83-#216-#11153

GEOLOGICAL AND GEOPHYSICAL REPORT

ON THE NEW MOON PROSPECT

[MISTY DAY, COPPER CLIFF, NEW MOON, FULL MOON,
LUNAR 1 - 18 CLAIMS]

OMINECA MINING DIVISION

BRITISH COLUMBIA

LOCATION	Latitude 53° 57' N Longitude 127° 45' W
N.T.S.	93E/13 E&W
OWNER	St. Joe Canada Inc. [under option agreement from Great Western Petroleum Corp., and Charles F. Kowall]
OPERATOR	St. Joe Canada Inc.

December 1982

David R. Kennedy
Malcolm Warwick

SUMMARY

St. Joe Canada Inc. optioned the New Moon prospect from Great Western Petroleum Corporation in August of 1982 for its volcanogenic massive sulphide potential.

Boulder trains carrying high grade massive sulphides assaying up to 12% copper and a small lead/zinc deposit [grading in excess of 7% combined] were reported on the property. Other float and in situ occurrences of massive sulphide mineralization were documented on the property.

The property was mapped in reconnaissance fashion in preparation for a helicopter borne Magnetic and EM survey flown with the Questor Mark VI Input System.

The mapping program provided structural and stratigraphic information so that the geophysical surveys could be conducted more effectively. The geologic environment was established as permissive of the formation of massive sulphide deposits. Float mineralization was traced to a source beneath Main Glacier.

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APPENDICES

INTRODUCTION

1. Location, Access and Topography

The New Moon prospect, totalling 375 contiguous claim units, is located on the eastern margin of the Coast Range mountains approximately one hundred kilometers south-southwest of Smithers and eighty-five kilometers southwest of Houston. Coordinates of the centre of the claim block are 53° 57' N and 127° 45' E [NTS 93E/13E&W].

Access is via helicopter from Smithers or Houston. A 74 kilometer all-weather gravel road connects Houston with the northeastern end of Morice Lake. Supplies can be ferried by helicopter from this point to the property, a distance of 27 km.

The property ranges from 775 m [at Morice Lake] to 2,200 m. a.s.l. Most of the property is above tree line, which occurs at roughly 1,400 m. Above this elevation, vegetation is sparse consisting of alpine grasses, flowers, heather and stunted conifers mostly confined to protected local valleys. The higher parts of the property, particularly the northeast facing slopes, are glacier covered. Wildlife is restricted to marmots, occasional mountain goats and bears.

A location map is included as Figure 1.

2. Property

The property is presently owned by St. Joe Canada Inc. under an option agreement with Great Western Petroleum Corporation. Relevant data concerning the claims is tabulated below:

Claim Name	Number	Units	Date of Record
Misty Day	832	12	October, 1977
Copper Cliff	833	12	October, 1977
New Moon	834	20	October, 1977
Full Moon	4163	8	August, 1981
Lunar 1	4718	18	August, 1982
Lunar 2	4719	14	August, 1982
Lunar 3	4720	16	August, 1982
Lunar 4	4764	18	Sept. 1982
Lunar 5	4765	12	Sept. 1982
Lunar 6	4836	20	October, 1982
Lunar 7	4837	18	October, 1982
Lunar 8	4838	20	October, 1982
Luner 9	4839	20	October, 1982
Lunar 10	4840	20	October, 1982
Lunar 11	4841	20	October, 1982
Lunar 12	4842	20	October, 1982
Lunar 13	4843	20	October, 1982
Lunar 14	4844	20	October, 1982
Lunar 15	4845	20	October, 1982
Lunar 16	4852	20	October, 1982
Lunar 17	4853	15	October, 1982
Lunar 18	4854	12	October, 1982
22 claims		375 units	

Geologic mapping was confined to the Misty Day, Copper Cliff, New Moon, Full Moon and Lunar 1 - 5 claims. Helicopter-borne Magnetic and EM surveys cover all claims.

3. History

The earliest known work in the area was done in 1967 by Phelps Dodge Corporation. The PC 1 - 36 claims were staked and 9 hand trenches totalling 692 feet were completed. Geology and chip sampling were carried out. No assessment was filed and the claims lapsed in 1968.

Silver Standard Mines had Charles Kowall prospect the area southeast of the PC claims in 1969. Boulder trains containing chalcopyrite, bornite, sphalerite, galena, magnetite and pyrite were reported. Claims were acquired but allowed to lapse without further evaluation.

Aggressive Mining Ltd. restaked the Phelps Dodge claims in 1970. Grab samples were taken to confirm the previous trenching results. A Crone JEM shootback EM survey was conducted over the mineralized zone. Only one line, located near the centre of the trenching, showed an anomalous result. Despite poor geophysical results, five short diamond drill holes totalling 312 metres were drilled in 1972. A silicified zone 7.6 - 9.1 metres wide by 165 metres long, averaging 1.74% Pb and 5.43% Zn was encountered in what was interpreted as a silicified fault zone. Aggressive Mining dropped the ground, primarily because the zone, where drilled, contained only low silver values.

The property was restaked in 1977 by Charles Kowall, working under a B.C. prospector's grant. Silver Standard optioned the claims in 1978 and they were, in turn, optioned to Norcen Energy Resources Ltd. of Calgary. A joint venture was formed with Aquitaine Ltd. to explore the massive sulphide potential of the claim group. Prospecting and some detailed geology were carried out. A limited ground Max-Min and Magnetic survey and some geochemistry were completed. The Norcen work identified a favourable volcanogenic environment with good grades of mineralization in float. The option was dropped as the Norcen staff felt that the logistics of a drill program to test the area under the glacier was too costly and might be impossible due to logistical considerations. The claims were returned to Kowall in 1978.

Great Western Petroleum Corporation optioned the claims in 1981. Helicopter borne VLF-EM and magnetometer surveys were carried out in September of that year. Three magnetic trends and weak VLF responses were recorded.

Great Western Petroleum Corporation optioned the property to St. Joe Canada Inc., as a massive sulfide prospect, in August of 1982.

St. Joe Canada carried out a geological study on the property during August and September, 1982. A helicopter borne Magnetic and EM survey was carried out in September and October of 1982 covering the Misty Day, Copper Cliff, New Moon, Full Moon and Lunar 1-18 claims.

Recovery of the geophysical data was tedious and not completed at the time of this writing. The large snow-covered areas have made precise plotting of the data difficult and time-consuming.

REGIONAL GEOLOGY

In 1980, G.J. Woodsworth compiled the available geological mapping of the Whitesail Map Sheet [NTS 93E], at a scale of 1:250,000. This map [GSC Open File 708] constitutes the most recent regional mapping covering the New Moon property. The property is, however, located in one of the less intensely mapped areas of the Whitesail map.

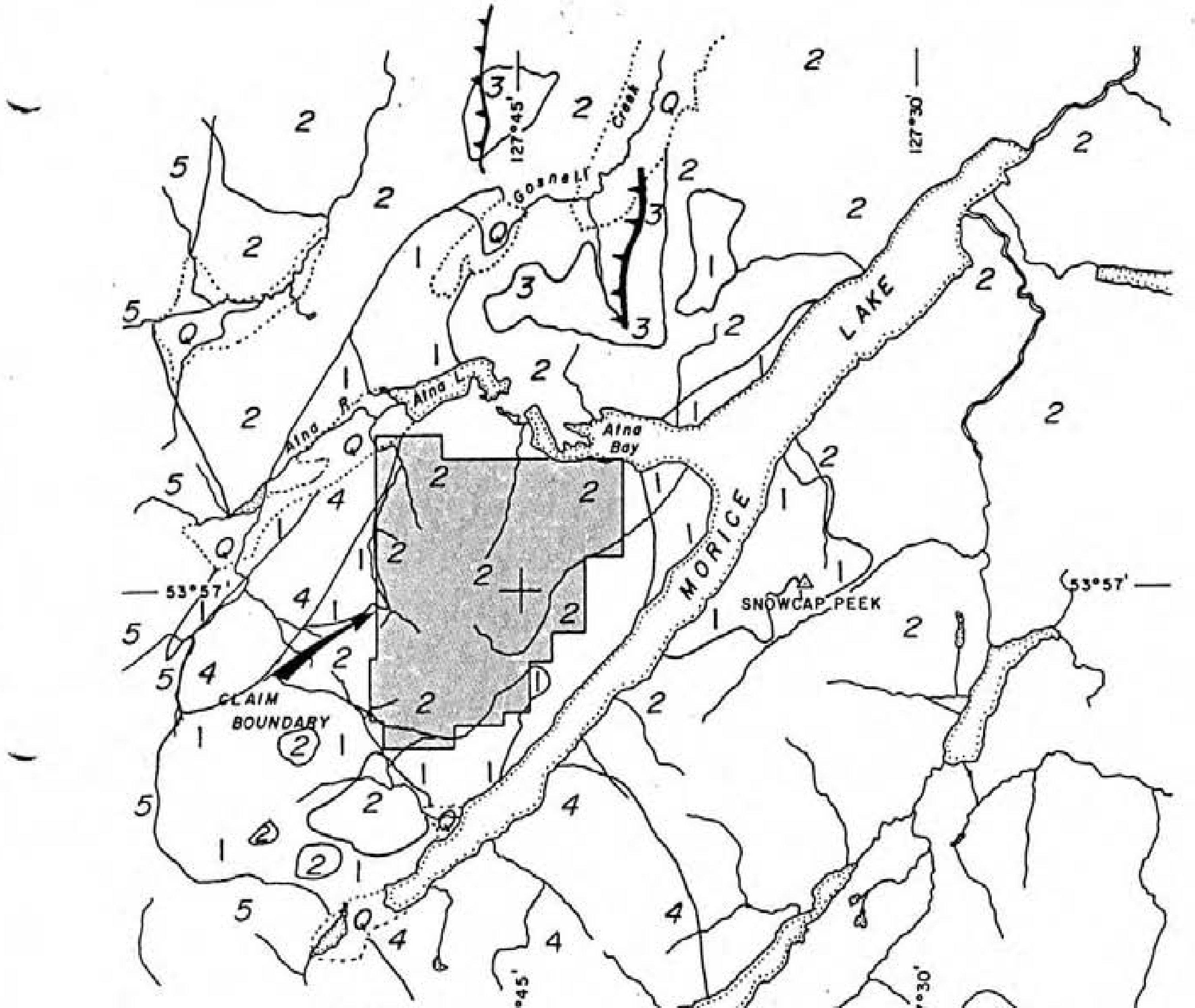
The important contacts and rock types in the vicinity of the New Moon property, as shown on the Whitesail Map, are illustrated on Figure 2. Figure 2 indicates that most of the property is underlain by Telkwa Formation volcanic rocks. The eastern, southern and western borders of the property roughly coincide with the mapped contacts of the Topley Intrusions. The northwestern corner of the property is underlain by a large, slightly metamorphosed intrusion of uncertain age.

Telkwa Formation refers to the oldest of three formations, which constitute the Early to Mid Jurassic, Hazelton Group of sedimentary and volcanic rocks. [See Table of Formations on the following page.]

FORMATIONS, MEMBERS, AND FACIES OF THE HAZELTON GROUP

Unit	Lithology	Thickness (m)	Age
Smithers Formation	Greywacke, argillite, siltstone, sandstone, sharpstone, conglomerate, glauconitic sandstone, ash-fall tuff, tuffaceous sediments	40 - 800	Middle Toarcian to Lower Callovian
Bait Member	Argillite, siltstone, fine-grained greywacke, limestone, sharpstone conglomerate, tuff and tuffaceous sediments	30 - 450	Middle Toarcian to Middle Bajocian
Yuen Member	Siltstone, tuffaceous siltstone, reddish tuff, fine tuff-aceous greywacke	780	Toarcian to Middle Bajocian
Nilkitkwa Formation	Shale, siltstone, greywacke, limy shale, limestone, rhyo-dacite airfall tuff and breccia, basalt	30 - 1200	Early Pliensbachian to Middle Toarcian
Carruthers Member	Pillow basalt, aquagene tuff, breccia, minor flows and limestone	60	Late Pliensbachian to Early Toarcian
Ankwell Member	Subaerial and subaqueous alkali olivine basalt, minor basalt, minor sandstone and limestone	10 - 1000	Middle Toarcian
Red Tuff Member	Subaerial airfall tuff, lapilli tuff, rhyolite to basalt flow breccia and tuff, minor subaqueous volcanics	50 - 300	Middle and ? Late Toarcian
Telkwa Formation			Late Sinemurian to Early Pliensbachian
Howson sub-aerial facies	Calc-alkaline basalt to rhyolite flows; breccia, tuff; intravolcanic sediments; minor marl	1000 - 2500	
Babine shelf facies	Calc-alkaline basalt to rhyolite; subaerial and subaq-eous flow, breccia, and tuff; limestone, greywacke, siltstone, and shale	1000 ?	
Kotsine subaqueous facies	Calc-alkaline basalt and rhyolite; subaqueous flow, breccia, tuff, pillow breccia; limestone, greywacke, siltstone and shale	30 - 1500	
Bear Lake subaerial facies	Calc-alkaline basalt to rhyolite flow, breccia, and tuff; and intravolcanic sediments	2000	
Sikanni clas-tic-volcanic facies	Subaerial conglomerate, sandstone, mudstone, lahar, rhyo-dacite flow, breccia, basalt, andesite; minor shallow-marine sandstone and conglomerate	200 - 1000	

Source: Tipper & Richards, GSC Bulletin 270, 1976



LEGEND

Q Quaternary deposits

sedimentary & volcanic rocks — intrusive rocks

5 Coast Plutonic complex

4 green chloritized quartz diorite

3 Nilkitkwa Formation (Red Tuff Member)

2 Telkwa Formation (Howson subaerial facies)

1 Topley Intrusions

geologic contact — thrust fault

SCALE 1:250,000

5 0 5 10 15 20

ST. JOE CANADA INC.			
G.W.P. OPTION			
NEW MOON PROPERTY			
REGIONAL GEOLOGY			
PLAN No.	DRAWN D.R.K./M.R.W.	DATE Dec. 1982	FIGURE 2
Revised		N.T.S. 93E/13	

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The Telkwa Formation is of Sinemurian to earliest Pliensbachian age. It is represented by a thick suite of calc-alkaline volcanic rocks. The Telkwa Formation has been subdivided into five distinct facies belts, of which only the 'Howson subaerial facies' appears applicable to the property geology. The Telkwa Formation is underlain and probably coeval with Lower Jurassic Topley Intrusions. The Telkwa volcanic rocks are conformably overlain by the Nilkitkwa Formation. The latter formation is of Lower Pliensbachian to Middle Toarcian ages.

The basal member of the Nilkitkwa Formation is the Red Tuff Member, and comprises reddish calc-alkaline volcanic rocks, some of which are exposed around Morice Lake. [Tipper, personal communication] The rocks of the Red Tuff Member are similar to those of the Howson Subaerial facies. The former is described in the Table of Formations as subaerial airfall tuff, lapilli tuff, rhyolite to basalt flow breccia and tuff, minor subaqueous volcanics. "Strata of the Howson subaerial facies are bright red, maroon, purple, pink, grey, green, well bedded, slightly deformed basalt to rhyolite [dominantly andesite-dacite], pyroclastic, flow and sedimentary rocks deposited in a terrestrial environment." [Tipper and Richards, 1976]. The similar lithologies of these two units make their exact distinction difficult. Where possible, the units are separated on the basis of their relationships to overlying and underlying formations. Where such contacts are absent, the separation of the Howson subaerial facies and the Red Tuff Member is dependant upon subtle lithological differences. H.W. Tipper, [personal communication] stated that one of his primary lithological bases for the separation of the two, was pervasive, thin limestone, and/or shale beds that he found among the rocks of the Red Tuff Members.

The preservation of the Red Tuff member strata has occurred where large displacement, drop faulting, has lowered blocks of the 'Red Tuffs' into the rocks of the surrounding Telkwa Formation. The traces of these faults were probably active throughout the Jurassic.

It is therefore possible that the rocks on New Moon are part of the Red Tuff member, however, the member is given a maximum thickness of 300 m. A much greater thickness is exposed on the property and may well be the "Howson subaerial facies". For purposes of this report the property is considered underlain by the "Howson subaerial facies".

The rocks of the second greatest areal extent on the New Moon property are the Topley Intrusions which are "calc-alkaline stocks and batholiths of Early Jurassic age that intrude the Telkwa Formation of the Hazelton Group. They form a series of bodies coincident with and possibly the core of "the Skeena Arch". "Although the bodies strike directly into the Coast Plutonic Complex, they have not been recognized within it". "These intrusive bodies are thought to be contemporaneous with, and intrusive into, the Telkwa Formation".

The intrusions are coincident with the thickest piles of volcanics and are associated with the greatest abundance of acidic extrusives.

The intrusives are of epizonal type. On the New Moon property, roofs of volcanic strata are well preserved, with some volcanic xenoliths near the contacts. Otherwise, the contacts are sharp, and the metamorphic effects are mainly baking.

PROPERTY GEOLOGY

The property geology is displayed in Figure 3 at a scale of 1:10,000. Reconnaissance type mapping was carried out, the objective being to gain a handle on the structure and stratigraphy quickly in order to properly oricnt the flight lines of a planned helicopter borne Magnetic and EM survey.

Mapping and prospecting continued during and after the airborne survey. Some time was spent investigating the mineralized boulder trains located in the Main Valley in an effort to determine the provenance of this material.

The glacial outwash found in the "North Canyon", "Shadow Valley" and the drainage on southern part of the property were prospected. A few isolated boulders containing pyrite or sphalerite and galena with minor chalcopyrite in the case of North Canyon, were located, but "Main Valley" contains by far the most impressive collection of mineralized boulders. The source of these boulders appears to lie within a compound cirque southwest of the boulder trains. The cirque is filled by a "Main Glacier" which is highly crevassed, particularly in the lower parts. Geophysical surveys on the glacier's surface are impractical due to the crevassed nature of its surface.

The volcanic extrusive rocks found on the property correspond well with Tipper's description of the Howson subaerial facies of the Telkwa Formation. In detail, one can see numerous thin flow and pyroclastic layers.

Unit 1 on the Geology Map is Monzonite to Quartz

Monzonite belonging to the Topley Intrusions. The rock is coarse grained and generally light to medium grey in color. White to cream colored feldspar phenocrysts [40%] up to 5 mm are suspended in a medium grey, fine groundmass. About 8% hornblende is present as dark green to black prismatic crystals up to 2 mm in cross section. Quartz crystals are present in some localities and minor pyrite [less than 1%] has been observed as disseminations. Carter [BCDM Bull. 64] gives age dates of 176 - 206 MY for the Topley Intrusions. An age of 178 MY was determined on a sample from the east side of Morice Lake. It is apparent that the monzonite is intrusive into the overlying volcanic package as large blocks of andesite material can be seen within the monzonite on the Full Moon claim. The blocks are most numerous near the contact with the volcanic package.

Map Unit 2 is a thick succession of mafic to intermediate pyroclastic and flow rocks, predominantly andesitic in composition. The sequence is composed of dominantly maroon colored flows and finely layered [in places varved] waterlain tuffs to tuff agglomerates interbedded with dark green flows, tuffs and agglomerates. Graded bedding observed at several locations is indicative of a subaqueous environment of deposition.

The regional strike is northwest-southeast, dipping 20 - 40° northeast. Tops are to the northeast as indicated by the graded bedding. Very coarse agglomerate containing cherty fragments up to 30 cm in a dark green or maroon matrix were observed in two locations on the plateau; these areas are indicated on the map.

Map Unit 3 consists of thin carbonate-chert exhalite horizons, conformable with the tuff/andesite flow unit, typically less than 30 cm but occasionally in excess of 2 m. They are light grey and have the appearance of thin, marly limestone beds.

Map Unit 4 is dacite, intermediate in composition between the mafic Unit 2 and acid Unit 5 rhyolite. All are viewed as members of the same Howson subaerial facies. The dacite is medium to light grey green, often feldspar porphyritic with feldspar phenocrysts ranging up to 5 mm in a few instances. In several localities, fine disseminated chalcopyrite has been observed in this unit. Visual estimates are less than 1% chalcopyrite at any given locality.

Map Unit 5 is a light colored [cream to pinkish] very fine grained rhyolite. In some outcrops [notably the plateau area] 1 - 2 mm phenocrysts of grey quartz have been observed in the unit. Bombs have been noted in the outcrop north of Main Glacier.

Unit 6 is anorthosite, light grey to green, composed largely of plagioclase feldspar with 10 - 15% pyroxene. A fairly large intrusion of this rock occurs near the western end of the plateau. The best exposure can be seen at the extreme upper end of "North Canyon".

Units 7 and 8 are intrusive dykes. Generally, the dykes are less than 1 meter wide and often they occur as swarms; up to 30 parallel dykes have been noted in some swarms. Field evidence suggests that the mafic dykes [often of basaltic composition] are older than the felsic [pink to light grey, typically feldspar porphyritic variety.]

ALTERATION

The volcanic rock of the Howson subaerial facies is extensively altered with a regional development of zeolites, epidote, prehnite, and calcite. The low grade secondary minerals occur in three major forms:

1] As veins, from approximately 30 cm wide to fine veinlets [1 cm] that cut the strata.

2] As primary porosity filling that forms amygdules and cements the breccias.

3] As a matrix component of secondary mineral in pyroclastics and flows.

The first two forms are visible to the eye and have been observed on the property.

The zeolitization tends to favour basaltic and andesitic rather than rhyolitic rocks. Barite, calcite and epidote have been recognized in the rhyolitic rocks by Tipper and Richards.

T.A. Richards recognized the mineral wairakite in a zeolite specimen. Wairakite is characteristic of zeolite facies alteration in geothermal areas [Seki, 1969]. The flow of Howson facies basalts into basins was suggested by Tipper and Richards [1976]. These basins would be suitable areas for the circulation cells of hydrothermal solutions that may have precipitated the zeolites.

Seki, Y.,
1969 Facies Series in low grade metamorphism; Geological Society, Japan, v. 75, p. 255-266

Other alterations observed in the volcanic rocks are:

1] Silicification along shear and fault zones.

2] Moderate clay alteration [kaolinization] of the feldspars.

3] Chloritization of mafic constituents of some of the volcanic rocks.

MINERALIZATION [in situ]

1] Plateau Showing [Misty Day Claim]

The Plateau Showing consists of a system of aligned white quartz and quartz carbonate stringers typically from 5 to 25 cm in width, carrying appreciable Pb/Zn values. Individual stringers pinch out and are replaced by other stringers. Considerable manganese staining is found throughout the area. The showing has a surface exposure of approximately 50 m x 300 m. Aggressive Mining's four diamond drill hole intersections indicate that the zone extends to a depth of at least 50 m. [One hole was drilled under the structure and intersected no mineralization.] Average grade calculated from the old drill intersections is in excess of 7% combined Pb-Zn over a true width of approximately 8 - 10 m. An overall strike direction of 015^{o} with a dip varying between 60^{o} E and near vertical, can be seen, though locally the stringers may be highly contorted. The zone is hosted by andesitic and tuffaceous rocks described under Map Unit 2. Sphalerite and galena occur as coarse, layered, fissure fillings and as crystal masses apparently filling open cavities. Several smaller but similar mineralized areas were located southwest of the Plateau Showings.

2] Shadow Showing [Lunar 5 Claim]

The Shadow Showing is a bedded sulphide and oxide showing located on the northeast side of Shadow Valley. The showing has an exposed strike length of approximately 300 m.

Several distinct beds of rusty colored sulphide [dominantly pyrite with minor chalcopyrite] and dark colored oxide [mostly magnetite] average between 0.5 m. and 1.5 m. in thickness. The showing has been cut in three places by the Topley Intrusives [Map Unit 1]. Xenoliths of bedded sulphide within the intrusive material have been rafted to the north, indicating intrusion was from the south.

3] North Canyon Malachite Showing [Lunar 2 Claim]

A discontinuous, though apparently stratiform malachite showing was located on the northwest wall of "North Canyon". This showing has not been investigated due to the very steep nature of the cliff walls. The showing is estimated to be at least 200 m. long and malachite is visible from the air over a width of approximately 1 - 2 m.

4] Full Moon Malachite Showing [Full Moon Claim]

Another area with sporadic malachite mineralization was observed east of the terminus of Main Glacier. This showing was also located from the air and appears confined to a particular stratigraphic horizon. Sampling revealed some chalcopyrite associated with the malachite staining.

5] <u>Shear Zone and Dyke Mineralization</u> [New Moon, Copper Cliff, Lunar 1 Claims]

Several small structurally controlled mineral showings, consisting mainly of chalcopyrite and malachite, have been located. Generally, the mineralization is persistent over lengths rarely exceeding a few meters and often widths are only a few centimeters. Individual specimens from this type of occurrence are impressive, commonly containing visually estimated chalcopyrite to 10%. The mineralization frequently occurs in thin quartz veinlets. Alteration is common; silicification, chloritization and epidotization have been observed. These showings, though small, indicate a metal-rich environment within the Howson subaerial facies.

6] <u>Manganese Showing</u> [Lunar 2 Claim]

A heavily manganese stained and carbonated area is located on the ridge running north between North Canyon and Main Valley. A few specimens taken from the Manganese stained layered rhyolite returned silver values up to 1 oz/ton.

FLOAT MINERALIZATION

High grade float specimens containing up to 12% Cu, minor Pb-Zn and up to 4 ounces per ton silver, were located on the New Moon, Full Moon and Copper Cliff claims by Charles Kowall in the Main Valley during 1969. These high grade boulders along with the drilled and trenched lead-zinc deposit on the plateau, formed the basis of St. Joe's initial interest in the property.

The most spectacular mineralization is found in the medial, lateral and terminal moraines north of, and emanating from Main Glacier. Three types of boulders are located in the prominent medial moraine. An area with numerous occurrences of lead-zinc mineralization occurs near the northeast [lowermost] part of the moraine just south of the creek. Galena and sphalerite occur in silicified, carbonated, and chloritized andesitic rock. The pieces found tend to be angular but this may be the result of breaking up during transport. The mineralized float accounts for 1 - 2% of all the material present in the local area.

The upper end of the medial moraine is particularly well endowed with copper-bearing boulders. Mineralized boulders, subangular to subrounded, are estimated to make up about 3% of the moraine material from the edge of the glacier down the moraine to about 100 m. From roughly 100 m. to 200 m., the mineralized boulders make up about 1% of the total moraine. Below 200 m., the boulders are infrequent, occurring roughly 10 m. apart. The copper-bearing boulders may be divided into two categories, -

i] heavy specular hematite, chalcopyrite, magnetite, ± minor sphalerite in jasperoidal chert;

ii] chalcopyrite and pyrite in a chlorite and epidote altered grey, cherty host rock.

Both types of boulders were found in the upper part of the moraine and traced up to and under the glacier. The boulders with heavy specular hematite were most common. Several less well defined trains were noted further east of the main boulder train; both types of copper-bearing boulders were represented.

The terminal moraines located north of the creek run at right angles to the lateral and medial moraines. The majority of the mineralized boulders here are generally subrounded and consist principally of chalcopyrite and pyrite [often banded] in a grey, cherty matrix. Chlorite and epidote are common alterations. A few of the oxide-sulphide boulders are present but their numbers are few compared to the sulphide boulders. These terminal moraines mark the advances of Main Glacier. The Glacier has since retreated.

Another very different type of mineralized float is located on the Copper Cliff claim just north of the area affected by Main Glacier on the west side of the creek. Here angular, locally derived blocks of felsic volcanic material contain chalcopyrite and pyrite in chlorite altered material. The mineralized rock ranges in composition from dacite to rhyolite. The source of the material may be under the side glacier located north of Main Glacier.

Two prominent on ice moraines exist in the upper part of North Canyon on the Lunar 1 claim. A few sporadic pieces of angular mineralized float, mostly andesite, have been found, particularly at the upper ends of these moraines. The mineralization consists of galena and sphalerite with minor amounts of chalcopyrite and pyrite. The sulphides are found associated with quartz and carbonate.

CONCLUSIONS

1] A volcanogenic environment favorable for the location of a massive sulphide ore deposit has been identified.

2] A lead-zinc deposit drilled by previous operators exists on the plateau. Limited sampling has confirmed previously reported grades.

3] Economic grades of copper mineralization occur as boulder trains which can be traced up to and under Main Glacier.

4] Several small, in situ, mineralized showings indicate a metal rich volcanic system was operative in the area.

5] Several exhalite horizons of carbonate/chert composition have been located.

6] Cyclical mafic to felsic volcanism has been identified.

RECOMMENDATIONS

1] The Lunar 6 - 18 claims should be prospected and mapped in reconnaissance fashion and at the same scale as the 1982 mapping.

2] A glaciologist should examine the Main boulder trains and terminal moraines with a view to determining if the various boulders could come from a single source or multiple sources and what part of the Glacier may hide the source or sources.

3] All Magnetic and EM responses should be prospected and ground geophysical follow-up should be carried out where possible.

4] An I.P. survey should be conducted over the Plateau Showing in an attempt to further delineate this zone before drilling.

5] Diamond drilling should be carried out to test the under glacier Input responses and further evaluate the Plateau zone. Follow-up on other Input anomalies may result in other drill targets.

COST STATEMENT

Salaries & Fringes [approximate] [on job and in transit days]	
D. Kennedy - Aug. 16 - Sept. 19 incl. 34 days at $165/day	$ 5,610
M. Warwick - Aug. 16 - Sept. 19 incl. 34 days at $ 96/day	2,304
Accommodation [Aspen Inn, Smithers] [Aug. 16 - Sept. 18 incl.]	2,470
Meals Aug. 16 - Sept. 19 incl.	1,941
Vehicle rental Aug. 16 - Sept. 19 incl.	1,226
Heli. Charter Aug. 17 - Sept. 18	29,902
Air transportation [commercial]	522
Report preparation	
Drafting [commercial service]	1,177
D. Kennedy - 7 days @ $165/day	1,155
M. Warwick - 19 days @ 96/day	1,824
Typing, etc.	200
Questor Surveys heli-borne Magnetic & EM surveys	113,405
	161,736

The geological field program was executed between August 16 and September 19, 1982. Some research and expediting was carried out before and after those dates.

STATEMENT OF QUALIFICATION

I, DAVID ROY KENNEDY, of 465 West 26th Street, North Vancouver, B.C., do hereby declare that:

1] I am a geologist, having obtained the degree of B.Sc. [major Geology] from Acadia University in Wolfville, Nova Scotia in 1970.

2] I am a member in good standing of the Canadian Institute of Mining and Metallurgy.

3] I am a Fellow of the Geological Association of Canada.

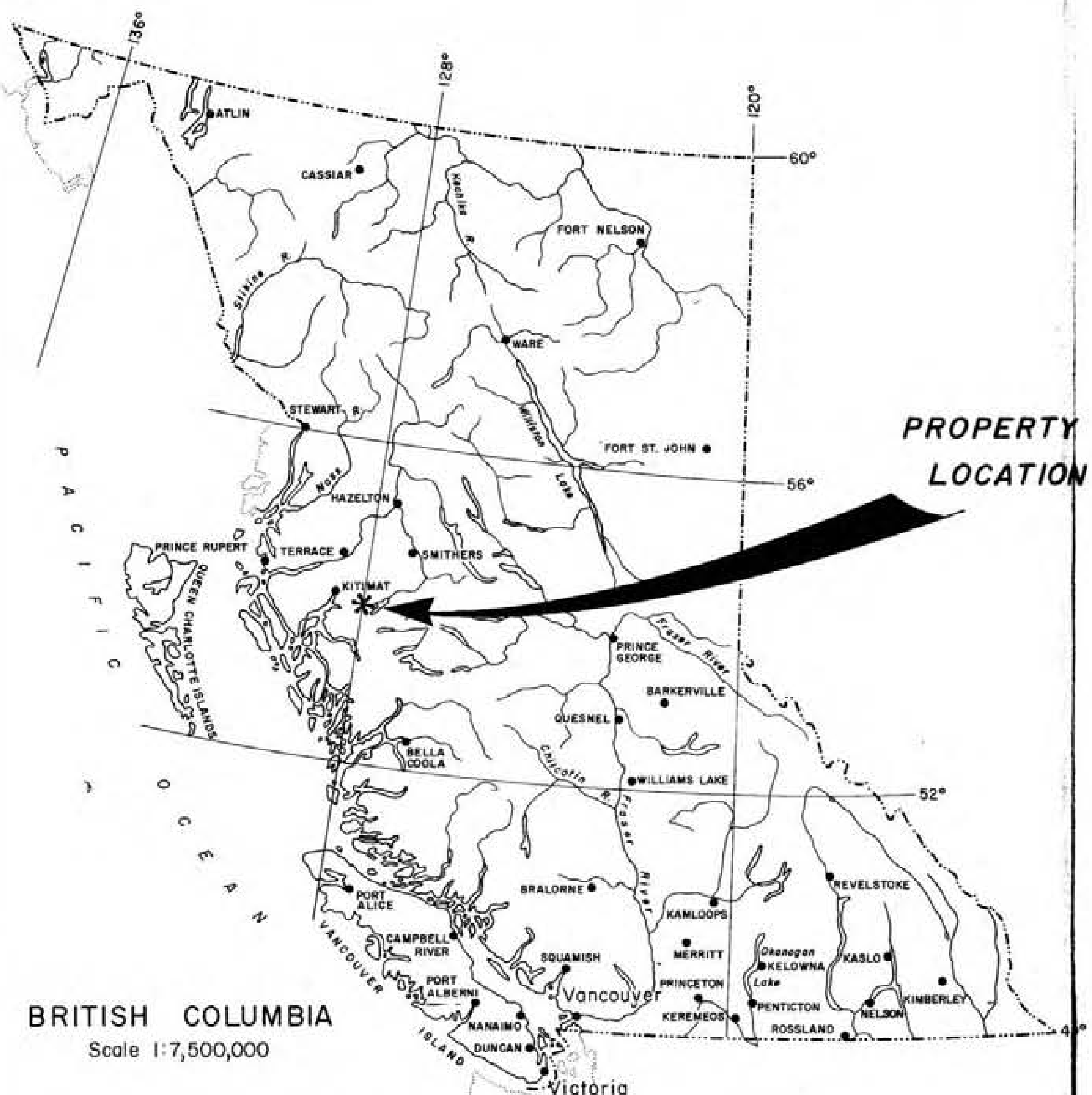
4] I have continuously practiced my profession in Canada since graduation in 1970.

5] I spent approximately five weeks on the New Moon prospect and personally supervised or carried out the work documented in this report. I was assisted by Malcolm Warwick, a graduate in geology from the University of Western Ontario [1981].

[SIGNED] D. R. Kennedy

David R. Kennedy

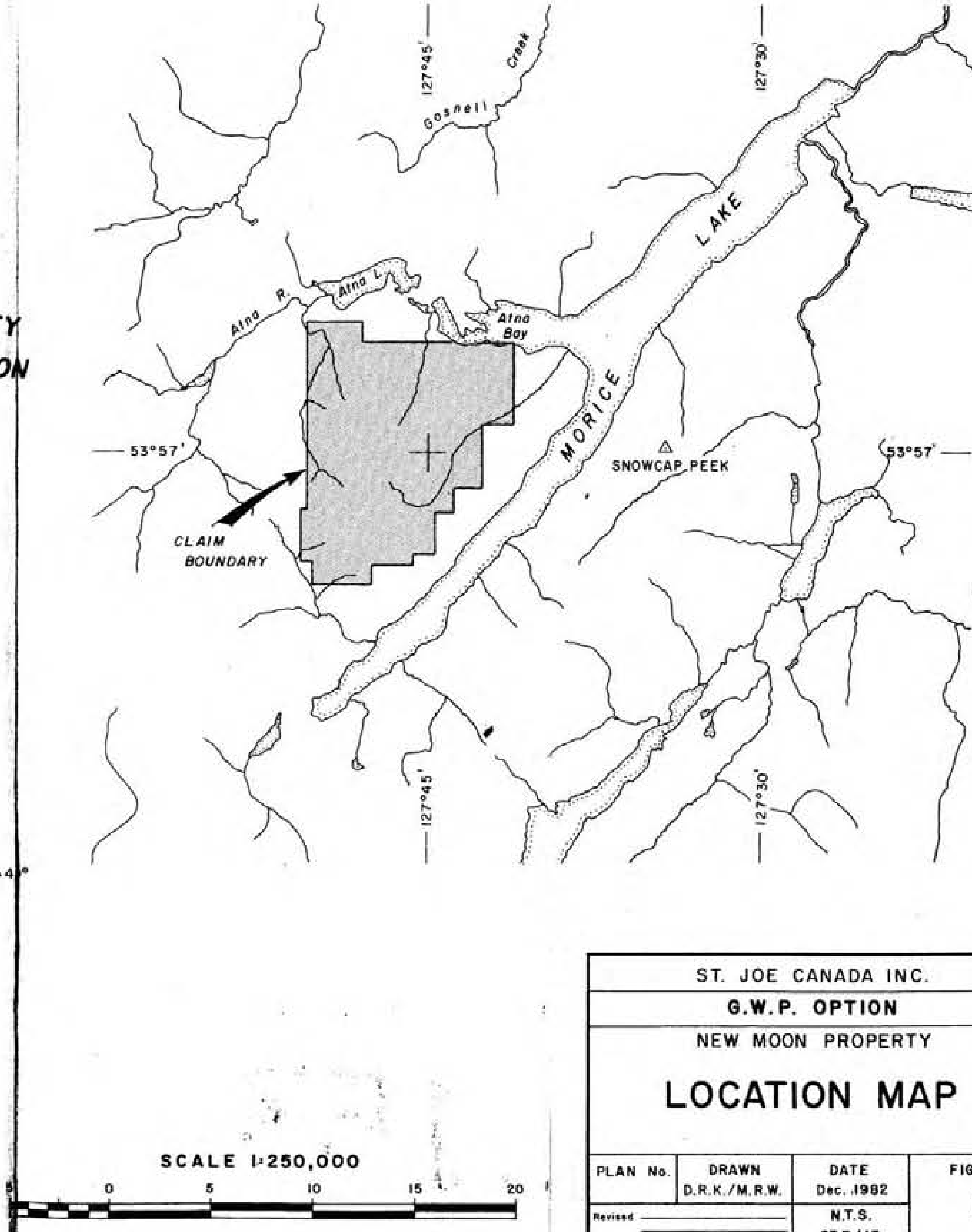
December 23, 1982



BRITISH COLUMBIA
Scale 1:7,500,000

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,153



ST. JOE CANADA INC.			
G.W.P. OPTION			
NEW MOON PROPERTY			
LOCATION MAP			
PLAN No.	DRAWN D.R.K./M.R.W.	DATE Dec. 1982	FIGURE 1
Revised		N.T.S. 93E/13	

EXCLUSIVE DRAFTING SERVICES LTD.

SELECTED PHOTOGRAPHS

NEW MOON PROPERTY

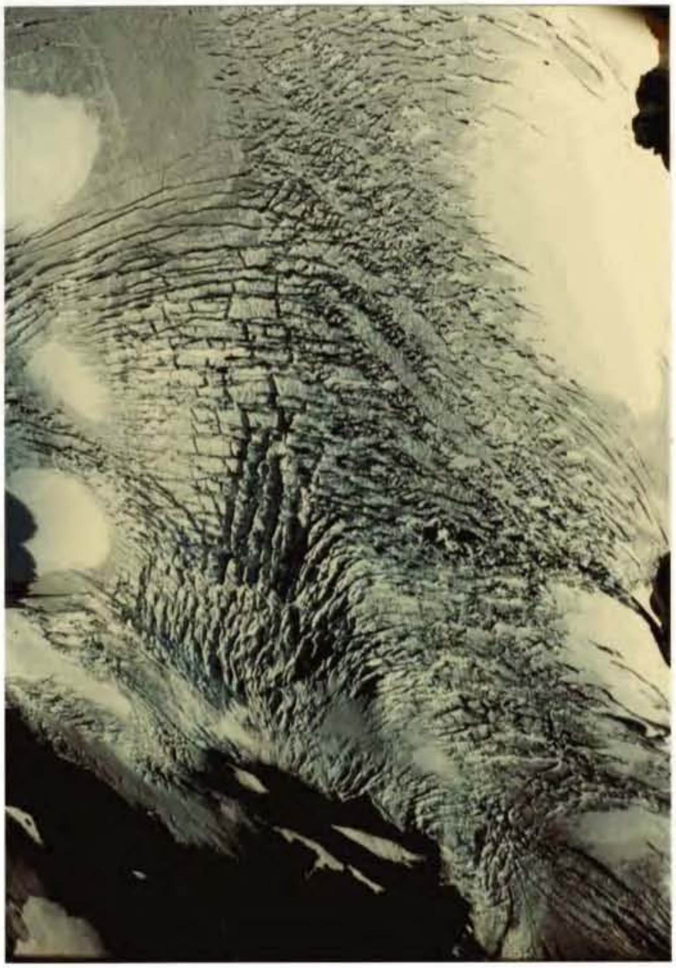
NEW MOON PROPERTY

MORICE LAKE AREA

BRITISH COLUMBIA

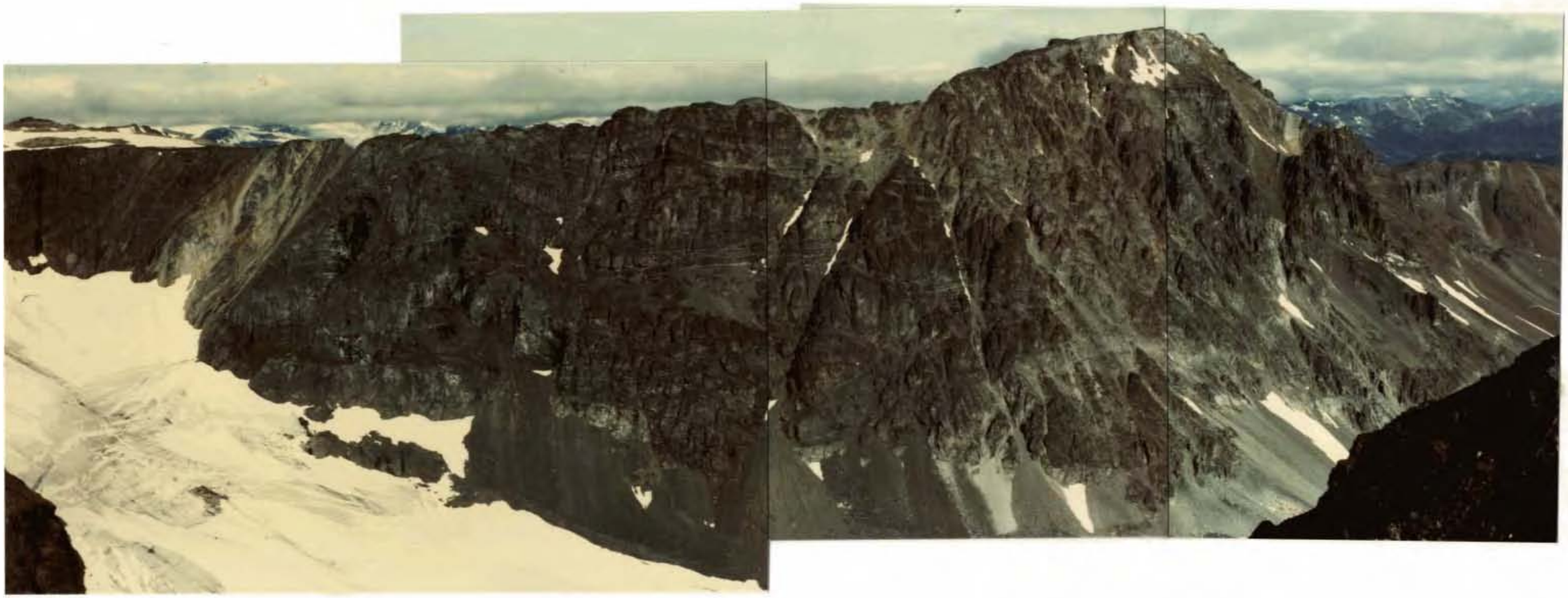
1/ Looking west up the Main Valley, towards Main Glacier.

2/ Main Glacier and Pyramid Peak in the foreground, with Morice Lake in the background.



3/ Vertical view of the large crevasses in the centre of the Main Glacier.

4/ Looking southeast, towards Main Glacier.



5/ A panoramic view of the cliffs on the west side of North Canyon

6/ Questor Survey Helicopter

7/ Questor survey in progress.

QUESTOR SURVEY RESULTS

HELICOPTER AIRBORNE ELECTROMAGNETIC SURVEY

ST. JOE CANADA INCORPORATED

MORICE LAKE AND EXTENSION AREAS

PROJECT NOS: 24H49, 24H60 DECEMBER, 1982

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

CONTENTS

INTRODUCTION

This report presents the results of two airborne electromagnetic surveys flown in the Morice Lake Area, British Columbia. The survey was conducted by QUESTOR SURVEYS LIMITED of Mississauga, Ontario, using a Bell 205A-1 Helicopter, specially modified as a survey platform.

The first portion of the survey was flown between September 2 and September 12, 1982 and the second portion was flown between October 11 and October 18, 1982. The operating base was Houston, British Columbia with a fuel cache at the B.C. Forestry Campsite on the northwestern shore of Morice Lake.

Operational personnel involved with the field aspect of the surveys were:

Geophysicist	-	D. Isherwood D. Martyn
Navigators	-	W. Smith H. Sandau
Electronic Technicians	-	K. Higenbottam D. Borsoi
Pilot	-	R. Masson
Engineer	-	J. Caza

The survey mileage was 208 line kilometres for the first survey area and 405 line kilometres for the second survey area. The area outlines are shown on 1:250,000 maps at the end of this report. These are parts of the National Topographic Series, sheet numbers 93E and 93L.

MAP COMPILATION

The base maps are air photos from Maps B.C., reproduced at an approximate scale of 1:10,000, on a stable, transparent film from which white prints can be made.

Flight path recovery was accomplished by comparison of the 35mm. half-frame film with the air photos in order to locate fiducial points.

Due to the highly variable speed of the helicopter while on survey, magnetic contouring and anomaly positioning and plotting were done manually.

SURVEY PROCEDURE

The original survey area and Block A of the second area were flown approximately N 45^{o} E at a line spacing of 200 metres. Block B of the second area was flown E-W, also at a line spacing of 200 metres. Detailed flying over a portion of the Main Glacier was done at a line spacing of 100 metres.

Terrain clearance was maintained as close to 120 metres as was practicable with the E.M. bird towed on a 76 metre cable.

INTERPRETATION

Morice Lake Area

The survey area lies to the west of Morice Lake and contains several ice fields and glaciers. There are large areas of glacially deposited material. Andesite, dacite and some rhyolite appear to be the main rock types in the area. There are a number of mineralized boulder trains in the "Main Valley" (Geology Map, New Moon Property, St. Joe Canada Inc.).

Although there are a number of intercepts plotted, most of these responses are of such low amplitudes as to be comparable to the noise envelope of the system. However, some of these E.M. anomalies do stand out. There are several areas where a conductor axis has been drawn, either for greater amplitude, higher conductivity values, magnetic correlation, or significant line-to-line correlation.

Conductor 1

This pair of anomalies, 10020A and B, is situated in a magnetic low. There are no associated responses on the adjacent flight lines. This is a low priority zone.

Conductor 2

Anomaly 10100E is among the best E.M. responses in this survey. It exhibits better than average conductivity and amplitude, although these may be amplified by compensation noise. This response, and those that appear to correlate with it, is coincident with a magnetic feature. The associated anomalies do not have responses as strong as 10100E, but they do correlate positionally, quite well. Lying in the "Main Valley" increases the accessability of the conductor. This zone is a good target for follow-up.

Conductors 3 and 4

These responses are near the start of traverse line 10110S, making it difficult to correlate responses to any other line. Swinging of the E.M. 'bird' is a possible source of these anomalies. There are slight magnetic anomalies adjacent to these E.M. responses on the profiles, but these may be just altitude effects. This is a low priority zone.

Conductor 5

The altimeter trace for this anomaly, 10110E, indicates turbulence as a possible source of this anomaly. However, the E.M. response exhibits a patterned decay of a good bedrock conductor. There is a coincident magnetic peak that is narrow in width and approximately fifty (50) gammas in amplitude. The conductor lies in a portion of the "Main Valley" which is primarily covered with glacially deposited material. The few bedrock out-crops in this vicinity show dacite, andesite and a trace of a possible carbonate exhalite. Also, there are several mineralized boulder trains in the area. This response may be worth further work.

Conductor 6

These responses occur over the Main Glacier. There is no direct correlation on the adjacent traverse lines and the magnetic profile shows a relative low. Bird motion may be responsible for these anomalies. On the other hand, these responses occur as a pair and do exhibit transient decay. Any further work should be advanced in terms of any further available information.

Conductor 7

Anomaly 10131B occurs over the northeast edge of the Main Glacier. It is an isolated response that was not reproduced in the detailed flying in the same area, so it must be regarded with some suspicion. The response is coincident with a broad magnetic high. If this anomaly has a bedrock source it is not near surface. This would be low priority.

Conductor 8

Anomaly pair 10150B and C are actually the same response; the helicopter at this point would have little forward speed. This conductor occurs in the "Main Valley". The amplitudes of the E.M. responses are very close to background and 'bird' motion may have contributed to the responses. There is no apparent associated magnetic feature. This would be low priority for follow-up.

Conductor 9

Magnetically there is nothing associated with this anomaly, 10160A. This response is broad and weak and lies to the northwest of the Main Glacier.

Conductor 10

This single line conductor correlates with a magnetic low. The anomaly has low amplitudes and low conductivity. The source of this response appears to be not near surface.

Conductor 11

There is at least one, and perhaps two bedrock conductors here. The E.M. responses have among the largest amplitudes and conductivity intercepted during the course of this survey. The altimeter profile is fairly steady through this area so there wouldn't be any interference from bird motion in these responses. The magnetic profiles indicate one, large, major peak and also a smaller peak in the gradient to the east. There are several occurrences of pyrite in a background of rhyolite and andesite mapped in this vicinity. This would be a good target for ground geophysical follow-up.

Conductor 12

Positioning of this conductor is approximate. The flight path is at an extreme edge of the survey block. Air photos have a great deal of distortion at their edges, such as the location of these anomalies. These responses have the same characteristics as those of Conductor 11. Ground geophysical work will be needed to delineate the source of this conductor.

Morice Lake Extension Areas

The survey areas abut the original survey block. The flight line direction for Block A is the same as for the original survey, N 45° E, and for Block B, E-W.

Geology in the area appears, by extrapolation (Geology Map, New Moon Property, St. Joe Canada Inc.; Map 1064A, Whitesail Lake, B.C., G.S.C.), to be much the same as the original survey block. Andesite, dacite and rhyolite are the main rock types in the area with large areas covered by ice fields and glacially deposited material.

The selection criteria for further discussion of the E.M. responses was greater amplitude, higher conductivity values, magnetic correlation or significant line-to-line correlation.

BLOCK A

Conductor 1

The main conductor is comprised of three anomalies whose amplitudes may have been increased by bird motion. There does not appear to be any real associated magnetic feature. The other anomalies are scattered, with no real line-to-line or magnetic correlation. This zone would be low priority.

Conductor 2

Anomalies 10072A, 19020B and 19020C flank a small magnetic feature. Unfortunately, there is no correlating E.M. response on line 10082. Therefore, this would be a low priority target.

Conductor 3

There is a small inflection in the magnetic profile that may be associated with this conductor. The anomaly has good amplitudes and there does not appear to be much motion causing movement on the altimeter trace. This would be a medium priority target.

Conductor 4

This anomaly, 10090A, has good amplitudes and is also coincident with the peak of a large magnetic feature. The altimeter trace is relatively flat through this area, so bird motion does not appear to be a factor. This is a medium priority zone.

Conductor 5

Although this anomaly, 10122A, has good amplitudes and no apparent bird motion, there is no coincident response on line 10112 which is plotted in the same position. There is also no associated magnetic feature, therefore, this is a low priority zone.

Conductor 6

This conductor is intercepted on two traverse lines, 10170 and 10180. The magnetic profile of line 10170 shows a small magnetic feature correlating with the E.M. responses. Although the same feature does not appear on line 10180, it does appear on line 10162. The E.M. profiles exhibit good amplitudes, shape and conductivity, indicating a high priority for follow-up work.

Conductor 7

Control line anomaly 19020F and traverse line anomalies 10170F and 10170G, intercept a conductor that parallels a magnetic feature at the western edge of the survey block. Unfortunately, line 10180 starts too late to provide any correlation. This zone would be a medium priority zone.

Conductive Zone 8

An axis has not been drawn through this zone, since these responses are not definite enough. The altimeter trace indicates the probability of bird motion. On the other hand, these responses only stretch across the one magnetic feature. This would be a low to medium priority zone.

Conductor 9

This conductor was selected due to its larger amplitudes and better defined shape. However, it lies on a magnetic gradient and may be due to bird motion. Therefore, this is a low priority zone.

Conductors 10 and 11

Both these conductors may be due to bird motion and neither has any intercepts on line 10260, but they both have coincident magnetic features on line 10250's profile. The E.M. responses on line 10250 have good shapes and amplitudes. Anomaly 10250E is not quite as good as the other on that same line, but there may be an association with anomaly 10270B, which has a similar magnetic feature. These would be medium priority zones.

Zone 12

This zone contains multiple, scattered, weak-to-questionable responses. With two possible exceptions, there is only coincidental line-to-line correlation. There are two axes that have been interpreted in this zone. These E.M. responses are still not that good, but they have interesting, possibly associated, magnetic features. Conductor A has a small, subtle dyke feature which becomes more prominant further north. Conductor B has what appears to be a broader feature but that may be due to the oblique traverse to strike angle. In this area, Conductor A would be medium priority; B, medium priority; and the rest of the responses, low priority for follow-up.

BLOCK B

Conductor 1

The magnetic profiles across this conductor have the appearance of a thin, dipping dyke. The E.M. anomalies plot near the crossover point from peak to trough. In this vicinity, the two traverse lines (20050 and 20060) almost coincide. Also, the altimeter profiles indicate the same feature being flown over. Although the E.M. responses may be due to bird motion, the correlation to a magnetic feature make this a good target for follow-up.

Conductor 2

This is apparently a single line intercept, 20140G. It lies in a broad magnetic gradient. This anomaly may be related to 20130A. The conductivity-thickness value may be slightly over-valued due to bird motion. This would be a medium to low priority zone for follow-up.

Conductor 3

These two anomalies, 20191A and B, may be related to bird motion, a position supported by the fact that line 20200 has no correlating responses, despite its proximity. However, there are two distinct responses here, and both, while not picked as 2 channel anomalies, show deflection in that trace. Magnetically, these responses lie on a gradient, close to a trough. This is a low priority zone.

Conductor 4

Although this is a single intercept conductor, it is also coincident with a magnetic peak. The anomaly is well-shaped but it also has low amplitude. Without another E.M. response correlating to the same magnetic feature, this should be a low priority zone.

Conductor 5

Anomaly 20261C has an axis drawn through it because of the small magnetic deflection on the profiles, which appears to be associated to the same conductor. The line-to-line correlation, including a tie line, make this a medium to high priority target.

Conductor 6

Tie line anomaly 29010A has good E.M. amplitude and two other anomalies appear to be associated to the same conductor. The line-to-line correlation, including a tie line, make this a medium to high priority target.

Conductive Zone 7

This zone is outlined due to its anomalous E.M. response amplitudes. The channel responses are larger than any other location, either in the original survey area or the extension blocks. The responses are so broad, that to draw any axes would be more imagination than fact. This zone, as a whole, appears to follow a stream bed. The peak responses, however, diverge on line 20270. Although this zone may merely be surficial conductivity, a reconnaissance-type follow-up may be indicated.

Conductor 8

Anomaly 20041A amplitudes are just barely above background and may be the result of bird motion, but it also flanks a magnetic feature. This would be a low priority zone.

SUMMARY

Priority assignments for follow-up have been made on the basis of E.M. characteristics qualities, line-to-line correlation, magnetic associations and available geologic information. Medium and high priority classifications speak for themselves. Low priority zones and zones that have no priority mentioned, may be upgraded to medium or high priority based on further available information.

The highly variable speed of the helicopter while on survey, and the large areas of the survey blocks under ice and snow, make exact positioning of E.M. anomalies and conductor axes difficult to impossible. The further a response is from an actual plotted fiducial point, the more approximate its position is. For accurate positioning, ground geophysical work must be done. INPUT axis locations should be regarded as approximations only.

The low amplitudes and lack of later channel responses made dip and depth determinations impossible. Geology and ground geophysics will be needed to further delineate conductor characteristics.

January 21, 1983.

QUESTOR SURVEYS LIMITED

Douglas Isherwood

Douglas Isherwood,
Geophysicist.

APPENDIX

EQUIPMENT

The helicopter is equipped with a Mark VI INPUT (R) 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 half-frame cameras are used to record the actual flight path.

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 helicopter. 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 helicopter on two hundred and fifty feet of cable, and the received signal is processed and recorded by equipment in the helicopter. 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 helicopter.

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.

The samples or gates are positioned at 340, 540, 840, 1240, 1740 and 2340 micro-seconds after the cessation of the pulse. The widths of the gates are 200, 200, 400, 400, 600 and 600 micro-seconds respectively.

For homogeneous conductions, 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.

SONOTEK P.M.H. 5010 PROTON MAGNETOMETER

The magnetometer which measures the total magnetic field has 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 time-sharing basis. The magnetometer head is energized while the transmitter is on, but the read-out is obtained during the 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.

The magnetometer has two scales, a coarse and a fine scale. The fine scale indicates a 10 gamma change for a 1 cm. change in amplitude. The coarse scale moves 2 mm. (or 1 division) for a 100 gamma change with gamma range with 1 gamma sensitivity.

DATA SYMBOLOGY

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.

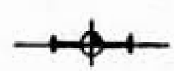
POSITIVE ANOMALY SYMBOL

A symbol ascribed to spatially represent the position of peak response amplitude from a conventional secondary field direction. The convention is based on the response type most frequently detected with the geometrical configuration of the system.

CONDUCTIVITY THICKNESS

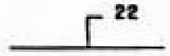
A numerical value based on a ratio between early and late channel amplitudes. It normalizes the DECAY INTERVAL CLASSIFICATION against the AMPLITUDE CLASSIFICATION to derive a value based on the temporal rate of decay of the secondary field.

SELECTED CHANNEL HALF WIDTH LIMIT



A planimetric representation of the profile-derived half-width of a positive response. It may also be used to indicate the group half-width of multiple responses.

ASSOCIATED MAGNETIC PEAK



A symbol ascribed to spatially represent the position and magnitude of a magnetic susceptibility anomaly proximate to a recognized conductivity anomaly. For purposes of plotting simplifications, only positive monopoles and the positive component of dipolar responses are mapped in this manner.

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.

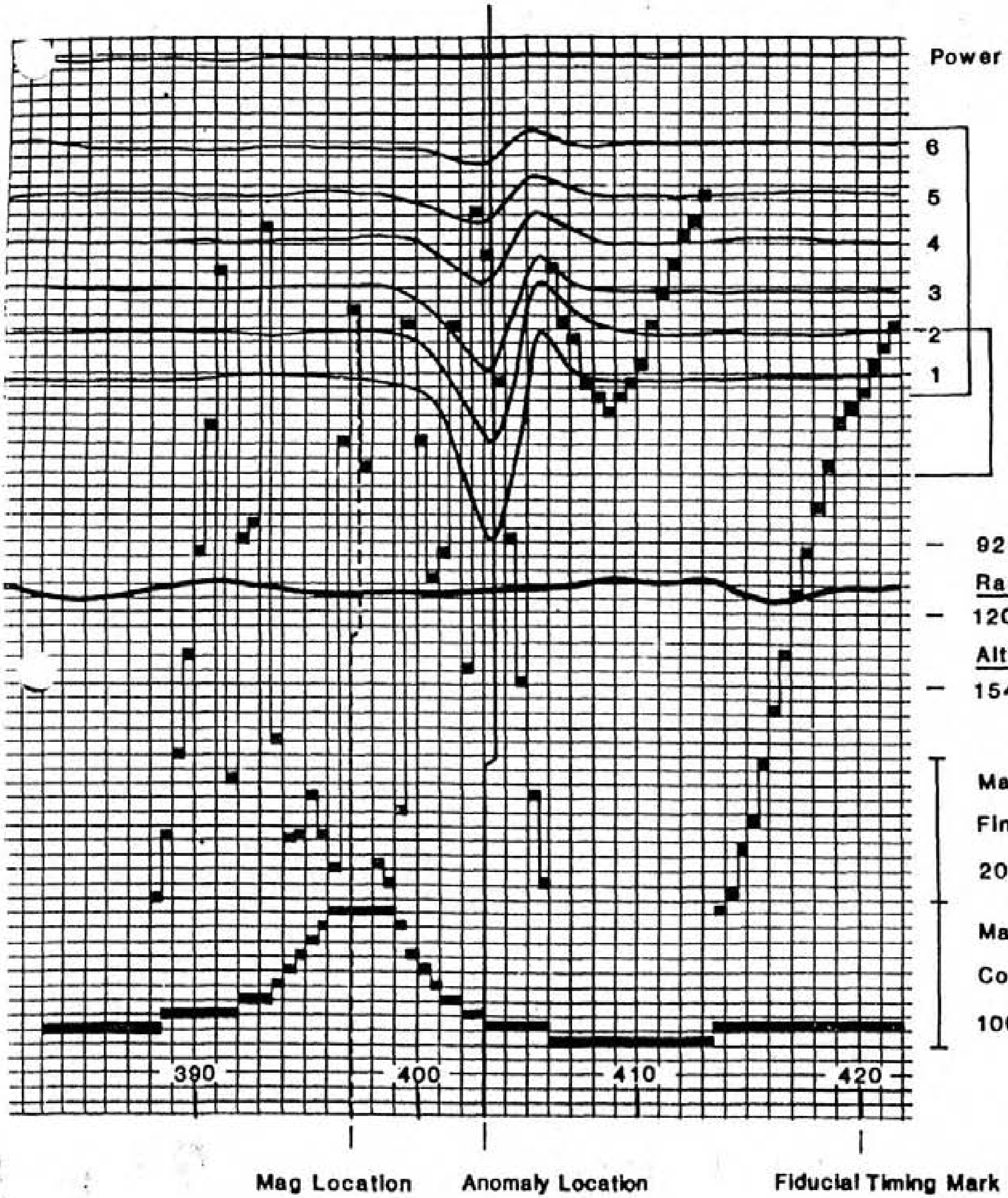
Railroad and pipeline responses are recognized by studying the film strips.

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.

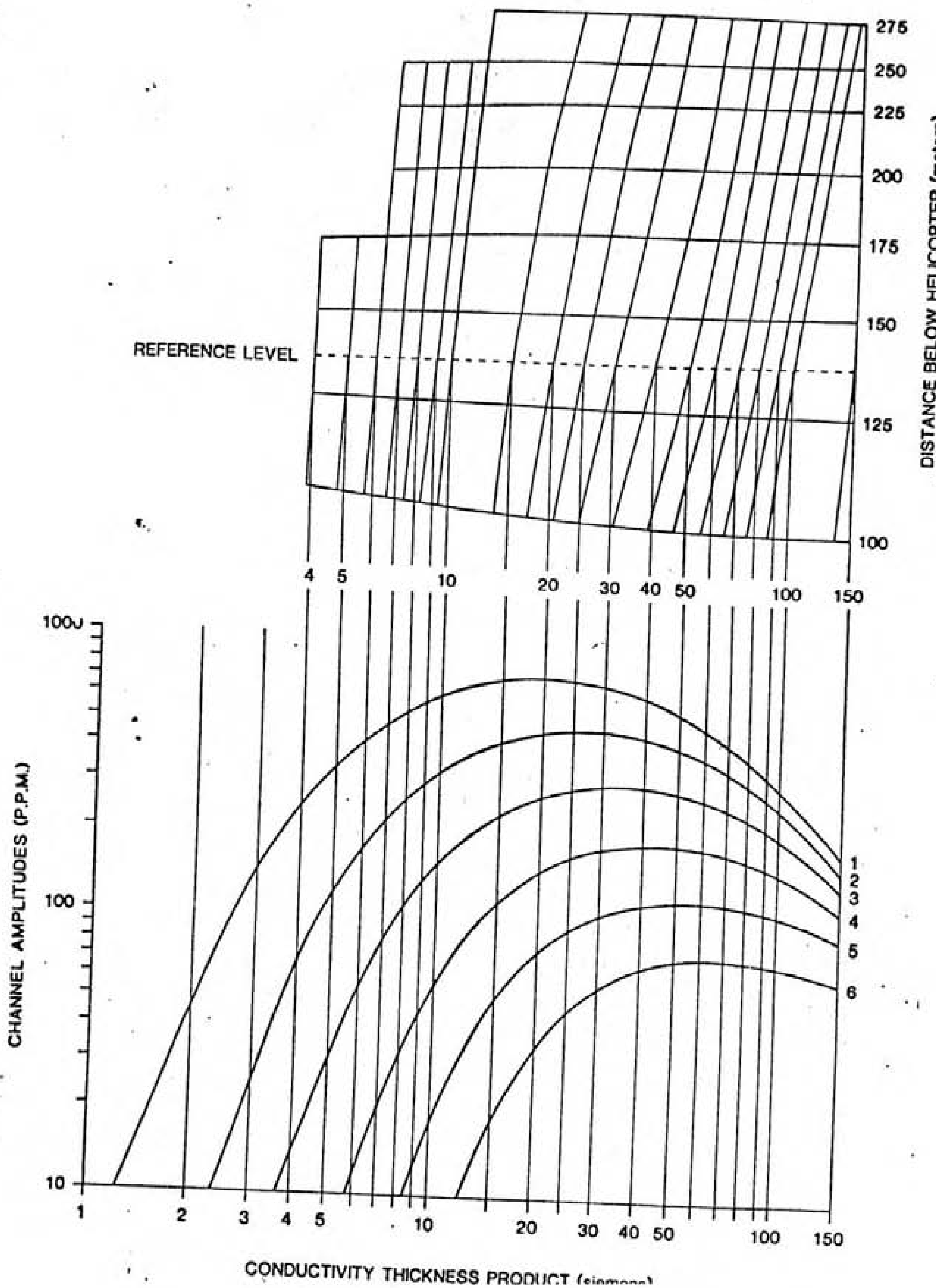
Serpentinized peridotites often produce anomalies with a character that is fairly easy to recognize. The conductivity which is probably caused in part by magnetite, is fairly low so that the anomalies often have fairly large response on channel # 1, they decay rapidly and they have strong magnetic correlation. 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.

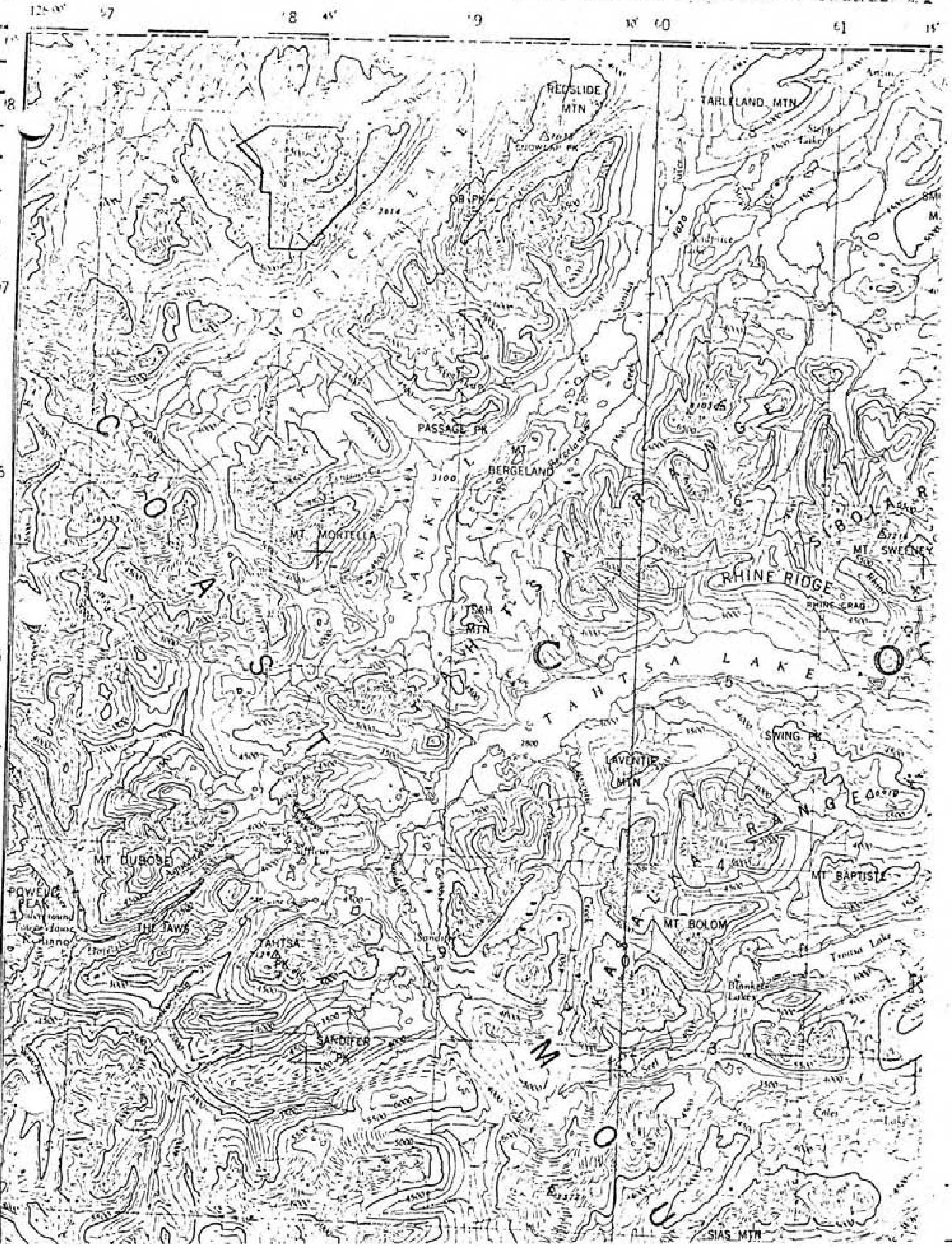
Commercial sulphide ore bodies are rare and those that respond to helicopter survey methods usually have medium to high conductivity. Limited lateral dimensions are to be expected and many have magnetic correlation caused by magnetite or pyrrhotite. Provided that the ore bodies do not occur within formational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

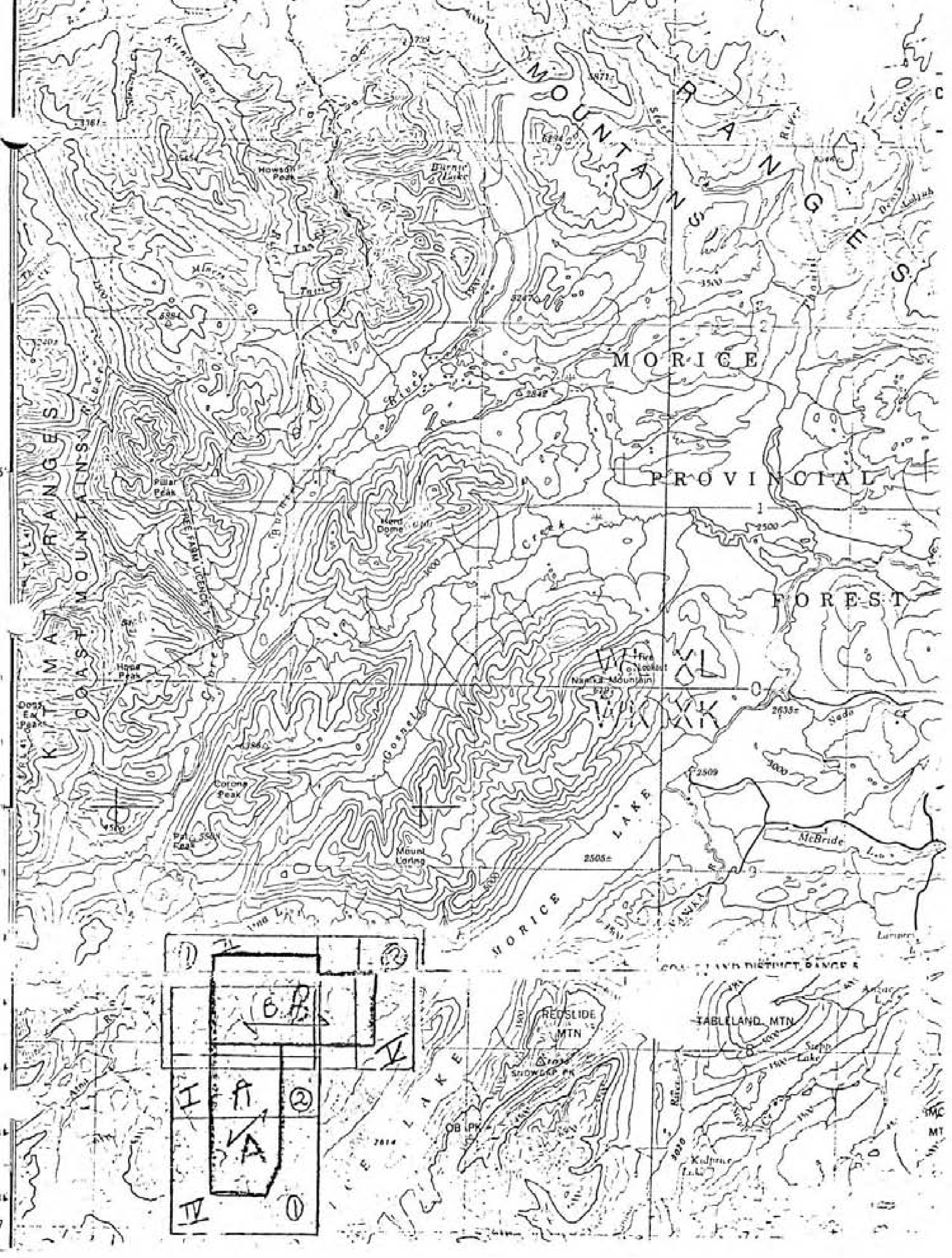


'epresentative INPUT Magnetometer and Altimeter Recording

HELICOPTER INPUT
VERTICAL HALF PLANE
CONDUCTIVITY / DEPTH NOMOGRAM




REDSLIDE MTN
SNOWCAP PK
OB PK
PASSAGE PK
MT BERGELAND
MT MORTELLA
TSAH MTN
RHINE RIDGE
RHINE CRAG
MT SWEENEY
TAHTSA LAKE
SWING PK
LAVENTIE MTN
MT BAPTISTE
MT BOLOM
MT DUBOSE
THE JAWS
TAHTSA PK
SANDIFER PK
SIAS MTN
Blanket Lakes



MOUNTAIN RANGES
Howson Peak
Burnie Lake
MORICE
PROVINCIAL
FOREST
KITIMAT RANGES
COAST MOUNTAINS
Pillar Peak
Nerd Dome
Creek
Naaska Mountain
Fire Lookout
Hope Peak
Corona Peak
Mount Loring
McBride L.
MORICE LAKE
REDSLIDE MTN
SNOWCAP PK
TABLELAND MTN
OB PK

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	HALF WIDTH RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETIC VALUE
10020 A	37.02	3				1		8		
10020 B	37.20	3				1		7		
10021 A	39.45	2				1				
10031 A	30.76	2				1				
10051 A	105.35	2				1				
10060 A	85.17	2				1				
10061 A	101.25	2				1				
10071 A	76.55	2				1				
10071 B	77.31	2				1			77.40	120
10100 A	125.53	3				1		25		
10100 B	126.28	2				1				
10100 C	126.50	2				1				
10100 D	127.85	2				1			127.85	300
10100 E	136.43	4	136.33	136.47	0.14	1	1N	8	136.40	228
10110 A	101.60	3	101.50	101.70	0.20	1		19		
10110 B	102.90	4	102.75	103.00	0.25	1	1S	10		
10110 C	104.14	3				1		9		
10110 D	105.97	3				1		1		
10110 E	110.49	4				1	1S	1	110.40	72
10120 A	79.57	3	79.50	79.60	0.10	1		1		
10120 B	81.48	3				1		1	81.10	200
10120 C	82.05	3				1		1		
10120 D	82.21	3				1		1	82.45	100
10120 E	83.13	3				1		1		
10120 F	84.75	2				1			85.00	550
10120 G	87.55	2				1				
10120 H	88.46	2				1			88.25	150
10120 J	89.35	2				1			89.45	330
10120 K	90.05	2				1				
10121 A	94.17	2				1			94.20	250
10121 B	94.40	2				1				
10121 C	95.03	2				1			95.20	200
10130 A	53.20	3				1	1S	82	52.80	130
10130 B	56.45	2				1				
10130 C	59.60	1				1				
10131 A	73.85	2				1				
10131 B	75.28	2				1			75.20	350

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	HALF WIDTH RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETIC VALUE
10140 A	38.56	2				1			38.20	350
10140 B	39.05	2				1				
10140 C	39.65	2				1				
10140 D	40.50	2				1				
10142 A	45.70	2				1			45.55	140
10142 B	47.45	2				1				
10142 C	49.55	2				1				
10150 A	11.52	4	11.42	11.62	0.20	1	2S	6		
10150 B	15.15	3	15.05			1		3		
10150 C	15.30	3		15.38		1		1		
10151 A	18.45	2	18.35			1				
10151 B	18.85	2		18.95		1				
10152 A	25.70	2				1				
10152 B	27.15	2				1			27.45	110
10152 C	27.90	2				1				
10152 D	28.55	2				1				
10154 A	32.90	2				1			32.65	350
10154 B	33.33	2				1				
10160 A	69.91	1				1				
10192 A	154.05	1				1			153.80	800
10192 B	155.20	2				1				
10200 A	167.70	2				1				
10200 B	168.39	2				1				
10200 C	169.35	2				1				
10200 D	172.05	2				1				
10210 A	15.65	3				1		1		
10211 A	24.30	2				1			24.00	700
10211 B	24.70	2				1				
10241 A	79.62	3	79.45			1		2	79.35	344
10241 B	79.89	3				1		5		
10250 A	86.95	3	86.87			1		8	87.00	120
10250 B	87.14	4		87.30		1	1S	3		
10270 A	124.35	2		124.45		1				
10270 B	124.87	2	124.80			1				
10281 A	153.35	3				1		1		

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	HALF WIDTH RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETIC VALUE
20040 A	24.85	2				1				
20041 A	34.55	2				1				
20050 A	43.10	2				1				

$

20F60

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	HALF WIDTH RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETIC VALUE
10011 A	52.50	1				1				
10020 A	43.53	1				1				
10020 B	44.28	1				1				
10034 A	38.12	3				1		4		
10034 B	38.64	2				1				
10041 A	12.28	1				1				
10041 B	15.10	1				1				
10041 C	17.42	1				1				
10041 D	18.18	1				1				
10051 A	97.52	1				1				
10051 B	99.71	1				1				
10051 C	100.58	1				1				
10060 A	76.01	2				1				
10060 B	76.89	1				1			77.00	158
10060 C	78.68	1				1				
10065 A	369.75	1				1			370.08	107
10065 B	370.49	2				1				
10065 C	370.92	2				1				
10072 A	66.92	1				1				
10072 B	70.62	1				1				
10072 C	71.44	1				1				
10081 A	75.28	1				1				
10083 A	80.98	2				1				
10090 A	94.24	2				1				
10090 B	97.62	2				1				
10091 A	17.25	2				1				
10100 A	22.31	1				1				
10112 A	49.39	1				1				
10122 A	67.55	3				1		3		
10141 A	85.77	1				1				
10141 B	86.40	1				1				
10150 A	104.15	1				1				
10150 B	113.97	1				1				
10150 C	117.32	1				1				
10162 A	91.23	1				1				

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	HALF WIDTH RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETIC VALUE
10162 B	95.10	1				1				
10162 C	95.90	1				1				
10170 A	62.13	2				1				
10170 B	62.46	2				1				
10170 C	63.63	2				1				
10170 D	76.02	3				1		6		
10170 E	76.27	3				1		5		
10170 F	78.68	2				1				
10170 G	79.15	1				1				
10180 A	43.05	2				1				
10180 B	45.15	2				1				
10180 C	48.80	1				1			48.94	34
10193 A	27.94	1				1				
10193 B	41.20	1				1				
10200 A	94.69	1				1				
10200 B	96.06	1				1			95.72	35
10200 C	106.03	1				1				
10200 D	106.42	1				1				
10200 E	107.01	1				1				
10210 A	8.66	1				1				
10210 B	9.87	2				1				
10210 C	10.23	2				1				
10210 D	10.72	1				1			10.73	11
10211 A	21.50	1				1				
10220 A	27.25	1				1				
10220 B	29.08	1				1				
10220 C	30.25	2				1				
10220 D	30.75	2				1				
10220 E	32.76	2				1				
10220 F	35.89	1				1				
10230 A	47.89	2				1				
10230 B	48.69	2				1				
10230 C	49.06	2				1				
10230 D	49.41	2				1				
10250 A	79.72	1				1				
10250 B	82.65	2				1				
10250 C	82.92	2				1				
10250 D	83.76	2				1				
10250 E	84.68	2				1				
10270 A	25.20	1				1				
10270 B	26.47	2				1				
10280 A	32.49	1				1				

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	HALF WIDTH RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETIC VALUE
10291 A	48.05	2				1				
10291 B	48.35	2				1				
10291 C	48.96	1				1				
10291 D	49.75	1				1				
10291 E	50.69	1				1				
10291 F	51.01	1				1				
10291 G	51.67	2				1				
10305 A	17.52	1				1				
10305 B	18.42	1				1				
10305 C	19.00	1				1				
10305 D	19.48	1				1				
10313 A	25.28	1				1				
10322 A	47.01	1				1				
10322 B	47.80	1				1				
10322 C	49.03	1				1				
10322 D	50.19	1				1				
10322 E	50.86	1				1				
10332 A	54.49	1				1				
10332 B	55.19	1				1				
19010 A	15.35	1				1				
19010 B	16.06	1				1				
19010 C	17.20	1				1				
19010 D	18.06	2				1				
19020 A	60.06	1				1				
19020 B	61.64	1				1				
19020 C	61.99	1				1				
19020 D	62.70	1				1				
19020 E	65.10	1				1				
19020 F	65.81	1				1				

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	HALF WIDTH RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETIC VALUE
20011 A	340.11	1				1			339.34	10
20012 A	347.26	1				1				
20012 B	348.80	1				1				
20012 C	349.49	2				1				
20014 A	358.56	2				1				
20014 B	358.93	2				1				
20014 C	364.27	2				1				
20014 D	364.98	2				1				
20014 E	365.32	2				1				
20014 F	366.22	2				1				
20014 G	366.82	2				1				
20020 A	229.81	1				1				
20020 B	231.58	1				1				
20020 C	232.69	1				1			233.54	38
20021 A	246.36	1				1				
20030 A	177.85	1				1				
20031 A	185.28	1				1				
20031 B	185.99	1				1			185.20	18
20041 A	151.63	2				1				
20041 B	153.15	1				1				
20041 C	154.04	1				1			154.68	7
20044 A	165.52	1				1				
20044 B	166.28	1				1				
20045 A	170.09	2				1				
20045 B	170.68	1				1				
20045 C	170.99	1				1				
20045 D	171.72	1				1				
20045 E	173.53	1				1				
20050 A	88.12	1				1				
20050 B	88.94	1				1				
20050 C	89.91	1				1				
20050 D	92.88	1				1				
20050 E	106.75	1				1				
20050 F	117.33	1				1			106.67	95
20060 A	294.60	2				1				
20060 B	295.09	2				1				
20060 C	307.66	2				1				
20060 D	307.97	2				1			307.52	21
20060 E	308.43	2				1				
20070 A	267.30	2				1				

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETIC VALUE
20070 B	268.08	2				1				
20070 C	272.39	2				1				
20070 D	280.40	2				1				
20070 E	281.85	2				1				
20081 A	235.29	2				1				
20081 B	236.18	2				1				
20090 A	187.93	2				1				
20091 A	190.79	2				1				
20091 B	191.76	2				1				
20100 A	166.30	2				1				
20101 A	218.74	2				1				
20110 A	112.74	2				1				
20120 A	84.67	2				1				
20120 B	87.68	1				1				
20120 C	104.72	1				1				
20130 A	42.79	1				1				
20140 A	16.91	1				1				
20140 B	17.35	1				1				
20140 C	18.05	2				1				
20140 D	18.31	2				1				
20140 E	30.45	1				1				
20140 F	31.06	1				1				
20140 G	36.85	3				1		8		
20151 A	316.83	2				1			317.28	6
20151 B	318.99	2				1				
20151 C	334.52	2				1				
20161 A	295.30	1				1				
20161 B	297.64	1				1				
20161 C	303.72	1				1				
20170 A	67.20	1				1				
20170 B	85.18	1				1			85.85	8
20170 C	86.45	1				1				
20170 D	90.96	2				1				
20180 A	40.00	2				1				
20180 B	41.15	1				1				
20181 A	54.52	1				1				
20190 A	21.67	2				1				
20191 A	26.92	1				1				

ANOMALY	FIDUCIAL	CHANNELS	HALF WIDTH LEFT	HALF WIDTH RIGHT	HW	AMPLITUDE CLASS	SKEW	SIG-T	ASSOCIATED MAG POSITION	MAGNETI VALUE
20191 B	27.15	1				1				
20191 C	35.70	1				1				
20200 A	123.08	1				1				
20200 B	125.36	2				1				
20200 C	125.91	1				1				
20200 D	136.59	1				1				
20200 E	137.09	1				1				
20210 A	119.10	2				1				
20210 B	120.86	2				1				
20210 C	122.24	1				1				
20220 A	83.30	2				1				
20220 B	86.87	1				1				
20220 C	96.63	1				1			96.54	21
20220 D	98.76	1				1				
20230 A	83.05	2				1				
20240 A	52.75	2				2				
20241 A	60.97	2				1				
20250 A	51.45	3				1		4		
20250 B	51.95	3				2		3		
20260 A	23.70	3				1		4		
20260 B	27.63	1				1				
20261 A	31.88	1				1				
20261 B	32.33	1				1				
20261 C	35.33	1				1				
20261 D	36.25	1				1				
20270 A	9.38	1				1				
20270 B	11.25	1				1				
20270 C	21.80	3				2		6		
20270 D	22.20	3				2		5		
29010 A	383.77	1				2				

24H49 FIDUCIAL LISTINGS

LINE NO.	PICKED FIDUCIALS							
10010S	49.0	51.0	52.7	55.3	56.1	57.3	60.7	61.6
	62.2	64.0						
10020N	36.0	36.7	37.4	37.7				
10021N	37.9	38.3	40.2					
10022N	42.4	42.6	42.9	43.2	43.4	44.6	45.0	45.7
	46.3	46.7	47.1	47.6	48.8	49.4		
10031S	21.4	22.7	23.6	24.2	24.7	25.1	25.8	27.0
	27.6	28.4	30.4	31.0	31.9	33.4		
10032S	34.0	35.5	35.9					
10040N	126.8	127.2	128.3	129.5	130.9	134.4		
10041N	136.2	137.1	137.6	139.0	139.7	140.5	141.3	141.7
	142.2	142.7	143.7					
10051S	104.0	104.6	105.2	106.1	107.8	108.5	109.5	112.7
10052S	114.7	115.8	117.0	118.5	119.3	120.4	121.3	123.0
	123.9							
10053S	124.8	126.0	126.4					
10060N	81.4	82.3	84.9	86.1	87.0	87.4	92.9	94.0
	95.0							
10061N	95.4	95.7	96.9	97.7	98.3	98.9	99.9	100.4
	101.0	101.7						
10070S	55.7	57.1	58.8	60.3	61.7	62.4		
10071S	64.7	66.4	68.8	71.4	71.9	73.5	76.5	77.7
10072S	77.8	78.3	79.0	79.7	81.2			
10080N	37.6	38.3	38.7	38.9				
10082N	42.1	42.7						
10083N	43.0	43.6	46.6	47.6	48.7	51.3	52.5	54.8
10090S	15.1	15.9	16.7	17.2	17.8	18.2	19.1	20.6
	21.0	24.3						
10091S	25.2	27.2	29.3	31.1	34.0			
10092S	34.7	36.5						

24H49 FIDUCIAL LISTINGS

LINE NO.	PICKED FIDUCIALS						
10100N	125.3	126.4	128.4	130.4	131.5	133.8	134.2	135.4
	137.2	140.6	143.5					
10110S	101.6	103.2	104.6	105.4	106.0	107.8	109.7	110.5
	111.1	112.9	115.5					
10111S	116.6	119.8	120.7	121.4				
10112S	123.9	124.3	124.8					
10120N	80.2	80.7	81.5	83.0	84.0	85.6	86.1	87.6
	89.1	90.5	91.4					
10121N	92.0	92.4	93.2	93.8	95.5	96.4	98.9	100.4
10130N	51.5	52.2	53.6	54.4	56.1	58.6	60.4	62.2
	63.3	64.6	65.8	66.4	67.0	67.5	70.0	
10131S	72.2	73.7	75.1	76.2	77.0	77.7	78.7	
10140N	36.0	36.4	36.9	37.5	38.3	39.2	40.7	
10141N	41.1	41.5	42.6					
10142N	42.8	43.2	44.0	44.6	45.0	46.2	46.6	46.9
	47.1	47.8	49.0	50.2	50.8	51.2		
10150S	11.6	13.0	14.3	16.8				
10151S	16.9	19.3	19.7	20.2	21.2			
10152S	21.8	22.6	23.6	24.7	25.4	26.0	27.3	30.3
10154S	31.8	32.8	33.0	33.6	34.6			
10160N	65.0	66.0	66.5	67.7	68.7	70.9	71.5	72.1
	72.9							
10161N	73.0	74.7	77.4	78.6	81.1	82.2	84.5	
10170S	84.6	85.5	86.2	86.9	87.9	89.6	90.0	91.1
	92.4							
10171S	92.6	93.3	96.6	97.7	98.9	99.6	100.4	
10172S	101.5	102.4	103.5	105.4				
10180N	114.6	115.5	117.5	118.5	119.3	120.5		
10181N	120.8	121.7	122.7	123.9	125.7	126.6	127.9	130.8
	131.7	132.5	133.4	133.9				

24H49 FIDUCIAL LISTINGS

LINE NO.	PICKED FIDUCIALS						
10190S	136.8	138.0	139.1	139.8	140.2	143.1		
10191S	143.2	146.1	147.6	148.5	149.6	152.0		
10192S	152.7	153.6	154.2	156.3	157.8	158.4		
10200N	161.4	162.0	164.0	167.6	171.5	171.9	173.0	173.8
	176.4	180.1	181.5	182.4	183.0	183.7	184.4	184.7
	185.6							
10210S	13.1	14.3	15.9	16.8	17.5			
10211S	18.1	19.2	21.8	24.2	25.7	26.5	27.4	
10220N	28.2	30.1	31.5	32.1	33.4			
10221N	33.9	34.9	36.2	37.7	39.1	40.9	41.9	43.5
10230S	45.8	47.0	48.6					
10231S	49.6	50.4	51.0	51.9	53.8	55.3	57.5	59.9
	60.2	61.0	61.9	62.9	63.4			
10240N	64.2	65.7	66.1	67.7	68.7	69.6		
10241N	73.9	74.7	75.5	75.8	77.4	78.3	79.1	79.7
	81.3							
10250S	87.2	89.8	90.4	91.5	94.1	95.2	97.7	99.6
10260N	100.3	101.1	102.5	103.1	104.9	106.3		
10262N	111.0	111.7	(112.2)	113.3	115.9	117.2		
10270S	122.8	123.4	124.9	129.0	130.9			
10271S	131.1	132.4	134.1	135.2	136.4	137.0	137.6	138.4
10280N	139.0	141.5	143.7	145.5	148.5	149.3	150.0	150.3
	150.8	151.2						
10281N	152.2	153.6	155.1					
10290S	155.4	156.9	157.3	158.5	159.5	161.8		
10291S	162.4	163.0	163.9	164.9	166.1	167.2		
10300N	167.7	168.8	171.0	171.9	172.6	173.2	173.9	174.4
	175.7							
10310N	40.0	40.3	40.8	41.4	42.4	44.3	44.8	45.6
	46.0	46.8	47.6					

24H49 FIDUCIAL LISTINGS

LINE NO.	PICKED FIDUCIALS						
10100N	125.3	126.4	128.4	130.4	131.5	133.8	134.2	135.4
	137.2	140.6	143.5					
10110S	101.6	103.2	104.6	105.4	106.0	107.8	109.7	110.5
	111.1	112.9	115.5					
10111S	116.6	119.8	120.7	121.4				
10112S	123.9	124.3	124.8					
10120N	80.2	80.7	81.5	83.0	84.0	85.6	86.1	87.6
	89.1	90.5	91.4					
10121N	92.0	92.4	93.2	93.8	95.5	96.4	98.9	100.4
10130N	51.5	52.2	53.6	54.4	56.1	58.6	60.4	62.2
	63.3	64.6	65.8	66.4	67.0	67.5	70.0	
10131S	72.2	73.7	75.1	76.2	77.0	77.7	78.7	
10140N	36.0	36.4	36.9	37.5	38.3	39.2	40.7	
10141N	41.1	41.5	42.6					
10142N	42.8	43.2	44.0	44.6	45.0	46.2	46.6	46.9
	47.1	47.8	49.0	50.2	50.8	51.2		
10150S	11.6	13.0	14.3	16.8				
10151S	16.9	19.3	19.7	20.2	21.2			
10152S	21.8	22.6	23.6	24.7	25.4	26.0	27.3	30.3
10154S	31.8	32.8	33.0	33.6	34.6			
10160N	65.0	66.0	66.5	67.7	68.7	70.9	71.5	72.1
	72.9							
10161N	73.0	74.7	77.4	78.6	81.1	82.2	84.5	
10170S	84.6	85.5	86.2	86.9	87.9	89.6	90.0	91.1
	92.4							
10171S	92.6	93.3	96.6	97.7	98.9	99.6	100.4	
10172S	101.5	102.4	103.5	105.4				
10180N	114.6	115.5	117.5	118.5	119.3	120.5		
10181N	120.8	121.7	122.7	123.9	125.7	126.6	127.9	130.8
	131.7	132.5	133.4	133.9				

24H49 FIDUCIAL LISTINGS

LINE NO.	PICKED FIDUCIALS						
10190S	136.8	138.0	139.1	139.8	140.2	143.1		
10191S	143.2	146.1	147.6	148.5	149.6	152.0		
10192S	152.7	153.6	154.2	156.3	157.8	158.4		
10200N	161.4	162.0	164.0	167.6	171.5	171.9	173.0	173.8
	176.4	180.1	181.5	182.4	183.0	183.7	184.4	184.7
	185.6							
10210S	13.1	14.3	15.9	16.8	17.5			
10211S	18.1	19.2	21.8	24.2	25.7	26.5	27.4	
10220N	28.2	30.1	31.5	32.1	33.4			
10221N	33.9	34.9	36.2	37.7	39.1	40.9	41.9	43.5
10230S	45.8	47.0	48.6					
10231S	49.6	50.4	51.0	51.9	53.8	55.3	57.5	59.9
	60.2	61.0	61.9	62.9	63.4			
10240N	64.2	65.7	66.1	67.7	68.7	69.6		
10241N	73.9	74.7	75.5	75.8	77.4	78.3	79.1	79.7
	81.3							
10250S	87.2	89.8	90.4	91.5	94.1	95.2	97.7	99.6
10260N	100.3	101.1	102.5	103.1	104.9	106.3		
10262N	111.0	111.7	(112.2)	113.3	115.9	117.2		
10270S	122.8	123.4	124.9	129.0	130.9			
10271S	131.1	132.4	134.1	135.2	136.4	137.0	137.6	138.4
10280N	139.0	141.5	143.7	145.5	148.5	149.3	150.0	150.3
	150.8	151.2						
10281N	152.2	153.6	155.1					
10290S	155.4	156.9	157.3	158.5	159.5	161.8		
10291S	162.4	163.0	163.9	164.9	166.1	167.2		
10300N	167.7	168.8	171.0	171.9	172.6	173.2	173.9	174.4
	175.7							
10310N	40.0	40.3	40.8	41.4	42.4	44.3	44.8	45.6
	46.0	46.8	47.6					

24H49 FIDUCIAL LISTINGS

LINE NO.	PICKED FIDUCIALS					
10320S	50.5	53.3	55.3			
10321S	56.1	56.6	57.0	57.9	58.6	59.3	59.6
10331N	62.0	62.8	63.5	65.0	66.0	67.3	
10340S	77.0	78.9	82.1				
10341S	83.0	84.0	85.7	86.2			
10350N	86.3	87.1	88.3				
10351N	88.4	90.4	91.5	92.2	94.3		
20010N	18.3	22.6	23.1	24.8			
20020S	9.4	14.7	16.4	16.9			
20030S	10.0	11.5	14.5	16.0	17.2		
20040N	17.5	19.1	24.4	25.3	26.8		
20041S	27.1	30.6	33.7	34.6	35.7		
20050N	36.2	38.6	41.7	42.4	43.4		
20050S	46.8	49.2					
20060S	31.0	33.0	39.2	40.8			
20070N	41.1	44.2	46.8	47.8			

24H60 MORICE LAKE EXTENSION B.C. - PICKED FIDUCIALS

BLOCK A 1982

LINE #	PICKED FID.
10010E	47.4
	47.8
	48.5
	49.9
	60.4
10011E	50.8
	51.1
	51.5
	52.4
	53.3
	54.2
	55.2
10012E	55.6
	56.3
	57.0
10020W	42.1
	42.5
	42.9
	44.0
	44.5
	44.9
	45.5
	46.1
	46.6
	47.3
10030E	21.1
	21.4
	21.9
	23.1
	24.0
	27.0
	29.1
	30.8
10031E	30.9
	31.3
	31.8
	32.2
	32.4
	32.6
	33.4
10034E	37.7
	38.0
	38.6
10040W	86.0
	95.0

LINE #	PICKED FID.
10041W	11.5
	12.1
	13.7
	15.4
	15.7
	16.8
	17.5
	18.0
	18.4
	19.3
	19.8
	20.1
10050W	90.7
	90.9
	92.1
10051W	94.2
	95.0
	95.8
	96.4
	98.1
	98.5
	99.6
	100.4
	100.9
	102.5
	102.8
	103.7
10060E	74.3
	74.8
	75.8
	76.3
	76.8
	77.8
	78.6
	79.6
	80.6
10061E	80.7
	81.2
	81.5
	82.1
	83.4
10062E	83.5
	84.0
10065W	367.5
	368.8
	369.6
	370.1
	370.8
	371.6

LINE #	PICKED FID.
10070W	62.0
	63.1
	64.5
10071W	65.3
	65.8
10072W	66.4
	66.7
	68.5
	69.2
	69.5
	69.9
	70.8
	71.7
	72.5
	72.8
	73.1
	73.5
	74.2
10080E	67.0
	67.6
	68.5
	68.9
	70.0
	70.5
	72.6
	73.8
10081E	73.9
	74.1
	74.5
	75.4
	76.1
10082E	76.2
	76.8
	77.1
	77.7
	78.5
	80.0
10083E	80.1
	81.2
	82.3
	82.9
	84.8

24H60 MORICE LAKE EXTENSION B.C. - PICKED FIDUCIALS

BLOCK A 1982

LINE #	PICKED FID.
10090W	84.9
	87.7
	89.4
	90.9
	93.3
	94.4
	95.3
	96.0
	96.4
	96.9
	97.6
	98.7
	99.1
	99.5
	100.0
	100.3
	100.6
	100.9
10091W	9.9
	11.8
	14.9
	15.6
	16.0
	16.4
	17.1
	17.4
	17.7
	18.1
10092W	71.5
	76.7
	78.2
	78.4
	79.7
	80.4
	81.2
	81.7
	82.7
	83.0
10100E	20.5
	21.4
	22.1
	23.1
	24.7
10101E	25.3
	25.7
	26.7
	29.4
	30.0
	32.5
10103E	35.8
	36.8
	39.4
10110W	40.6
	41.6
	46.2
10112W	47.7
	48.3
	49.0
	52.9
	53.3
	54.3
	54.7
	55.5
	56.2
	56.8
	57.5
10120E	57.8
	58.1
	58.8
	59.2
	60.0
	60.6
	61.1
	61.6
	62.1
	63.0
	64.8
10121E	65.0
	65.5
	66.3
10122E	66.6
	67.5
	68.2
	70.8
10130E	119.8
	120.7
	121.6
	122.2
	122.9
	123.6
	124.8
	125.2
	126.8
	130.7
10131W	72.3
	73.4
	76.2
	77.8
10132W	78.3
	79.4
10133W	79.5
	80.2
	80.9
	81.8
10141E	82.4
	82.7
	83.0
	83.4
	86.3
	86.7
	87.0
	88.0
	90.3
10150W	102.4
	103.4
	104.4
	105.2
	107.2
	114.1
	115.9
	116.5
	116.8
	117.1
	117.7
	117.9
	118.3
	118.6
	119.4
	119.5
10161E	80.0
	80.5
	80.8
	81.4
	82.1
	83.0
	83.8
	84.6
	85.6
	86.5
10162E	87.7
	88.6
	89.0
	89.5
	90.1
	91.2
	95.6
	96.6
	97.0
	97.8

24H60 MORICE LAKE EXTENSION B.C. - PICKED FIDUCIALS

BLOCK A 1982

LINE #	PICKED FID.
10162E	98.6
	100.7
10170W	60.3
	61.1
	61.6
	62.1
	62.5
	63.0
	63.3
	64.1
	64.7
	66.8
	68.7
	71.0
	72.9
	74.5
	77.2
	78.3
	79.5
10180E	42.3
	45.7
	47.2
	49.2
	50.6
	51.2
	52.5
	54.0
	55.6
10193W	25.7
	26.7
	27.7
	28.0
	28.9
	29.3
	30.0
	31.4
	33.7
	37.6
	39.5
	41.2
10200W	92.6
	93.1
	94.3
	94.6
	96.0
	96.5
	96.8
	98.0
	99.5
	103.4
	105.9
	108.0
	109.7

LINE #	PICKED FID.
10210W	6.7
	9.3
	10.4
	10.6
	11.1
	11.8
	18.1
10211W	19.7
	20.7
	22.6
	23.8
10220E	24.3
	25.7
	27.1
	27.7
	30.2
	30.6
	31.4
	31.7
	33.1
	34.8
	39.5
	41.2
10221E	41.6
	43.5
10230W	44.4
	45.8
	46.3
	47.1
	47.7
	48.2
	48.7
	49.7
	50.1
	50.7
	51.9
	53.7
	58.2
10231W	60.6
	61.7
	62.4
	62.7
10240E	63.0
	63.7
	65.1
	66.3
	66.7
	67.6
	68.1
	68.5
	68.8

LINE #	PICKED FID.
10240E	69.4
	70.0
	74.1
10241E	74.2
	74.8
	75.3
	78.2
	78.9
10250W	79.4
	81.5
	82.7
	83.1
	84.0
	85.0
	85.3
	86.7
	88.5
	90.1
10260E	91.0
	93.7
	94.5
	95.4
	95.6
	97.3
	98.3
	99.7
	100.5
	106.4
	106.8
	107.7
10270W	20.0
	21.2
	21.5
	23.2
	24.0
	25.3
	26.2
	27.0
	27.3
	28.4
	28.9
	29.4
	30.6
10280E	30.7
	31.8
	32.7
	33.1
	33.6
	36.5

24H60 MORICE LAKE EXTENSION B.C. - PICKED FIDUCIALS

BLOCK A 1982

LINE #	PICKED FID.
10281E	37.0
	37.8
	38.5
10282E	39.2
	39.3
	40.5
10283E	40.9
	42.0
	43.1
10290W	44.9
	46.9
10291W	47.0
	47.6
	48.8
	49.4
	49.8
	50.9
	51.4
	52.0
	52.7
	53.3
	53.7
	54.3
10303W	10.1
	10.6
	12.1
10304W	12.3
	13.3
10305W	14.3
	14.6
	16.9
	17.6
	18.2
	19.2
	19.4
	20.2
	20.9
	21.4
	21.8
10313E	21.9
	22.3
	23.1
	23.4
	23.8
	25.5

LINE #	PICKED FID.
10314E	27.6
	28.2
	31.0
	33.4
10315W	35.1
	37.5
	38.1
	39.3
	39.6
10321W	40.2
	42.6
	45.7
10322W	45.9
	47.8
	48.9
	50.1
	51.0
	51.3
	51.9
	52.3
10332E	52.5
	53.0
	53.3
	60.4
	67.7
	69.1
	70.1
10340E	113.5
	115.0
	117.0
	117.8
	122.7
10350W	104.1
	108.6
	109.2
	109.9
	110.3
	111.7
	112.0
10360E	98.1
	98.7
	99.3
	100.2
	100.6
	101.4
	101.9
	102.4
	103.3

LINE #	PICKED FID.
10370W	95.7
	96.9
	97.6
10380E	93.5
	94.4
	95.3
	95.6
19010N	12.3
	12.8
	13.3
	13.8
	14.8
	15.3
	15.6
	17.4
	17.8
	18.1
	18.4
	18.6
	18.8
	19.0
	19.3
	19.5
	19.8
19020N	57.1
	61.9
	62.3
	62.5
	62.6
	62.8
	63.4
	63.9
	65.3
	65.8
	66.3
	66.5
	66.8

LINE #	PICKED FID
20011W	335.4
	336.5
	337.8
	338.5
	339.3
	341.9
	343.4
20012W	344.0
	345.0
	345.6
	347.5
	349.6
	350.1
	352.9
20013W	353.0
	353.8
20014W	355.2
	356.8
	358.9
	363.1
	365.3
	366.0
	366.6
	367.1
	367.4
20020W	217.0
	219.0
	219.7
	221.0
	222.4
	223.3
	229.6
	231.8
	232.6
	232.8
	233.2
	234.2
	238.1
20021W	242.1
	246.8
	251.6
	254.1
	256.1
20030E	174.5
	176.2
	177.6

LINE #	PICKED FID
20031E	179.1
	184.2
	185.2
	186.6
	192.4
20032E	193.3
	195.5
	197.6
	198.3
	199.2
	199.9
	202.3
	208.2
20033E	208.8
	210.8
	211.9
	213.3
	214.1
	215.3
	215.9
	216.3
	216.8
20040W	140.0
	140.8
	141.1
	141.9
	144.9
	145.5
	146.0
20041W	147.6
	148.8
	152.6
	153.7
	154.5
	155.1
	155.6
20042W	157.3
	158.3
20044W	162.5
	166.4
	168.1
20045W	168.9
	169.3
	169.8
	172.2

LINE #	PICKED FID
	173.2
	173.7
	174.1
20050E	83.8
	84.9
	85.5
	86.3
	91.3
	91.7
	92.4
	93.5
	94.2
	96.1
	103.9
	106.0
	106.7
	108.1
	109.5
	115.3
	116.7
	121.7
	123.3
	124.5
	125.5
	126.2
20060E	288.6
	288.8
	289.6
	290.2
	292.7
	294.3
	294.8
	295.8
	296.6
	304.8
	305.1
	307.2
	307.9
	308.7
	309.5
	310.0
	312.8
	315.2
	316.5
	319.9
	321.3
	322.4
	322.8

LINE #	PICKED FID
20070W	262.4
	263.6
	264.5
	265.1
	265.7
	266.5
	268.1
	272.2
	272.8
	273.4
	274.2
	275.2
	276.0
	279.4
	280.1
	280.4
	281.3
	282.1
	283.3
	284.5
	286.1
	287.3
20081E	225.3
	226.0
	226.4
	227.1
	228.3
	229.2
	230.6
	231.2
	232.0
	233.0
	238.1
20082E	241.9
	243.5
	244.1
	245.9
	246.3
	247.8
	249.5
	252.0
	254.6
	257.1
20083E	258.3
	259.6
	260.6
	261.2
	261.6
	261.9
	262.3
20090W	185.5
	186.2
	187.9
	189.3
20091W	190.5
	191.2
	191.7
	193.9
	195.0
	195.6
	197.3
20092W	198.8
	199.4
	200.9
	201.1
	201.4
	202.3
	203.8
	204.9
	206.1
	206.8
	207.4
	208.4
	209.4
	210.3
	211.4
	211.7
20100W	144.3
	144.8
	145.3
	146.3
	147.3
	148.0
	150.7
	151.4
	151.9
	152.1
	152.7
	153.7
	154.4
	155.5
	158.1
	160.3
	162.3
	163.1
	163.5
	165.0
	165.7
	166.5
20101W	213.4
	214.2
	215.5
	216.2
	217.0
	218.3
	219.1
	219.7
20110E	109.4
	110.5
	112.2
	112.9
	113.3
	114.5
	116.3
	117.0
	118.3
	119.7
	121.8
	122.5
	124.4
	125.5
	125.9
	127.7
	128.2
	128.9
	129.6
	130.3
	131.2
	133.8
	135.5
	137.5
	142.2
	144.0
20120W	75.6
	78.0
	79.5
	82.7
	83.8
	84.5
	85.4
	86.2
	87.0
	88.0
	89.8
	91.5
	93.3
	94.3
	102.1
	104.8
	105.2
	106.2

LINE #	PICKED FID
20120W	107.7
	108.6
	109.1
20130E	39.3
	40.6
	41.7
	42.6
	43.5
	49.0
20131E	49.3
	50.9
	51.6
	52.4
	54.6
	57.0
	58.1
	58.7
	62.2
	64.4
	65.6
20132E	65.8
	68.2
	69.0
	70.3
	74.8
20140W	8.0
	8.5
	10.5
	11.1
	11.7
	13.3
	15.8
	18.2
	19.9
	22.1
	24.3
	28.8
	31.2
	32.0
	33.3
	34.3
	36.0
	36.8
	37.5
	38.0
	38.6
20151E	305.5
	306.6
	307.8
	308.4
	311.7
	313.8
	316.9
	317.8
	319.2
	320.9
	321.8
	323.2
	323.7
	325.9
	327.9
	329.6
	331.3
	331.7
	332.3
	333.2
	333.9
	334.4
	335.0
20161W	282.5
	283.5
	284.0
	285.5
	286.2
	288.0
	288.7
	289.2
	289.4
	290.0
	291.8
	295.7
	298.1
	298.6
	300.8
	302.8
	303.9
	304.4
20170W	65.3
	65.7
	66.9
	67.5
	68.2
	69.5
	70.6
	73.6
	74.2
	74.9
	75.4
	76.0
	79.0
	80.1
	82.6
	84.1
	85.3
	85.7
	86.1
	87.8
	89.6
	90.4
	91.3
	93.4
20180E	37.4
	37.7
	38.5
	39.2
	40.2
	41.0
	43.0
	44.5
	48.0
20181E	51.4
	52.4
	53.0
	53.3
	54.5
	55.0
	58.9
	60.9
	61.4
	63.1
	63.7
	64.0
	65.1
	65.2
20190W	13.3
	15.6
	16.3
	17.2
	18.1
	18.5
	21.3
	22.8

LINE #	PICKED FID
20191W	24.3
	25.4
	27.2
	27.8
	29.6
	30.5
	31.2
	32.5
	34.1
	34.7
	35.7
	37.3
20200E	123.1
	124.2
	125.4
	125.9
	128.7
	130.4
	131.2
	132.4
	133.8
	134.5
	135.5
	137.1
	138.6
	140.0
	141.4
	142.1
	144.1
20210W	99.8
	100.2
	101.5
	102.8
	103.5
	104.9
	107.5
	111.0
	112.0
	112.6
	114.2
	114.9
	116.3
	117.2
	118.4
	119.3
	122.0
20220E	83.4
	83.8
	84.1
	85.0
	85.7
	88.8
	90.0
	90.9
	92.0
	92.5
	93.4
	94.3
	95.1
	95.8
	97.3
	99.5
20230W	67.2
	69.8
	71.8
	72.6
	74.1
	74.7
	75.7
	77.0
	77.5
	78.4
	79.3
	81.0
	82.1
	83.0
20240E	52.9
	53.6
	54.2
	54.9
	57.9
20241E	58.6
	59.5
	60.6
	61.7
	62.5
	63.2
	63.6
	64.2
	66.1
	67.1
20250W	36.8
	38.1
	42.4
	43.2
	44.4
	45.8
	46.3
	47.5
	48.3
	49.6
	50.3
	51.7
	52.4
20260E	23.0
	23.5
	25.6
	29.4
20261E	29.7
	30.9
	31.3
	32.4
	33.0
	33.4
	34.1
	36.5
20270W	8.5
	9.3
	9.9
	11.0
	12.3
	13.3
	14.6
	15.6
	16.0
	17.2
	18.7
	20.0
	21.8
	22.2
	22.5
	22.9
29010N	374.5
	375.3
	375.9
	376.2
	377.2
	377.5
	377.8
	379.3
	379.7
	380.0
	380.3
	381.2
	382.8
	383.2
	384.9

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,153

INPUT

DECAY INTERVAL CLASSIFICATION

- 1 Channel (340 microseconds)
- 2 Channel (540 microseconds)
- 3 Channel (840 microseconds)
- 4 Channel (1240 microseconds)
- 5 Channel (1740 microseconds)
- 6 Channel (2340 microseconds)

Selected Channel Half-width Limit
Conductivity -Thickness
Decay Interval Classification
Amplitude Classification
Associated Magnetic Peak
POSITIVE RESPONSE

AMPLITUDE CLASSIFICATION OF CHANNEL 2
(UNCORRECTED FOR ALTITUDE)

Class 1 (<100 ppm)
Class 2 (100 - 199 ppm)
Class 3 (200 - 399 ppm)
Class 4 (400 - 1000 ppm)
Class 5 (>1000 ppm)

MAGNETIC CONTOURS

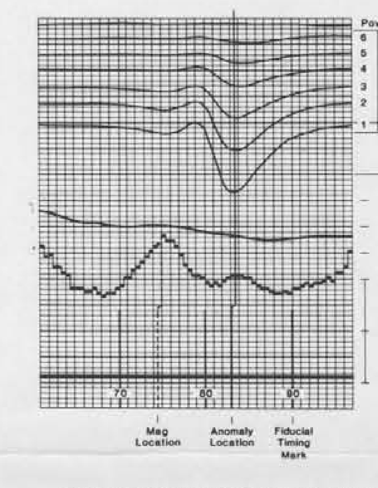
25 Gamma Contour Line
100 Gamma Contour Line
500 Gamma Contour Line

Magnetic Depression

1 Gamma = 1 Nanotesla in SI Units

INTERPRETATION

20 Conductor Axis, with reference number (good definition)
20 Conductor Axis, with reference number (poor definition)
Vertical Conductor
Conductor Dip
20 Selected Zone, with reference number
Surficial Conductivity
Fault Zone



Representative INPUT Magnetometer and Altimeter Recording

DESCRIPTIVE NOTES

The aircraft is equipped with the Barringer/Questor Mark VI INPUT* airborne E.M. System and the Sonotek PMH 5010 Proton Precession Magnetometer and Sonotek SDS-1200 Series Data Acquisition System. The INPUT* system will respond to conductive overburden and near-surface horizontal conducting layers in addition to bedrock conductors. Discrimination of conductors is based on the rate of transient decay, magnetic correlation and the anomaly shape, together with the conductor pattern and topography.

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INTERPRETATION REFERENCES

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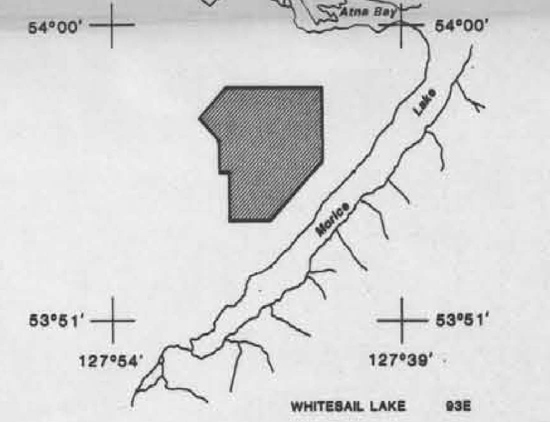
Palacky, G.J.
1978: Selection of a Suitable Model for Quantitative Interpretation of Towed-Bird AEM Measurements; Geophysics, Volume 43, No. 3, p. 576-587.



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HELICOPTER MK VI INPUT® SURVEY
(Vertical Coil)
TOTAL MAGNETIC INTENSITY SURVEY

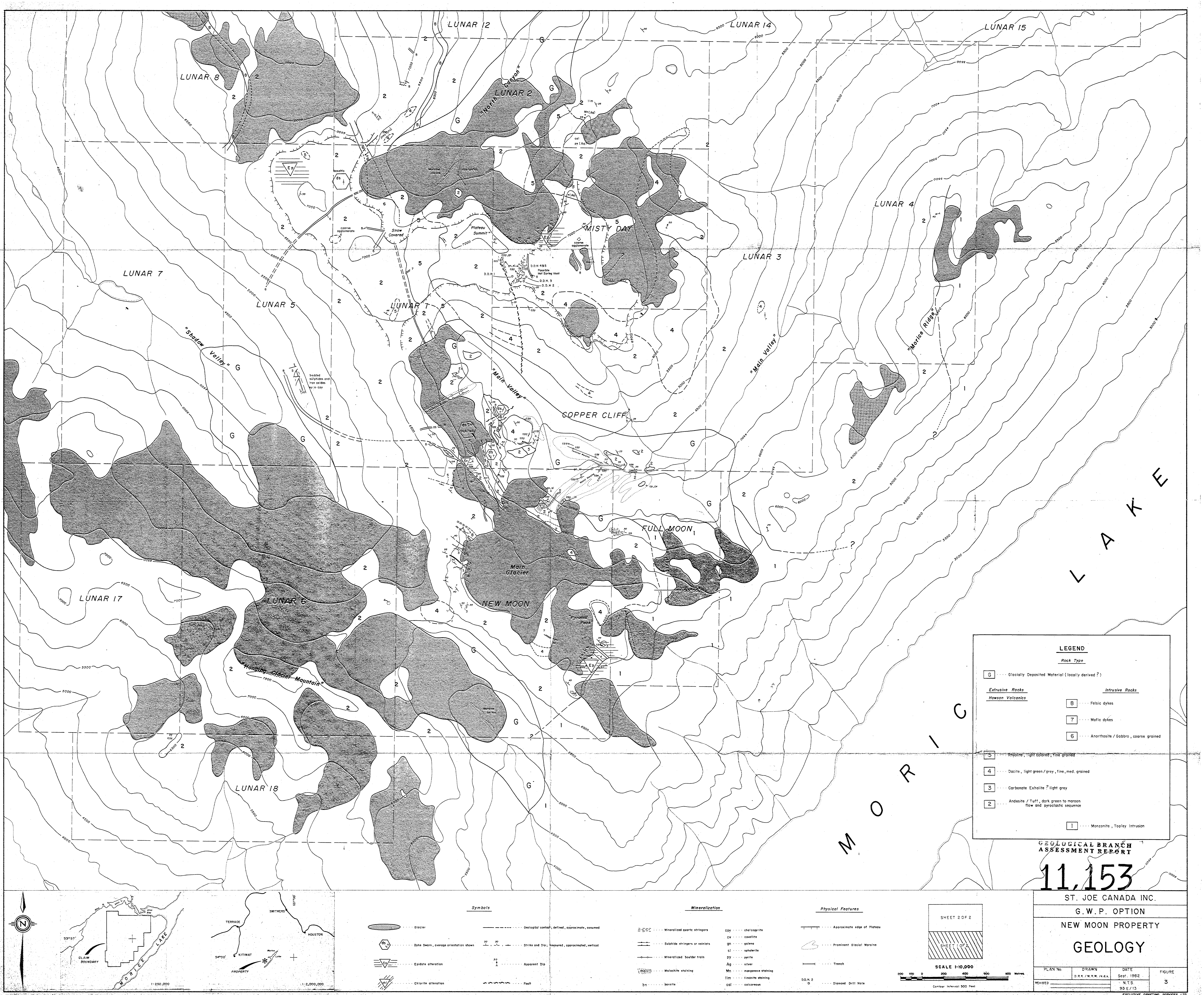
ST. JOE CANADA INC.

MORICE LAKE AREA

Province of BRITISH COLUMBIA

FILE NO.	SHEET NO.	DATE	DRAWN BY
24H49	1 of 1	Sept'82	MB, N.P

Questor Surveys Limited
Mississauga, Ontario Canada



GEOLOGICAL BRANCH ASSESSMENT REPORT

11,153

ST. JOE CANADA INC.

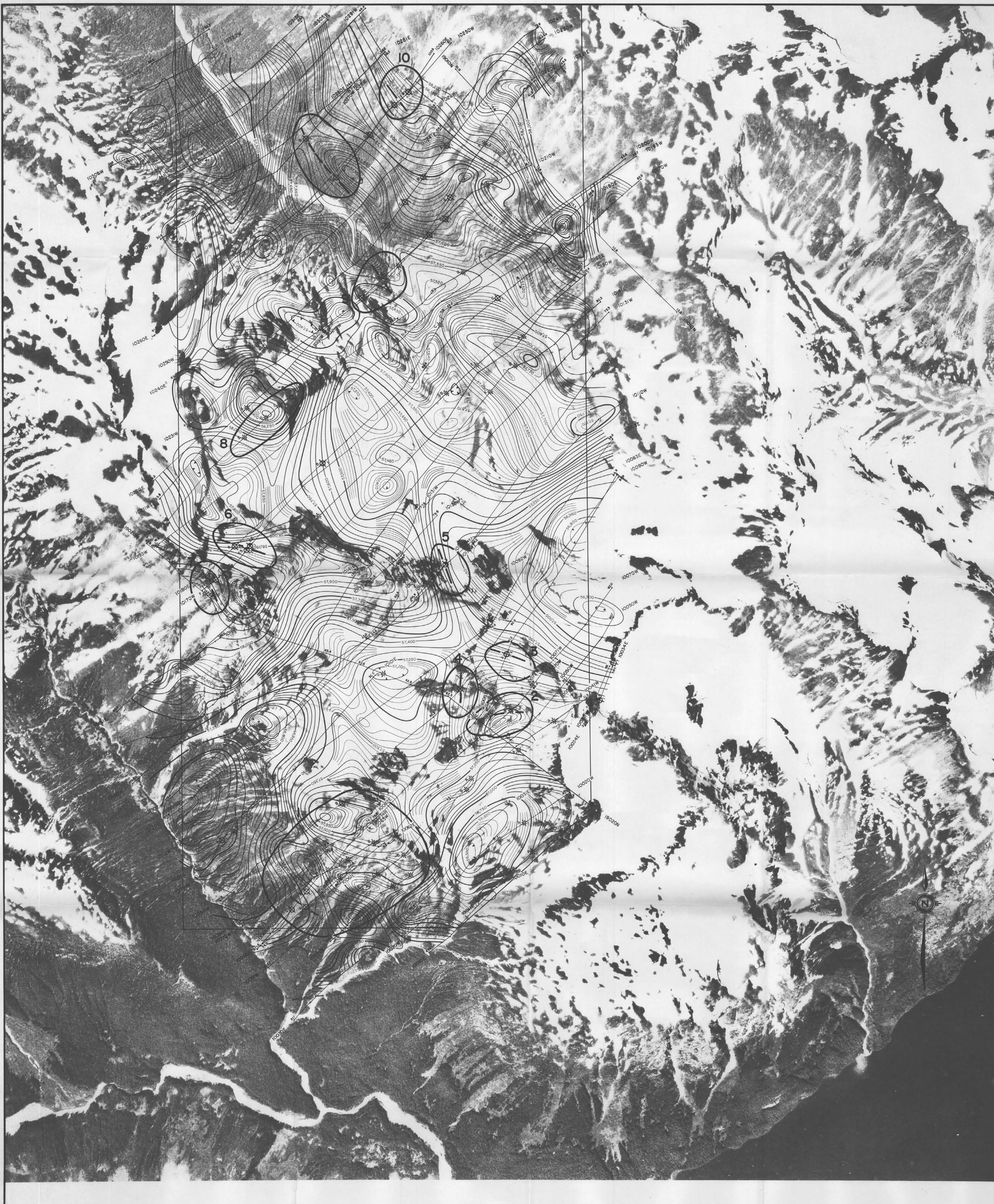
G.W.P. OPTION

NEW MOON PROPERTY

GEOLOGY

PLAN No.	DRAWN	DATE	FIGURE
	D.R.K. / M.R.W. / e.d.s.	Sept. 1982	3
REVISED		N.T.S. 93 E / 13	

EXCLUSIVE DRAFTING SERVICES LTD.



INPUT

DECAY INTERVAL CLASSIFICATION

- 1 Channel (340 microseconds)
- 2 Channel (540 microseconds)
- 3 Channel (840 microseconds)
- 4 Channel (1240 microseconds)
- 5 Channel (1740 microseconds)
- 6 Channel (2340 microseconds)

Selected Channel Half-width Limit
Conductivity-Thickness
Decay Interval Classification
Amplitude Classification
Associated Magnetic Peak
POSITIVE RESPONSE

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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AMPLITUDE CLASSIFICATION OF CHANNEL 2 (UNCORRECTED FOR ALTITUDE)

Class 1 (<100 ppm)
Class 2 (100 - 199 ppm)
Class 3 (200 - 399 ppm)
Class 4 (400 - 1000 ppm)
Class 5 (>1000 ppm)

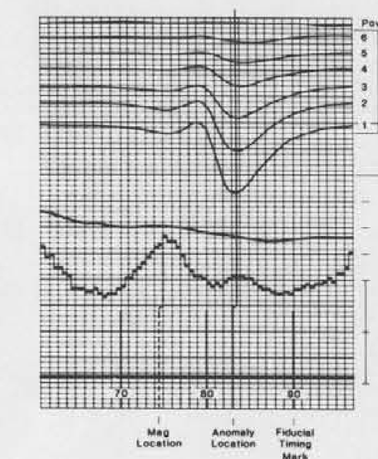
MAGNETIC CONTOURS

10 Gamma Contour Line
50 Gamma Contour Line
250 Gamma Contour Line
Magnetic Depression

1 Gamma = 1 Nanotesla in SI Units

INTERPRETATION

20 Conductor Axis, with reference number (good definition)
20 Conductor Axis, with reference number (poor definition)
Vertical Conductor
Conductor Dip
20 Selected Zone, with reference number
Surficial Conductivity
Fault Zone



Representative INPUT Magnetometer and Altimeter Recording

DESCRIPTIVE NOTES

The aircraft is equipped with the Barringer/Questor Mark VI INPUT* airborne E.M. System and the Sonotek PMH 5010 Proton Precession Magnetometer and Sonotek SDS-1200 Series Data Acquisition System. The INPUT* system will respond to conductive overburden and near surface horizontal conducting layers in addition to bedrock conductors. Discrimination of conductors is based on the rate of transient decay, magnetic correlation and the anomaly shape, together with the conductor pattern and topography.

* Registered Trade Mark of Barringer Research Limited

INTERPRETATION REFERENCES

Becker, A., Gauvreau, C., and Collett, L.S.
1972 Scale Model Study of Time Domain Electromagnetic Response of Tabular Conductors; Canadian Mining and Metallurgical Bulletin, Volume 65, No. 725, p. 90-96.

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Nelson, Philip, H.
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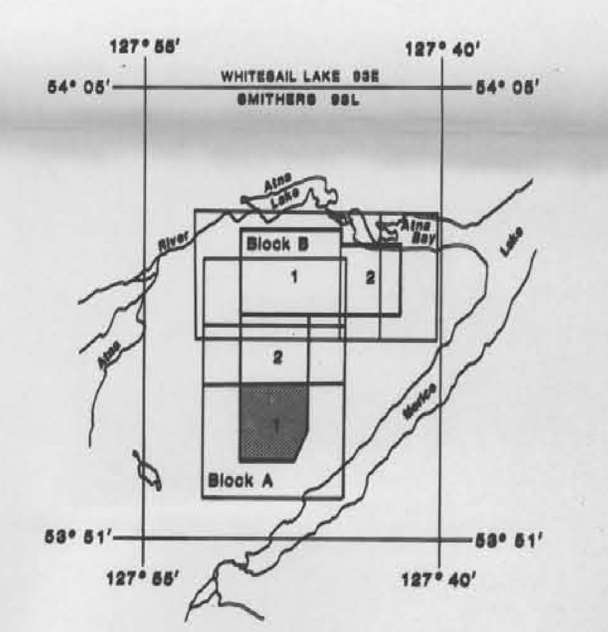

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HELICOPTER MK VI INPUT® SURVEY
(Vertical Coil)
TOTAL MAGNETIC INTENSITY SURVEY

ST. JOE CANADA INC.

MORICE LAKE EXTENSION

Province of BRITISH COLUMBIA

FILE NO.	SHEET NO.	DATE	DRAWN BY
24H60	A 1 of 2	Oct. 1982	K.J.E.

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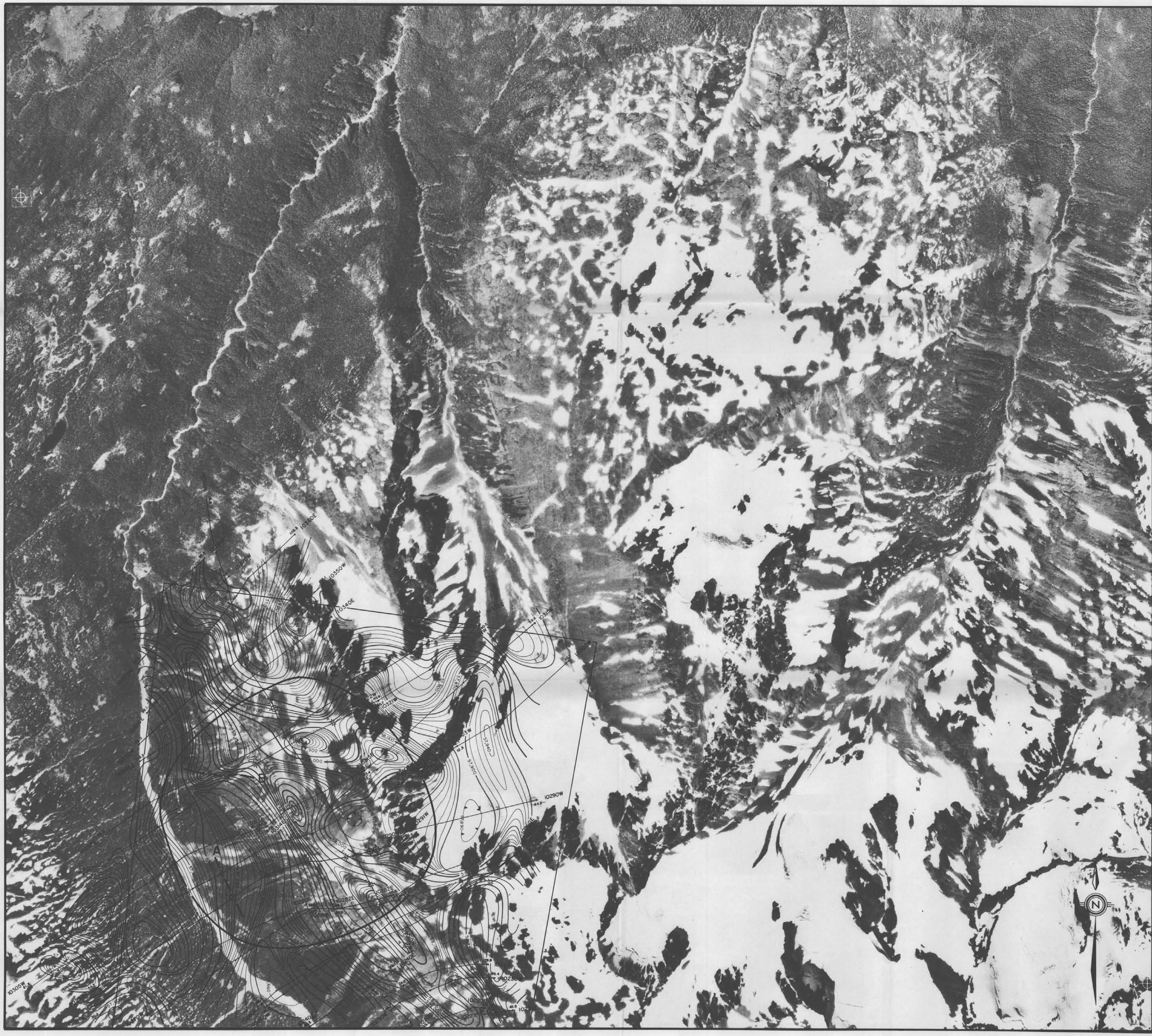

INPUT

DECAY INTERVAL CLASSIFICATION

- 1 Channel (340 microseconds)
- 2 Channel (540 microseconds)
- 3 Channel (840 microseconds)
- 4 Channel (1240 microseconds)
- 5 Channel (1740 microseconds)
- 6 Channel (2340 microseconds)

Selected Channel Half-width Limit — Conductivity-Thickness — Decay Interval Classification — Amplitude Classification — Associated Magnetic Peak — POSITIVE RESPONSE

AMPLITUDE CLASSIFICATION OF CHANNEL 2
(UNCORRECTED FOR ALTITUDE)

Class 1 (<100 ppm)
Class 2 (100 - 199 ppm)
Class 3 (200 - 399 ppm)
Class 4 (400 - 1000 ppm)
Class 5 (>1000 ppm)

GEOLOGICAL BRANCH ASSESSMENT REPORT

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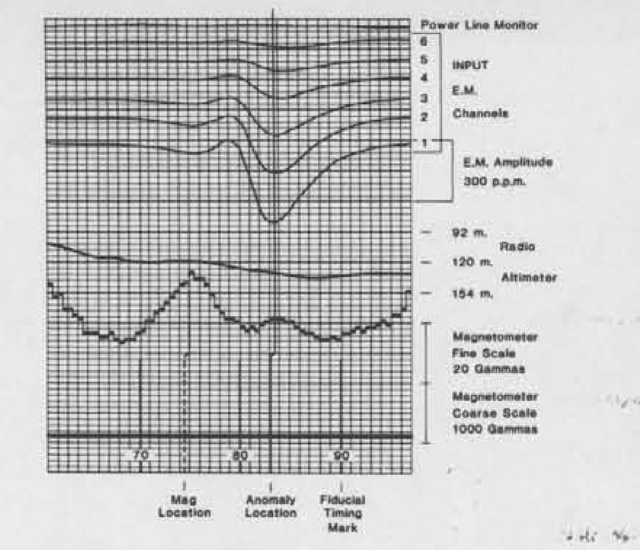
MAGNETIC CONTOURS

10 Gamma Contour Line
50 Gamma Contour Line
250 Gamma Contour Line
Magnetic Depression

1 Gamma = 1 Nanotesla in SI Units

INTERPRETATION

20 Conductor Axis, with reference number (good definition)
20 Conductor Axis, with reference number (poor definition)
Vertical Conductor
Conductor Dip
20 Selected Zone, with reference number
Surficial Conductivity
Fault Zone



Representative INPUT Magnetometer and Altimeter Recording

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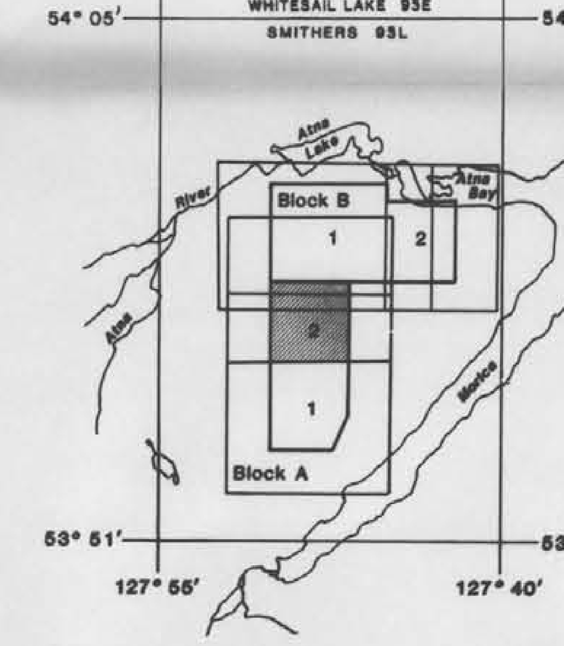

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HELICOPTER MK VI INPUT® SURVEY
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TOTAL MAGNETIC INTENSITY SURVEY

ST. JOE CANADA INC.

MORICE LAKE EXTENSION

Province of BRITISH COLUMBIA

FILE NO.	SHEET NO.	DATE	DRAWN BY
24H60	A 2 of 2	Oct. '82	M.B

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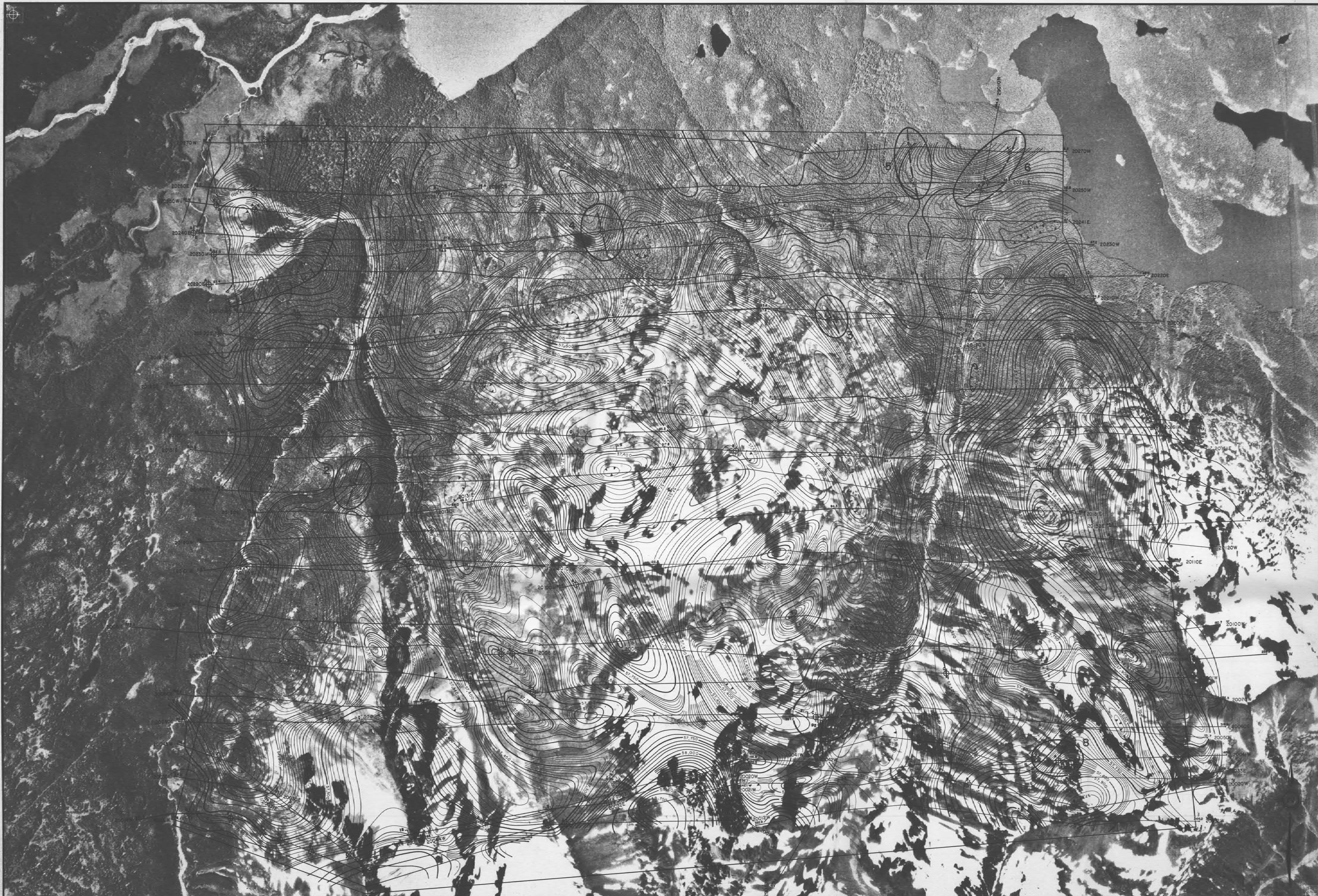


INPUT

DECAY INTERVAL CLASSIFICATION

1 Channel (340 microseconds)
2 Channel (540 microseconds)
3 Channel (840 microseconds)
4 Channel (1240 microseconds)
5 Channel (1740 microseconds)
6 Channel (2340 microseconds)

Selected Channel Half-width Limit
Conductivity-Thickness
Decay Interval Classification
Amplitude Classification
Associated Magnetic Peak
POSITIVE RESPONSE

AMPLITUDE CLASSIFICATION OF CHANNEL 2 (UNCORRECTED FOR ALTITUDE)

Class 1 (<100 ppm)
Class 2 (100 – 199 ppm)
Class 3 (200 – 399 ppm)
Class 4 (400 – 1000 ppm)
Class 5 (>1000 ppm)

GEOLOGICAL BRANCH ASSESSMENT REPORT

11,153

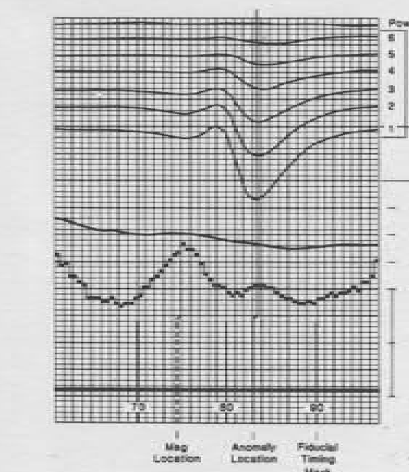
MAGNETIC CONTOURS

10 Gamma Contour Line
50 Gamma Contour Line
250 Gamma Contour Line
Magnetic Depression

1 Gamma = 1 Nanotesla in SI Units

INTERPRETATION

20 Conductor Axis, with reference number (good definition)
20 Conductor Axis, with reference number (poor definition)
Vertical Conductor
Conductor Dip
20 Selected Zone, with reference number
Surficial Conductivity
Fault Zone



Representative INPUT Magnetometer and Altimeter Recording

DESCRIPTIVE NOTES

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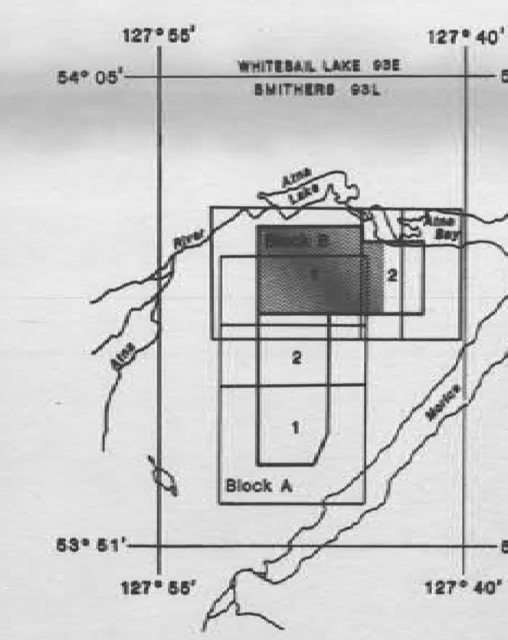

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HELICOPTER MK VI INPUT® SURVEY
(Vertical Coil)
TOTAL MAGNETIC INTENSITY SURVEY

ST. JOE CANADA INC.

MORICE LAKE EXTENSION

Province of BRITISH COLUMBIA

FILE NO.	SHEET NO.	DATE	DRAWN BY
24H60	B, 1 of 2	Oct. '82	K.C., M.B.

Questor Surveys Limited
Mississauga, Ontario Canada

INPUT

DECAY INTERVAL CLASSIFICATION

- 1 Channel (340 microseconds)
- 2 Channel (540 microseconds)
- 3 Channel (840 microseconds)
- 4 Channel (1240 microseconds)
- 5 Channel (1740 microseconds)
- 6 Channel (2340 microseconds)

Selected Channel Half-width Limit — Conductivity-Thickness (12) — Decay Interval Classification — Amplitude Classification (3) — Associated Magnetic Peak (15) — POSITIVE RESPONSE

AMPLITUDE CLASSIFICATION OF CHANNEL 2
(UNCORRECTED FOR ALTITUDE)

Class 1 (<100 ppm)
Class 2 (100 – 199 ppm)
Class 3 (200 – 399 ppm)
Class 4 (400 – 1000 ppm)
Class 5 (>1000 ppm)

MAGNETIC CONTOURS

10 Gamma Contour Line
50 Gamma Contour Line
250 Gamma Contour Line
Magnetic Depression

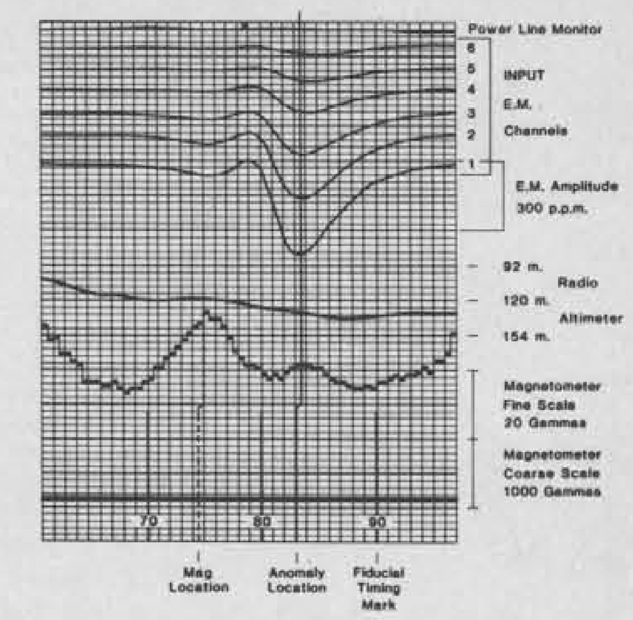
1 Gamma = 1 Nanotesla in SI Units

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,153

INTERPRETATION

20 Conductor Axis, with reference number (good definition)
20 Conductor Axis, with reference number (poor definition)
Vertical Conductor
Conductor Dip
20 Selected Zone, with reference number
Surficial Conductivity
Fault Zone



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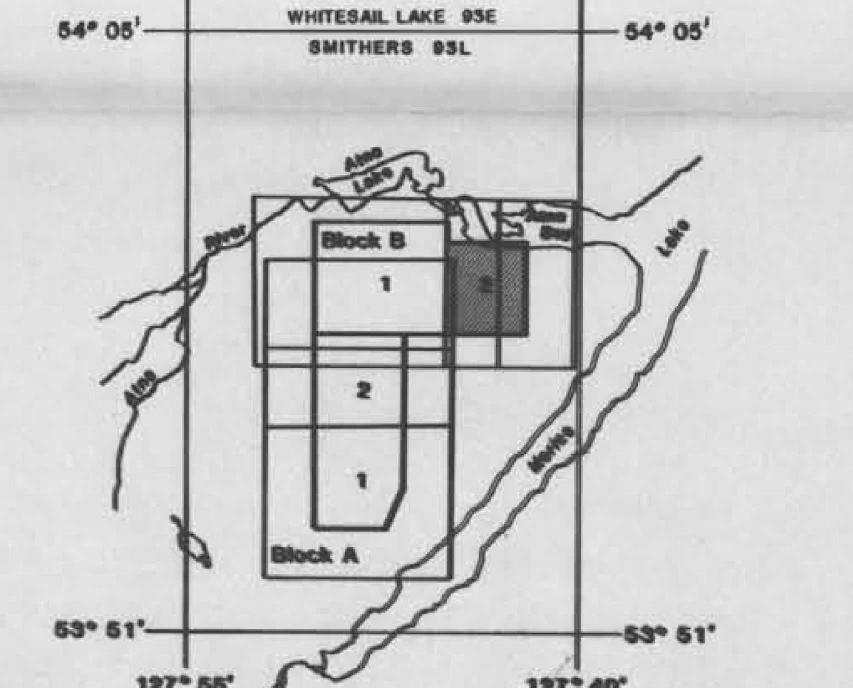

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HELICOPTER MK VI INPUT® SURVEY
(Vertical Coil)
TOTAL MAGNETIC INTENSITY SURVEY

ST. JOE CANADA INC.

MORICE LAKE EXTENSION

Province of BRITISH COLUMBIA

FILE NO.	SHEET NO.	DATE	DRAWN BY
24H60	B, 2of2	Oct.'82	J. M.

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