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GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL

REPORT

on

TAKLA PROJECT

93 N/12 W, 13 W; 93 M/16 E

55°37', 125° 57'

for

McINTYRE MINES LIMITED

by

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December 12, 1977
Vancouver, B.C.

TABLE OF CONTENTS

FIGURES AND MAPS

SUMMARY

1. In the search for massive sulphides of the volcanogenic type, a crew of five men spent 3.5 months between June 3 and September 21, 1977 conducting geological, geochemical and geophysical surveys as a ground follow-up of a combined airborne magnetic and electromagnetic survey flown by McIntyre Mines over the Sitlika Assemblage in central British Columbia.

2. From examination of the Sitlika Assemblage and from the work of Monger in recent years, Paterson (1974) and others it can be concluded that: a) similarities between the "Kutcho" succession and the Sitlika Assemblage are largely imposed by a later metamorphism.

b) Sitlika rocks bear greatest similarities with the less metamorphosed Upper Triassic rocks near Dewar Peak, in the McConnell Creek map-area.

c) Kutcho Creek volcanics are correlated with the less metamorphosed Permian Asitka Group.

3. Lithological discontinuities within the Sitlika Assemblage are believed to have resulted largely from late block faulting along northeast trends.

4. Significant piles of rhyolitic material commonly altered to quartz-sericite schists are restricted to three main areas along the Sitlika volcanic belt: 1) the Mount Bodine area; 2) the Mount Olson area; and 3) the "North Area" a narrow strip of altered volcanics exposed between the Ominicetla and Omineca Rivers.

5. The airborne electromagnetic survey did not outline the above areas as zones of geophysical interest (the North Area was not flown).

6. Graphitic argillite was recognized as the source of eleven (11) of the seventeen (17) A.E.M. anomalies for ground follow-up work.

7. Of the remaining six (6) anomaly areas, weak to moderate copper-zinc soil geochemical anomalies were obtained in the following four (4) areas: 4, 6, 12 and 17. These areas are considered to be of low to moderate priority for follow-up work.

8. The southeastern portion of the Ruth claims in the Mount Bodine area, with the recent discovery of two mineral showings, remains a high priority target area and should be followed by a program of detailed soil geochemistry, ground magnetometer and prospecting.

INTRODUCTION

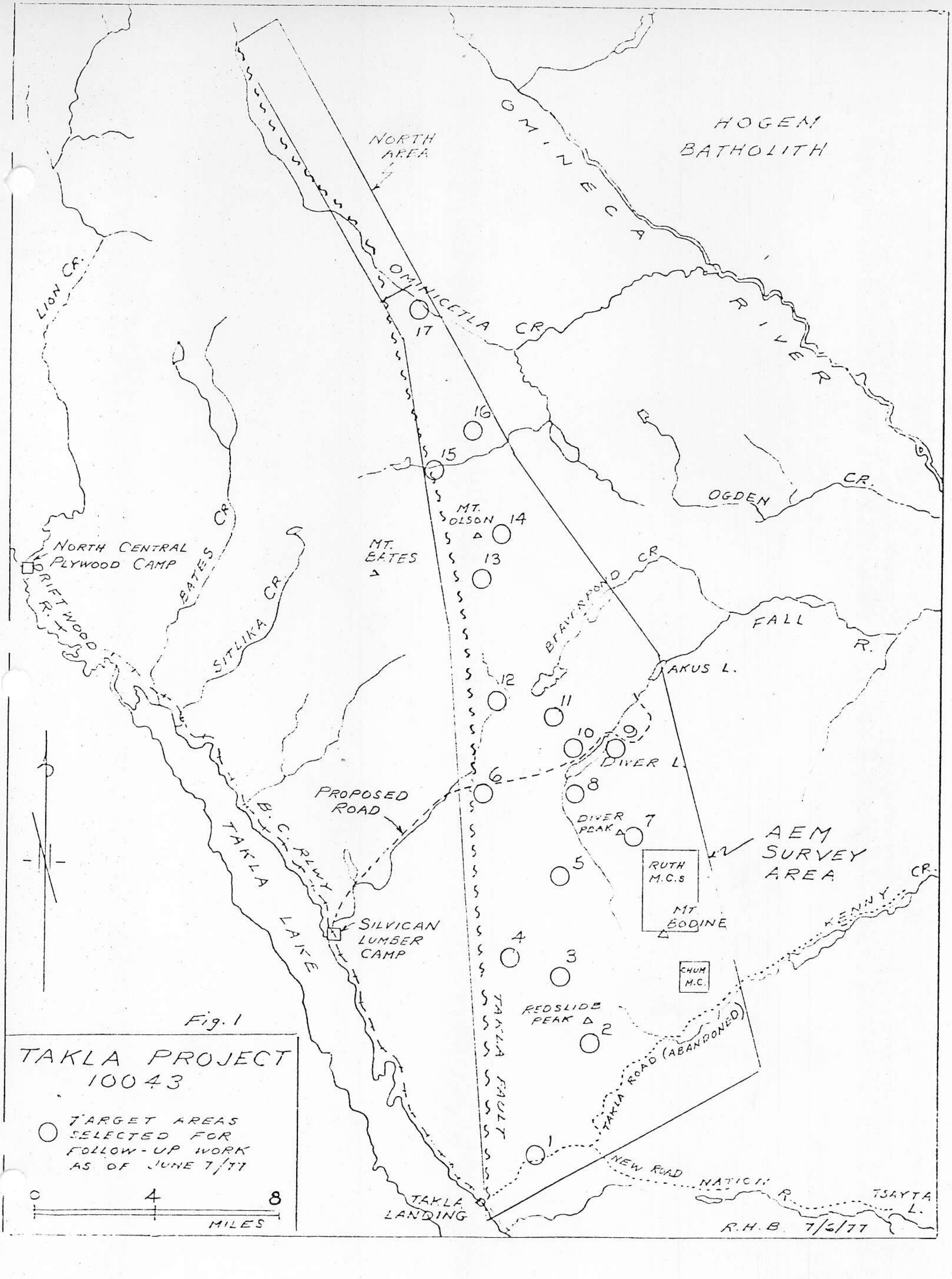
Following recommendations by Joe Shearer (1976), a combined helicopter borne magnetic and electromagnetic survey was conducted over a portion of central British Columbia on behalf of McIntyre Mines Limited during the period February 25th through March 10th, 1977.

The area flown, geologically referred to as the Sitlika Assemblage, is a triangular shape zone covering approximately 274 square kilometres and extending north-northwesterly from the mid point on Takla Lake to the Ominicetla River Fig. 1 .

The objective of the survey was to outline target areas in the search for massive sulphide deposits of the volcanogenic type.

The attractiveness of the Sitlika Assemblage as a potential area for massive sulphide occurrence was largely based on the recognition of basic similarities between these rocks and the "Kutcho Creek" succession located 230 miles to the north-northwest and hosting a recent discovered economic massive sulphide deposit. This prompted a field reconnaissance of the two areas by McIntyre Mines during the summer of 1976 and resulted in the staking of a 54 unit claim block in the Mount Bodine area. The conclusions of that study (J. Shearer, 1976 a, b) lead to the present program.

The electromagnetic survey resulted in the selection of seventeen (17) target areas for ground follow-up work (Crosby, 1977). During the summer of 1977 a crew of five (5) men consisting of two (2) geologists, and three (3) assistants spent 3.5 months, between June 3rd and September 21st,


HOGEM
BATHOLITH
OMINECA RIVER
NORTH AREA
OMINICETLA CR.
LION CR.
17
16
15
OGDEN CR.
MT. OLSON
14
13
MT. BATES
NORTH CENTRAL PLYWOOD CAMP
BATES CR.
SITLIKA CR.
DRIFTWOOD R.
BEAVERPOND CR.
FALL R.
AKUS L.
12
11
10
9
DIVER L.
6
8
PROPOSED ROAD
DIVER PEAK
7
AEM SURVEY AREA
RUTH M.C.s
5
MT. BODINE
B.C. RLWY
TAKLA LAKE
SILVICAN LUMBER CAMP
KENNY CR.
4
3
CHUM M.C.
REDSLIDE PEAK
2
TAKLA FAULT
TAKLA ROAD (ABANDONED)
1
NEW ROAD
NATION R.
TSAYTA L.
TAKLA LANDING
Fig. 1
TAKLA PROJECT
10043
TARGET AREAS SELECTED FOR FOLLOW-UP WORK AS OF JUNE 7/77
0
4
8
MILES
R.H.B. 7/6/77

conducting geological, geophysical and geochemical surveys within the area of interest.

The present report presents the data accumulated under three main headings: 1) Tectonic Setting and the Problematical Age of the Sitlika and Related Metamorphic Assemblages in Central and North Central British Columbia (a summary of ideas from miscellaneous government reports); 2) Geology and Structures within the Sitlika Assemblage (pertinent observations and conclusions as a result of the work conducted during the present program); and 3) Evaluation of the Seventeen (17) A.E.M. anomaly areas Selected for Ground Follow-Up Work.

LOCATION AND ACCESS

The project area is covered by N.T.S. map sheets 93N/12 W, 13 W and 93 M/16E. Takla Landing located in the southwest corner of the project area can be reached by the following means of transportation:

1) Four - Wheel drive. A 250 mile gravel strip from Fort St. James (Germanson Road);

2) Float plane from Prince George (Northern Thunderbird Airways);

3) Float Plane from Smithers (Smithers Airway);

4) B.C. Railway carries a freight service from Fort St. James twice a week.

Access to the project area is by helicopter. A Bell-47-G3B1 Northern Mountain helicopter based at the North Central Plywood Camp, 20 miles to the northwest of Takla Landing, was used on a casual basis. By the summer of 1978, logging roads should provide access to the central portion of the project area as shown on Fig. 1.

I. REGIONAL GEOLOGY AND TECTONIC SETTING OF THE SITLIKA ASSEMBLAGE

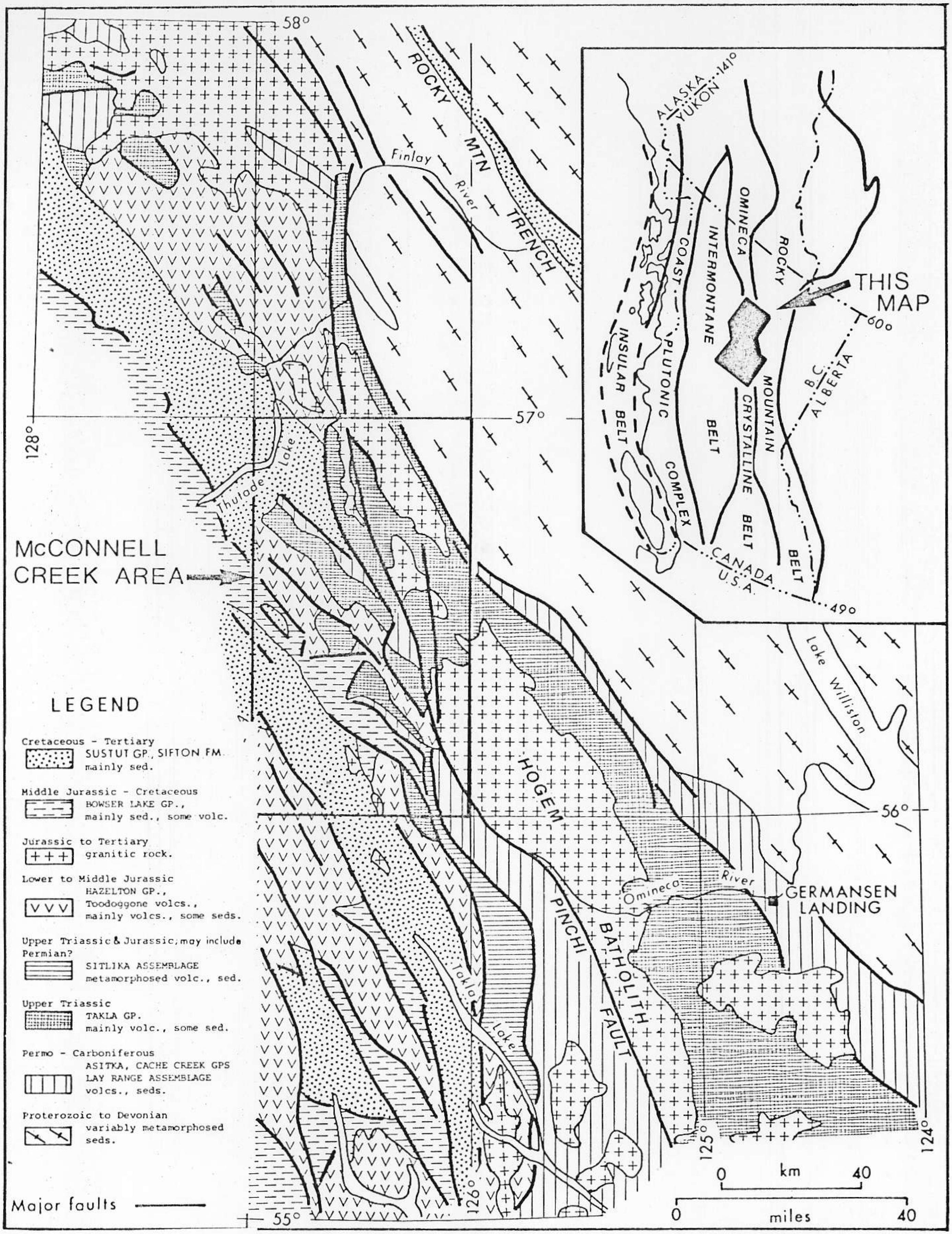
I.2 REGIONAL GEOLOGY (Summarized from Paterson 1974 and Monger 1977 b)

The Sitlika Assemblage is a volcanic-sedimentary assemblage composed of possible Triassic metamorphosed, basaltic to rhyolitic pyroclastic and flow rocks, greywacke and argillite. The Takla fault zone separates the Sitlika rocks from Mesozoic volcanic and sedimentary rocks of the Hazelton and Sustut Group to the west. The Sitlika Assemblage is bounded to the east by the Vital fault zone containing a greenstone-serpentinite melange. The Upper Paleozoic Cache Creek Group which lies to the east of these rocks is separated from the Jurassic Hogem batholith by the Pinchi Fault, Fig. 2.

I.3 TECTONIC SETTING AND PROBLEMATICAL AGE OF THE SITLIKA ASSEMBLAGE AND RELATED METAMORPHIC ASSEMBLAGES

The Sitlika volcanics are well foliated intermediate to acid volcanic pyroclastics and flows characterized by the local development of sericite and quatz-sericite and chlorite schists.

Identical chlorite and sericite schists in similar metamorphosed volcanic rocks, also of uncertain age, are found to the west and to the south of the Sikanni Range, in the McConnell Creek map-area, and much farther to the north in the Toodogone and Kutcho Creek areas (Monger, 1977 c). The tectonic setting, in each of these areas, is virtually similar: 1) the metamorphic assemblages are bounded by major easterly and northeasterly dipping fault zones; 2) the fault zone bounding the east and northeast side of the metamorphic assemblages, namely the Nahlin fault zone in the Atlin



Distribution of major stratigraphic units in the Omineca Mountains.

Fig. 2

(Monger, 1977 b)

Terrane to the north and the probably equivalent Vital fault at the north end of the Stuart Lake Belt in the Takla Lake area to the south (Paterson 1974), contains a serpentinite-greenstone melange; 3) on the east and northeast side, these rocks are structurally overlain by the Permian Cache Creek Group; 4) below them are essentially unmetamorphosed Upper Triassic and Jurassic strata comprising the Permian(?) Asitka, the Upper Triassic Takla Group , and the Jurassic Hazelton and Bowser Lake Groups as defined by Monger (1977 b).

The fault zone containing the serpentinite-greenstone melange, two to three miles wide in the Takla area, is inferred to represent a subduction zone believed to have been active during Upper Jurassic and Lower Cretaceous times (Monger, 1977 a). Terry (1977) demonstrated the ophiolitic character of the Nahlin ultramafics of the Atlin Terrane. Based on the descriptions of Peterson (1974), the Trembleur ultramafics, in the Takla area, appear to be identical rocks.

Monger (1977 a) offers two hypotheses to explain the distribution of the different assemblages: 1) oceanic assemblages such as the Cache Creek Group represent Upper Paleozoic and Early Mesozoic Pacific ocean floor obducted over a broad arc terrane in the Jurassic; or 2) they are Paleozoic and Early Mesozoic ocean floor, trapped east of allochtonous arc terranes emplaced in the Mesozoic.

Of more immediate concern is the problem of correlating the Sitlika and Kutcho Assemblages with rock assemblages of known age. Gabrielse and al (1976) consider the metamorphic assemblages in the Sitlika, Kutcho Creek and Toodogone Terranes to be Upper Palaeozoic rocks dragged up and exposed along the contacts of granitic rocks which intruded Mesozoic strata and formed, as a result, local areas of marble sericite, quartz-sericite and chlorite schists. Paterson (1974), noting the difference in the style of deformation and degree of metamorphism between the Sitlika Assemblage and the Upper Triassic Takla Group in the McConnell Creek map-area, nevertheless tentatively correlated the two rock assemblages on lithological grounds. Pearson and Panteleyev (1975) on the basis of lithological similarities correlated the Kutcho Creek successions with the less metamorphosed Asitka Group. The lower most of the three subdivisions of the Asitka Group contains an abundant fauna of Lower Permian fossils (Monger 1977 a). Rubidium-strontium isochrons give comparable ages of 250 $\pm$ 20 Ma and of 270 Ma for the middle unit of the Asitka Group and for the Kutcho Rocks, respectively (R.L. Armstrong, personal communication to Monger, 1977 a). Kutcho successions are overlain by polymictic conglomerates, argillite and limestone with scleraclinian corals that are probably correlative with the Upper Triassic Sinwa Formation to the west (F.W. Ambel, personal communication to Monger 1977 a). Monger (1977 c) described the metamorphic assemblages as imbricate slices in a major east and northeast dipping thrust system that lies along the west side of the Omineca and Cassiar mountains and extends for 700 Km from Takla Lake (lat. 55) in the south the Atlin Lake (lat. 59) in the north Fig.3. In addition to thrusting (i.e., to subduction and obduction movements,), Monger (1977 a) and Gabrielse (1977, in his presentation at the 1977 MA.C. - G.A.C. Annual Meeting) indicated that these prominent northwesterly trending lineaments in Cassiar and Omineca mountains marked zones of intense deformation that also appear to be the locii of dextral transcurrent faults. Gabrielse further suggested that the extension of the Kutcho succession, faulted off to the east of the Kutcho deposit , must lie considerably farther to the southeast.

I.4
CONCLUSION

The inescapable conclusion is that the age and origin of the Sitlika and related metamorphic assemblages are for the least problematical. Although it can be demonstrated that Kutcho Creek rocks, hosting a volcanogenic massive sulphide deposit, bear striking similarities with rocks in the Sitlika Assemblage, it should be realized that these characteristic similarities are largely imposed by later matamorphism and deformation as stated by Monger (1977 c). In other words, Kutcho and Sitlika rocks may each possibly correlate with rock assemblages of totally different age.

2. GEOLOGY AND STRUCTURES WITHIN THE SITLIKA ASSEMBLAGE

2.1 INTRODUCTION

In order to obtain stratigraphic and geological information across the Sitlika volcanic belt and along the belt, geological mapping was conducted on the ridges in the vicinity of Mount Olson and across the Mount Bodine area and "Highland" ridges immediately to the west. Several other traverses were also conducted at various other places along and across portions of the belt.

It should be emphasized that the results of the combined airborne Mag-E.M. survey flown by McIntyre over the Sitlika Assemblage largely contributed to a better understanding of the regional geology and structure. For example, it was found that broad zones of conductivity could generally be correlated with areas of sedimentary rocks. This is paticularly true in this case since pelitic sedimentary rocks such as argillite and silstone, which constitute the predominant types of sedimentary rocks within the Sitlika Assemblage, are usually conductive. Similarly, breaks in the magnetic pattern were most useful in outlining possible faults.

2.2 DISTRIBUTION AND CORRELATION OF LITHOLOGIES WITHIN THE SITLIKA ASSEMBLAGE

The Sitlika volcanics, forming a belt trending north-northwest, attain their maximum width of 6.5 Km in the Mount Bodine - Redslide Peak areas. In the Mount Olson area, 26 Km to the north-northwest, the volcanic belt has narrowed to a width of 1.2 Km. The zone further narrows to 0.7 Km in the Axelgold Range of the McConnell Creek map-area where it is sandwiched against a narrow strip of Cache Creek (?) meta-conglomerates, phyllitic argillites and marble between semi-confomrable porphyritic granitic intrusions.

The volcanics are flanked on the west side by a narrow strip (1.2Km wide) of predominantly black slatey to sub-phyllitic argillites, commonly graphitic and interbedded with minor greenstone. Similarly, the sericite and chlorite schists within the volcanics are commonly interbedded with thin bands of (graphitic) argillite and chert. Meta-greywackes and laminated siltsones are reported to constitute the predominant rock type to the east and northeast of the volcanics (Paterson, 1974).

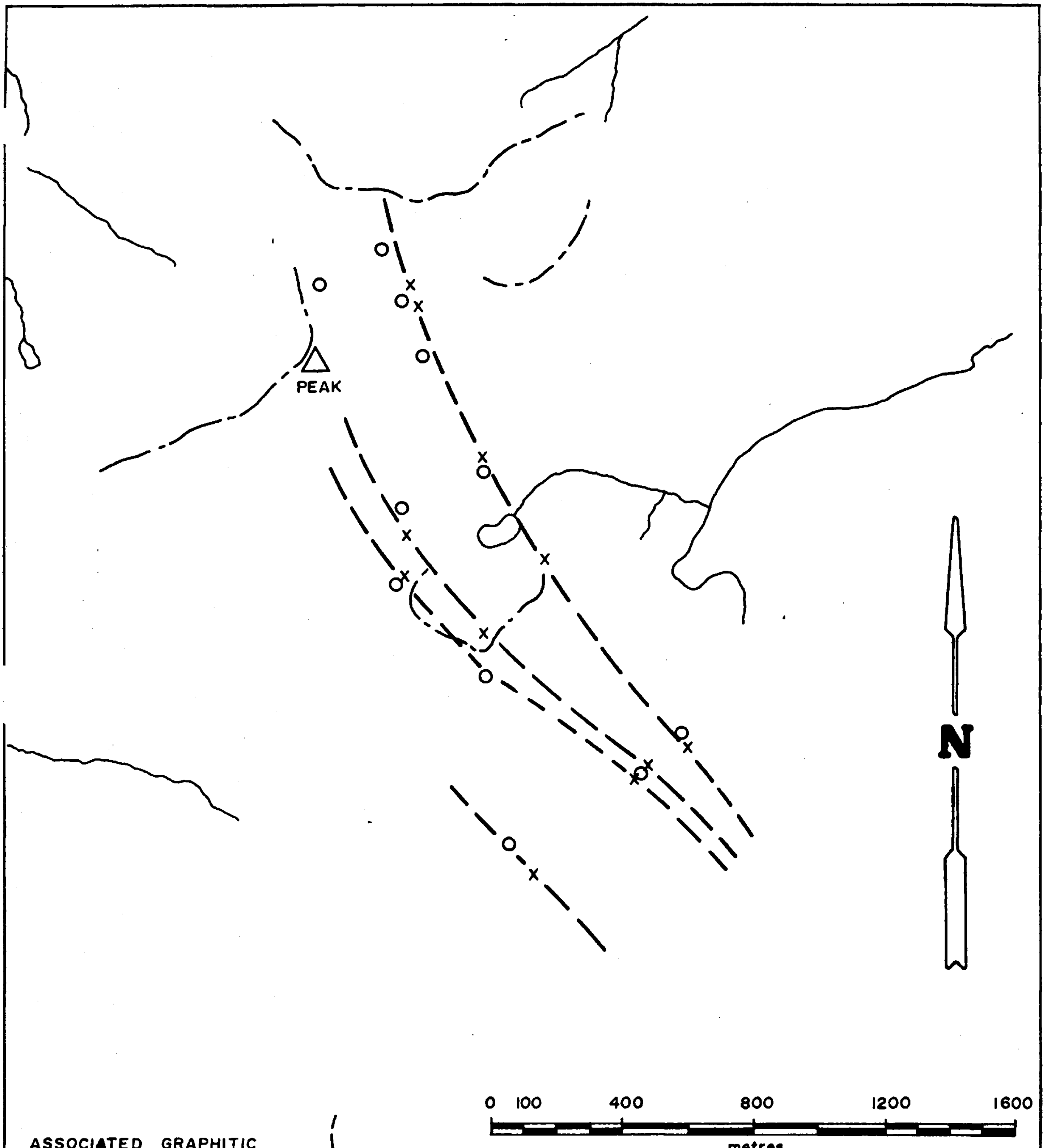
The Mount Bodine-Redslide Peak area and the Mount Olson area, separated by 26 Km along the volcanic trend and containing the two highest peaks within the survey area, have identical stratigraphic and structural relationships that could not be recognized elsewhere within the survey area.

In the two areas, the mountain peaks are capped by basaltic to andesitic flows with pillow structures. Columnar jointing was also observed in the Mount Olson area. These rocks overly conformably a succession of predominantly massive to well bedded dacitic pyroclastics containing significant thicknesses of characteristically schistose and sericitized rhyodacitic to rhyolitic horizons. Thin iron formations (less than 2 metres thick) interbedded with well bedded dacitic tuffs are also recognized in the two areas.

In the remaining portions of the survey area, greenish dacitic to andesitic pyroclastic and flow rocks largely predominate. In these areas, rocks of basaltic composition are rare and do not constitute significant surface areas except at the northeast end of Beaver Pond Lake. Similarly, rhyolitic rocks are common but do not constitute any significant piles. A rhyolite package at the southwest end of Beaver Pond Lake is perhaps another exception. Rather, the schistose rusty and sericitized rhyolitic horizons found in these areas are narrow usually less than 10 metres thick) commonly interbedded with thin black argillites, often graphitic, and cherty horizons (possible exhalites). The more important rhyolitic packages found in the Mount Bodine and Mount Olson areas do not have this argillite-chert association. This observation is supported by the results of the airborne electromagnetic survey. Many of the narrow rusty rhyolitic horizons were outlined by the airborne E.M. survey because of their (graphite)-argillite-chert association. The cluster of airborne E.M. intercepts on the series of ridges north of Redslide Peak is a good example of such a correlation (Fig. 3). Characteristically enough, no E.M. anomalies were obtained in the Mount Olson and Mount Bodine areas over the zones of rhyolite and quartz-sericite schists.

2.3 STRUCTURES WITHIN THE SITLIKA ASSEMBLAGE

Efforts to follow the Mount Bodine and Mount Olson successions, along strike, were unsuccessful. Rather geophysical and geological evidence suggest that lithological discontinuities largely resulted from partial erosion and late block faulting. Possible lateral facies changes, common in volcanogenic terrains, may also occur and terminate lithologies abruptly. In addition, prior to block faulting, effects of a dynamic metamorphism superimposed on a period of regional metamorphism and deformation (Paterson, 1974) largely contributed to obliterate primary features now dominated by a penetrative cleavage remarkedly persistent in attitude throughout the map-area. The development of metamorphic minerals such as chlorite, epidote, (biotite), major mineralogical constituents of the rocks within the survey area, tends to conceal the original nature of the rock.



ASSOCIATED GRAPHITIC ARGILLITE AND PYRITIZED RHYOLITE HORIZONS — x

LOCATION OF A.E.M. CONDUCTOR — o

CIRQUE RIM

McINTYRE PORCUPINE MINES LIMITED

ANOMALY 5 (Highland) AREA

DATE DRAWN: DEC. /77	SCALE: 1" = 400 metres
DRAWN BY: D. FRANCOEUR	N.T.S. 93-N-12 W

Fig. 3

STRUCTURAL ELEMENTS

Structural elements measured in the field were bedding (So), foliation (S_1 and S_2) and lineation (L?). Special attention was given to photo linears as possible indications of faults.

BEDDING

Bedding is best preserved in some of the dacitic tuffs exposed on the flanks of the "Gossan Saddle" ridge immediately to the south of Mount Olson and on the flanks of Mount Bodine. In both instances, dips are moderate to shallow westerly and easterly defining a synform in the "Gossan Saddle" area and an antiform in the Mount Bodine area. These regional folds have subhorizontal north-northwest trending axes roughly coincident with the ridge tops. Elsewhere, in the map-area, beds are commonly steep and parallel in strike and dip to the regional schistosity.

FOLIATIONS

The dominant Tectonic element, imprinted in the Sitlika rocks, is a penetrative cleavage defined by the preferential alignment of platy minerals, such as chlorite and biotite, developed during the main metamorphic episode. Because no earlier Tectonic surfaces are recognized, this cleavage is described as a primary foliation or Tectonic surface S_1.

S_1 FOLIATION

This S_1 cleavage is remarkedly persistent throughout the map-area with steep dips and a north-northwest trend, and is believed to be axial planar to the regional folds discussed above.

However, a preliminary examination of the attitude of S_1 surfaces, within the map-area, allows one to subdivide the map-area into two main structural domains (Fig. 1). Structural domain I covers the Mount Olson area. In this domain, S_1 foliations trend north-northwest but dips are steep (60 - 80 degrees) toward the east. Structural domain II covers Mount Bodine, Red Slide Peak and the "Highland" Ridges immediately to the north. Here too, S_1 foliations trend north-northwest and dips are steep but predominantly toward the west. This regional variation in the dip of S_1 foliations is believed to have originated by tilting during a period of late block faulting (the evidence for block faulting is discussed below).

S_2 CLEAVAGE

A secondary cleavage S_2 is recognized locally in volcanic and sedimentary rocks in the vicinity of Mount Bodine and in the vicinity of Mount Olson. It is defined by a widely spaced cleavage (4 cm - 20 cm apart) commonly emphasized by the trace of thin quartz veinlets. This secondary cleavage fluctuates about northeast and east-northeast trends. It is therefore subparallel to the numerous cross-faults outlined on the airborne geophysical compilation map (Plate 2, Crosby 1977, Report for McIntyre Mines Limited) and on the geology map in the pocket.

LINEATIONS

Lineations within the map area occur in the form of mineral elongations, intersections of cleavage surfaces and as fragments in pyroclastic rocks elongated and flattened in the plane of foliations.

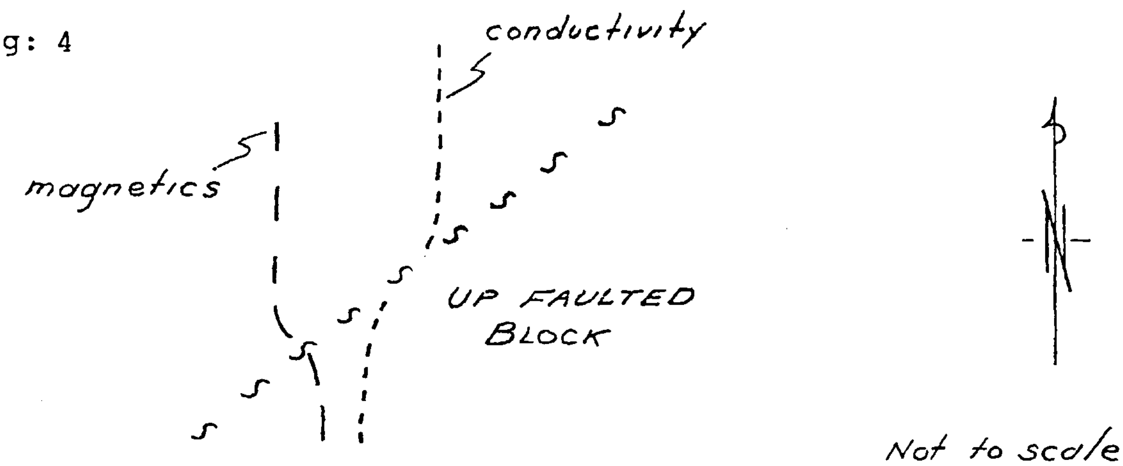
Concerning lineations, not enough data was collected to elaborate on its significance. However, it is worth mentioning that most of the lineations plotted on the map are down-dip lineations measured on the plane of S_1 foliations.

FAULTS

Numerous north-east trending cross faults, previously unmapped, were outlined by the combined airborne magnetometer-electromagnetic survey flown by McIntyre in 1977 (Plate 2, Crosby 1977,Report for McIntyre Mines Limited). A number of these "geophysical" faults were confirmed by geology during the ground follow-up phase of the program. In most cases they correspond to strong photo linears.

An argument in favour of the fact that primarily vertical displacements occurred along these faults is the little apparent horizontal displacements of the Takla fault zone believed to be a much older "steeply" dipping structure. Another indication of vertical offset is the opposing displacements shown by the magnetics and the conductivity along one of these breaks, (Fig. 4), in an area 8 Km due north from the midpoint on Takla Lake (Plate 2, Crosby 1977 , Report for McIntyre Mines Limited) which can only be explained by the vertical offset of structures dipping in opposite directions.

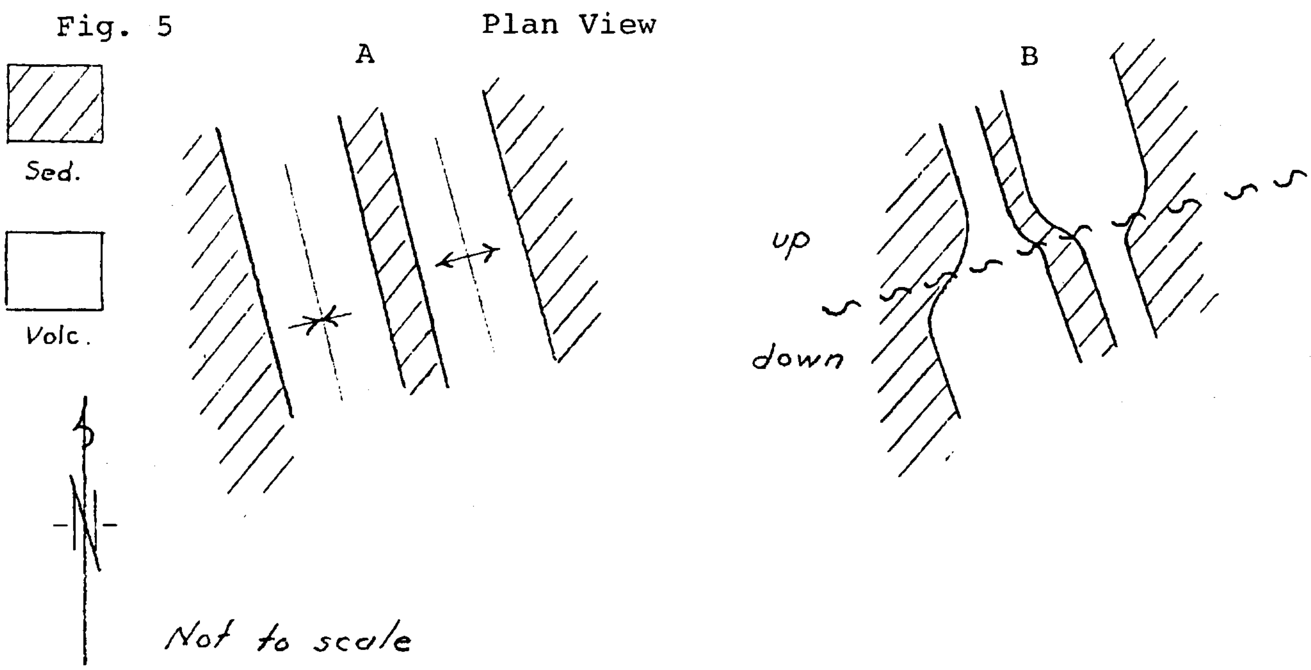
Fig: 4



Block faulting is suggested here. It is known to be a typical form of deformation during the last stages of orogenic cycles. These late phases of deformation are usually characterized by brittle deformation. The whole Sitlika Assemblage is believed to be, from north to south, a succession of grabbens and horsts.

Indications of relative movements along these faults (in the Mount Bodine-Redslide Peak area and in the Mount Olson area) is suggested indirectly by the following observations: 1) the similarity in nature and in relative abundance of the different types of volcanic lithologies between the Mount Bodine-Redslide Peak area and the Mount Olson area was emphasized in the previous section. These areas are also the areas of greatest relief within the map-area. Mount Bodine and Mount Olson both exceed 2000 metres in altitude. The present topography is believed to represent the relief of the Sitlika Assemblage after a last phase of brittle deformation which resulted in block faulting. It is therefore suggested that the Mount Olson and the Mount Bodine-Redslide Peak areas are upfaulted blocks. 2) Another indication of relative movements, supporting the above interpretation, is illustrated below. In a succession of rocks folded into upright synclinal and anticlinal structures, adjacent to each other, subsequent uplifting of the north section by displacement along a steeply dipping cross-fault would result in the apparent horizontal displacement of lithologies as illustrated below for the Redslide Peak- Mount Bodine area (Fig. 5).

Fig. 5

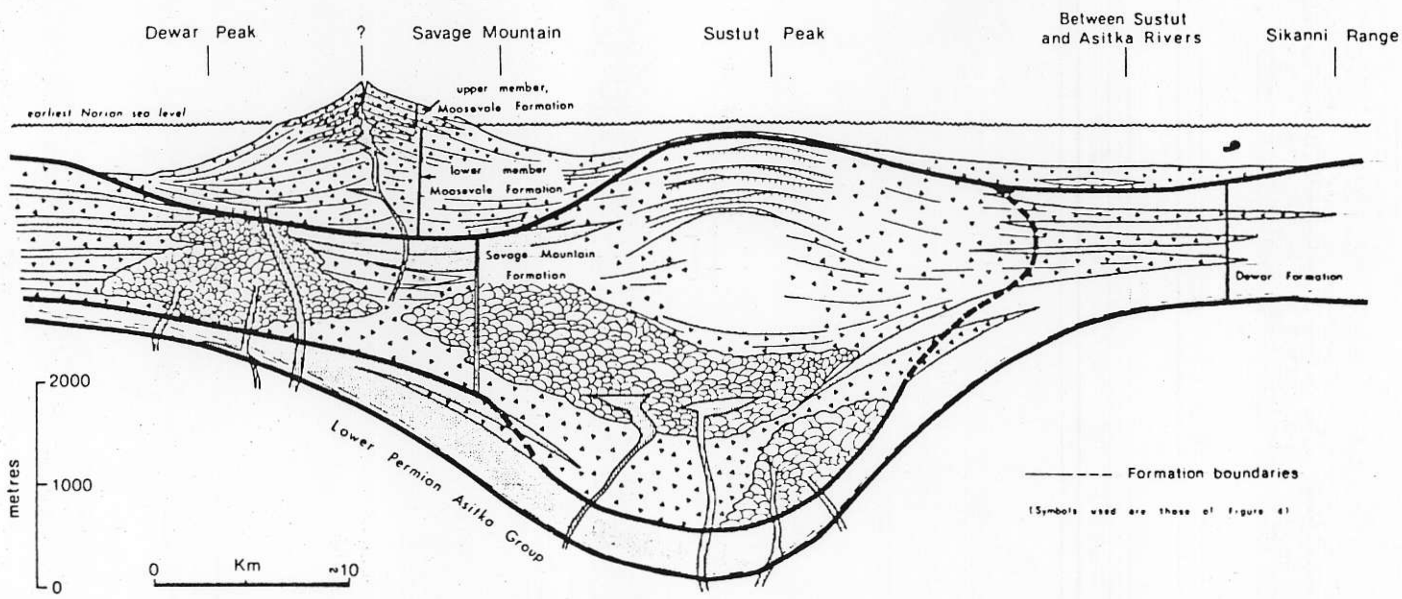


2.4 CONCLUSION

Based on the descriptions of Monger (1977 b) of the Takla Group in the McConnell Creek map-area, and in accordance with Paterson (1974), lithologies in the Sitlika Assemblage appear to bear greatest similarities with the less metamorphosed Upper Triàssic rocks near Dewar Peak, in the McConnell Creek map-area. These rocks correspond to the Lower Division of the Takla Group as described by Lord (1948). The pillowed basaltic to andesitic often porphyritic flows exposed on the peaks of Mount Bodine and Mount Olson are comparable with the massive to pillowed basic augite-feldspar porphyries of the Savage Mountain Formation. The underlying well bedded dacitic tuffs and fine to medium greenish pyroclastics and associated argillites, siltstones and greywackes correlate well with similar rocks of the Upper Triassic Dewar Formation. Paterson (1974) has emphasized the similarity of the basal Upper Triassic unit in the McConnell Creek area with the Sitlika argillite. The common occurrence of argillite interbedded with pyroclastic rocks of the Dewar Formation (Monger, 1977 b) is another striking similarity with rocks of the Sitlika Assemblage. Finally, block faulting, common in Sitlika rocks, was also recognized in rocks ranging in age from Lower Permian to Lower Permian to Lower Jurassic near Dewar Peak (Monger 1974).

Fig. 6 is a schematic diagram from Monger (1977 b) showing the conformably and partly coeval relationships of the Dewar and Savage Mountain formations. by correlation, Sitlika Rocks may thus be considered as distal facies to a primarily volcanic environment such as the Savage Mountain Formation or in part as an underlying formation.

Fig. 6



Schematic diagram showing nature of, and relationships between formations of the Takla Group.

(Monger 1977 b Geol. Surv. Can. Paper 76-29, P. 23)

3. GROUND FOLLOW-UP OF THE AIRBORNE E.M. ANOMALIES

3.1 INTRODUCTION

Of the seventeen (17) airborne E.M. anomalies selected for ground follow-up work, eleven (11) have received geological, geophysical and geochemical attention. All anomalies have been geologically evaluated and prospected in some detail.

E.M. targets were selected, jointly by the consulting geophysicist and by the project geologist on the basis of their electromagnetic characteristics and magnetic correlation. They were also selected as shown by their scattered distribution to investigate the occurrence of massive sulphides in three possible geological settings: 1) sedimentary environments in the vicinity of volcanic terrains; 2) sedimentary and/or volcanic terrains underlain by major faults; and 3) volcanic terrains. Greater emphasis was placed on isolated conductors within volcanic areas.

3.2 GROUND GEOPHYSICS

- Ground E.M. (Vertical Loop - Model SE 300)

Procedure: A minimum of 3 lines, one 1000 metres long and usually spaced 75 metres apart were established at right angles to the trace of the airborne E.M. conductors. Two operators would then survey the lines with the vertical loop equipment using the In-Line -"A" Configuration Method. A coil seperation of 100 metres was used and readings were taken every 50 metres. Sharper definition of the conductor was obtained by resurveying one of the lines over the anomaly using a coil separation of 50 metres with readings at 25 metre station intervals.

- E.M. & Mag.

The airborne E.M. survey (Scintrex HEM-801 "fixed configuration") was well complemented by ground vertical loop E.M. Model SE 300 unit, using similar frequencies. Ground E.M. has confirmed the presence of the airborne conductors in all cased where conducted. Where applicable ground magnetometer often gave a sharper definition of the anomalies.

3.3

GEOLOGY IN THE VICINITY OF THE E.M. ANOMALIES

In nearly all cases where bedrock was observed in the vicinity of the anomaly areas, the following rock associations were noted: chloritized andesitic to dacitic flows and tuffs predominate; thin horizons of interbedded cherts and black argillites, usually in contact with rusty-weathered and bleached rhyolitic to dacitic schists are nearly always present. The argillite is commonly graphitic and is believed to be the cause of most E.M. conductors. The associated felsic volcanic horizons recognized in 11 of the 17 target areas usually contained disseminated pyrite and/or pyrrhotite in amounts varying from 1 to 10 per cent. No copper-zinc sulphide associations were observed in those areas to date. Anomalies 15 and 13 are entirely underlain by sedimentary rocks. In both cases highly graphitic shales and/or thin graphite bands are the cause of the conductivity.

The E.M. airborne survey was highly sensitive with respect to graphite. It is believed that a near surface massive sulphide body would have been detected with equal effectiveness.

3.4
GEOCHEMISTRY

3.41 SOIL GEOCHEMISTRY

The general scarcity of outcrop exposure made the accumulation of geological data difficult in many areas. However, overburden is generally thin ($<$10 feet in thickness) within the survey area and soil profiles are well developed. Soil geochemistry was therefore a useful and reliable indicator or metal ion concentration in the underlying bedrock.

Eight (8) of the twelve (12) anomaly areas investigated for copper, zinc and silver concentrations in the soil yielded similar results indicating background values for the three ions. Anomalous copper and coincident weakly anomalous silver values were detected in the following four (4) anomaly areas: 4, 12, 6 and 17. The persistently low concentrations in zinc in these four areas may be attributed to the high mobility of zinc. However, our field observations tend to support cupriferous pyrite and pyrrhotite as a source for the copper; the general lack of copper and zinc sulphides in the favourable volcanic horizons is notorious.

However, significant copper-(zinc) showings were discovered during the present program on the Ruth claims. These showings coincide with extensive soil copper-zinc silver anomalies detected by Kennco in 1974. Indications that there, the mineralization may be fault related is encouraging when considering that copper soil anomalies in anomaly areas 6 and 12 possibly occur along fault zones.

3.42 ROCK GEOCHEMISTRY

Sixty-five (65) rock grab samples collected from gossaneous dacitic and rhyolitic horizons, at various localities within the survey area, were geochemically analysed for copper, lead, zinc and silver. Five (5) samples showed weakly anomalous copper values ranging between 100 and 200 ppm. Fourteen (14) zinc values exceed 100 ppm; but only two (2) are greater than 400 ppm. There is no correlation between zinc and copper. Lead and silver show little variation and are not anomalous in any of the samples. Most of the lead values are lower than 10 ppm.

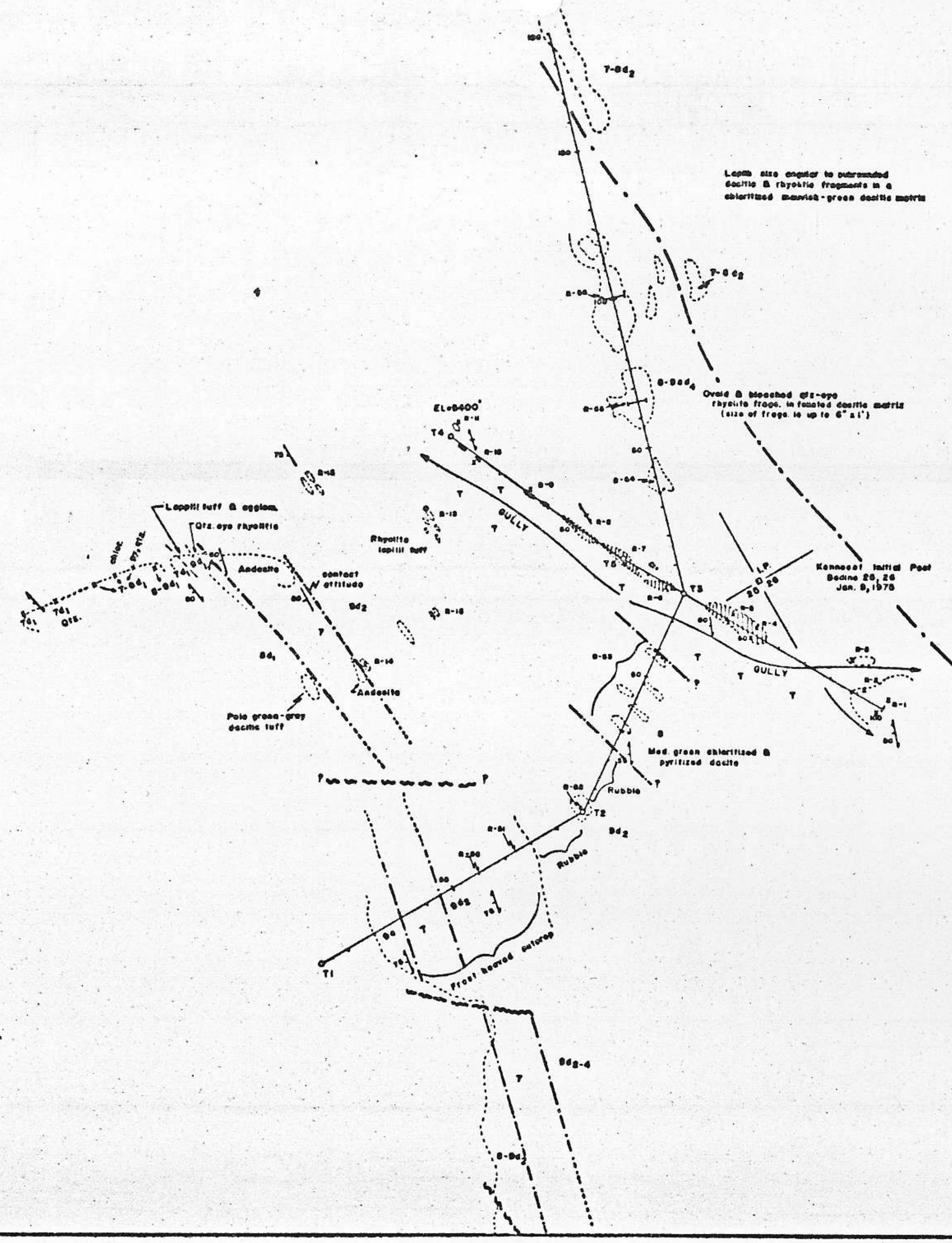
Rock chip sampling of the pyritized quartz-sericite schist zones was conducted on three separate ridges in the vicinity of Mount Olson* in the northern portion of the survey area, and at two localities on the Ruth claims (Mt. Bodine area) in the southern portion of the survey area. Geochemical returns (Cu,Zn,Ag and Mo in some cases) were negative except at two localities on the Ruth claims in the vicinity of the quartz-eye sericite schist (Fig. 8) and within the area of the "Eureka showing (Fig. 9) where weak kicks in silver were recorded. The remarkedly low copper-zinc values obtained over all of these zones is believed to be due to the extreme mobility of these two elements in zones of strong weathering and oxidation.

Recent ferruginate sediments formed through the leaching of Fe rich horizons in the volcanics by ground water circulation and surface run off, and commonly capping or deposited downhill from nearby gossans, are indications of the strong acidity of the environment. In those areas, stream sediment sampling and soil sampling were better indicators of the presence of copper-zinc mineralization. This is well illustrated on Fig. 9 in the vicinity of the Eureka showing.

* Fig. 7 in pocket.

ROCK GEOCHEMICAL ANALYSES (grab samples)

FIELD SAMPLE No.	PPM Cu	PPM Zn	PPM Ag
R-1	6	425	0.1
R-2	16	600	0.2
R-3	8	345	0.1
R-4	6	350	0.2
R-5	12	615	0.1
R-6	12	815	0.1
R-7	4	235	0.1
R-8	4	168	0.1
R-9	4	425	0.1
R-10	30	1100	0.1
R-11	2	150	0.1
R-12	2	280	0.1
R-13	6	205	0.4
R-14	4	38	1.2
R-15	4	200	0.6
R-50	4	144	0.6
R-51	8	138	0.4
R-52	8	148	0.1
R-53	12	510	0.2
R-54	6	410	0.1
R-55	6	325	0.2
R-56	6	365	0.2



LEGEND

- 6 BASALT
- 7 ANDESITE
- 8 DACITE
- 9 RHYOLITE
- a Porphyritic
- d_1 Tuff
- d_2 Lapilli tuff
- d_3 Tuff Breccia
- d_4 Agglomerate
- T TALUS
- Sericitized zone

0 40 80 metres

PROJECT No. 10043

McINTYRE MINES LTD

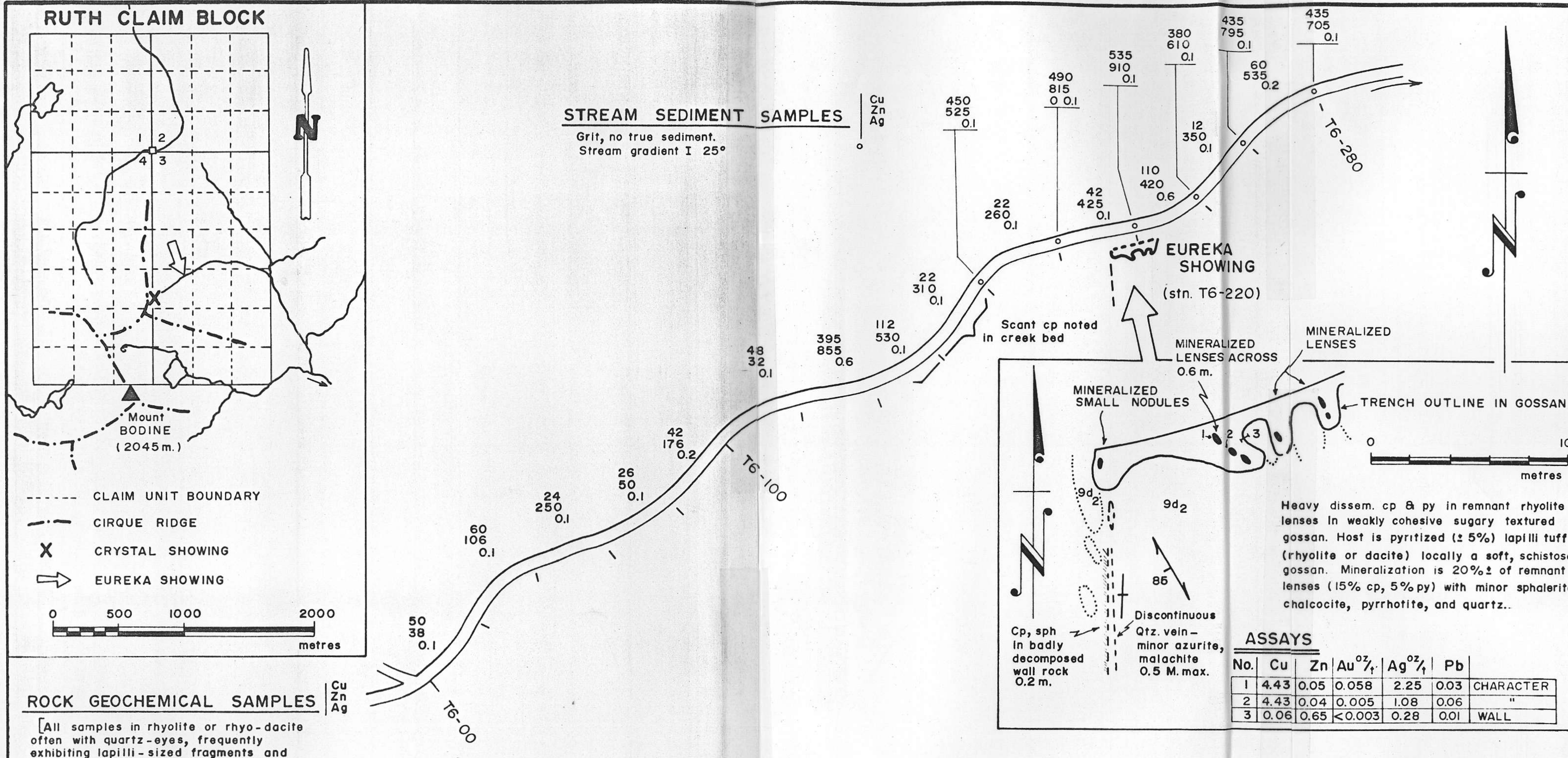
RUTH No. 3 CLAIM –

Qtz. sericite schist — pyritized Main showing

R. BEATON, D. FRANCOEUR | SEPT 1977

R.B./D.F./ | 93-N-12 W

Fig. 8



ASSAYS

No.	Cu	Zn	Au oz/t	Ag oz/t	Pb	
1	4.43	0.05	0.058	2.25	0.03	CHARACTER
2	4.43	0.04	0.005	1.08	0.06	"
3	0.06	0.65	<0.003	0.28	0.01	WALL

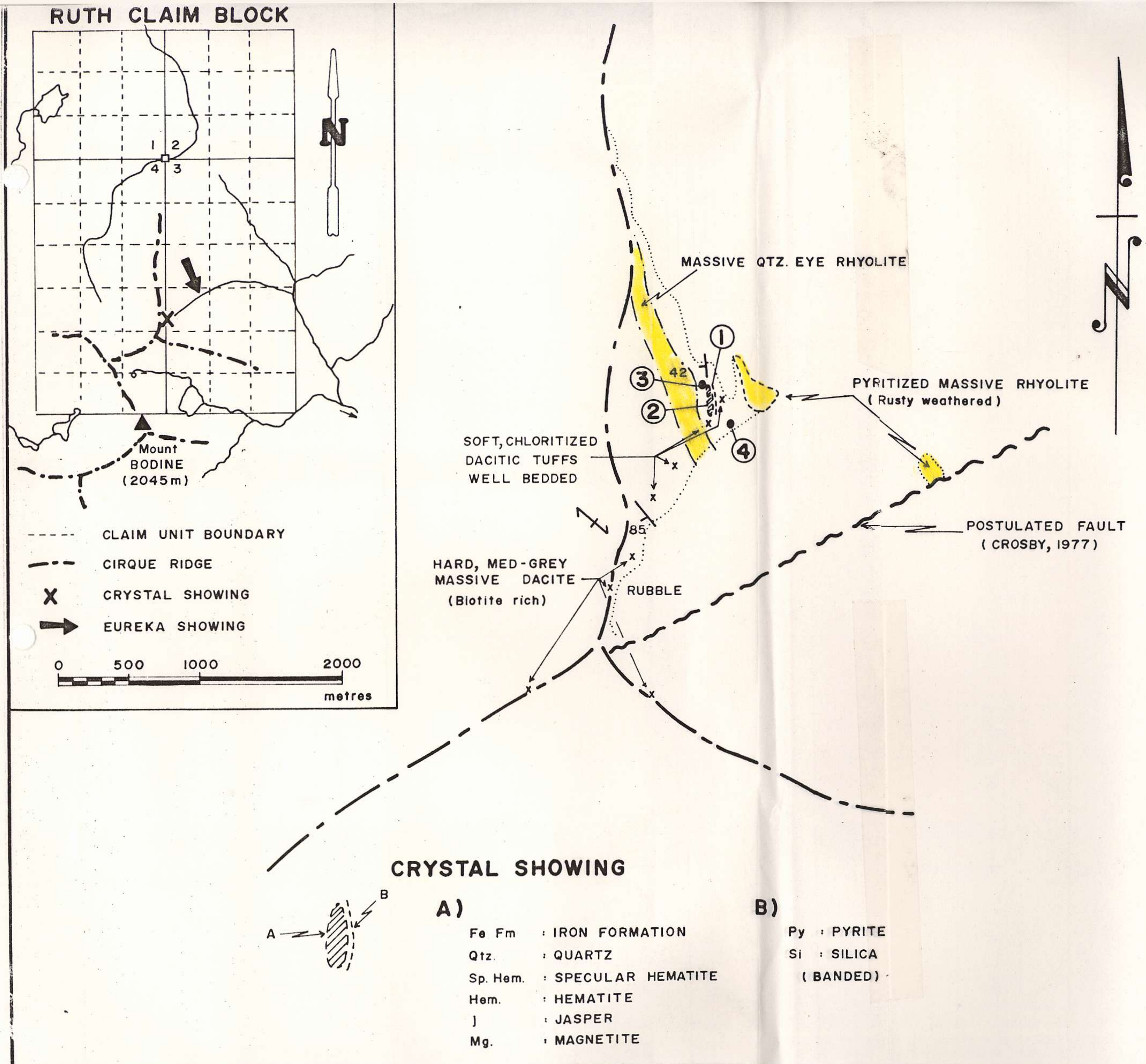
McINTYRE MINES LTD

EUREKA SHOWING

PROJECT NO. 10043

WORK BY: R. BEATON	DATE: NOV. 7, 1977
DRAWN BY: R. T. Falck	NTS: 93-N-12 W

Fig. 9



No.	ROCK TYPE	Cu %	Zn %	Au oz/t	Ag oz/t
		ROCK ASSAY			
①	BANDED SULPHIDES (pyrite & silica)	<0.01	0.01	<0.003	0.16
②	Si - Rich Fe Fm	0.04	0.02	<0.003	0.08
		ROCK GEOCHEM (PPM)			
③	CHLORITE SCHIST	2	245		0.1
④	CHLORITIZED GREEN STONE WITH DISS. PYRRHO.	42	60		0.1

Fig. 10

McINTYRE MINES LTD

CRYSTAL SHOWING GEOLOGY

PROJECT NO. 10043

WORK BY: D. FRANCOEUR	DATE: NOV. 15, 1977
DRAWN BY: T. Falck	NTS: 93 - N - 12 W

3.5
NEW SHOWINGS ON THE RUTH CLAIMS

Two new showings have recently been discovered on the Ruth claims.

Crystal Showing: (Fig. 10)

The Crystal Showing occurs in the east central part of the claim block in a sequence of dacitic tuffs underlying a rhyolite horizon. A four inch thick banded pyrite-silica horizon occurs along the footwall of an iron formation consisting of silica, jasper, hematite, magnetite and specular hematite. The iron formation occurs as a lens, 18 metres long and has a maximum thickness of 2 metres. Banding is not well developed. Irregular coarsely crystalline and vuggy quartz veins cut the surrounding rocks and carry specular hematite aggregates. The name of the showing was derived from detached large and well developed quartz crystals found in the talus just below the showing.

Eureka Showing: (Fig. 9)

The Eureka showing also occurs in the east central part of the claim block, approximately 800 metres east of the Crystal showing.

Two (2) north-south trending chalcopyrite-quartz veins were uncovered along the steep banks of a creek. The veins are lens-shaped and vary in thickness from 4 inches to 2 feet. Copper sulphides are disseminated throughout the veins in amounts varying from 5 to 20 per cent. Rock assays on samples from the mineralized lenses gave 4.45% Cu, up to 2.25 oz/ton Ag and traces of Zn and Au. One assay on a sample from the wall rock (rhyodacite) indicated 0.65% Zn, 0.28 oz/ton Ag and a trace of Cu.

The possiblity that the quartz-chalcopyrite veins constitute feeder zones to a potentially more important sulphide mass must not be discarded. The occurrence of banded iron sulphides associated with iron oxides at the Crystal Showing, approximately 800 metres to the west, is evidence of exhalitive oxide and sulphide facies. Fault controls must also be considered since the two showings discussed above occur adjacent to the same fracture zone. The break is one of the many northeast trending cross faults recognized in the Sitlika Assemblage.

Because found very late during the field season, the showing has received a minimum amount of work. This mineralization is taken to be a source for the silt and extensive soil copper-zinc anomalies detected by "Kennco" in 1974. Silt sampling by McIntyre in 1976 had confirmed high copper-zinc concentrations in the downstream sediments. This area should definitely be followed by a program of detailed soil sampling, ground magnetometer and geological mapping and prospecting.

CONCLUSION

The airborne electromagnetic survey was highly sensitive with respect to graphite and graphitic argillite believed to be the cause of most A.E.M. conductors within the Sitlika Assemblage. It is believed that a near surface massive sulphide body would have been detected with equal effectiveness.

The general lack of copper-zinc sulphides in the favourable volcanic horizons of the Sitlika Assemblage is notorious. The Mount Bodine area is perhaps unique in that respect and escapes this conclusion. The ground now covered by the Ruth claims, located on the east flank of Mount Bodine, was isolated as anomalous in copper and zinc by the regional stream sediment surveys of Kennco in 1974 and McIntyre in 1976. Prior to the staking of the ground by McIntyre in September 1975, Kennco had outlined an extensive copper - zinc anomaly in the soil at a break in slope below a sequence of gossaneous felsic pyroclastics. Because of a failure to outline significant mineralization in outcrop, the anomaly was attributed to downslope accumulation of metal ions leached from high metal background volcanics. The localization of quartz-chalcopyrite veins containing up to 4.5% copper and up to 2.08 oz/ton silver and of minor zinc in the wall rocks in the vicinity of Kennco's anomaly in the soil is of great significance. This area is given a high priority and should definitely be followed up before the expiry date of the Ruth claims in September 1980. A program of detailed soil geochemistry, ground magnetometer and prospecting is recommended for this area. Investigations of anomalies 4, 6, and of area "porphyry west" would be completed in conjunction with this work. The corresponding costs for this work are given in Appendix IV.

Other mineral possibilities for this area and its immediate vicinity include 1) mercury as cinnabar in carbonated serpentinites along the Pinchi Fault zone; 2) nephirite jade in the ultramafic rocks in contact with granitic intrusions, in the Axelgold Range and in the Vital Mountains. Nephrite jade is currently being mined in the Mount Ogden area; and 3) gold. Placer gold production occurred intermittently in the Stuart Lake belt of Cach Creek rocks between 1869 and the 1950's (Paterson 1974). Possibility of lode gold deposits is suggested by the abundance of quartz veins found both within the Cache Creek and Sitlika Assemblages.

McINTYRE MINES LTD.

Denis Francoeur

D.Francoeur, M. Sc.
Project Geologist

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N.B.

Special thanks to R.H. Beaton for his assistance and cooperation during the length of the Project.

APPENDIX I

EVALUATION OF THE SEVENTEEN (17) ANOMALY AREAS SELECTED FOR GROUND FOLLOW-UP WORK

AREA PORPHYRY WEST

Minor chalcopyrite was found in a pyrrhotitized dacitic outcrop exposed at the base of a fallen tree near the western margin of the quartz-feldspar porphyry intrusive located west of Diver Lake. This area, referred to as area "Porphyry West" on map No. 5 in pocket, is almost entirely overburdened. One soil geochemistry line tested the immediate area (Fig. 11). Geochemical returns were weak. However, this area merits more attention. Should a McIntyre Crew return to the Takla area, a proper grid should be cut centered on the mineralized outcrop and the area should be evaluated geochemically. A ground magnetometer survey is also recommended.

D. Francoeur

ANOMALY 1 (Fig. 11)

Definition:

An extensive north-trending zone extending from the southern edge of the survey area for a distance of more than 10 miles. The zone is characterized by two narrow and strong conductors.

Discussion:

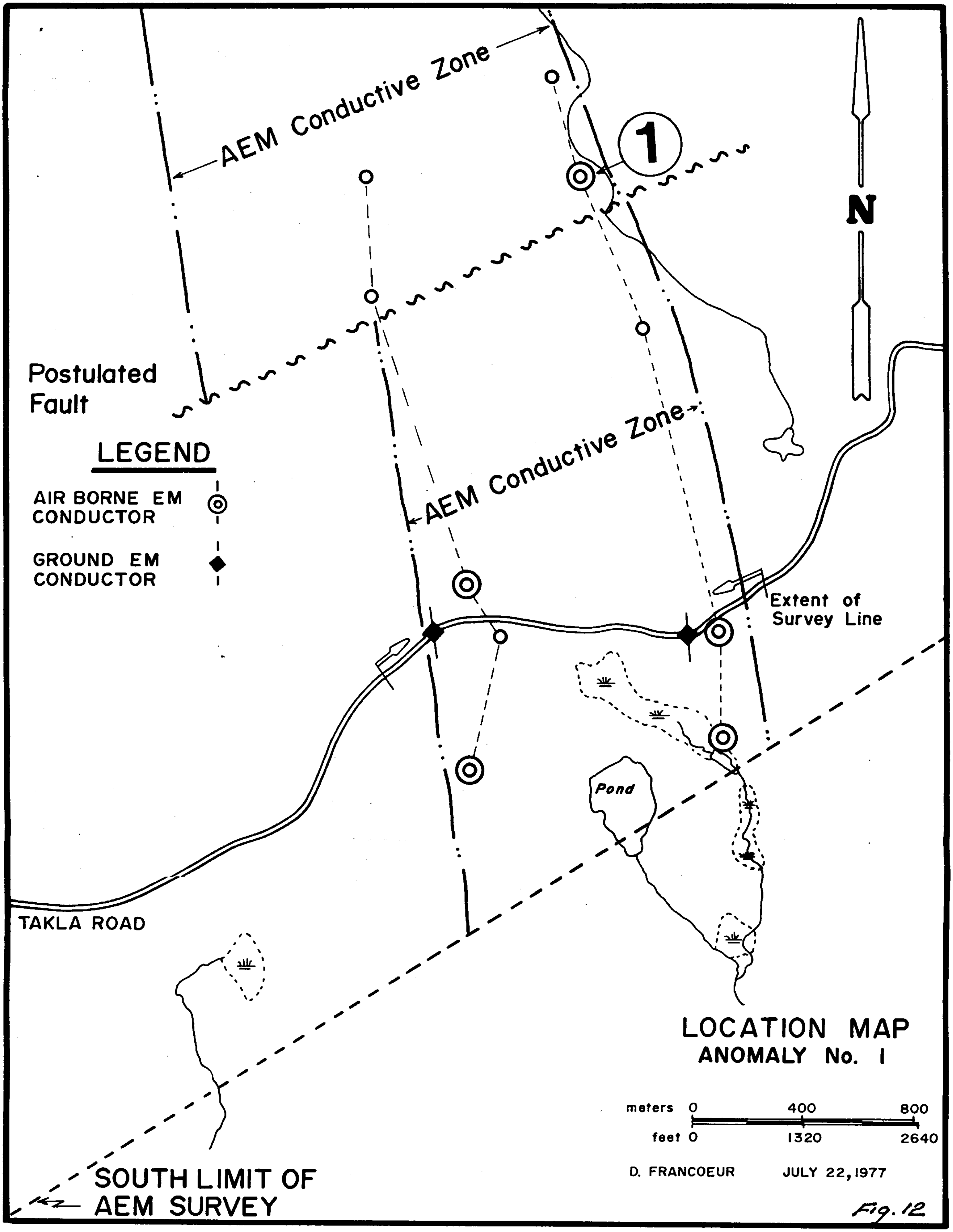
The area of the selected E.M. intercept is believed to be underlain by sediments. A traverse through the area did not locate any exposures. A Highly calcareous sediment (No. 1 - 3026) was found as "float" in the stream near the main intercept and contained 5% pyrite.

Five silt samples taken in the stream bed gave negative results.

The first two days of ground geophysics were conducted along the Takla Road, 4 Km east of Takla Landing and successfully outlined the two main conductors 1.6 Km to the south of the selected peak (Fig. 13 and 14). Because of the lack of rock exposure, the conductivity remains unexplained. However, Anomaly No. 1 is believed to be underlain by an area of contact between sedimentary and volcanic rocks.

Anomaly No. 1 is a low priority area. No further work is recommended.

W. Thorpe & D. Fancoeur


AEM Conductive Zone
1
N
Postulated
Fault
LEGEND
AIR BORNE EM
CONDUCTOR
GROUND EM
CONDUCTOR
AEM Conductive Zone
Extent of
Survey Line
Pond
TAKLA ROAD
LOCATION MAP
ANOMALY No. 1
meters 0 400 800
feet 0 1320 2640
D. FRANCOEUR JULY 22, 1977
SOUTH LIMIT OF
AEM SURVEY
Fig. 12

ANOMALY 2

Location:

Two conductors in a small zone about 1 kilometre southeast of the cairn on Redslide Peak.

Access:

Helicopter to immediate vicinity.

Airborne E.M.:

The better of the two conductors has an in-phase amplitude of 6, an in-phase to out-phase ratio of 47, and no magnetic expression. The two were selected on the basis of being isolated and of probably lying within volcanic terrain.

Geology:

Examination of outcroppings exposed on the cirque rim 100 to 200 metres to the north of the better anomaly showed the underlying rocks to be andesitic to basaltic tuffs with in one place, a thin rhyolite zone carrying the usual 5% more or less of pyrite. Projection of this zone along strike would place it close to the anomaly. Just east of the rhyolite outcropping and almost due north of the conductor is a gossanous zone of considerable size including two small intrusive bodes (diorite, felsite), probably dykes or sills, whose attitudes were not readily apparent. A pronounced true gossan of 2 to 3 metres thickness trending northerly and consisting of porous ferruginous materal locally sooty black in color (manganese?) was also noted. No copper or other mineralization was noted other than pyritization in the rusty zones, nor was graphite in evidence.

ANOMALY 2

Location:

Two conductors in a small zone about 1 kilometre southeast of the cairn on Redslide Peak.

Access:

Helicopter to immediate vicinity.

Airborne E.M.:

The better of the two conductors has an in-phase amplitude of 6, an in-phase to out-phase ratio of 47, and no magnetic expression. The two were selected on the basis of being isolated and of probably lying within volcanic terrain.

Geology:

Examination of outcroppings exposed on the cirque rim 100 to 200 metres to the north of the better anomaly showed the underlying rocks to be andesitic to basaltic tuffs with in one place, a thin rhyolite zone carrying the usual 5% more or less of pyrite. Projection of this zone along strike would place it close to the anomaly. Just east of the rhyolite outcropping and almost due north of the conductor is a gossanous zone of considerable size including two small intrusive bodes (diorite, felsite), probably dykes or sills, whose attitudes were not readily apparent. A pronounced true gossan of 2 to 3 metres thickness trending northerly and consisting of porous ferruginous materal locally sooty black in color (manganese?) was also noted. No copper or other mineralization was noted other than pyritization in the rusty zones, nor was graphite in evidence.

Conclusions:

The considerable extent of rusty (hydrothermal?) pyritization along the cirque rim and the presence of small intrusive bodes renders the anomalies of more interest than many other conductors selected for follow-up work. Examination of the outcrops late in the program precluded normal grid evaluation; but such might be considered should further work be contemplated in the area. Due to shallow overburden, geochemistry might be most useful.

R.H. Beaton

ANOMALY 3

Location:

In a zone between 1 and 3 kilometres north of Redslide Peak.

Access:

Helicopter to valley swamps or alpine meadows.

Airborne E.M.:

The four conductors within the zone are individually isolated, and were selected as probably lying in the volcanics. The most northerly (and prominent) gave an in-phase amplitude of 4, and in-phase to out-phase ratio of 1, and a magnetic response of 200 gammas or more. Grouping of the conductors was for reason of convenient reference rather than geologic correlation.

Geology:

All conductors were found to occur within volcanic rocks as suspected. The most northerly was not prospected; however examination of rocks on the ridge crest 1 kilometre to the north revealed occasional thin argillic horizons, some with graphite within andesitic fragmentals. Alternately, a prominent north-easterly trending fault (as indicated by offsets in airborne magnetic and E.M. trends) lies directly over, or shortly to the north of, the two most northerly conductors.

The easterly conductor in the zone was found to be under overburden. Rocks in the vicinity were found to be andesitic to basaltic volcanics.

The southerly conductor is attributed to a graphitic argillite horizon lying in thinly bedded dacites exposed in a slide area on the north flank of Redslide Peak. The outcrops are on strike directly in line with the mapped position of the conductor. No copper or zinc mineralization was found.

Conclusions:

None of the individual conductors within the zone designated as anomaly three (3) were subjected to follow-up (grid) work. Time limitation prevented such examination, but preliminary inspection of two of them has shown no evidence of economic mineralization.

R.H. Beaton

ANOMALY 4 (Figs. 15-18)

Definition:

An isolated E.M. intercept with magnetic coincidence located east of a broad conductive zone.

Discussion:

Geology. A northwest trending and steeply dipping zone of graphitic argillite, of pyrrhotitized dacitic rocks and of pyritized strongly sheared and altered quartz-sericite schist underlies the anomaly area. This zone, inferred to be 200 metres wide, is flanked both to the east and to the west by foliated and chloritized dacitic lapilli tuffs. The quartz-sericite schist is exposed over a width of 33 metres along the eastern margin of the 200 metre wide zone. The rock is similar to the Mount Olson and Mount Bodine quartz-sericite schist, but lacks the strong sericitization and bleaching of the latter rocks.

Nine thousand metres of grid lines have been cut, to date, and surveyed by ground E.M., magnetometer and soil geochemistry.

Soil Geochemistry. Extensive copper anomalies trending north-northwest have been outlined across the entire grid. Copper values do not exceed 800 ppm. Zinc and silver values increase weakly in coincidence with copper. Soil copper anomalies are stronger upslope toward the north. The shape of the anomalies coincide with the drainage pattern strongly suggesting that the anomalies are transported anomalies if not hydromorphic in origin.

Ground Geophysics. Ground E.M. and ground magnetic anomalies (Fig. 15 and 18) are coincident and have their source in a common rock type (i.e., graphite in argillite and fine-grained disseminated magnetite in argillite), but do not correlate with the soil geochem anomalies. (Fig. 17)

This area remains a high priority target for follow-up work. Further prospecting should be carried out and soil geochemistry should be extended to the overburdened ridge tops to the north.

D. Francoeur

ANOMALY 5

Definition:

Anomaly 5 is a cluster of airborne E.M. intercepts defining a number of northwest-trending conductors on a series of ridges referred to as the "highland area".

Discussion:

The conductivity is attributed to thin graphitic bands and graphitic argillite-chert layers interbanded with sericitized and pyritized rusty-weathered rhyolite zones ranging from less than 1 metre to 10 metres in thickness. Surrounding rocks are chloritized meta-andesities.

One anomalous rock geochem sample, collected from a pyritized rhyolite horizon indicated 1040 ppm copper and 6.4 ppm silver. As a follow-up, the flat overburdened areas, hiding the extension of the rhyolite zones on the ridge tops, were soil sampled at three localities (Fig. 19). Soil geochemical returns gave negative results.

No further work is planned for this area.

D. Francoeur

ANOMALY 6

Definition:

A cluster of airborne E.M. intercepts defining two northerly trending conductors in a broader conductive zone. The eastern most conductor has a magnetic correlation.

Discussion:

Outcropping with the area is very poor. One outcrop of dacitic lappilli tuff was encountered on the three thousand (3000) metres of grid lines. Regional geology suggests that the area lies predominantly within conductive sediments (argillites) along the western margin of a northerly trending volcanic belt.

Vertical loop ground E.M. (Fig 20) confirmed the presence of the two conductors detected by the airborne survey. A ground magnetometer survey, conducted over the grid, revealed a 1000-gamma relief mag high in the central portion of the grid (Fig. 23). Soil geochemistry outlined a copper anomaly (with max. values of 800 ppm) at the eastern extremity of the grid (Fig 22). The anomaly is sharply cut off to the north and suggests the presence of a fault.

Ground E.M. is believed to outline argillaceous sediments underlying the western half of the grid. The mag high probably marks the contact between the sediments and the volcanics to the east. The copper geochem anomaly is believed to lie within the volcanics along a northeast-trending fault.

The grid should be extended toward the east and southeast and soil sampled. Trenching would be advisable if results are further encouraging. Logging patches adjacent to the Anomaly 6 area are accessible by road from the Silvican Lumbering camp.

D. Francoeur

ANOMALY 7

Definition:

Three (3) isolated peaks located on the eastern and southeastern flanks of Diver Peak. The three peaks correlate with magnetic anomalies.

Discussion:

> "The two northerly intercept zones were examined carefully to determine, if possible, the cause of the conductivity.
>
> The area is underlain by both rhyolite and andesitic lavas and pyroclastics. However, the andesitic types are much more prevalent. The only sulphide noted was a trace of pyrite.
>
> The only graphite present was seen in a small piece of float made up of graphitic sediments, apparently not indigenous, found near the base of the hill. Traverses over the talus slopes and valley bottom did not add any significant information.
>
> Accepting the fact that rock outcrops and talus are very extensive and should give an explanation of the anomalies, nevertheless it will still be necessary to locate the intercepts exactly before a final examination and recommendation is possible."
> (W. Thorpe, Senior Geologist with McIntyre).

This area is a low priority area. Under the present circumstances, no further work is recommended. However, the area of the southerly intercept has been ignored and should be examined in the field in conjunction with the work to be carried out on the nearby Ruth claims.

D. Francoeur

ANOMALY 8

Definition:

A broad conductive zone with a coincident magnetic anomaly on the foothill west of Diver Peak. The eastern side of the zone has a sharp anomaly selected as a target for follow-up work.

Discussion:

The western half of the grid is underlain by argillite, graphitic in places. Dacitic lapilli tuffs interbanded with minor andesite and argillite underly the eastern portion of the grid (geology by R. Arnold, 1977).

> "A traverse along the creek draining southerly along the western margin of the conductive zone revealed prominent outcrops of andesitic flows and tuffs followed upstream by rhyolite flows and tuffs. The rhyolite weathers to quite a gossaneous appearance but only a trace of pyrite was observed." (W. Thorpe, 1977, McIntyre Geologist).

Three thousand four hundred (3400) metres of grid lines were surveyed with ground E.M., magnetometer and soil geochemistry. Results show features similar to those of Anomaly 6.

A sharp 10,000 gamma mag anomaly (Fig. 27) marks the boundary between the sediments and the volcanics. Immediately adjacent to the mag anomaly, a strong .E.M. response was obtained at station 5.0 West on Line 1.0 North where graphite was noted in argillite.

A weak copper-zinc anomaly Cu: 200 ppm, Ag: 0.8 - 1.0 ppm occurs in the northwest portion of the grid (Fig.26). The significance of the anomaly is not known.

Additional lines of soil geochemistry to trace a possible northerly extension of the geochem anomaly are recommended in conjunction with the work to be carried out on the mineralized portions of the Ruth claims.

D. Francoeur

ANOMALY 9

Location:

Approximately 1/4 mile south of the extreme easterly limit of Diver Lake at elevation of 1000 metres (3280 feet). See photo mosaic sheet No. 6

Access:

Helicopter (pad is at nearest point on lakeshore).

Airborne E.M.:

An isolated conductor with an in-phase amplitude of 18 and an in-phase/out-phase ration of 0.6.

Geology:

A single outcrop in a small creek close to the conductive source revealed a narrow bed of thinly-banded cherty tuff lying within a drab greenish-grey massive horizon of possibly andesitic tuff. Cherty material locally contained 5 - 10% pyrrhotite within a width of not more than a few feet (only 1 contact seen). Attitude of thin banding was 120^{o} azimuth with a dip of 60^{o} NE. A second outcrop 120 metres upstream to the southeast exhibited dacitic to andesitic tuff (crystal?); but without cherty bands. No argillite or graphite was observed.

Ground E.M. (Fig. 28 and 29):

Five lines 900 metres in length and 75 metres separation on 40^{o} azimuth were subjected to ground E.M. observations including "SE 300" vertical loop in-line 'A' configuration procedure. Normal instrument separation was 100 metres except for 50 metres where detailing was performed on line 75 S. On all five lines plotted results provided anomalous values which aligned northerly. A northeast-trending fault is interpreted by R.O. Crosby as following the southeast shore of Diver Lake passing 100 metres or so from the strongest readings.

Soil Geochemistry (Fig 30):

A brief inspection of soil results from the grid showed that backgrounds for copper, zinc and silver were in the order of 20, 60, and 1.15 respectively. Of 136 smaples processed only 8 were weakly anomalous for copper (only two exceeded 100 ppm); only 2 were anomalous for zinc (8 threshold); and 4 were anomalous for silver (15 threshold). Only three samples provided good coincidence for the three elements.

Conclusions:

Almost certainly the ground E.M. follow-up accurately located and defined the airborne E.M. conductor. Nothing has been found to verify the source; but graphite in volcanic sediments is suspected although faulting might be a possible alternative. Negative soil results would seem to preclude economic mineral occurrence.

R.H. Beaton
29/7/77

ANOMALY 10 (Figs 31 - 33)

Definition:

An isolated E.M. intercept correlated with a magnetic anomaly, north of Diver Lake.

Discussion:

The anomaly area is underlain primarily by chloritized meta-andesitic rocks interbedded with narrow gossanous felsic pyroclastic horizons. Quartz-feldspar porphyry dikes intrude the country rocks along northeasterly trends. These dikes may be apophyses of the granitic quartz-feldspar porphyry mass mapped in an area 1.5 Km west-southwest of the present grid. Grey-black finely bedded volcanic-sediments (graphitic in part) occur in limited areas in the central and estern portions of the grid along line .75 North. Approximately 1 Km to the northeast, a coarse mafic agglomerate unit, 20 metres wide and trending north-northwesterly, is flanked on both sides by coarse felsic flow (?) breccias. The latter rock is designated as an agglomerate on the map in pocket. The term agglomerate is used here in a purely descriptive sense meaning a pyroclastic rock with subrounded fragments esceeeding 32 mm in size. The felsic flow breccia is made up of hard massive quartz-eye rhyolite fragments (up to 0.8 metres in length) aligned in the plane of foliation and possibly indicating primary flow structure. The matrix is biotite rich and constitutes less than 10 per cent of the rock. The mafic agglomerate is made up of rounded chloritized mafic volcanic bombs reaching 0.5 metres in diameter. The bombs exhibit vesicular cores and chilled margins. Occasional angular fragments of quartz-eye rhyolite are included in the mafic agglomerate. Coarse angular felsic tuff breccias were also recognized locally.

The amalgamation of lithologies in the anomaly 10 area suggests the proximity to a volcanic center. These rocks do not appear to occur anywhere else in the Sitlika Assemblage.

An extensive gossan in rhyolite lapilli tuffs occurs 400 metres to the west of the present grid. Pyrite and pyrrhotite were the only sulphides recognized.

Ground E.M. successfuly located the airborne E.M. intercept. The cause of the conductivity is attributed to the "graphitic" volcanic sediments directly underlying the anomalous site. Except for one soil sample anomalous in copper (330 ppm), rock and soil geochemical returns negate the potential for mineral occurrence in the areas covered by the 3200 metre grid and the adjacent gossan areas to the west.

D. Francoeur

ANOMALY 11

Location:

Approximately 1.2 kilometres SE of the south tip of Beaverpond Lake of 2.9 kilometres north of the west tip of Diver Lake. Approximate elevation between 1350 and 1400 metres (4400 - 4600 feet).

Access:

Helicopter. (pad is on nose of ridge at elevation of 1435 metres - 4700 feet). Nearest grid line is about 200 metres down slope westerly.

Airborne E.M.:

This group of 4 conductors was selected on the basis of being isolated and having weak coincident magnetics. The selected conductor in the group has an in-phase amplitude of 20 and an in-phase/out-phase ratio of 0.8.

Geology:

Although overburden is shallow (0 - 10 feet) few outcrops were found. A dark green andesite? is well exposed at the NW end of the grid lines. This pulls a hand magnet due to presence of disseminated pyrrhotite. Drab grey-green andesite is exposed on the ridge nose above the grid in the helicopter pad vicinity. A few small scattered dacitic to andesitic outcrops were found within the grid but none at the conductor sites. A small test pit dug directly over a very high magnetic anomaly coincident with a ground E.M. anomaly revealed graphitic argillite in sharp contact with pyrrhotite-bearing dacite or rhyolite (est. sulphide, 5 - 10%, disseminated).

Jointing and schistosity in nearest outcrops were observed to strike in the order of 160^{o} with near vertical dips. The contact between the argillite and dacite-rhyolite in the test pit was perpendicular to this trend indicating offsetting.

Ground E.M. (Fig. 36):

Four 1000-metre lines 75 metres apart with 100-metre station spacing were cut to include the airborne E.M. location. These were laid out on azimuth of 40^{o}. The "SE 300" vertical-loop equipment involving in-line 'A' configuration picked up a good response on Line 0 near station 3.5 west. Weaker response was detected on lines 0.75 N and 0.75 S to the NW and SE respectively.

Ground Magnetics (Fig. 35):

A Sharpe fluxgate magnetometer (MF 1) was employed to detail a small grid (100 metres X 225 metres) laid out over the ground E.M. conductor near line 0. Results of this survey when plotted showed an erratic discontinuous magnetic trend running north-westerly perpendicular to the grid lines. Anomalous highs including readings generally up to 6000 gammas (one exceptionally high at 17,500 gammas) occur along this trend; but do not exhibit appreciable continuity. Widths of from 5 to 20 metres and lengths of 50 to 60 metres appear to be characteristic dimensions. Intervening longitudinal gaps, at least within the area surveyed, were 50 metres or more in extent.

Soil Geochemistry (Fig. 34):

Soil values for copper, zinc and silver were low except for a few small highs in the northeasterly half of the grid. One of these, in the detailed magnetic grid, coincided with the magnetic high mentioned.

The highest value of 540 ppm copper in this high was found not coincident with the highest magnetic value; and was believed related to a very narrow source (sample spacing of only 6 metres gave background values on both sides). The sampling thus confirmed the northwesterly trend of the underlying beds and also their lack of continuity strongly suggestive of faulting. The few highs are thought to originate from pyrite and pyrrhotite in felsitic volcanic horizons underlying shallow overburden.

Conclusions:

Soil values almost certainly negate the grid area with respect to economic mineralization. The small test pit dug at the highest point of magnetism in the detail grid exposed disseminated pyrrhotite in acid volcanics which is probably the source mineral for the few small spotty geochemical highs.

R.H. Beaton

ANOMALY 12

Definition:

The selected Airborne E.M. intercept is part of a broad northerly trending conductive zone. This anomaly was highly rated by the geophysical consultant on the basis of its electromagnetic characteristics.

Discussion:

Outcropping is poor, but traversing indicated that the western and northern portions of the grid are underlain by argillaceous sediments. Andesitic volcanic rocks outcrop at one locality in the remaining portion. Rusty weathered rhyolite floats were also encountered in the west part of the grid.

The grid (7300 metres of lines) was extended twice in order to trace the possible northerly and southerly extensions of a weak copper-silver anomaly (max. Cu: 330 ppm; max. Ag: 3.2 ppm) outlined in the central portion of the grid (Fig.40). The Cu-Ag anomaly is best described as a finger print anomaly coincident with and abruptly terminated at the north end of a sharply ending narrow north trending two thousand (2000) gamma mag high (Fig.41). The sudden break and offset in magnetic pattern is strongly suggestive of faulting. The conductivity outline shown on the E.M. profiles (Fig. 38 and 39) reflects the distribution of the argillaceous sediments and is also suggestive of the apparent lateral offset of a north trending contact between sedimentary and volcanic rocks (see Map No. 5 in pocket).

The significance of the soil geochem anomaly remains enigmatic. The magnetic coincidence and the probably underlying fault are encouraging facts. However, the scarcity of rock exposure in an area hard of access does not justify further work at the present time.

Denis Francoeur

ANOMALY 13

Definition:

A conductive zone in an area of reduced magnetic background.

Discussion:

The area is underlain by black graphitic slates interbedded with minor marble and dacitic tuffs. This zone of conductivite metasedimentary rocks may be fault bounded as suggested by the airborne magnetic and electromagnetic patterns and is shown as such on the geology map (Map No. 5 in pocket). The nature of the geology and the lack of sulphides negated this area.

However, two nearby areas are worth a mention. 1) a complex network of quartz veins is found 500 metres to the north in an area roughly 30 metres X 60 metres with coarse calcite, graphite and ankerite within the argillite immediately to the west of the volcanic contact.

3.5 kilometres to the south past the area of anomaly 13, a zone of conductivity is underlain by similar but more complex and obviously faulted lithologies. Across a width of 25 metres the following rock types were encountered: Highly chloritic and mylonitic (?) andesite, serpentinite, ankerite, and slate with highly graphitic bands. 800 metres farther to the south, the above lithologies are found in association with polymictic conglomerates and maroon shales characteristic of the Jurassic basal units in the Hazelton Group. Ankerite rocks found in this area are laced with barren quartz veins and contain an abundant green flaky mineral identified as mariposite.

These ankerite zones are not believed to be distal exhalites; rather, they flank areas of serpentinite introduced along fault zones, and are believed to be products of the alteration of the country rock further modified by metasomatic addition. Grab samples analysed for gold gave negative results.

D. Francoeur

ANOMALY 14

Definition:

A group of three (3) airborne E.M. intercepts defining a north-trending (?) conductor.

Location:

The conductor lies immediately to the north of the Mount Olson quartz-sericite schist horizons.

Discussions:

Four thousand (4000) metres of lines were surveyed with the vertical loop ground E.M. A fairly broad and high intensity response was obtained on Line 1+100 N (Fig. 42). A four hundred (400) gamma ground magnetic high is coincident with the ground E.M. anomaly (Fig. 44).

Bedrock is not exposed within the grid area; but extrapolation of the geology from the immediate ridge to the south suggests that thin "graphitic" argillite bands interbedded with cherty and pyritized dacitic horizons may be the cause of the conductivity. Airborne Mag - E.M. results suggest that the area is traversed by a major northeast trending fault.

Soil geochemical results obtained over the grid were not encouraging and therefore, no further work is planned.

ANOMALY 15

Definition:

This anomaly is defined by a narrow conductive zone trending north-south and extending for a distance of three (3) miles.

Discussion:

The conductor is coincident with the trace of a major structural lineament (the Takla Fault) and lies at the intersection with a possible east-trending cross fault as suggested by the drainage pattern. Polymictic conglomerates and red shale characteristic of the basal units of the Hazelton Group occur west of the Takla Fault and are in fault contact with graphitic and calcareous phyllitic argillites of the Sitlika (?) Assemblage, to the east. A number of thin graphitic bands (2 - 3" thick) were also noted. The latter rocks underly the southern portion of the conductor and, undoubtedly, are the cause of the conductivity. Marshes cover the northern portion of the conductor. A test ground E.M. line (Fig. 45) across the northern segment of the conductor gave a weak response coincident with a six hundred (600) gamma magnetic high (Fig. 47). Soil geochemical results over the test line were negative (Fig. 46).

A granitic intrusive outcrops for a distance of three quarters of a mile along the river approximately one half mile to the east of the conductive zone. A distinctive chloritic alteration is noted within the volcanics along the western margin of the intrusive.

The only positive observation made to date concerns a strongly altered rhyolite schist horizon along the eastern margin of the instrusive. The rock carries 10 to 15% disseminated Py. A rock geochem grab sample analysed for Cu, Zn, and Ag was slightly anomalous in Cu (480 ppm).

In view of the above results, no further work is planned for this area.

ANOMALY 16 (Figs. 48 - 52)

Definition:

Four (4) airborne E.M. intercepts defining a weak conductor in a broad northerly trending conductive zone.

Discussion:

This area is entirely overburdened and the nature of the terrain is swampy. Outcropping along a creek approximately one half mile to the west indicates that the area is possibly underlain by intermediate to felsic volcanics, and by argillaceous sediments.

Four thousand and two hundred (4200) metres of vertical loop ground E.M. were conducted over the area. A weak response was obtained approximately three hundred (300) metres west of the original grid and is attributed to the underlying argillites.

Soils taken at 25 metre intervals along the grid lines; and run for copper, silver, and zinc; gave little response. A weak copper-silver response (to 150 ppm copper), noted between 2.0 and 3.0 west on line 1.0 south, fingered northwesterly to stations 1.75 W and 3.0 W on line 0 where it terminated. Zinc values remained flat. The response corresponds roughly with slightly low magnetics hence pyrrhotite is not indicated as a source mineral. Terrain was low and swampy with negligible outcrop hence reliability of geochemistry is questionable.

The magnetic survey showed magnetic relief over the grid to be in the order of 600 gammas. Two small highs, one at 300 gammas at stn 7.0 W on line 1.0 N, and the other at 150 gammas at 3.25 W on the same line did not correlate with the weak soil high although the latter may not, as mentioned, be too indicative.

A dacitic float with disseminated Po (2 - 5%) and trace Cpy was found approximately one half mile to the northwest of the present grid. Lack of time did not permit further prospecting in this area. Based on results of grid work, no further work is recommended.

D. Francoeur and R.H. Beaton

ANOMALY 17

Location & Access:

Anomaly 17 is situated just south of Ominicetla Creek and a short distance east of the inferred position of the Takla Fault zone. Helicopters can land along the river flats or in a few small swamps adjacent to the area of interest.

Airborn E.M.:

Anomaly 17 consists of three parallel conductors trending NNW. The three trends with approximately 500 metre separation are undulatory suggesting folding or faulting.

Geology:

Although originally given low priority due to airborne E.M. characteristics, examination on the ground revealed that pyrite-bearing rhyolite is well exposed along a line of SE-trending outcroppings immediately south of the creek flat. The rhyolite was traced south-easterly showing it to be interbedded with andesite horizons, and to exhibit small local offsets. The easterly limit devèloped considerable width before being concealed by swampy ground. Here specular hematite and magnetite were found in two places at the brow of the creek bank.

Immediately to the north across Ominicetla Creek limy argillites, locally graphitic, are well exposed. Since these interrupt the trend; and since they are almost certainly in the Cache Creek assemblage, there is little doubt that a major fault follows Ominicetla Creek valley.

Ground E.M. Survey: (Figs 55, 56)

The SE 300 vertical-loop configuration 'A' technique defined a prominent conductor crossing lines 0 and 1.5 N between stations 5.0 and 6.0 west. This showed fairly strong definition at 100-metre spacing of coils; but weakened considerably at 50-metre and 25-metre spacing suggesting the source to be at some depth.

Ground Magnetic Survey: (Fig. 54)

The magnetics on the grid (three 1000-metre lines at azimuth of 242^{o} and 150-metre separtion plus two discontinuous lines at 2.25 N and 3.0 north run for soils only)have outlined two narrow highs, one at 1000 gammas relief trending northwesterly at stns 8.5 W, the other also at 1000 gammas trending northerly across stn 5.5 W on line 1.5 N. The narrow widths, limited strike length (both appear to terminate within the grid) suggest segments, possibly of rhyolite beds carrying pyrrhotite; the variance in strike suggests faulting and/or folding. These coincide roughly with the two westerly airborne E.M. conductors (the third lies in the argillites north of the creek). The centre high also coincides with a well-defined ground E.M. anomaly; the westerly high has no such coincidence.

Soil Geochemical Survey: (Fig. 53)

Soils run for copper, zinc, and silver at 25 - metre spacing (locally at 17 - metre spacing) picked up two anomalies. The westerly, coinciding with the magnetic high, trends northwesterly as a very narrow zone which terminates abruptly just north of line 1.5 N where it reaches a peak of 375 ppm Copper and 1.6 ppm silver. Zinc remained flat. The easterly at stn 5 W, also in rough agreement with the magnetic high, consists of three very narrow linear trends striking just west of north and very obviously fault truncated.into an overall zone length of about 175 metres. The argument for faulting is strong since, when plotted, the faults fit the magnetic interpretation equally well. Soil values for the two anomalies are similar i.e. moderate to strong copper (max. 630 ppm), weak to moderate silver (max 1.6 ppm), and background for zinc.

Conclusions:

Grid work has substantiated the airborne E.M. anomalies well. The conductors appear to be in fault slices, possibly bedding controlled. The copper and silver anomalous values are thought to originate from pyrite and/or pyrrhotite in rhyodacitic horizons typical of the project area. If this interpretation is valid, further investigation is not warrented or at least should not be of high priority.

APPENDIX II

GEOPHYSICAL AND GEOCHEMICAL MAPS

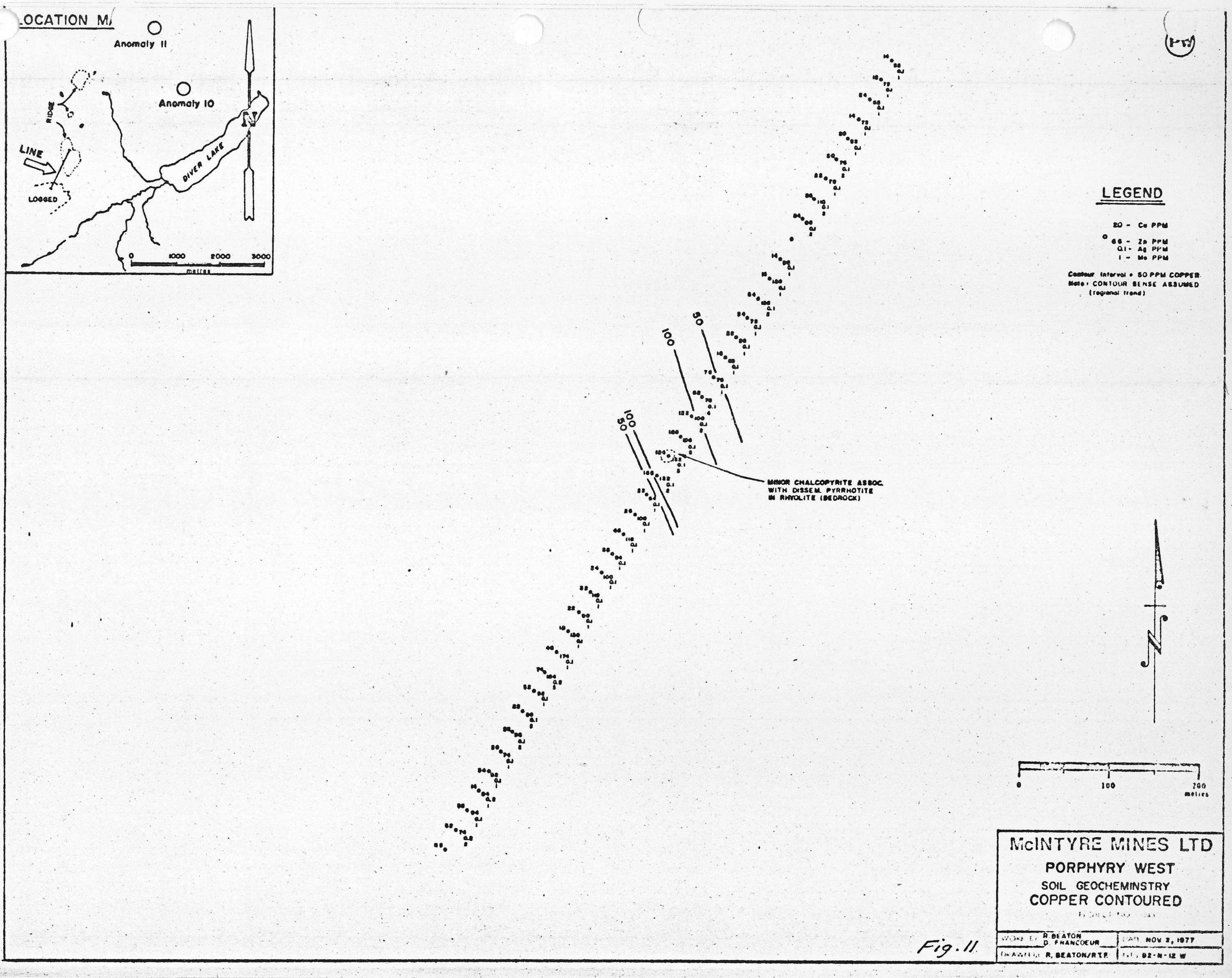
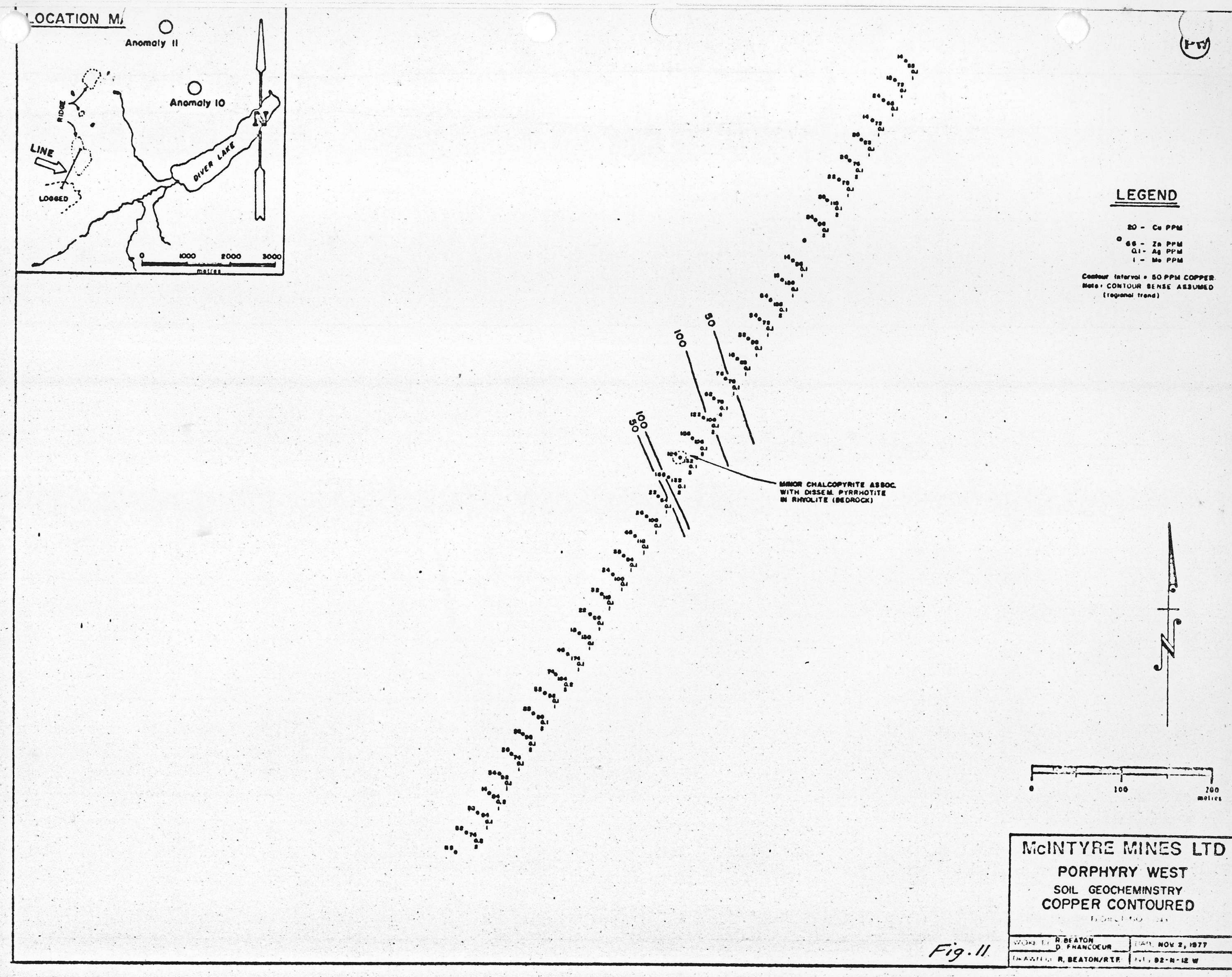

LOCATION MA
Anomaly 11
Anomaly 10
RIDGE
LINE
LOGGED
DIVER LAKE
N
0 1000 2000 3000
metres
100
50
100
50
MINOR CHALCOPYRITE ASSOC. WITH DISSEM. PYRRHOTITE IN RHYOLITE (BEDROCK)
LEGEND
20 - Cu PPM
66 - Zn PPM
0.1 - Ag PPM
1 - Mo PPM
Contour interval = 50 PPM COPPER
Note: CONTOUR SENSE ASSUMED (regional trend)
0 100 200
metres
PW
McINTYRE MINES LTD
PORPHYRY WEST
SOIL GEOCHEMINSTRY
COPPER CONTOURED
WORK BY R. BEATON D. FRANCOEUR
DATE NOV 2, 1977
DRAWN BY R. BEATON/R.T.F.
N.T.S. 92-N-12 W

Fig. 11



LOCATION M
Anomaly 11
Anomaly 10
RIDGE
LINE
LOGGED
DIVER LAKE
0 1000 2000 3000
metres
100
50
100
50
MINOR CHALCOPYRITE ASSOC. WITH DISSEM. PYRRHOTITE IN RHYOLITE (BEDROCK)
LEGEND
20 - Cu PPM
66 - Zn PPM
0.1 - Ag PPM
1 - Mo PPM
Contour Interval = 50 PPM COPPER
Note: CONTOUR SENSE ASSUMED
(regional trend)
0 100 200
metres
McINTYRE MINES LTD
PORPHYRY WEST
SOIL GEOCHEMINSTRY
COPPER CONTOURED
R. BEATON
D. FRANCOEUR
NOV 2, 1977
R. BEATON/R.T.F.
92-N-12 W

Fig. 11

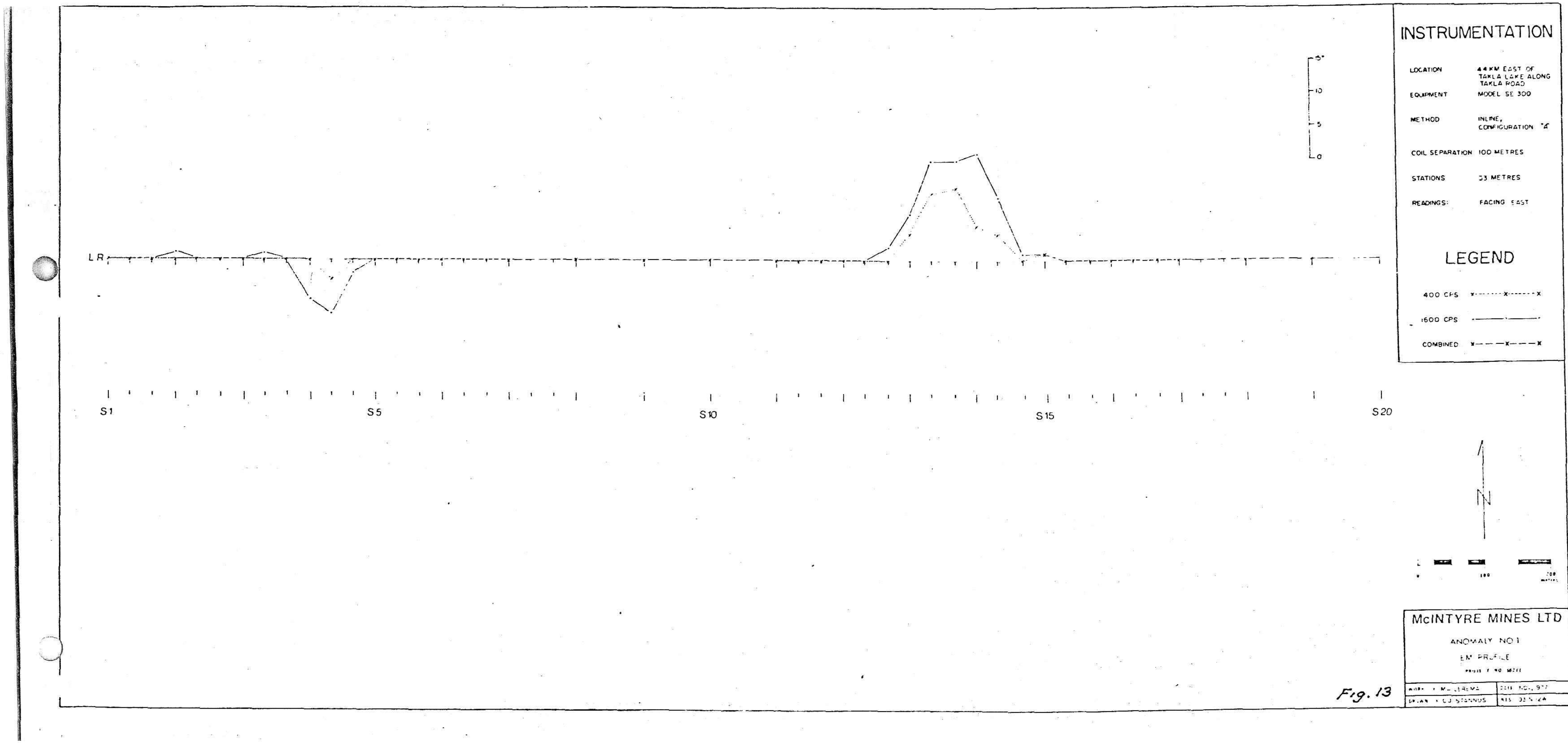
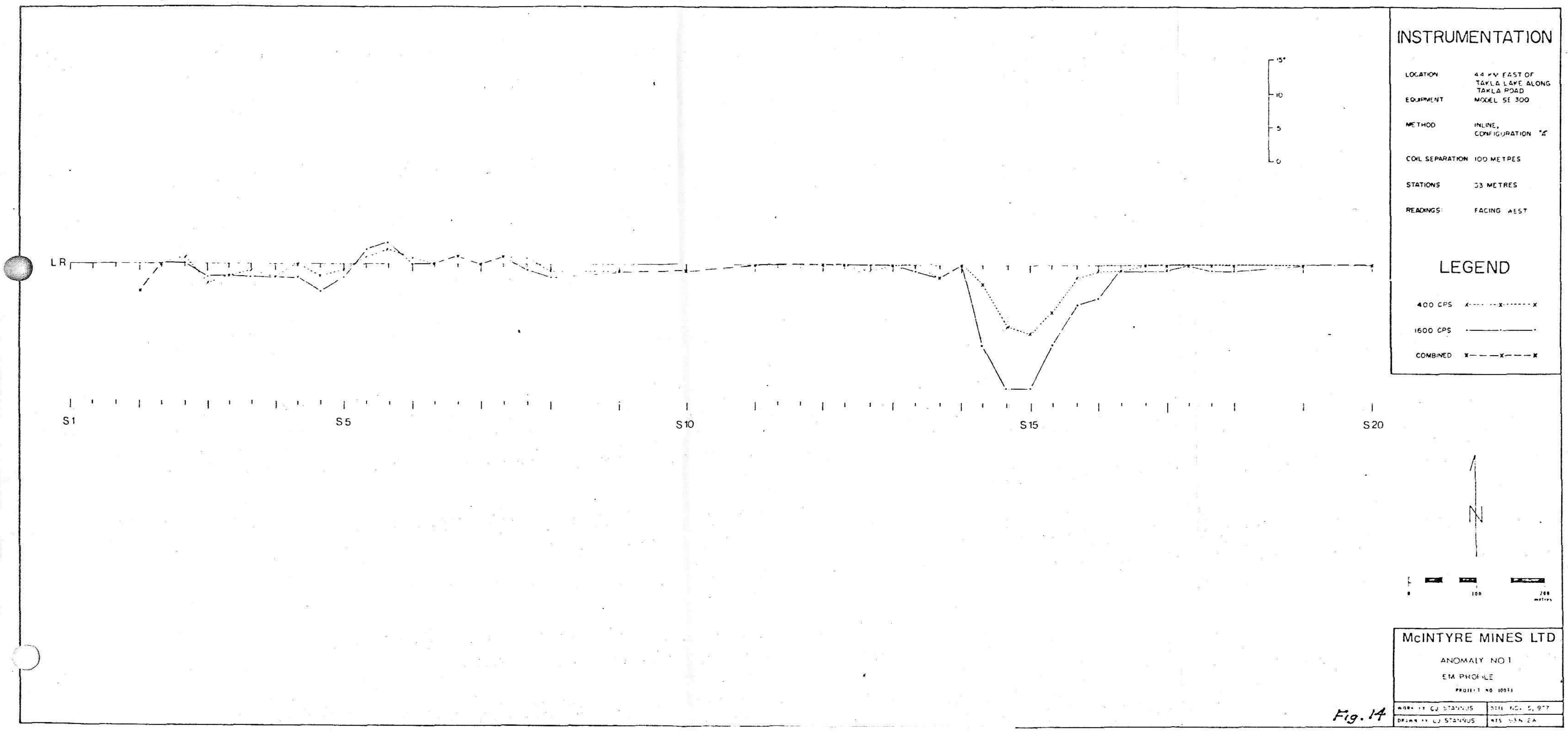
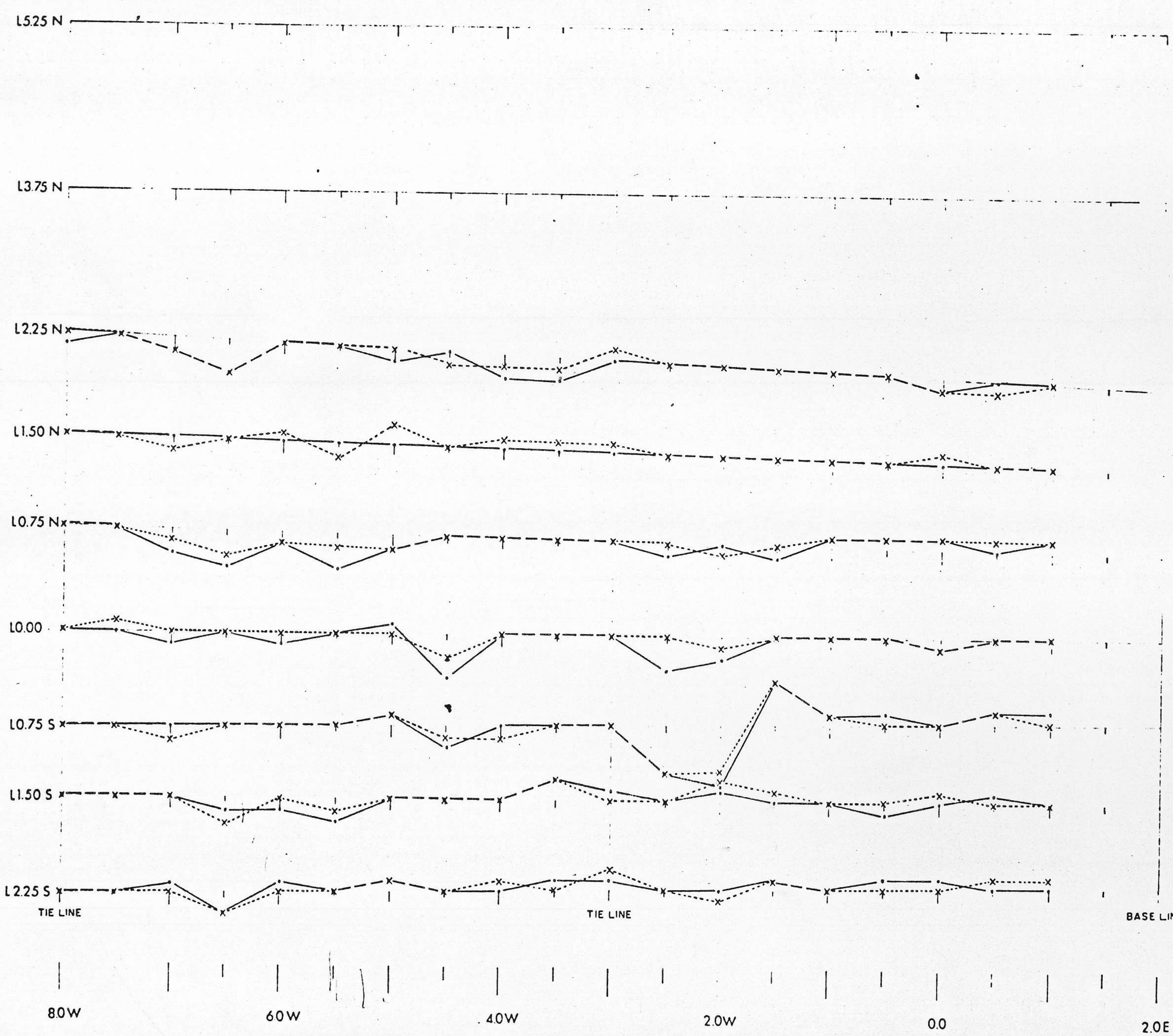

LR
S1
S5
S10
S15
S20
15
10
5
0
INSTRUMENTATION
LOCATION 44 KM EAST OF TAKLA LAKE ALONG TAKLA ROAD
EQUIPMENT MODEL SE 300
METHOD INLINE, CONFIGURATION "A"
COIL SEPARATION 100 METRES
STATIONS 33 METRES
READINGS: FACING EAST
LEGEND
400 CPS
1600 CPS
COMBINED
N
McINTYRE MINES LTD
ANOMALY NO 1
EM PROFILE

Fig. 13



LR
S1
S5
S10
S15
S20
15°
10
5
0
INSTRUMENTATION
LOCATION
44 KM EAST OF TAKLA LAKE ALONG TAKLA ROAD
EQUIPMENT
MODEL SE 300
METHOD
INLINE, CONFIGURATION "A"
COIL SEPARATION
100 METRES
STATIONS
33 METRES
READINGS:
FACING WEST
LEGEND
400 CPS
1600 CPS
COMBINED
N
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO 1
EM PROFILE
DRAWN BY CJ STANNUS

Fig. 14



INSTRUMENTATION

LOCATION:	3.6 KM NORTH OF REDSLIDE PEAK
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	60 METRES
READINGS:	FACING EAST

LEGEND

400 CPS x------x------x

1600 CPS •———•———•

COMBINED x— — —x— — —x

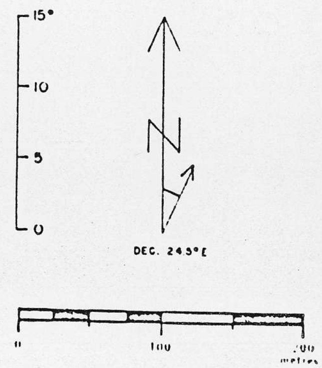


Fig. 15

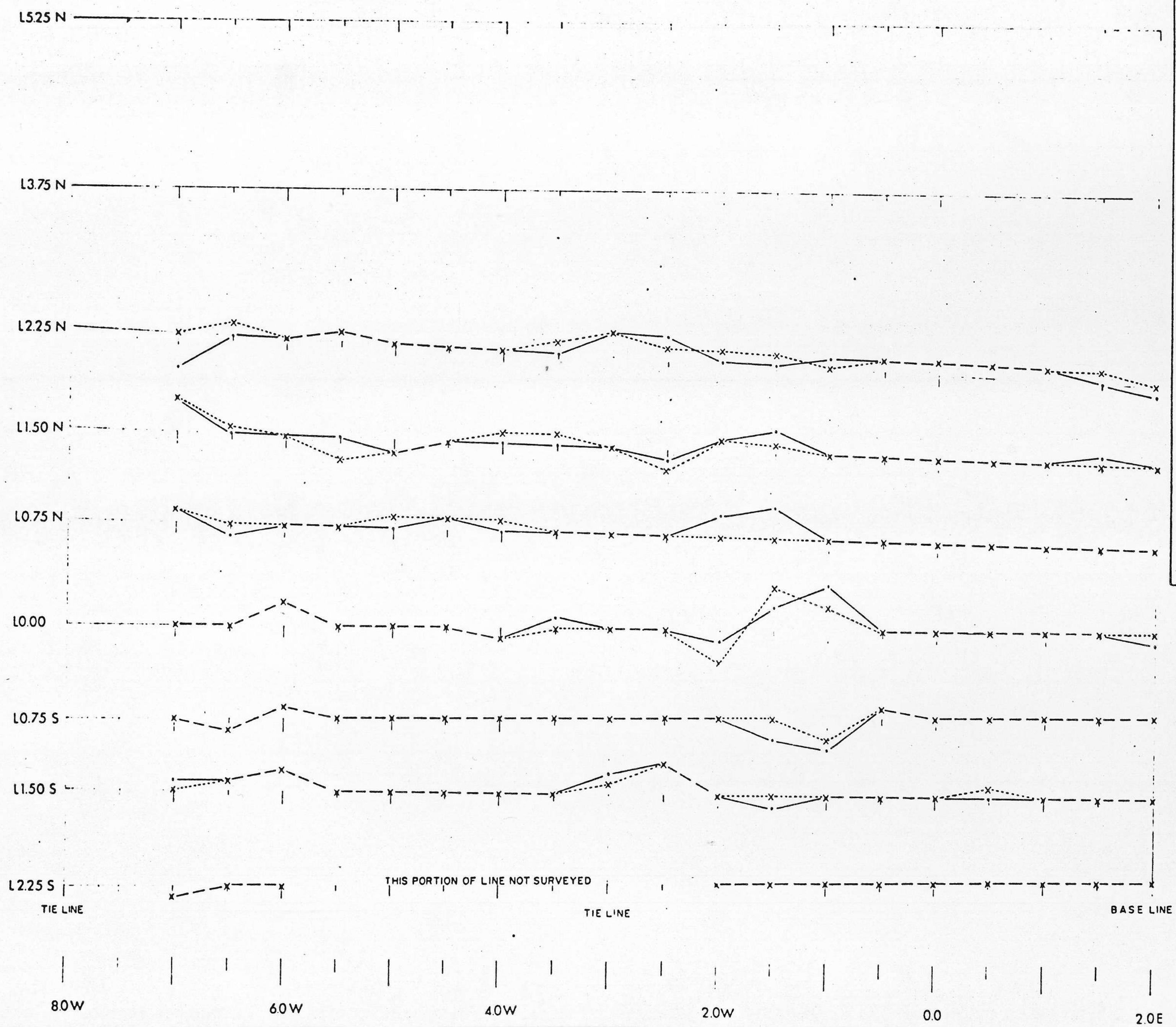
McINTYRE MINES LTD

ANOMALY NO 4

EM PROFILE

PROJECT NO 10043

WORK BY: H M & C S	DATE: NOV 7, 1977
DRAWN BY: C S	NTS: 93 N 12W



INSTRUMENTATION

LOCATION: 36 KM NORTH OF REDSLIDE PEAK

EQUIPMENT: MODEL SE 300

METHOD: INLINE, CONFIGURATION "A"

COIL SEPARATION: 100 METRES

STATIONS: 50 METRES

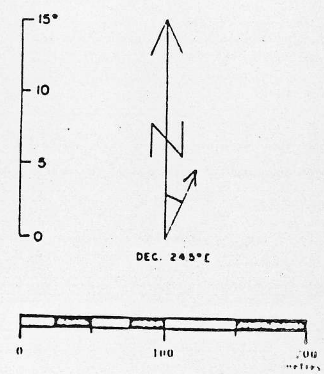
READINGS: FACING WEST

LEGEND

400 CPS x-------x-------x

1600 CPS •————•————•

COMBINED x— — —x— — —x



McINTYRE MINES LTD

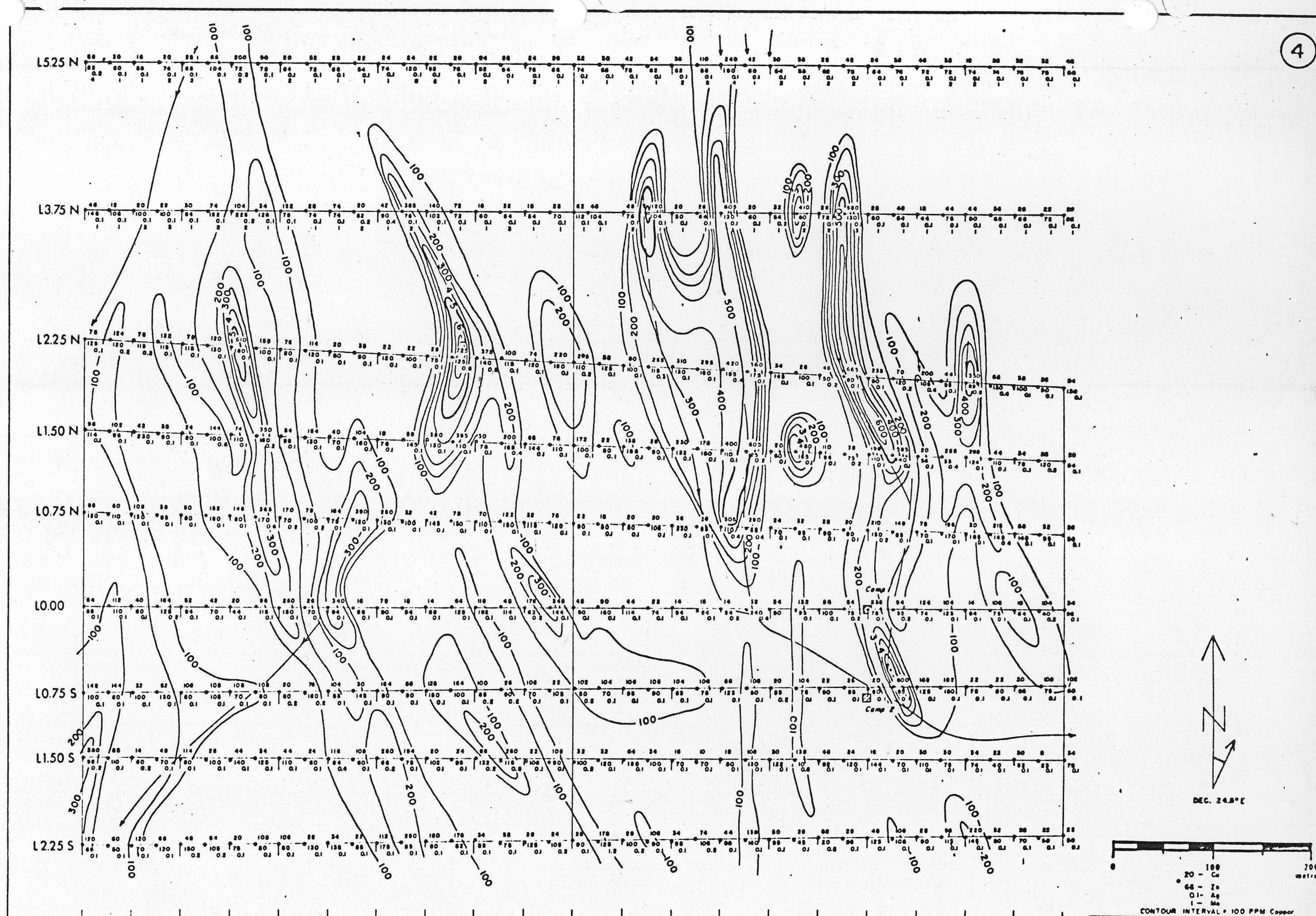
ANOMALY NO 4

EM PROFILE

PROJECT NO. 10043

WORK BY MA JEREMA	DATE NOV 7, 1977
DRAWN BY: CJ STANNUS	NTS: 93 N 12W

Fig. 16

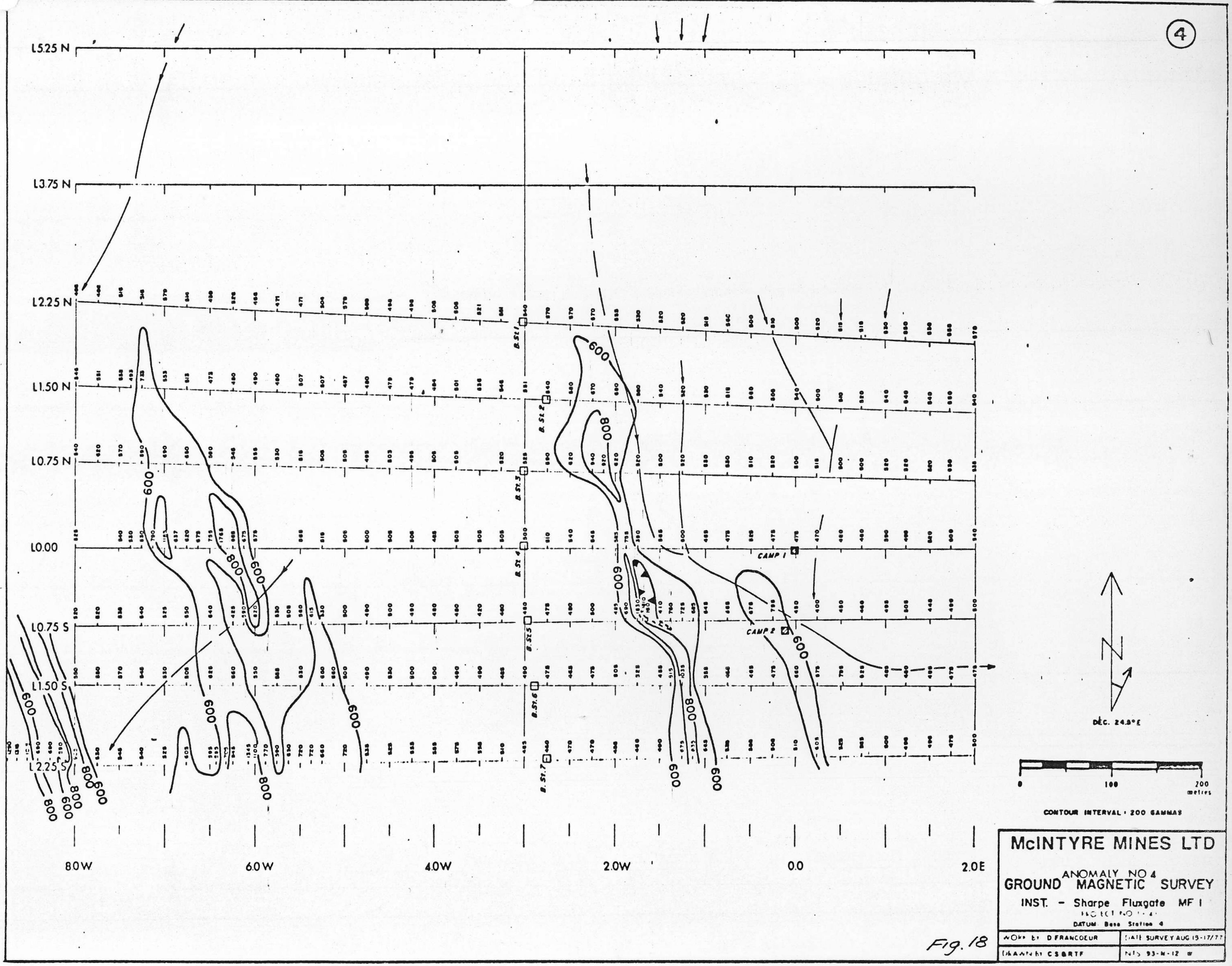


McINTYRE MINES LTD

ANOMALY NO 4
SOIL GEOCHEMISTRY
COPPER PPM
PROJECT NO 1-41

Fig. 17

WORK BY M. JEREMA, C. STANNUS	DATE SEPT 12/77
DRAWN BY R. BEATON/RTF	NTS 93N-12W



4
L5.25 N
L3.75 N
L2.25 N
L1.50 N
L0.75 N
L0.00
L0.75 S
L1.50 S
L2.25 S
80W
6.0W
4.0W
2.0W
0.0
2.0E
CAMP 1
CAMP 2
DEC. 24.5°E
0
100
200
metres
CONTOUR INTERVAL : 200 GAMMAS
McINTYRE MINES LTD
ANOMALY NO 4
GROUND MAGNETIC SURVEY
INST. - Sharpe Fluxgate MF 1
DATUM Base Station 4
WORK BY D FRANCOEUR
DATE SURVEY AUG 15-17/77

Fig. 18

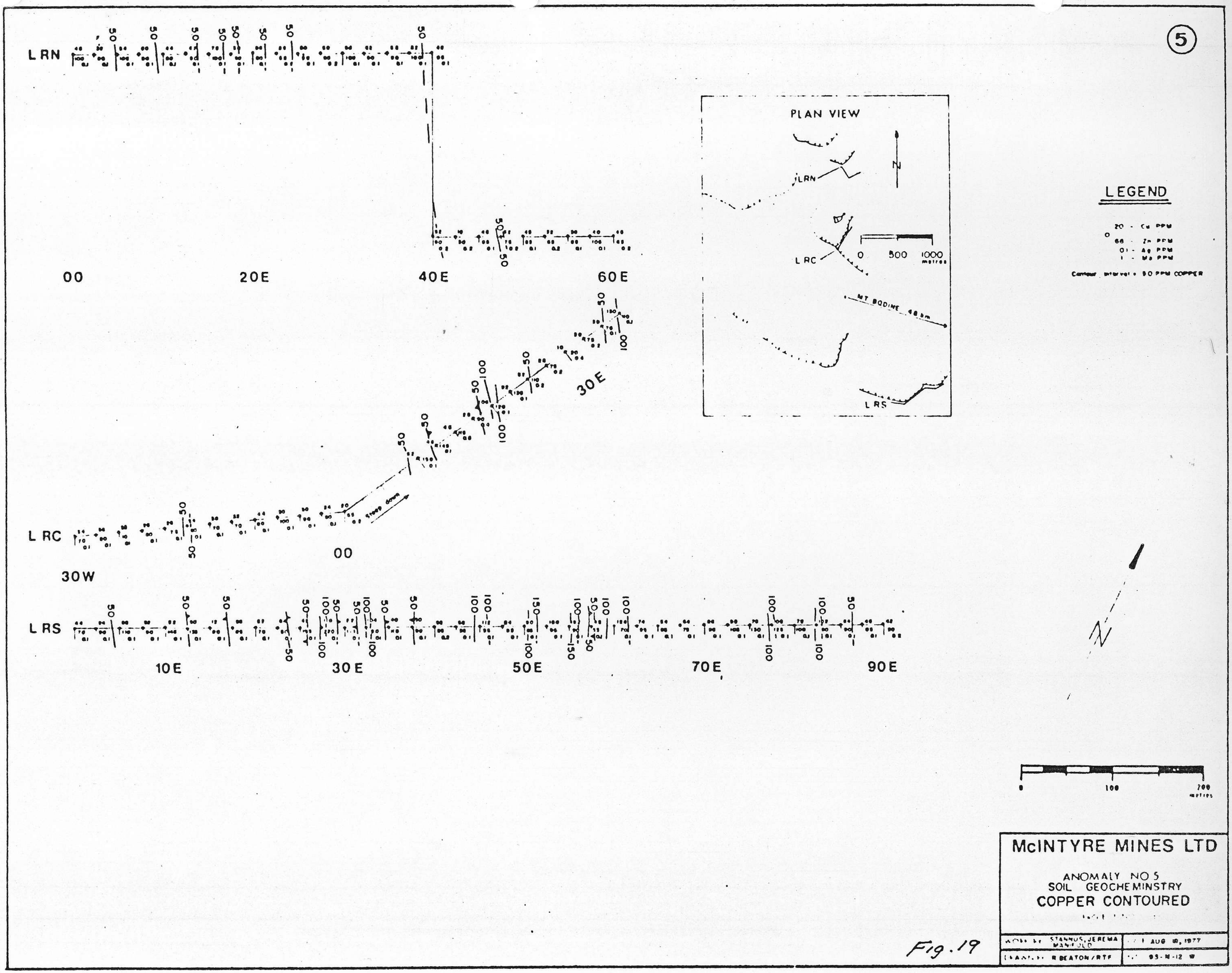
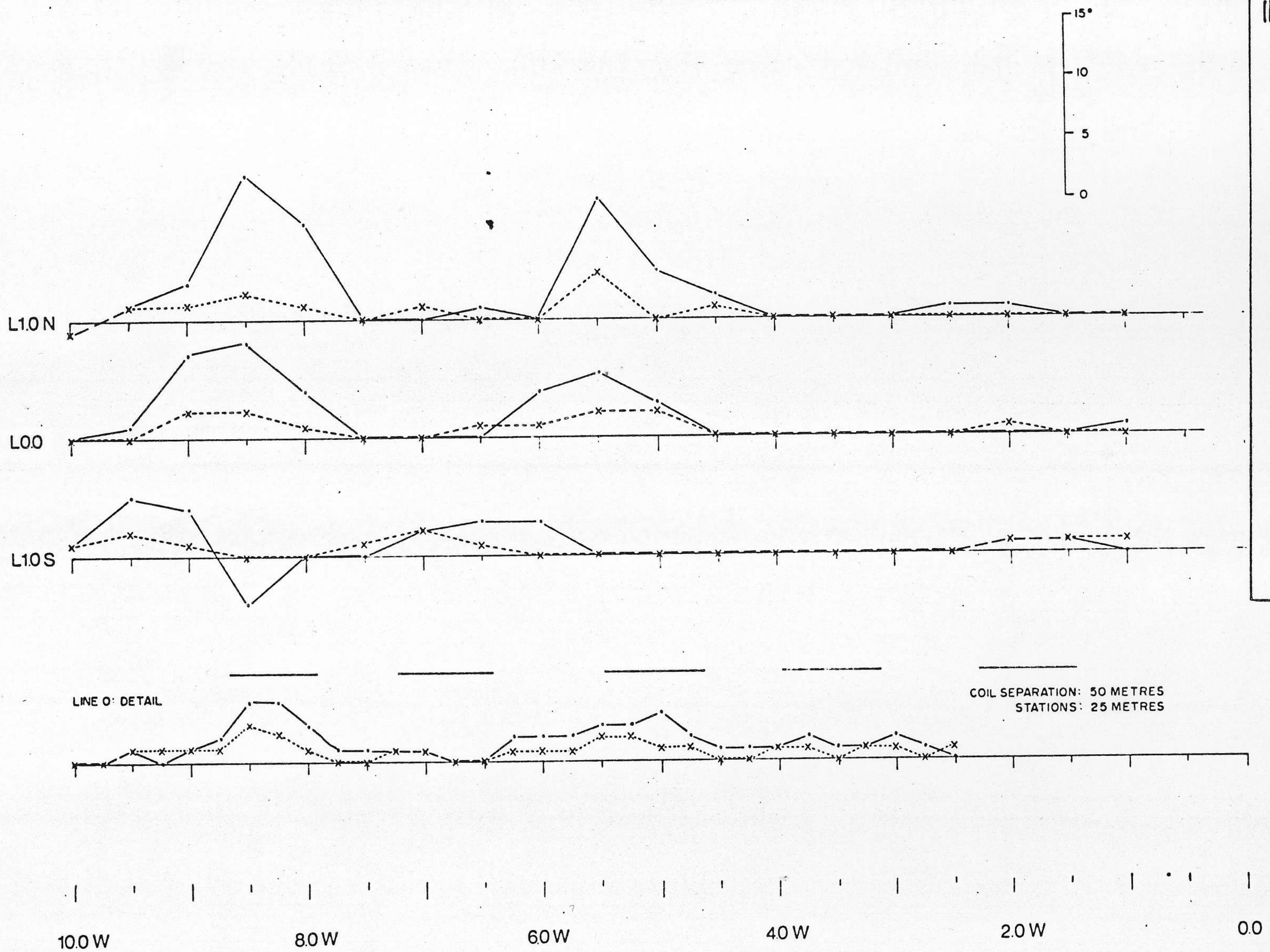

5
LRN
00
20E
40E
60E
LRC
00
30W
30E
LRS
10E
30E
50E
70E
90E
PLAN VIEW
LRN
LRC
LRS
N
0 500 1000 metres
MT BODINE 48 km
LEGEND
20 - Cu PPM
66 - Zn PPM
01 - Ag PPM
1 - Mo PPM
Contour interval = 50 PPM COPPER
0 100 200 metres
McINTYRE MINES LTD
ANOMALY NO 5
SOIL GEOCHEMINSTRY
COPPER CONTOURED

Fig. 19



INSTRUMENTATION

LOCATION: 4.4 km SOUTH OF SOUTH TIP OF DIVER LAKE

EQUIPMENT: MODEL SE 300

METHOD: INLINE, CONFIGURATION "A"

COIL SEPARATION: 100 METRES

STATIONS: 50 METRES

READINGS: FACING EAST

LEGEND

400 CPS x-------x-------x

1600 CPS •———•———•

COMBINED x— — —x— — —x

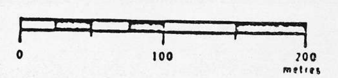
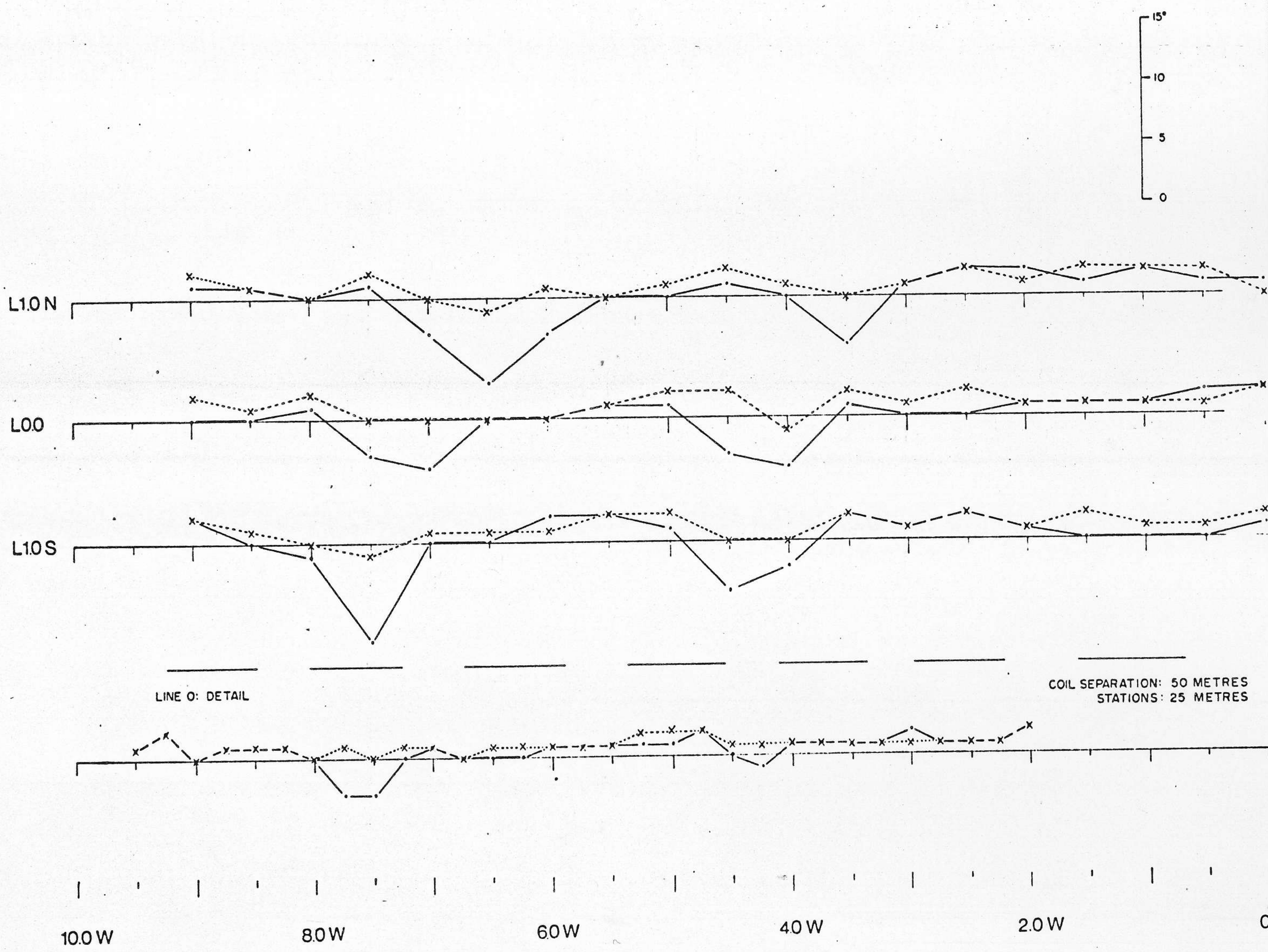


Fig. 20

McINTYRE MINES LTD	
ANOMALY NO 6 EM PROFILE	
CJ STANNUS	NOV 1, 1977
CJ STANNUS	93 N 12W



INSTRUMENTATION

LOCATION:	1.2 km SOUTH OF SOUTH TIP OF DIVER LAKE
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	50 METRES
READINGS:	FACING WEST

LEGEND

400 CPS x- - - - -x- - - - -x

1600 CPS •————•————•

COMBINED x— — —x— — —x

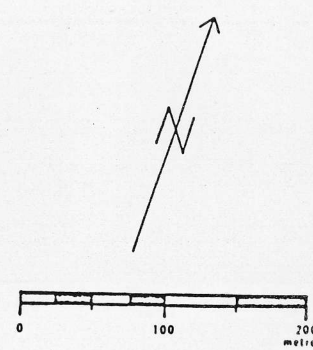


Fig. 21

McINTYRE MINES LTD

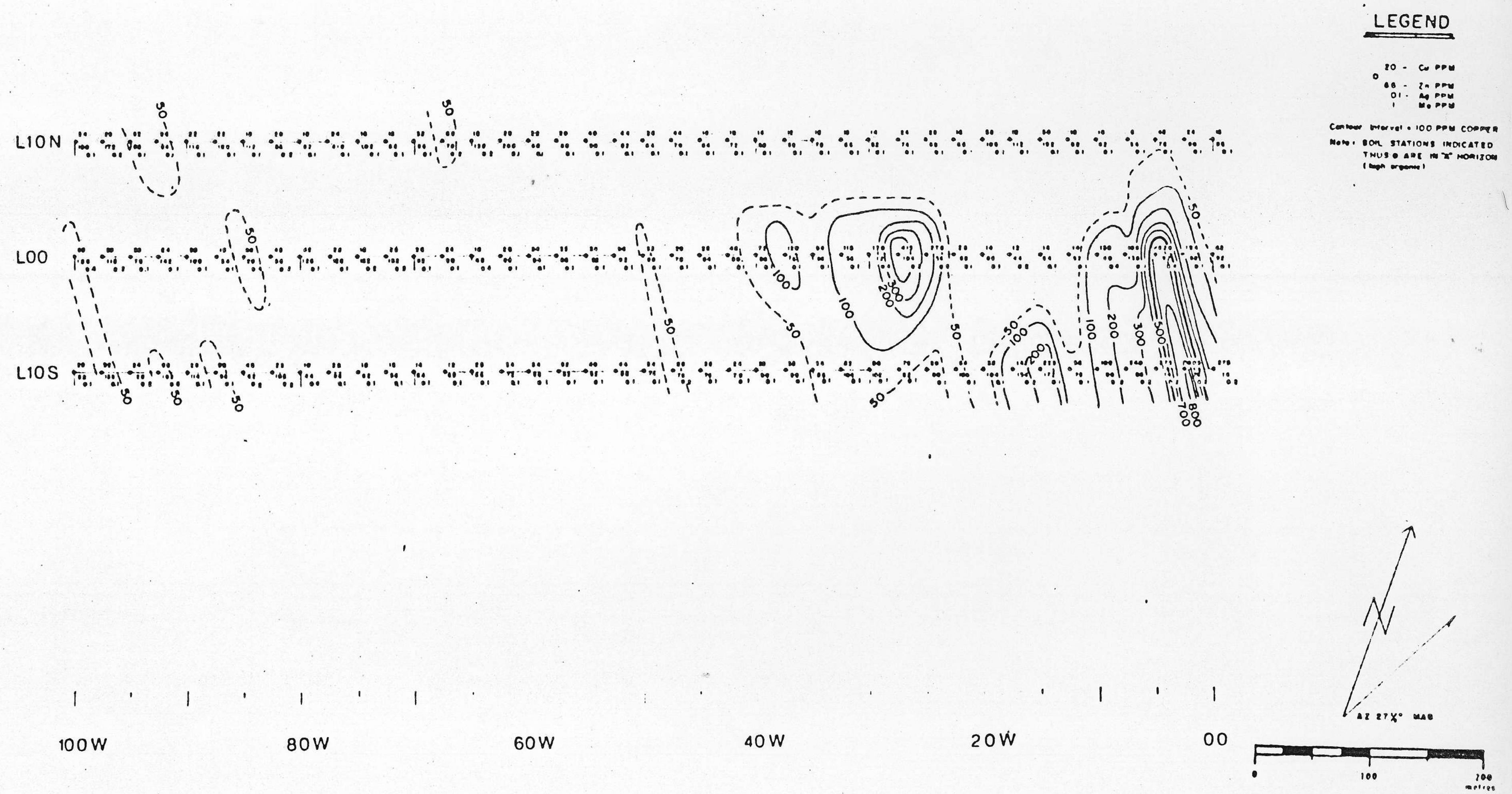
ANOMALY NO. 6

EM PROFILE

PROJECT NO [illegible]

[illegible] RW ARNOLD	[illegible] NOV 2, 1977
[illegible] CJ STANNUS	[illegible] 93 N 12W

(6)



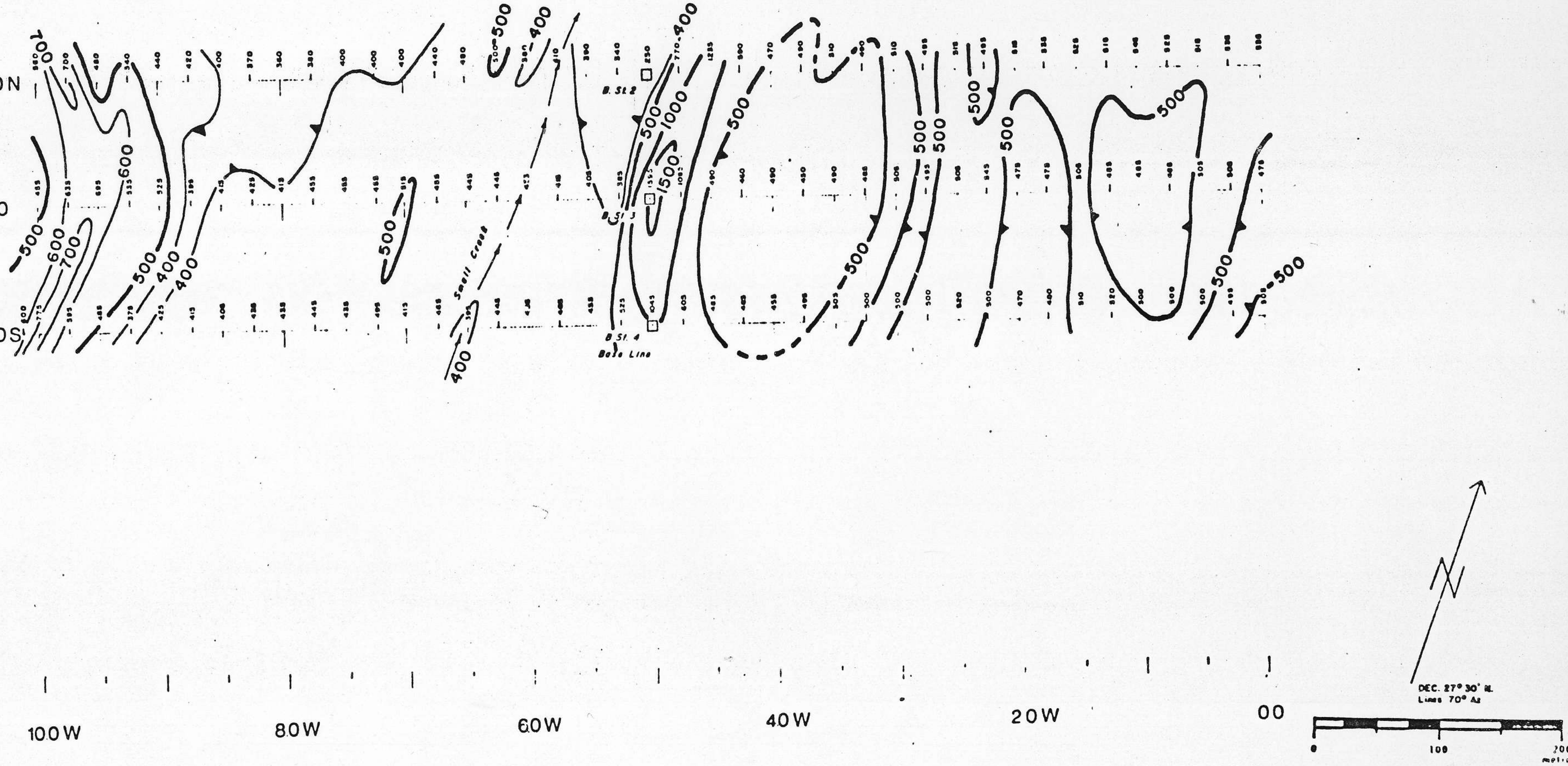
McINTYRE MINES LTD

ANOMALY NO 6
SOIL GEOCHEMISTRY
COPPER CONTOURED

Fig. 22

R BEATON	NOVEMBER 1, 1977
R T FALCK	93-N-12 W

6



Adjusted - straight-line base normal looping procedure

CONTOUR INTERVAL 100 gammas

McINTYRE MINES LTD

ANOMALY NO 6

GROUND MAGNETIC SURVEY

INST. - Sharpe Fluxgate MF I

DATUM Base Station 2 = 250 Gammas

R BEATON	SURVEY SEPT/77
CSB RTF	93-N-12 W

Fig. 23

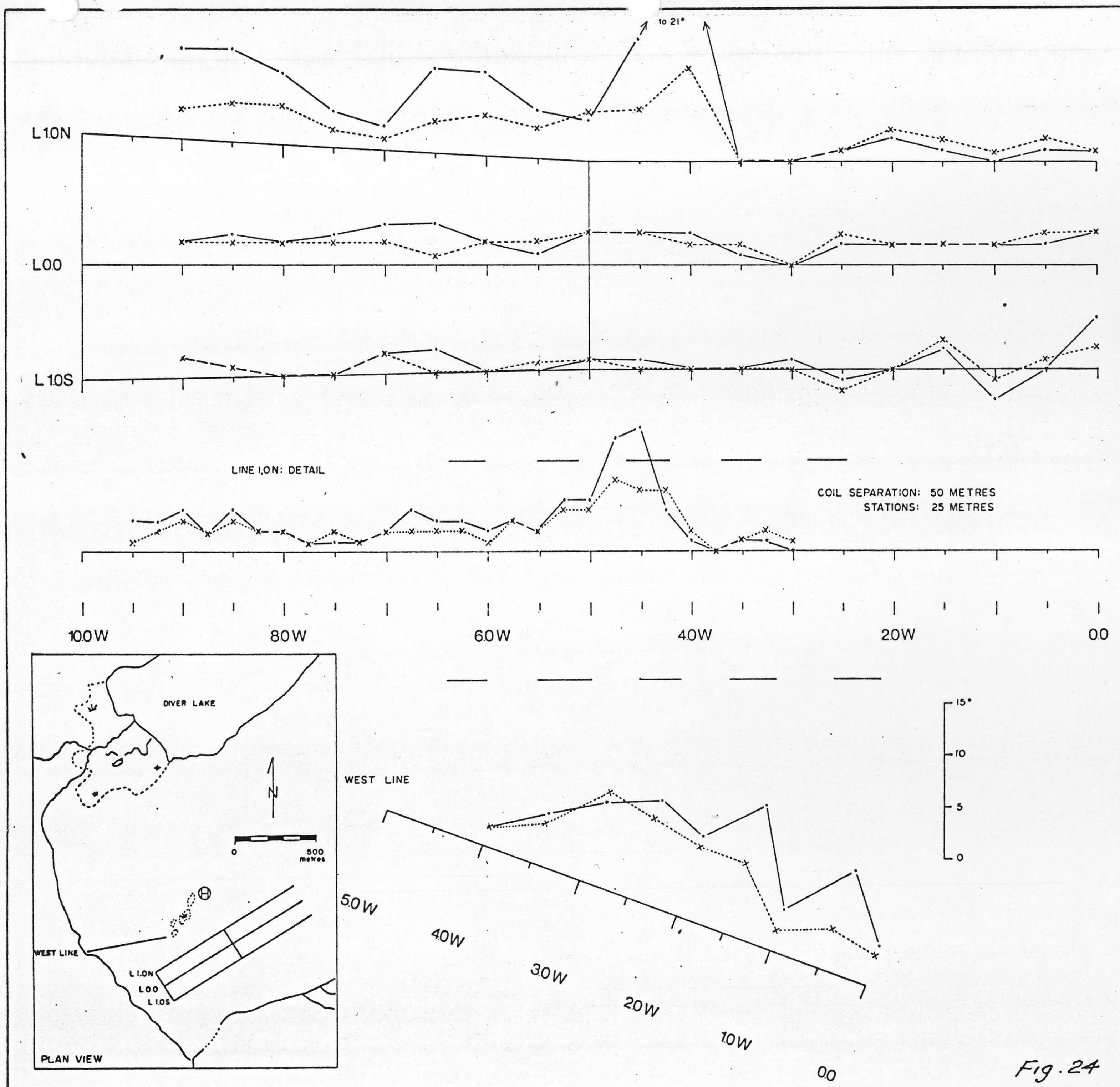


Fig. 24

INSTRUMENTATION

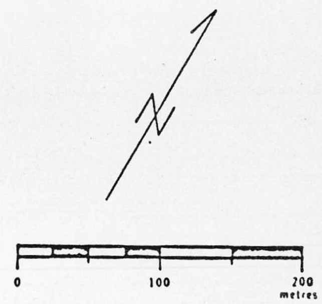
LOCATION:	44 KM SOUTHWEST OF DIVER LAKE
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	50 METRES
READINGS:	FACING WEST

LEGEND

400 CPS x------x------x

1600 CPS •——•——•

COMBINED x— — —x— — —x



McINTYRE MINES LTD

ANOMALY NO 8

EM PROFILE

PROJECT NO 1 41

WORK BY RW ARNOLD	DATE NOV 3, 1977
DRAWN BY CJ STANNUS	NTS 93 N 12W

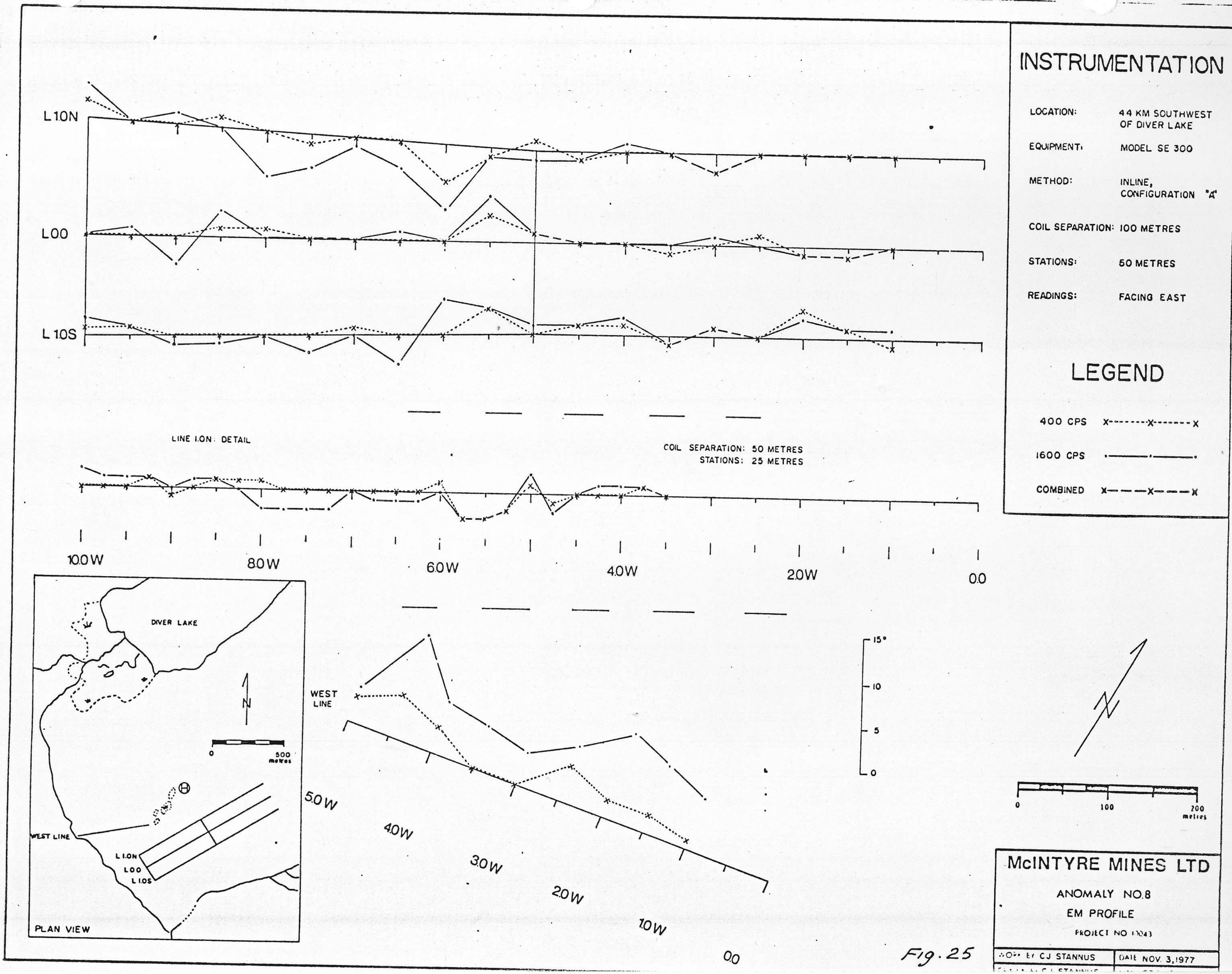
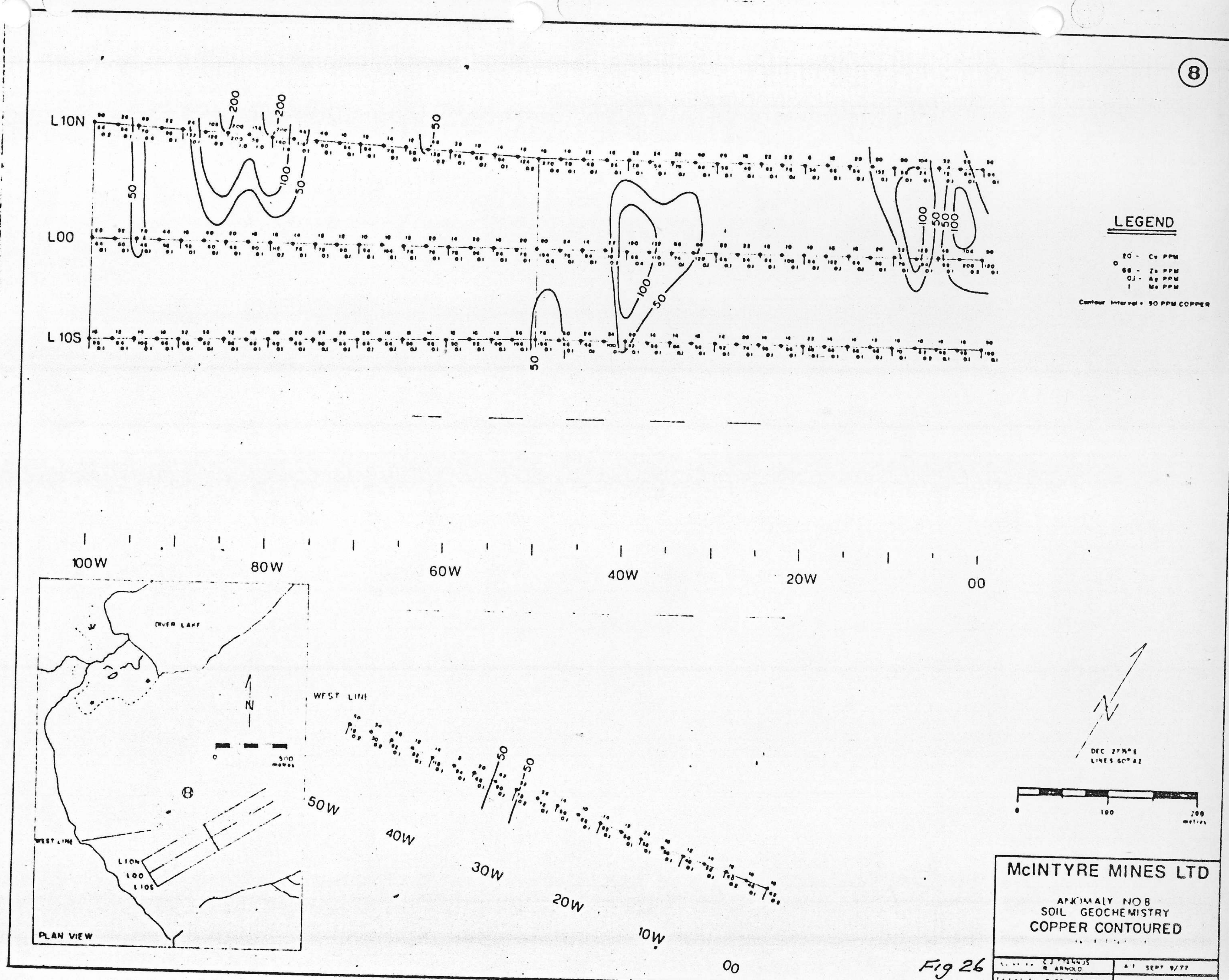

INSTRUMENTATION
LOCATION: 44 KM SOUTHWEST OF DIVER LAKE
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING EAST
LEGEND
400 CPS
1600 CPS
COMBINED
L1.0N
L0.0
L1.0S
LINE 1.0N: DETAIL
COIL SEPARATION: 50 METRES
STATIONS: 25 METRES
10.0W
8.0W
6.0W
4.0W
2.0W
0.0
DIVER LAKE
N
0
500 metres
WEST LINE
L1.0N
L0.0
L1.0S
PLAN VIEW
WEST LINE
5.0W
4.0W
3.0W
2.0W
1.0W
0.0
15°
10
5
0
0
100
200 metres
McINTYRE MINES LTD
ANOMALY NO.8
EM PROFILE
PROJECT NO 1304[illegible]
DRAWN BY C.J. STANNUS
DATE NOV. 3, 1977

Fig. 25


8
L10N
L00
L 10S
LEGEND
20 - Cu PPM
66 - Zn PPM
0.1 - Ag PPM
1 - Mo PPM
Contour Interval = 50 PPM COPPER
100W
80W
60W
40W
20W
00
PLAN VIEW
DIVER LAKE
WEST LINE
N
L10N
L00
L10S
50W
40W
30W
20W
10W
00
McINTYRE MINES LTD
ANOMALY NO 8
SOIL GEOCHEMISTRY
COPPER CONTOURED
R. BEATON/RTF
Fig 26

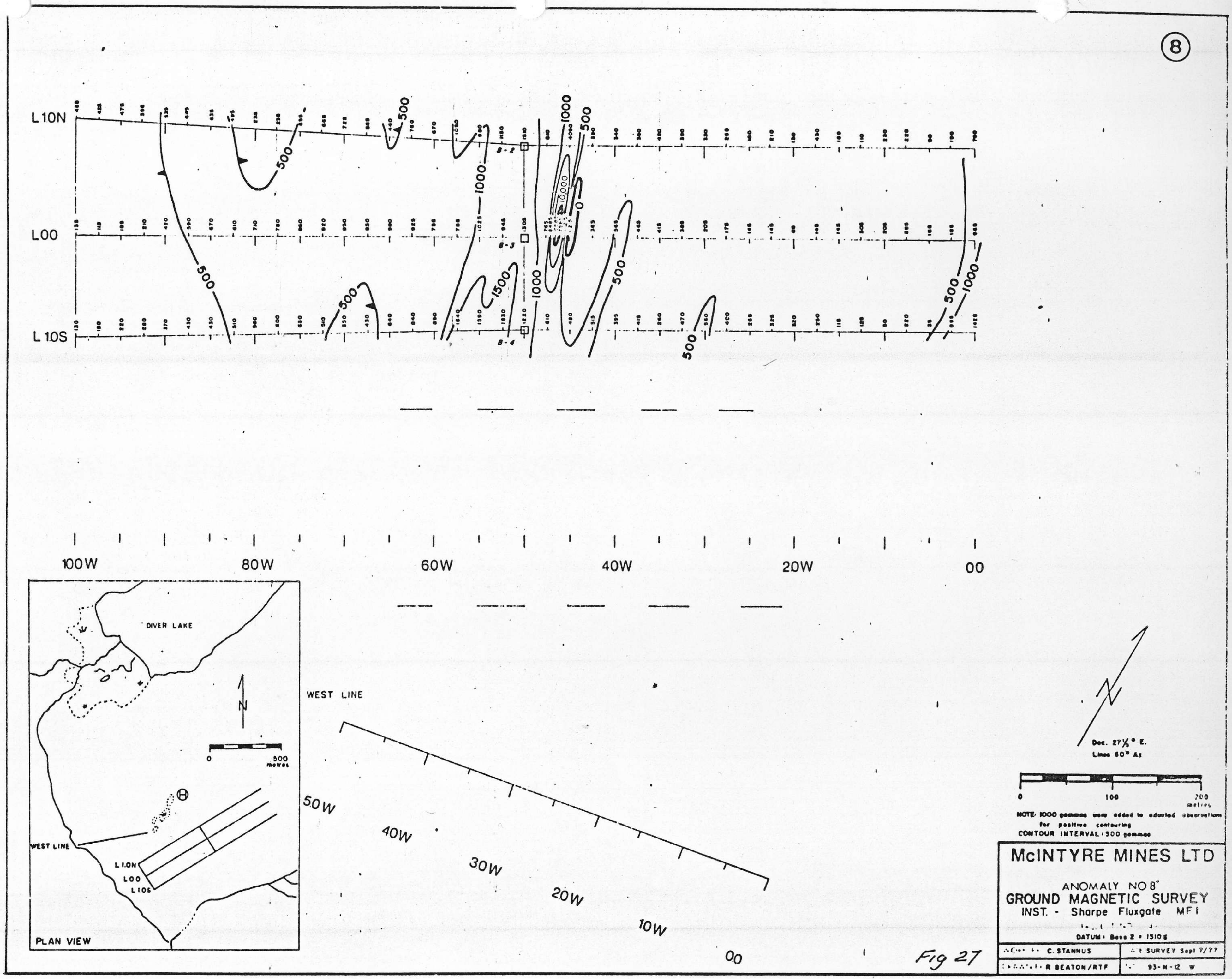

8
L10N
L00
L10S
100W
80W
60W
40W
20W
00
DIVER LAKE
WEST LINE
PLAN VIEW
L10N
L00
L10S
50W
40W
30W
20W
10W
00
Dec. 27½° E.
Lines 60° Az
0
100
200
metres
NOTE: 1000 gammas were added to adjusted observations for positive contouring
CONTOUR INTERVAL: 500 gammas
McINTYRE MINES LTD
ANOMALY NO 8
GROUND MAGNETIC SURVEY
INST. - Sharpe Fluxgate MF1
DATUM: Base 2 = 1510 g
C. STANNUS
SURVEY Sept 7/77
R BEATON/RTF
93-N-12 W

Fig 27

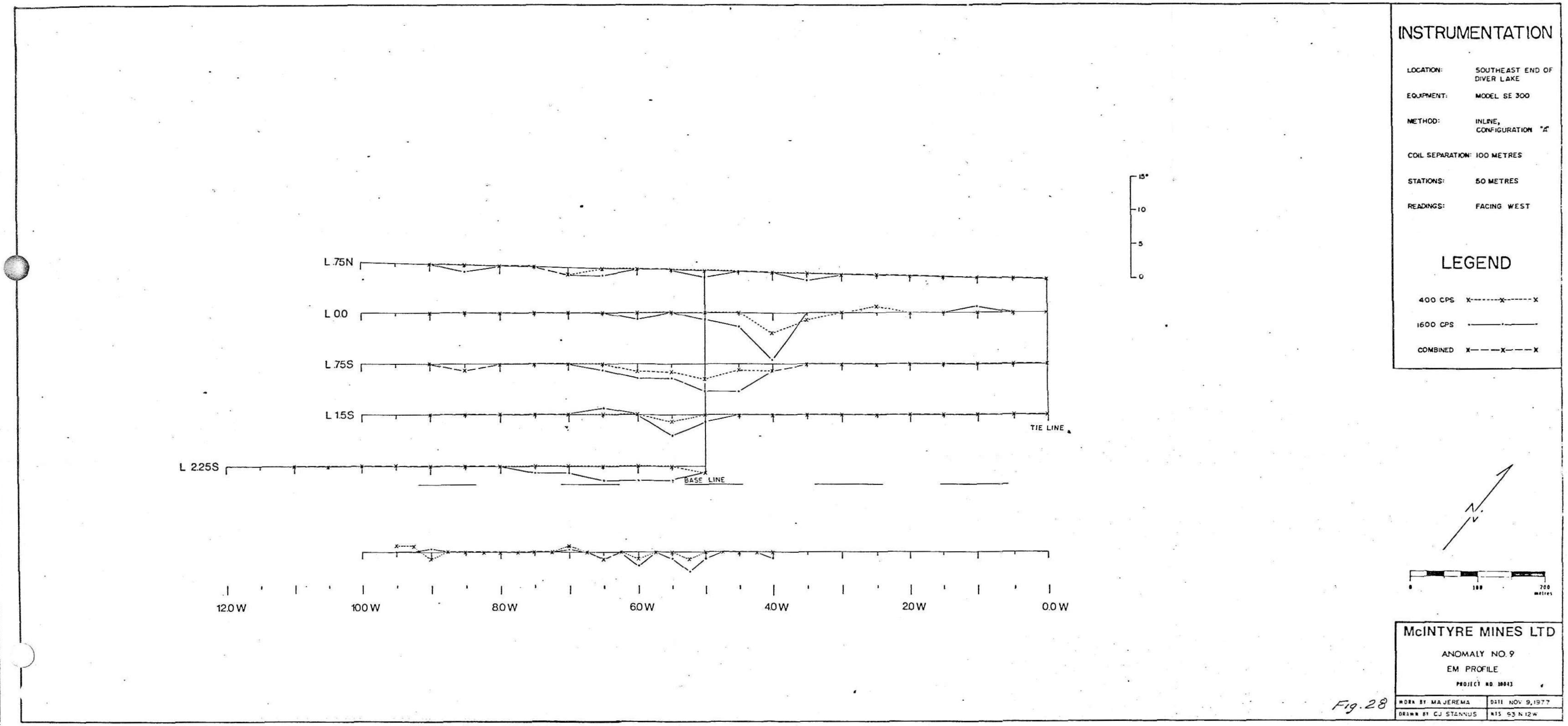
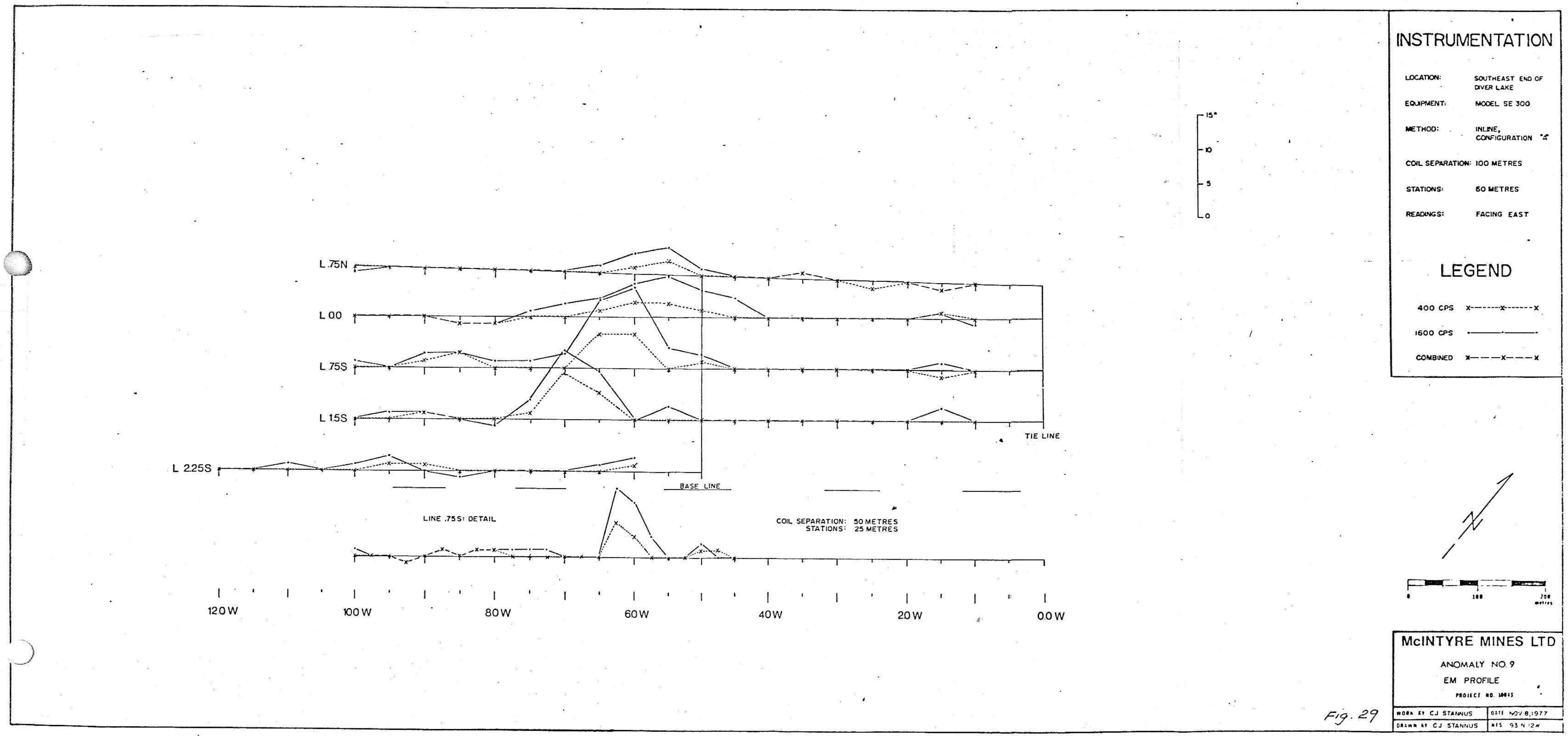
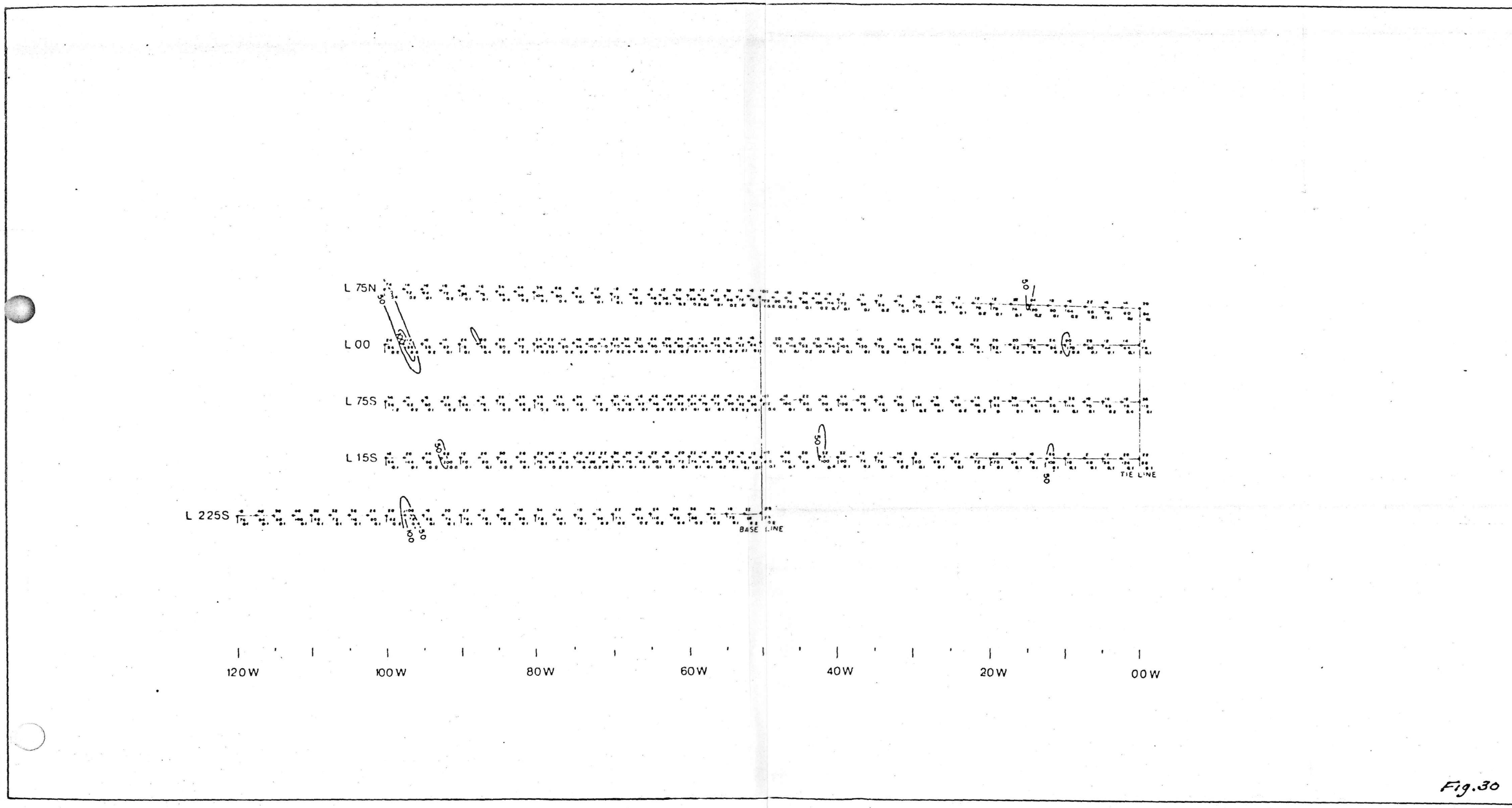

INSTRUMENTATION
LOCATION: SOUTHEAST END OF DIVER LAKE
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING WEST
LEGEND
400 CPS
1600 CPS
COMBINED
L 75N
L 00
L 75S
L 15S
L 225S
TIE LINE
BASE LINE
15°
10
5
0
120 W
100 W
80 W
60 W
40 W
20 W
0.0 W
N
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO. 9
EM PROFILE
PROJECT NO 10043
WORK BY MA JEREMA
DATE NOV 9, 1977
DRAWN BY CJ STANNUS
NTS 93 N 12W

Fig. 28



INSTRUMENTATION
LOCATION: SOUTHEAST END OF DIVER LAKE
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING EAST
LEGEND
400 CPS
1600 CPS
COMBINED
15°
10
5
0
L 75N
L 00
L 75S
L 15S
L 225S
TIE LINE
BASE LINE
LINE 75S: DETAIL
COIL SEPARATION: 50 METRES
STATIONS: 25 METRES
120W
100W
80W
60W
40W
20W
00W
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO. 9
EM PROFILE
PROJECT NO. 10043
WORK BY CJ STANNUS
DATE NOV 8, 1977
DRAWN BY CJ STANNUS
NTS 93 N 12W

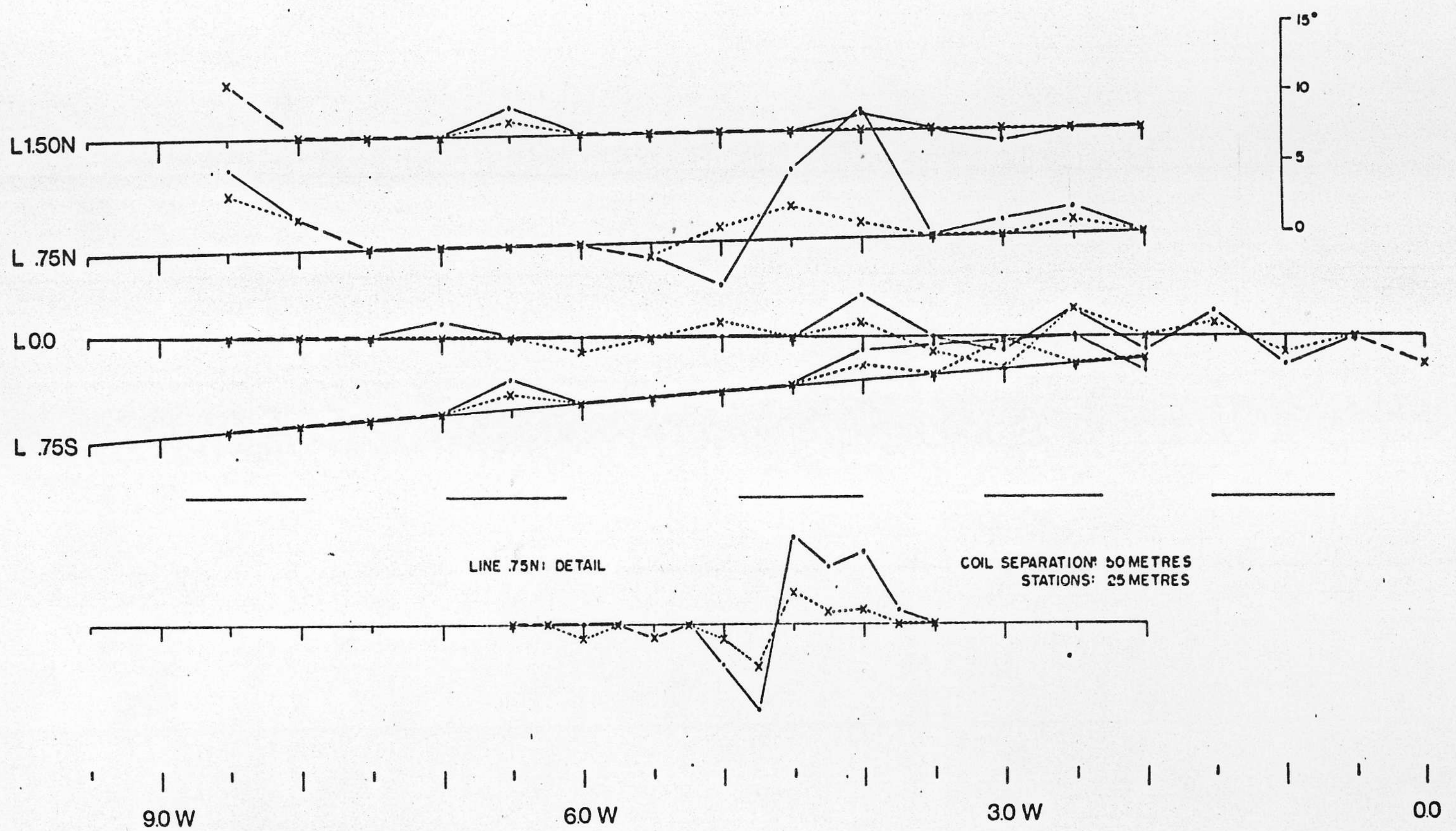
Fig. 29



McINTYRE MINES LTD

ANOMALY NO 9
SOIL GEOCHEMISTRY
COPPER CONTOURED

Fig.30



INSTRUMENTATION

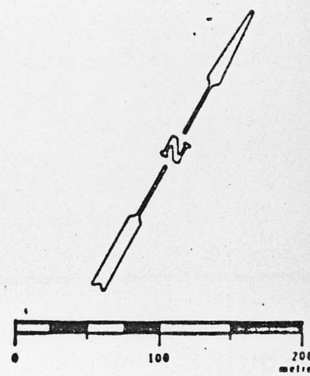
LOCATION:	NORTHWEST END OF DIVER LAKE
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	50 METRES
READINGS:	FACING WEST

LEGEND

400 CPS x-------x-------x

1600 CPS •———•———•

COMBINED x— — —x— — —x



McINTYRE MINES LTD

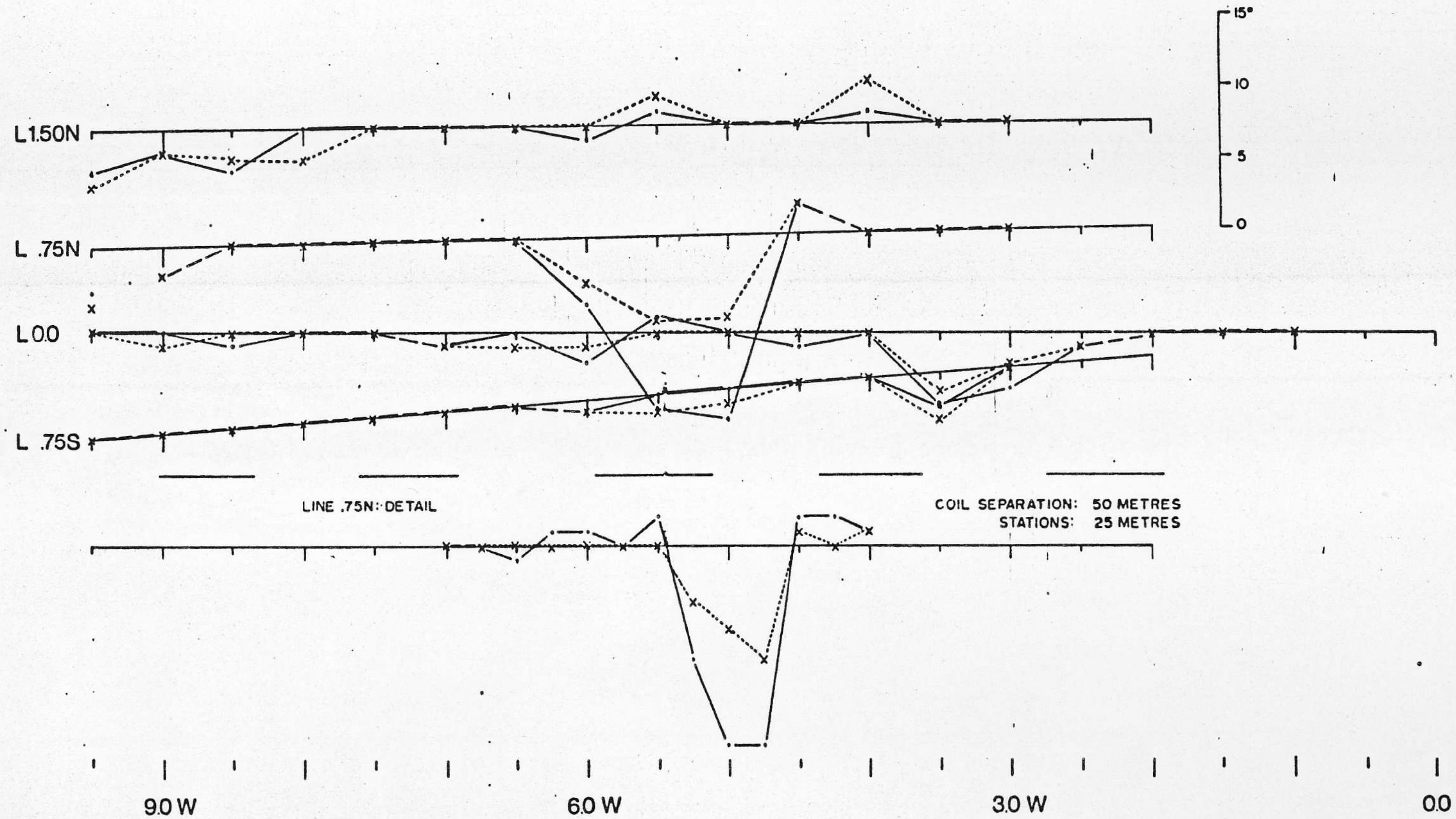
ANOMALY NO 10

EM PROFILE

PROJECT NO 1-41

WORK BY MA JEREMA	DATE NOV 10, 1977
DRAWN BY CJ STANNUS	N.T.S. 93 N 12 W

Fig. 31

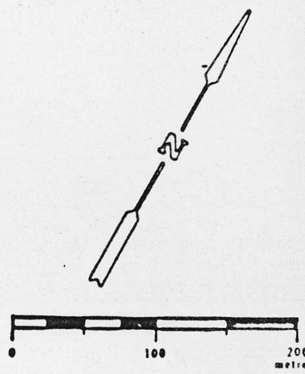


INSTRUMENTATION

LOCATION:	NORTHWEST END OF DIVER LAKE
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	50 METRES
READINGS:	FACING EAST

LEGEND

400 CPS	x-------x-------x
1600 CPS	•———•———
COMBINED	x— — —x— — —x



McINTYRE MINES LTD

ANOMALY NO 10

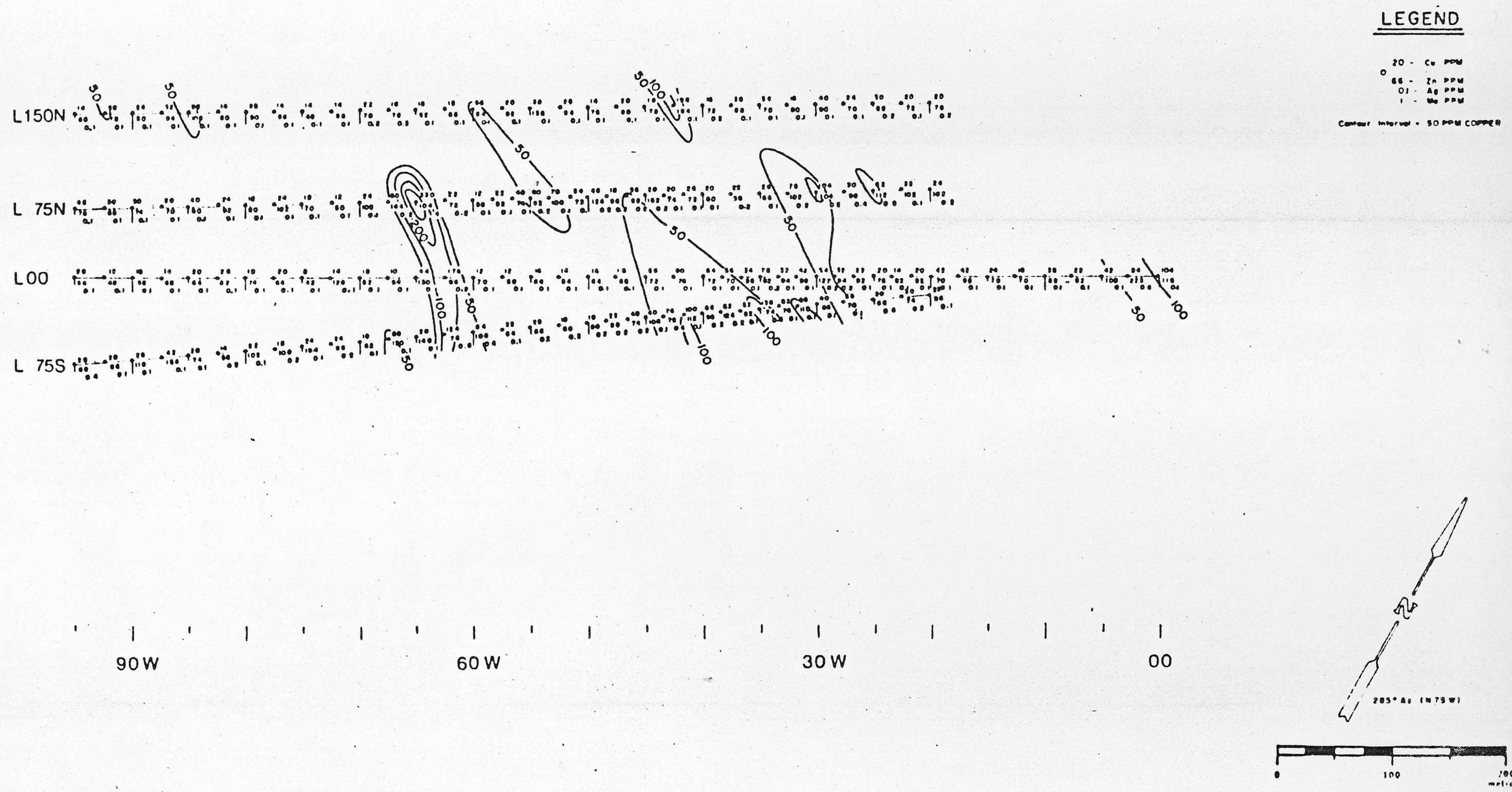
EM PROFILE

PROJECT NO [illegible]

Fig. 32

WORK BY CJ STANNUS	DATE NOV 14, 1977
DRAWN BY CJ STANNUS	N.T.S. 93 N 12W

10



McINTYRE MINES LTD

ANOMALY NO 10
SOIL GEOCHEMISTRY
COPPER CONTOURED

C STANNUS M JEREMA	JULY 15, 1977
R BEATON/RTF	93-N 12 W

Fig. 33

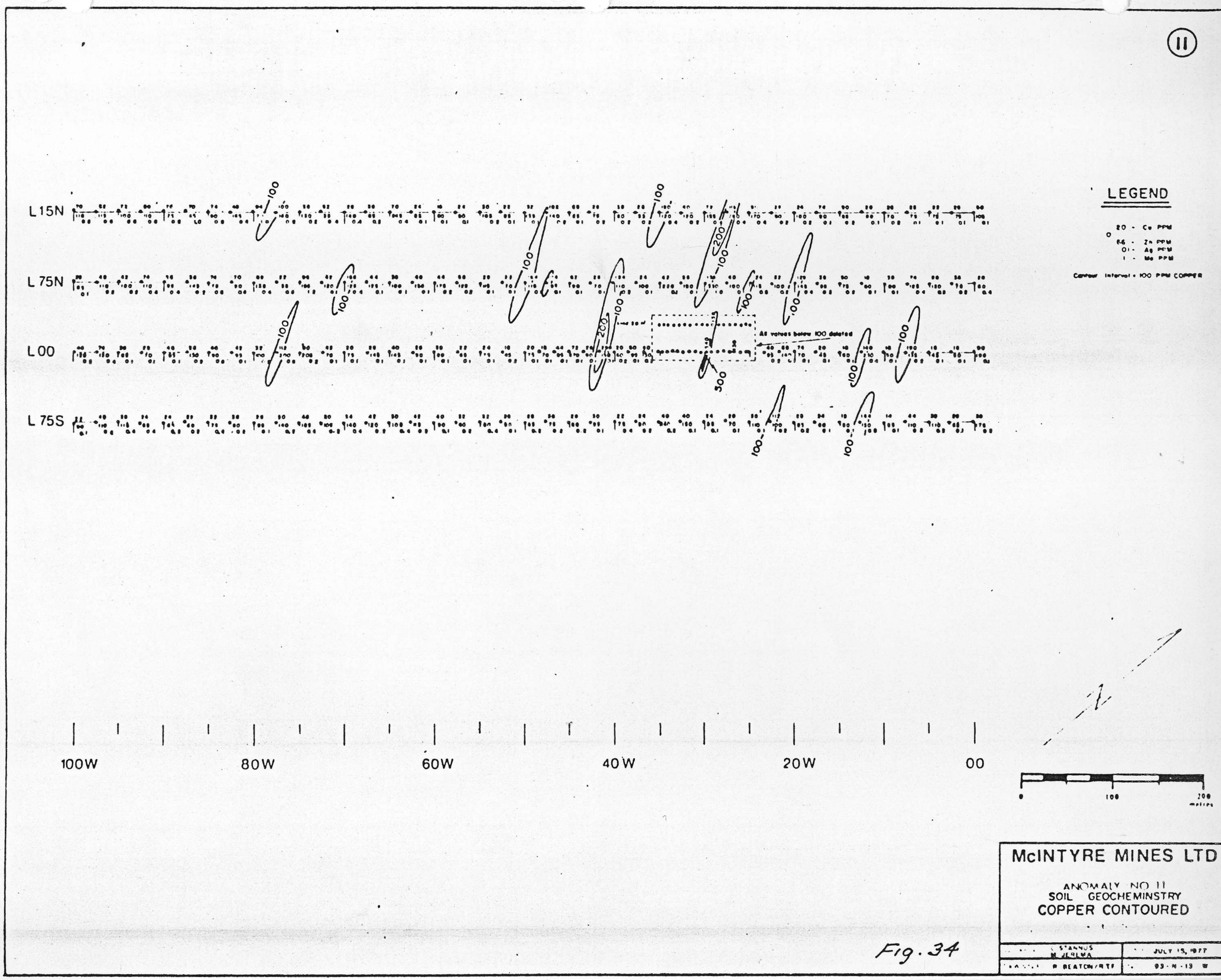
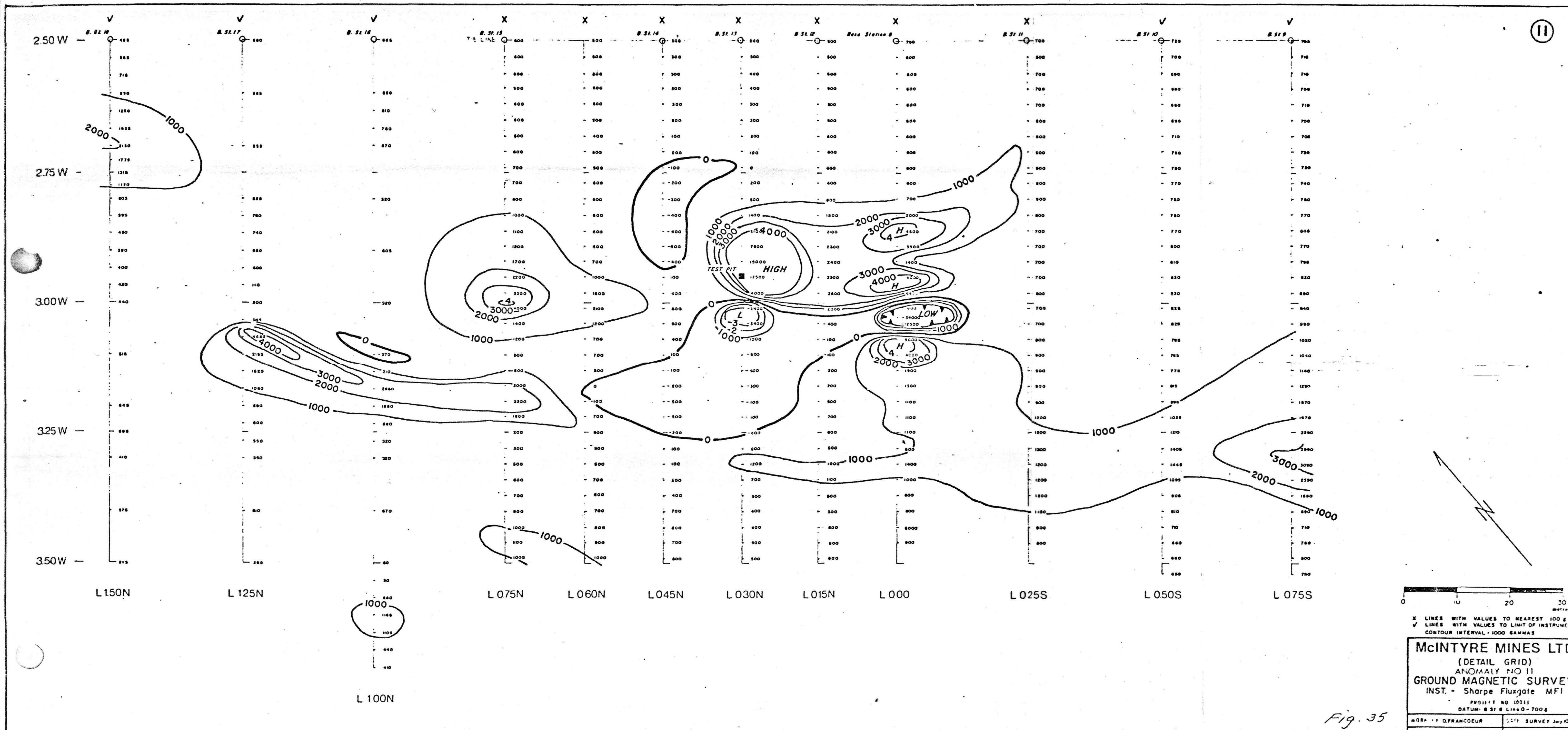
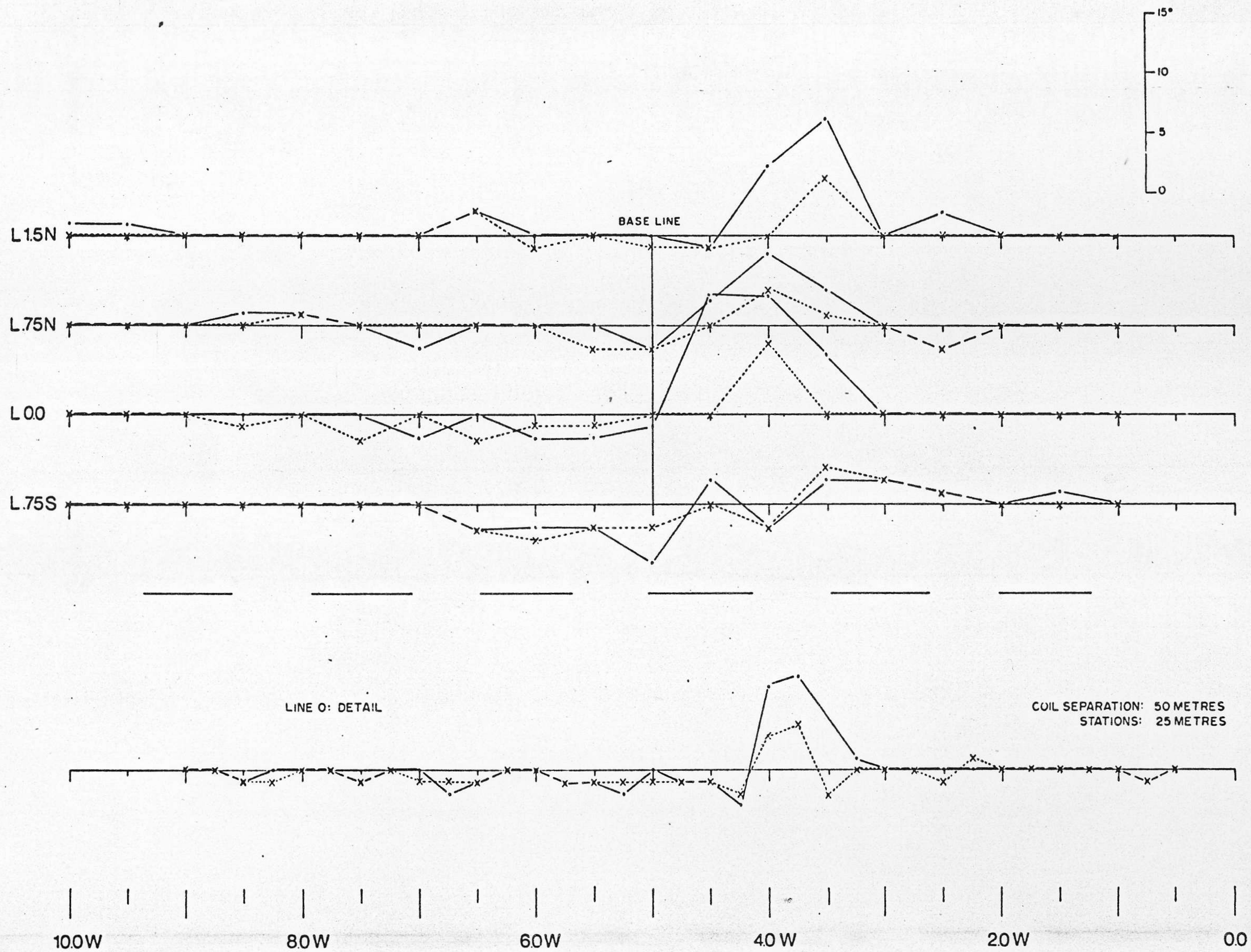

11
LEGEND
20 - Cu PPM
56 - Zn PPM
01 - Ag PPM
1 - Mo PPM
Contour Interval = 100 PPM COPPER
L15N
L75N
L00
L75S
All values below 100 deleted
100
200
300
100W
80W
60W
40W
20W
00
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO 11
SOIL GEOCHEMINSTRY
COPPER CONTOURED
JULY 15, 1977
R BEATON/RTF
93-N-13 W

Fig. 34



2.50 W
2.75 W
3.00 W
3.25 W
3.50 W
L 150N
L 125N
L 100N
L 075N
L 060N
L 045N
L 030N
L 015N
L 000
L 025S
L 050S
L 075S
TEST PIT
HIGH
LOW
Base Station 6
11
X LINES WITH VALUES TO NEAREST 100 γ
✓ LINES WITH VALUES TO LIMIT OF INSTRUMENT
CONTOUR INTERVAL - 1000 GAMMAS
McINTYRE MINES LTD
(DETAIL GRID)
ANOMALY NO 11
GROUND MAGNETIC SURVEY
INST. - Sharpe Fluxgate MFI
DATUM - B St 6 Line 0 - 700 γ
WORK BY D.FRANCOEUR
SURVEY July 10/77
DRAWN BY R BEATON/RTF
NTS 93-N-12 W

Fig. 35



INSTRUMENTATION

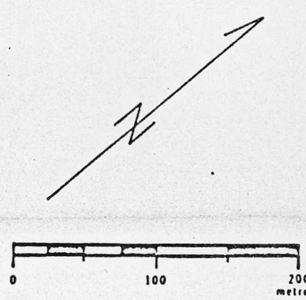
LOCATION:	3.2 KM SOUTH OF BEAVERPOND
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	50 METRES
READINGS:	FACING EAST

LEGEND

400 CPS x-------x-------x

1600 CPS •———•———•

COMBINED x— — —x— — —x



McINTYRE MINES LTD

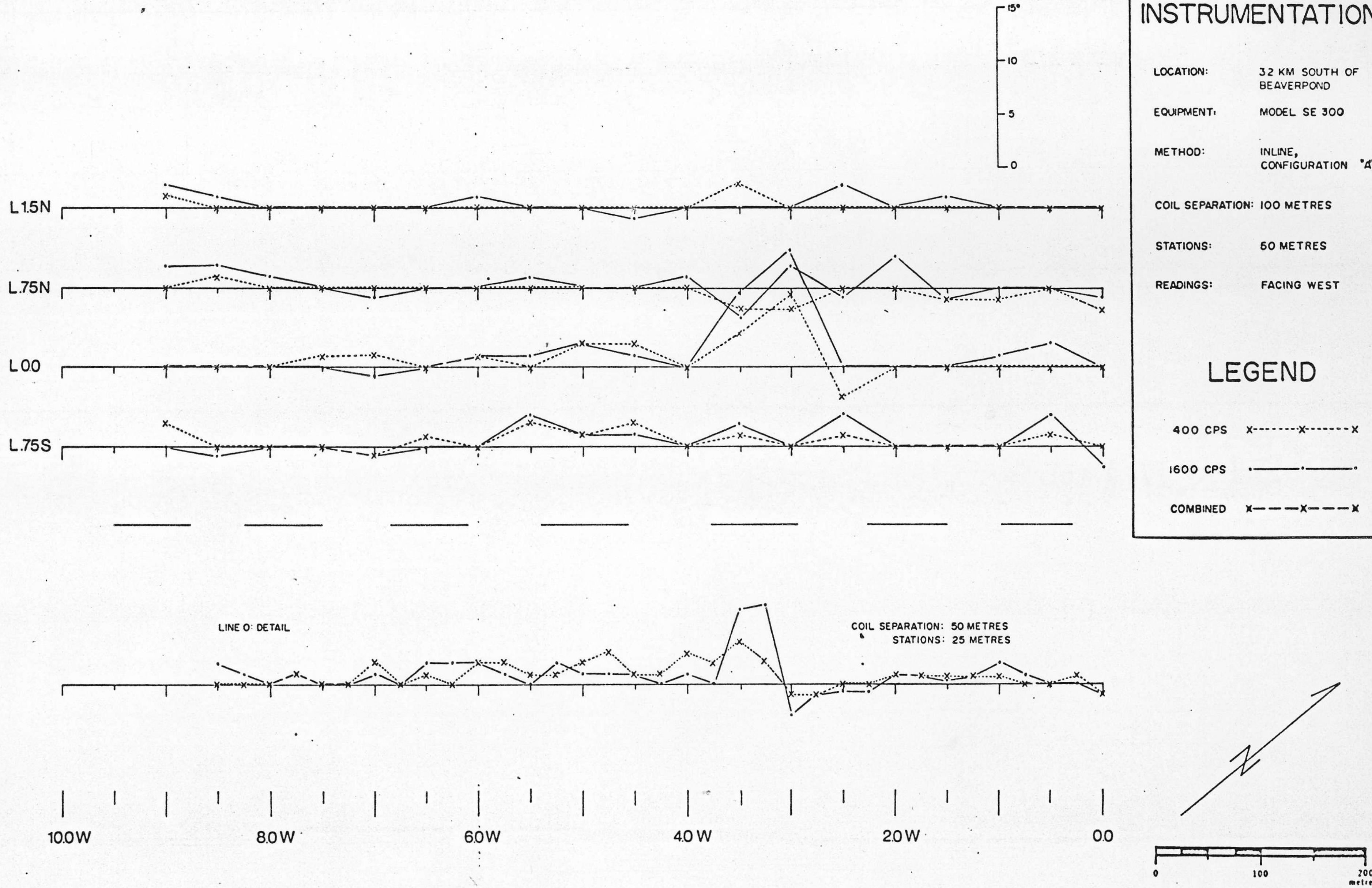
ANOMALY NO. 11

EM PROFILE

[illegible]

[illegible] CJ STANNUS	[illegible] NOV 7, 1977
[illegible] CJ STANNUS	[illegible] 93 N 12W

Fig. 36



INSTRUMENTATION

LOCATION:	32 KM SOUTH OF BEAVERPOND
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	50 METRES
READINGS:	FACING WEST

LEGEND

400 CPS x------x------x

1600 CPS •———•———•

COMBINED x— — —x— — —x

McINTYRE MINES LTD

ANOMALY NO. 11

EM PROFILE

PROJECT NO [illegible]

WORK BY MA JEREMA	DATE NOV 8, 1977
DRAWN BY CJ STANNUS	NTS 93 N 12W

Fig. 37

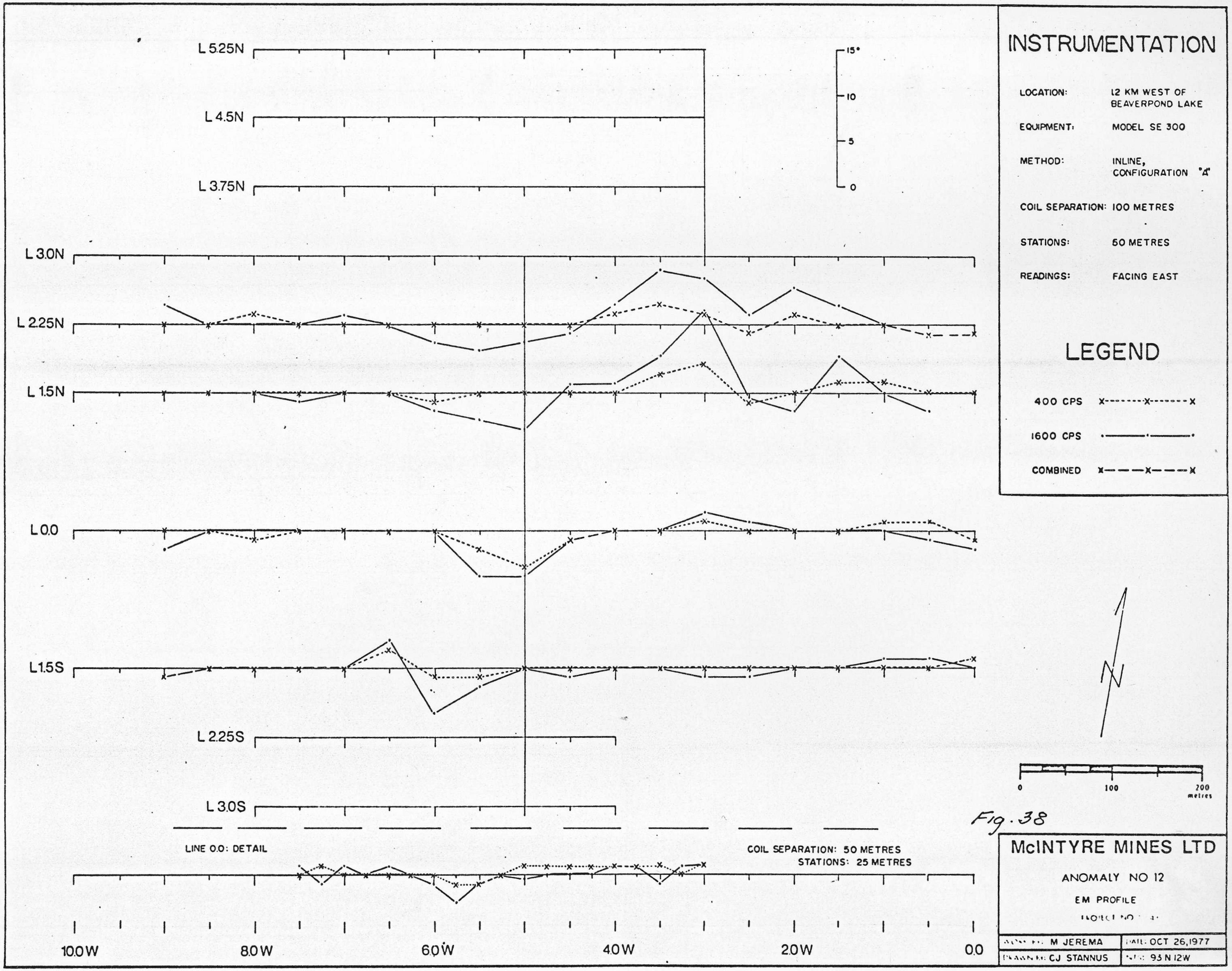
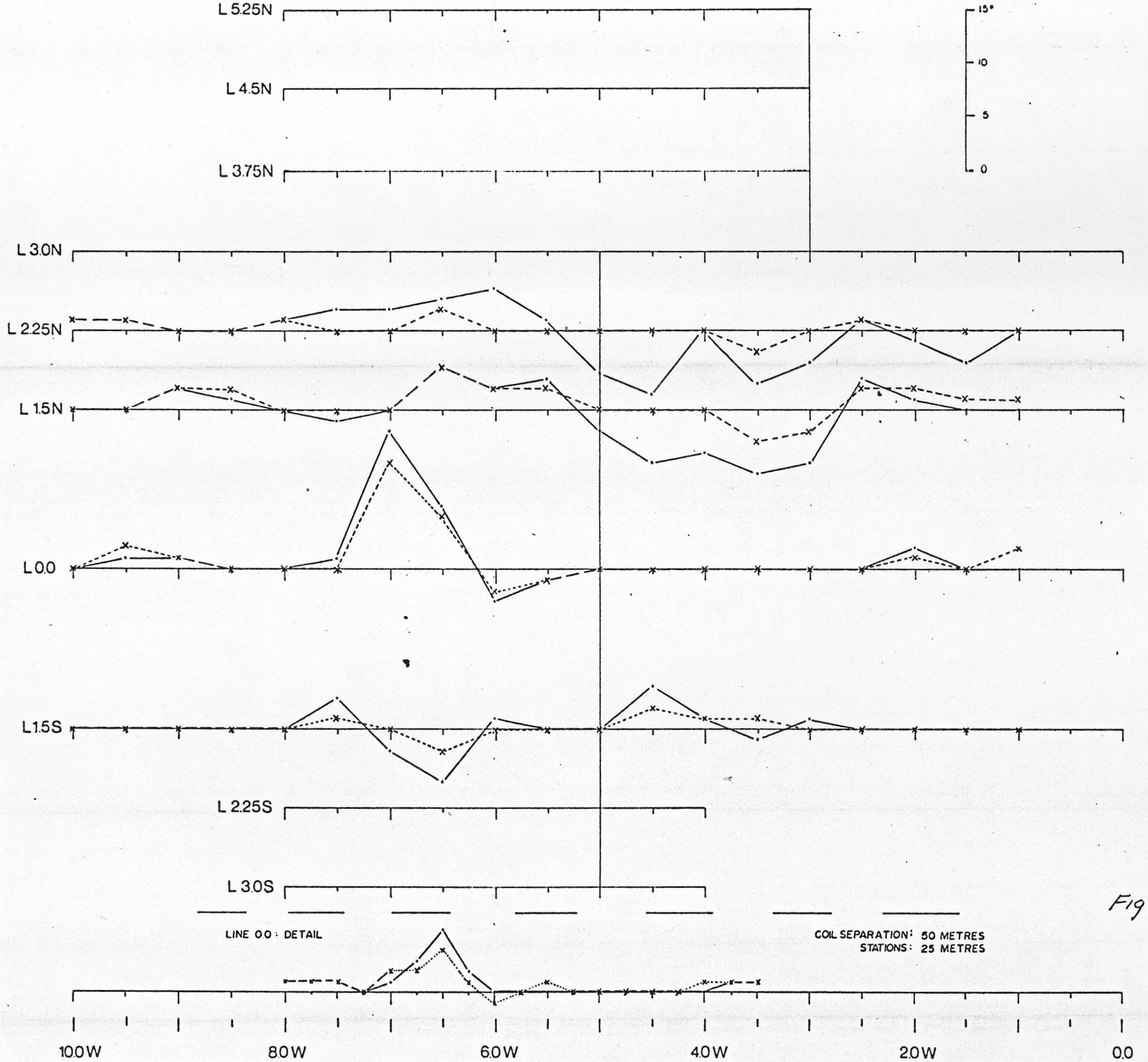

L 5.25N
L 4.5N
L 3.75N
L 3.0N
L 2.25N
L 1.5N
L 0.0
L 1.5S
L 2.25S
L 3.0S
15°
10
5
0
LINE 0.0: DETAIL
COIL SEPARATION: 50 METRES
STATIONS: 25 METRES
100.0W
80.0W
60.0W
40.0W
20.0W
0.0
INSTRUMENTATION
LOCATION: 12 KM WEST OF BEAVERPOND LAKE
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING EAST
LEGEND
400 CPS
1600 CPS
COMBINED
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO 12
EM PROFILE
M JEREMA
OCT 26,1977
CJ STANNUS
93 N 12W

Fig. 38



INSTRUMENTATION

LOCATION:	1.2 KM WEST OF BEAVERPOND LAKE
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	50 METRES
READINGS:	FACING WEST

LEGEND

400 CPS X-------X-------X

1600 CPS •———•———•

COMBINED X— — —X— — —X

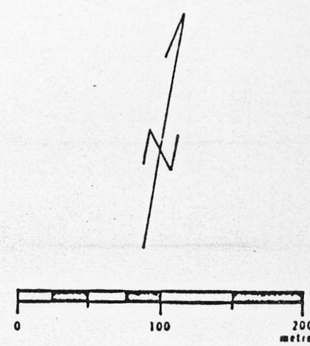


Fig. 39

McINTYRE MINES LTD

ANOMALY NO. 12

EM PROFILE

PROJECT NO [illegible]

[illegible] CJ STANNUS	DATE: OCT 26, 1977
DRAWN BY: CJ STANNUS	NTS: 93 N 12W

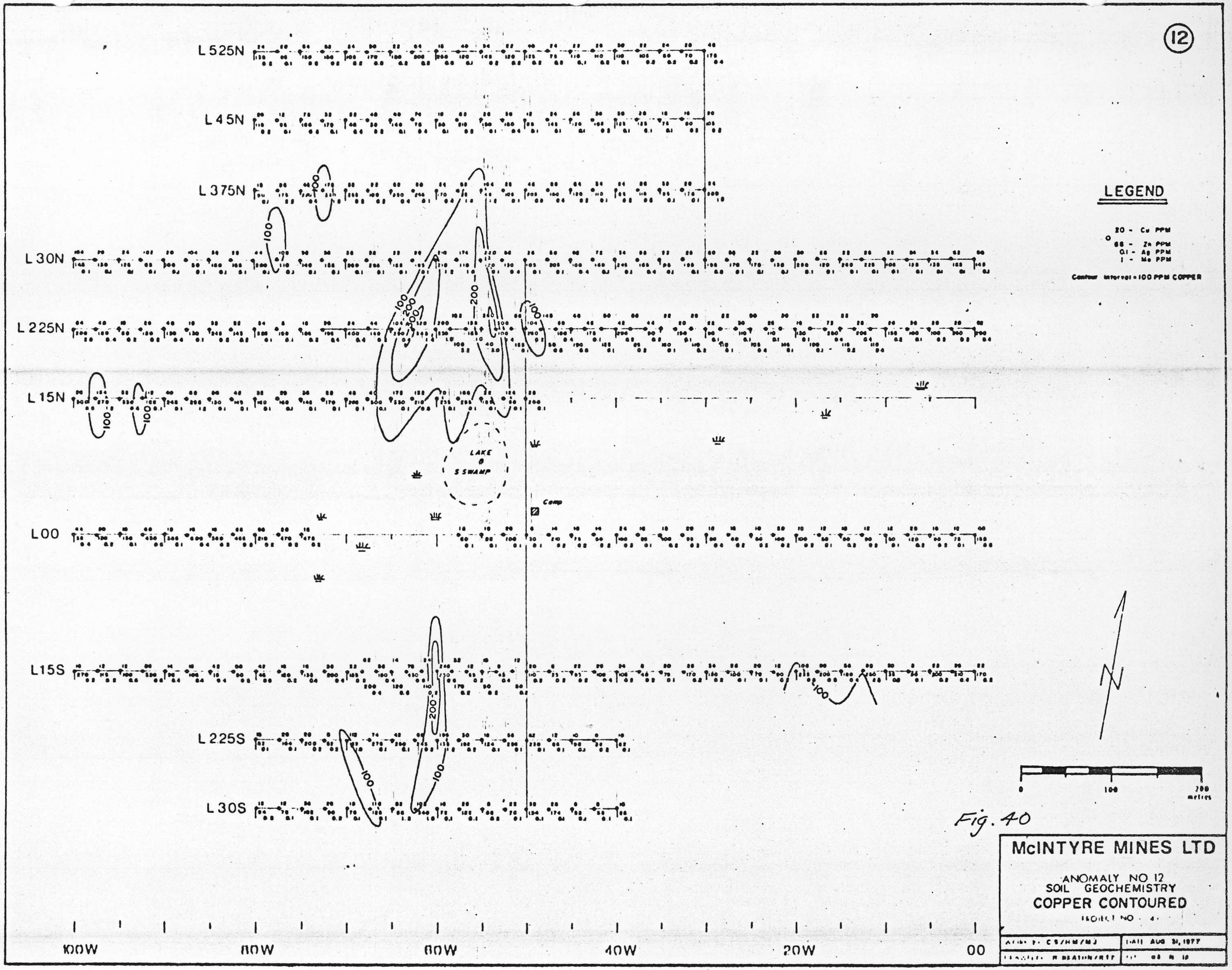

12
L 525N
L 45N
L 375N
L 30N
L 225N
L 15N
L 00
L 15S
L 225S
L 30S
100
200
LAKE
&
SWAMP
Camp
LEGEND
20 - Cu PPM
Zn PPM
0.1 - Ag PPM
1 - Mo PPM
Contour interval = 100 PPM COPPER
0
100
200
metres
100W
80W
60W
40W
20W
00
McINTYRE MINES LTD
ANOMALY NO 12
SOIL GEOCHEMISTRY
COPPER CONTOURED
DATE AUG 31, 1977

Fig. 40

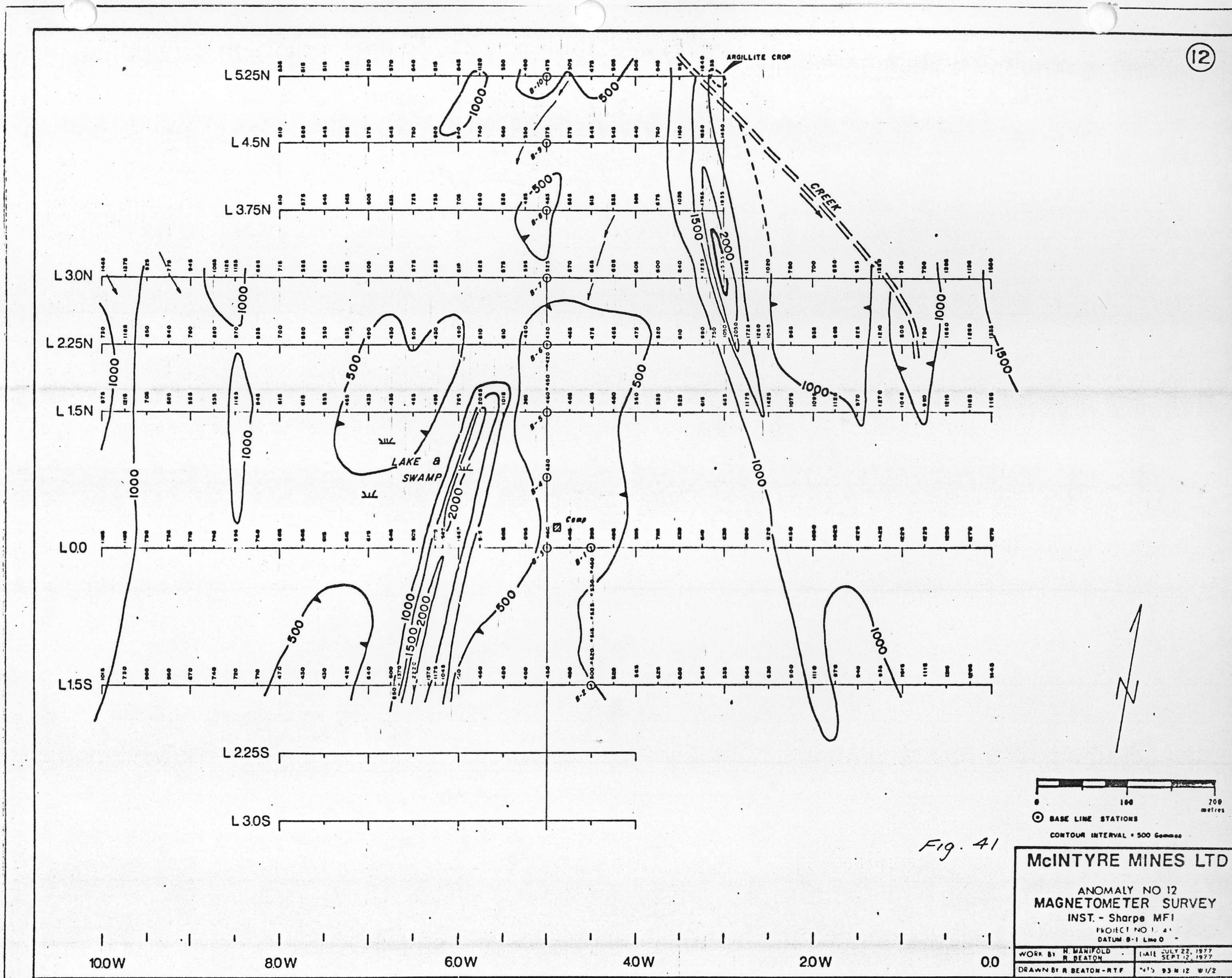
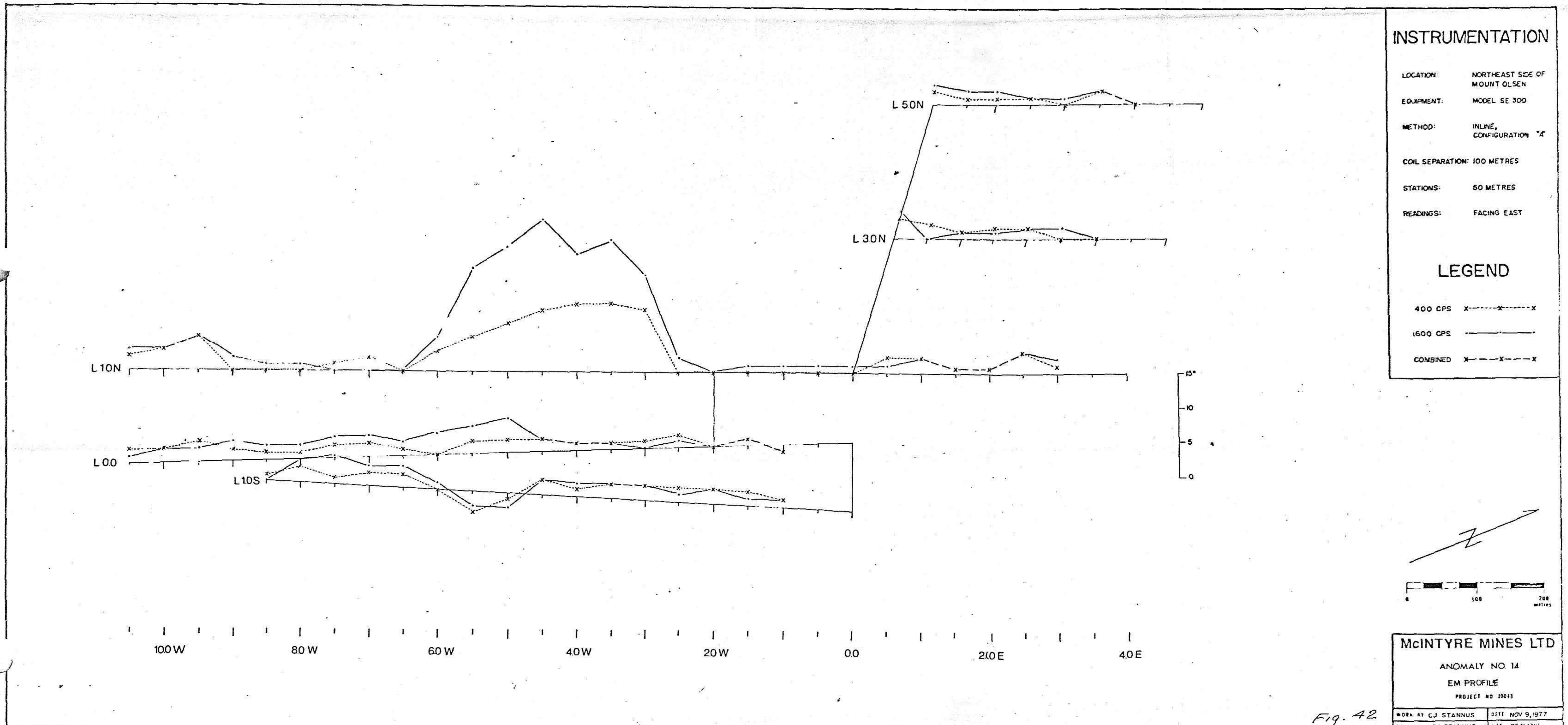


Fig. 41

McINTYRE MINES LTD

ANOMALY NO 12
MAGNETOMETER SURVEY
INST. - Sharpe MF1
DATUM B-1 Line 0

WORK BY H. MANIFOLD, R. BEATON
DATE JULY 22, 1977, SEPT 12, 1977
DRAWN BY R. BEATON - RTF
NTS 93 N 12 W1/2



INSTRUMENTATION
LOCATION: NORTHEAST SIDE OF MOUNT OLSEN
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING EAST
LEGEND
400 CPS
1600 CPS
COMBINED
L 50N
L 30N
L 10N
L 0.0
L 10S
15°
10
5
0
100W
80W
60W
40W
20W
0.0
20E
40E
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO. 14
EM PROFILE
PROJECT NO 10043
WORK BY CJ STANNUS
DATE NOV 9, 1977
DRAWN BY CJ STANNUS
NTS 93 N 13W

Fig. 42

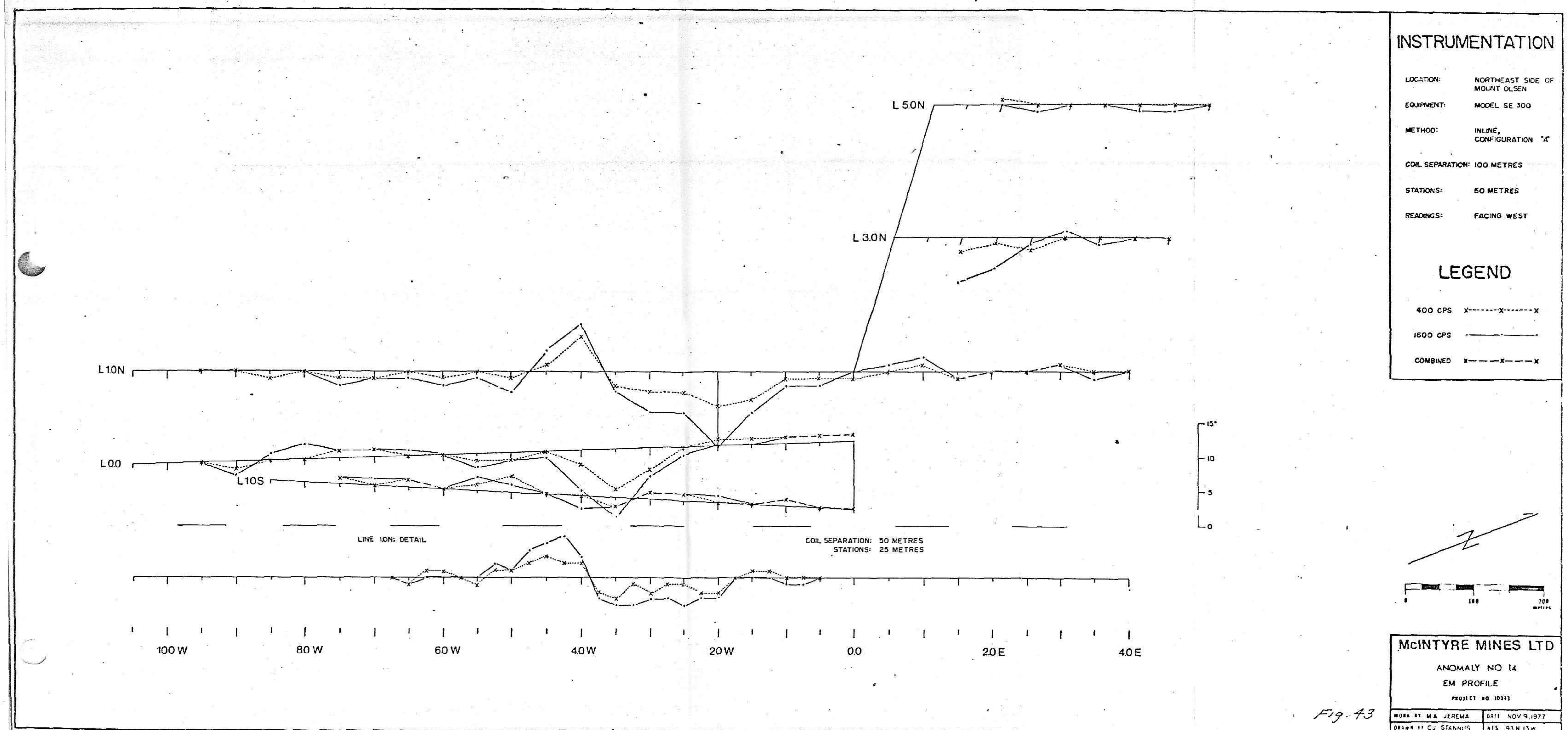
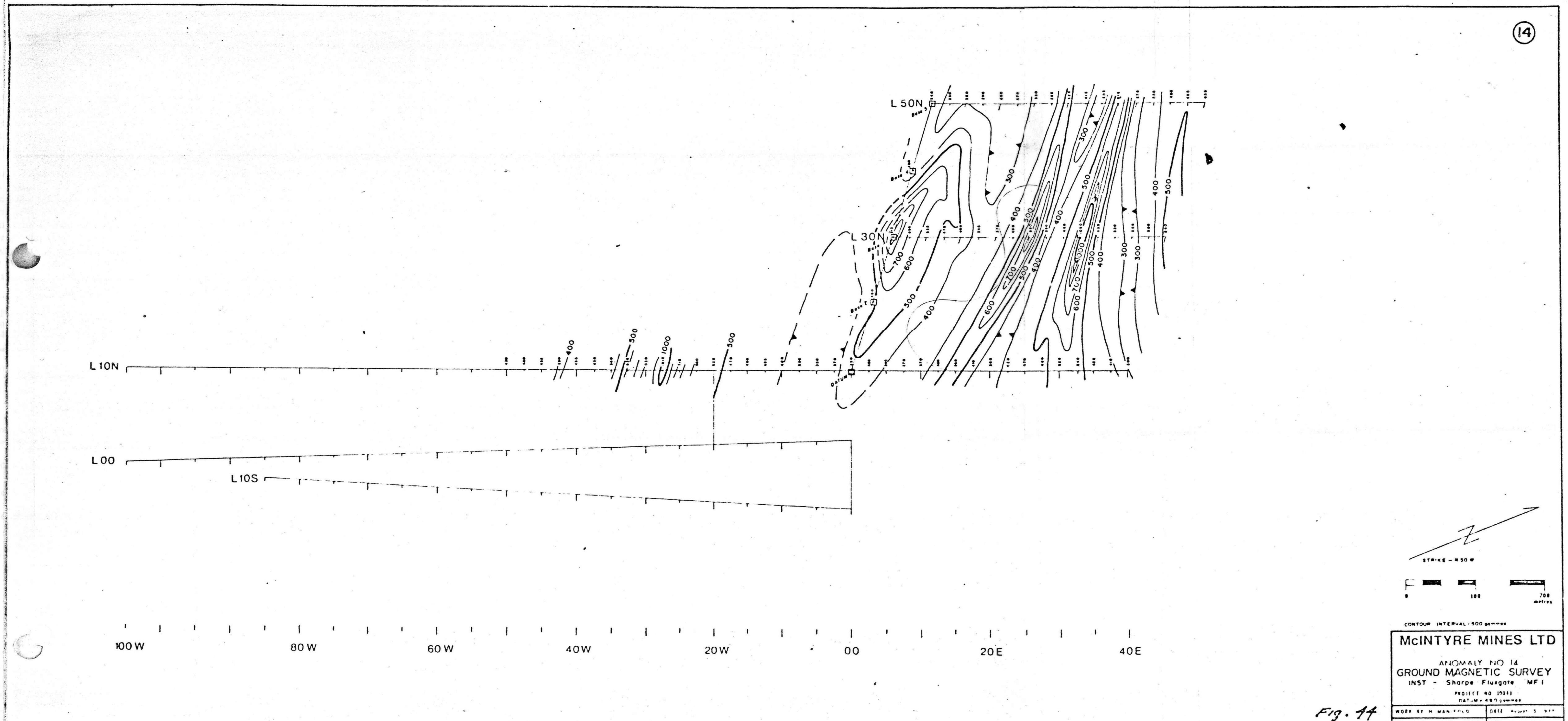

L 5.0N
L 3.0N
L 1.0N
L 0.0
L 1.0S
LINE 1.0N: DETAIL
COIL SEPARATION: 50 METRES
STATIONS: 25 METRES
100 W
80 W
60 W
40 W
20 W
0.0
20 E
40 E
15°
10
5
0
INSTRUMENTATION
LOCATION: NORTHEAST SIDE OF MOUNT OLSEN
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING WEST
LEGEND
400 CPS
1600 CPS
COMBINED
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO 14
EM PROFILE
WORK BY M.A. JEREMA
DATE NOV 9, 1977
DRAWN BY C.J. STANNUS
NTS 93N 13W

Fig. 43



(14)
L 50N
L 30N
L 10N
L 00
L 10S
100 W
80 W
60 W
40 W
20 W
00
20 E
40 E
STRIKE – N 30 W
0
100
200
metres
CONTOUR INTERVAL - 500 gammas
McINTYRE MINES LTD
ANOMALY NO 14
GROUND MAGNETIC SURVEY
INST - Sharpe Fluxgate MF I

Fig. 44

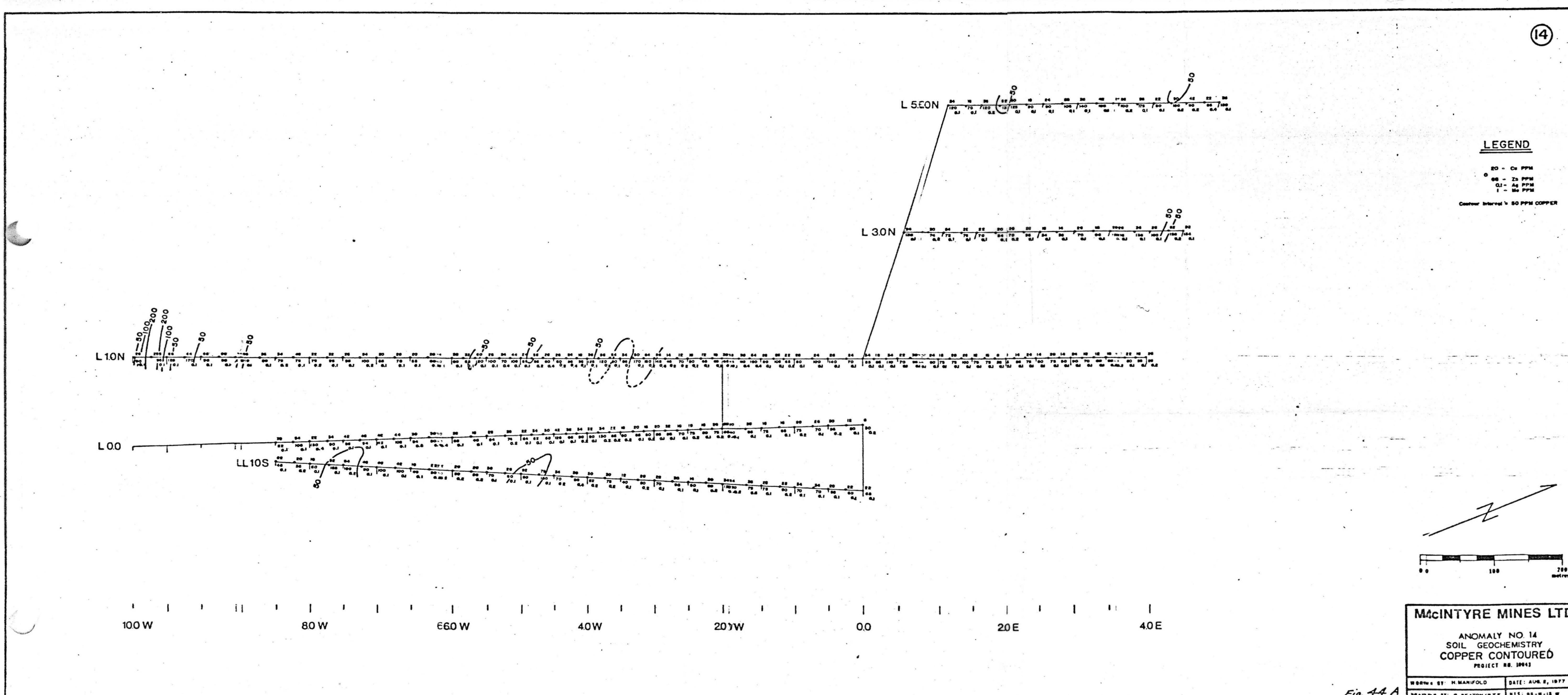
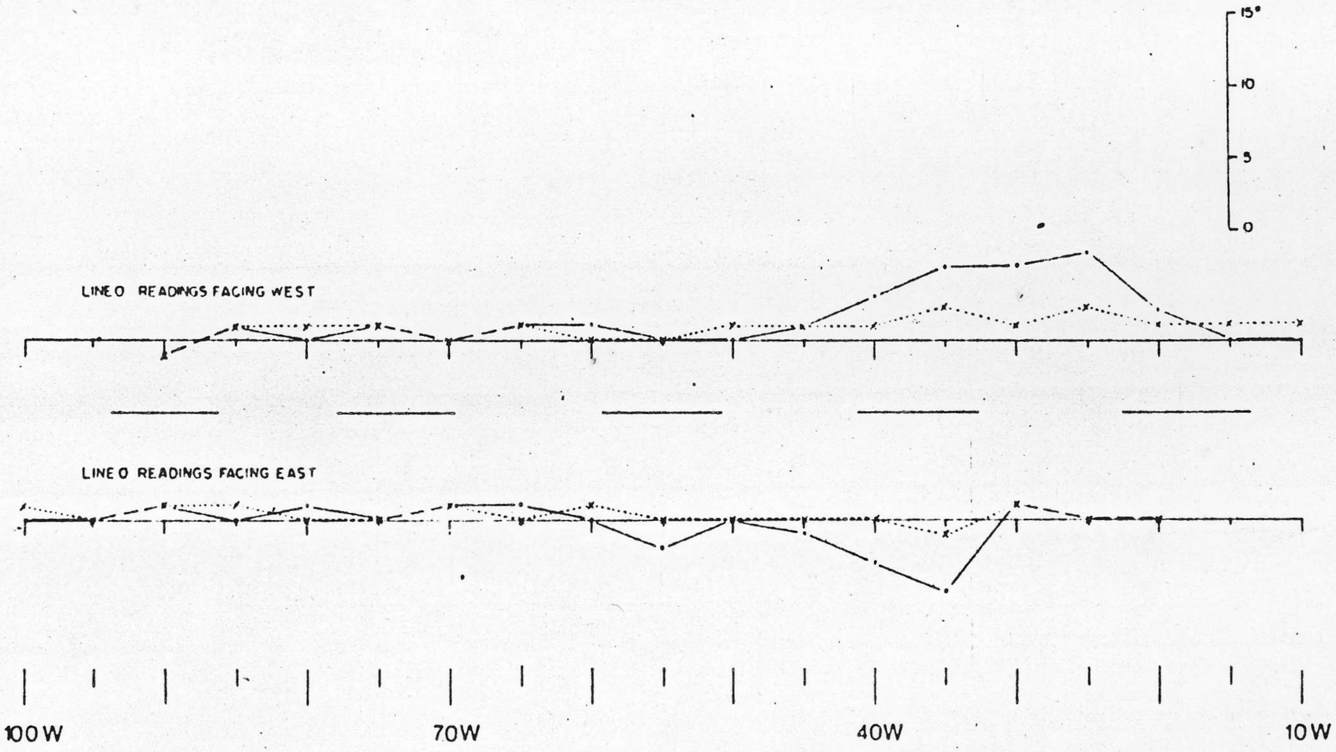

14
L 5.0N
L 3.0N
L 1.0N
L 0.0
LL 10S
LEGEND
20 - Cu PPM
66 - Zn PPM
0.1 - Ag PPM
1 - Mo PPM
Contour Interval is 50 PPM COPPER
100 W
80 W
60 W
40 W
20 W
0.0
20 E
40 E
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO. 14
SOIL GEOCHEMISTRY
COPPER CONTOURED
PROJECT NO. 10043
WORK BY: H. MANIFOLD
DATE: AUG. 2, 1977
DRAWN BY: R. BEATON/R.T.E.
NTS: 93-N-15 W

Fig. 44 A



INSTRUMENTATION

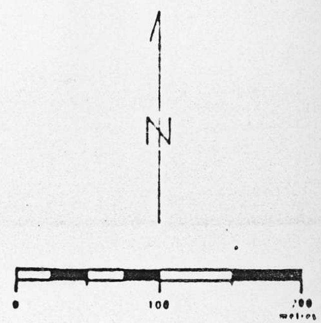
LOCATION	4.8 KM NORTH-NORTH-WEST OF MT OLSEN
EQUIPMENT	MODEL SE 300
METHOD	INLINE, CONFIGURATION "A"
COIL SEPARATION	100 METRES
STATIONS	50 METRES
READINGS:	FACING

LEGEND

400 CPS x--------x--------x

1600 CPS •————•————•

COMBINED x— — —x— — —x



McINTYRE MINES LTD

ANOMALY NO 15

EM PROFILE

10043

CJS & MAJ	NOV 16, 1977
CJS	93 N 13W

Fig. 45

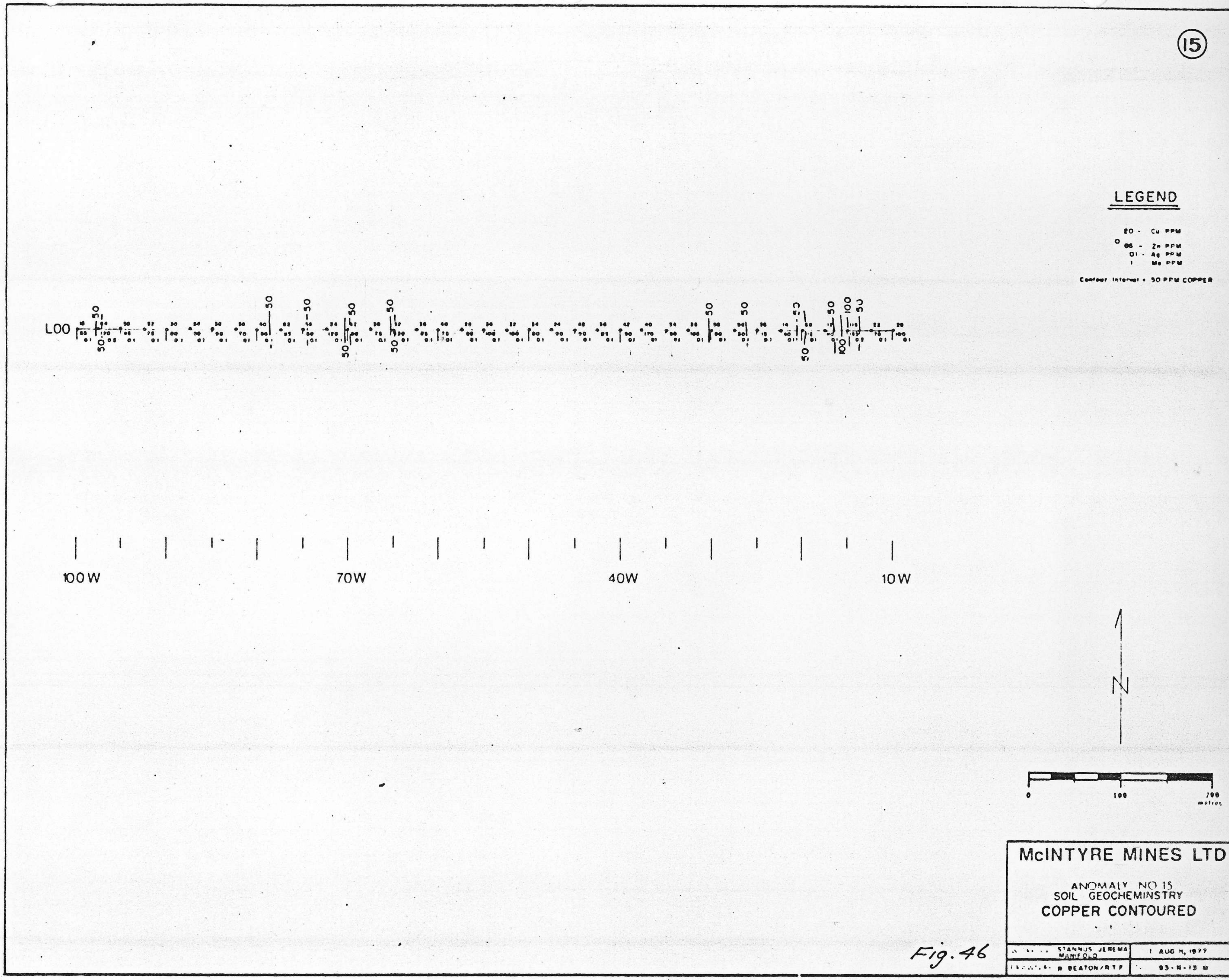
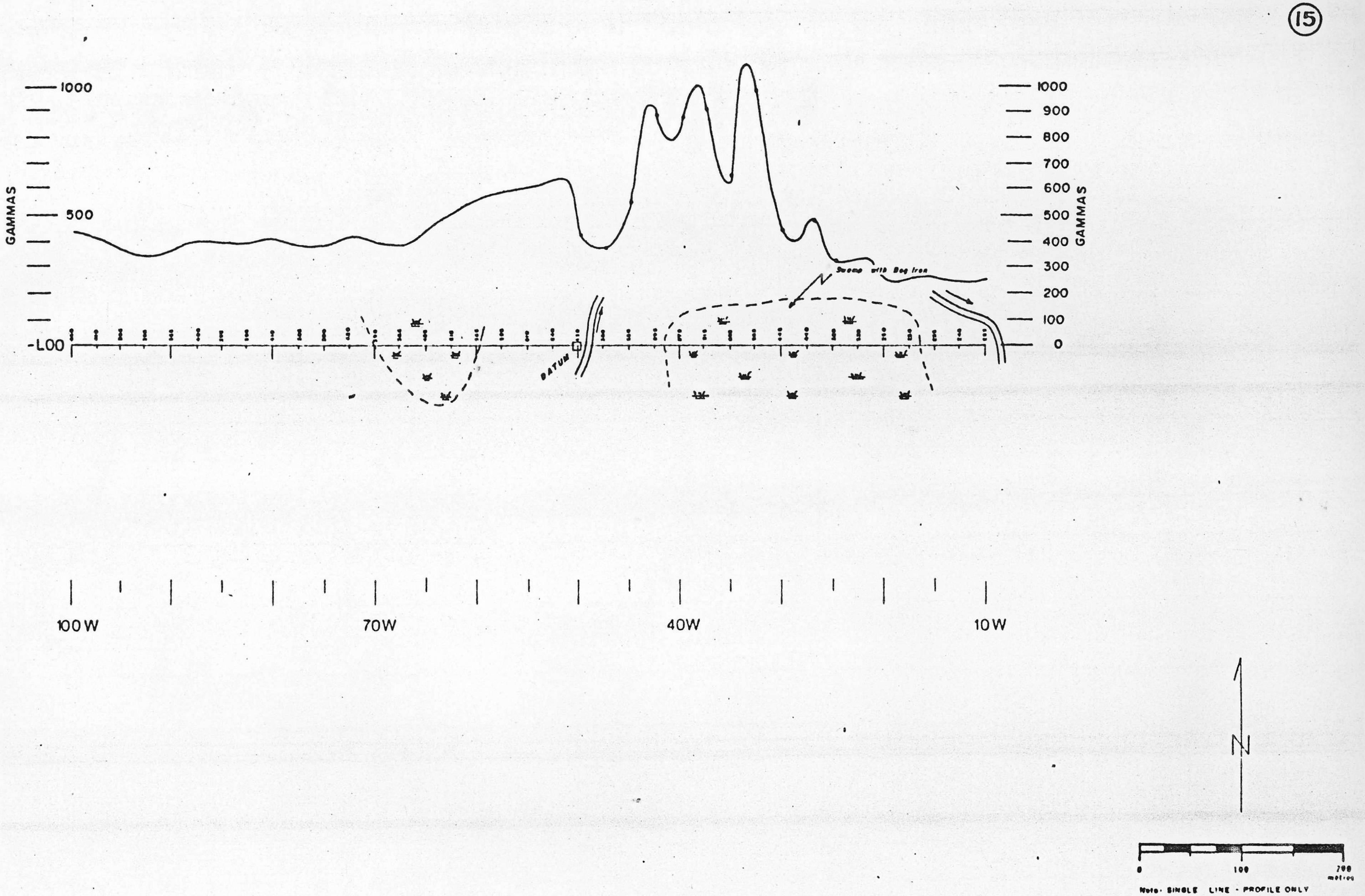

15
LEGEND
20 - Cu PPM
06 - Zn PPM
01 - Ag PPM
1 Mo PPM
Contour Interval = 50 PPM COPPER
L00
100W
70W
40W
10W
N
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO 15
SOIL GEOCHEMINSTRY
COPPER CONTOURED
STANNUS JEREMA
MANIFOLD
R BEATON/RTF
AUG 11, 1977
93-H-13 W

Fig. 46

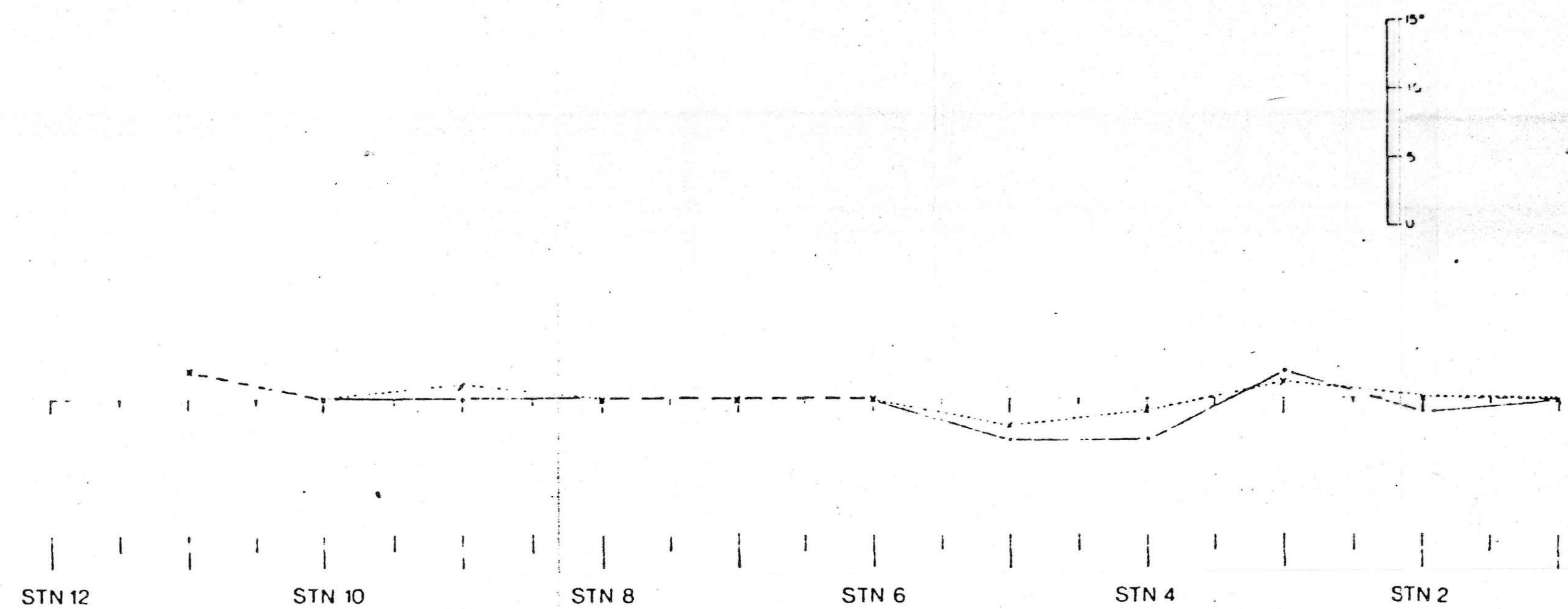


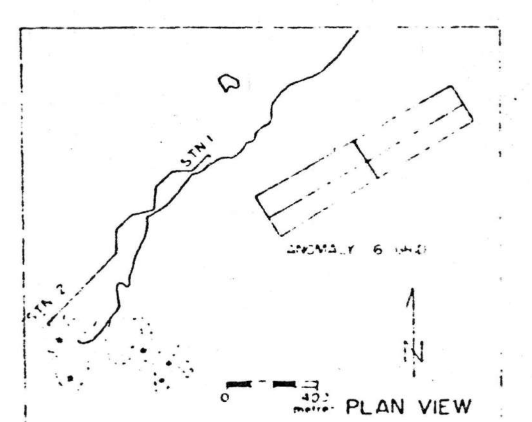
McINTYRE MINES LTD

ANOMALY NO 15
GROUND MAGNETIC SURVEY
INST. - Sharpe Fluxgate MF I

... BY H. MANIFOLD	DATE NOV 8, 1977
DRAWN BY R.H. BEATON	... 93-H-15 W

Fig. 47





INSTRUMENTATION

LOCATION	500 M WEST OF ANOMALY NO 16 CAMP
EQUIPMENT	MODEL SE 300
METHOD	INLINE, CONFIGURATION "A"
COIL SEPARATION	100 METRES
STATIONS	50 METRES
READINGS:	FACING WEST

LEGEND

400 CPS x-------x-------x

1600 CPS •———•———•

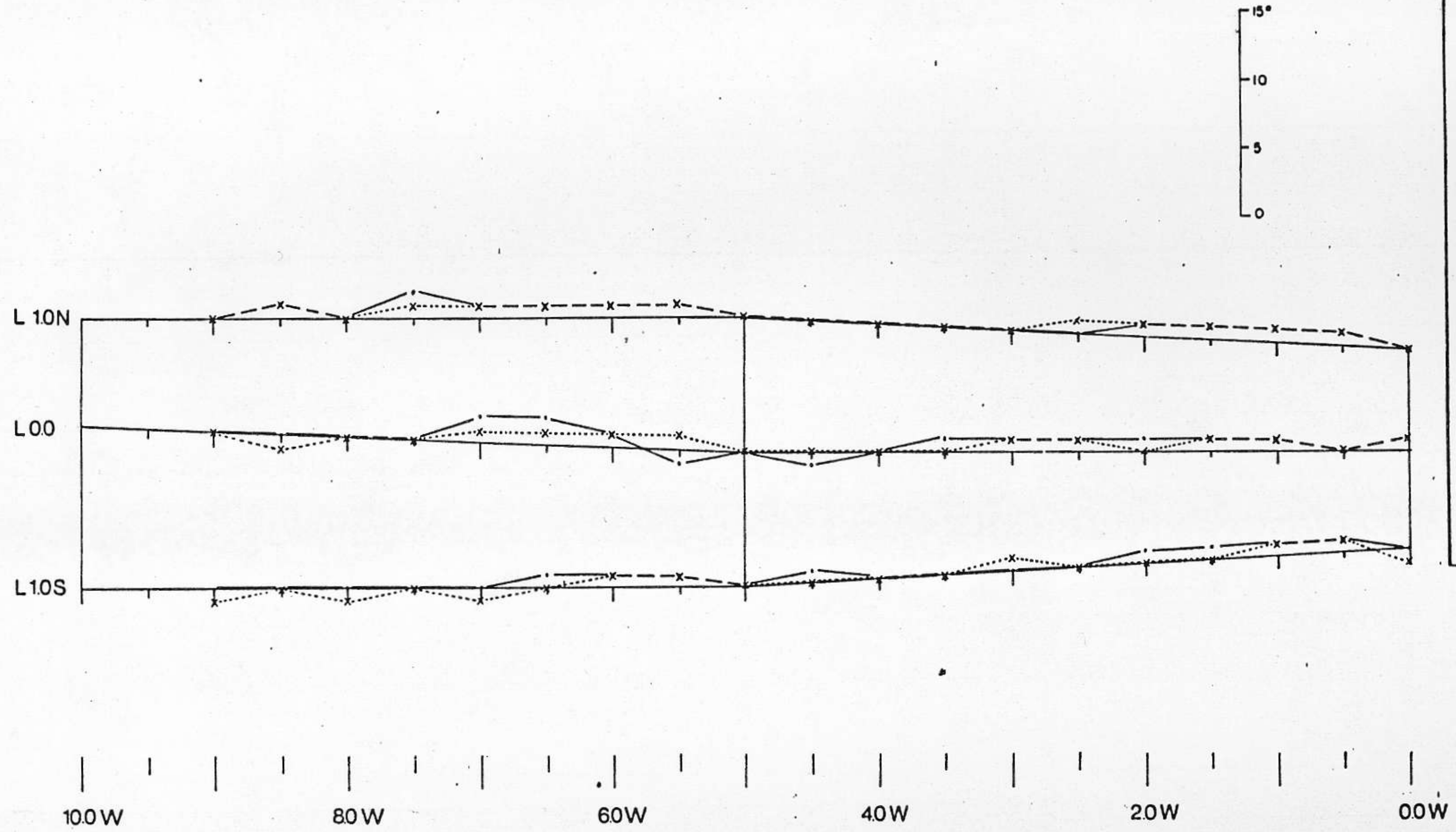
COMBINED x———x———x

McINTYRE MINES LTD

ANOMALY NO 16

EM PROFILE

Fig. 48



INSTRUMENTATION

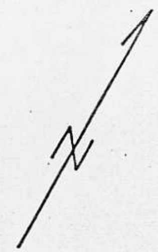
LOCATION:	5.4 KM NORTHWEST OF OGDEN LAKE
EQUIPMENT:	MODEL SE 300
METHOD:	INLINE, CONFIGURATION "A"
COIL SEPARATION:	100 METRES
STATIONS:	50 METRES
READINGS:	FACING WEST

LEGEND

400 CPS x-------x-------x

1600 CPS •———•———•

COMBINED x— — —x— — —x



McINTYRE MINES LTD

ANOMALY NO 16

EM PROFILE

PROJECT NO [illegible]

WORK BY: MA JEREMA	DATE: NOV 15, 1977
DRAWN BY: CJ STANNUS	NTS: 93 N 13W

Fig. 49

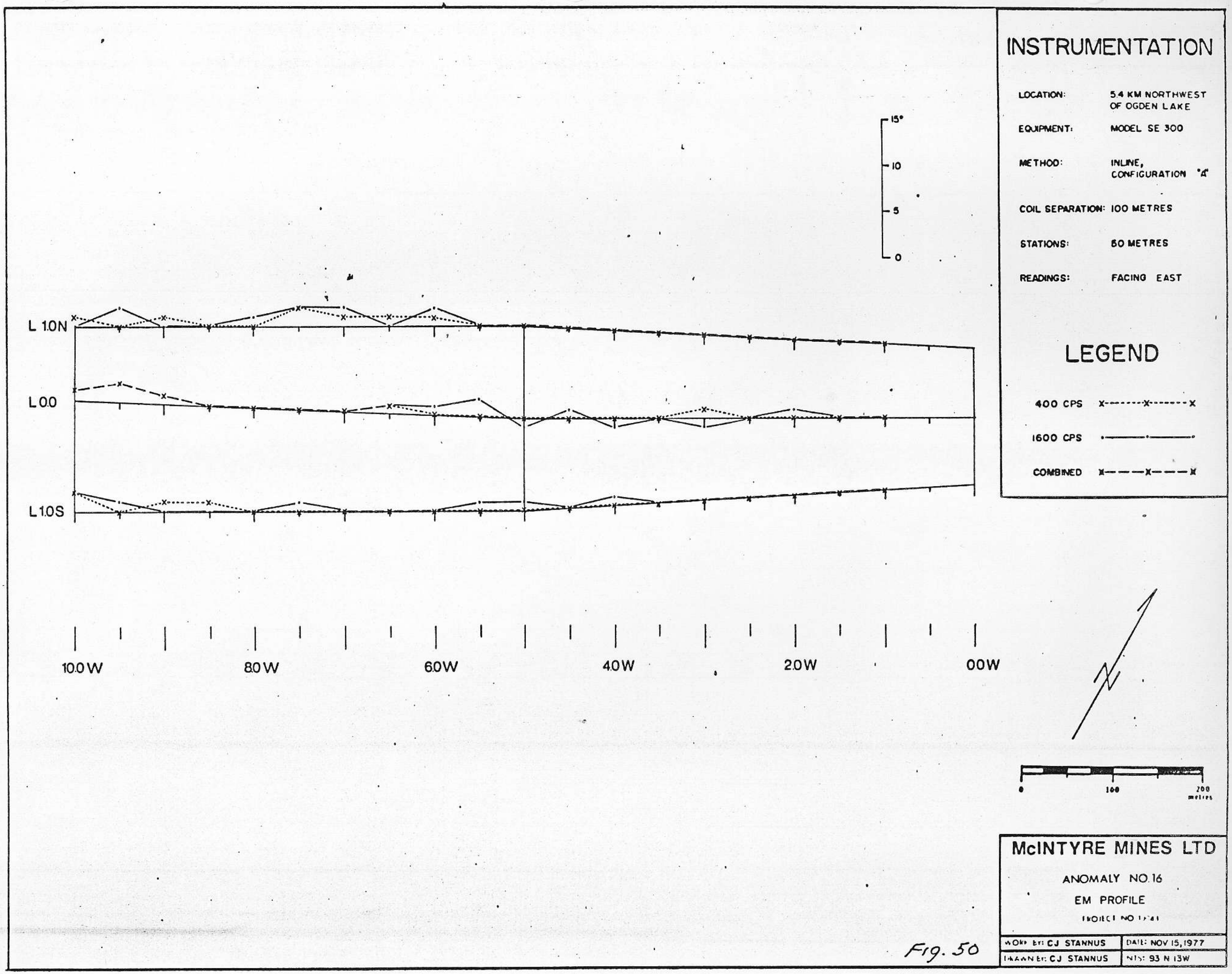
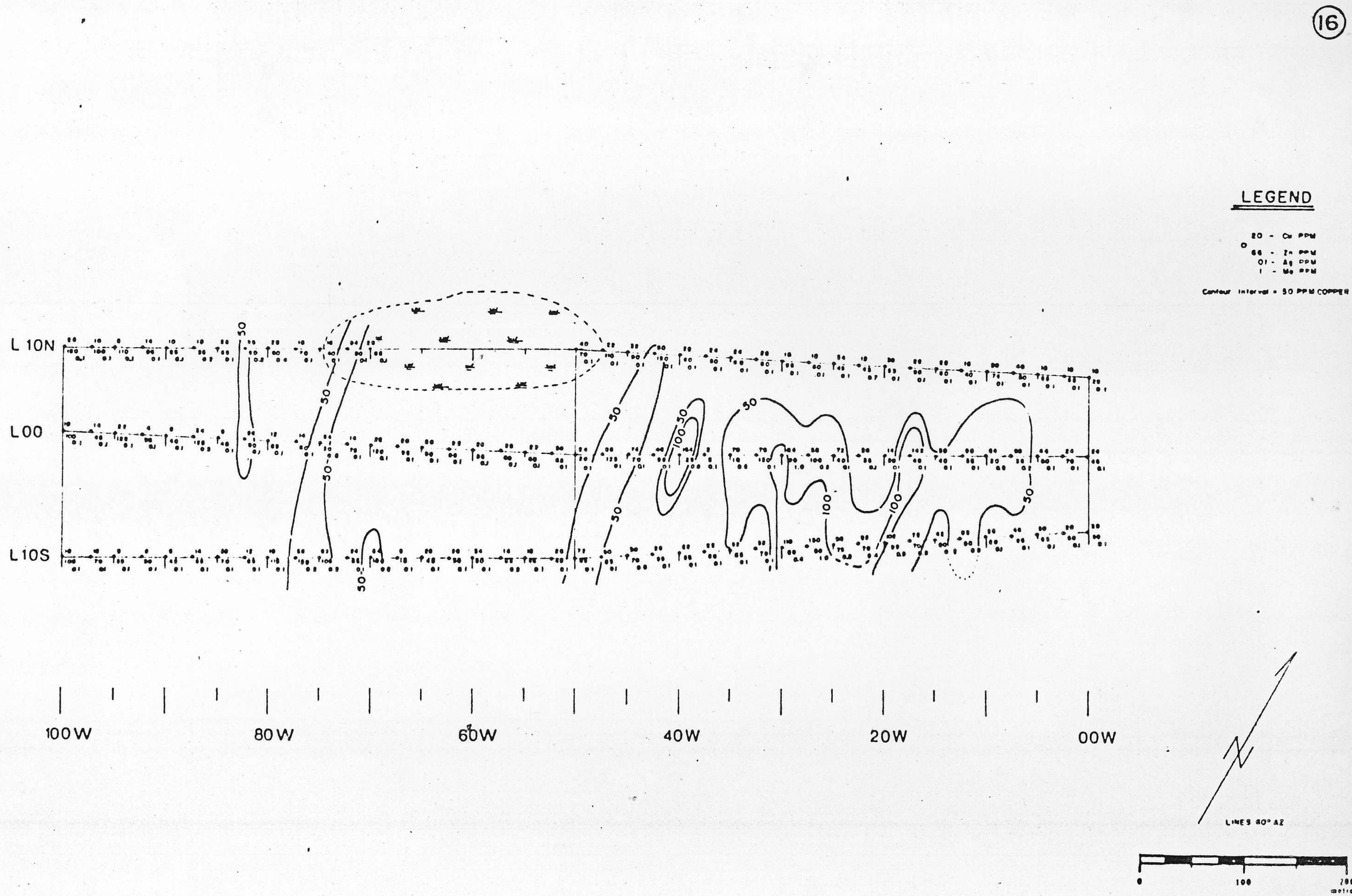

INSTRUMENTATION
LOCATION: 5.4 KM NORTHWEST OF OGDEN LAKE
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING EAST
LEGEND
400 CPS
1600 CPS
COMBINED
15°
10
5
0
L 1.0N
L 0.0
L 1.0S
10.0 W
8.0 W
6.0 W
4.0 W
2.0 W
0.0 W
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO. 16
EM PROFILE
PROJECT NO
WORK BY: CJ STANNUS
DRAWN BY: CJ STANNUS
DATE: NOV 15, 1977
NTS: 93 N 13W

Fig. 50



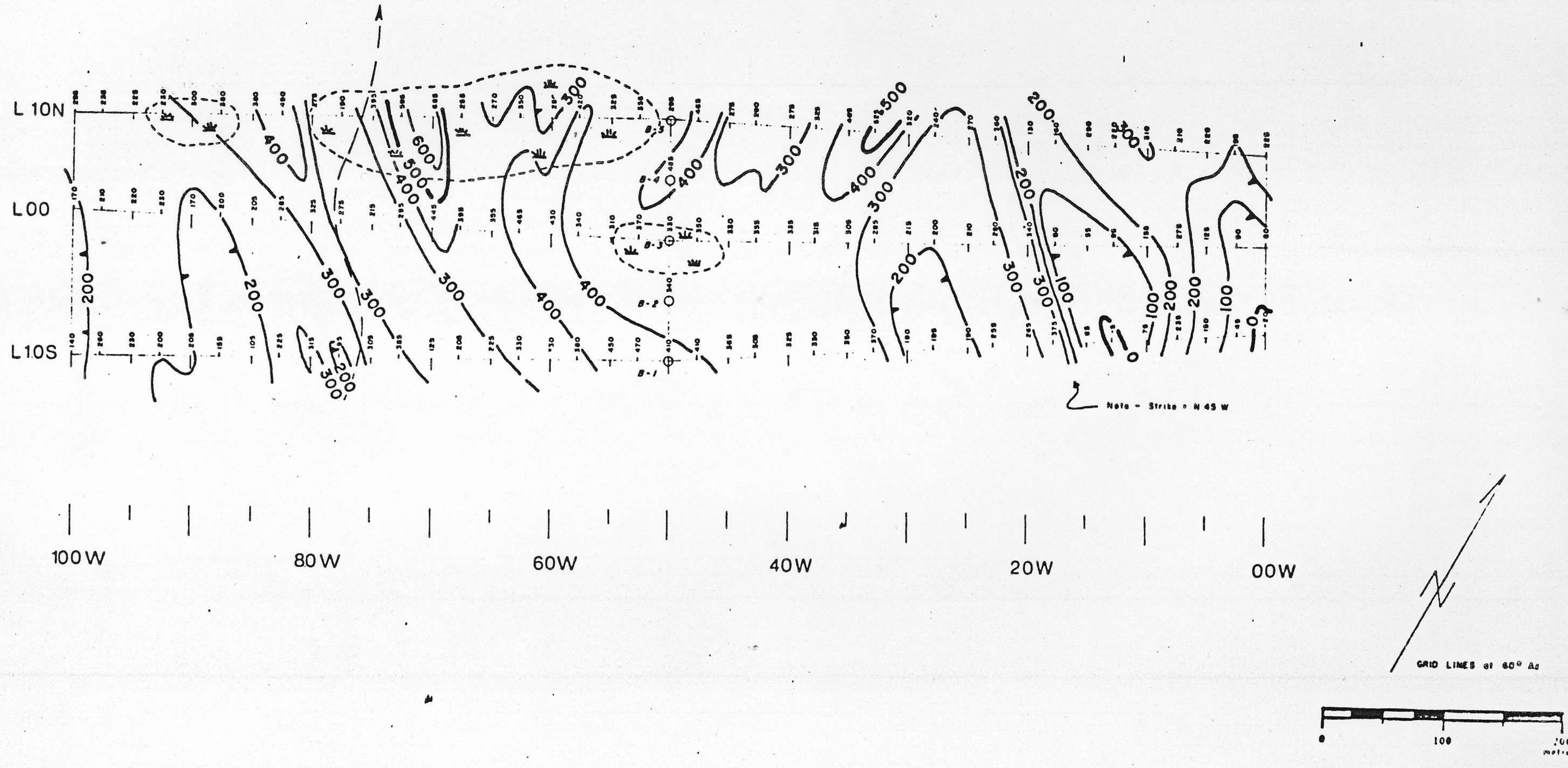
McINTYRE MINES LTD

ANOMALY NO 16
SOIL GEOCHEMINSTRY
COPPER CONTOURED

H MANIFOLD M JERENA	AUG 18, 1977
R BEATON/RTF	93-N-12 W

Fig. 51

(16)



McINTYRE MINES LTD

ANOMALY NO 16

GROUND MAGNETIC SURVEY

INST. - Sharpe MF I

DATUM - L 10S, 50W 470 γ

N. MANIFOLD	SURVEY Aug
R BEATON / RTF	93-N-13 W

Fig. 52

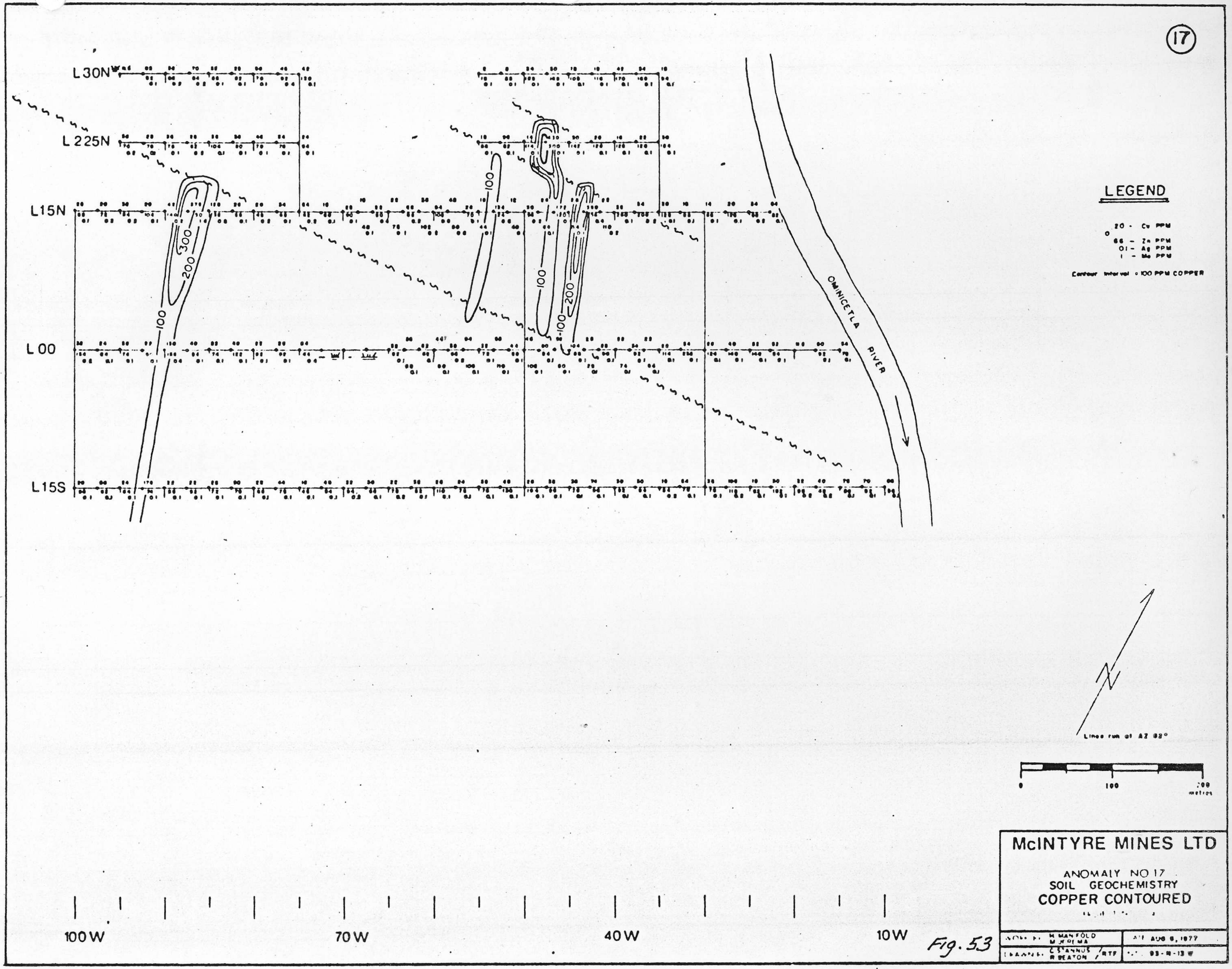
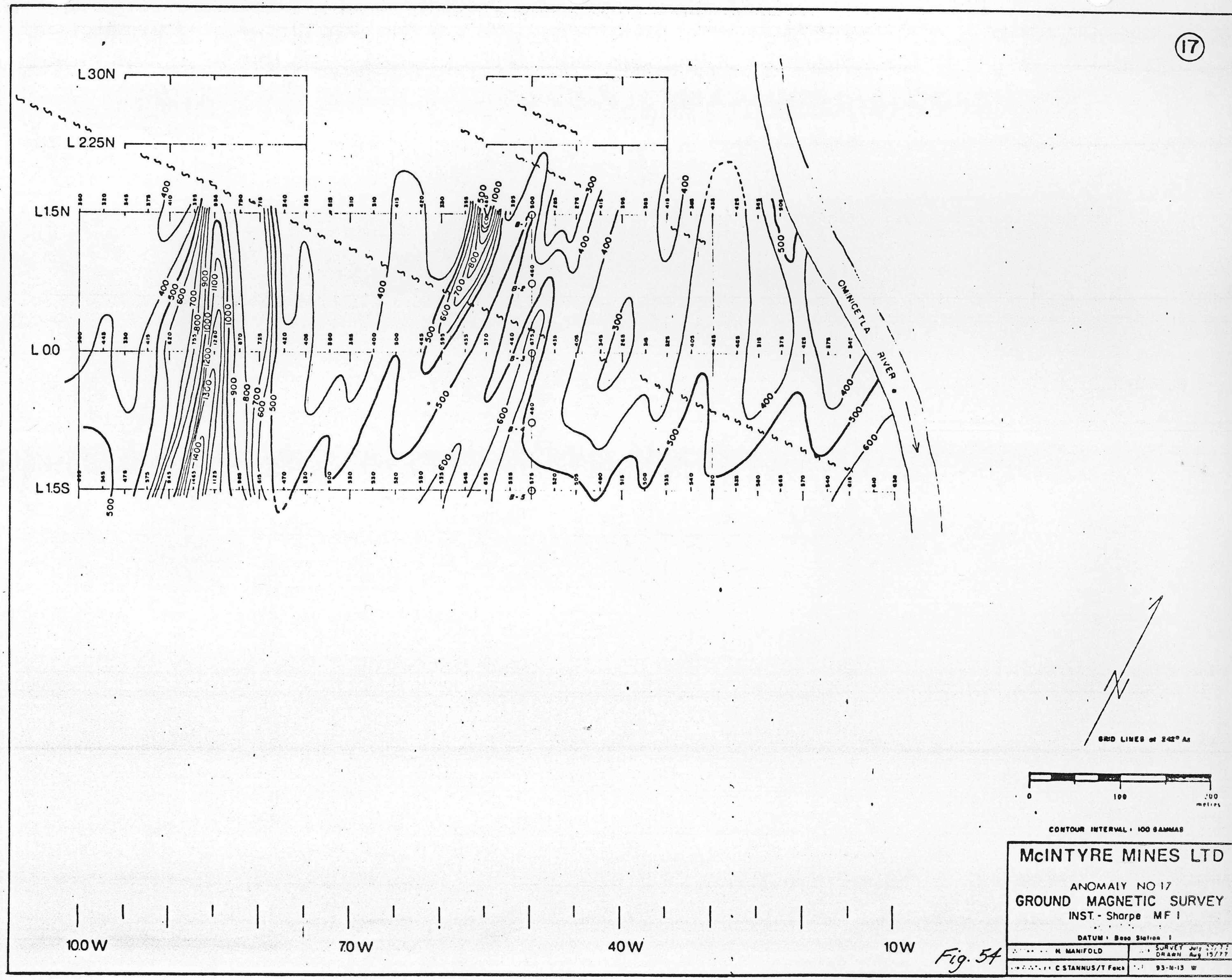
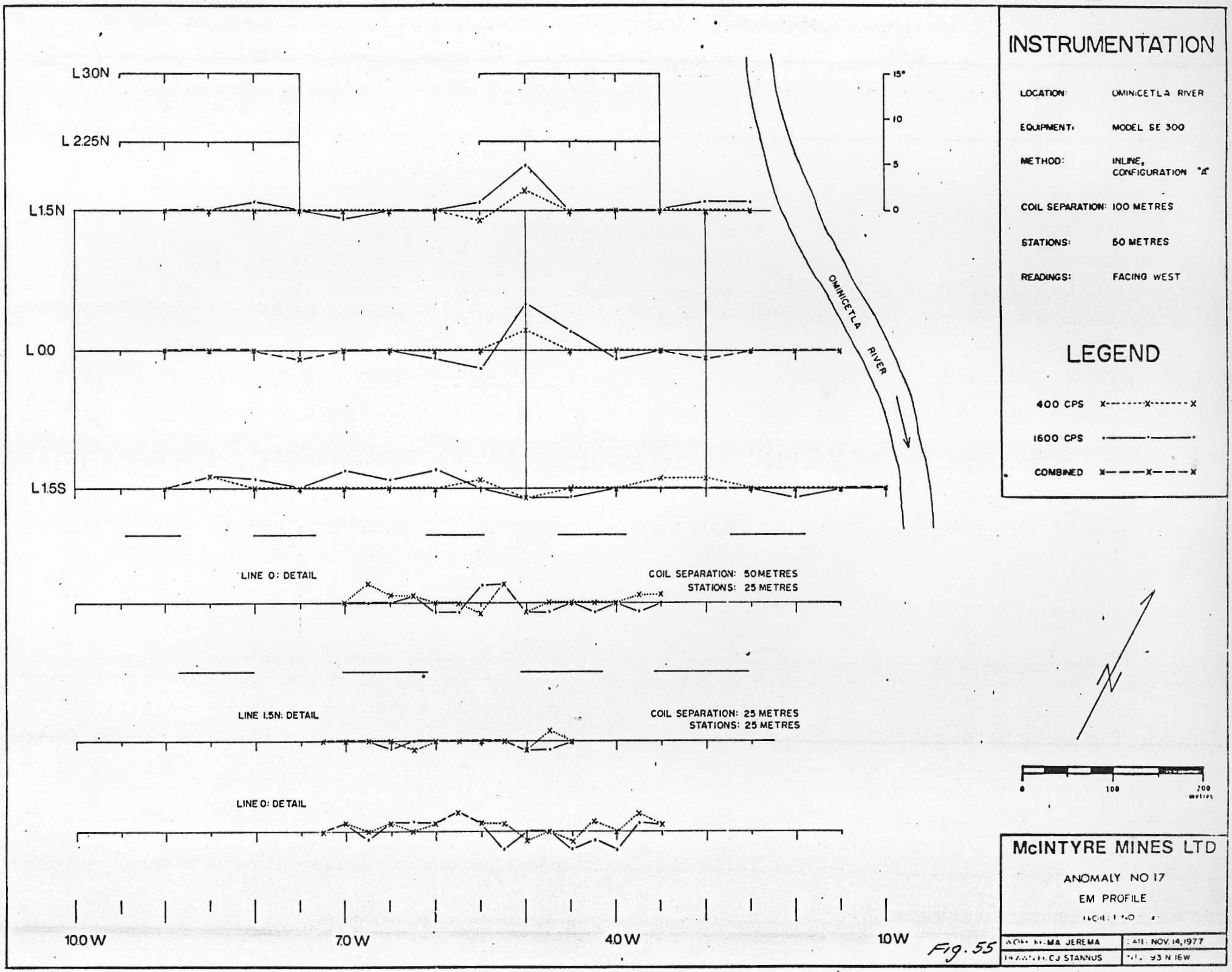

17
L30N
L225N
L15N
L00
L15S
100
300
200
100
200
100
OMINICETLA RIVER
LEGEND
20 - Cu PPM
66 - Zn PPM
01 - Ag PPM
1 - Mo PPM
Contour interval = 100 PPM COPPER
0
100
200
metres
100W
70W
40W
10W
McINTYRE MINES LTD
ANOMALY NO 17
SOIL GEOCHEMISTRY
COPPER CONTOURED
H MANFOLD
C STANNUS
R BEATON
AUG 6, 1977
93-N-13 W

Fig. 53



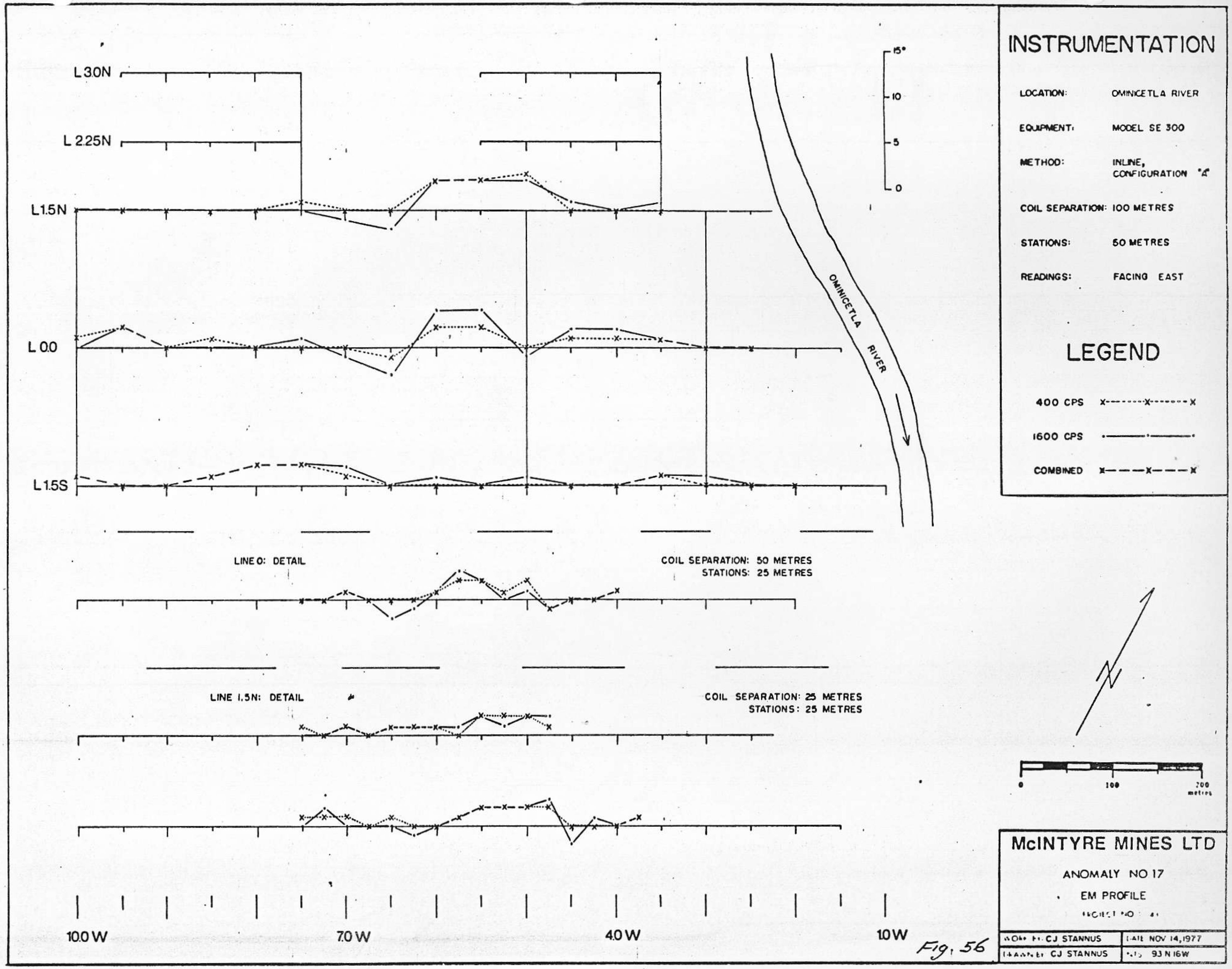
17
L 30N
L 2.25N
L 1.5N
L 0.0
L 1.5S
OMINECETLA RIVER
GRID LINES at 242° Az
0
100
200
metres
CONTOUR INTERVAL : 100 GAMMAS
McINTYRE MINES LTD
ANOMALY NO 17
GROUND MAGNETIC SURVEY
INST. - Sharpe MF 1
DATUM : Base Station 1
H. MANIFOLD
C. STANNUS / T. Feick
93-N-13 W
10.0 W
7.0 W
4.0 W
1.0 W

Fig. 54



L 3.0N
L 2.25N
L 1.5N
L 0.0
L 1.5S
15°
10
5
0
OMINICETLA RIVER
INSTRUMENTATION
LOCATION: OMINICETLA RIVER
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING WEST
LEGEND
400 CPS
1600 CPS
COMBINED
LINE 0: DETAIL
COIL SEPARATION: 50 METRES
STATIONS: 25 METRES
LINE 1.5N: DETAIL
COIL SEPARATION: 25 METRES
STATIONS: 25 METRES
LINE 0: DETAIL
0
100
200
metres
10.0 W
7.0 W
4.0 W
1.0 W
McINTYRE MINES LTD
ANOMALY NO 17
EM PROFILE
MA JEREMA
NOV. 14, 1977
CJ STANNUS
93 N 16W

Fig. 55



INSTRUMENTATION
LOCATION: OMINICETLA RIVER
EQUIPMENT: MODEL SE 300
METHOD: INLINE, CONFIGURATION "A"
COIL SEPARATION: 100 METRES
STATIONS: 50 METRES
READINGS: FACING EAST
LEGEND
400 CPS
1600 CPS
COMBINED
L 3.0N
L 2.25N
L 1.5N
L 0.0
L 1.5S
15°
10
5
0
OMINICETLA RIVER
LINE 0: DETAIL
COIL SEPARATION: 50 METRES
STATIONS: 25 METRES
LINE 1.5N: DETAIL
COIL SEPARATION: 25 METRES
STATIONS: 25 METRES
10.0 W
7.0 W
4.0 W
1.0 W
0
100
200
metres
McINTYRE MINES LTD
ANOMALY NO 17
EM PROFILE
CJ STANNUS
NOV 14, 1977
CJ STANNUS
93 N 16W

Fig. 56

APPENDIX IV

RUTH CLAIMS
PROPOSED BUDGET FOR 1978

7.	Mobilization & Demobilization	
	Material (freight)	500.00
	Personnel: + Air Fare $200.00/man X 5	1,000.00
	+ Taxi $30.00/man X 5	150.00
	+ Misc. Travelling Expenses (Food & lodging) for 5 men @ $35.00/man = 5 X 35.00 X 2	350.00
8.	Food & Lodging	
	75 days X 4 men X $25.00/day	4,500.00
9.	Camp Supplies, Office Supplies,	
	Rentals (Vertical Loop)	2,000.00
		$ 34,461.75
10.	Completing work in areas of Anomalies	
	4, 12, 17 and 6	
	20 man days @ $50.00/day (Soil geochem, geol. & prospecting)	1,000.00
	Food & lodging: 20 man days X $25.00/day	500.00
	Geochemical Assays: 120 samples @ $2.05/sample	246.00
		1,746.00
		$ 36,207.75
11.	Contingencies	4,000.00
	Grand Total	$ 40,207.75

* 40% of this cost is applied to completing work in areas of anomalies 4, 12, 17 and 6.

NB: The cost of this program is largely dependent on the availibility of a helicopter within the area.

MAP 1,2
LEGEND
INTRUSIVES
22 a) GRANITE, b.) GRANODIORITE, c.) DI
21 ULTRA MAFICS
a. Gabbro
b. Serpentinite
20 QUARTZ-FELDSPAR-PORPHYRY.
SITLIKA VOLCANICS
9 RHYOLITIC VOLCANICS
a. Porphyritic (qtz. eye)
b. Amygduloidal or Vesicular
c. Pillowed
8 DACITIC VOLCANICS
a. Porphyritic (qtz. eye)
b. Amyg. or Vesic.
c. Pillowed
7 ANDESITIC VOLCANICS
a. Porphyritic
b. Amyg. or Vesic.
c. Pillowed
6 BASALTIC VOLCANICS
a. Porphyritic
b. Amyg. or Vesic.
c. Pillowed
CACHE CREEK – POSSIBLY SITLIKA
5 GREENSTONE
4 GREYWACKE & SILTSTONE
Siltstone, well bedded; Greywa
2 & 3 2. CHERT
3. ARGILLITE
a. Slaty
b. Phyllitic
1 calcareous
2 graphitic
1 LIMESTONE (marble)
1a. ANKERITIC
SYMBOLS
ROCK OUTCROP, AREA OF ROCK OUTCROP
FLOAT
GEOLOGICAL BOUNDARY: defined
assumed
inferred from Airborne EM (limit of conductive zone)
Sedimentary Rocks (?) S ?
BEDDING: (horizontal, vertical, dip unknown)
BEDDING, ESTIMATED DIP (gentle, moderate, steep) g, m, s,
SCHISTOSITY, GNEISSOSITY, CLEAVAGE, FO (horizontal, vertical, inclined, dip unknown)
SECONDARY CLEAVAGE
QUARTZ VEIN (inclined, vertical)
LINEATION (horizontal, inclined, inclined but plunge u vertical)
FOLD AXES (horizontal, inclined, vertical)
DRAG FOLD (arrow indicates plunge)
ANTICLINE (defined, approximate) (plunging)
SYNCLINE (defined, approximate)
FAULT (defined, approximate, assumed)
PHOTO LINEAR
GLACIAL STRIKE direction of ice movement known, unknow
SWAMP boundary and symbol
HELICOPTER LANDING
GOSSAN g
MINERALIZATION
CHALCOPYRITE
CHALCOCITE
PYRRHOTITE
PYRITE
MALACHITE
MAGNETITE
SPHALERITE
SPECULAR HEMATITE
HEMATITE
JASPER
GRAPHITE
1600 800 0 800
5280 2640
FEET
McINTYRE MINES LIM
GEOLOGY
SITLIKA ASSEMB
TAKLA LAKE A
NORTH CENTRAL
WORK BY: D. Francoeur, R. Beaton
DATE: Summ
DRAWN BY: D.F. - R.B. /r.t.f.
NTS: 93-N-1
RUTH MC 1
RUTH MC 4
RUTH MC 2
RUTH MC 3
KENNCO CAMP
EUREKA SHOWING
Qtz, Cp, Sph (ch)
CRYSTAL SHOWING
Qtz, Spec. Hem, J
banded Py, Mag
CHUM MC
Legal Post
sedimentary outcrops in creek
sedimentary outcrops
HIGHLAND AREA
Burned Area
Outcrop on S. side of burn – Not Checked
Geochem Lines
Geochem Line
Zone of pyritized rhyolite with argillite beds locally graphitic
Based on airborne EM and grid geochemistry
photo linears
photo linear
DIVER PEAK
REDSLIDE PEAK
gossan (rusty, black stain – Mn ?)
talus & cirque wall several large rusty zones
maroon shale & siltstone – in saddle (fault?)
drab calcareous rocks
2
3
4
5
6
8
S ?
inches
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
BRITISH COLUMBIA GEOLOGICAL SURVEY

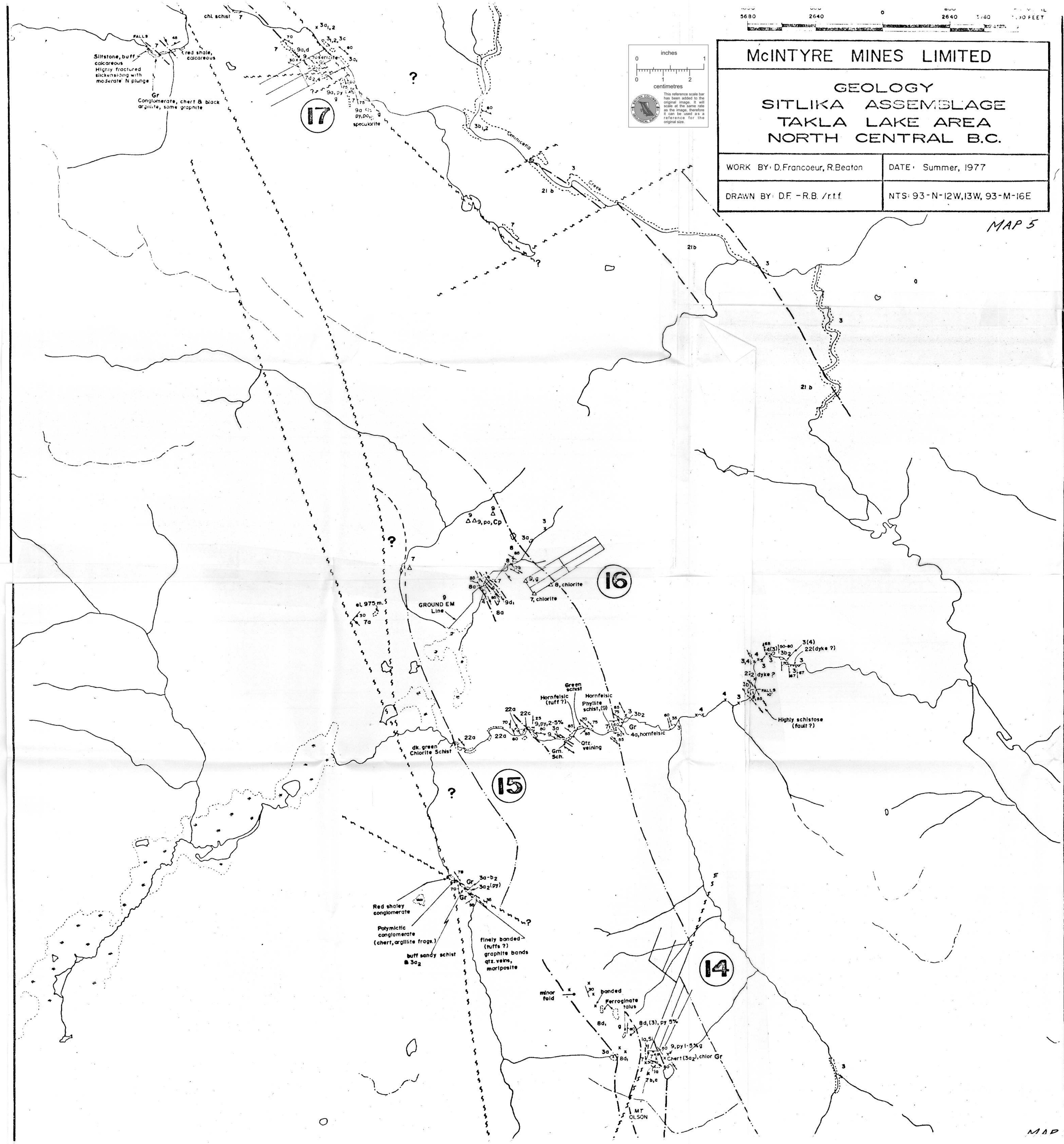

McINTYRE MINES LIMITED
GEOLOGY
SITLIKA ASSEMBLAGE
TAKLA LAKE AREA
NORTH CENTRAL B.C.
WORK BY: D.Francoeur, R.Beaton
DATE: Summer, 1977
DRAWN BY: D.F. -R.B. /r.t.f.
NTS: 93-N-12W,13W, 93-M-16E
MAP 3,4
inches
0 1 2
0 1 2 3 4 5
centimetres
BRITISH COLUMBIA GEOLOGICAL SURVEY
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
LEGEND
INTRUSIVES
22 a) GRANITE, b.) GRANODIORITE, c.) DIORITE
21 ULTRA MAFICS
a. Gabbro
b. Serpentinite
20 QUARTZ-FELDSPAR-PORPHYRY.
SITLIKA VOLCANICS
9 RHYOLITIC VOLCANICS
a. Porphyritic (qtz. eye)
b. Amygduloidal or Vesicular
c. Pillowed
d. Pyroclastics
1. tuff
2. lapilli tuff (4-32 mm)
3. tuff breccia
4. agglomerate
8 DACITIC VOLCANICS
a. Porphyritic (qtz. eye)
b. Amyg. or Vesic.
c. Pillowed
d. Pyroclastics
1. tuff
2. lapilli tuff (4-32mm)
3. tuff breccia
4. agglomerate
7 ANDESITIC VOLCANICS
a. Porphyritic
b. Amyg. or Vesic.
c. Pillowed
d. Pyroclastics
1. tuff
2. lapilli tuff (4-32mm)
3. tuff breccia
4. agglomerate
6 BASALTIC VOLCANICS
a. Porphyritic
b. Amyg. or Vesic.
c. Pillowed
CACHE CREEK - POSSIBLY SITLIKA IN PART
5 GREENSTONE
4 GREYWACKE & SILTSTONE
Siltstone, well bedded; Greywacke, foliated
2 & 3 2. CHERT
3. ARGILLITE
a. Slaty
b. Phyllitic
1. calcarcous
2. graphitic
1 LIMESTONE (marble)
1a. ANKERITIC
SYMBOLS
ROCK OUTCROP, AREA OF ROCK OUTCROP
FLOAT
GEOLOGICAL BOUNDARY:
defined
assumed
BEDDING:
(horizontal, inclined, vertical, overturned, dip unknown)
inferred from Airborne EM
(limit of conductive zone)
Sedimentary Rocks (?) S ?
BEDDING, ESTIMATED DIP
(gentle, moderate, steep) g, m, s.
SCHISTOSITY, GNEISSOSITY, CLEAVAGE, FOLIATION
(horizontal, vertical, inclimed, dip unknown)
SECONDARY CLEAVAGE
QUARTZ VEIN
(inclined, vertical)
LINEATION
(horizontal, inclined, inclined but plunge unknown, vertical)
0-90°
FOLD AXES
(horizontal, inclined, vertical)
DRAG FOLD
(arrow indicates plunge)
ANTICLINE
(defined, approximate)
(plunging)
SYNCLINE
(defined, approximate)
FAULT
(defined, approximate, assumed)
PHOTO LINEAR
GLACIAL STRIKE
direction of ice movement known, unknown
SWAMP
boundary and symbol
HELICOPTER LANDING
GOSSAN g
MINERALIZATION
CHALCOPYRITE Cp
CHALCOCITE Ch
PYRRHOTITE Po
PYRITE Py
MALACHITE Ma
MAGNETITE Mag
SPHALERITE Sph
SPECULAR HEMATITE Sp Hem
HEMATITE Hem
JASPER j
GRAPHITE Gr
1600 800 0 800 1200 1600 METRE
5280 2640 2640 3960 5280 FEET
MT BATES
MT OLSON
13
12
11
10
9
LINEAMENTS
MULTIPLE FAULTING
TAKLA FAULT FROM PHOTO MOSAIC (LINEAMENT)
AEM Delineation
AEM Delineation (weak)
GEOPHYSICAL DEFINITION
PORPHYRY WEST
Geochem line
LOGGED
Pronounced Linear
S?
S
MAP 3,4

McINTYRE MINES LIMITED

GEOLOGY
SITLIKA ASSEMBLAGE
TAKLA LAKE AREA
NORTH CENTRAL B.C.

WORK BY: D. Francoeur, R. Beaton	DATE: Summer, 1977
DRAWN BY: D.F. - R.B. /r.t.f.	NTS: 93-N-12W, 13W, 93-M-16E

MAP 5



LEGEND

INTRUSIVES

22 a) GRANITE, b.) GRANODIORITE, c.) DIORITE

21 ULTRA MAFICS
- a. Gabbro
- b. Serpentinite

20 QUARTZ-FELDSPAR-PORPHYRY.

SITLIKA VOLCANICS

9 RHYOLITIC VOLCANICS
- a. Porphyritic (qtz. eye)
- b. Amygduloidal or Vesicular
- c. Pillowed
- d. Pyroclastics
  1. tuff
  2. lapilli tuff (4-32 mm)
  3. tuff breccia
  4. agglomerate

8 DACITIC VOLCANICS
- a. Porphyritic (qtz. eye)
- b. Amyg. or Vesic.
- c. Pillowed
- d. Pyroclastics
  1. tuff
  2. lapilli tuff (4-32 mm)
  3. tuff breccia
  4. agglomerate

7 ANDESITIC VOLCANICS
- a. Porphyritic
- b. Amyg. or Vesic.
- c. Pillowed
- d. Pyroclastics
  1. tuff
  2. lapilli tuff (4-32 mm)
  3. tuff breccia
  4. agglomerate

6 BASALTIC VOLCANICS
- a. Porphyritic
- b. Amyg. or Vesic.
- c. Pillowed

CACHE CREEK - POSSIBLY SITLIKA IN PART

5 GREENSTONE

4 GREYWACKE & SILTSTONE
Siltstone, well bedded; Greywacke, foliated

2 & 3
2. CHERT
3. ARGILLITE
- a. Slaty
- b. Phyllitic
  1. calcareous
  2. graphitic

1 LIMESTONE (marble)
1a. ANKERITIC

SYMBOLS

ROCK OUTCROP, AREA OF ROCK OUTCROP x
FLOAT Δ
GEOLOGICAL BOUNDARY:
defined
assumed
BEDDING:
(horizontal, inclined, vertical, overturned, dip unknown)
inferred from Airborne EM
(limit of conductive zone)
Sedimentary Rocks (?) S ?
BEDDING, ESTIMATED DIP
(gentle, moderate, steep) g, m, s.
SCHISTOSITY, GNEISSOSITY, CLEAVAGE, FOLIATION
(horizontal, vertical, inclined, dip unknown)
SECONDARY CLEAVAGE
QUARTZ VEIN
(inclined, vertical)
LINEATION
(horizontal, inclined, inclined but plunge unknown, vertical) 0-90°
FOLD AXES
(horizontal, inclined, vertical)
DRAG FOLD
(arrow indicates plunge)
ANTICLINE
(defined, approximate)
(plunging)
SYNCLINE
(defined, approximate)
FAULT
(defined, approximate, assumed)
PHOTO LINEAR
GLACIAL STRIKE
direction of ice movement known, unknown
SWAMP
boundary and symbol
HELICOPTER LANDING (H)
GOSSAN g

MINERALIZATION

CHALCOPYRITE	Cp
CHALCOCITE	Ch
PYRRHOTITE	Po
PYRITE	Py
MALACHITE	Ma
MAGNETITE	Mag
SPHALERITE	Sph
SPECULAR HEMATITE	Sp Hem
HEMATITE	Hem
JASPER	j
GRAPHITE	Gr

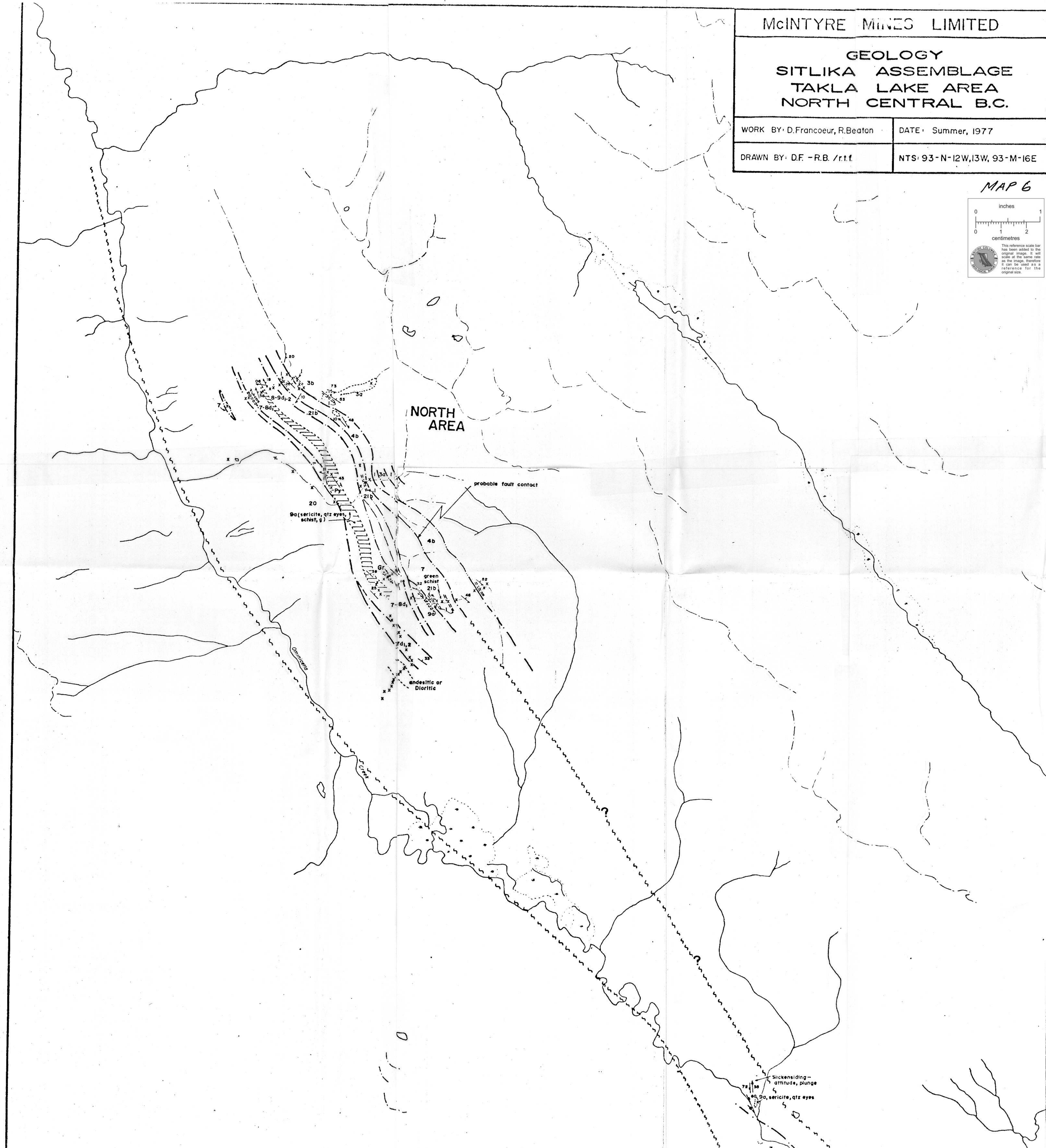
MAP 5

McINTYRE MINES LIMITED

GEOLOGY
SITLIKA ASSEMBLAGE
TAKLA LAKE AREA
NORTH CENTRAL B.C.

WORK BY: D.Francoeur, R.Beaton	DATE: Summer, 1977
DRAWN BY: D.F. - R.B. / r.t.f.	NTS: 93-N-12W, 13W, 93-M-16E

MAP 6



LEGEND

INTRUSIVES

- 22 a) GRANITE, b.) GRANODIORITE, c.) DIORITE
- 21 ULTRA MAFICS
  - a. Gabbro
  - b. Serpentinite
- 20 QUARTZ-FELDSPAR-PORPHYRY.

SITLIKA VOLCANICS

- 9 RHYOLITIC VOLCANICS
  - a. Porphyritic (qtz. eye)
  - b. Amygduloidal or Vesicular
  - c. Pillowed
  - d. Pyroclastics
    1. tuff
    2. lapilli tuff (4-32 mm)
    3. tuff breccia
    4. agglomerate
- 8 DACITIC VOLCANICS
  - a. Porphyritic (qtz. eye)
  - b. Amyg. or Vesic.
  - c. Pillowed
  - d. Pyroclastics
    1. tuff
    2. lapilli tuff (4-32mm)
    3. tuff breccia
    4. agglomerate
- 7 ANDESITIC VOLCANICS
  - a. Porphyritic
  - b. Amyg. or Vesic.
  - c. Pillowed
  - d. Pyroclastics
    1. tuff
    2. lapilli tuff (4-32mm)
    3. tuff breccia
    4. agglomerate
- 6 BASALTIC VOLCANICS
  - a. Porphyritic
  - b. Amyg. or Vesic.
  - c. Pillowed

CACHE CREEK - POSSIBLY SITLIKA IN PART

- 5 GREENSTONE
- 4 GREYWACKE & SILTSTONE
  Siltstone, well bedded; Greywacke, foliated
- 2&3 2. CHERT
  3. ARGILLITE
  - a. Slaty
  - b. Phyllitic
    1. calcareous
    2. graphitic
- 1 LIMESTONE (marble)
  1a. ANKERITIC

SYMBOLS

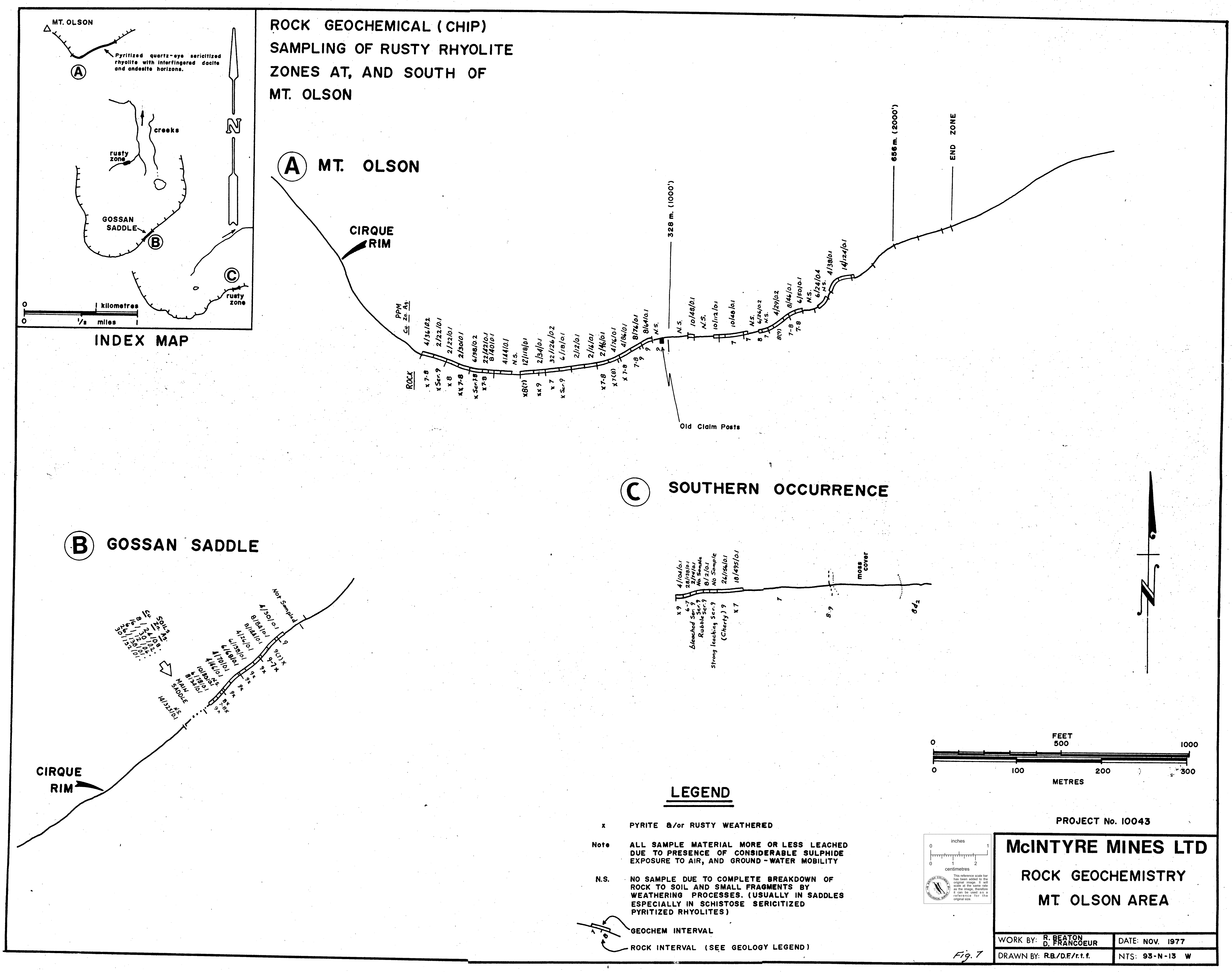
ROCK OUTCROP, AREA OF ROCK OUTCROP
FLOAT
GEOLOGICAL BOUNDARY: defined, assumed
BEDDING: (horizontal, inclined, vertical, overturned, dip unknown)
Inferred from Airborne EM (limit of conductive zone)
Sedimentary Rocks (?) S ?
BEDDING, ESTIMATED DIP (gentle, moderate, steep) g, m, s,
SCHISTOSITY, GNEISSOSITY, CLEAVAGE, FOLIATION (horizontal, vertical, inclined, dip unknown)
SECONDARY CLEAVAGE
QUARTZ VEIN (inclined, vertical)
LINEATION (horizontal, inclined, inclined but plunge unknown, vertical) 0-90°
FOLD AXES (horizontal, inclined, vertical)
DRAG FOLD (arrow indicates plunge)
ANTICLINE (defined, approximate) (plunging)
SYNCLINE (defined, approximate)
FAULT (defined, approximate, assumed)
PHOTO LINEAR
GLACIAL STRIKE direction of ice movement known, unknown
SWAMP boundary and symbol
HELICOPTER LANDING (H)
GOSSAN g

MINERALIZATION

CHALCOPYRITE	Cp
CHALCOCITE	Ch
PYRRHOTITE	Po
PYRITE	Py
MALACHITE	Ma
MAGNETITE	Mag
SPHALERITE	Sph
SPECULAR HEMATITE	Sp Hem
HEMATITE	Hem
JASPER	j
GRAPHITE	Gr

1600	800	0	800	1200	1600 METRES
5680	2640		2640	3960	5280 FEET

MAP 6



ROCK GEOCHEMICAL (CHIP) SAMPLING OF RUSTY RHYOLITE ZONES AT, AND SOUTH OF MT. OLSON
MT. OLSON
Pyritized quartz-eye sericitized rhyolite with interfingered dacite and andesite horizons.
A
creeks
rusty zone
GOSSAN SADDLE
B
C
rusty zone
N
0 1 kilometres
0 1/2 miles
INDEX MAP
A MT. OLSON
CIRQUE RIM
PPM Cu Zn Ag
ROCK
328 m. (1000')
656 m. (2000')
END ZONE
Old Claim Posts
C SOUTHERN OCCURRENCE
bleached Ser. 9
Rubble Ser. 9
Strong leaching Ser. 9
(Cherty) 9
No Sample
moss cover
B GOSSAN SADDLE
Not Sampled
SOILS Cu Zn Ag
MAIN SADDLE
CIRQUE RIM
FEET 0 500 1000
0 100 200 300 METRES
LEGEND
x PYRITE &/or RUSTY WEATHERED
Note ALL SAMPLE MATERIAL MORE OR LESS LEACHED DUE TO PRESENCE OF CONSIDERABLE SULPHIDE EXPOSURE TO AIR, AND GROUND-WATER MOBILITY
N.S. NO SAMPLE DUE TO COMPLETE BREAKDOWN OF ROCK TO SOIL AND SMALL FRAGMENTS BY WEATHERING PROCESSES. (USUALLY IN SADDLES ESPECIALLY IN SCHISTOSE SERICITIZED PYRITIZED RHYOLITES)
GEOCHEM INTERVAL
ROCK INTERVAL (SEE GEOLOGY LEGEND)
PROJECT No. 10043
McINTYRE MINES LTD
ROCK GEOCHEMISTRY
MT. OLSON AREA
WORK BY: R. BEATON D. FRANCOEUR
DATE: NOV. 1977
DRAWN BY: R.B./D.F./r.t.f.
NTS: 93-N-13 W
Fig. 7