REPORT
ON
PHASE I EXPLORATION PROGRAM
COMPLETED BY
MICHAM EXPLORATION INC.
ON THE
TERRACE BAY PROPERTY, ONT.

Timmins, Ontario
February 16, 1984

By: Donald W. Esson, P. Eng.

INDEX

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I SUMMARY

Micham Exploration Inc. have completed the Phase I program on their Terrace Bay property as was recommended by Thomas Skimming, P.Eng. in his Report on the property dated January 30, 1982. Micham has acquired an additional 46 claims adjoining the original 50 claims which were the subject of the Skimming Report.

Expenditures on the property by Micham have totalled $268,554.00 as compared to the Skimming Phase I budget of $145,000.00 for the smaller original claim group.

The prospecting, geological mapping, airborne and ground geophysical surveys and geochemical surveys have shown four areas of interest which warrant further explor-atin. These areas of interest and the Phase II programs proposed for them herein are:

Empress Mine Structure

A preliminary nine diamond drill holes totalling 2,700 feet to test geophysical and geochemical anomalous areas along the 9,000 foot alteration zone associated with this former mine.

South Grid, West Portion

Three diamond drill holes totalling 800 feet to test IP anomalies that are not related to geochemically-anomalous zones.

Ursa Major Prospect

Seven diamond drill holes totalling 1,525 feet are proposed to test 2 EM conductors and 4 IP anomalies in the area of potential precious and/or base metal mineralization.

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Mocan Valley Prospect

A Phase I program of mapping, geochemical and geophysical surveys is proposed for this area of gold mineralization which has not been explored in detail to-date. A follow-up, Phase II program of diamond drilling is suggested for this prospect if warranted by the results of the Phase I program.

Estimated Costs of the recommended programs are:

Empress Mine Structure]		
South Grid West]		$157,000.00
Ursa Major Prospect]		
Mocan Valley Prospect		
Phase I	29,000.00	
Phase II	125,000.00	$154,000.00
Total Costs		$311,000.00

I INTRODUCTION

The writer was retained by Micham Exploration Inc. to review the exploration work performed on their Terrace Bay, Ontario property, under the direction of David Bell Geological Services Inc. (DRBGS) during 1983.

The work performed by DRBGS has been summarized in two reports by that Company, authored by Peter A. Dadson, as appended hereto. These reports concluded that additional work should be performed in the 1984 field season and recommended diamond drilling immediately.

In 1982 (see References), Thomas Skimming reported on a 50 claim property owned by Micham Exploration in Syine Township, Ontario which forms a portion of the now 96 claim property. This Report covered in detail a description of the property, location and access, topography, exploration history and general geology. Skimming also proposed a three phase exploration program consisting of a Phase I program of geological mapping, soil geochemistry, ground magnetic and electromagnetic surveys and trench or surface sampling where practicable. Subsequent phases proposed would be contingent on progressively favourable results and were to consist primarily of diamond drilling.

Costs of the work proposed by Skimming were:

Phase I	$145,000.00
Phase II	145,000.00
Phase II	480,000.00

The work performed during 1983 was that of Phase I and, while some additional detail is proposed, Phase I may be considered to be completed. Total expenditures on the property by the Company to Feb. 1984 were approximately $268,554.17.

Subsequent to the Skimming Report, the Company acquired by staking an additional 45 claims and optioned one patented claim so that the property now consists of 96 claims. The Reports by Dadson cover the 96 claim property and are appended hereto.

This Report is a review of the work performed and analyses the conclusions and recommendations. This Report is based on the writer's extensive knowledge of Canadian gold deposits and numerous property examinations and diamond drill core logging in the Hemlo-Terrace Bay area. The writer has not visited the specific Terrace Bay property of Micham Explorations Inc.

For details of the services in the area, claim status, history and geology plus location and claim maps, the writer is referred to the Report of Dadson, Appendix I hereto.

III REVIEW AND COMMENT ON 1983 WORK PROGRAM (PHASE I)

No comment is required to the first 15 sections of the Dadson Reports (1983) dealing with the history and geology of the property. Mr. Dadson supervised the geological mapping and is conversant with the property and area. To-date, no reports have been prepared on the geochemical surveys while the geophysical surveys are the subject of a Report by Frank L. Jagodits (1984) Appendix III. Maps have been prepared to illustrate the results of these

surveys and have been used by the author in preparation of this Report. A composite map showing the anomalous areas has been prepared and is presented herein, as is the geological map accompanying the Dadson Report.

III-1 Airborne Mag, VLF-EM and EM

The property has been covered by an airborne (helicopter) magnetic, VLF-EM and EM survey. On a regional scale, the magnetic and VLF contours give an outline of underlying bedrock geology. On a property scale, there is a VLF anomaly which is more-or-less coincident with the Empress Mine structure over its eastern extension but which does not appear to extend onto or west of the Empress Claim. This area has been investigated by more definitive surveys (see below).

Other than in the vicinity of the Ursa Major area at the extreme north of the property, there are no AEM conductors on the property. In the vicinity of the Ursa Major location, there are four or five EM conductors with coincident or flaking magnetic anomalies. This area warrants further investigation as is more clearly discussed under Recommendations.

Dadson Section 16.0 Major Prospects

Dadson (p. 23) recognized three major prospects on the Micham property. The formerly gold-producing Empress mine structure is the largest of the prospects and has been explored the most thoroughly by the recent program.

At the present stage of exploration, the writer agrees that there are three major prospects, being:

16.1 Empress Mine Structure

In addition to the geological observations of a 9,000 feet zone of altered, sheared mafic volcanics, as noted by Dadson, there is a more-or-less continuous indication of geochemical and geophysical anomalous conditions also outlining the Empress structure.

The airborne survey failed to detect the Empress structure other than a rather weak VLF conductor which lies just north of the eastern half of the structure. Similarily, the ground magnetic and VLF surveys were of little use in outlining the structure.

The induced polarization surveys did clearly show the Empress structure in the central and eastern areas. To the east, additional coverage is required (see Jagodits p. 16) to delineate the extent of the structure. West of the Empress claim boundary, the zone, as evidenced by IP results, is much less-well mineralized.

Geochemical anomalous results extend, discontinuously, along the Empress structure and are best defined in the central area of the Empress claim. To the northeast, the zone is weakly definable geochemically, while to the west the zone again appears to be less-well mineralized. In the central portion of the Empress claim is a broad geochemical anomaly which extends continuously east of the claim boundary but does not extend to the western claim boundary.

16.2 Ursa Major

Judging from sampling results this occurrence appears to be in more of a silver than gold province.

The airborne EM surveys in this area indicated several conductors with flanking magnetic anomalies. Ground EM (Max-Min) surveys are discussed in the Jagodits Report (Appendix III). In all, he recognized 8 conductors or which 5 are considered to be valid and 2 others warrant further ground examination.

Induced Polarization surveys detected 7 anomalous zones of which 3 are considered worthy of immediate diamond drilling.

Geochemical surveys were completed in the area for Au, Ag, Cu, Zn and Mo. Three, one line gold assays were identified, however there were no significant anomalous silver or molybdenum values detected which is surprising in light of the silver and molybdenum values detected in rock samples.

Three, broad east-west trending Copper-Zinc anomalous zones were detected, one at 100-200 north, one at 500-600 north and one 1500-1800 north. The later zone, with a west-northwesterly trend, has a coincident geophysical (IP and EM) expression.

16.3 Mocan Valley

Subsequent to the Dadson Report, additional geochemical sampling data has been received. Four distinctly anomalous zones are indicated. The anomalous zone extending from L112W, 1200N to L104, 800N is coincident with the contact between mafic volcanics (to the north) and the mafic intrusives (?) and tuffs (to the south). This anomaly lies just south of the Mocan Valley adit and a vein system extending eastward from which significant gold assays were obtained in 1983 (up to 0.595 oz Au/t).

The significance of the other three soil anomalies requires further examinations on the ground and by extended geo-technical surveys.

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IV CONCLUSIONS

On the portions of the Micham Terrace Bay property which have been explored to-date, three areas of significant precious metal mineralization have been delineated---two of gold and one of silver. Further indications of gold mineralization have been located in the central section of the property which has not be subject to detailed examination as yet.

The three zones defined all warrant further exploration to determine their economic potential. The relatively unexplored portion of the property deserves a detailed, preliminary exploration program similar to that performed in 1983 on the other portions of the property.

The 1983 exploration program has completed the Phase I work as proposed by Skimming (1982). Some additional detailed work is proposed herein to define drill targets, particularily in the Mocan Valley area. A preliminary program of exploration is proposed on the central claims which were not part of the property at the time of Skimming's Report. The work to-date has resulted in more-than-sufficiently encouraging results to continue with Phase II of Skimming's Recommendations, i.e., diamond drilling.

Expenditures by Micham Explorations on the property have been approximately $268,554.17, including additional claims acquisition as compared to the original Phase I estimate by Skimming of $145,000.00.

V RECOMMENDATIONS

The writer concurs with Dadson's Recommendation (p. 28) that the central area of the property, where encouraging gold values have been located, be gridded and

subjected to the same preliminary exploration program as the balance of the property. Detailed recommendations for this work and its costs are not included herein.

For the major identified prospects the following is proposed.

Empress Mine Prospect

Exploration of the Empress Mine structure is more complete than that of the other major prospects. The writer agrees with Dadson, that surface exploration of the structure should be continued in 1984 by stripping and trenching along strike of the alteration zone.

The writer concurs with Dadson's recommendations (p. 27) that this prospect should be diamond drilled in the vicinity of the former mine. However the writer does not concur in the recommendation that this drilling be extended west of the Empress claim (other than for geological information) as the mineralization appears to weaken to the west. The mineralization does extend east (or ENE) of the Empress claim boundary and there is evidence that, while the mineralization is weaker than over the former mine, it is stronger than to the west. Thus diamond drilling is recommended east of the claim boundary and along strike of the structure.

Jagodits (p. 16) also recommends additional detailed geophysical surveys over the Empress Mine structure (his anomaly A1) to define the anomalies prior to diamond drilling. However, if drilling is to proceed prior to further surveys and surface examinations, he suggests (p. 18) the primary targets

to be Anomalies A1-2 and A1-3. He further suggests that Anomaly A1-4 has three drill targets based on geophysics alone.

The writer concurs with Jagotis and Dadson that, if drilling is to proceed prior to any further geo-technical work, the Empress Mine structure (Anomaly A-1) is the primary target. The drilling should be designed to obtain as much geological-structural data as possible in light of the fact that little information is available on the attitude of the structure.

Suggested locations of holes would be:

Location	Azimuth	Angle	Depth	Comment
L22W 10+008	Grid N	-45°	325	Anomaly A1-1
L20W 10+50S	Grid N	-45°	225	Anomaly A1-2
L18W 9+50S	Grid N	-45°	325	Anomaly A1-2
L12W 5+50S	Grid N	-45°	275	For Dip
L12W 5+50S	Grid N	-60°	350	Anomaly A1-3
L0 0+25S	Grid N	-45°	275	Anomaly A1-4
L0 3+00S	Grid N	-45°	375	Anomaly A1-4
L8E 1+50N	Grid N	-45°	225	Anomaly A1-4
L8E 1+50N	Grid N	-60°	325	Anomaly A1-4
Sub-total, Empress Mine Structure			2,700	

South Grid, West Portion

The other anomalies on the Southern Grid by Jagodits, i.e., A2 and A3, have no coincident geochemical expression. One hole to intersect each anomaly is recommended. Locations of these holes would be:

Location	Azimuth	Angle	Depth, ft	Comment
L64W 2+25S	Grid N	-45°	350	
L64W 5+75S	Grid S	-45°	225	Cross-Section
L64W 8+50S	Grid N	-45°	225	
Total, South Grid West			800 ft.	

Ursa Major Prospect

This is the second best-explored of the three major prospects. It appears that it is a silver-base metal, rather than a gold, prospect. The soil geochemical survey for gold and silver has not indicated any significantly anomalous zones. The copper-zinc surveys did produce some indication of broad areas anomalous in these elements.

While the geochemical results are inconclusive, there are two quite strong EM conductors which warrant diamond drill testing for precious and/or base metal mineralization. In addition there are four significant IP conductors of which three are recommended by Jagodits (p.18) for drilling. As attitudes of the structures are imperfectly known, the drilling proposed herein is more extensive than that proposed by Jagodits and would also test the fourth IP anomaly. The recommended drilling is located as follows:

Location	Azimuth	Angle	Depth	Comments
L0 13+75N	Grid S	-45	200	To determine
L0 13+75N	Grid S	-60°	300	dip
L0 10+75N	Grid S	-45°	250	X-Section
L0 7+50N	Grid N	-45°	250	
L2W 17+50N	Grid S	-50°	125	

Location	Azimuth	Angle	Depth	Comments
L5W 14+50N	Grid N	-45°	200	X-Section
L5W 17+00N	Grid S	-45°	200	
Total Footage, Ursa Major			1,525	

Summary, Total Footage	
Empress Mine Structure	2,700 ft.
South Grid, West	800 ft.
Ursa Major	1,525 ft.
Total:	5,025 ft.

Mocan Valley Prospect

This is the most interesting of the three prospects in that it is, for the most part, a new discovery on which little work has been done. Significant gold mineralization has been found in both rocks and soils. This prospect required further definition by geological, geochemical and geophysical work prior to diamond drilling:

It is recommended that:

Phase I

1. Intermediate lines be cut at 114W, 110W, 106W, 102W and 98W from the base line to 2000N. These intermediate lines should be soil sampled at 50 foot intervals, while the existing lines are to be sampled at the intermediate points (between the existing 100 foot sample locations) over the same area. Silver has not been found to be diagnostic of gold mineralization in surveys to-date and it is suggested that analysis be for Au, Cu and Zn only.

2. An Induced Polarization survey should be conducted over lines 120W to 96W, from the base lines to 2800N and over intermediate lines to 2000 N.

3. The area of the IP survey should be mapped and prospected in detail; paying particular attention to zones of sulphide, quartz and gold mineralization and alteration.

Phase II

4. Assuming there are positive results from items 1 to 3 above, the resulting targets should be diamond drilled.

VI COSTS OF RECOMMENDED PROGRAMS - Phase II

Empress Mine Structure, South Grid West and Ursa Major Area

1.	Diamond Drilling		
	5,025 ft. @ $20./ft, say		$100,000.00
	Mob & Demob		10,000.00
2.	Assaying		
	250 @ $20./ea		5,000.00
3.	Supervision		
	2 man, 1½ months @ $6,000./month	9,000.00	
	Board, Accommodation, etc.	2,000.00	
	Transportation	1,000.00	12,000.00

4.	Consulting & Reporting		
	10 days @ $500./day	$5,000.00	
	Transportation, charters, etc.	2,000.00	
	Drafting, typing, telephone, etc.	3,000.00	$10,000.00
5.	Total		$157,000.00

Mocan Valley Prospect
Phase I

1.	Geochemical Survey		
	Linecutting		
	2 mi @ $300./mile	$600.00	
	Soil sampling, 360 samples		
	Sampling 5 days @ $100.	500.00	
	Analyses 360 @ $20./ea	7,200.00	
	Helicopter	800.00	
	Travel, accommodation, camp, etc.	900.00	10,000.00
2.	Induced Polarization Survey		
	4 mi @ $1,200./mi	4,800.00	
	Helicopter	800.00	
	Travel, accommodation, camp, etc.	900.00	6,500.00
3.	Geological Mapping & Prospecting		
	Geologist, 1 week @ $1,000/wk	1,000.00	
	Helper, 1 wk @ $500./wk	1,000.00	
	Helicopter	800.00	
	Travel, accommodation, camp, etc.	700.00	4,000.00

4.	Consulting and Reporting		
	5 days @ $500./day	$2,500.00	
	Drafting, typing, photocopy, etc.	1,000.00	
	Helicopter, travel, accommodation, etc.	1,000.00	$4,500.00
5.	Contingency 15%	say	4,000.00
	Total Phase I		$29,000.00

Phase II

1.	Diamond Drilling		
	3,000 ft of BQ coring @ $35./ft all inclusive		105,000.00
	Consulting & Reporting		5,000.00
	Contingency @ 15%	say	15,000.00
	Total Phase II		$125,000.00
	Total Cost Mocan Valley, Program		$154,000.00

Summary of Costs

Empress Structure, South Grid West and Ursa Major		157,000.00
Mocan Valley Phase I	$29,000.00	
Phase II	125,000.00	154,000.00
Total Cost, Recommended Program		$311,000.00

Note: Costs of the Phase I, preliminary exploration program for the central portion of the property are not included herein.

All of which is respectfully submitted,

Donald W. Esson, P.Eng.

Timmins, Ontario
February 16, 1984

REFERENCES

Bell, David R.
1982
Report on the Geophysics Micham Exploration Inc., Syine Township..... Thunder Bay, Ontario, dated November 14, 1982

Dadson, Peter A.
1983
Geological Report, Micham Exploration Inc., Terrace Bay Claims, ... Thunder Bay, Ontario, for David R. Bell Geological Services Inc., Oct. 24, 1983.

Dadson, Peter A.
1983
Summary Report, Empress claim, Syine Township..... Thunder Bay, Ontario, for David R. Bell Geological Services Inc., Dec. 9, 1983.

Jagodits, Frank L.
1984
Report on Geophysical Surveys, Terrace Bay Claims, Syine Township and Santoy Lake Area. District of Thunder Bay, Ont. for Micham Explorations Inc. January, 1984

Skimming, Thomas
1982
Report on the Property of Micham Exploration Inc., Syine Township....., Thunder Bay, Ontario, dated January 30, 1982.

CERTIFICATE

I, Donald W. Esson, do hereby certify:

1. that I am a consulting geologist and reside at R. R. #1, Duntroon, Ontario.

2. that I am a graduate of the University of Toronto, 1957, with the degree of Bachelor of Applied Science (Mining Geology).

3. that I have been practicing my profession since graduation.

4. that I am registered with the Association of Professional Engineers of Ontario as a Professional Engineer.

5. that I do not have, nor do I expect to receive, directly or indirectly, any interest in the properties and/or securities of Micham Exploration Inc.

6. that my report is based on extensive knowledge of Canadian gold deposits and work in the Hemlo-Terrace Bay area, on review of all available reports, maps, and sections resulting from earlier work in the area and in particular on review of the Reports and maps resulting from the 1983 Phase I exploration program on the Micham Terrace Bay Property.

Timmins, Ontario
February 16, 1984

Donald W. Esson, B.A.Sc., P. Eng.

APPENDIX I

APPENDIX II

BRIEF SUMMARY REPORT
EMPRESS CLAIM
SYINE TOWNSHIP
DISTRICT OF THUNDER BAY, ONTARIO

December 9, 1983
Timmins, Ontario

Per: David R. Bell Geological Services Inc.
By: Peter A. Dadson

TABLE OF CONTENTS

List of Figures

SUMMARY

During the 1983 field season, David R. Bell Geological Services Inc. were contracted to conduct an exploration program over claim TB459728 (Empress Claim) in the Terrace Bay area of Ontario.

This program was initiated by the establishment of a cut grid system for control of the various geo-technical surveys, geological mapping, soil geochemistry and several geophysical surveys were utilized to delineate zones of economic importance.

Mafic volcanics dominated the geological succession with diorites and felsic units being present at the north end of the claim. Pervasive carbonate alteration was evident and with the vein(s) system forms the NE to SW striking Empress structure which hosted former producing gold mine, the Empress Mine. All of the old workings were re-located during the mapped and rock sampling confirmed the presence of ore grade material.

Both the VLF-EM and IP chargebility surveys were successful in outlining the extension of the Empress structure, while the chargebility also delineated three satellite zones to the north. Soil samples taken east and west of the claim had anomalous gold values and were coincident with the extension of these conductors.

The encouraging gold assays obtained from numerous trenches along the structure, the anomalous soil geochemistry just off the claim combined with pervasive carbonatization of the wall rocks, quartz veining and sulphide mineralization has strengthened the gold potential of this claim. With the advanced nature of ground work it has been recommended that a diamond drill program be undertaken to further define the Empress structure and that backhoe trenching and/or bulldoze stripping with hydraulicking should follow in 1984 to provide a basis for detailed mapping and systematic rock sampling.

INTRODUCTION

The exploration program undertaken by David R. Bell Geological Services Inc. in the 1983 field season over the Empress claim was carried out in conjunction with similar work on the remaining Micham claims.

The known Empress structure was the main zone of interest due to the past production of the Empress Mine. A series of surveys including geological mapping, soil geochemistry, magnetometer, VLF-EM and induced polarization were completed and an analysis of the results is included in this report as are recommendations for 1984.

1.0 LINECUTTING

A total of 1.97 miles of line were cut during the 1983 field season to facilitate adequate ground control for geological mapping and geochemical and geophysical surveys .

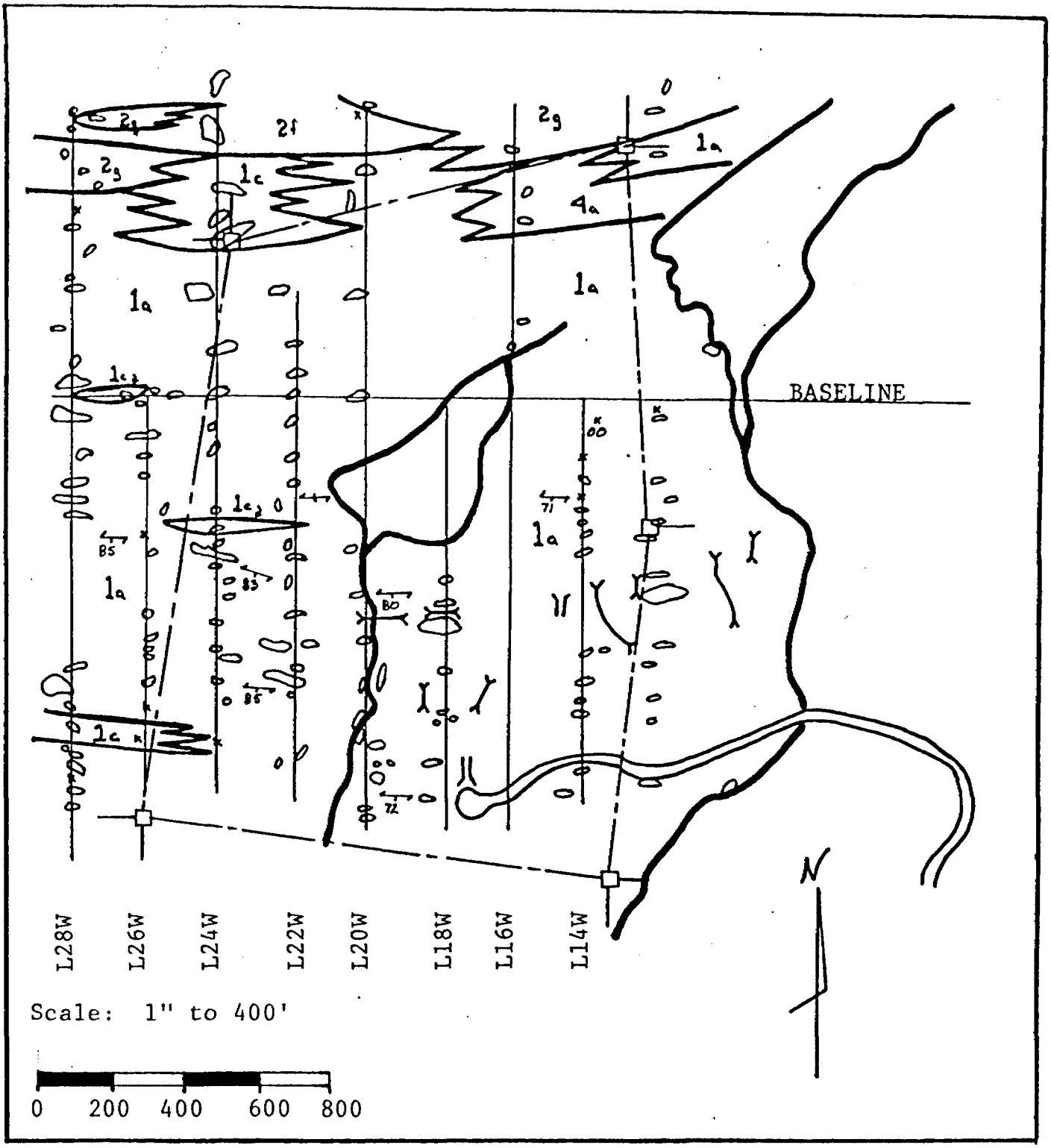
2.0 GEOLOGY (see Figure 1 & 1a)

The claim was mapped at a scale of 1" - 400' in conjunction with the mapping of the remaining areas of the claim group. This survey revealed that the claim was predominantly underlain by dark green mafic volcanic flows intercalated with tuffs of similar composition. All rocks were found to be foliated in an east-west direction with moderate southerly dips.

At the north end of the claim the flow-tuff sequence had been intruded by a medium grained gabbro which may be syn-volcanic and represent a feeder sill.

In the area of the former minesite and along strike to the east and west; the mafic volcanics had been intensely altered by carbonate and silica. Quartz veining was most prevalent in this zone with their associated pyrite, sphalerite, galena and chalcopyrite mineralization.

Numerous trenches were blasted for the purpose of exposing the vein system(s) and to obtain fresh samples for assay. Many old trenches and pits were discovered but were either too deep or overgrown to re-enter. Assays from the trenches on the claim as well as along the Empress Structure were encouraging with many being of ore grade.



SCALE: 1" to 400'

LEGEND

1a	Mafic flows
1c	Mafic tuffs
2f	Felsic tuff
2g	Felsic crystal tuff
4a	Gabbro
	Foliation & Dip
	Foliation with vertical dip
	Adit
	Trench

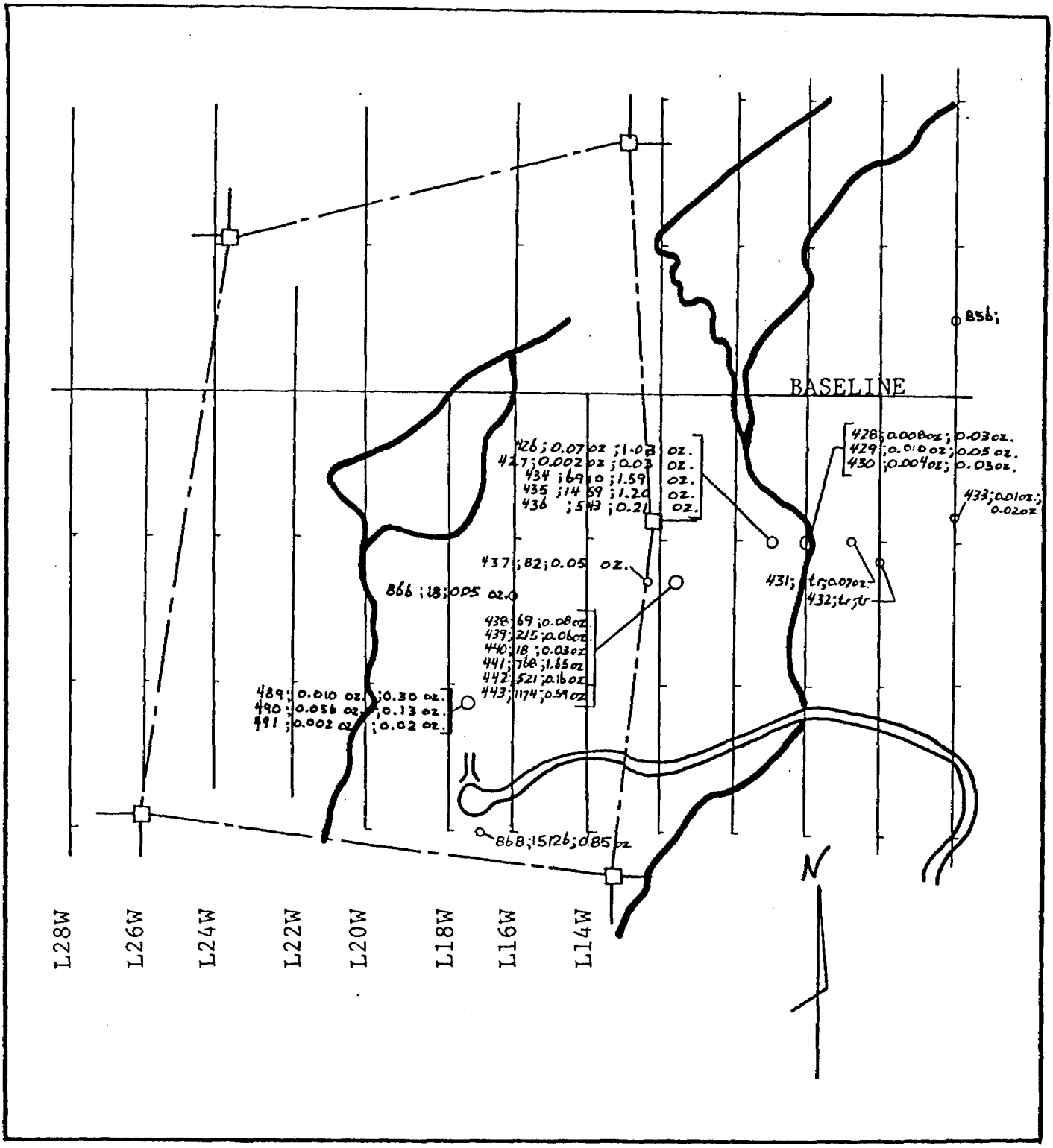
DAVID R. BELL GEOLOGICAL SERVICES INC.

MICHAM EXPLORATION INC.

EMPRESS CLAIM

GEOLOGY

November 16, 1983 | Fig 1



SCALE: 1" to 400'

0 200 400 600 800

DAVID R. BELL GEOLOGICAL SERVICES INC.

MICHAM EXPLORATION INC.

EMPRESS CLAIM

SAMPLE LOCATION AND ASSAY MAPS

November 16, 1983 | Fig 1a

3.0 GEOCHEMISTRY

No soil geochemical sampling was conducted early in the 1983 season over this claim. However a subsequent survey was undertaken in the fall and the results are still pending.

On either side of the claim (east and west); however, the soils showed a favourable response to gold as well as silver, copper and zinc. The results to be received in the near future will further delineate these zones one of which corresponds to the Empress Structure that currently extends over 5,000 feet.

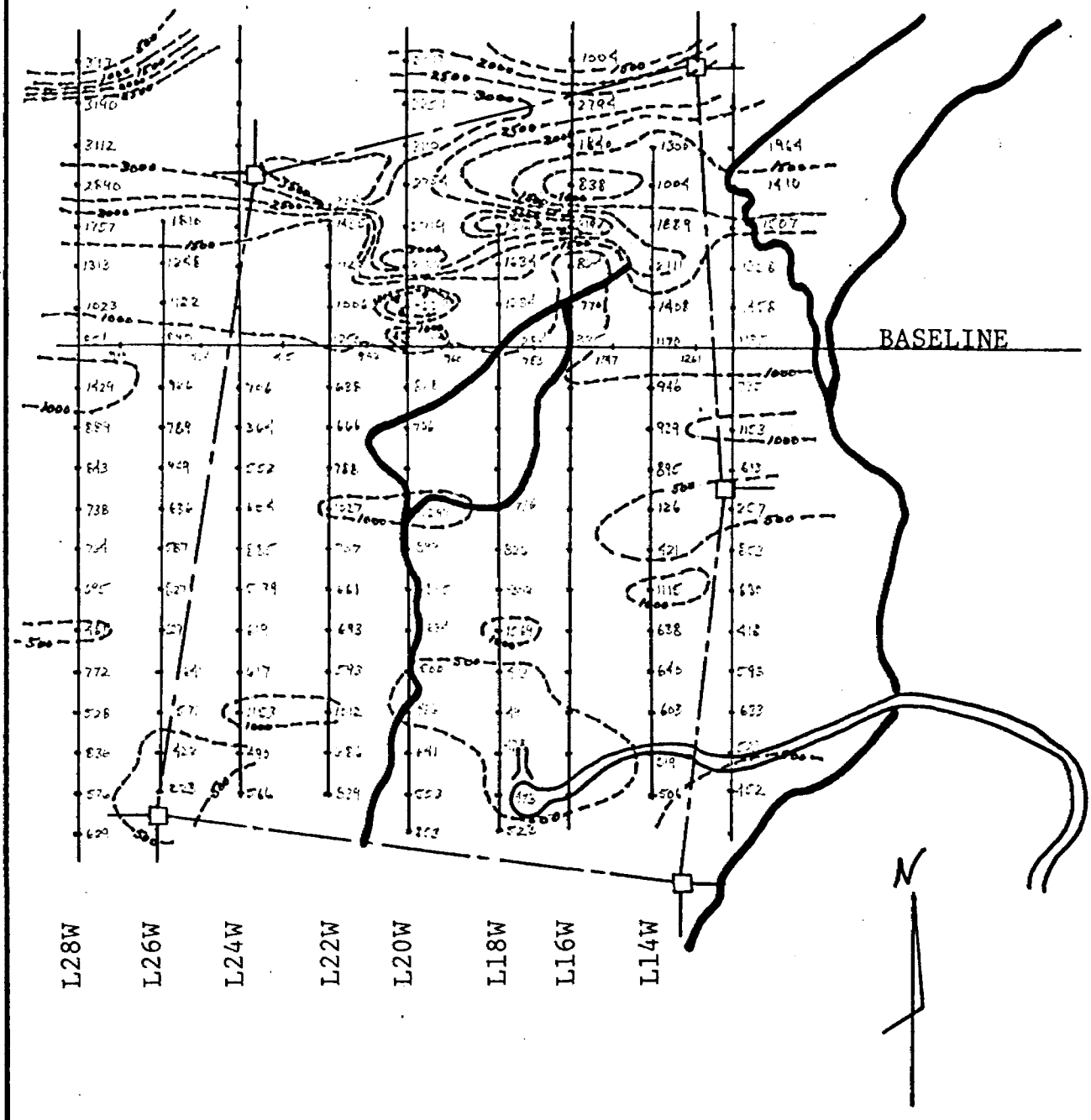
4.0 MAGNETOMETER SURVEY (see Figure 2)

A total of 87 stations were read over the claim using the cut grid for control. The corrected and contoured results have indicated that the southern two thirds of the claim has a relatively flat magnetic relief which corresponds to the highly altered mafic volcanics.

At the north end however, the relief increases over the unaltered volcanics and gabbro. A further decrease to the north marks the contact between the mafic and felsic volcanics.

5.0 VLF-EM SURVEY (see Figure 3 & 4)

Following the same procedure as the magnetic survey the VLF-EM survey was completed with all readings taken facing south. The plotted results show two conductors of moderate strength as well as four weak responses. Of these the conductor located on line L24W at 9+50S and the weak conductors on lines L22W, L18W and L14W at 8+50S, 6+50S and 5+50S respectively correspond to the Empress Structure. The other poor conductor on line L20W at 9+50S may also correlate with the structure and could be a faulted segment.



Contoured every 500 gammas

SCALE: 1" to 400'

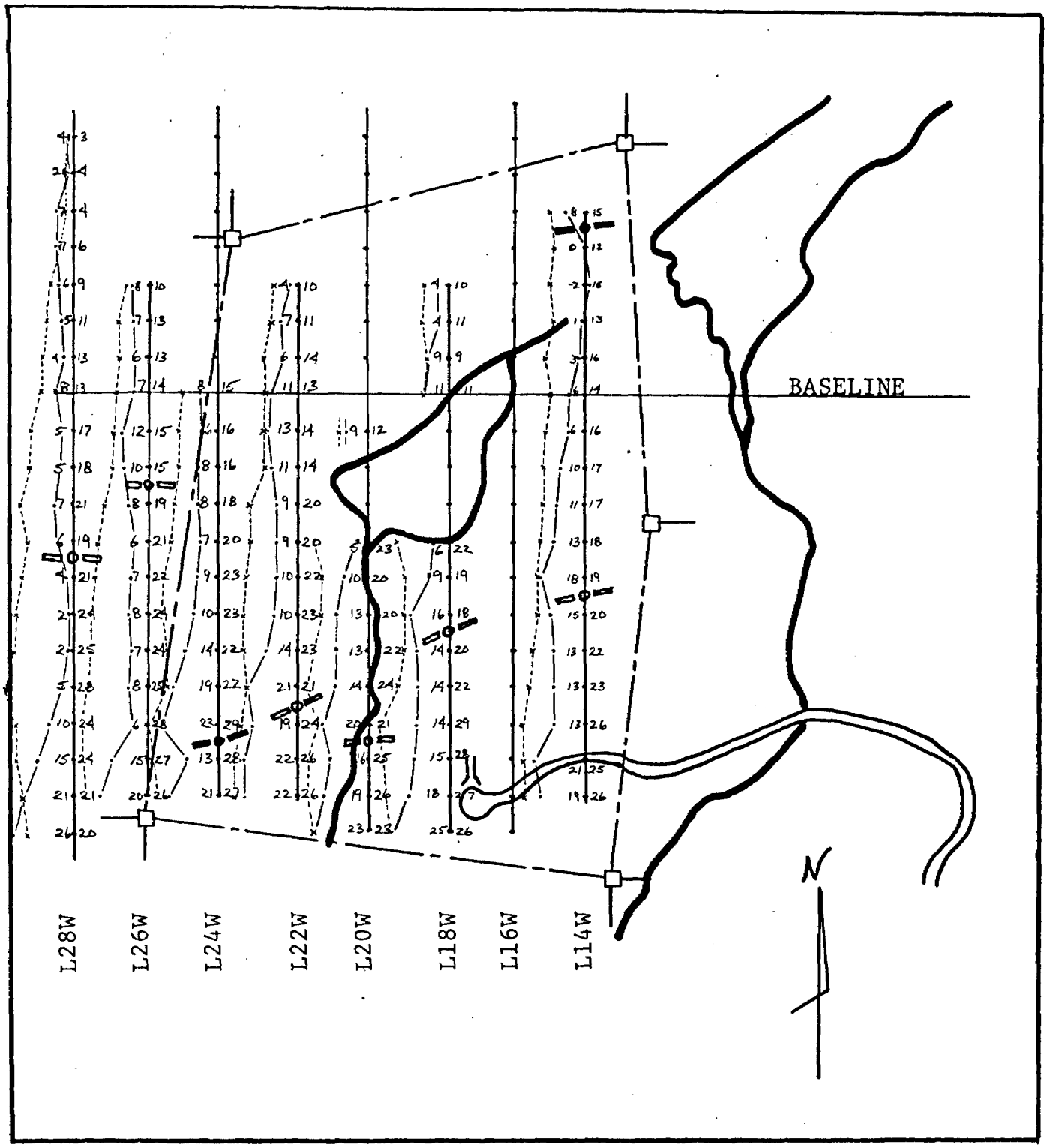
0 200 400 600 800

DAVID R. BELL GEOLOGICAL SERVICES INC.

MICHAM EXPLORATION INC.

EMPRESS CLAIM
MAGNETOMETER SURVEY

November 16, 1983 | Fig 2



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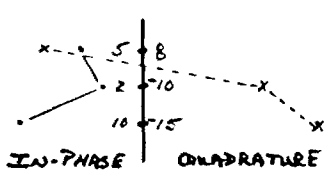


HORIZONTAL SCALE 1:60%

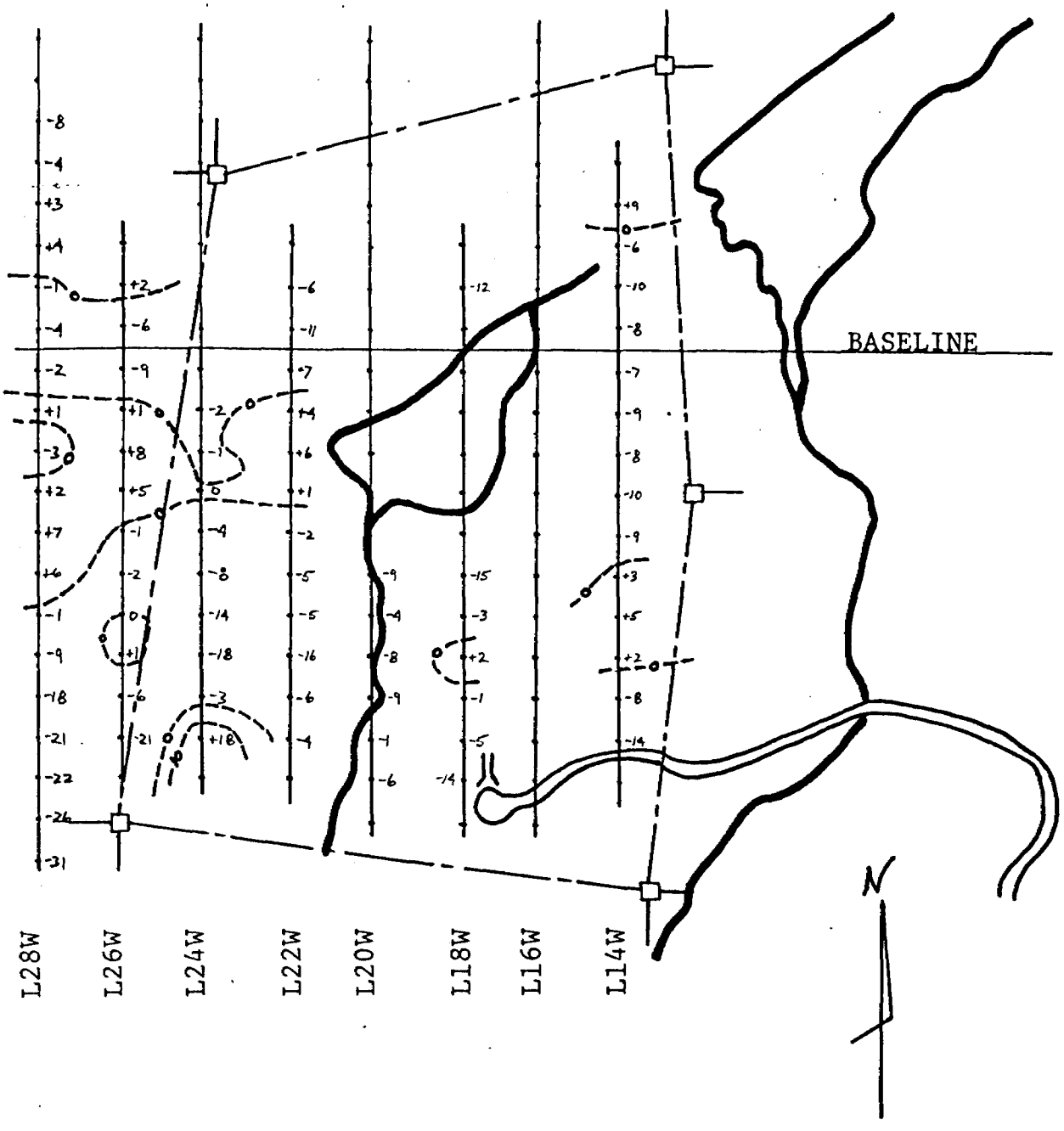
STRONG CONDUCTOR
WEAK CONDUCTOR

DAVID R. BELL GEOLOGICAL SERVICES INC.

MICHAM EXPLORATION INC.

EMPRESS CLAIM
VLF-EM SURVEY

November 16, 1983 | Fig 3



SCALE: 1" to 400'

0 200 400 600 800

DAVID R. BELL GEOLOGICAL SERVICES INC.

MICHAM EXPLORATION INC.

EMPRESS CLAIM
FRASER FILTER

November 16, 1983 | Fig 4

The conductor on line L14W at 4+50N cannot be readily explained but lies close to a presumed geological contact between the mafic flows and a gabbro.

6.0 INDUCED POLARIZATION (see Figure 5)

To further define the mineralization in the Empress Structure and to delineate any satellite zones, an IP chargebility survey was undertaken.

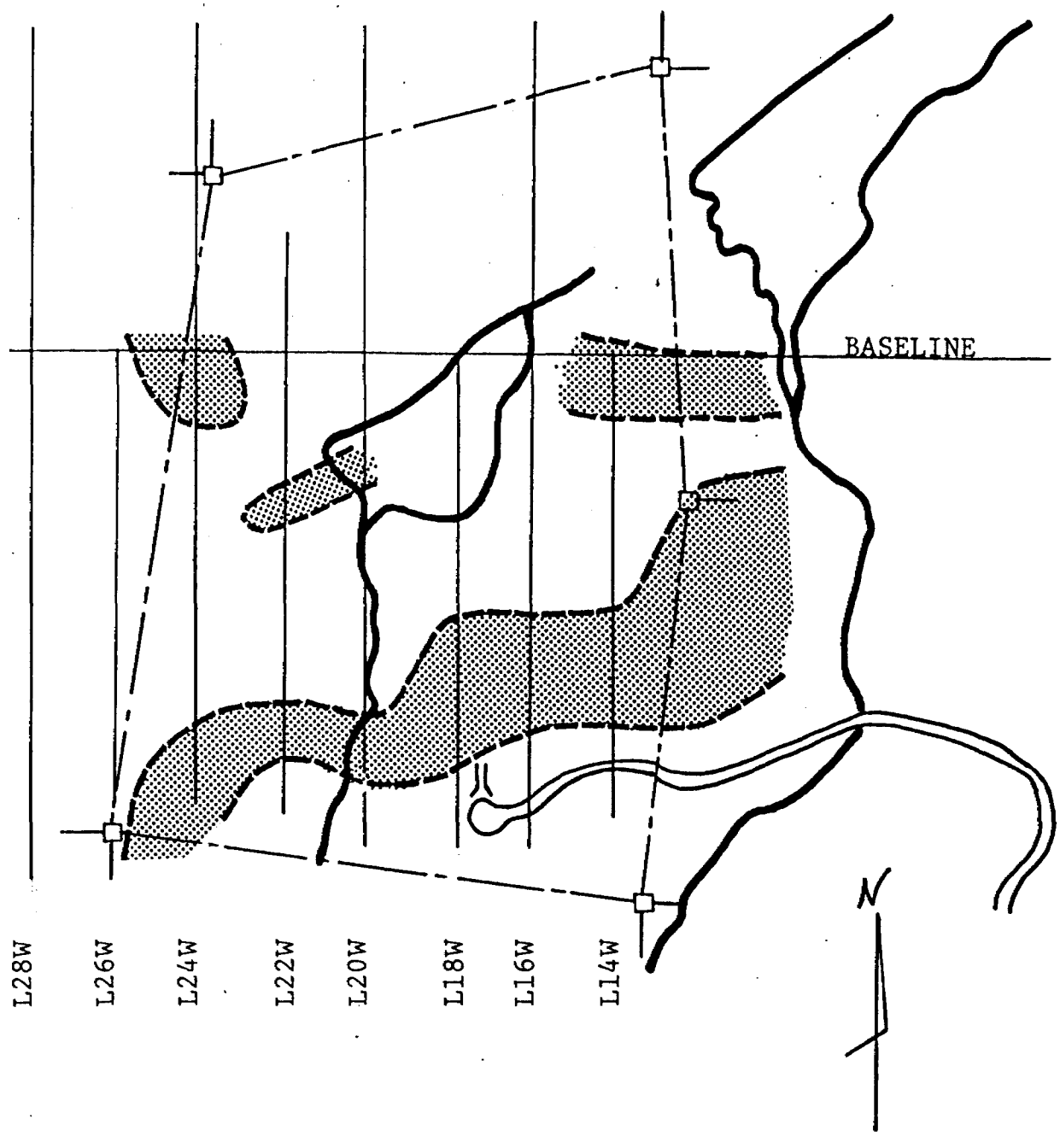
A broad continuous zone was outlined over the southern-half of the survey area and clearly defines this Structure. A pronounced flexure in this anomaly on line L20W at 9+50S may mark the presence of a fault as noted in the VLF-EM survey.

In addition to this zone, three other trends were noted. All were narrower and discontinuous except for one which broadens to the east and terminates on line L6E just north of the baseline. Causes for these anomalies have as yet not been determined.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The Empress Claim was investigated by several geo-technical surveys during the 1983 field season. Geological mapping showed that the area was predominantly underlain by a sequence of mafic volcanic flows and tuffs. However a large proportion of these rocks had been significantly altered by intense carbonatization and silicification. This alteration with quartz veining and associated pyrite, sphalerite, galena and chalcopyrite mineralization define the Empress Structure that hosted the gold deposit of the former producing Empress Mine.

The soil geochemical results were still pending but an earlier survey completed to the east and west of the Empress claim has already outlined encouraging gold, silver, zinc and copper anomalies and it is expected that these will continue across this claim.



SCALE: 1" to 400'

0 200 400 600 800

DAVID R. BELL GEOLOGICAL SERVICES INC.
MICHAM EXPLORATION INC.
EMPRESS CLAIM IP CHARGEBILITY
November 16, 1983 | Fig 5

Both the VLF-EM and IP chargebility surveys produced conductors corresponding to the Empress Structure while the magnetics showed a low magnetic relief over the altered zone.

The results to-date have shown the existence, the length and width of this Structure and assay results from the trenches have confirmed the ore grade gold values previously obtained. It is therefore recommended that a diamond drill program be initiated to test for the continuation of the Empress Structure particularly to the west. Further, a drill test should be made of the corresponding chargebility and gold soil geochemical anomalies on lines L24W to L28W at approximately 1+00S.

In the 1984 summer field season backhoe trenching and/or bulldoze stripping combined with hydraulicking should be undertaken to define the Empress Structure, its vein system(s) and to carry out systematic rock sampling.

Respectfully submitted,

December 9, 1983
Timmins, Ontario

Peter A. Dadson
Exploration Manager

APPENDIX III

REPORT ON GEOPHYSICAL SURVEYS, TERRACE BAY CLAIMS SYINE TWP. AND SANTOY LAKE AREA, DISTRICT OF THUNDER BAY, ONTARIO

for

MITCHAM EXPLORATIONS INC.

by

Frank L. Jagodits, P. Eng.,
Consulting Geophysicist

January 1984

EXCALIBUR
INTERNATIONAL
CONSULTANTS LTD.

LIST OF CONTENTS

LIST OF PRELIMINARY MAPS SUBMITTED UNDER SEPARATE COVER

DWG. NO.	TITLE	SCALE
EIC - P100	Induced Polarization Survey, Contours of Apparent Chargeability, n=1, South Area.	1" = 200'ft.
- P100A	Induced Polarization Survey, Contours of Apparent Chargeability, n=1, South Area.	1" = 400'
- P101	Induced Polarization Survey, Contours of Apparent Resistivity, n=1, South Area.	1" = 200'
- P101A	Induced Polarization Survey, Contours of Apparent Resistivity, n=1, South Area.	1" = 400'
- P102	Induced Polarization Survey, Contours of Apparent Metal Factor, n=1, South Area.	1" = 200'

DWG. NO.	TITLE	SCALE
EIC - P102A	Induced Polarization Survey, Contours of Apparent Metal Factor, n=1, South Area.	1" = 400'
- P103	Interpretation Map, South Area.	1" = 200'
- P103A	Interpretation Map, South Area.	1" = 400'
- P104	Induced Polarization Survey, Contours of Apparent Chargeability, n=1, Ursa Major Area.	1" = 200'
- P104A	Induced Polarization Survey, Contours of Apparent Chargeability, n=1, Ursa Major Area.	1" = 400'
- P105	Induced Polarization Survey, Contours of Apparent Resistivity, n=1, Ursa Major Area.	1" = 200'
- P105A	Induced Polarization Survey, Contours of Apparent Resistivity, n=1, Ursa Major Area.	1" = 400'
- P106	Induced Polarization Survey, Contours of Apparent Metal Factor, n=1, Ursa Major Area.	1" = 200'
- P106A	Induced Polarization Survey, Contours of Apparent Metal Factor, n=1, Ursa Major Area.	1" = 400'
- P107	Interpretation Map, Ursa Major Area	1" = 200'
- P107A	Interpretation Map, Ursa Major Area	1" = 400'

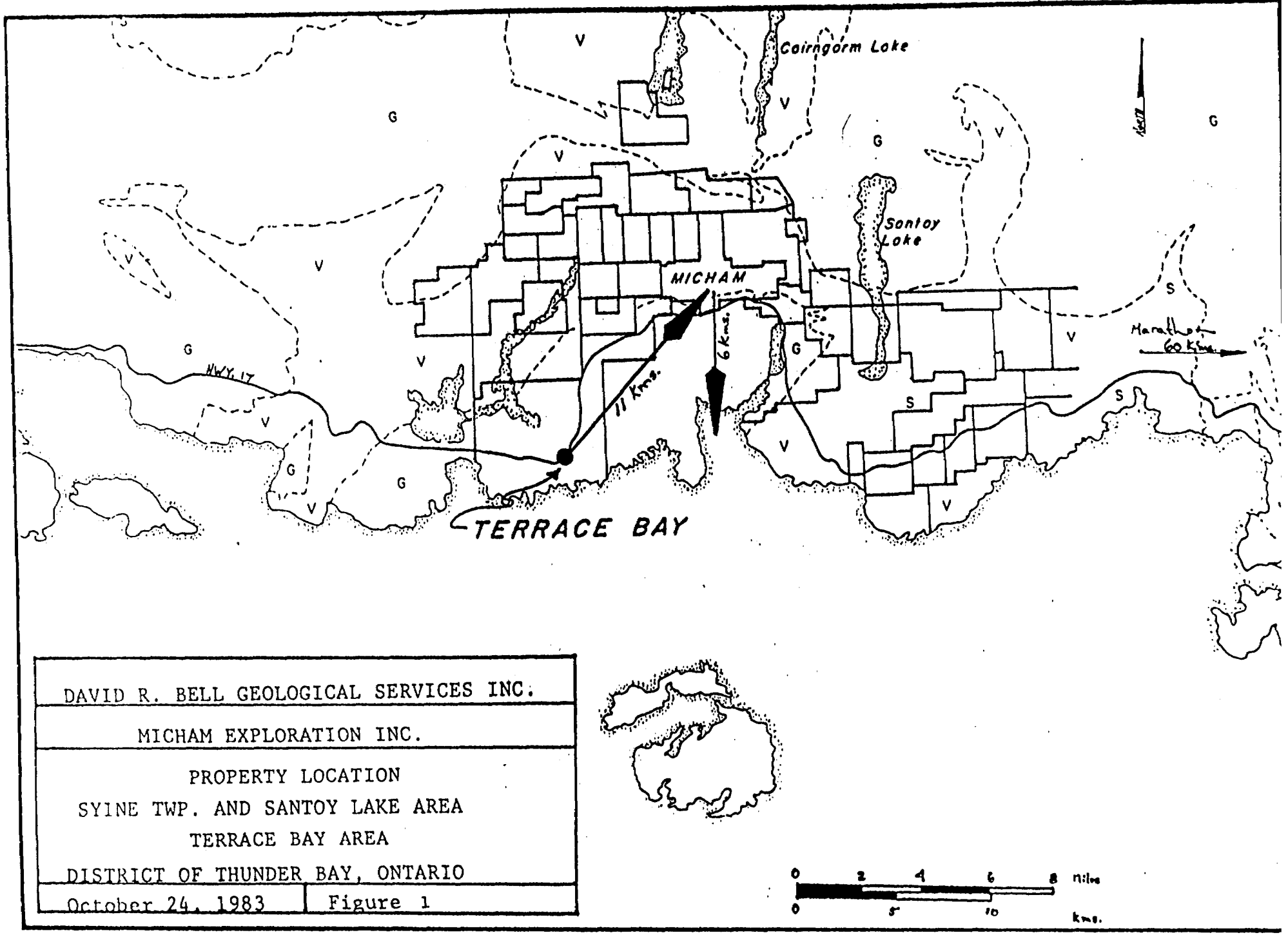
1. INTRODUCTION

David R. Bell Geological Services Inc. conducted an integrated exploration programme over 95 contiguous claims in the Terrace Bay Area on behalf of Mitcham Exploration Inc. The exploration programme included geophysical effort which consisted of partial coverage of the claims with induced polarization and MaxMin II horizontal loop em surveying. The geophysical surveys covered two areas: (a) an east-west area in the southern part of the claims, which will be referred to as the South Area and (b) a smaller area in the north covering the old Ursa Major Mine (Ursa Major Area).

The South Area includes the patented claim TB459728, held under option agreement covering the old Empress Mine. In addition to the induced polarization survey this claim was also covered with magnetics and VLF-EM. These results are not reported upon here, but references will be made as applicable. The time domain induced polarization survey covers both areas while the Ursa Major Area was also surveyed with horizontal loop em. The induced polarization survey was conducted by Ryan Exploration Ltd. of North Bay and Guy Thibault Geophysical Services of Timmins carried out the MaxMin II horizontal loop em survey.

The survey areas are located about 11 km north of Terrace Bay (Fig. 1), approximately 800 km northwest of Toronto. The Trans Canada Highway crosses the southernmost claim providing easy access there. However the rest of the claims can only be accessed by foot or by helicopter.

The survey statistics and the claims covered by the work is listed in the following table (Table I).



DAVID R. BELL GEOLOGICAL SERVICES INC.
MICHAM EXPLORATION INC.
PROPERTY LOCATION SYINE TWP. AND SANTOY LAKE AREA TERRACE BAY AREA DISTRICT OF THUNDER BAY, ONTARIO
October 24, 1983 | Figure 1

The following report presents the interpretation of the induced polarization and horizontal loop em surveys together with the ensuing recommendations.

TABLE I

LIST OF THE SURVEYED CLAIMS AND SURVEY STATISTICS

SOUTH AREA

Claim Numbers

TB 459728

TB 603912 to 603915 inclusive

TB 604049

TB 604051 to 604053 inclusive

TB 604055 to 604058 inclusive

TB 604060

Induced Polarization: 8.3 l. km.

URSA MAJOR AREA

Claim Numbers

TB 614674 and TB 614676

Induced Polarization: 1.50 l. mi.

MaxMin II horizontal loop em.: 2.25 l. mi.

2. SURVEY SPECIFICATIONS AND INSTRUMENTATION

The induced polarization surveys were conducted along lines 400 ft. apart, but the line separation was reduced to 200 ft. between Lines 12W and 28 (except L-16W) of the South Area. The dipole-dipole electrode array was used with an electrode separation ("a") of 50 ft., observations were made at dipole separations of n=1 and 2. The Crone Geophysics IP-4 time domain receiver was utilized together with the Phoenix Geophysics IPT-1 transmitter.

The northern Ursa Major Area (Claims 614674 and 614676) was also surveyed with the MaxMin II horizontal loop em system, manufactured by Apex Parametrics of Uxbridge, Ontario. The in-phase and quadrature components of the secondary field were observed at 444 Hz and 1777 Hz. The survey was conducted using a coil separation of 50 m, the station interval being 100 ft. The survey lines are 200 ft. apart.

3. PRESENTATION OF THE RESULTS

The data set for the interpretation was provided in preliminary form at a scale of 1 inch = 200 ft. by David R. Bell Geological Services Inc. The apparent charageabilities and apparent resistivities are given on separate maps; the values for dipole separations of n=1 and n=2 are plotted on the west side and on the east side of the survey lines respectively.

The MaxMin II horizontal loop em survey results were provided as stacked profiles of the in-phase and quadrature components.

Excalibur International prepared preliminary contour maps of the n=1 apparent chargeabilities (Dwg. Nos.: EIC - P100 and EIC - P104), apparent resistiviites (Dwg. Nos.: EIC - P101 and EIC - P105) and apparent metal factor (Dwg. Nos.: EIC - P102 and EIC - P106). The interpretation of the results are given in preliminary interpretation overlays (Dwg. Nos.: EIC - P105 and EIC - P107). The scale of the above maps is 1 inch = 200 ft. David R. Bell Geological Services Inc. will look after the final drafting of the maps.

In addition, the above maps were reduced to a scale of 1 inch = 400 ft. by xerographic process to facilitate comparison with the geological map provided by David R. Bell Geological Services Inc.

Copies of these maps are not included with this report, the originals are submitted under separate cover.

4. KNOWN GEOLOGY AND PREVIOUS WORK

The following information was extracted from References 1 and 2. The brief summary intends to set the geological framework for the discussion of the geophysical survey results.

The areas surveyed are underlain by Precambrian rocks. The dominant rock types of the South Area is the "dark green flows" of the unsubdivided mafic metavolcanics. Outcrops of "pillowed flows" of the mafic metavolcanics were also found. In the northeast corner of the South Area the mafic metavolcanics are in contact with a gabbro intrusion. Diorites were mapped in the north-central part (small exposure) and in the southwest corner. Intermediate to felsic intrusions are represented by outcrop of granite granodiorite in the southwest corner. Diabase dyke was located on Line 840W at about 8S.

In the Empress Mine Area "prospecting and mapping revealed an altered zone of sheared mafic volcanics, with contained several quartz vein systems with associated base metal and precious metal mineralization" (Ref. 1). This zone is referred to as the Empress structure. The Ursa Major Area appears to be underlain by mafic metavolcanics, except just north of the Base Line on L-0 where intermediate to felsic volcanics were identified.

At the Ursa Major Mine "the deposit consists of at least two subparallel quartz vein systems mineralized with pyrite and molybdenite. Host rocks were a series of massive and/or foliated mafic volcanics mineralized with disseminated euhedral pyrite" (Ref. 2).

The history of the Empress Mine Area extends from 1895 to the present. The mine was operated on and off from 1895 to 1938. The Siville-

Ferrier Syndicate Ltd. worked over the claims between 1933 and 1941. The claims were staked again in 1954, and 1974 and were cancelled in 1976. The latest staking took place in 1981.

Activity at the Ursa Major Mine commenced in 1886 and from then to 1901 trenches were dug and a shaft was sunk. The claims were acquired by a number of companies between 1934 and 1973 when magnetic and electromagnetic surveys were conducted. The claims lapsed in 1974 and were staked again, but were cancelled in 1976. The staking of 1980 was cancelled in 1981.

5. DISCUSSION OF THE RESULTS

5.1 General Comments

The anomalous induced polarization zones clearly stand out from the background which is about 10 msec. The local backgrounds in the vicinity of the anomalous zones would be in the order of 15-20 msec. The amplitude of the responses generally remain about the same at n=2 as at n=1, but in several instances increasing responses with depth are noted. Slight decrease in the amplitude at n=2 is also apparent occasionally. Since measurements were made only at n=1 and n=2 and the behaviour of the responses are not known at the larger separations too much significance should not be attached to these variations noted above. The anomalous sources are near surface, however the available data are insufficient to predict depth.

The outlined anomalies, zones where the apparent chargeability exceeds 40 msec, which represents approximately twice background in local terms and about 4 times background in terms of the regional background. Furthermore the anomalous responses are divided into three categories: (a) larger than 70 msec (first order anomaly), (b) between 50 msec and 70 msec (second order anomaly), and (c) between 40 msec and 50 msec (third order anomaly). The anomaly trends shown were established on the basis of the most anomalous parts of these responses. However, it should be kept in mind that the trends are interpolated between lines which are mainly 400 ft. apart.

The apparent resistivities associated with the IP anomalies are noted on the interpretation maps. There are three categories: (a) low resistivity (LR)-apparent resistivities lower than 1000 ohm-metres, (b) intermediate resistivities (IR)-between 1000 and 10,000 ohm-metres and (c) high resistivity (HR)-resistivities higher than 15,000 ohm-metres.

The apparent metal factor contour map contains anomalies which are not associated with anomalous chargeability responses. These pseudo anomalies

are due to the low apparent resistivities and no further significance is attached to them. Within the outlined anomalies the metal factor contours enhance the parts of the anomalies associated with low resistivities.

In order to make use of the information available on the airborne geophysical maps (Ref. 3) the grid maps were reduced to the scale of the airborne maps. The outline of the interpreted magnetic bodies, interpreted shears, axes of conductors defined by the airborne VLF-EM and the helicopter em anomalies were transferred to the 1 inch = 200 ft. grid maps. The reduced grid maps were fitted to the airborne maps using lakes and rivers, but the fit was not exact, hence location of the interpreted airborne features and the helicopter em anomalies on the grid maps are only approximate.

The depths and the conductivity-thickness products of the ground em conductors were determined assuming that they are caused by thin plates.

5.2 South Area

The airborne magnetic data indicate that most of the grid is underlain by non-magnetic or slightly magnetic rocks. However, magnetic bodies were outlined in the central west end, in the northwest corner and in the northeast of the grid. A magnetic body AM-1 appears to correlate with a mapped diorite intrusion. Anomaly AM-2 just north of the grid covers an area shown to be underlain by mafic volcanics which are non-magnetic elsewhere. However to the north diorites were mapped. It is possible that the volcanic cover is thinner in this region and the magnetic signatures of the underlying diorites are observed. Anomaly AM-3 appears to correlate with mapped diorite intrusion. However, Anomaly AM-4 which partly covers IP Anomaly A1-4 is shown to be underlain by mafic volcanics. The airborne anomaly (AM-4) is part of a long strike length trend (which also includes AM-3) extending beyond the grid to the east as well as to the west. The airborne magnetics suggest that the extent of the diorite intru-

sive is larger than indicated on the geologic map and that the volcanic cover may be thinner in the vicinity of IP Anomaly A1-4. The airborne magnetic contours imply several northeast trending shear zones of which the longest one is supported by evidence on the apparent resistivity contour map.

Of the airborne VLF-EM conductors the one associated with the low resistivity trends of IP Anomaly A1-4 are noteworthy indicating that the IP sources may be structurally controlled there. It is not surprising that the ground VLF-EM conductors of the Empress structure are not detected in the airborne results when the small amplitude of the ground responses is taken into consideration.

The apparent resistivities vary from less than 100 ohm-metres to as high as 60,000 ohm-metres. The background apparent resistivity is in the order of 10,000 ohm-metres except in the area between Lines 28W and 60W near the southern edge of the area where extensive swamp occurs. In this area the bedrock more than likely was not sampled by the electrode and dipole separations used. Elsewhere, the low apparent resistivities do not coincide with known swamps except along Line 64W from 2+50S to 4+00S.

The comparison of the apparent resistivity contour map and the known geology does not reveal a conclusive relationship between apparent resistivities and the rock types occurring in the area. Numerous 'narrow' (resolution is 50 ft.) resistivity highs were outlined, some of which exhibit considerable apparent strike length. These features may indicate quartz veins.

The remarkable resistivity feature of the area is a low in the northeast corner. Generally striking northeast, the feature can be traced from L-18W to L-12E and is on strike with the VLF-EM conductors describing the known Empress structure. As noted earlier, the low is also associated with airborne VLF-EM features.

Four anomalous IP areas were outlined. The first to be discussed is the zone associated with the known Empress structure. This anomalous zone A1 extending from L-26W to L-8E can be subdivided into four subzones: A1-1, A1-2, A1-3 and A1-4.

Anomaly A1-1, as defined, extends from L-20W to L-26W. The source of the IP responses are associated with intermediate apparent resistivities and may have been moved towards the southeast on L-20W along an interpreted northwest striking shear zone. The source appears to be the shallowest in the west and the main source may be somewhat deeper along L-20W. The induced polarization anomalies are associated with VLF-EM responses of shallow origin, which could indicate conductive shears associated with the known Empress structure. The magnetic anomaly on Lines 22W and 24W roughly correlating with the IP anomaly could describe more magnetic mafic volcanic rocks.

The anomalous zone appears to swing to the north between Lines 20W and 18W forming the second sub-zone A1-2 which is associated with intermediate resistivities. The zone widens along L-18W, the most anomalous part being near the southern limit, which can be correlated with the anomaly on L-14W towards the west. The ground magnetic anomaly north of the IP anomaly may describe more magnetic mafic volcanic rocks. The VLF-EM conductor just north of the magnetic body could indeed describe its contact on the north.

The third sub-zone, A1-3, extends from L-12W to L-8W although there are indications that the trends may continue to L-4W albeit the anomalous responses are lower there. Structural deformation may have moved the sources of A1-3 towards the north. The northern most anomalous trend, which is associated with intermediate resistivities appears to be terminated between Lines 12W and 14W. The less anomalous southern trend can be considered as the immediate continuation of A1-2. The eastern end of the southern trend is associated with high resistivities and the anomalous responses may have originated from a

somewhat deeper depth. The significance of Anomalies A1-2 and A1-3 is measurably increased as they are coinciding with a gold geochemical anomaly.

The fourth sub-zone A1-4 is between L-4W and L-8E. It consists of at least four definite anomalous trends. The most northerly one on Lines 4W and 0 includes the largest amplitude anomaly, 170 msec at n=2, on L-0 near the Base Line.

The north-northeast striking second trend is associated with the main resistivity low of the area. The anomalous response just exceeds 100 msec on Line 0 and it remains above 70 msec along its entire length, constituting one of the more promising targets discovered. The largest amplitude metal factor anomaly occurs at the eastern end of this trend on L-8E where it correlates with a gold geochemical anomaly. This location constitutes a first priority target.

The next trend to the south is well defined on L-0, however the anomaly on L-4E reaches only 48 msec. The anomaly at L-0/2+00S is just north of a gold geochemical anomaly. The fourth trend striking northeast can be traced from L-4E to L-8E. The anomaly is associated with high resistivity on L-8E. The most southerly trend between Lines 4E and 8E strikes nearly east-west. The amplitudes in the 'narrow' zone are 58 msec and 56 msec respectively, the eastern one being associated with high apparent resistivity.

The second anomalous zone A2 in the extreme northwest corner of the survey extends from L-72W to L-52W, however the anomalous horizon could be extended as far as L-40W. The anomalous zone is associated with intermediate resistivities within the well defined part of the zone except on L-64W where low resistivities prevail. The most anomalous part of the zone (Lines 72W through 64W) are open to the north. The sources of the anomalies in the eastern extension could be deeper and the anomalies are associated with high resistivi-

ties. The airborne VLF-EM axis east of an on-strike with the zone is noteworthy implying probable structural control. The most promising target for initial drill testing is along L-64W where low resistivities could imply larger concentration of mineralization.

The third anomalous zone, A3, is about 700 ft. south of A2. It is a relatively short strike length feature, well defined from L-64W to L-56W, although a case could be made for a narrow extension towards L-68W on the west. The two parallel anomalous trends are striking west-northwest while the apparent resistivity axes appear to strike east-west to east-northeast. The strike of the axes of the apparent resistivity contours is more in accord with the regional trends. If this is taken into account, the anomalous IP trends could be reinterpreted. The northernmost first order anomaly of L-64W would be a short strike length feature. The southerly first order anomaly of L-64W would be correlated with the anomalies of L-60W continuing towards the northern anomaly of L-56W. The southern anomaly of L-56W would be again a short strike length feature. As it stands the situation cannot be resolved satisfactorily, surveying of intermediate lines would shed light on the problem.

The southernmost, nearly east-west striking anomalous zone, A4 extends from L-48W to L-68W. The constituent second and third order anomalies are associated with intermediate resistivities except on Lines 64W and 60W where lower resistivities prevail. The considerable strike length of the zone suggests a formational source. The available evidence is not sufficient to link Anomaly A4 with the Empress structure, Anomaly A1-1.

5.3 Ursa Major Area

The most southern part of the grid coincides with the peak of a northwest-southeast striking magnetic anomaly. From this high the magnetic field relatively gently decreases towards the north where the magnetic low is

reached near the northern end of the grid. The geologic map does not indicate intrusive rocks in this area. If the anomalies are caused by intrusives it would have to be at a deeper depth.

The single northwest striking airborne VLF-EM axis is just north of Conductor C3 indicating that the ground em feature will occupy a structurally disturbed zone. Two out of the three airborne em conductors do not correlate with ground em anomalies. The centre helicopter em anomaly is in close correlation with Conductor C4. The best ground conductor of the grid, C1 does not appear to have an airborne expression. The ground em results hint that the conductor may have short strike length and if it is between flight lines it may account for not being detected.

The apparent resistivities in this area vary from a low of 45 ohm-metres to a high of nearly 46,000 ohm-metres. The high as well as the low apparent resistivity features are generally narrow (one station) but a few wider trends are also found. The somewhat larger area of resistivity low just north of the centre of the area is notable. It has a profound effect on the apparent metal factors along L-4W between 15N and 16+50N. In consequence, the resistivity low should be investigated on the ground whether or not it is due to a swamp.

The apparent chargeability background is in the order of 10 msec, but locally it increases to about 20 msec. Seven IP anomalous trends are outlined. The east-west striking Anomaly U-A1 in the centre of the area is narrow at the western end, but apparently widens to the east. The most anomalous response of the area (90 msec at n=1) coupled with an apparent resistivity of 15 ohm-metres occurs at the eastern end of U-A1. Based on the IP results, this anomaly is considered as a first priority target. The narrow, short strike length IP anomaly just south of U-A1 on Line 4W may be related to U-A1.

Anomaly U-A2, about 300 ft. south of U-A1 is identified on Lines 0 and 4W. The northern first order IP anomaly on L-0 at St. 10+00N is in direct correlation with Conductor C1. The in-phase response of this anomaly is the largest (52%) of the MaxMin survey. The amplitude of the associated quadrature response is only 1% which could indicate a very good conductor and/or highly conductive overburden. The conductor is indicated to be near vertical or steeply dipping to the north at this locality. It would appear that Conductor C1 swings to the northwest between L-0 and L-2W and cannot be traced west of L-4W. The quality of the conductor diminishes towards the west. The coincident IP and em anomalies deserve follow-up as a first priority target.

The southernmost Anomaly U-A3 is again a narrow feature extending across the three lines. The second order IP anomalies are associated with intermediate resistivities. The eastern second order anomaly of the two-line U-A4 coincides with the large area of low resistivity. The exaggerated width of the apparent metal factor anomaly here is due to a low resistivity. It was suggested earlier that this resistivity low should be checked out on the ground. Anomalies U-A5, U-A6 and U-A7 are relatively narrow, west-northwest striking features in the north of the grid. The constituent anomalies are second or third order except the narrow first order responses at the western and eastern ends of U-A5. The significance of these anomalies will depend on the results of the initial field testing elsewhere.

The southerly dipping conductor C2 is west of and along strike of U-A2. The indicated depth of the 7 mho conductor is about 70 ft. which is believed to be too deep. Conductor C3 can be traced through three lines although the anomaly along the most easterly line L-2W is questionable. The estimations of conductance along two lines agree well, however the depth estimates should be taken only as indicators of the conductor being shallow-seated. The conductor may have been trenched and the southernmost shaft should be in the vicinity of the conductor.

The best conductance of the survey (with the possible exception of C1) was estimated from the anomaly on L-2W belonging to Conductor C4. The 30 mho conductor is at an estimated depth of 40 ft. and it may have been tested by trenching at two locations. The probable extension of the conductor on Line 8W appeared to be associated with a short strike length IP feature.

Conductor C5 is reasonably well defined on L-2W where the peak of the quadrature anomaly is shifted to the north from the in-phase peak. This may indicate near-surface variations in the conductivity of the overburden. The expression of the conductor on L-4W is lower quality. Conductor C6 is a weak event mainly expressed in the quadrature phase component and no further significance is attached to it.

Conductor C7 is a curious feature. The quadrature phase components of the three anomalies constituting the conductor remain practically at background. The phenomenon may indicate: (a) very good conductors, (b) conductive overburden, or (c) errors in the in-phase component measurement due to topography. The location of the conductor should be checked out on the ground for the latter two reasons. Conductor C8 is a weak event with practically no quadrature response. This conductor should also be checked out in the field for the reasons mentioned above.

6. CONCLUSIONS AND RECOMMENDATIONS

The induced polarization survey of the South Area revealed four anomalous zones. The most westerly member (A1-1) of Anomaly A1 is coincident with the known Empress structure which appears to be at the western end of the regional northeast striking structurally disturbed zone. The airborne as well as the ground VLF-EM and the ground resistivity results support the existence of such a zone. The northeasterly trending Anomaly A1 is at least partially associated with this structurally disturbed zone. The significance of the induced polarization anomalies gain further importance by the correlation with gold geochemical anomalies. Anomaly A1 is the first priority target of the South Area.

The airborne magnetics intimate that Anomalies A2 and A3 are located between intermediate composition intrusions which may be significant. The least inspiring of the zones is Anomaly A4 which as noted earlier can be considered to describe a formational feature. Recommendations for further work along Anomaly A4 will depend on learning results obtained elsewhere in the South Area.

It is recommended that further geophysical surveys should be conducted over Anomalies A1, A2, and A3 prior to drilling. The purpose of the surveys would be to define the anomalous bodies in greater detail and to locate with accuracy the cross-structures hinted by the present survey which can be significant in terms of mineralization. The surveying of the intermediate (200 ft.) lines with induced polarization should be carried out with a dipole separation of 50 ft. making observations at n=1, 2, 3 and 4. In addition it is also recommended that all survey lines (old and new) should be covered with magnetics and VLF-EM which would shed light on the structure as well as on the

lithology (e.g. the airborne magnetic anomaly over Anomaly A1-4).

The additional IP survey over Anomaly A1 would include the coverage of L-16W and the intermediate lines from L-10W to L-10E. The coverage in the north-south direction should be from 9+00N to 16+00S. As it stands several of the older lines would also have to be extended. If anomalous responses will be obtained at the larger dipole separations along the southern parts of the new lines (where low chargeabilities were obtained at n=1 and 2 on the old lines) the re-surveying of the old lines with larger dipole separation should be carried out.

The additional IP coverage of Anomalies A2 and A3 would be from L-70W to L-54W. The coverage along the lines should be the following: L-70W from 3+00N to 12+00S, Lines 66W and 62W from 3+00N to 15+00S and Lines 54W and 58W from 3+00N to 13+00S.

The magnetic and VLF-EM observations should be made at stations 25 ft. apart. The magnetic survey should be conducted using a recording base station magnetometer to ensure good quality data. The transmitter for the VLF-EM survey can be selected later.

If it is decided to drill prior to the additional geophysical work, the selection of targets would very much depend on geological and geochemical considerations. Since the sources of the IP anomalies appear to be shallow it would be in order to prospect in detail the IP anomalies on the ground prior to drilling.

Since the induced polarization results do not provide dip indications, the azimuth of and the dip of the holes will have to be decided on the basis of geologic information. As it is postulated that the IP sources are at a

shallow depth in most cases, the step-out from the centre of the anomaly will depend on the desired vertical depth of intersection. Since the required information is not available now, specific drill hole locations and the particulars of the holes to test the IP anomalies will not be recommended at this time.

Not considering the eventual results of the detailed prospecting for the time being but taking into account the geochemical indications, the first priority targets are Anomalies A1-2 and A1-3. The first target of a drill hole would be the anomaly on L-12W at 4+00S where the IP anomaly is intersected by an interpreted northeast striking fault. The other target is on L-20W at St. 9+50S where interpreted shear zones intersect and a ground VLF-EM anomaly was also found. In terms of significant geophysical responses, Anomaly A1-4 offers at least three drill targets. The anomalies on Line 0 north and south of the Base Line (0+75N and 1+00S) and the anomaly at 2+50N on L-8E where the best metal factor occurs are the prospective targets.

The best geophysical target of Anomaly A2 is on Line 64W at 1+00S. Here the IP anomaly is associated with low resistivities. The recommended targets of Anomaly A3 are also on Line 64W at 6+50S and 7+50S.

There are three first priority targets in the Ursa Major Area. The first target is the coincident IP and horizontal loop em anomalies on Line 0 at about 9+50N. According to the em profile (in-phase) the conductor is nearly vertical or dipping steeply to the north. The recommended particulars of the drill hole are as follows: collar: 10+50N; dip: 50°; azimuth: grid south and approximate length: 150 ft. Since the thickness of the overburden is not known the particulars may have to be changed. As it stands the whole ought to intersect the em conductor at a vertical depth of about 60 ft. and the IP source at a vertical depth of about 90 ft. If geologic considerations suggest

that these depths of the intersections are not reasonable two holes will be needed to test the anomalies. The second target is the best IP anomaly of the area coupled with low resitivity on Line 0 at 13+00N. The third target is Conductor C4 on Line 2W at 17+00N. The nearly vertical conductor could be tested with a hole collared at 17+50N, drilled to the south, dipping 50° and the approximate length being 125 ft.

The following features are considered as second priority targets: Conductor C3 along Line 6W/15+00N, the IP anomaly U-A4 along Line 4W/16+00N. Depending on the results of the drilling, additional holes could be selected.

Furthermore it is also recommended that the intermediate lines (2W and 4W) and lines east of Line 0 should be surveyed in an attempt to close off the induced polarization and em anomalies of Line 0. The additional lines should be 200 ft. apart. The specifications of the induced polarization survey would be the same as given before for the South Area. The specifications of the MaxMin II survey would remain the same as for the present survey, however corrections for topography should be carried out.

It is also suggested that Line 0 should be surveyed again with the MaxMin but this time corrections for topography should be carried out.

It would be beneficial to cover the entire grid (the old lines and the new ones) with magnetics and VLF-EM.

Respectfully submitted,

FLJ:sb
January 31, 1984.

Frank L. Jagodits, P. Eng.,
Consulting Geophysicist.

7. REFERENCES

1. Dadson, P. (1983) Geological Report, Micham Exploration Inc., Terrace Bay Claims, Syine Twp. and Santoy Lake Area, District of Thunder Bay, Ontario. David R. Bell Geological Services Inc.

2. Dadson, P. (1983) Brief Summary, Empress Claim, Syine Twp., District of Thunder Bay, Ontario. David R. Bell Geological Services Inc.

3. Hogg, R.L.S. (1983) Report on Combined Helicopter Borne Magnetic and Electromagnetic Survey, Terrace Bay Area, Ontario. Aerodat Ltd.

8. APPENDIX

CERTIFICATE

I, Francis Loui Jagodits, of the Borough of Scarborough, County of York, Province of Ontario, do hereby certify that:

1. I am a geophysical engineer residing at 19 Orangewood Crescent, Agincourt, Ontario.

2. I am a graduate of the Technical University of Sopron, Hungary with Dipl. Eng. degree in geophysical engineering (1956).

3. I am a member of the Society of Exploration Geophysicists, the European Association of Exploration Geophysicists, the Canadian Geophysical Union and Fellow of the Geological Association of Canada.

4. I am a professional engineer, registered in the Province of Ontario.

5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly in the property or securities of Micham Exploration Inc.

6. The statements made in this report are based on study of published and unpublished private reports.

7. Permission is granted to use in whole or in part for assessment and qualifications requirements but not for advertising purposes.

Dated at Scarborough,

This 31st day of January , 1984.

Francis L. Jagodits, Dipl. Eng. P. Eng.,

900

OM 83-4-C-36

THIS SUBMITTAL CONSISTED OF VARIOUS REPORTS, SOME OF WHICH HAVE BEEN CULLED FROM THIS FILE. THE CULLED MATERIAL HAD BEEN PREVIOUSLY SUBMITTED UNDER THE FOLLOWING RECORD SERIES (THE DOCUMENTS CAN BE VIEWED IN THESE SERIES):

THE FOLLOWING WAS PREVIOUSLY SUBMITTED:

1. GEOLOGICAL REPORT, PETER DADSON, OCT/83 → SEE: 2·6014 MINING RECORDER, REPORT OF WORK #83-368

NB NO SIGNIFICANTLY ANOMALOUS VALUES ON NORTH GRID

LOWER AQUASABON LAKE AREA

TB GG0057 TB GG0058 TB GG0059 TB GG0066 TB GG0065 TB GG0064 TB GG0055 TB GG0056 TB GG0054 TB GG0052 TB GG0053 TB GG0044 TB GG0045 TB GG0046 TB GG0043 TB GG0042 TB GG0041 TB G42208 TB G42207 TB G42206 TB G42215 TB G42216 TB G42205 TB G13728 TB G13727 TB G13842 TB G13856 TB G42217 TB G42214 TB G42201 TB G13852 TB G13853 TB G13854 TB G04046 TB G04047 TB G04048 TB G04049 TB G13729 TB G13843 TB G13845 TB G13844 TB G04051 TB G04052 TB G04053 TB G04050 TB G04060 TB G03913 TB G03912 TB G03911 TB G03910 TB G13840 TB G13847 TB G04054 TB G04055 TB G04056 TB G04057 TB G04058 TB G42211 TB G13848 TB G42209 TB G42210 TB G42212 TB G13849

LUNCH LAKE

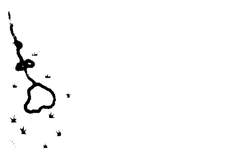
WILSON LAKE

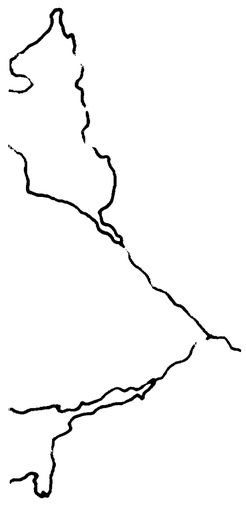
28+00 N 24+00 N 20+00 N 18+00 N 12+00 N 8+00 N 4+00 N 00 BL 4+00 S 8+00 S 12+00 S 16+00 S 20+00 S 24+00 S 28+00 S 32+00 S 36+00 S 40+00 S

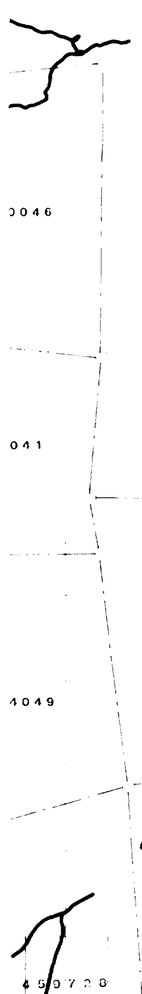
L 20 W L 116 W L 112 W L 108 W L 104 W L 100 W L 96 W L 92 W L 88 W L 84 W L 80 W L 76 W L 72 W L 68 W L 64 W L 60 W L 56 W L 52 W L 48 W L 44 W L 40 W L 36 W L 32 W L 28 W L 26 W L 24 W L 22 W L 20 W L 18 W L 16 W L 14 W L 12 W

200

N.B. NO SIGNIFIGANTLY ANOMALOUS Ag VALUES ON NORTH GRID







LEGEND

- Soil Anomaly >20ppb
- V.L.F. EM Conductor Axis
- I.P. Anomalous Trend
- E.M. Conductor Axis
- Fault or shear Zone
- Projected Diamond Drill Hole

#63.42.9

DAVID R. BELL GEOLOGICAL SERVICES INC.

McFADAM EXPLORATION INC.

GEOTECHNICAL COMPILATION MAP

STONE TWP. (N.) SANDY LAKE AREA

THUNDER BAY MINING DIVISION

ONTARIO

1"=400' FEBRUARY 16, 1984