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MARUM
resources inc.

MARUM RESOURCES INC.
400 NATIONAL BANK BUILDING
407 – 8 AVE. S.W.,
CALGARY, ALBERTA T2P1E5

ASSESSMENT WORK

METALLIC AND INDUSTRIAL MINERALS PERMITS NO. 9396010022 TO 9396010034

COVERING THE PERIOD

JANUARY 1, 1996

TO

APRIL 30, 1998

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INTRODUCTION

The Chinchaga Diamond Project consists of approximately 120,000 hectares in northern Alberta, specifically in the eastern half of NTS mapsheet 84E. The permits were specifically acquired to capture a coincidence of diverse geological conditions that favour the localization of kimberlite pipe targets. These conditions include:

- A requirement that the underlying craton possess thick, cool roots that have not been subjected to thermal re-heating. Both the Chinchaga Craton and the associated Buffalo Head Craton have these characteristics. The Alberta Geological Survey report "Diamonds in Alberta" favours the Chinchaga craton as a potential diamond host terrane on the basis of the Chinchaga's mix of Archean isotope geochemistry and cooler, deeper crustal roots.

- The existence of a pronounced gravity low within the craton to pinpoint the location of super-cool root zones. Regional gravity data clearly shows that the Chinchaga and Buffalo Head Cratons form a single circular unit, similar in size and shape to the Slave Craton in the NWT. A pronounced ring shaped gravity low occurs within the Chinchaga-Buffalo Head Craton complex. Both the Ashton and Monopros kimberlite pipes occur on this low-gravity ring. The core Ashton permits appear to cover approximately 30 degrees of circumference on the East Side of the Chinchaga-Buffalo Head low-gravity ring. The Marum properties cover approximately 45 degrees of circumference on the West Side of the ring.

- The presence of deep, crustal faults. It appears that the distribution of kimberlite pipes in northern Alberta is directly related to the deep, crustal scale faults associated with the Peace River Arch, especially in areas which contain swarms of smaller stress release faults. Satellite imagery indicates that this apparently essential structural combination exists in the core Ashton permit block as well as in Marum's Chinchaga properties where the Chinchaga valley itself is the surface expression of a deep crustal fault.

- The presence of Shaftsbury Embayments. The Wabasca, Peace River and Chinchaga erosional embayments expose the upper Cretaceous Shaftsbury formation to the surface. The Shaftsbury formation is now known to be rich in kimberlitic volcanic ash layers of possible ultramafic origin. Since the Ashton/AEC kimberlite pipes, located approximately 150 km to the east of the permits, have been dated at approximately 85 million years, exploration permits located in the Shaftsbury embayments will have the potential for Shaftsbury age pipes to occur at surface rather than being deeply buried by overlying sedimentary rocks. The area covered by the permits described in this report and the Ashton/AEC Buffalo Head permits containing a large kimberlite pipe cluster are both located in Shaftsbury embayments.

The Chinchaga diamond project permits contain general geological conditions that are favourable for the localization of diamond host rocks. Moreover, exploration conducted for precious metals and iron ore development to the south of the project area, in the Clear Hills, resulted in the discovery of attractive derivative (i.e. sedimentary) lithologies in the late-Cretaceous age Bad Heart formation. Preliminary geochemical sampling was successful since a broad suite of indicators was recovered, including the recovery of two clear microdiamonds from a trench sample of Bad Heart material in early 1996, but only announced the first half of 1997 for competitive reasons. Subsequent to the evaluation of this sampling programs, the Chinchaga Diamond project was launched in 1996 and more-or less continuous exploration has been conducted throughout 1996, 1997 and the first half of 1998.

PERMIT TABULATION

The following Metallic and Industrial Minerals Permits are the subject of this report. Legal descriptions of the permits and ownership information is contained in Appendix A.

Permit Number	Hectares
Permit No 9396010022	9,216
Permit No 9396010023	9,216
Permit No 9396010024	9,216
Permit No 9396010025	9,216
Permit No 9396010026	9,216
Permit No 9396010027	9,216
Permit No 9396010028	9,216
Permit No 9396010029	9,216
Permit No 9396010030	9,216
Permit No 9396010031	9,216
Permit No 9396010032	9,216
Permit No 9396010033	9,216
Permit No 9396010034	9,216
Total	**119,808**

LOCATION AND ACCESS

The Permits are located in NTS mapsheets 84E and 84D, west of the town of Manning, Alberta. More particularly the permits are bounded by Townships 91 to 100 and Ranges 3 to 8 west of the 6th Meridian. Location maps are contained in Appendix A.

The towns of Peace River and Manning, Alberta service the project area. The Chinchaga road is the main east-west service corridor, acting as an all-weather gravel highway for the forestry and petroleum industries. The Chinchaga Road is located approximately 30 km north of Manning. Battle River Holdings operates Camp 42, an open camp located at mile 42, approximately kilometre 60, on the Chinchaga road.

Summer access throughout most of the area is difficult and is best achieved by helicopter. Winter access is excellent along a dense network of seismic lines.

WORK PERFORMED

Outline

During the period January 1, 1996 and April 30, 1998, the Company explored the permit by means of a continuous campaign of outcrop prospecting; reconnaissance geochemistry, aeromagnetic surveys, localized geochemistry and drilling on an adjacent group of permits. The evolution of the Chinchaga Diamond project has been dictated by the large size of the permit package, the semi-remoteness of the area, the lack of outcrop, the thin glacial drift thickness and the difficulty of access during the summer.

Diamond exploration to date has consisted of the following programs representing approximately $600,000 in expenditures:

- Reconnaissance, opportunity mapping and limited sampling;
- Purchase and re-processing of high resolution Digital Elevation model data;
- Purchase, re-processing and interpretation of 600 metre line-spacing aeromagnetic data;
- Helicopter supported geochemical sampling program of streams draining the project area;
- Drilling 600 metre aeromagnetic data set anomalies on an adjacent permit block (not part of this assessment report);
- Acquisition, processing and interpretation of a 7,000 line km, 200 metre line-spacing aeromagnetic survey over a part of the permit area as well as over adjacent permits; and
- Ground vehicle supported geochemical sampling program of certain anomalies identified on the 200 metre line-spacing aeromagnetic survey.

As at the date of this report, exploration continues with both ground- and helicopter-supported geochemical sampling program proposed for the 1998 autumn exploration season. The objective of these programs will be to further investigate selected anomalies on the 200 metre line-spacing aeromagnetic data set.

Digital Elevation Model Analysis and Integration into mapping system

A high resolution Digital Elevation Model (DEM) dataset was purchased and integrated into the project database in order to provide a topographic layer which could be overlaid on geophysical datasets to provide a sense of topographic sensitivity to geological structures. The DEM dataset covers all of the NTS 84E mapsheet and the northern part of the 84D mapsheet.

The area is topographically varied, dominated by significant highlands such as the Clear Hills and the Naylor Hills and large drainage systems such as the Chinchaga and the Hotchkiss.

The regional DEM map, at a scale of 1:250,000 is contained in Appendix B.

The data is also provided on a CD-ROM, which forms part of this report. The data is provided in both XYZ format (compressed) and in ERMapper format. Copies of this data have also been provided to APEX Geoscience of Edmonton and GeoAnalytic Inc. of Calgary. Both of these companies are able to provide data analysis and mapmaking services using this dataset when this report is made public, subject to any restrictions placed on the dataset by the original data vendor.

Reconnaissance, opportunity mapping and limited preliminary sampling

Preliminary reconnaissance and consideration of regional aeromagnetic data resulted in the collection and processing of samples, primarily from the Bad Heart formation which occurs in the southern part of the permit area and in the Clear Hills to the south of the permit area. Two diamonds were recovered immediately south of the permit areas as reported in a March 17, 1997 news release.

<<Excerpt from March 17, 1997 news release>>

TWO DIAMONDS RECOVERED FROM PEACE RIVER PROJECT IN ALBERTA
March 17, 1997 -- Two diamonds have been recovered from a 1.3 Kg outcrop sample taken from Marum's Peace River project. The project area consists of 612 square miles of metallic mineral permits in the Peace River area of Alberta. Marum has collected reconnaissance geochemical samples of rock outcrops in the 60 km by 120 km project area.

A routine 1.3 Kg geochemical sample of exposed bedrock was pulverized and passed though a 30 mesh (0.5 mm) screen. The plus 0.5 mm clastic fraction was discarded since the sample was not intended for diamond analysis. Prior to chemical analysis, a microscope inspection of panned, minus 0.5 mm material indicated several interesting grains. Consequently, the sample was subjected to caustic dissolution and two diamonds were recovered. Both diamonds are clear and colourless. Grain #1 is an octahedral crystal, which may be a fragment of a larger grain. Grain #1 measures 0.40mm x 0.35 mm x 0.20mm. Grain #2 is a dodecahedral crystal measuring 0.30 x 0.25mm x 0.30mm. The sample was processed at Terramin Research Laboratories in Calgary and the diamonds have been confirmed by electron microprobe.

The Alberta Geological Survey has published reports of indicator minerals occurring in the project area. Outcrop samples of the diamond host rocks collected by Marum contain elevated levels of chrome and nickel. Various chromites and deep red, possibly pyropic, garnets have been visually identified in panned samples. The intensely weathered diamond host rocks have been observed in bedrock exposures at multiple locations within the large project area. Marum has initiated a program to determine the composition and origin of the diamond host rocks and the geologic controls, which determine their distribution throughout the project area.

Only one sample from the project has so far been processed for diamonds and this sample was not investigated for grains larger than 0.5 mm.

Purchase, re-processing and interpretation of 600 metre line-spacing aeromagnetic data

Surface reconnaissance and essentially regional geochemical sampling was encouraging, the results were not specific enough to generate precise geological targets, either ultramafic pipes or secondary, sedimentary lag deposits which might host diamonds. Accordingly, a 30,000 line km, 600 metre line-spacing aeromagnetic survey was located, purchased, re-processed and interpreted. This program was described in a September 24, 1997 news release.

<<Excerpt from September 24, 1997 news release>>

AEROMAGNETIC DATA ACQUIRED FOR CHINCHAGA CRATON DIAMOND PROPERTIES

September 24, 1997 -- The Company reports that it has acquired high resolution aeromagnetic data covering its Chinchaga Craton diamond properties in northern Alberta. Spectra Exploration Geoscience Corp. of Calgary performed data acquisition. Spectra is currently processing the data for high frequency, shallow targets which also have deep root expressions. A preliminary review of the unprocessed data indicates several areas of potential interest, including localized, high frequency anomalies which are powerful enough to appear on the total field magnetic maps.

Marum's Chinchaga Craton diamond properties consist of a 100% interest in 400,000 acres of permits distributed in a north-south pattern adjacent to and immediately west of a property, which Mount Hope Resources recently reported as containing over 20 anomalies, which appear in a cluster.

Marum's properties were specifically acquired to capture a coincidence of diverse geological conditions which favour the localization of kimberlite pipe targets. These conditions include:

- *A requirement that the underlying craton possess thick, cool roots that have not been subjected to thermal re-heating. Both the Chinchaga Craton and the associated Buffalo Head Craton have these characteristics. The Alberta Geological Survey report "Diamonds in Alberta" favours the Chinchaga over the Buffalo Head as a potential diamond host terrane on the basis of the Chinchaga's mix of Archean isotope geochemistry and cooler, deeper crustal roots. The existence of a pronounced gravity low within the craton to pinpoint the*

location of super-cool root zones. Regional gravity data clearly shows that the Chinchaga and Buffalo Head Cratons form a single circular unit, similar in size and shape to the Slave Craton in the NWT.

- *A pronounced ring shaped gravity low occurs within the Chinchaga-Buffalo Head Craton complex. Both the Ashton and Monopros kimberlite pipes occur on this low-gravity ring. The core Ashton permits appear to cover approximately 30 degrees of circumference on the east side of the Chinchaga-Buffalo Head low-gravity ring. The Marum properties cover approximately 45 degrees of circumference on the west side of the ring.*
- *The presence of deep, crustal faults. It appears that the distribution of kimberlite pipes in northern Alberta is directly related to the deep, crustal scale faults associated with the Peace River Arch, especially in areas which contain swarms of smaller stress release faults. Satellite imagery indicates that this apparently essential structural combination exists in the core Ashton permit block as well as in Marum's Chinchaga properties where the Chinchaga valley itself is the surface expression of a deep crustal fault.*
- *The presence of Shaftsbury Embayments. The Wabasca, Peace River and Chinchaga erosional embayments expose the upper Cretaceous Shaftsbury formation to the surface. The Shaftsbury formation is now known to be rich in kimberlitic volcanic ash layers. If, as is suspected, the Ashton pipes are of Shaftsbury age (85 million years old) the properties located in the Shaftsbury embayments will have the potential for Shaftsbury age pipes to occur at surface rather than being deeply buried by overlying sedimentary rocks. The Marum Chinchaga properties and the Ashton Buffalo Head property are both located in Shaftsbury embayments.*
- *The presence of diamond indicator minerals. Marum has previously reported the existence of indicator minerals in the area and the recovery of two clear microdiamonds from a trench sample of a Cretaceous age sedimentary rock outcrop located on one of its Chinchaga Craton properties.*

The 600 metre, 1:250,000 scale, magnetic dataset covers the entire NTS 84E (Chinchaga River) mapsheet and represents a significant contribution to the public domain. The maps and survey specifications are contained in Appendix C. The dataset consists of four maps, namely:

- Total Magnetic Intensity Map
- First Vertical Derivative of the Total Magnetic Intensity Map
- Shaded Relief of the first Vertical Derivative of the Total Magnetic Intensity Map
- Shaded Relief of the Horizontal Gradient of the First Vertical Derivative Map

Helicopter supported geochemical sampling program of streams draining the permits

Following receipt of the 600 metre line-spacing aeromagnetic data, Apex Geoscience of Edmonton was retained to plan and execute a helicopter-supported geochemical sampling program designed to gather and process samples from streams draining the permit areas. This program was described in an October 6, 1997 news release.

<<Excerpt from October 6, 1997 news release>>

Oct 6 1997 -- The company announces that it has engaged Apex Geoscience to carry out geological reconnaissance and sampling operations on its 100% owned 400,000 acre Chinchaga diamond property in Alberta. Mr Michael Dufresne of Apex will manage the program and personally conduct field operations. Mr Dufresne is an authority on Alberta geology and is the primary author of the Alberta Geological Survey publication entitled "Diamond Potential of Alberta."

The company has received from Spectra Exploration Geoscience the final processed aeromagnetic data products covering most of the Chinchaga diamond property.

Marum, Spectra and Apex geologists have positively identified multiple clusters of aeromagnetic anomalies with pronounced basement roots. These seem to fit the classical pipe models which consist of circular to elliptical clusters of surface or near surface, 500 to 1000m diameter individual anomalies which directly overlie large, deep, strongly magnetic root structures.

Marum has decided that the outstanding quality of the clustered anomalies and their large number merit immediate action. Accordingly, an accelerated, helicopter supported anomaly identification and sampling program has been started. Mobilization of field and helicopter crews is under way. The field program is expected to last six weeks.

The helicopter supported geochemical sampling program was executed in October, 1997. The Alberta Geological Survey was invited to sent a representative to collect samples for general research project and took advantage of the opportunity to collect till samples which were processed and the results published.

Appendix D contains the following data concerning the geochemical sampling program:

- Sample Location Map
- Summary Communication from John Pawlowicz, Alberta Geological Survey
- Terramin Research Labs Ltd., Sample Preparation Data
- Terramin Research Labs Ltd., Indicator Mineral Tally
- Terramin Research Labs Ltd., Mineral Identification Summary

Drilling Program on adjacent property, on 600 metre aeromagnetic anomalies

In December 1997, Marum entered into a joint venture arrangement with CaribGold Resources Inc. in order to explore permits adjacent to the permits covered in this report. This work, while not forming part of this report for assessment credit purposes, is relevant since is describes adjacent land with identical geological features and also because it lead to the commissioning of a joint high-resolution (200 metre) line-spacing aeromagnetic survey over several sets of permits. The arrangement with CaribGold was described in a December 1, 1997 news release.

<<Excerpt from December 1, 1997 news release>>

CARIBGOLD AND MARUM FORM ALBERTA DIAMOND JOINT VENTURE

December 1, 1997 -- Calgary, Alberta - CaribGold Resources Inc. (TSE:CG) and Marum Resources Inc. (ASE:MMU) report that they have signed a letter of agreement to form a joint venture to explore for diamonds in northern Alberta. The area under agreement consists of approximately 250,000 acres in an area of intense structural density near the Chinchaga crustal fault which defines the northwestern edge of the Peace River Arch. There is growing evidence that the deep crustal faults of the Peace River Arch structural province are the primary controls for Ashton Mining of Canada's large, newly discovered field of diamondiferous kimberlites.

Drill target prioritization using magnetic, seismic and geochemical data is underway.

A drill program, using a light coring auger drill, was carried out in March, 1998, as described in the following News Release.

<<Excerpt from an April 6, 1998 news release>>

EXPLORATION UPDATE CHINCHAGA DIAMOND PROJECT, ALBERTA

April 6, 1998 -- Marum Resources Inc. has received from CaribGold Resources Inc. (TSE:CG) an interim report from APEX Geoscience Ltd. (APEX) on the Marum/CaribGold Chinchaga joint venture.

During the period from March 5 to March 22, a total of eleven auger drill holes were completed by APEX at six separate targets within the 275,000 acre Marum/CaribGold joint venture project area.

The intent of the drilling was to test overburden thickness and to obtain samples from basal till and bedrock in the vicinity of magnetic and/or physiographic anomalies defined by airborne and ground magnetic surveys. In each of the eleven holes (drill hole identifiers 8CH01 to 8CH11), both basal till and top of bedrock was cored using a continuous sample tube system which yields a 3-inch diameter core. Drill hole depths ranged from 12.3m to 40.5m, with bedrock intersected in each of the eleven drill holes. The maximum depth of overburden encountered was 9.4m.

Interestingly, an impenetrable bedrock unit was encountered in two separate holes at Target 7. Attempts to penetrate the bedrock unit caused damage to the light drill. The program was terminated since repairs to the drill could not be completed before spring breakup related road closures.

Preliminary observations from drilling indicate that Cretaceous-age shales, sands and mudstones were intersected. The stratigraphic units tested are likely similar in age and character to the succession of sediments that immediately surround or are intercalated with pyroclastic aprons associated with the Buffalo Head Hills kimberlites. At least three targets over an area of about 15 km in length yielded multiple thick pyroclastic ash horizons, up to 2.5m thick, which exhibit varying degrees of alteration. In addition to the pyroclastic horizons, several partly consolidated green sand units were intersected at each of the three targets that yielded the thick pyroclastic. The green color of the sands is due, in part, to the presence of green clay minerals. At this time, prior to analyzing the core, it is unknown whether any of the pyroclastic horizons or the green sand units are related to local mafic or kimberlitic volcanism. Drill holes 8CH09 and 8CH10, which were drilled at Target 7 approximately 10m apart, were terminated at 12.3m and 13.7m, respectively, due to encountering an impenetrable bedrock unit. Further exploration is planned to determine the origin and extent of the pyroclastic horizons, the green sand units and the impenetrable bedrock unit that was encountered at Target 7.

At present, all of the drill core is in the process of being logged and sampled by APEX. Selected samples will be sent to the Saskatchewan Research Council for diamond and diamond indicator analysis. Results are expected in three to six weeks.

Upon receipt of the preliminary drill results, a high resolution, 200m line spaced, fixed-wing, Spectra Geoscience airborne magnetic survey was immediately authorized to further define the drilled targets as well as other targets in nearby clusters. This 7,000-line km survey is a cooperative effort between Marum, CaribGold Resources Inc., and Micrex Development Corp
(ASE:MIX). The survey area covers six townships of the Marum/CaribGold joint venture and 5.5 townships covering a combination of 100% Marum land and Marum/Micrex joint venture land. The flying portion of the survey is expected to be finished within a few days.

Additional fieldwork on the Marum/Caribgold joint venture will begin as soon as the core analysis results are evaluated and the airborne geophysical survey results have been reviewed. This work will include sampling, auger drilling and rotary core drilling. Fieldwork, including possible drilling, on certain 100% Marum lands and a portion of the Marum/Micrex joint venture which are adjacent to all- weather roads will begin immediately upon receipt of the airborne geophysical survey results.

Petrographic Report on Drill Cutting Samples (T98R3W6, Section 30)

One of the drill targets (Target 7) was located near the boundary of the permit area as indicated by "Powell Report Samples" on the sample location map in Appendix D.

Several cuttings were submitted for petrographic analysis and the results of this analysis are contained in the Wayne Powell petrographic report contained in Appendix E.

Cranberry 200 m line spacing aeromagnetic survey

Following the receipt of encouraging results from the March 1998 drill program on land immediately adjacent to the permits, a 200m line spacing aeromagnetic survey was commissioned to redefine drill targets. The survey was flown in April 1998 and the final results were received in July. The program was described in a news release as follows:

<<Excerpt from an May 26, 1998 news release>>

GEOPHYSICAL RESULTS - CHINCHAGA DIAMOND PROJECT

May 26, 1998 -- Marum Resources Inc. reports that it has received preliminary data from the 200-metre line spacing high-resolution aeromagnetic survey flown by Spectra Geoscience in April. This survey was flown following a drill program conducted by CaribGold Resources Inc. on the Marum/CaribGold Chinchaga diamond exploration joint venture.

The 200-metre "Cranberry" survey covers approximately 11 townships. Approximately half of the survey area covers Marum/CaribGold joint venture land and the other half covers either Marum 100% land or Marum/Micrex joint venture land. To date, Marum has restricted its analysis of the aeromagnetic data to the 100% Marum land and the Marum/Micrex joint venture land covered by the survey. The survey has confirmed the location of a number of point targets shown on the regional 600 metre spacing survey. The new, more detailed results define several new sets of point target patterns that are not related to cultural objects. Moreover, these target patterns, or clusters, although some are linear patterns over 8km long, are not related to glacial till deposits since till is very thin throughout the Chinchaga area. Neither are they related to stream sediment deposits since most of the patterns cut across existing drainage networks. Approximately one third of the targets coincide with slightly elevated topographic mounds.

Preliminary analysis indicates that these targets occur at or near surface and have geological diameters greater than 200 metres, but not likely greater than 800 metres. Approximately 30 anomalies are compelling because of their shape and, especially, their power which render them obvious even on unprocessed preliminary total field intensity maps.

Marum has requested that its consultant, APEX Geoscience immediately recommend a drilling program for the 100% Marum land and the Marum/Micrex joint venture land on the basis of their analysis of the high-resolution magnetics and the results of the March drill program on the Marum/CaribGold joint venture. Marum has not yet received basal till and core analysis results from the Marum/CaribGold joint venture drill program conducted in March, however, APEX, the project manager, has advised the Company that results should be available soon.

Field operations in the Chinchaga will commence within one week and will initially consist of a reconnaissance team responsible for locating and sampling the areas near certain anomalies. Marum's mobile, 1 ton per day, gravity concentrator has been reconfigured for the Chinchaga sampling program. An 8 foot trommel has been added to the concentrating unit in order to automate the sampling pre-screening process. Stream sediment and trench samples will be processed into concentrates in the field. The objective of the sampling program is to gather

geochemical data near selected anomalies and to sample nearby Cretaceous-age beach deposits for concentrations of indicator minerals and diamond.

The Cranberry 200 m aeromagnetic dataset is contained in Appendix F. It consists of a detailed operations report and the following:

Maps

- Total Magnetic Intensity and Flight Path Overlay
- Small Target Enhancement of Total Magnetic Intensity
- Shallow Magnetic Target Filter of Total Magnetic Intensity
- Second Vertical Derivative of Total Magnetic Intensity
- Calculated Horizontal Gradient of Total Magnetic Intensity
- – 5.3 km Band Pass of Total Magnetic Intensity
- 350 m – 1,500 m Band Pass of Total Magnetic Intensity

CD-ROM

All of the above listed maps in ERMapper (.ers) format

RESULTS OBTAINED

Digital Elevation Model Analysis and Integration into mapping system (Appendix B)

Relatively little structural information was captured by the DEM dataset. The printed maps are useful as a topographic reference and to get a feel for the terrain.

The dataset proved to be very useful in digital form when layered over or under geophysical datasets. In a number of instances, coincident topographic and magnetic anomalies were identified and this coincidence was used to prioritize anomalies for either drilling or further geochemical investigation.

Reconnaissance, opportunity mapping and limited preliminary sampling

The discovery of two microdiamond fragments in a gold sample was responsible for re-prioritizing the area as a diamond exploration project, to the total exclusion of exploration for other commodities.

Additionally, the overall geochemical signatures of sedimentary rocks in the area, outlined in conjunction with work on a project immediately to the south of the permits, suggested the existence of primary volcanic rocks in the area, possibly of mafic or ultramafic composition and possibly derived from the earth's mantle.

Purchase, re-processing and interpretation of 600 metre line-spacing aeromagnetic data (Appendix C)

Extensive processing and analysis of this large regional magnetic dataset generated several priority areas, some of which were later explored in detail.

Total Magnetic Intensity Map
With the Buffalo Head Craton along the eastern edge of the mapsheet and the Ksituan magnetic high terrane in the western portion of the mapsheet, the Chinchaga magnetic low terrane is clearly outlined in blue. The Great Slave Lake Tectonic lineament (the Hay river Fault) cuts across the extreme northwest corner of the mapsheet in a NE-SW direction.

First Vertical Derivative of the Total Magnetic Intensity Map
Shaded Relief of the first Vertical Derivative of the Total Magnetic Intensity Map
Shaded Relief of the Horizontal Gradient of the First Vertical Derivative Map
Obvious areas of magnetic diversity are evident in NTS 84E/9 and NTS 84E/2, portions of which fall within the permit area. The edges of these hot spots, corresponding to steep changes in the gradient of the Total Magnetic Intensity, display point anomalies which are considered

interesting diamond targets since they could be caused by vertical volcanic bodies with elevated magnetite concentrations. Running through the centre of the mapsheet, in a NE-SW direction is a speckled pattern which probably represents tributaries of the Chinchaga River which contain sedimentary rocks with high concentrations of magnetite.

Helicopter supported geochemical sampling program of streams draining the permits (Appendix D)

This program was initially designed to capture the broad geochemical signature of the area and to identify samples with high concentrations of diamond indicator minerals.

Generally, the area was found to contain a slightly anomalous concentration of minerals which could be derived from primary mafic or ultramafic volcanics in or near the permit areas. The identification of a few grains of possible olivine and a few high-chrome pyrope garnets are considered positive and together with other data confirm the area as being prospective for diamonds.

Drilling Program on adjacent property, on 600 metre aeromagnetic anomalies

A drilling program carried out by the Marum/CaribGold joint venture immediately to the east of several of the permits further confirms the area's potential to host diamond-bearing volcanic rocks.

Preliminary geochemical and stratigraphic evaluation of the drill cutting and core data suggests the possibility than the green "bentonitic" ashes encountered represent lapilli tuff deposits, presumably on the edge of a volcanic complex of mafic to ultramafic composition. This data further supports the permits as being prospective for diamonds.

Petrographic Report on Drill Cutting Samples (T98R3W6, Section 30) (Appendix E)

Some of the drill cutting and core material was submitted for petrographic analysis. Located less than 2km from the permit boundaries this information is relevant to the project.

Two samples, "SS Milled" and "Mud Milled in Bag" contain significant geochemical indicators consisting of olivine in the first sample and an "ascent granulite" in the second sample. Both indicators are consistent with the concept of a local, deeply-derived volcanic source rock.

Cranberry 200 m line spacing aeromagnetic survey (Appendix F)

The highlights of this dataset are the Small Target Enhancement of the Total Magnetic Intensity map which highlights (in red) shallow, drillable targets which are due to unexplained geological features. Forty to fifty anomalies are identified throughout the permit areas.

AUTHOR

Richard A. Boulay, B.Sc., President of Marum Resources Inc. is the author of this report.

In 1967, Mr. Boulay graduated from Carleton University with a Bachelor of Science degree in geology. His subsequent 30 year career has included a diversity of projects in the international mining and mineral exploration industries. In the early 1970's he was employed as a mining investment analyst at a Toronto investment firm. This activity was followed by twelve years of international project financing with three international banks. Since 1985, Mr. Boulay has been involved in the startup and development of public companies in the mining, technology and financial industries.

STATEMENT OF EXPENDITURES AND DECLARATION

STATEMENT OF EXPENDITURES - PERMITS 9396010022 TO 9396010034
Chinchaga Project Expenditures from January 19, 1997 ***GST excluded***

Date	Check	Name	Memo	Account	Amount	Category	Percent
10/31/97	2223	Greyhound Courier	Acct:02538433	Courier	27.51		
1/22/98	2263	Greyhound Courier	Inovice 8025634 - Acct 025843	Courier	59.56		
5/1/98	2346	Greyhound Courier	Inovice 8041546 & 8138114	Courier	30.00		
4/16/96	1709	Greyhound Courier	Re:Acct:0258433	Courier	25.40		
1/13/98	2249	604737 Alberta Ltd	Peace River Airport Fee	Exploration Expens	15.92	158.39	0.03%
10/27/97	2212	VISA - split accoun	Re: Exploration Expenses	Exploration Expens	357.05		
8/22/97	2136	Marmot Research I	Re: Peace River Exploration	Exploration Expens	1,000.00		
8/29/97	2146	Marmot Research I	Re: Peace River Exploration	Exploration Expens	2,500.00		
9/18/97	2184	Marmot Research I	Re: Peace River Exploration	Exploration Expens	2,000.00		
5/13/96	1730	MT Environmental	Re: Peace River Exploration	Exploration Expens	1,750.00		
8/20/96	1863	MT Environmental	Re: Peace River Exploration	Exploration Expens	875.00		
8/30/96	1881	MT Environmental	Re: Peace River Exploration	Exploration Expens	1,750.00		
9/13/96	1887	MT Environmental	Re: Peace River Exploration	Exploration Expens	1,750.00		
10/3/96	1912	MT Environmental	Re: Peace River Exploration	Exploration Expens	1,750.00		
5/28/97	2092	MT Environmental	Re: Peace River Exploration	Exploration Expens	875.00		
5/1/96	1725	MT Environmental	Re: Peace River Exploration	Exploration Expens	264.05		
5/29/98	2356	[redacted]		Exploration Expens	280.00		
11/20/96	1963	[redacted]	Nov 8,96 Invoice	Exploration Expens	400.00		
10/22/96	1936	[redacted]	October 15/96- Sample prep wc	Exploration Expens	800.00		
2/29/96	1662	[redacted]	Feb 27, 96 Invoice	Exploration Expens	1,600.00		
5/13/96	1731	[redacted]	May 8, 1996 invoice	Exploration Expens	1,200.00		
5/17/96	1751	[redacted]	Re:Fees	Exploration Expens	2,000.00		
5/29/98	2357	[redacted]	Chinchaga Field Program	Exploration Expens	2,000.00		
9/30/97	2191	APEX Geoscience	Geochemical Sampling Progran	Geological Surveys	10,000.00		
10/7/97	2205	APEX Geoscience	Geochemical Sampling Progran	Geological Surveys	10,000.00		
1/22/98	2259	APEX Geoscience	Invoice A97-134	Geological Surveys	1,599.26	44,750.36	7.45%
4/2/98	2320	APEX Geoscience	Spectra Survey 200 metre surve	Geological Surveys	32,070.58		
9/22/97	2186	Spectra Exploratior	84E Interpretation 600 metre su	Geophysical Survey	6,000.00		
10/3/97	2198	Spectra Exploratior	84E Interpretation 600 metre su	Geophysical Survey	12,000.00		
11/3/97	2225	Spectra Exploratior	84E Interpretation 600 metre su	Geophysical Survey	6,000.00		
6/30/97	60397	Spectra Exploratior	Purchase of 30,000 line km surv	Geophysical Survey	410,000.00	466,070.58	77.57%
5/14/98	2350	Calgary Petrograpl	Invoice 98-128	Laboratory Analysis	75.00		
8/27/97	2139	Calgary Petrograpl	Invoice 97-150	Laboratory Analysis	470.00		
5/17/96	1753	[redacted]	Re:Lab Services	Laboratory Analysis	750.00		
1/30/98	2267	Terramin Research	Invoices: 4810-4814	Laboratory Analysis	1,930.49		
1/30/98	2272	Terramin Research	Invoice 4848 part payment	Laboratory Analysis	5,000.00		
3/13/98	2302	Terramin Research	Invoices 4846 balance	Laboratory Analysis	4,482.93	12,708.42	2.12%
1/22/98	2257	GEOANALYTIC In	Inovice 155 & 165	Mapping	2,770.00		
3/5/98	2299	GEOANALYTIC In	Inovice 186	Mapping	3,140.00		
5/1/98	2339	GEOANALYTIC In	Invoice 217	Mapping	134.90		
1/6/98	2239	GEOANALYTIC In	Re: GIS Services & Data	Mapping	5,320.00		
3/2/98	2292	Provincial Treasure	DEM Data	Mapping	4,850.00		
1/30/98	2270	Tarin Mapping	Invoice #TRS2861_Air Photos	Mapping	600.00		
5/1/98	2338	Tarin Mapping	Invoice #TRS2691- Air Photos	Mapping	252.00		
2/14/98	2278	The Letter Shop	Color Copies	Mapping	69.02	17,135.92	2.85%
		Project Management	Allocation at $2000 per month for 24 months		48,000.00	48,000.00	7.99%
		Overhead Allocation,	including project office room at $500 per month for		12,000.00	12,000.00	2.00%
					600,823.67	**600,823.67**	**100%**

Declaration

The undersigned hereby declares that the above stated exploration cash expenditures were incured in the diligent exploration of Metallic and Industrial Minerals Permits Nos. 9396010022 through 9396010034 from the commencement date of the permits in accordance with the applicable regulations and in compliance with the applicable permitting requirements

MARUM RESOURCES INC.

[redacted]

Richard A. Boulay, President, Calgary, August 30, 1998

ALLOCATION OF EXPLORATION EXPENDITURES
PERMITS 9396010022 TO 9396010034

Expenditures represented by this certificate				**$ 600,823.67**
	Hectares	Amount	Total	
Applied to Permit No 9396010022	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010023	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010024	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010025	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010026	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010027	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010028	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010029	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010030	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010031	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010032	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010033	9,216	$ 5.00	$ 46,080	
Applied to Permit No 9396010034	9,216	$ 5.00	$ 46,080	
Allocated for Assessment	**119,808**		**$ 599,040**	**$ 599,040.00**
Unallocated exploration expenditures				**$ 1,783.67**

Note regarding 600m aeromagnetic expenses

The purchase of the 30,000 line km, 600m line spaced aeromagnetic dataset from Spectra Exploration Geoscience Corp., and the related processing of the data, during 1997 was paid for by Marum Resources Inc., related companies and exploration syndicates by a combination of cash and equity. The total cost of the data, including processing is $410,000, approximately $13.66 per line km.

The accompanying letter from Spectra documents the cost of the dataset.

SPECTRA

Spectra Exploration Geoscience Corp.

Suite 2610, 520 - 5th Avenue S.W.
Calgary, Alberta
T2P 3R7

Phone (403) 777-9280
Fax (403) 777-9289
E-mail: spectra@nucleus.com

June 25, 1998

Mr. Richard Boulay
President
Marum Resources Inc.
400, 407 – 8th Avenue SW
Calgary, Alberta
T2P 1E5

Dear Mr. Boulay

Re: Chinchaga River Map Sheet (NTS 84E) Airborne Magnetic Survey purchased by Marum Resources Inc. from Spectra Exploration Geoscience Inc.

Be advised, pursuant to your information request, that the costs incurred by Spectra for the acquisition, processing and production of the captioned 600-meter line spaced aeromagnetic survey are:

Data acquisition:	$300,000.00
Processing, editing and production	$110,000.00
Total	$410,000.00

Best Regards

[redacted]

Jim Genereux

MARUM
resources inc.

Chinchaga Diamond Project, Alberta

Appendix A

Metallic and Industrial Minerals Permit Title and Location Documentation

Contents

MARUM resources inc.

Metallic and Industrial Minerals Permit Title Documentation
Chinchaga Diamond Project, Alberta

List of Permits

The permits listed below, which form the subject of this report, were issued to 659485 Alberta Limited in January 1996. Under the terms of a trust agreement between Marum Resources Inc. and 659485 Alberta Limited, the permits are held in trust for Marum. Subsequent to the issue of the listed permits, 659485 Alberta Limited changed its name to Frontier Capital Corporation.

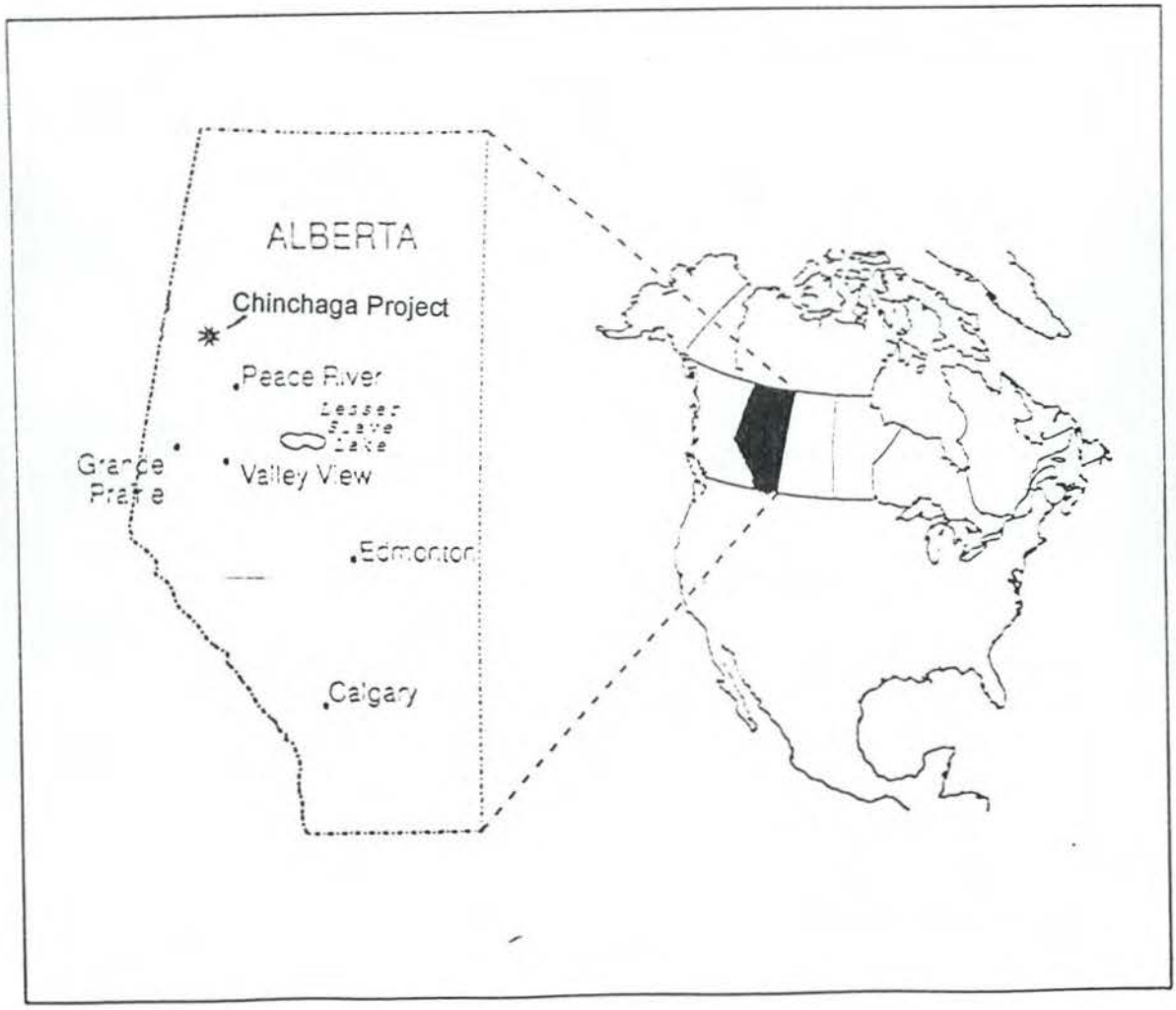
List of Chinchaga Project Permits

	Hectares
Permit No 9396010022	9,216
Permit No 9396010023	9,216
Permit No 9396010024	9,216
Permit No 9396010025	9,216
Permit No 9396010026	9,216
Permit No 9396010027	9,216
Permit No 9396010028	9,216
Permit No 9396010029	9,216
Permit No 9396010030	9,216
Permit No 9396010031	9,216
Permit No 9396010032	9,216
Permit No 9396010033	9,216
Permit No 9396010034	9,216
Total	**119,808**

MARUM
resources inc.

Metallic and Industrial Minerals Permit Title Documentation
Chinchaga Diamond Project, Alberta

Location Map



MARUM
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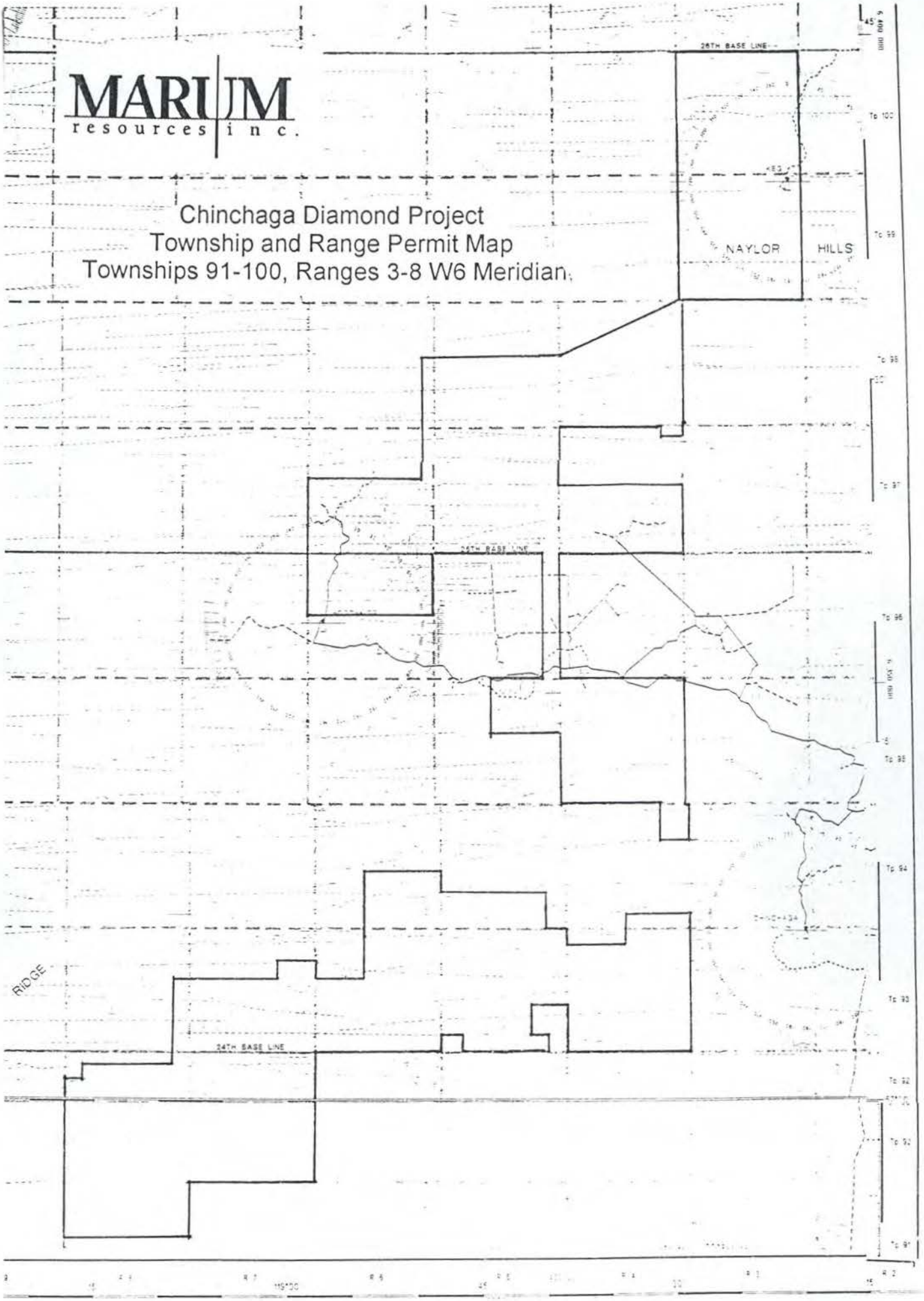
Chinchaga Diamond Project
Township and Range Permit Map
Townships 91-100, Ranges 3-8 W6 Meridian



APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010022

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-08-091: 19-36
6-08-092: 1-18

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010023

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-07-092: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010024

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-07-093: 1-18;23;24
6-08-092: 20-29;35;36
6-08-093: 1;2;10;11

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010025

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-04-093: 1-30;34-36
6-04-094: 1-3

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010026

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-05-093: 3;4;7-9;16-36
6-05-094: 2-11

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010027

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-06-093: 1-18;22-27;34-36
6-06-094: 1-3;10-15

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010028

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-04-094: 25-27;34-36
6-04-095: 1-3;5-24;26-30
6-05-095: 12;13

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010029

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-04-095: 31-36
6-04-097: 2-11;14-18
6-05-095: 25-28;33-36
6-05-096: 1;12;13;24;25;36
6-05-097: 1

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010030

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-05-096: 31;32
6-06-096: 19;20;24-36
6-06-097: 1-13;15-18;22
6-07-096: 25

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010031

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-04-097: 36
6-04-098: 1-16;22-26;36
6-05-098: 1-8;11-13
6-06-098: 1;12

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010032

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-05-097: 2-36
6-06-097: 36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010033

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-03-099: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9396010034

COMMENCEMENT OF TERM:

1996 JANUARY 17

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION:

6-03-100: 1-36

PERMITTED SUBSTANCES:

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

MARUM
resources inc.

Chinchaga Diamond Project, Alberta

Appendix B

DEM (Digital Elevation Model) Map
NTS Sheet 84E and part of 84D

Contents

Map

CD-Rom (XYZ and ERMapper Files and Algorithms)

#1

MARUM
resources inc.

Chinchaga Diamond Project, Alberta

Appendix C

High Resolution Aeromagnetic Data Set
600 m line spacing
flown by
Spectra Geoscience Corp.
NTS Sheet 84E (Chinchaga River)
Scale at 1:250,000

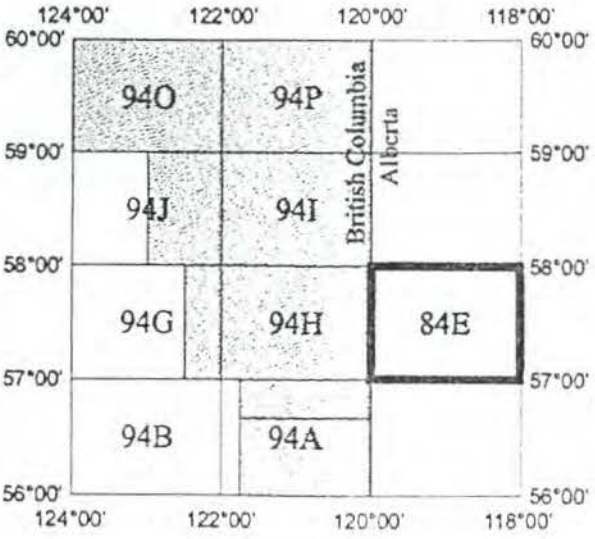
Contents

MIN9816 #2 to 5

Chinchaga Diamond Project, Alberta

High Resolution Aeromagnetic Data Set
600 m line spacing
NTS Sheet 84E (Chinchaga River)
Survey Specifications

Primary Line Spacing	600 m
Primary Line Direction	East - West
Control Line Spacing	1800 m
Control Line Direction	North - South
Aircraft Altitude	120 m
Magnetometer Sensor	Geometrics G-822A & Scintrex CS-2, cesium vapour
Magnetometer Sensitivity	0.01 nT
Aircraft Positioning	Differential GPS
GPS Receiver	NovAtel 951R, 12 channel
Aircraft	BN2 Islander, C-FGAQ & Cessna 402B, C-GCKB
Dates Flown	May 19 to July 24, 1996
IGRF Correction	As of date flown
Mean IGRF Correction	59265 nT
Magnetic Inclination at 56°30'N, 121°00'W	78.0°
Magnetic Declination at 56°30'N, 121°00'W	24.0°
Grid Cell Size	200 m
Datum	NAD27
UTM Zone	11N



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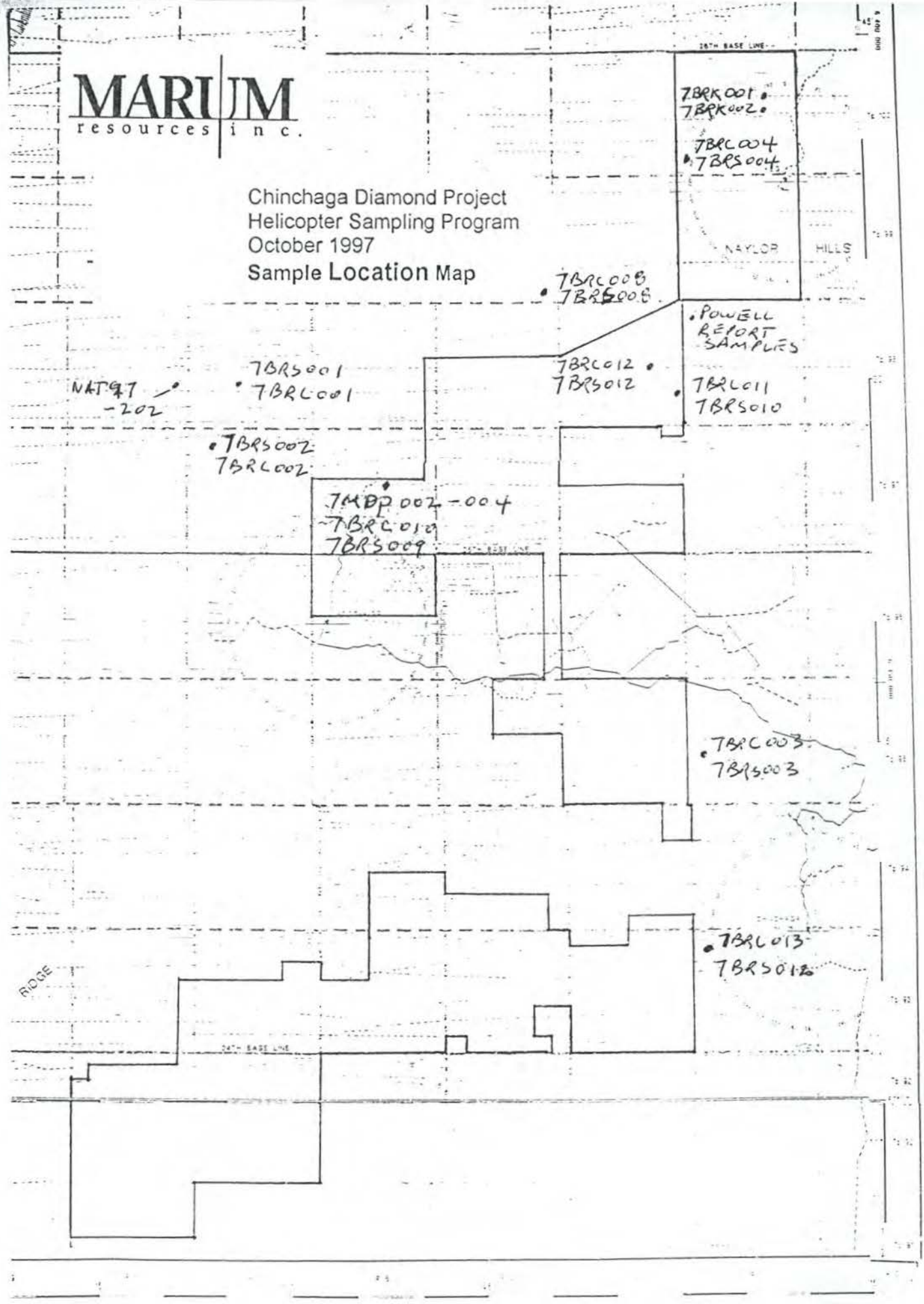
Chinchaga Diamond Project, Alberta

Appendix D

Helicopter Sampling and Geochemical Program
October 1997 through April 1998
NTS 84E (East Half) on, draining or proximal to Permit lands

Contents


MARUM
resources inc.
Chinchaga Diamond Project
Helicopter Sampling Program
October 1997
Sample Location Map
7BRK001
7BRK002
7BRC004
7BRS004
NAYLOR
HILLS
7BRC008
7BRS008
POWELL
REPORT
SAMPLES
7BRS001
7BRC001
NAT97
-202
7BRC012
7BRS012
7BRC011
7BRS010
7BRS002
7BRC002
7MDP002-004
7BRC010
7BRS009
7BRC003
7BRS003
7BRC013
7BRS013
RIDGE

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

M730 PAWLOWICZ EUB DECEMBER 3/97 (6) [INDICATOR MINERALS]
1 SAMPLE WEIGHT IN KG EUB97.05
2 +1.7mm WEIGHT IN KG
3 MAGSTREAM MID FRACTION IN GRAMS
4 MAGSTREAM HEAVY FRACTION IN GRAMS
5 VISIBLE PYROPIC GARNET GRAIN COUNT
6 VISIBLE Cr-DIOPSIDE GRAIN COUNT
7
8
9

	SWT	+1.7	MID	HEAVY	PG	CD
NAT97 202	24.10	1.00	7.52	11.68	0	0
NAT97 203	25.95	0.55	4.39	9.91	0	0
NAT97 204	36.85	1.15	6.09	12.34	0	0
NAT97 205	31.30	1.15	11.74	22.99	1	0
NAT97 206	30.70	0.75	4.16	10.81	0	0
NAT97 207	35.90	0.90	9.64	21.03	0	0

INDICATOR MINERAL GRAIN DESCRIPTION

GEOLOGIST/COMPANY: J. PAWLOWICZ GROUP #: EUB 97:05

DATE

SAMPLE #	PYROPE	CR. DIOP.	ECLOG (POSS)	BLACK OPAQUE	OTHER	DEF. COUNT	GEN. COUNT
1 NAT 97-202	0	0	0	1	0	0	1
COMMENTS: 1/4 BLK. OP. Picked							
2 203	0	0	0	15+	0	0	15
COMMENTS: 1/10 BLK. OP. Picked							
3 204	0	0	4	5	0	0	9
COMMENTS: 1/5 BLK. OP. Picked							
4 205	1	0	1	1	0	1	2
COMMENTS: 1/13 BLK. OP. Picked							
5 206	0	0	0	0	0	0	0
COMMENTS: 1/8 BLK. OP. Picked							
6 207	0	0	0	0	0	0	0
COMMENTS: 1/8 BLK. OP. Picked							
7							
COMMENTS:							
8							
COMMENTS:							
9							
COMMENTS:							
10							
COMMENTS:							
11							
COMMENTS:							
12							
COMMENTS:							

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-1**	**Client**	**Marum Resources Inc.**
Sample No:	**7 MDC-001**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			1375 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			1.5 hr			
Weight	+7	mesh	gm			
	-7+35	mesh	gm			
	-10+60	mesh	825 gm			
	-60	mesh	550 gm			
Mineral Separation Time			7 hr			
Weight	-10+35 m	Heavy	Ferro-mag	1.1 gm	Weakly-mag	1.8 gm
			Para-mag	38.1 gm	Non-mag	14.4 gm
Weight	-35+60 m	Heavy	Ferro-mag	0.4 gm	Weakly-mag	0.4 gm
			Para-mag	34.6 gm	Non-mag	8.0 gm
Mineral Examination Time			5 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-2**	**Client**	**Marum Resources Inc.**
Sample No:	**7 MDC-002**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			1100 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			1.5 hr			
Weight	+7	mesh	gm			
	-7+35	mesh	gm			
	-10+60	mesh	775 gm			
	-60	mesh	325 gm			
Mineral Separation Time			7 hr			
Weight	-10+35 m	Heavy	Ferro-mag	1.3 gm	Weakly-mag	33.8 gm
			Para-mag	7.9 gm	Non-mag	11.8 gm
Weight	-35+60 m	Heavy	Ferro-mag	3.3 gm	Weakly-mag	27.4 gm
			Para-mag	17.7 gm	Non-mag	4.4 gm
Mineral Examination Time			6 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	97-220-3	Client	Marum Resources Inc.
Sample No:	7 MDC-003	Project	
Sample Type:	Pan Con	Date	Dec. 24, 1997

Weight of Sample			1050 gm				
Crushing Time			hr				
Milling Time			hr				
Dispersion Time			hr				
Sieving Time			1.5 hr				
Weight	+7	mesh	gm				
	-7+35	mesh	gm				
	-10+60	mesh	925 gm				
	-60	mesh	125 gm				
Mineral Separation Time			7 hr				
Weight	-10+35 m	Heavy	Ferro-mag	0.2 gm	Weakly-mag	19.1 gm	
			Para-mag	1.3 gm	Non-mag	0.4 gm	
Weight	-35+60 m	Heavy	Ferro-mag	0.5 gm	Weakly-mag	33.3 gm	
			Para-mag	1.4 gm	Non-mag	0.9 gm	
Mineral Examination Time			4 hr				
Mineral Grains Picked							
Mineral Grains Analysed							

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	97-220-4	Client	Marum Resources Inc.
Sample No:	7 BCR-001	Project	
Sample Type:	Pan Con	Date	Dec. 24, 1997

Weight of Sample			1125 gm				
Crushing Time			hr				
Milling Time			hr				
Dispersion Time			hr				
Sieving Time			1.5 hr				
Weight	+7	mesh	gm				
	-7+35	mesh	gm				
	-10+60	mesh	1050 gm				
	-60	mesh	75 gm				
Mineral Separation Time			7 hr				
Weight	-10+35 m	Heavy	Ferro-mag		1.3 gm	Weakly-mag	5.9 gm
			Para-mag		5.9 gm	Non-mag	2.3 gm
Weight	-35+60 m	Heavy	Ferro-mag		2.0 gm	Weakly-mag	12.6 gm
			Para-mag		2.3 gm	Non-mag	2.4 gm
Mineral Examination Time			3 hr				
Mineral Grains Picked							
Mineral Grains Analysed							

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	97-220-5	Client	Marum Resources Inc.
Sample No:	7 BCR-002	Project	
Sample Type:	Pan Con	Date	Dec. 24, 1997

Weight of Sample			1900 gm				
Crushing Time			hr				
Milling Time			hr				
Dispersion Time			hr				
Sieving Time			2 hr				
Weight	+7	mesh	gm				
	-7+35	mesh	gm				
	-10+60	mesh	1750 gm				
	-60	mesh	150 gm				
Mineral Separation Time			12 hr				
Weight	-10+35 m	Heavy	Ferro-mag	4.2 gm	Weakly-mag	26.9 gm	
			Para-mag	7.6 gm	Non-mag	8.2 gm	
Weight	-35+60 m	Heavy	Ferro-mag	14.3 gm	Weakly-mag	6.1 gm	
			Para-mag	67.5 gm	Non-mag	8.3 gm	
Mineral Examination Time			10 hr				
Mineral Grains Picked							
Mineral Grains Analysed							

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	97-220-6	Client	Marum Resources Inc.
Sample No:	7 BCR-003	Project	
Sample Type:	Pan Con	Date	Dec. 24, 1997

Weight of Sample			1850 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			2 hr			
Weight	+7	mesh	gm			
	-7+35	mesh	gm			
	-10+60	mesh	1800 gm			
	-60	mesh	50 gm			
Mineral Separation Time			9 hr			
Weight	-10+35 m	Heavy	Ferro-mag	2.8 gm	Weakly-mag	37.7 gm
			Para-mag	6.1 gm	Non-mag	2.5 gm
Weight	-35+60 m	Heavy	Ferro-mag	2.7 gm	Weakly-mag	25.0 gm
			Para-mag	2.2 gm	Non-mag	1.7 gm
Mineral Examination Time			5 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-7**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-004**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			1500 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			2 hr			
Weight	+7	mesh	gm			
	-7+35	mesh	gm			
	-10+60	mesh	1275 gm			
	-60	mesh	225 gm			
Mineral Separation Time			7.5 hr			
Weight	-10+35 m	Heavy	Ferro-mag	1.3 gm	Weakly-mag	9.1 gm
			Para-mag	5.0 gm	Non-mag	1.9 gm
Weight	-35+60 m	Heavy	Ferro-mag	2.7 gm	Weakly-mag	22.4 gm
			Para-mag	2.5 gm	Non-mag	1.1 gm
Mineral Examination Time			4 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-8**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-005**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			2125 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			2 hr			
Weight	+7	mesh	gm			
	-7+35	mesh	gm			
	-10+60	mesh	1900 gm			
	-60	mesh	225 gm			
Mineral Separation Time			9 hr			
Weight	-10+35 m	Heavy	Ferro-mag	1.9 gm	Weakly-mag	12.8 gm
			Para-mag	11.3 gm	Non-mag	4.0 gm
Weight	-35+60 m	Heavy	Ferro-mag	4.1 gm	Weakly-mag	35.1 gm
			Para-mag	6.4 gm	Non-mag	3.8 gm
Mineral Examination Time			5 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-9**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-006**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			1900 gm				
Crushing Time			hr				
Milling Time			hr				
Dispersion Time			hr				
Sieving Time			2 hr				
Weight	+10	mesh	8.5 gm				
	-7+35	mesh	gm				
	-10+60	mesh	1600 gm				
	-60	mesh	300 gm				
Mineral Separation Time			9 hr				
Weight	-10+35 m	Heavy	Ferro-mag		1.9 gm	Weakly-mag	17.9 gm
			Para-mag		3.5 gm	Non-mag	2.6 gm
Weight	-35+60 m	Heavy	Ferro-mag		5.7 gm	Weakly-mag	45.3 gm
			Para-mag		4.3 gm	Non-mag	3.8 gm
Mineral Examination Time			8 hr				
Mineral Grains Picked							
Mineral Grains Analysed							

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-10**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-007**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			2800 gm				
Crushing Time			hr				
Milling Time			hr				
Dispersion Time			hr				
Sieving Time			2.5 hr				
Weight	+10	mesh	0.1 gm				
	-7+35	mesh	gm				
	-10+60	mesh	2550 gm				
	-60	mesh	250 gm				
Mineral Separation Time			9 hr				
Weight	-10+35 m	Heavy	Ferro-mag		2.2 gm	Weakly-mag	16.0 gm
			Para-mag		4.0 gm	Non-mag	3.4 gm
Weight	-35+60 m	Heavy	Ferro-mag		2.6 gm	Weakly-mag	28.4 gm
			Para-mag		1.4 gm	Non-mag	2.4 gm
Mineral Examination Time			4 hr				
Mineral Grains Picked							
Mineral Grains Analysed							

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-11**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-008**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			3175 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			2.5 hr			
Weight	+10	mesh	102.3 gm			
	-7+35	mesh	gm			
	-10+60	mesh	2400 gm			
	-60	mesh	675 gm			
Mineral Separation Time			9.5 hr			
Weight	-10+35 m	Heavy	Ferro-mag	3.4 gm	Weakly-mag	19.6 gm
			Para-mag	6.8 gm	Non-mag	6.5 gm
Weight	-35+60 m	Heavy	Ferro-mag	2.5 gm	Weakly-mag	29.5 gm
			Para-mag	3.5 gm	Non-mag	3.2 gm
Mineral Examination Time			4 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-12**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-009**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			2525 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			2 hr			
Weight	+10	mesh	5.9 gm			
	-7+35	mesh	gm			
	-10+60	mesh	2400 gm			
	-60	mesh	125 gm			
Mineral Separation Time			11 hr			
Weight	-10+35 m	Heavy	Ferro-mag	1.8 gm	Weakly-mag	40.2 gm
			Para-mag	25.8 gm	Non-mag	4.8 gm
Weight	-35+60 m	Heavy	Ferro-mag	1.5 gm	Weakly-mag	40.4 gm
			Para-mag	14.9 gm	Non-mag	8.8 gm
Mineral Examination Time			7 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-13**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-010**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			1775 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			2 hr			
Weight	+10	mesh	1.1 gm			
	-7+35	mesh	gm			
	-10+60	mesh	1600 gm			
	-60	mesh	175 gm			
Mineral Separation Time			11 hr			
Weight	-10+35 m	Heavy	Ferro-mag	0.6 gm	Weakly-mag	63.9 gm
			Para-mag	36.8 gm	Non-mag	1.8 gm
Weight	-35+60 m	Heavy	Ferro-mag	0.8 gm	Weakly-mag	70.2 gm
			Para-mag	12.6 gm	Non-mag	2.1 gm
Mineral Examination Time			14 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-14**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-011**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			2500 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			2 hr			
Weight	+10	mesh	1.5 gm			
	-7+35	mesh	gm			
	-10+60	mesh	2225 gm			
	-60	mesh	275 gm			
Mineral Separation Time			8.5 hr			
Weight	-10+35 m	Heavy	Ferro-mag	3.9 gm	Weakly-mag	39.9 gm
			Para-mag	21.8 gm	Non-mag	7.9 gm
Weight	-35+60 m	Heavy	Ferro-mag	10.7 gm	Weakly-mag	52.8 gm
			Para-mag	6.2 gm	Non-mag	7.4 gm
Mineral Examination Time			7 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-15**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-012**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			2655 gm			
Crushing Time			hr			
Milling Time			hr			
Dispersion Time			hr			
Sieving Time			2 hr			
Weight	+10	mesh	81.7 gm			
	-7+35	mesh	gm			
	-10+60	mesh	2400 gm			
	-60	mesh	150 gm			
Mineral Separation Time			7.5 hr			
Weight	-10+35 m	Heavy	Ferro-mag	2.3 gm	Weakly-mag	24.4 gm
			Para-mag	23.3 gm	Non-mag	3.6 gm
Weight	-35+60 m	Heavy	Ferro-mag	5.3 gm	Weakly-mag	45.2 gm
			Para-mag	5.7 gm	Non-mag	3.6 gm
Mineral Examination Time			7 hr			
Mineral Grains Picked						
Mineral Grains Analysed						

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS LTD.

DIAMOND EXPLORATION SAMPLE PROCESSING

Job No:	**97-220-16**	**Client**	**Marum Resources Inc.**
Sample No:	**7 BCR-013**	**Project**	
Sample Type:	**Pan Con**	**Date**	**Dec. 24, 1997**

Weight of Sample			2000 gm				
Crushing Time			hr				
Milling Time			hr				
Dispersion Time			hr				
Sieving Time			2 hr				
Weight	+10	mesh	23.8 gm				
	-7+35	mesh	gm				
	-10+60	mesh	1625 gm				
	-60	mesh	375 gm				
Mineral Separation Time			9.5 hr				
Weight	-10+35 m	Heavy	Ferro-mag		4.7 gm	Weakly-mag	98.3 gm
			Para-mag		9.8 gm	Non-mag	2.3 gm
Weight	-35+60 m	Heavy	Ferro-mag		1.9 gm	Weakly-mag	65.1 gm
			Para-mag		4.5 gm	Non-mag	0.9 gm
Mineral Examination Time			16 hr				
Mineral Grains Picked							
Mineral Grains Analysed							

Examined By _____ Probed By _____

TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-1	Client	Marum Resources Inc.
Sample No.	7 MDC-001	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Haematite	>50			
	Hornblende	>20			
	Garnet	~10			
	Opaques	~10			
Para-mag	Haematite	>70			
	Hornblende	~10			
	Garnet	10	5		
	Opaques	10	8		
	CPx	some	1		
Non-mag	Haematite	>80			
	Sulphide	10			
	Clears	10			
-35+60 Heavy					
Weakly-mag	Haematite	50			
	Hornblende	30			
	Garnet	10			
	Opaques	10			
Para-mag	Haematite	70			
	Hornblende	10			
	Sulphide	5			
	Garnet	5	12		
	Opaques	10	9		
Non-mag	Sulphide	80			
	Haematite	10			
	Clears	10	1		

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-2	Client	Marum Resources Inc.
Sample No.	7 MDC-002	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Haematite	40			
	Garnet	40			
	Hornblende	10			
	Opaques	10	1		possible chromite
Para-mag	Haematite	70			
	Sulphide	10			
	Garnet	10	4		elevated Mg in one grain
	Opaques	5	1		
	Hornblende	5			
	Rutile	some			
	CPx	some	2		
Non-mag	Sulphide	30			
	Amphibole	30			
	Clears	25			
	Garnet	10	6		
	Haematite	5			
	Opaques	some	6		
	CPx	some	5		
-35+60 Heavy					
Weakly-mag	Haematite	40			
	Garnet	40			
	Hornblende	10			
	Opaques	10			
	Olivine/CPx	possible			
Para-mag	Haematite	70			
	Sulphide	15			
	Garnet	10	4		
	Opaques	5	8		
	Hornblende	some			
	Rutile	some			
	CPx	some	7		
Non-mag	Sulphide	60			
	Hornblende	20			
	Clears	20	1		
	Garnet	some	8		
	Rutile	some			
	CPx	some	5		
	Opaques	some	3		

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-3	Client	Marum Resources Inc.
Sample No.	7 MDC-003	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Haematite	80			
	Hornblends	15			
	Opaques	5			
	Garnet	some			
Para-mag	Haematite	80			
	Opaques	10			
	Hornblende	10			
Non-mag	Clears	90			
	Sulphides	5			
	Opaques	5			
-35+60 Heavy					
Weakly-mag	Haematite	90			
	Hornblende	10			
	Opaques	some			
	Garnets	some			
Para-mag	Haematite	95			
	Hornblende	5			
	Opaques	some	2		
	Olivine/Opx	possible			
Non-mag	Clears	95			
	Sulphides	5			
	CPx	some	13		
	Garnet	some	2		
	Opaques	some	10		

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-4	Client	Marum Resources Inc.
Sample No.	7 BRC-001	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Garnet	60			
	Hornblende	30			
	Opaques	5			
	Haematite	5			
Para-mag	Garnet	40	3		
	Opaques	40	19		
	Apatite	5			
	Haematite	10			
	CPx	some	3		
	Olivine/Opx	possible			
Non-mag	Clears	80			
	Hornblende	10			
	Apatite	10			
	Garnet	some	5		
	CPx	some	7		
	Olivine/Opx	possible			
	Opaques	some	9		
-35+60 Heavy					
Weakly-mag	Garnets	60			
	Hornblende	20			
	Opaques	10			
	Haematite	10			
Para-mag	Garnets	60	6		
	Haematite	20			
	Opaques	10	1		
	Hornblende	10			
	Apatite	some			
	CPx	some	13		
	Olivine/Opx	possible			
Non-mag	Clears	70			
	Hornblende	20			
	Apatite	10			
	Garnet	some	9		
	Opaques	some	5		
	CPx	some	18		
	Olivine/Opx	possible			

Examined By: _____ Probed By: _____

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MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-5	Client	Marum Resources Inc.
Sample No.	7 BRC-002	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Garnet	40			
	Apatite	20			
	Rutile	20			
	Haematite	10			
	Hornblende	10			
	Opaques	some			
Para-mag	Haematite	45			
	Rutile	25			
	Garnet	15	10		
	Hornblende	10			
	Apatite	5			
	Opaques	some	9		
	Olivine	possible			
	CPx	some	4		
Non-mag	Clears	80			
	Hornblende	10			
	Apatite	10			
	Rutile	some			
	Garnet	some	12		
	CPx	some	8		
	Opaques	some	12		
-35+60 Heavy					
Weakly-mag	Garnets	80			
	Hornblende	10			
	Opaques	10			
	Apatite	some			
	Rutile	some			
Para-mag	Haematite	70			
	Hornblende	20			
	Apatite	10			
	Garnet	some	7		
	Opaques	some	5		
	CPx		3		
	Olivine	possible	11		
Non-mag	Clears	80			
	Hornblende	20			
	Garnet	some	12		
	Opaques	some	12		
	CPx	some	18		

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-6	Client	Marum Resources Inc.
Sample No.	7 BRC-003	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Haematite	70			
	Garnet	20			
	Opaques	5			
	Hornblende	5			
Para-mag	Haematite	80			
	Hornblende	10			
	Opaques	10			
	CPx	some			
	Olivine	possible			
Non-mag	Clears	90			
	Hornblende	some			
	Rutile	some			
	Opaques	some	9		
	Olivine	possible			
	Garnet	some	2		1 Cr pyrope, possible G-9
	CPx	some	3		
-35+60 Heavy					
Weakly-mag	Haematite	40			
	Garnet	40			
	Hornblende	10			
	Opaques	10			
	Rutile	some			
Para-mag	Haematite	80			
	Hornblende	15			
	Opaques	5	4		
	Rutile	some			
	Olivine	possible			
	Garnet	some	3		
	CPx	some	2		
Non-mag	Clears	90			
	Hornblende	some			
	Opaques	some	10		
	Olivine	possible			
	Rutlie	some			
	Garnet	some	4		elevated Mg in one grain
	CPx	some	12		

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-7	Client	Marum Resources Inc.
Sample No.	7 BRC-004	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Garnet	80			
	Rutile	5			
	Hornblende	5			
	Opaques	5			
	Haematite	5			
Para-mag	Haematite	75			
	Hornblende	10			
	Garnet	5			
	Rutile	5			
	Opaques	5	6		
	CPx	some	2		
Non-mag	Clears	80			
	Olivine	possible			
	Hornblende	some			
	Garnet	some	8		
	Opaques	some	16		
	Clinopyroxine	some	9		
-35+60 Heavy					
Weakly-mag	Garnet	70			
	Rutile	10			
	Haematite	10			
	Hornblende	5			
	Opaques	5			
Para-mag	Haematite	60			
	Rutile	10			
	Hornblende	15			
	Garnet	10	10		
	Opaques	5	5		
	Olivine	possible			
	CPx	some	4		
Non-mag	Clears	80			
	Haematite	some			
	Hornblende	some			
	Olivine	possible			
	Opaques	some	8		
	Garnet	some	3		
	CPx	some	8		

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-8	Client	Marum Resources Inc.
Sample No.	7 BRC-005	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Garnet	50			
	Haematite	30			
	Hornblende	10			
	Opaques	10			
Para-mag	Haematite	80			
	Opaques	10	7		
	Garnet	5	4		
	Hornblende	5			
Non-mag	Clears	80			1 possible uvarovite
	Opaques	some			3 possible G4/5 high Mg
	Olivine	possible			
	CPx	some			
	Garnet	some			
-35+60 Heavy					
Weakly-mag	Garnet	50			
	Haematite	30			
	Hornblende	10			
	Opaques	10			
Para-mag	Haematite	60			
	Opaques	10			
	Hornblende	10			
	Garnet	20			
Non-mag	Clears	80			
	Opaques	some	8		
	CPx	some	17		
	Garnet	some	15		1 possible G4/5 high Mg

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-9	Client	Marum Resources Inc.
Sample No.	7 BRC-006	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Garnet	50			
	Haematite	30			
	Hornblende	10			
	Opaques	10			
	Olivine	possible			
Para-mag	Haematite	70			
	Hornblende	15			
	Opaques	15	3		
	CPx	some			
	Olivine	possible			
Non-mag	Clears	80			
	Sulphides	10			
	Garnet	some	2		
	Opaques	some	10		
	CPx	some	4		
-35+60 Heavy					
Weakly-mag	Garnet	50			
	Haematite	30			
	Hornblende	10			
	Opaques	10			
	Olivine	possible			
Para-mag	Haematite	70			
	Hornblende	15			
	Opaques	15	10		
	CPx	some	2		
	Olivine	possible			
	Garnet	some	2		
Non-mag	Clears	80			
	Sulphides	10			
	Hornblende	some			
	Opaques	some	10		1 Illmenite, possible pyrope
	Garnet	some	15		1 Opaque, possible G2
	CPx	some	10		

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-10	Client	Marum Resources Inc.
Sample No.	7 BRC-007	Project	
Sample Type	Pan Con	Date	Dec. 24, 1997

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Garnet	50			
	Haematite	30			
	Hornblende	10			
	Opaques	10			
Para-mag	Haematite	70			
	Hornblende	15			
	Apatite	5			
	Opaques	10	3		
	Garnet		2		
Non-mag	Clears	80			
	Haematite	some			1 possible E Garnet
	Hornblende	some			
	Apatite	some			
	Garnet	some	5		4 with high Mg and Ti
	Opaques	some	10		1 opaque garnet, very high Ti
	CPx	some	3		
-35+60 Heavy					
Weakly-mag	Garnet	50			
	Haematite	30			
	Opaques	15			
	Hornblende	5			
	Apatite	some			
Para-mag	Haematite	70			
	Hornblende	20			
	Garnet	5			
	Opaques	5			
	CPx	some			
	Olivine	possible			
Non-mag	Clears	80			
	Haematite	some			
	Hornblende	some			
	Garnet	some	4		
	Opaques	some	6		
	CPx	some	1		
	Olivine	possible			

Examined By: _____ Probed By: _____

[redacted]

TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

PRELIMINARY REPORT

Job No.	97-220-11	Client	Marum Resources Inc.
Sample No.	7 BRC-008	Project	
Sample Type	Pan Con	Date	Jan. 20, 1998

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Haematite	40			
	Garnet	20	8		3 elevated Mg
	Hornblende	20			
	Opaques	10			
	Rutile	10			
	CPx	some			
	Olivine	some			
Para-mag	Haematite	60			
	Apatite	20			
	Hornblende	10			
	Opaques	5	7		2 illmenite - low Ti, no Cr, Mg
	Olivine	5			
Non-mag	Clears	40			
	Haematite	40			
	Amphiboles	20			
-35+60 Heavy					
Weakly-mag	Haematite	40			
	Garnet	25	4		1 elevated Mg
	Hornblende	20			
	Opaques	10			
	Rutile	5			
	CPx	some			
	Olivine	some			
Para-mag	Haematite	40			
	Garnet	25			
	Hornblende	20			
	Apatite	10			
	Opaques	5	8		1 illmenite
Non-mag	Clears	60			
	Haematite	20			
	Apatite	20			

Examined By: _____ Probed By: _____

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TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

Job No.	97-220-12	Client	Marum Resources Inc.
Sample No.	7 BCR-009	Project	
Sample Type	Pan Con	Date Rec'd	Jan.20, 1998

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Haematite	70			
	Hornblende	15			
	Opaques	10			
	Garnet	5	3		
Para-mag	Haematite	70			
	Hornblende	15			
	Sulphide	10			
	Opaques	5	4		3 black corundum
	CPx	possible			
	Olivine	possible			
Non-mag	Sulphide	50			
	Clears	40			
	Haematite	10			
-35+60 Heavy					
Weakly-mag	Haematite	45			
	Garnet	35	2	1	elevated Mg
	Opaques	10	10	1	CaFeAl garnet with Mg
	Hornblende	10			
	Olivine	possible			
Para-mag	Sulphide	25			
	Haematite	40			
	Opaques	15			
	Garnet	10			
	Hornblende	10			
Non-mag	Sulphide	50			
	Clears	40			
	Haematite	10			

Examined By: _____ Probed By: _____

[redacted]

TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

Job No.	97-220-13	Client	Marum Resources Inc.
Sample No.	7 BCR-010	Project	
Sample Type	Pan Con	Date Rec'd	Jan.20, 1998

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Haematite	90			
	Garnet	5	6		3 elevated Mg
	Opaques	5			
Para-mag	Haematite	95			
	Opaques	5	3		
	Sulphide	some			
Non-mag	Clears	40			
	Sulphide	30			
	Haematite	30			
-35+60 Heavy					
Weakly-mag	Haematite	85			
	Garnet	5	3		1 purple/pink zircon
	Opaques	5			1 elevated Mg
	Hornblende	5			
Para-mag	Haematite	95			
	Opaques	possible	6		3 illmenites
	CPx	possible			
	Olivine	possible			
Non-mag	Clears	60			
	Haematite	20			
	Sulphide	20			
	misc (blue)		1		corundum

Examined By:

Probed By: _____

[redacted]

TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

Job No.	97-220-14	Client	Marum Resources Inc.
Sample No.	7 BCR-011	Project	
Sample Type	Pan Con	Date Rec'd	Jan.20. 1998

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Garnet	40	12		4 elevated Mg
	Haematite	25			
	Opaques	20			
	Hornblende	10			
	Olivine	5			
Para-mag	Haematite	80			
	Garnet	15			
	Hornblende	5			
	Opaques	some	15		2 illmenite 1 black garnet, elevated Mg 1 corundum
Non-mag	Clears	85			
	Opaques	10			
	Haematite	5			
	Garnet	some			
-35+60 Heavy					
Weakly-mag	Garnet	40	5		1 purple zircon
	Opaques	30			
	Haematite	20			
	Hornblende	5			
	Olivine	5			
Para-mag	Haematite	70			
	Garnet	20			
	Hornblende	10			
	Opaques	some	17		2 illmenites
	CPx	some			
	Olivine	some			
Non-mag	Clears	80			
	Opaques	15			
	Haematite	5			
	Garnet	some			

Examined By:

Probed By: _____

[redacted]

TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

Job No.	97-220-15	Client	Marum Resources Inc.
Sample No.	7 BCR-012	Project	
Sample Type	Pan Con	Date Rec'd	Jan.20, 1998

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Garnet	35	6		3 elevated Mg
	Haematite	30			
	Hornblende	20			
	Opaques	15			
	CPx	some			
	Olivine	possible			
Para-mag	Haematite	70			
	Hornblende	15			
	Garnet	10			
	Opaques	5	8		1 illmenite
	CPx	some			
	Olivine	possible			
Non-mag	Clears	80			
	Opaques	10			
	Haematite	5			
	Sulphide	5			
-35+60 Heavy					
Weakly-mag	Haematite	50			
	Garnet	30	2		1 elevated Mg
	Opaques	10			
	Hornblende	10			
	CPx	some			
	Olivine	possible			
Para-mag	Haematite	60			
	Sulphide	15			
	Hornblende	15			
	Garnet	5			
	Opaques	5	10		2 illmenites
	CPx	some			
	Olivine	possible			
Non-mag	Clears	75			
	Sulphide	15			
	Opaques	10			

Examined By:

Probed By: _____

[redacted]

TERRAMIN RESEARCH LABS Ltd.

MINERALOGICAL EXAMINATION - INDICATOR MINERALS

Job No.	97-220-16	Client	Marum Resources Inc.
Sample No.	7 BCR-013	Project	
Sample Type	Pan Con	Date Rec'd	Jan.20, 1998

Fraction	Mineral Observed	% Observed	Number Picked	Number Probed	Comments
+35 Heavy					
Weakly-mag	Haematite	80			
	Hornblende	10			
	Garnet	5	6		2 elevated Mg
	Opaques	5			
Para-mag	Haematite	95			
	Hornblende	5			
	Opaques	some	2		2 illmenite
	CPx	some	1		Mg silicate
Non-mag	Clears	90			
	Haematite	10			
	Opaques	some			
-35+60 Heavy					
Weakly-mag	Haematite	90			
	Garnet	5			
	Hornblende	5			
	Opaques	some			
Para-mag	Haematite	95			
	Opaques	5			
	Olivine	some			
Non-mag	Clears	90			
	Haematite	10			
	Opaques	some			

Examined By: _____ Probed By: _____

[redacted]

MARUM
resources inc.

Chinchaga Diamond Project, Alberta

Appendix E

Petrographic Report on Drill Cutting Sample Adjacent to and Proximal to the Permits

Sample Location
T98R3W6 Section 30
(see sample location map in Appendix D)

Contents

TerraMin Research - Mineral Identification Summary				
Mount 1	**Dec. 2, 1997**			
TerraMin Job No.	**97-220-2**			
Sample:	**7 MDC-002**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
andradite garnet	Ca, Fe, Al, SiO_2	1	1	
almandine garnet	Fe, Al, SiO_2	1	2	
andradite garnet	Ca, Fe, Al, SiO_2	1	3	
andradite garnet	Ca, Fe, Al, SiO_2	1	4	
spessartite garnet	Mn, Fe, Al, SiO_2	1	5	
pink zircon	Zr, SiO_2	1	6	
spessartite garnet	Mn, Fe, Al, SiO_2	1	7	
almandine garnet	Fe, Al, SiO_2	1	8	
almandine garnet	Fe, Al, SiO_2	1	9	
pyropic almandine (G4-5?)	Mg,Fe,Ca,Al,SiO_2	1	10	yes
opaque rutile	TiO_2	2	1	
black apatite	$CaPO_4$	2	2	
black quatrz	SiO_2, some Ca,Fe	2	3	
black rutile	TiO_2	2	4	
black rutile	TiO_2	2	5	
black quatrz	SiO_2	2	6	
black quatrz	SiO_2	2	7	
blue? lucite?	K,Al,SiO_2, some Fe	2	8	
red rutile	TiO_2	2	9	
monazite	Ce,PO_4	2	10	
andradite	Ca,Fe,Al,SiO_2	3	1	
andradite	Ca,Fe,Al,SiO_2	3	2	
almondine	Fe, Al, SiO_2	3	3	
monazite	Ce,PO_4	3	4	
black rutile	TiO_2	3	5	
black rutile	TiO_2	3	6	
black rutile	TiO_2	3	7	
black rutile	TiO_2	3	8	
diopside	Mg,Ca,SiO_2	3	9	
pyroxene	Ca,Al,SiO_2	3	10	

TerraMin Research - Mineral Identification Summary				
Mount 1	**Dec. 2, 1997**			
Job No.	**97-220-4**			
Sample:	**7 BRC-001**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
almandine	Fe,Al,SiO_2	4	1	
almandine	Fe,Al,SiO_2	4	2	
titanite (sphene)	Ca,Ti,SiO_2	4	3	
titanite (sphene)	Ca,Ti,SiO_2	4	4	
monazite	Ce,PO_4	4	5	
andradite	Ca,Fe,Al,SiO_2	4	6	
andradite	Ca,Fe,Al,SiO_2	4	7	
tourmaline	$AlSiO_2$	4	8	
black apatite	$Ca(PO_4)$	4	9	
hornblende	Fe,Al,SiO_2	4	10	
apatite	$Ca(PO_4)$	5	1	
hornblende	$AlSiO_2$+(Fe,K,Mg)	5	2	
black apatite	$Ca(PO_4)$	5	3	
black quartz	SiO_2	5	4	
hornblende	$AlSiO_2$+Fe	5	5	
rutile	TiO_2	5	6	
rutile	TiO_2	5	7	
rutile	TiO_2	5	8	
rutile	TiO_2	5	9	
rutile	TiO_2	5	10	

TerraMin Research - Mineral Identification Summary				
Mount 2	**Dec. 2, 1997**			
Job No.	**97-220-4**			
Sample:	**7 BRC-001**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
rutile	TiO_2	1	1	
andradite	$CaFeAlSiO_2$	1	2	
almandine	$FeAlSiO_2$	1	3	
almandine	$FeAlSiO_2$	1	4	
black rutile	TiO_2	1	5	
black rutile	TiO_2	1	6	
black rutile	TiO_2	1	7	
black apatite	$CaPO_4$	1	8	
black rutile	TiO_2	1	9	
black rutile	TiO_2	1	10	
apatite	$CaPO_4$	2	1	
apatite	$CaPO_4$	2	2	
epidote	$CaAlSiO_2$+Fe,Mg	2	3	

TerraMin Research - Mineral Identification Summary				
Mount 2	**Dec. 2, 1997**			
Job No.	**97-220-5**			
Sample:	**7 BRC-002**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
epidote	$CaAlSiO_2$	5	9	
epidote	$CaAlSiO_2$	5	10	

TerraMin Research - Mineral Identification Summary				
Mount 2	**Dec. 2, 1997**			
Job No.	**97-220-5**			
Sample:	**7 BRC-002**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
andradite	$CaFeAlSiO_2$	2	4	
pink zircon	$ZrSiO_2$	2	5	
titanite (sphene)	$CaTiSiO_2$	2	6	
almandine	$FeAlSiO_2$	2	7	
almandine	$FeAlSiO_2$	2	8	
monazite	$CePO_4$	2	9	
black rutile	TiO_2	2	10	
black rutile	TiO_2	3	1	
tourmaline	$AlSiO_2$+Mg,Fe	3	2	
tourmaline	$AlSiO_2$+Mg,Fe	3	3	
black quartz	SiO_2	3	4	
tourmaline?	$AlSiO_2$+Mg,Ca,Fe	3	5	
apatite	$CaPO_4$	3	6	
epidote	$CaAlSiO_2$+Fe	3	7	
epidote	$CaAlSiO_2$+Fe	3	8	
rutile	TiO_2	3	9	
rutile	TiO_2	3	10	
rutile	TiO_2	4	1	
rutile	TiO_2	4	2	
rutile	TiO_2	4	3	
monazite	$CePO_4$	4	4	
zircon	$ZrSiO_2$	4	5	
apatite	$CaPO_4$	4	6	
rutile	TiO_2	4	7	
rutile	TiO_2	4	8	
rutile	TiO_2	4	9	
tourmaline?	$AlSiO_2$+Mg,Fe	4	10	
rutile	TiO_2	5	1	
apatite	$CaPO_4$	5	2	
apatite	$CaPO_4$	5	3	
epidote	$AlSiO_2$(Na)--->$CaAlSiO_2$	5	4	
epidote	$CaAlSiO_2$+Fe	5	5	
epidote	$CaAlSiO_2$+Fe	5	6	
monazite	$CePO_4$	5	7	
epidote	$CaAlSiO_2$	5	8	

TerraMin Research - Mineral Identification Summary				
Mount 3	**Dec. 2, 1997**			
Job No.	**97-220-6**			
Sample:	**7 BRC-003**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
pyrope (G-9)?	$MgAlSiO_2$ + Fe,Ca,Cr	1	1	yes
monazite	$CePO_4$	1	2	
tourmaline?	$AlSiO_2$ + Mg,Fe	1	3	
black quartz	SiO_2	1	4	
black quartz	SiO_2	1	5	
apatite	$CaPO_4$	1	6	
black quartz	SiO_2	1	7	
corundum	AlO_2	1	8	
pyropic almandine	AlSiO2 + Fe,Mg	1	9	yes
rutile	TiO_2	1	10	
rutile	TiO_2	2	1	
monazite	$CePO_4$	2	2	
corundum	AlO_2	2	3	
apatite	$CaPO_4$	2	4	
tourmaline?	$AlSiO_2$	2	5	
black rutile	TiO_2	2	6	
apatite	$CaPO_4$	2	7	
rutile	TiO_2	2	8	
epidote	$CaAlSiO_2$	2	9	
gahnite	AlO + Na,Fe,Zn	2	10	

TerraMin Research - Mineral Identification Summary				
Mount 3	**Dec. 2, 1997**			
Job No.	**97-220-7**			
Sample:	**7 BRC-004**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
andradite	$CaFeAlSiO_2$	3	1	
spessartite	$MnFeAlSiO_2$	3	2	
andradite	$CaFeAlSiO_2$	3	3	
andradite	$CaFeAlSiO_2$	3	4	
andradite	$CaFeAlSiO_2$	3	5	
andradite	$CaFeAlSiO_2$	3	6	
pyropic almandine	$AlSiO_2$ + Mg,Fe,Ti	3	7	yes
rutile	TiO_2	3	8	
quartz	SiO_2	3	9	
quartz	SiO_2	3	10	
rutile	TiO_2	4	1	
rutile	TiO_2	4	2	
monazite	$CePO_4$	4	3	
grossularite	$CaAlSiO_2$ + Fe	4	4	
apatite	$CaPO_4$	4	5	

TerraMin Research - Mineral Identification Summary				
Mount 3	**Dec. 2, 1997**			
Job No.	**97-220-8**			
Sample:	**7 BRC-005**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
uvorovite	$CrCaMgAlSiO_2$ + Fe	4	6	yes
pyropic andradite (G4-5)?	$CaFeAlSiO_2$ + Mg	4	7	yes
pyropic andradite (G4-5)?	$CaFeAlSiO_2$ + Mg	4	8	yes
almandine	$FeAlSiO_2$	4	9	
pyropic andradite (G4-5)?	$CaMgFeAlSiO_2$	4	10	yes
rutile	TiO_2	5	1	
tourmaline?	$AlSiO_2$ + Fe. Mg	5	2	
tourmaline?	$AlSiO_2$ + Fe. Mg	5	3	
tourmaline?	$AlSiO_2$ + Fe. Mg	5	4	
tourmaline?	$AlSiO_2$ + Fe. Mg	5	5	
black quartz	SiO_2	5	6	
rutile	TiO_2	5	7	
andradite	$CaFeAlSiO_2$	5	8	
andradite	$CaFeAlSiO_2$	5	9	
corundum	AlO	5	10	

TerraMin Research - Mineral Identification Summary				
Mount 4	**Dec. 2, 1997**			
Job No.	**97-220-9**			
Sample:	**7 BRC-006**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
titanite (sphene)	$CaTiSiO_2$	1	1	
titanite (sphene)	$CaTiSiO_2$	1	2	
almandine	$FeAlSiO_2$	1	3	
apatite	$CaPO_4$	1	4	
tourmaline?	$AlSiO_2$	1	5	
black quartz	SiO_2	1	6	
rutile	TiO_2	1	7	
epidote	$CaAlSiO_2$	1	8	
rutile	TiO_2	1	9	
rutile	TiO_2	1	10	
rutile	TiO_2	2	1	
rutile	TiO_2	2	2	
rutile	TiO_2	2	3	
rutile	TiO_2	2	4	
rutile	TiO_2	2	5	
rutile	TiO_2	2	6	
rutile	TiO_2	2	7	
rutile	TiO_2	2	8	
rutile	TiO_2	2	9	
rutile	TiO_2	2	10	
rutile	TiO_2	3	1	
haematite	Fe_2O_3	3	2	
illmenite	$FeTiO_2$ + Cr,Mg	3	3	yes
rutile	TiO_2	3	4	
hornblende	$MgAlSiO_2$ + Fe,Ca,Ti	3	5	
apatite	$CaPO_4$	3	6	
rutile	TiO_2	3	7	
rutile	TiO_2	3	8	
rutile	TiO_2	3	9	
rutile	TiO_2	3	10	

TerraMin Research - Mineral Identification Summary				
Mount 4	**Dec. 2, 1997**			
Job No.	**97-220-10**			
Sample:	**7 BRC-007**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
rutile	TiO_2	4	1	
monazite	$CePO_4$	4	2	
almandine	$FeAlSiO_2$	4	3	
pyropic? almandine	$FeAlSiO_2$ + Mg, Ca	4	4	yes
pyropic? almandine	$MgFeAlSiO_2$	4	5	yes
pyropic? almandine	$MgFeAlSiO_2$	4	6	yes
pyropic? almandine	$MgFeAlSiO_2$	4	7	yes
pyropic? almandine	$MgFeAlSiO_2$	4	8	yes
apatite	$CaPO_4$	4	9	
blue plastic	plastic	4	10	
titanite (sphene)	$CaTiSiO_2$	5	1	
rutile	TiO_2	5	2	
rutile	TiO_2	5	3	
schorlomite garnet?	$TiMgFeAlSiO_2$	5	4	yes
rutile	TiO_2	5	5	
pyropic andradite?	$MgCaFeAlSiO_2$	5	6	yes
apatite	$CaPO_4$	5	7	
apatite	$CaPO_4$	5	8	
pyropic andradite	$MgCaFeAlSiO_2$	5	9	yes
blue plastic	plastic	5	10	

TerraMin Research - Mineral Identification Summary				
Mount 5	**Jan. 20, 1997**			
Job No.	**97-220-11**			
Sample:	**7 BRC-008**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
pyropic almandine	$FeAlSiO_2$ + Mg	1	1	yes
almandine	$FeAlSiO_2$	1	2	
almandine	$FeAlSiO_2$	1	3	
andradite	$CaFeAlSiO_2$	1	4	
andradite	$CaFeAlSiO_2$	1	5	
almandine	$FeAlSiO_2$	1	6	
almandine	$FeAlSiO_2$	1	7	
almandine	$FeAlSiO_2$	1	8	
illmenite	$TiFeO_3$	1	9	yes
tourmaline?	$AlSiO_2$	1	10	
haematite	FeO	1	11	
haematite	FeO	1	12	
haematite	FeO	1	13	
tourmaline?	$AlSiO_2$	1	14	
andradite	$CaFeAlSiO_2$	1	15	
andradite	$CaFeAlSiO_2$	1	16	
almandine	$FeAlSiO_2$ + Mn	1	17	
titanite (sphene)	$CaTiSiO_2$	1	18	
titanite (sphene)	$CaTiSiO_2$	1	19	
illmenite	$TiFeO_3$	1	20	yes
haematite	FeO	2	1	
rutile	TiO_2	2	2	
haematite	FeO	2	3	
apatite	$CaPO_4$	2	4	
haematite	FeO	2	5	
haematite	FeO	2	6	
low Ti illmenite	FeO + Ti	2	7	
haematite	FeO	2	8	
pyroxene	$FeAlSiO_2$ + Mg	2	9	
monazite	$CePO_4$	2	10	
quartz in pyrite	SiO_2 centre FeS crust	2	11	
no grains		2	12 to 20	

TerraMin Research - Mineral Identification Summary				
Mount 5	**Jan. 20, 1997**			
Job No.	**97-220-12**			
Sample:	**7 BRC-009**			
Mineral Identification	Mineral Composition	Mineral Location Row	Column	Recommend Probe
andradite	$CaFeAlSiO_2$	3	1	
andradite	$CaFeAlSiO_2$	3	2	
titanite (sphene)	$CaTiSiO_2$	3	3	
tourmaline?	$AlSiO_2$ + Mg,Fe	3	4	
tourmaline?	$AlSiO_2$	3	5	
tourmaline?	$AlSiO_2$	3	6	
black quartz	SiO_2	3	7	
andradite	$CaFeAlSiO_2$	3	8	
almandine	$FeAlSiO_2$	3	9	
pyropic almandine?	$MgFeAlSiO_2$	3	10	yes
pyrite	FeS	3	11	
rutile	TiO_2	3	12	
rutile	TiO_2	3	13	
rutile	TiO_2	3	14	
rutile	TiO_2	3	15	
black andradite	$CaFeAlSiO_2$ + Mg	3	16	
rutile	TiO_2	3	17	
rutile	TiO_2	3	18	
rutile	TiO_2	3	19	
rutile	TiO_2	3	20	

TerraMin Research - Mineral Identification Summary				
Mount 5	**Jan. 20, 1997**			
Job No.	**97-220-13**			
Sample:	**7 BRC-010**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
pyropic almandine	$FeAlSiO_2$ + Mg	4	1	yes
almandine	$FeAlSiO_2$	4	2	
pyropic almandine	$FeAlSiO_2$ + Mg	4	3	yes
andraditic almandine	$FeAlSiO_2$ + Ca	4	4	
almandine	$FeAlSiO_2$	4	5	
almandine	$FeAlSiO_2$ + Ca, Mn	4	6	
haematite	FeO	4	7	
haematite	FeO	4	8	
haematite	FeO	4	9	
zircon	$ZrSiO_2$	4	10	
almandine	$FeAlSiO_2$	4	11	
pyropic almandine	$FeAlSiO_2$ + Mg	4	12	yes
rutile	TiO_2	4	13	
pyrite	FeS	4	14	
rutile	TiO_2	4	15	
illmenite	$TiFeO_3$	4	16	yes
illmenite	$TiFeO_3$	4	17	yes
illmenite	$TiFeO_3$	4	18	yes
corundum	AlO	4	19	
epidote	$CaAlSiO_2$	4	20	

TerraMin Research - Mineral Identification Summary				
Mount 5	**Jan. 20, 1997**			
Job No.	**97-220-14**			
Sample:	**7 BRC-011**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
pyropic almandine	$FeAlSiO_2$ + Mg	5	1	yes
pyropic almandine	$FeAlSiO_2$ + Mg	5	2	yes
pyropic almandine	$FeAlSiO_2$ + Mg	5	3	yes
almandine	$FeAlSiO_2$	5	4	
almandine	$FeAlSiO_2$	5	5	
almandine	$FeAlSiO_2$	5	6	
almandine	$FeAlSiO_2$	5	7	
almandine	$FeAlSiO_2$	5	8	
almandine	$FeAlSiO_2$ + Ca	5	9	
almandine	$FeAlSiO_2$ + Mn	5	10	
pyropic almandine	$FeAlSiO_2$ + Mg	5	11	yes
almandine	$FeAlSiO_2$ + Ca	5	12	
rutile	TiO_2	5	13	
rutile	TiO_2	5	14	
illmenite	$TiFeO_3$	5	15	yes
hornblende	$FeAlSiO_2$	5	16	
hornblende	$FeAlSiO_2$	5	17	
haematite	FeO	5	18	
illmenite	$TiFeO_3$	5	19	yes
haematite	FeO	5	20	
haematite	FeO	6	1	
haematite	FeO	6	2	
haematite	FeO	6	3	
haematite	FeO	6	4	
pyroxene eustatite?	$MgAlSiO_2$	6	5	
pyroxene wollastonite?	$CaSiO_2$ + MgFe	6	6	
haematite	FeO	6	7	
tourmaline?	AlSiO2 + Mg,Fe	6	8	
almandine	$FeAlSiO_2$ + Ca	6	9	
purple zircon	$ZrSiO_2$	6	10	
monazite	$CePO_4$	6	11	
monazite	$CePO_4$	6	12	
almandine	$FeAlSiO_2$ + Ca	6	13	
almandine	$FeAlSiO_2$ + Ca, Mn	6	14	
tourmaline?	AlSiO2 + Fe	6	15	
haematite	FeO	6	16	
haematite	FeO	6	17	

TerraMin Research - Mineral Identification Summary				
Mount 5	**Jan. 20, 1997**			
Job No.	**97-220-14**			
Sample:	**7 BRC-011**			
Mineral Identification	Mineral Composition	Mineral Location Row	Column	Recommend Probe
haematite	FeO	6	18	
illmenite	$TiFeO_3$	6	19	yes
illmenite	$TiFeO_3$	6	20	yes
haematite	FeO	7	1	
haematite	FeO	7	2	
haematite	FeO	7	3	
haematite	FeO	7	4	
haematite	FeO	7	5	
haematite	FeO	7	6	
rutile	TiO_2	7	7	
rutile	TiO_2	7	8	
rutile	TiO_2	7	9	
rutile	TiO_2	7	10	
rutile	TiO_2	7	11	
no grains		7	12-20	

TerraMin Research - Mineral Identification Summary				
Mount 5	**Jan. 20, 1997**			
Job No.	**97-220-15**			
Sample:	**7 BRC-012**			
Mineral	Mineral	Mineral Location		Recommend
Identification	Composition	Row	Column	Probe
pyropic almandine	$FeAlSiO_2$ + Mg	8	1	yes
pyropic almandine	$FeAlSiO_2$ + Mg	8	2	yes
pyropic almandine	$FeAlSiO_2$ + Mg	8	3	yes
almandine	$FeAlSiO_2$	8	4	
almandine	$FeAlSiO_2$	8	5	
almandine	$FeAlSiO_2$	8	6	
rutile	TiO_2	8	7	
tourmaline?	$AlSiO_2$ + Fe	8	8	
tourmaline?	$AlSiO_2$ + Fe	8	9	
tourmaline	$AlSiO_2$	8	10	
tourmaline	$AlSiO_2$ + MgFe	8	11	
tourmaline	$AlSiO_2$	8	12	
pyroxene (hedenbergite?)	$CaFeSiO_2$ + Mg	8	13	
illmenite	$TiFeO_3$	8	14	yes
pyropic almandine	$FeAlSiO_2$ + Mg	8	15	yes
almandine	$FeAlSiO_2$ + CaMn	8	16	
rutile	TiO_2	8	17	
illmenite	$TiFeO_3$	8	18	yes
rutile	TiO_2	8	19	
haematite	FeO	8	20	
haematite	FeO	9	1	
haematite	FeO	9	2	
illmenite	$TiFeO_3$	9	3	yes
haematite	FeO	9	4	
haematite	FeO	9	5	
haematite	FeO + Ti	9	6	
epidote?	$CaAlSiO_2$	9	7	
pyroxene (eustatite)	$MgSiO_2$ + FeCa	9	8	
no grains		9	12-20	

TerraMin Research - Mineral Identification Summary				
Mount 5	**Jan. 20, 1997**			
Job No.	**97-220-16**			
Sample:	**7 BRC-013**			
Mineral Identification	Mineral Composition	Mineral Location Row	Column	Recommend Probe
spessartite	$MnFeAlSiO_2$	10	1	
pyropic almandine	$FeAlSiO_2$ + Mg	10	2	yes
almandine	$FeAlSiO_2$	10	3	
pyropic almandine	$FeAlSiO_2$ + Mg	10	4	yes
andradite	$CaFeAlSiO_2$	10	5	
almandine	FeAlSiO2 + Ca	10	6	
illmenite	$TiFeO_3$	10	7	yes
illmenite	$TiFeO_3$	10	8	yes
pyroxene (pigeonite)	$MgSiO_2$ + CaFe	10	9	

Description and Interpretation of Thin-Sections and Selected Grain Mounts

Prepared for: Dean Besserer, Apex Geoscience Ltd., Edmonton
Rick Boulay, Marum Resources, Calgary

Prepared by: Wayne Powell, Ph.D., Calgary

April 23, 1998

Sample #4
Smectite-Rich Sandy Mudstone

DESCRIPTION

- most primary textures have been obliterated
- patches in which primary clastic texture is evident (see photo)
- probable protolith is a sandy mudstone

- 3% angular sand grains
    - equant quartz grains are most abundant
    - detrital biotite is common
        - variably clay altered
    - equant anhydrite/gypsum grains
    - fractured prismatic grains (apatite?)
    - one grain of garnet

- clays constitute the majority of the sample
- characteristics of clay:
    - olive green to olive brown colour
    - weakly pleochroic
    - 3rd order birefringence
        - masked by strong colour in finer grains
    - commonly display a poorly developed concentric form with radial crystals (see photo)
- intense green colour suggests that the clay is Fe-rich
    - high birefringence inconsistent with chlorite-group mineral
    - most likely an Fe-bearing smectite (nontronite)

INTERPRETATION

This rock is predominantly composed of smectites. The coarser, banded grains suggest that the clays were significantly recrystallized during diagenesis. Consequently, distinguishing primary and secondary clays is difficult.

Although most primary textures have been destroyed, there clearly remains a clastic textures (See photos). The obvious sand grains comprise a rather unusual mineralogy: quartz, anhydrite, apatite(?) and garnet. Clearly there is a rather exotic source for these grains that must include medium- to high-grade metamorphic rocks to account for the garnet grain.

More samples are required to evaluate the crystalline-sourced component of this rock.

Relict Clastic Texture in #4

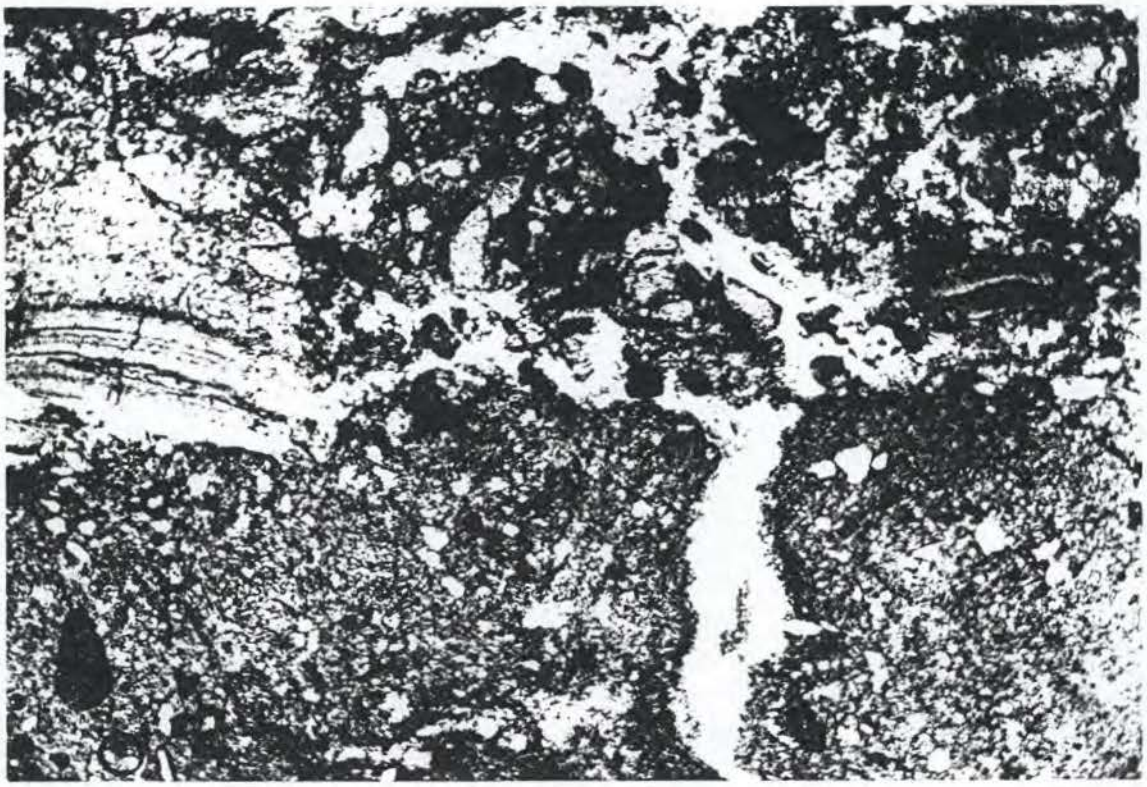
FOV=2.5mm PPL

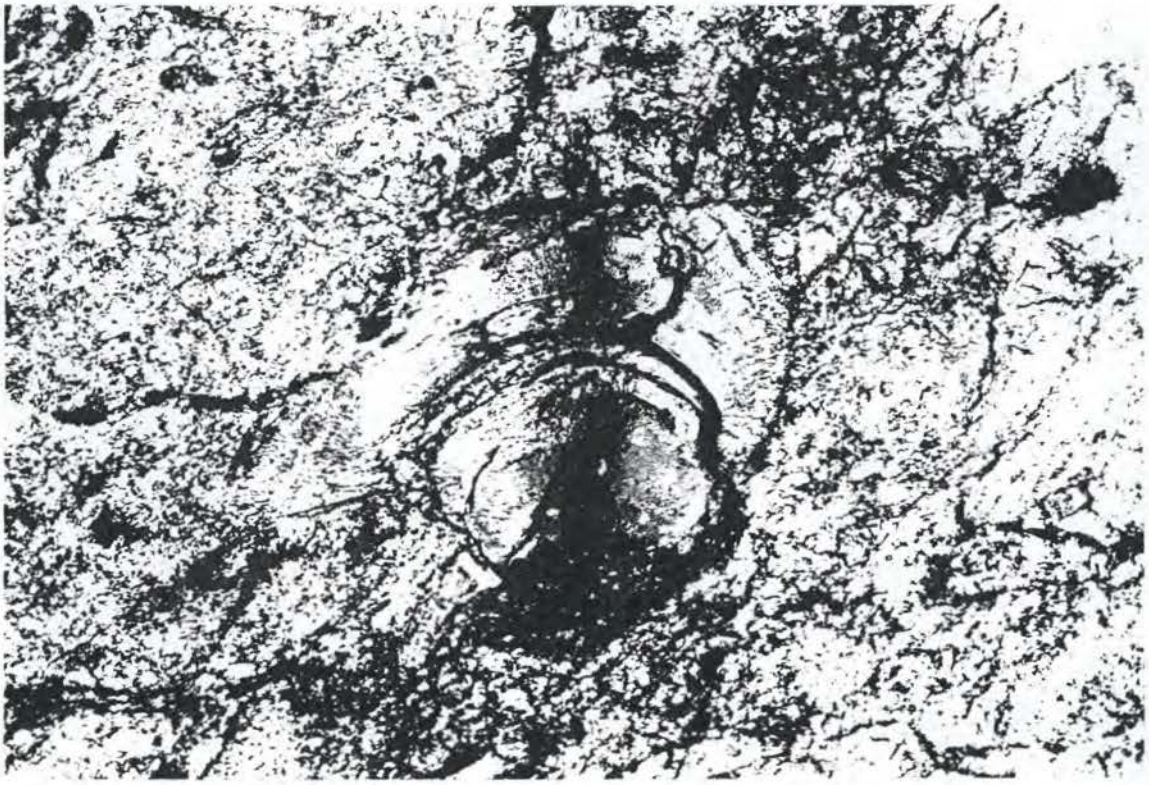
Fe-smectite rich matrix (green), with apparent subrounded clasts and detrital biotite, in contact with a granule/pebble containing a brown clay-rich matrix

Matrix of #4

FOV=1.25mm XPL

Matrix predominantly composed of Fe-smectite. Coarser clay in centre of photo displays 3rd order birefringence and a poorly developed concentric texture (with radial clay crystals)





Sample #8
Iron-Rich Lithic Wacke

DESCRIPTION

- angular to rounded sand grains in a clay-rich matrix
- sand grains are predominantly quartz and chert
    - 20% lithic fragments of sedimentary origin
    - rare feldspar grains

- clay matrix is deep olive green to Kelly green
    - non pleochroic
    - low birefringence (masked by intense colour)
    - probably an Fe-rich chlorite group mineral (chamosite)
- carbonate has patchy distribution in matrix
    - equant subhredral crystals to euhedral rhombehedral crystals (see photo_
        - secondary (diagnetic) origin
- patchy hematite staining and massive hematite
    - massive hematite replaced clay matrix (see photo)
        - includes sand grains
    - massive to bladed habit
    - diagnetic origin

- patches of slide contain abundant grains that display fine, concentric laminations
    - irregular patches rather than distinct beds
    - laminated grains are generally spatially distinct from hematitic patches
    - laminations composed of olive-green to rust-brown clays that are pleochroic
        - similar to, but distinct from matrix clay
        - probably also chamosite, but of slightly different composition
            - oolitic form is very common for chamosite
    - most are obviously cored by sand grains
    - regularity of laminations is variable
        - isolated grains (ie, surrounded by clay matrix) tend to have a very regular elliptical form with continuous laminae (see photo)
        - grains in sandy patches tend to be irreguar in form (see photo)
            - inner laminae of individual grains are regular and continuous
            - outer laminae are commonly irregular
                - discontinuous laminations
                - some laminations abut against neighbouring sand grains
                - laminations have variable thickness

- samples from base of unit contain fewer sand grains
    - sand occurs in irregular patches rather than distinct beds
    - angular to subrounded
    - predominantly quartz with minor sedimentary lithic fragments
- matrix clay similar to other sections

- hematite staining throughout
- carbonate more abundant
    - well developed euhedral rhombehedral crystals
    - distinct growth bands
        - rusty cores (siderite?)
        - clear rims
- sand grains with elliptical concentrically laminated clay overgrowths are rare
- uncommon sand grains with elliptical overgrowths of coarse carbonate
    - some carbonate overgrowths contain ghosts of earlier concentric laminations (see photo)

INTERPRETATION

In terms of its general components, this rock would be considered a lithic wacke. However, compositionally this rock is anomalously rich in Fe. This unusual composition is reflected in rather unusual diagenetic minerals and textures, including hematite, siderite(?) and oolitic chamosite(?).

The provenance of this rock appears to be entirely sedimentary. There is no indication of a metamorphic or igneous component to the detrital components of this rock. However, the source of the Fe is uncertain. The most likely source is a set of seafloor hydrothermal vents.

The textures in this rock suggest a great deal of post-depositional change. It probably was originally deposited as a thinly bedded sandstone-mudstone, but the original bedding was disrupted by gravitational and dewatering processes, producing the patchy, irregular textures of this rock. The rhombehedral form of siderite crystals, the well developed growth zoning in these grains, and the overgrowth of carbonates on concentrically laminae (previously clay laminae) clearly indicates a diagenetic origin for most of the carbonate. Hematite is also clearly diagenetic, as evidenced by tabular crystals cross-cutting sand grains. The complex form of the concentric clay overgrowths on sand grains is also interpreted to be diagenetic.

Rhombehedral carbonate crystals in clay matrix in #8

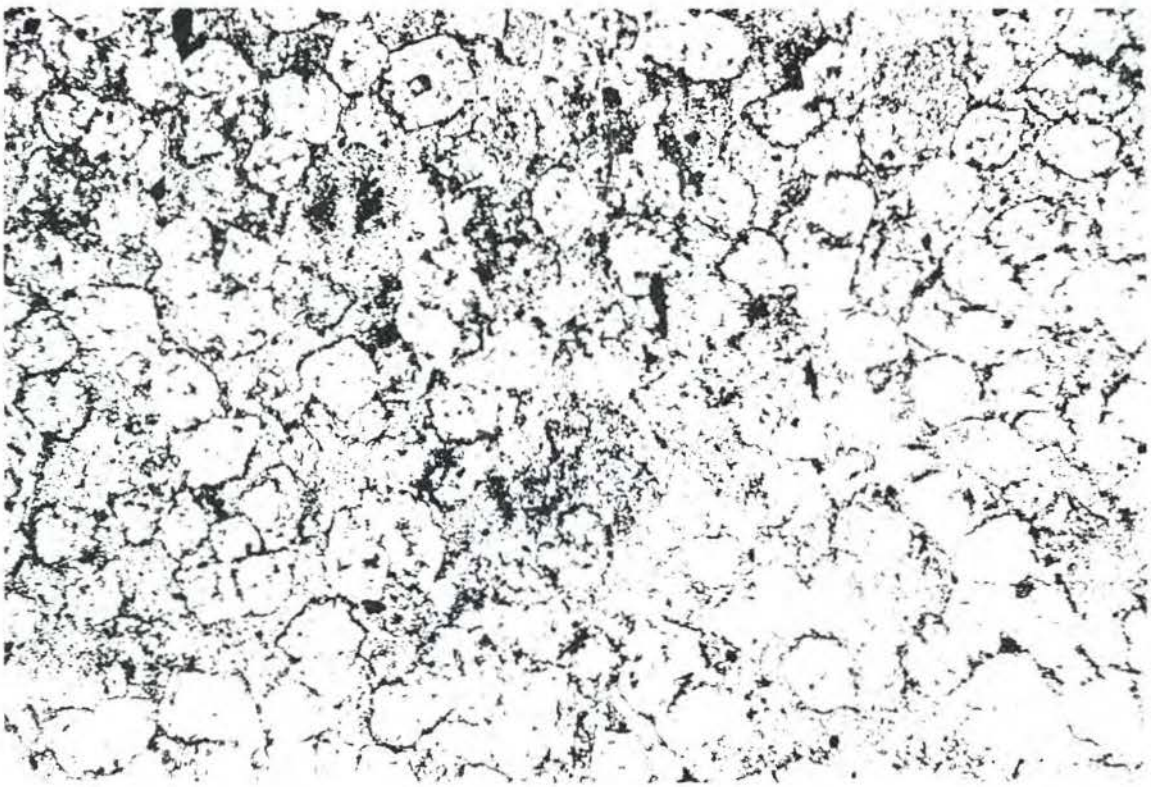
FOV=1.25mm PPL

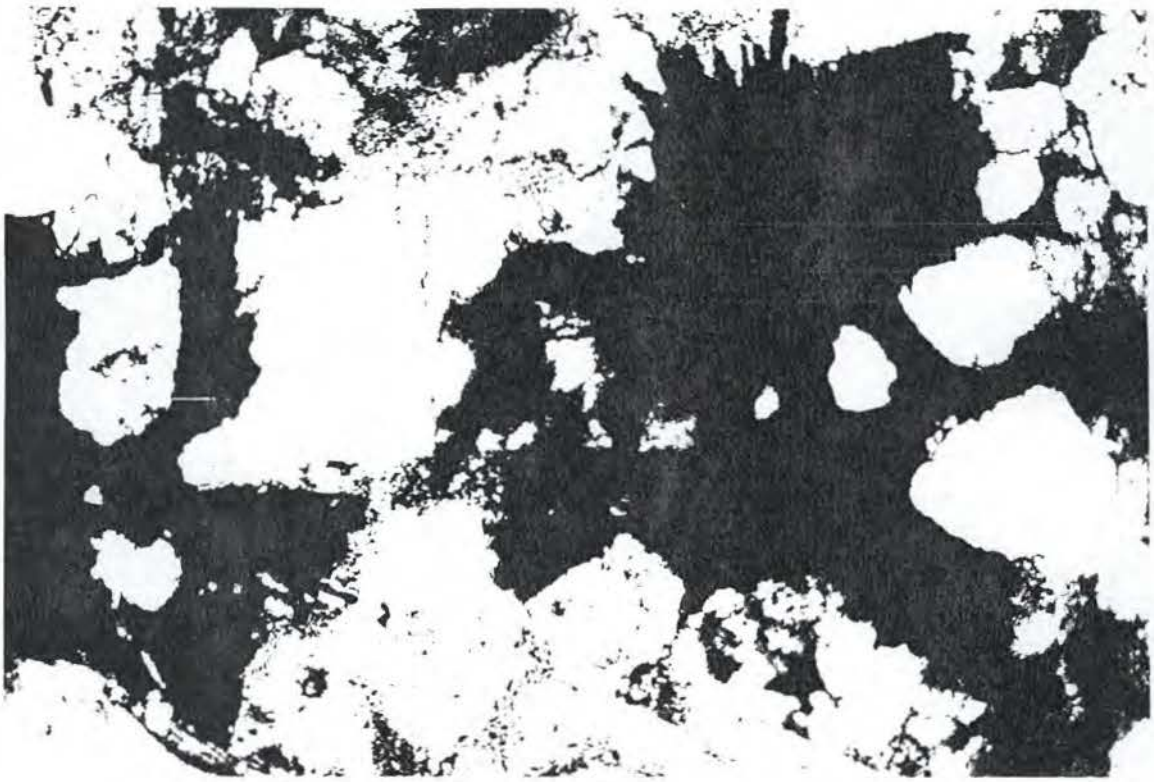
Rhombehedral carbonate crystals displaying distinct growth zoning. Inner cores are rusty (siderite cores?). Rims are colourless. Carbonate crystals set in matrix of bright green clay (chamosite).

Hematite replacement of matrix in #8

FOV=1.25mm PPL

Hematite replacement of clay matrix, thereby engulfing quartz sand grains. Note the delicate spray-like crystals of hematite cutting across the matrix at the top of the photo.





Regular Oolitic Grains in #8

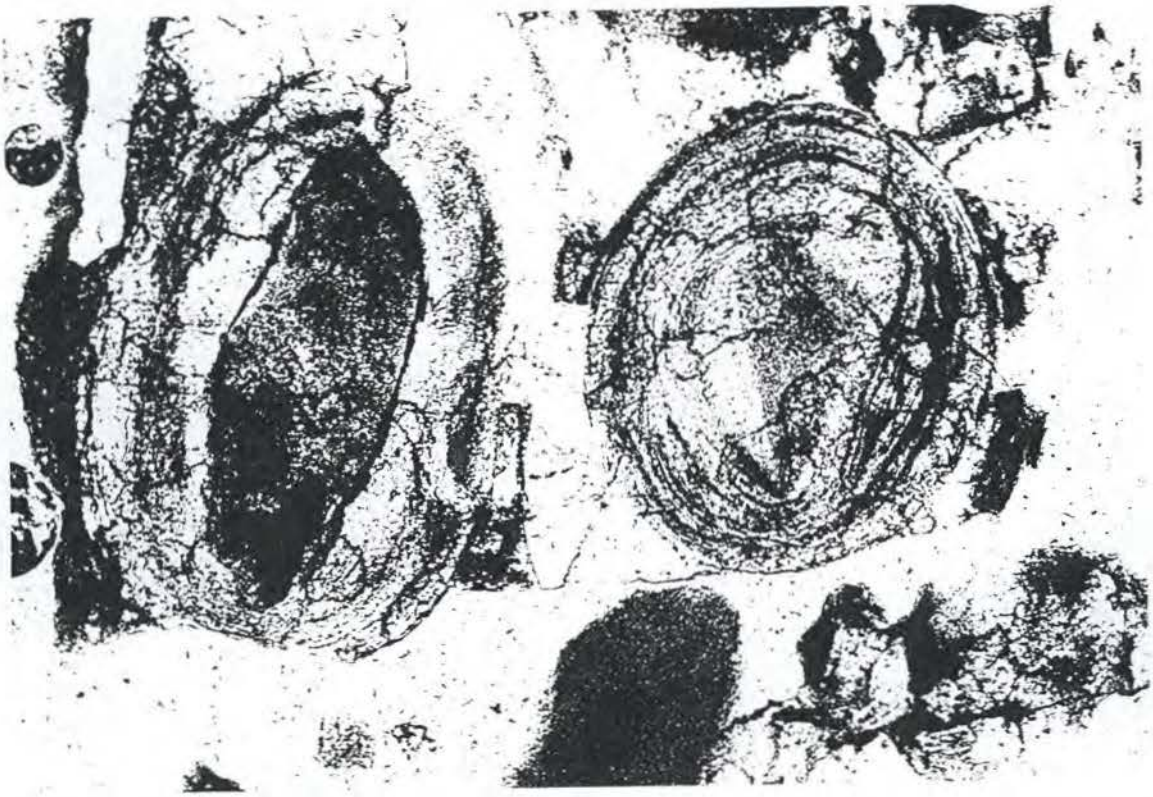
FOV=1.25mm PPL

Regular concentric bands in oolitic grains. Originally, these oolitic grains were composed on chamosite. However, note that coarse crystalline calcite (grain boundaries obvious as dark lines making mosaic pattern) has replaced these grains leaving ghosted relicts of the chamosite banding.

Irregular Oolitic Chamosite Grains in #8

FOV=1.25mm PPL

Irregular oolitic grains composed of a sand-grain core and chamosite bands. Note that the concentric chamosite bands are terminate against other grains or within the matrix.



"SS Milled"
Grain Mount

DESCRIPTION

- predominantly opaque grains (identity undetermined)
- minor chert/quartz grains

- mafic silicates comprise approximately 35% of the heavy mineral concentrate
- the mafic silicate grains comprise the following population

Orthopyroxene	50%
Clinopyroxene	20%
Stilpnomelane (secondary)	15%
Amphibole	10%
Biotite	5%
Olivine	trace

- a fine-grained brown, pleochroic mica with high birefringence commonly has replaced pyroxene along rims and fractures (see photo)
    - mica interpreted to be stilpnomelane
- olivine present in one grain
    - extensively replaced by serpentine along fractures (see photo)
- composite grains are rare
    - colourless amphibole commonly intergrown with clinopyroxene (see photo)
        - late replacement of clinopyroxene (?)
    - some grains contain both clinopyroxene and orthopyroxene (see photo)

INTERPRETATION

- lack of composite grains makes origin of grains uncertain
    - pyroxenes may be either metamorphic or plutonic in origin
        - most likely source of two-pyroxene-bearing rocks in region would be deep crustal granulite xenoliths from a diatreme/kimberlite
    - olivine must have been derived locally (due to instability in surface environment)
        - no local rocks should contain olivine
            - most likely source is from an ultramafic xenolith from a kimberlite

Stilpnomelane Replacement of Pyroxene

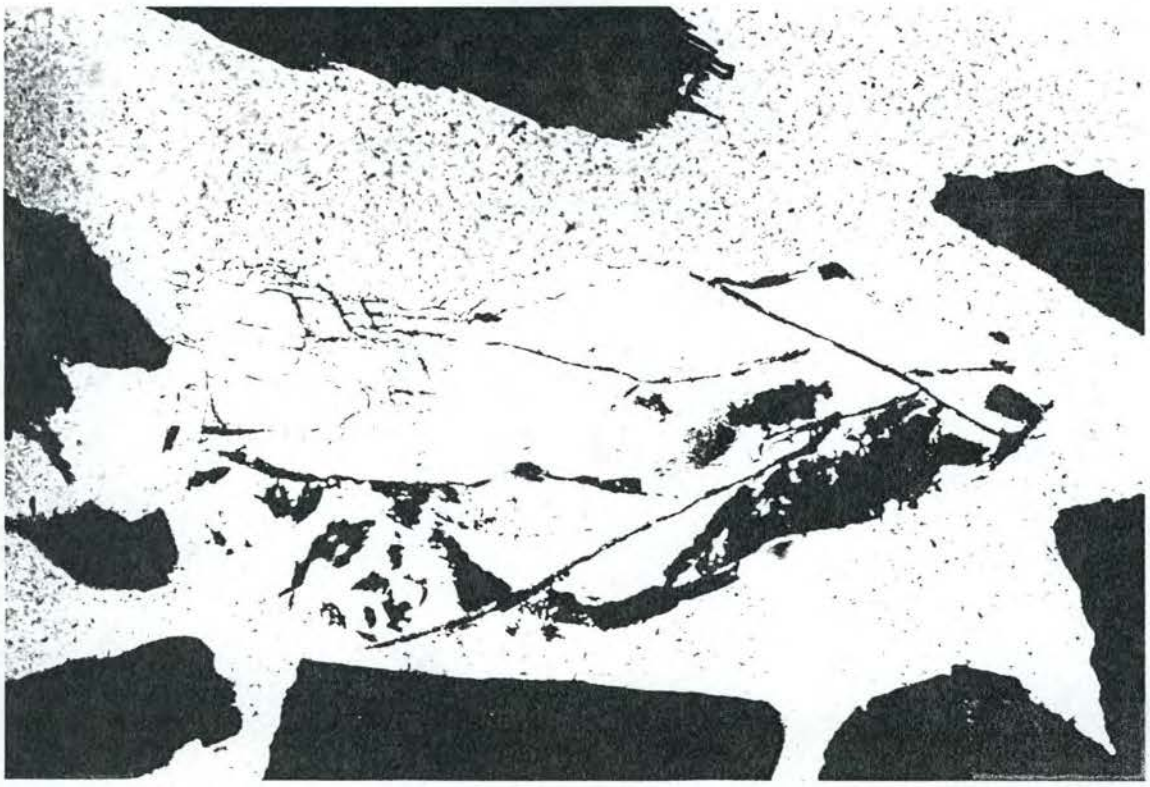
FOV=0.63mm PPL

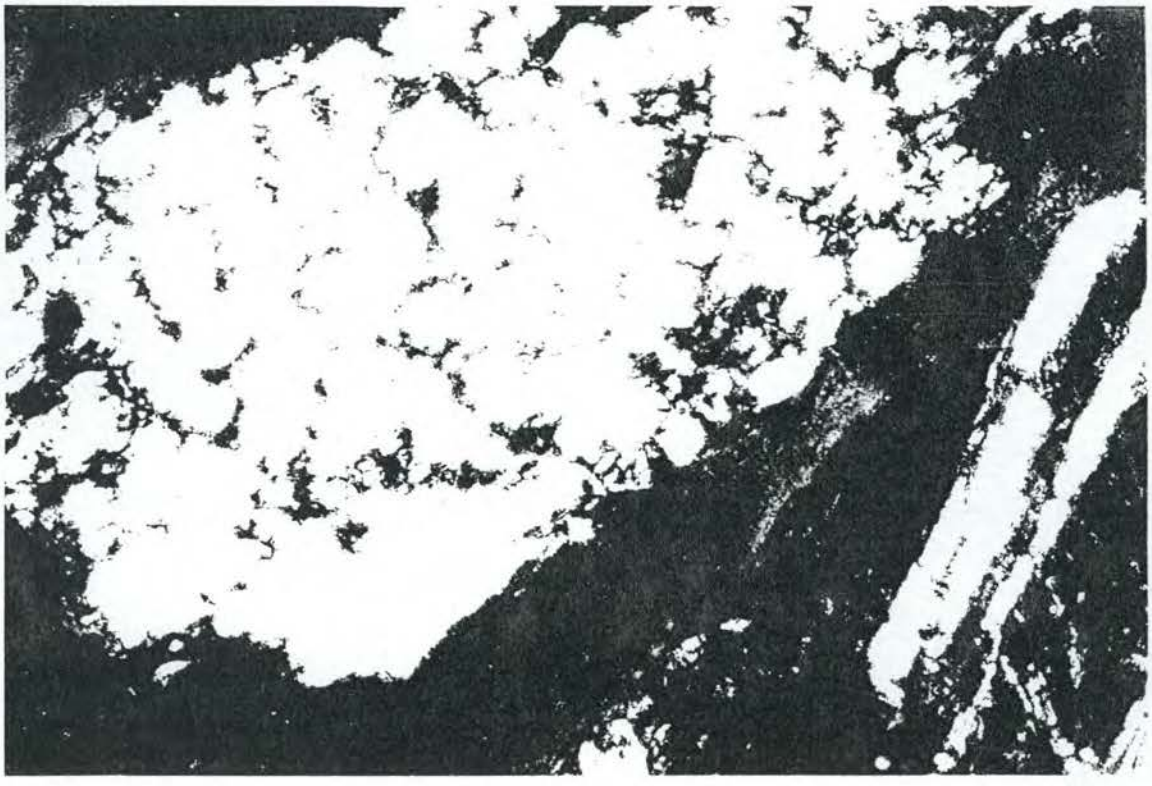
Extensive replacement of pyroxene (colourless) by a fine-grained, brown mica interpreted to be stilpnomelane

Highly Serpentinized Olivine Grain

FOV=0.63mm XPL

Olivine (high birefringence) extensively replaced by serpentine along a network of fractures that crosscut the grain.





Composite Grain of Amphibole-Clinopyroxene

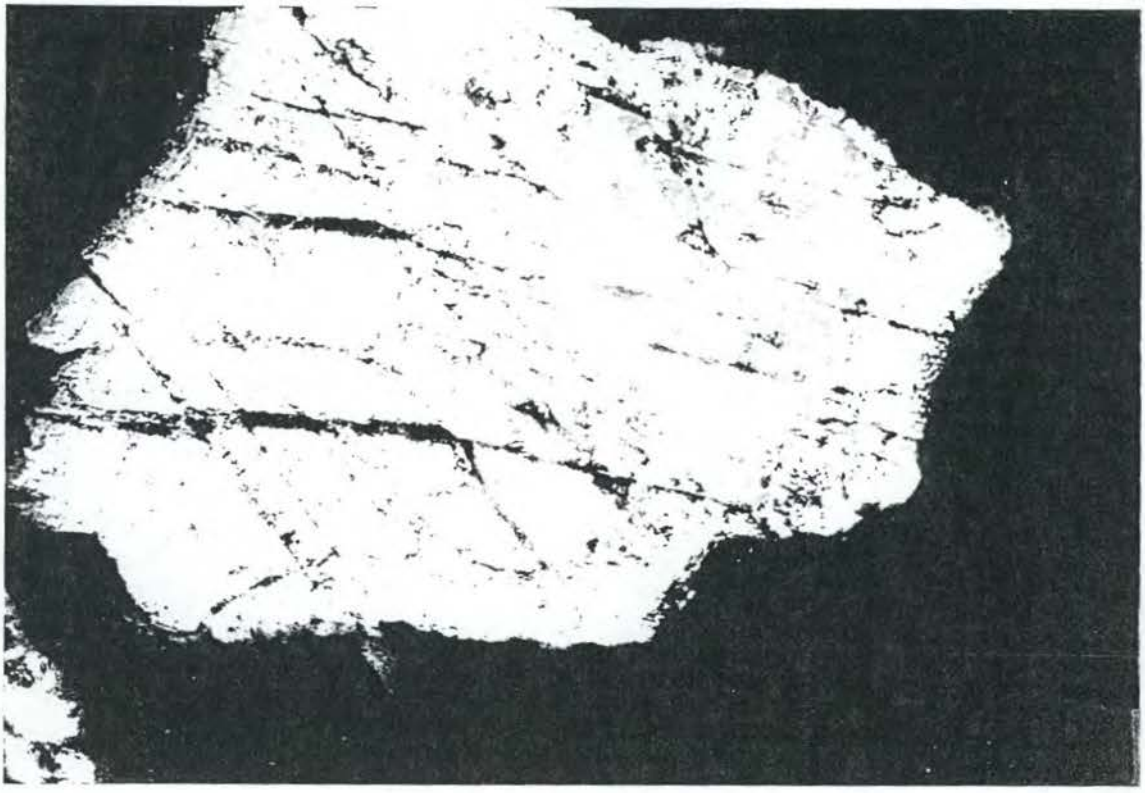
FOV=0.63mm XPL

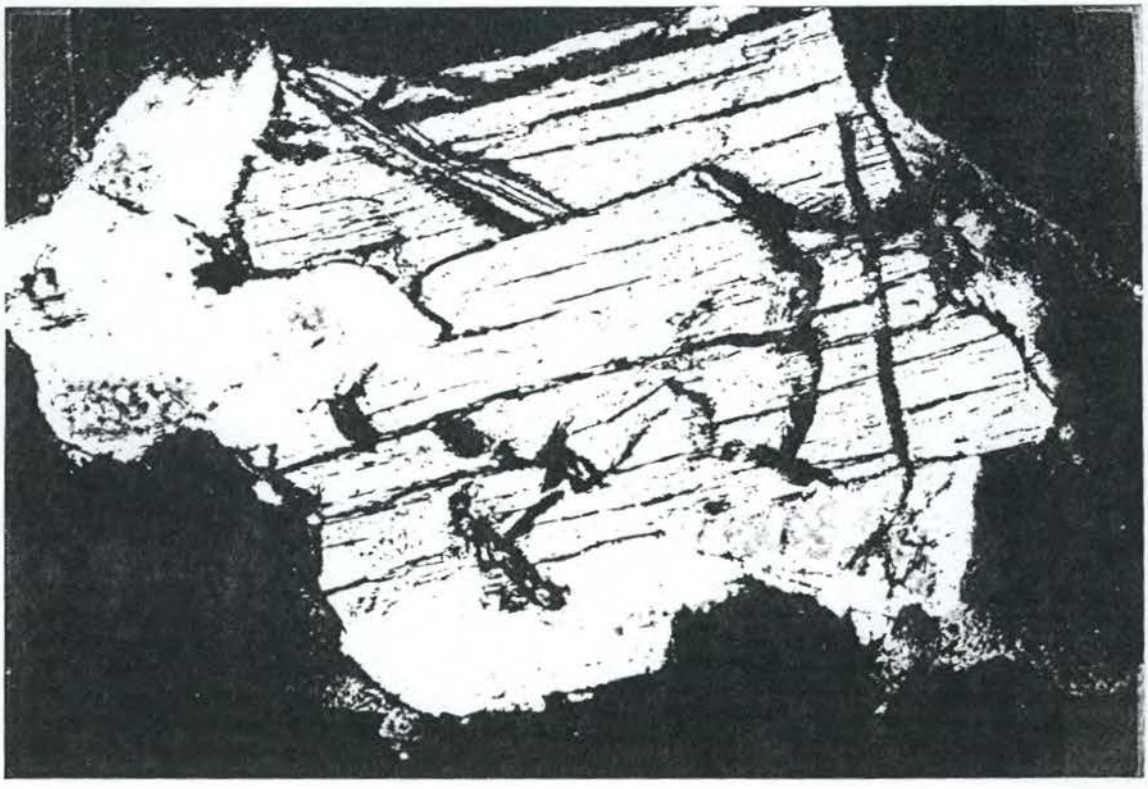
Core of grain composed of clinopyroxene (blue birefringence). Rim is composed of amphibole (yellow birefringence). Amphibole is probably a hydration product of original clinopyroxene.

Composite Grain of Orthopyroxene-Clinopyroxene

FOV=0.63mm XPL

Centre of composite grain composed of orthopyroxene (dull yellow-green birefringence) with clinopyroxene along edges of grain. The association of orthopyroxene and clinopyroxene is commom to granulites.





"Mud Milled in Bag"
Grain Mount

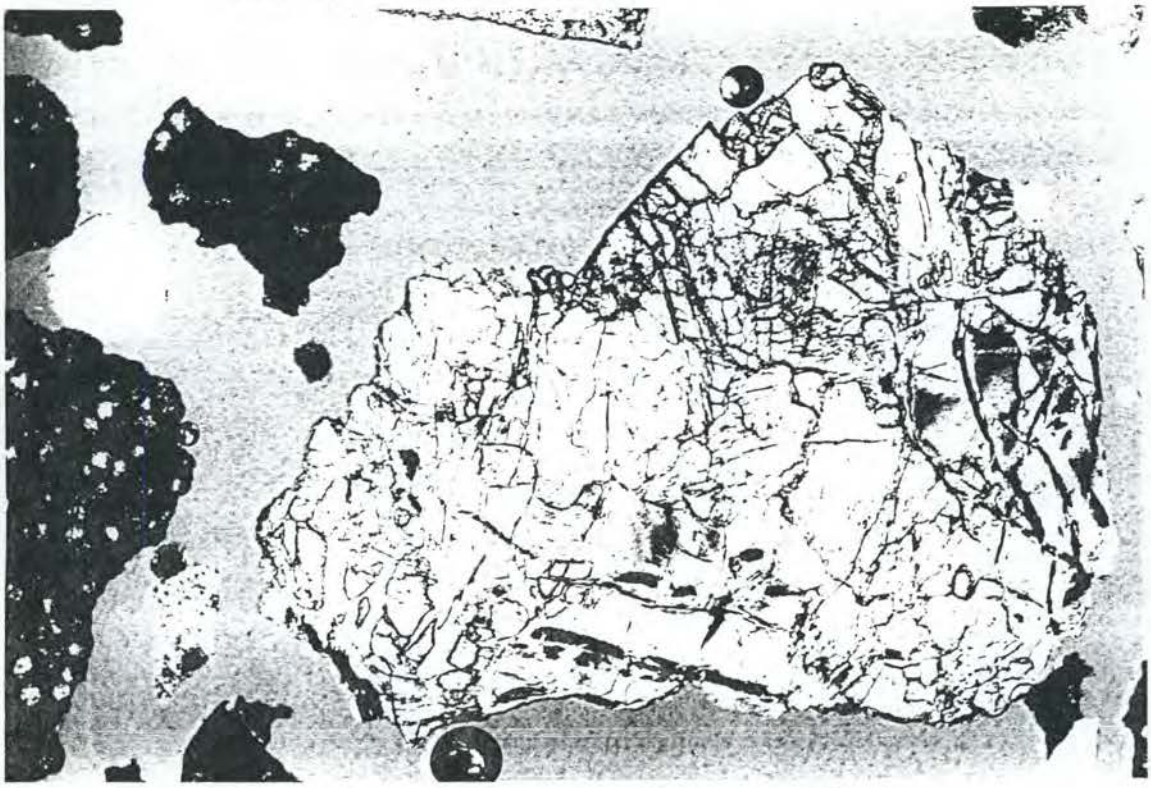
DESCRIPTION

- dominantly sedimentary grains
- one grain of interest (see accompanying photo)
    - composite grain consisting of:

Stilpnomelane (secondary)	50%
Clinopyroxene	25%
Orthopyroxene	20%
Garnet	5%

INTERPRETATION

- the assemblage clinopyroxene-orthopyroxene-garnet is characteristic of a metabasite from the granulite facies
    - no regional outcrops of such extreme metamorphism
    - most likely source of grain is a deep crustal xenolith transported to surface in a diatreme/kimberlite



Garnet-Clinopyroxene-Orthopyroxene Composite Grain

FOV= 1.25mm

Highly stilpnomelane replaced composite grain. Remaining primary minerals are garnet, orthopyroxene and clinopyroxene, indicating that this grain was derived from a granulite.

MARUM
resources inc.

Chinchaga Diamond Project, Alberta

Appendix F

Cranberry Aeromagnetic Survey
200 m line spacing
High Resolution Aeromagnetic Data Set
flown by
Spectra Geoscience Corp.
over part of the
Permit lands and lands proximal to the Permits
Scale at 1:50,000

Contents

OPERATIONS REPORT

CRANBERRY
HIGH RESOLUTION AEROMAG SURVEY

Project 9807

for

APEX GEOSCIENCE LTD.
Edmonton, Alberta
by

SPECTRA AVIATION SERVICES CORP.
Calgary, Alberta

April 29, 1998

TABLE OF CONTENTS

1.0 INTRODUCTION

This report describes the specifications and operations of an airborne geophysical survey carried out for APEX GEOSCIENCE LTD. (on behalf of their client), having an office in the city of Edmonton, Alberta, in accordance with the contract for services dated March 20, 1998. The survey was performed by Spectra Aviation Services Corp., a wholly owned subsidiary of Spectra Exploration Geoscience Corp. located at Suite 2610, 520 - 5th Avenue SW, Calgary, Alberta T2P 3R7. Telephone (403) 777-9280 and fax (403) 777-9289.

The purpose of a survey of this type is to acquire high resolution, high sensitivity aeromagnetic data in order to map both the near surface and basement rocks and structures in the survey area according to their magnetic signatures. The end result of the processing was to provide detailed maps to assess the area for anomalies and magnetic features pertaining to potential Kimberlite bodies.

To achieve this purpose the survey area was systematically traversed by an aircraft carrying geophysical instruments along parallel flight lines (traverses) spaced at even intervals in a North – South alignment at 200 meters, with tie-lines flown normal to the traverses spaced at 1000m (aligned so as to intersect the regional geology and structure in a way to provide the optimum contour patterns of geophysical data). The flying height was 100 meters above the terrain surface.

2.0 SURVEY AREA

The survey area is located in west-central Alberta, and consists of approximately 11 contiguous townships. The total project area is defined within TWP 96 RGE 3-5W6; TWP 97 RGE 2-4W6; TWP 98 RGE 3-4W6; TWP 99 RGE 2-4W6; and TWP 100 RGE 3-4W6.

This area is bounded by the following latitude/longitude coordinates:

2.1 Cranberry Project Area

1. N 57.730°	W 118.574°
2. N 57.730°	W 118.327°
3. N 57.642°	W 118.327°
4. N 57.642°	W 118.163°
5. N 57.381°	W 118.162°
6. N 57.381°	W 118.324°
7. N 57.294°	W 118.324°
8. N 57.294°	W 118.649°
9. N 57.541°	W 118.649°
10. N 57.541°	W 118.568°

3.0 EQUIPMENT SPECIFICATIONS

3.1 AIRCRAFT

The survey was carried out using Spectra's Piper Navajo PA31-310 aircraft, registration C-FYTT, which carries a high sensitivity magnetometer and full on-board real time compensation recording computer, and related equipment. It is a twin engine aircraft with full avionics, including real time GPS.

The aircraft has been extensively modified to conduct airborne geophysical surveys. Considerable effort has been made to remove all ferruginous materials near the sensors and to ensure that the aircraft electrical

system does not create any noise. With these modifications this aircraft represents one of the quietest magnetic platforms in the industry with a figure of merit of approximately 8 nT uncompensated and 0.80 nT compensated at this survey location using G.S.C. standards.

The aircraft is operated by Spectra Aviation Services Corp. under full M.O.T approval and certification for specialty flying including airborne geophysical surveys. The aircraft is maintained at base operations by a regulatory AMO Facility, Baker Aviation Inc. and in the field by a Spectra Aviation Services Corp. AME in association with Baker Aviation, AMO.

3.2 AIRBORNE GEOPHYSICAL EQUIPMENT

The airborne geophysical system has one high sensitivity, cesium vapor magnetometer. Ancillary support equipment include tri-axial fluxgate magnetometer, video camera, video recorder, radar altimeter, barometric altimeter, GPS receiver and a navigation system which includes a left/right indicator and a screen showing the survey area with real time flight path. All data are collected and stored by the data acquisition system. The following provides the detailed equipment specifications.

Cesium Vapor Magnetometer:

Manufacturer	Scintrex
Model	CS-2
Resolution	0.001 nT counting @ 0.1 per second
Sensitivity	+/-0.005 nT
Dynamic Range	15,000 to 100,000 nT
Fourth Difference	0.02 nT

Tri-Axial Magnetic Field Sensor (for compensation, mounted in the forepart of the tail stinger):

Manufacturer	Bartington Instruments Ltd.
Model	MAG-03MC
Internal Noise	at 1 Hz - 1 kHz; 0.6 nT rms
Bandwidth	0 to 1 kHz maximally flat, -12 dB/octave roll off beyond 1 kHz
Frequency Response	1 HZ - 100 Hz: +/- 0.5% 100 Hz - 500 Hz: +/- 1.5% 500 Hz - 1 kHz: +/- 5.0%
Calibration Accuracy:	+/- 0.5%
Orthogonality	+/- 0.5% worst case
Package Alignment	+/- 0.5% over full temperature range
Scaling Error	absolute: +/- 0.5% between axes: +/- 0.5%

Video Camera (camera mounted in belly of aircraft):

Manufacturer	Sanyo
Model	VDC-2982 (colour)
Specifications	1/2", 470 hr, 1.3LX. 12VDC, C/CS,EI/ES, backlite comp
Lens	Rainbow, 2/3", 4.87 mm, F1.8-360, auto iris

Video Recorder (strapped to computer rack/floor plate):

Manufacturer	Panasonic
Model	AG 2400 (commercial grade)

Radar Altimeter:

Manufacturer	King
Model	KRA-10A

Accuracy	5% up to 2,500 feet
Calibrate Accuracy	1%
Output	Analogue for pilot; Converted to digital for data acquisition

Barometric Altimeter:

Manufacturer	Sensym
Model	LX18001AN
Source	Coupled to aircraft pitot static system

Differential GPS Receiver (# 511 aircraft certified antenna mounted on top of the cabin roof):

Manufacturer	Novatel
Model	Novatel Card for magnetic system; King KLN-89B for pilot (interfaced)
Serial Number	GPS 511
Type	Continuous tracking, L1 frequency, C/A code (SPS), 12 channel (independent)
Position Sensitivity	once per second
Accuracy	position (SA implemented) 100 meters, position (no SA) 30 m, velocity 0.1 knot, time recovery 1 pps, 100 nsec pulse width
Data Recording	all GPS data and positional data logged by PDAS 1000

Navigation Interface (with pilot and operator readouts):

Manufacturer	Picodas Group Inc.
Model	Helimag
Data Input	Real time processing of GPS output data
Pilot Readout	Left/Right indicator
Operator Readout	Screen modes: map, survey and line
Data Recording	All data recorded in real time by Helimag

Data Acquisition System :

Manufacturer	Picodas Group Inc.
Model	PDAS 101 Helimag
Operating System	MS-DOS
Microprocessor	80486dx - 66 CPU
Coprocessor	Intel 8048dx
Memory	On board up to 8 MB, page interleaving, shadow RAM for BIOS, support EMS 4.0
Clock	real time; hardware implementation of MC14618 in the integrated peripherals controller
I/O Slots	5 AT and 3 PC compatible slots
Display	Electro-luminscent 640x400 pixels
Graphic Display	Scrolling analog chart simulation with up to 5 windows operator selectable; freeze display capability to hold image for inspection
Recording Media	Standard 540 Mbyte hard disk with extra shock mounts; Standard 1.44 Mbyte floppy disk; Standard tape backup
Sampling	Selectable for each input type; 1, 0.5, 0.25, 0.2 or 0.1 seconds
Inputs	12 differential analog input with 16 bit resolution
Serial Ports	2 RS-232C (expandable)
Parallel Ports	Ten definable 8 bit I/O; Two definable 8 bit outputs

The Helimag also contains the magnetometer processor boards, one for each cesium vapor magnetometer installed

Manufacturer	Picodas Group Inc.

Model	PCB
Input Range	20,000 - 100,000 nT
Resolution	0.001 nT
Bandwidth	0.7, 1 or 2 Hz
Microprocessor	TMS 9995
Firmware	8 Kbit EPROM board resident
Internal Crystal	18,432 kHz
Absolute Crystal Accuracy	<0.01%
Host Interfacing	8 Kbyte dual port memory
Address Selection	Within 20 bit addressing in 8 Kbyte software selectable steps
Input Signal	TTL, CMOS, Open collector compatible or sine wave with decoupler
Input Impedance	TTL>1K Ohm

Magnetic compensation for aircraft and heading effects is done in real time. Raw magnetic values are also stored and thus if desired, compensation with different variables can be run at a later time.

Other Boards:

Analog Processor — PCB - provides separate A/D converter for each analog input with no multiplexing; each channel is sampled at a rate of 1,000 samples per second with digital processing applied.

Power Supplies:

1) Power Distribution Unit manufactured by Picodas Group Inc. interfaces with the aircraft power and provides filtered and continuous power at 27.5 VDC to all components.
2) The Helimag contains a 32 volt DC cesium sensor switching power supply for the cesium vapor magnetometers in conjunction with real time magnetometer compensation; also enables interfacing the fluxgate magnetometer and the barometric altimeter; also provides clean power for radar altimeter and ancillary equipment (PC notebook, printer)

3.3 MAGNETOMETER BASE STATION

High sensitivity base station data are provided by a cesium vapor magnetometer, data logging onto a PC 486sx notebook and time synchronization with ground GPS receiver.

Magnetic Sensor:

Identical to magnetometer in aircraft

Magnetic Processor:

Manufacturer	Picodas Group Inc.
Model	P101
Input range	20,000 - 100,000 nT
Resolution	0.001 nT
Resolution (fdd)	1 pt
Bandwidth	0.7, 1 or 2 Hz
Microprocessor	TMS 9995
Firmware	8 Kbit EPROM board resident
Internal Crystal	18,432 kHz
Absolute Crystal Accuracy	<0.01%
Host Interfacing	8 Kbyte dual port memory
Address Selection	Within 20 bit addressing in 8 Kbyte software selectable steps
Input Signal	TTL, CMOS, Open collector compatible or sine wave with decoupler

Input Impedance	TTL> 1kohm
Clock Stability	2 ppm per year
Absolute accuracy correction	+/- 999x10e-6

Logging Software:

Logging software by Picodas Group Inc. version 5.02 to IBM compatible PC with RS 232 input; supports real time graphics, automatic startup, compressed data storage, selectable start/stop times, automatic disk swapping, plotting of data to screen or printer at user selected scales, and fourth digital difference and diurnal quality flags set by user.

3.4 GPS BASE STATION

Ground GPS data was collected to perform post flight differential correction to the flight path. The ground GPS base station equipment is described below:

Manufacturer	Novatel
Model	Novatel Card
Type	Continuous tracking, L1 frequency, C/A code (SPS), 10 channel (independent)
Position Update	once per second
Accuracy	with SA implemented 100 meters, no SA 30 meters, velocity 0.1 knot, time recovery 1 pps, 100 nsec pulse width
Data Recording	all GPS raw and positional data logged by PDAS 1000

3.5 IN-FIELD COMPUTING FACILITIES

The following equipment was supplied for infield preliminary processing including base station logging and GPS differential calculations:

- one 266MHz and two 486DX/66 desk-tops, and two 386SX/25 notebooks, External Colorado tape drive, writeable CD.
- one color and two black and white printers

Software included C3NAV by Picodas Group Inc. for GPS differential corrections, and Oasis and Montaj suite of software by Geosoft Inc. to provide binary database functions, tie line leveling, mapping and imaging.

4.0 SURVEY SPECIFICATIONS

4.1 LINES AND DATA

Survey area coverage	Cranberry total 6,900 line km
Line Direction	000-180 degrees azimuth
Line Interval	200 meters
Tie Line Interval	1.0 kilometers (1000 meters) - flown orthogonal to survey lines
Terrain Clearance	100 meters, drape mode
Average ground speed	70-80 meters/second
Data point interval:	Magnetic: 7-8 meters relative ground spacing per sample point

4.2 TOLERANCES

Line spacing: Any gaps wider than 10% of the nominal line spacing for a distance of more than 12 kilometers. Also at no point shall the traverse or control lines deviate more than +/- 100 meters from the pre-plot line locations.

Terrain clearance: In general the true flight altitude must be less than +/- 15 meters for a distance of over 5 kilometers from the norm drape level of the survey. This survey has specific requirements with regard to altitude control; the critical element is the difference in altitude between the survey line and the control line, referred to as elevation misties. The misties must be less than +/-10 meters absolute.

Diurnal magnetic variation: A maximum deviation of +/- 2.50 nT from a curvilinear mean within the time span required to acquire 10 line kilometers of data at the specified minimum sampling interval.

4.3 NAVIGATION AND RECOVERY

The satellite navigation system is used to ferry to the survey site and to survey along each line using latitude/longitude coordinates. The coordinates of the survey outline for navigation purposes and flight path recovery were supplied by the client.

The navigation accuracy is variable depending on the number and condition of the satellites, however it is generally less than twenty five meters and typically in the ten to fifteen metre range. Post flight differential correction of the flight path, which corrects for satellite range errors, improves the accuracy of the flight path recovery to approximately within one to three meters.

The navigational and flight path recovery positioning is based on the 1:50,000 NTS maps which are NAD 1927. The datum shift from WGS-84 to local is North American 1927, Canada, Clarke 1866.

A video camera recorded the ground image along the flight path. A video screen in the cockpit enabled the operator to monitor the accuracy of the flight path during the survey. This system also provided a backup system and verification for flight path recovery.

4.4 OPERATIONAL LOGISTICS

The main base of operations with the base station magnetometer and GPS equipment was at Manning, Alberta, near the Manning airport. The coordinates for the base station were: 56^0 56' 56.78"N, 117^0 37' 58.1"W; 463 m ASL.

The crew consisted of:
Bruce Waines - Senior Survey Pilot
Greg Bernetic - Equipment Operator
James Mohns - Aircraft Mechanical Engineer

The survey crew arrived in Manning on March 28 1998, to set up the base station and establish local support facilities for several surveys to be flown. The first data acquisition flight for the Cranberry survey was made on April 1, and completed on April 24, 1998. There were a total of 19 flights on the Cranberry block, including ferry and survey flights, compensation, scrubbed missions, and reflights. The figure of merit (FOM) was measured at 0.80 nT.

Each line of data was presented in paper profile format displaying rawmag, groundmag, noise, 4th difference RA, barometric altimeter, Lat./Long. These, with the digital review, were the basis for the data QC.

5.0 DATA PROCESSING

Initially in-field processing was performed by our field crew, checking on all parameters and procedures. Once a satisfactory level was achieved the data was file-transfererd to our geophysicist in the Calgary office for downloading the survey and GPS corrected data after each flight by use of an FTP site (and data written to CD). The preliminary in field processing during the survey consisted of the following:

1) Software program C3NAV (by Picodas) was applied to the base and aircraft GPS data in order to provide post-flight compensated GPS location of the flight path.
2) Program C3NAV2TBL (by Geosoft) to produce two table files (UTM-X -Y -Z, and LAT/LON)
3) Use READMAG (by Picodas) on raw binary base (diurnal) magnetic data to create BASEMAG table.
4) Create job file database in OASIS (Geosoft) for airborne data and import all flight and base data.
5) Edit BASEMAG channel to remove any occasional spikes and linearly interpolate across the gaps. (Occasionally we filter the BASEMAG with a low pass filter to remove high frequency near surface and local disturbances; this was specifically requested not to be performed).
6) When required, establish table of mean terrain clearances at intersection locations from tie line data to provide elevation guidance for survey line navigation. Grid differences in elevations at intersections of tie and survey lines to provide quality check on elevation control and tag any for reflight.
7) Edit flight path channels to remove any spikes and linearly interpolate gaps.
8) Edit RAWMAG channel to remove any spikes and linearly interpolate gaps.
9) Create new channel as MAGDC = (MAG1 - BASEMAG) + base constant.
10) Perform lag correction to MAGDC channel: lag is 0.5 seconds
11) Perform tie line leveling using all the survey line data to level the tie lines
12) Perform survey line leveling using the leveled tie lines; final leveled channel is labeled LEVMAGDC
13) All data were viewed on the screen on a line by line basis using the interactive OASIS database to inspect for quality, required tolerances and data integrity.
14) Produce preliminary flight path map and gridded magnetic intensity map including shadowing.
15) Plot analog charts of MAG1 and MAGDC in output format, for data quality.
16) Plot survey line and tie line flight paths and profiles for quality control inspection.

Following quality control and de-mobilization, the data were subjected to more advanced level of processing and leveling as follows. The final leveling and inspection were carried out by a senior geophysicist (Erwin Ebner) and furthermore in Toronto by an independent consultant, Mr. Chris Vaughan.

1) Prepare grid of final field leveled tie line data and shadow it at low sun angle to check quality of tie line co-leveling.
2) Prepare grid of final leveled survey line data, shadow it at low sun angle and calculate a horizontal gradient grid, both used to check the quality of tie line level corrections.
3) In OASIS inspect raw, diurnal corrected and final leveled mag simultaneously on each line to determine cause of any poor tie line leveling. (Using LCT software, same steps were taken as a check.)
4) Eliminate tie/survey intersections that are not useable due to excessive tie line diurnal noise and/or culture.
5) Eliminate duplicated data from reflights if required.
6) Prepare new leveling correction table and apply it.
7) Repeat steps 3) to 6) as often as is necessary to achieve highest quality data set.
8) Micro-level final total field grid to remove small line level errors (this was not done in this survey).
9) Prepare Reduction to pole, selected band-pass and gradient filter maps at scale on the Total Field grid.
10) Contour and plot.
11) Remove be digital means all video-reviewed cultural artifacts.
12) Re-level the dataset.

13) Produce higher-frequency filter and target maps, and compile target report.
14) Data archived on Exabyte tape and on CD-ROM.

6.0 SUMMARY

An airborne high sensitivity, high resolution magnetic survey has been carried out at 100 metre terrain clearance, 200 metre line intervals and with data sample stations at 7 -8 metres along the lines. Tie lines were spaced at 1.0 kilometer. A high sensitivity base magnetic station recorded the diurnal activity throughout the survey and a base GPS station was used to correct range errors in the GPS flight path recovery. Airborne recorded data included one fully compensated magnetometer located in rear stinger, radar altimeter, barometric altimeter and all attendant GPS data. The magnetic data have been processed, gridded and provided on Exabyte tape format and CD-ROM. Cultural effects have been edited out.

SPECTRA AVIATION SERVICES CORP.

Jim Genereux
Managing Partner

APPENDIX:

SPECTRA EXPLORATION GEOSCIENCE COMPANY PROFILE
SPECTRA SURVEY AIRCRAFT; C-FZHG (SAME CONFIGURATION AS C-FYTT)
C-FYTT FIELD OPERATIONS REPORTS

SPECTRA

SPECTRA EXPLORATION GEOSCIENCE CORP.

COMPANY PROFILE SUMMARY

Spectra Exploration Geoscience Corp. designs, conducts, and markets geological and geophysical projects for the petroleum and mining industries, providing "high-tech" applications for mature to frontier areas and offering assistance for explorationists working either domestically or internationally. Our subsiding company; Spectra Aviation Services Corp. owns and operates our two specially configured Piper Navajo survey aircraft.

HISTORY

Spectra was incorporated in 1994 and has established its position as the industry leader in the acquisition of multi-client high resolution aeromagnetic data in western Canada with 750,000 line kilometers of high quality data flown to date, providing HRAM coverage in northeastern British Columbia, Alberta and Saskatchewan and the Northern United States. Spectra has also managed projects for the acquisition of over 250,000 line kilometers of proprietary HRAM data in western Canada. Most recently the firm has been working on projects throughout the U.S. and embarking on International programs.

SERVICES

Spectra provides project management and consultancy services to the industry, from data acquisition to final interpretive reports and recommendations. We are dedicated to becoming a leader in the cost-effective application of innovative high-tech exploration tools, the integration of multiple datasets and comprehensive interpretations.

Some of the products and services Spectra offers includes:

- acquiring exclusive and multi-party high resolution aeromagnetic programs;
- acquiring exclusive and multi-party detailed gravity programs;
- marketing of geological, hydrodynamic and geophysical data;
- conducting field geological programs;
- basin analysis and geological/geophysical interpretations of integrated multiple datasets.

Spectra is offering its services to the petroleum and mining industries and would like to assist companies with managing and acquiring the most appropriate, cost-effective data for their exploration needs. Please consider Spectra if future technical support is required and if we can be of assistance in any way.

2610, 520 - 5th Ave SW Calgary, Alberta T2P 3R7
TEL: (403) 777-9280 FAX: (403) 777-9289

SPECTRA

Spectra Exploration Geoscience Corp.

Suite 2610, 520 - 5th Avenue S.W.
Calgary, Alberta
T2P 3R7

Phone (403) 777-9280
Fax (403) 777-9289
E-mail: spectra@nucleus.com

Spectra Aviation Services Corp., a division of Spectra Exploration Geoscience Corp., is pleased to announce the introduction of our new High Resolution Aeromagnetic (HRAM) service aircraft, to meet your survey requirements. This service combines a dedicated aircraft with a complete field data processing capability for optimum efficiency and quality control. Spectra's strong management and industry proven data products round out this unique service capability to the mining and petroleum exploration community

PIPER PA-31 NAVAJO AIRCRAFT SPECIFICATIONS

Twin-engine turbocharged piston		MTOW	6,730 lbs
Service Ceiling	24,000 feet	Available Payload	1,500 lbs
Cruise Speed (ISA)	165 KTAS	Certified for Day, Night	
	300 km/hr	IFR, VFR operations	
Nominal Survey Speeds	120-165 KIAS	Survey Avionics	Novatel GPS
	200-300 km/hr		Radar Altimeter
Cruise Endurance	7.5 hours	Survey Endurance	6.7 hours

Special Modifications	Survey Endurance
Tailboom for magnetometer	Airborne Geophysics Surveys
Extended-range fuel tanks	Picodas PNAV-101 System
Survey AC and DC Power Distribution Panel	Scintrex CS-2 Cesium Sensor

SPECTRA EXPLORATION GEOSCIENCE CORP. - "CRANBERRY"
APEX GEOSCIENCE
MIKE DUFRESNE

AEROMAGNETIC SURVEY
WEEKLY REPORT #1 (MARCH 30, - APRIL 5, 1998)

DATE	WEATHER	GEOMAG FIELD	FLIGHTS/ DATA ACQ.	COMMENTS
Monday, Mar. 30	OK	QUIET	C-FYTT NONE	COMPLETING PREVIOUS GRID.
Tuesday, Mar. 31	OK	QUIET	C-FYTT NONE	COMPLETING PREVIOUS GRID.
Wednesday, Apr. 1	OK	QUIET	C-FYTT FERRY	FERRY TO SURVEY BLOCK.
Thursday, Apr. 2	OK	QUIET	C-FYTT FLT 0701/02	Flew 866.6 LKM. Operations normal.
Friday, Apr. 3	POOR	QUIET	C-FYTT FLT 0703/04	Flew 1951.3 LKM, OPERATIONS NORMAL
Saturday, Apr. 4	OK	QUIET	C-FYTT NONE	MAINTENANCE AT FT MCMURRAY.
Sunday, Apr. 5	OK	QUIET	C-FYTT NONE	MAINTENANCE AT FT MCMURRAY.

PROJECT SIZE: 6900 LINE KM +/-

TOTAL FLOWN TO DATE: Gross this week 2817.9km.
Gross km 2817.9 (40.3% of total).
Remaining 4082.1 line km

C-FZHG - Piper Navajo

OTHER: Good production week. Only exception of maintenance to the aircraft. Survey should be completed in the next couple of days depending on the weather.

SPECTRA EXPLORATION GEOSCIENCE CORP. - "CRANBERRY"
APEX GEOSCIENCE
MIKE DUFRESNE

AEROMAGNETIC SURVEY
WEEKLY REPORT #2 (APRIL 6, - APRIL 12, 1998)

DATE	WEATHER	GEOMAG FIELD	FLIGHTS/ DATA ACQ.	COMMENTS
Monday, Apr. 6	OK	QUIET	C-FYTT FLT 0705	FERRY FROM FT. MAC TO MANNING. FLEW 485 LKM.
Tuesday, Apr. 7	OK	QUIET	C-FYTT FLT 0706	FLEW 921.5 LKM.
Wednesday, Apr. 8	POOR	QUIET	C-FYTT NONE	NO FLYING TODAY DUE TO POOR WEATHER CONDITIONS.
Thursday, Apr. 9	OK	QUIET	C-FYTT FLT 0707/08	FLEW 873 LKM, SLIGHT TURBULENCE.
Friday, Apr. 10	OK	QUIET	C-FYTT FLT 0709/10/11	FLEW 2259.4 LKM.
Saturday, Apr. 11	OK	QUIET	C-FYTT FERRY	FERRY TO CALGARY FOR MAINTENANCE.
Sunday, Apr. 12	OK	QUIET	C-FYTT NONE	IN CALGARY FOR MAINTENANCE.

PROJECT SIZE: **6900 LINE KM +/-**

TOTAL FLOWN TO DATE: **Gross this week 4538.9 LKM.**
Gross km 7356.8 (100.00% of total).
Remaining 0.00 line km

C-FYTT - Piper Navajo

OTHER: FLYING ACQUISITION NOW COMPLETE. NOW QC ING AND PRELIMINARY PROCESSING.

SPECTRA EXPLORATION GEOSCIENCE CORP. - "CRANBERRY"
APEX GEOSCIENCE
MIKE DUFRESNE

AEROMAGNETIC SURVEY
WEEKLY REPORT #3 (APRIL 20, - APRIL 26, 1998)

DATE	WEATHER	GEOMAG FIELD	FLIGHTS/ DATA ACQ.	COMMENTS
Monday, Apr. 20	OK	ACTIVE	C-FYTT FLT 0715/16	FLEW 582 LKM IN PM, ACTIVE DIURNAL IN AM. FIRST FLIGHT ABORTED DUE TO TURBULENCE.
Tuesday, Apr. 21	OK	QUIET	C-FYTT FLT 0717	FLEW 873 LKM, IN AM, TURBULENT IN PM.
Wednesday, Apr. 22	WINDY	QUIET	C-FYTT FLT 0718	FLEW 776 LKM IN AM, TURBULENT IN PM.
Thursday, Apr. 23	OK	QUIET	C-FYTT FLT 0719	FLEW 892 LKM, OPERATIONS OK.
Friday, Apr. 24	OK	QUIET	C-FYTT FLT 0720	FLEW 165 LKM, REFLIGHT COMPLETE. DATA ACQUISITION COMPLETE ON THIS PROJECT.
Saturday, Apr. 25	OK	QUIET	C-FYTT FERRY	FERRY TO SLAVE LAKE FROM MANNING, COMENCE NEW PROJECT.
Sunday, Apr. 26	OK	QUIET	C-FYTT COMP	COMPENSATION FLIGHT AND F.O.M SLAVE LAKE GRID.

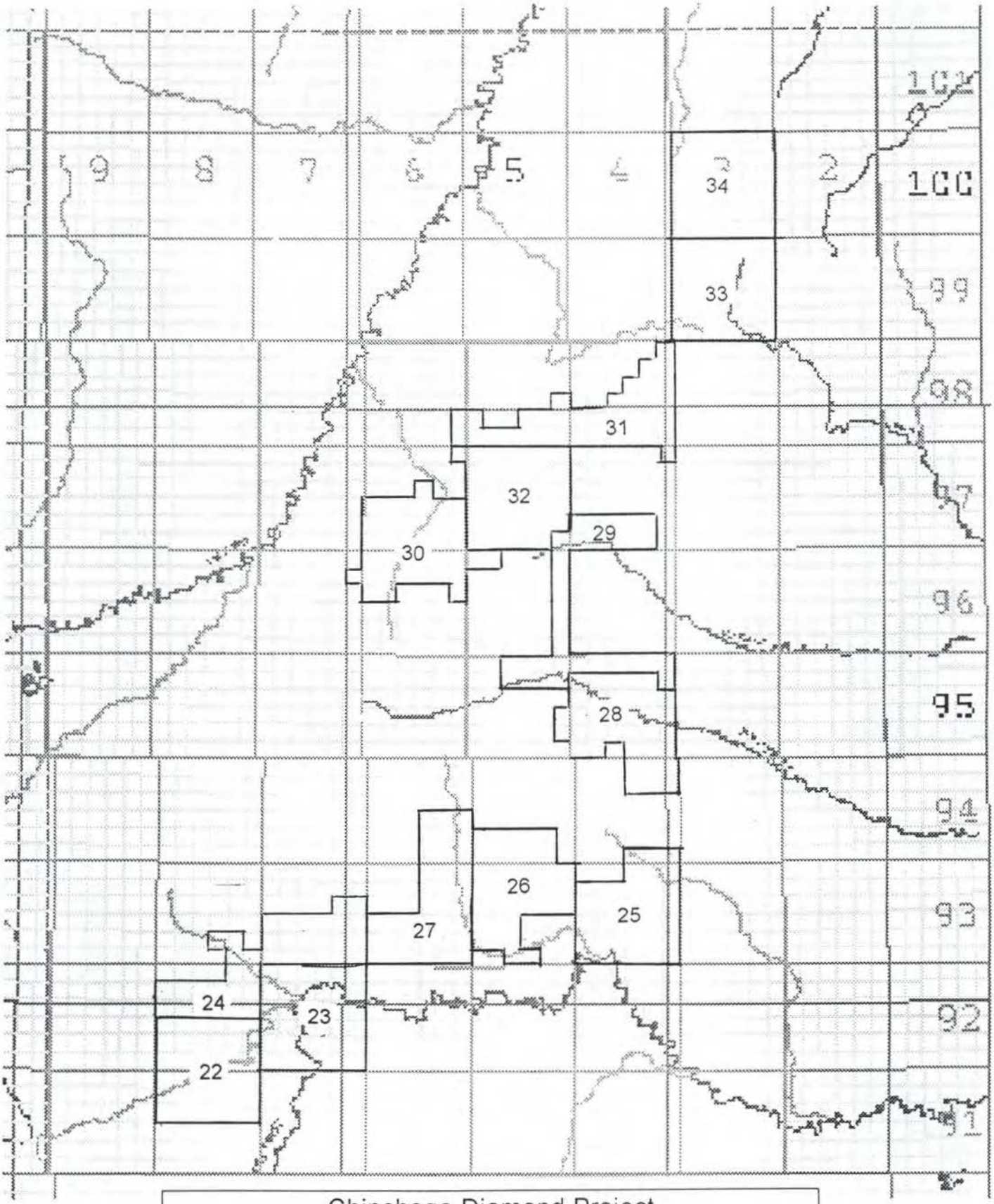
PROJECT SIZE: **6900 LINE KM +/-**

TOTAL FLOWN TO DATE: **Gross this week 3288 LKM. REFLIGHTS**
Gross km 7356.8 (100.00% of total).
Remaining 0.00 line km

C-FYTT - Piper Navajo

OTHER: ALL REFLIGHTS HAVE NOW BEEN COMPLETED. PROCESSING IN PROGRESS. (MARK WORKING O/T TO CARTCH UP FOR SOME LOST GROUND.0

MAP- # 6 to 11



Chinchaga Diamond Project
Township and Range Permit Map
Townships 91-100, Ranges 3-8 W6 Meridian
Permit Nos. 9396010022 TO 9396010034

MARUM
resources inc.

September 15, 1998

Mr. Brian Hudson
Alberta Energy
Petroleum Plaza - North Tower
9945 - 108 Street
Edmonton, Alberta, T5K 2G6

Dear Mr. Hudson:

Re: Metallic & Industrial Minerals Permits Nos. 9396010022 to 9396010034
(Frontier Capital Corp. and/or 659485 Alberta Limited)

ASSESMENT REPORT
AUTHORIZATION TO COPY OR REPRODUCE

This letter constitutes your authorization to copy or reproduce the assessment report covering the captioned permits, submitted to you under our letter of transmittal dated September 10, 1998.

Yours truly,
MARUM RESOURCES INC.

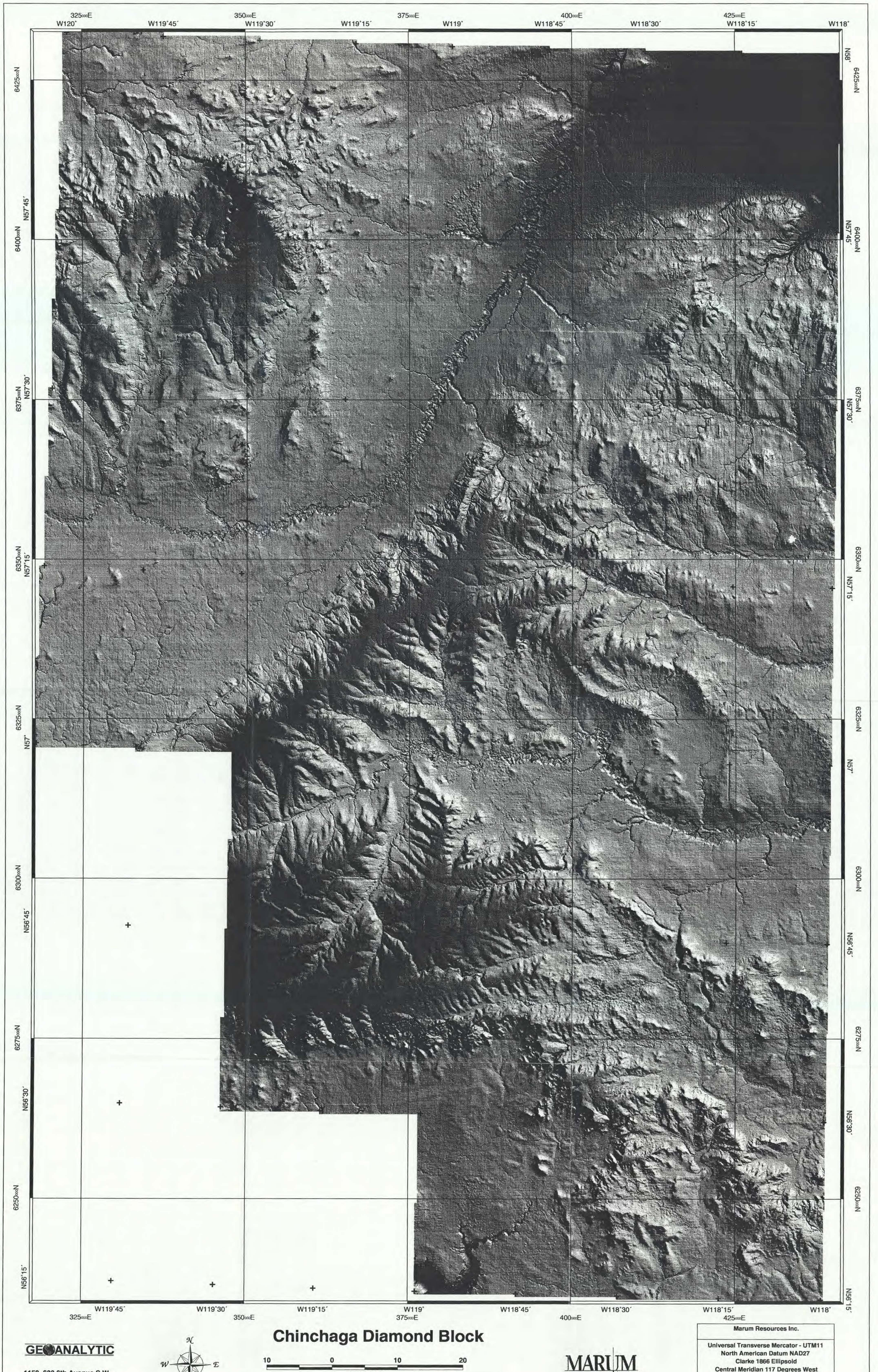
[redacted]

Richard A. Boulay, President
(Direct line: (403) 243-9500)

SEP 22 10 08 AM '98

ENER

400 National Bank Building, 407 - 8th Avenue S.W. Calgary, Alberta, Canada T2P 1E5
Telephone: 403-264-2220 Facsimile: 403-234-9686 E-mail: marum@canuck.com



Chinchaga Diamond Block

GEOANALYTIC

1150, 633 6th Avenue S.W.
Calgary, Canada T2P 2Y5
Tel: (403) 213 2700 Fax: (403) 213 2707
http://www.geoanalytic.com

N W E S

10 0 10 20
Kilometers
8 0 8 16
Miles

MARUM resources inc
MMU - ASE

Marum Resources Inc.		
Universal Transverse Mercator - UTM11 North American Datum NAD27 Clarke 1866 Ellipsoid Central Meridian 117 Degrees West Resolution: 25 m		
DATE: 12/2/98	BY: BB	PLAN NO.
SCALE: 1:250 000	REF. 97-27	97-27-250k

#1 MIN98016

MIN 9816
#2

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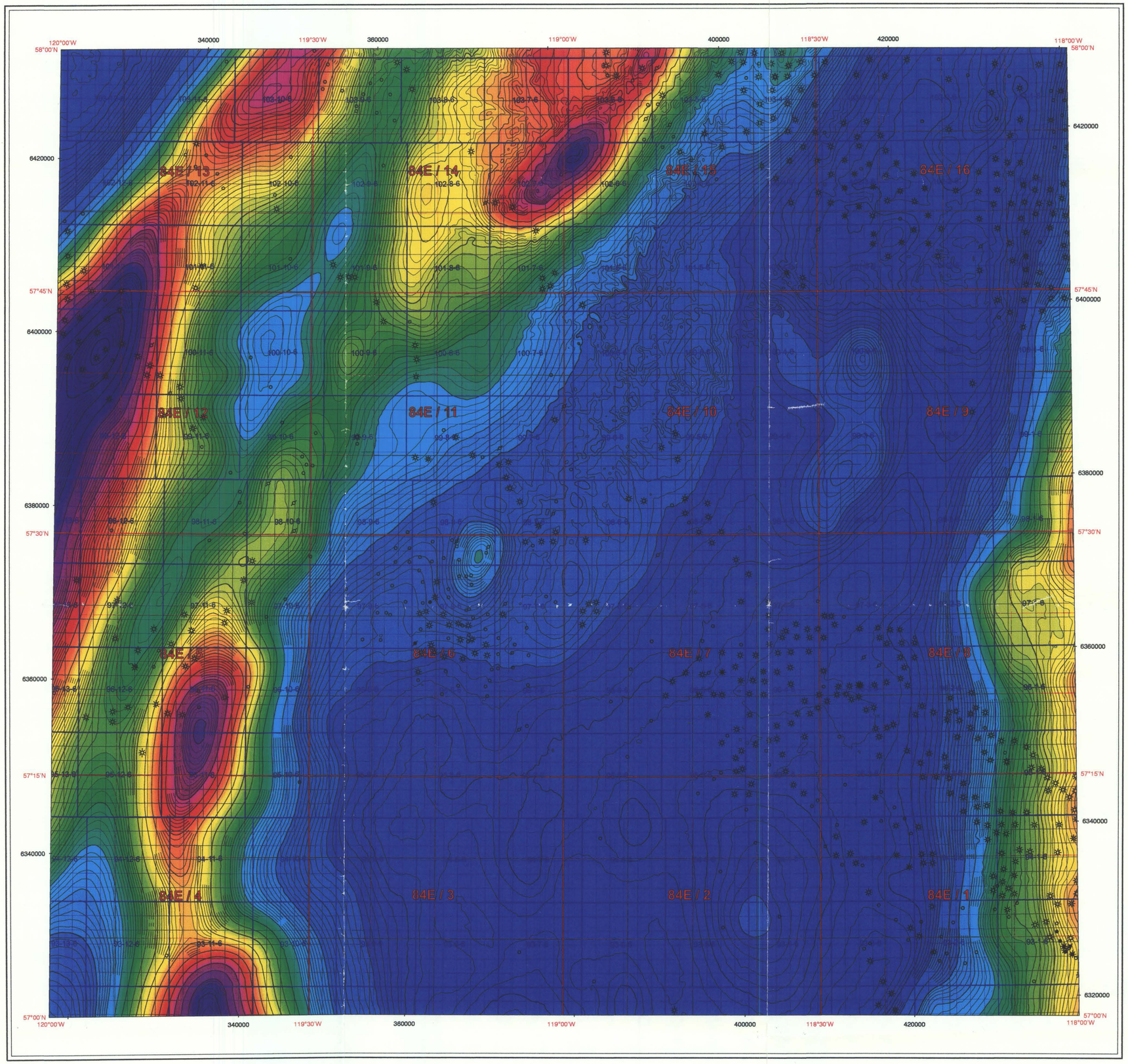
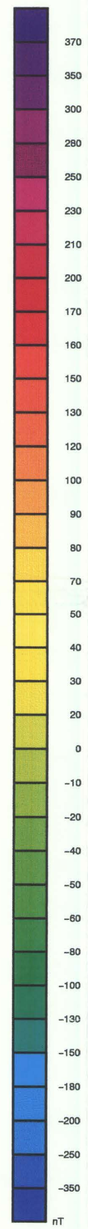
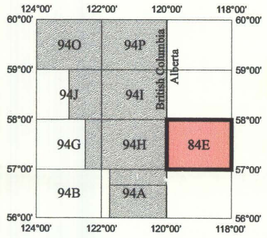
EXPLORATION GEOSCIENCE CORP.





TOTAL MAGNETIC INTENSITY
(nT)

10 .....
50 .....
250 .....



MIN 9816
#2

Aeromagnetic Survey
May to July, 1996

Primary Line Spacing	600 m
Primary Line Direction	East - West
Control Line Spacing	1800 m
Control Line Direction	North - South
Aircraft Altitude	120 m
Magnetometer Sensor	Geometrics G-822A & Scintrex CS-2, cesium vapour
Magnetometer Sensitivity	0.01 nT
Aircraft Positioning	Differential GPS
GPS Receiver	NovAtel 951R, 12 channel
Aircraft	BN2 Islander, C-FGAQ & Cessna 402B, C-GCKB
Dates Flown	May 19 to July 24, 1996
IGRF Correction	As of date flown
Mean IGRF Correction	59265 nT
Magnetic Inclination at 56°30'N, 121°00'W	78.0°
Magnetic Declination at 56°30'N, 121°00'W	24.0°
Grid Cell Size	200 m
Datum	NAD27
UTM Zone	11N

CHINCHAGA RIVER
NTS 84E

Northwestern Alberta

Well Legend

- Oil Well
- Gas Well
- Suspended Oil
- Oil and Gas Well
- Well Location
- Dry, Abandoned Well

Scale 1 : 250 000

km 5 0 10 20 km

SGL

Flown and compiled by:
Sander Geophysics Limited
303 Legget Dr. Kanata
Ottawa, Ontario, Canada
K2K 2B1

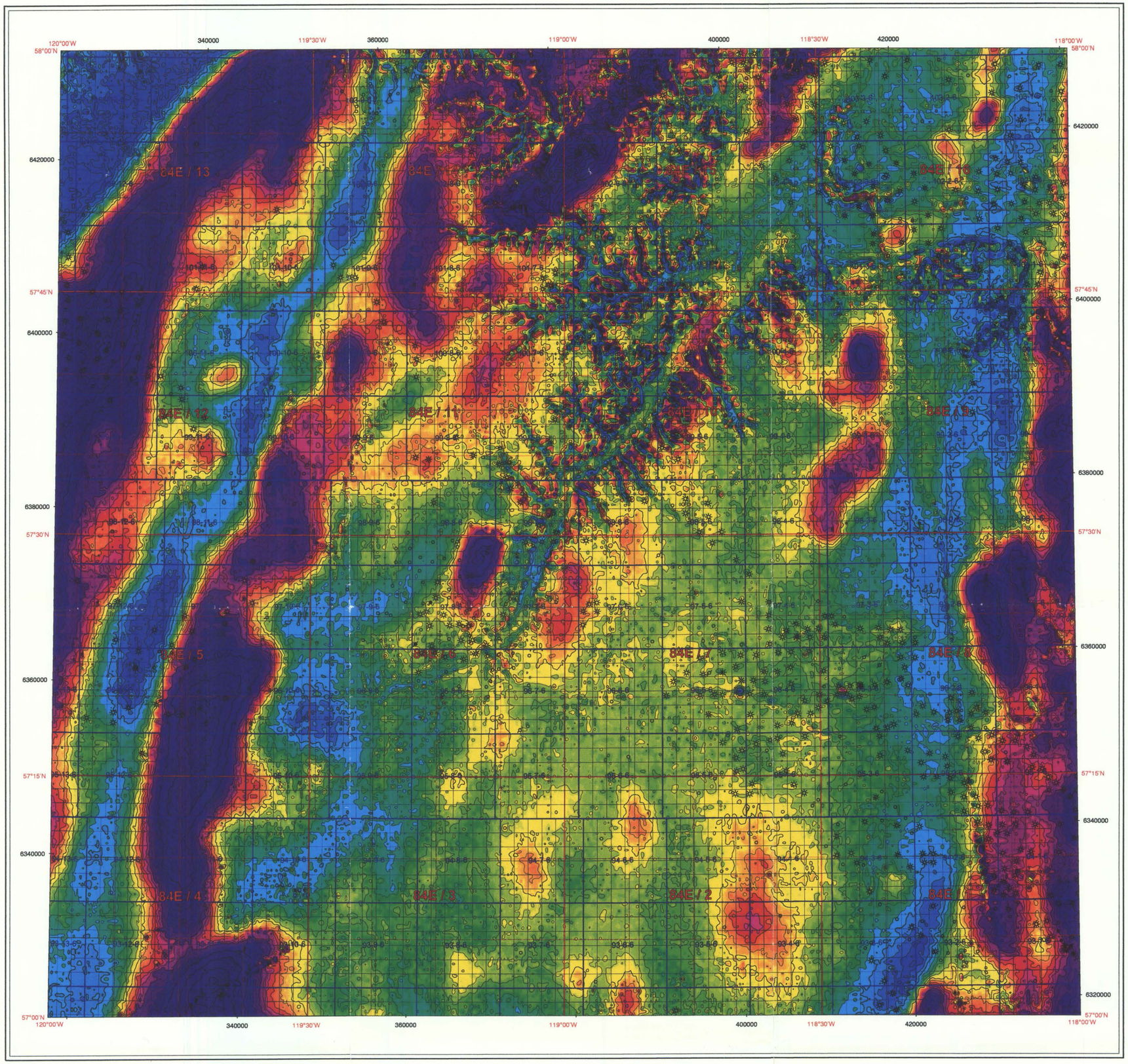
MM9816
#3

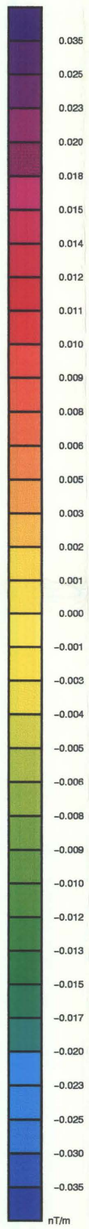
SPECTRA
EXPLORATION GEOSCIENCE CORP.

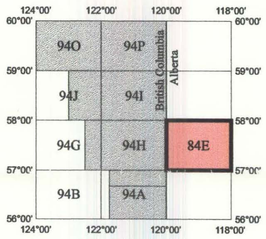
FIRST VERTICAL DERIVATIVE OF THE TOTAL MAGNETIC INTENSITY
(nT/m)

0.005.....

0.025.....







CHINCHAGA RIVER
NTS 84E

Northwestern Alberta

Well Legend

- Oil Well
- Gas Well
- Suspended Oil
- Oil and Gas Well
- Well Location
- Dry, Abandoned Well

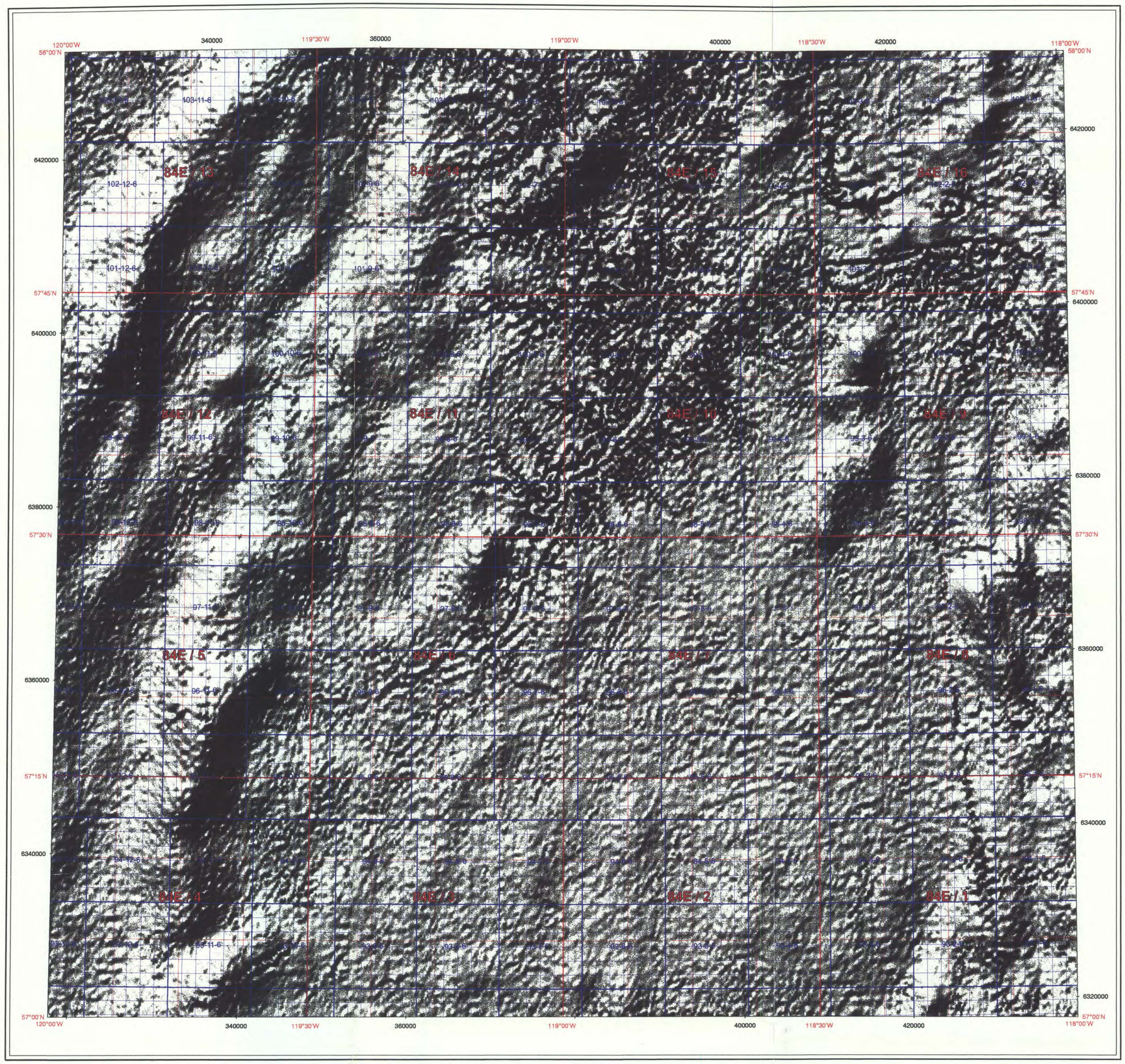
Scale 1 : 250 000

km 5 0 10 20 km

Aeromagnetic Survey
May to July, 1996

Primary Line Spacing	600 m
Primary Line Direction	East - West
Control Line Spacing	1800 m
Control Line Direction	North - South
Aircraft Altitude	120 m
Magnetometer Sensor	Geometrics G-822A & Scintrex CS-2, cesium vapour
Magnetometer Sensitivity	0.01 nT
Aircraft Positioning	Differential GPS
GPS Receiver	NovAtel 951R, 12 channel
Aircraft	BN2 Islander, C-FGAQ & Cessna 402B, C-GCKB
Dates Flown	May 19 to July 24, 1996
IGRF Correction	As of date flown
Mean IGRF Correction	59265 nT
Magnetic Inclination at 56°30'N, 121°00'W	78.0°
Magnetic Declination at 56°30'N, 121°00'W	24.0°
Grid Cell Size	200 m
Datum	NAD27
UTM Zone	11N

Flown and compiled by:
Sander Geophysics Limited
303 Legget Dr. Kanata
Ottawa, Ontario, Canada
K2K 2B1



CHINCHAGA RIVER

NTS 84E

Northwestern Alberta

Scale 1 : 250 000

km 5 0 10 20 km

Flown and compiled by:
Sander Geophysics Limited
303 Legget Dr. Kanata
Ottawa, Ontario, Canada
K2K 2B1

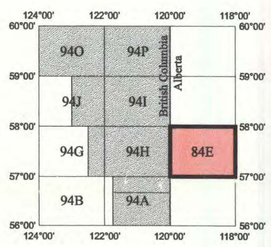
SPECTRA
EXPLORATION GEOSCIENCE CORP.

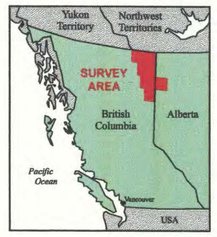
SHADED RELIEF OF THE FIRST VERTICAL DERIVATIVE OF THE TOTAL MAGNETIC INTENSITY

ILLUMINATION

DECLINATION . . . . . 330°

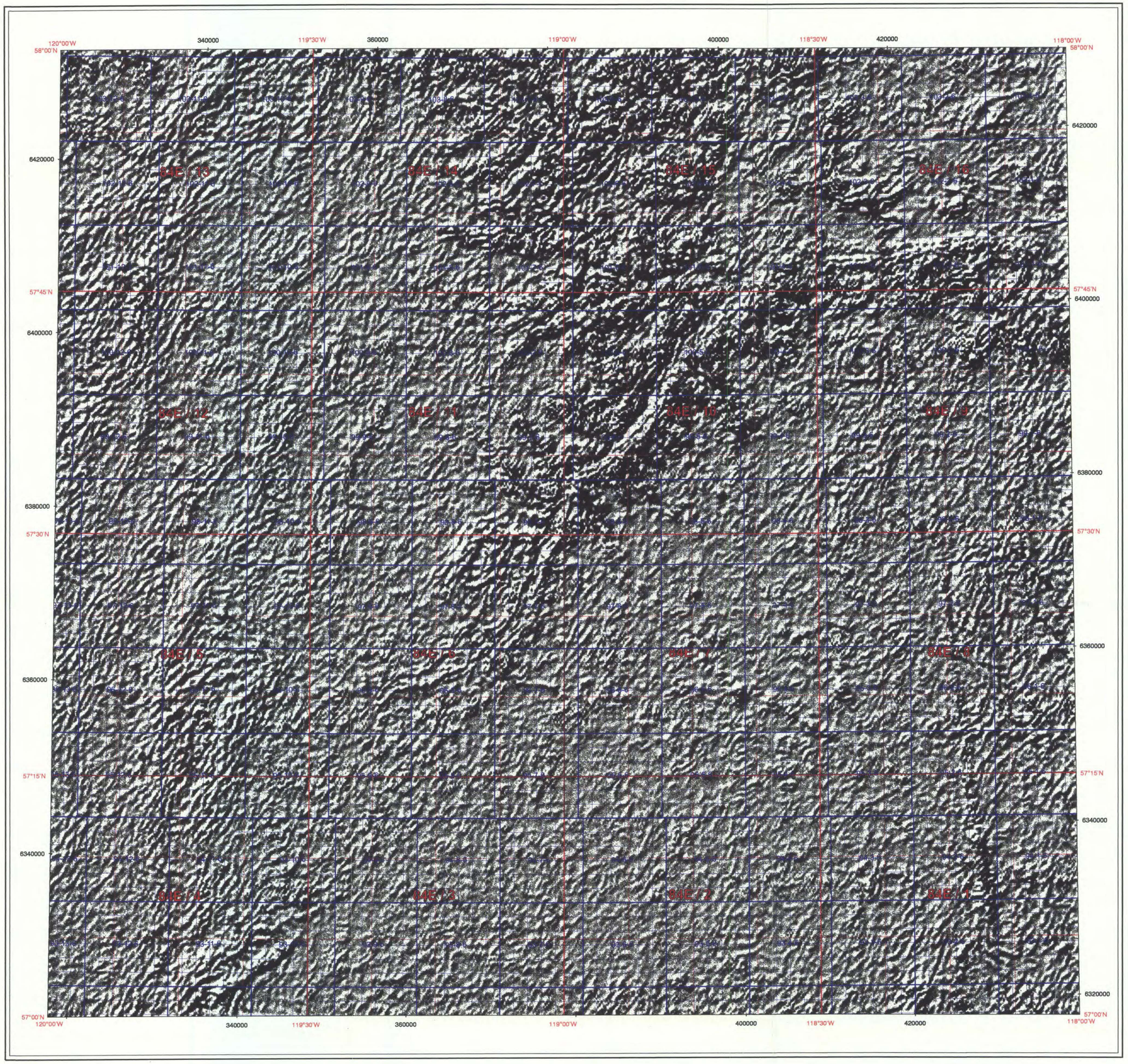
INCLINATION . . . . . 45°





Aeromagnetic Survey
May to July, 1996

Primary Line Spacing	600 m
Primary Line Direction	East - West
Control Line Spacing	1800 m
Control Line Direction	North - South
Aircraft Altitude	120 m
Magnetometer Sensor	Geometrics G-822A & Scintrex CS-2, cesium vapour
Magnetometer Sensitivity	0.01 nT
Aircraft Positioning	Differential GPS
GPS Receiver	NovAtel 951R, 12 channel
Aircraft	BN2 Islander, C-FGAQ & Cessna 402B, C-GCKB
Dates Flown	May 19 to July 24, 1996
IGRF Correction	As of date flown
Mean IGRF Correction	59265 nT
Magnetic Inclination at 56°30'N, 121°00'W	78.0°
Magnetic Declination at 56°30'N, 121°00'W	24.0°
Grid Cell Size	200 m
Datum	NAD27
UTM Zone	11N



CHINCHAGA RIVER

NTS 84E

Northwestern Alberta

Scale 1 : 250 000

km 5 0 10 20 km

Flown and compiled by:
Sander Geophysics Limited
303 Legget Dr. Kanata
Ottawa, Ontario, Canada
K2K 2B1

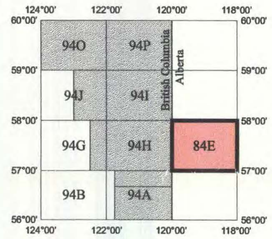
SPECTRA
EXPLORATION GEOSCIENCE CORP.

SHADED RELIEF OF THE HORIZONTAL GRADIENT OF THE FIRST VERTICAL DERIVATIVE

ILLUMINATION

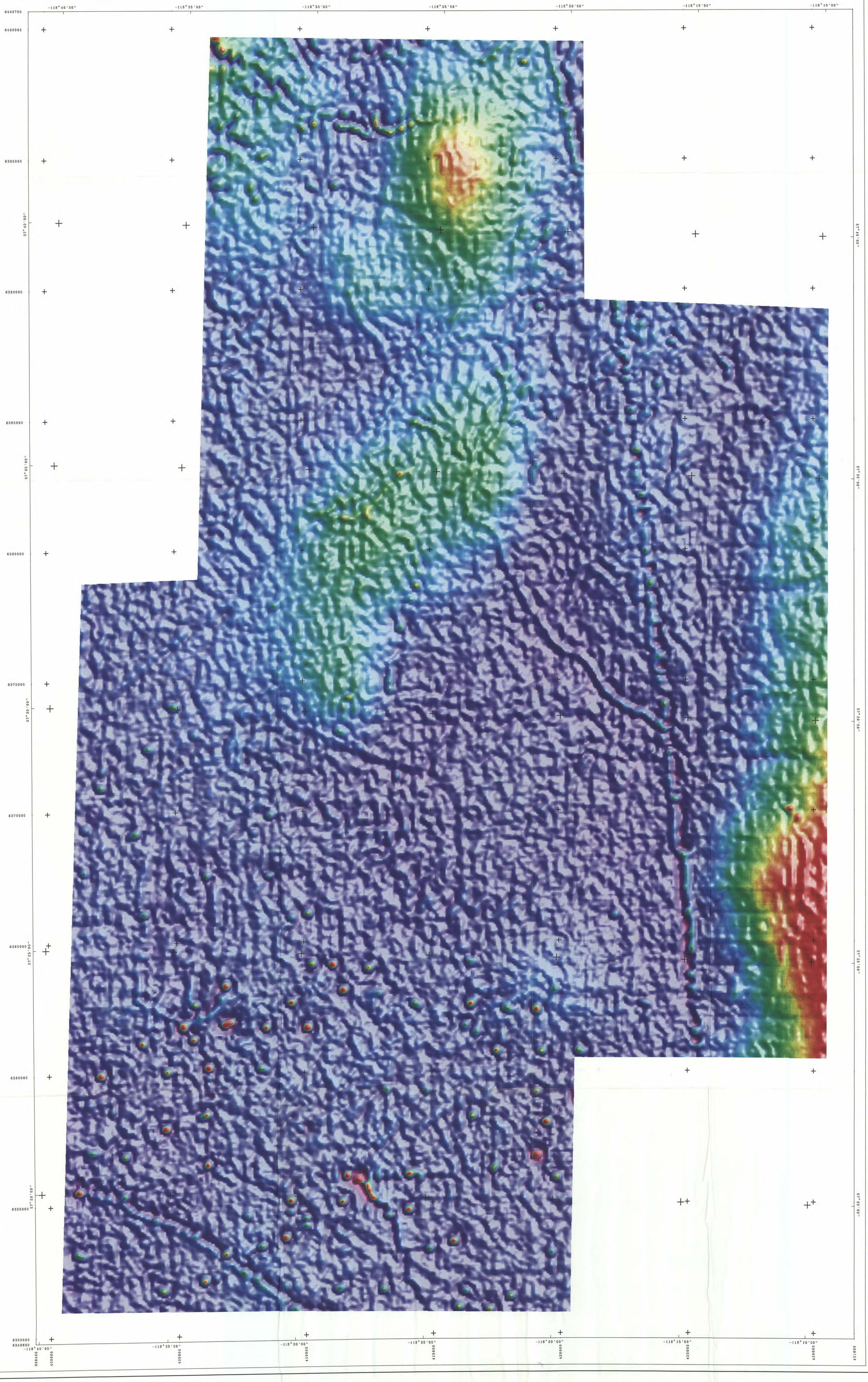
DECLINATION ..... 330°

INCLINATION ..... 30°



Aeromagnetic Survey
May to July, 1996

Primary Line Spacing	600 m
Primary Line Direction	East - West
Control Line Spacing	1800 m
Control Line Direction	North - South
Aircraft Altitude	120 m
Magnetometer Sensor	Geometrics G-822A & Scintrex CS-2, cesium vapour
Magnetometer Sensitivity	0.01 nT
Aircraft Positioning	Differential GPS
GPS Receiver	NovAtel 951R, 12 channel
Aircraft	BN2 Islander, C-FGAQ & Cessna 402B, C-GCKB
Dates Flown	May 19 to July 24, 1996
IGRF Correction	As of date flown
Mean IGRF Correction	59265 nT
Magnetic Inclination at 56°30'N, 121°00'W	78.0°
Magnetic Declination at 56°30'N, 121°00'W	24.0°
Grid Cell Size	200 m
Datum	NAD27
UTM Zone	11N



PROCESSING

PRELIMINARY PROCESSING ONLY!
CULTURE SIGNAL NOT REMOVED
PRELIMINARY LEVELLED
WIENER FILTERED (0.09)
REDUCED TO POLE

SHADED RELIEF PARAMETERS

LINEAR STRETCH
SUN ANGLES:
Azimuth: 45 DEGREES
Elevation: 40 DEGREES

nT/m*

100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100

Scale 1:50000

1 0 0.5 1 1.5 2 Kilometers
1 0 0.5 1 Miles

56.5N 118W; 500 m; 1998-04-30

Magnetic Field: 59060 nT
Magnetic Inclination: 77.22
Magnetic Declination: 22.75

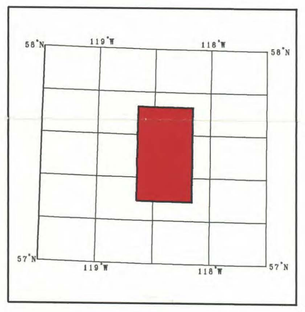
SURVEY PARAMETERS

FLOWN BY: SPECTRA EXPLORATION LTD.

TRAVERSE LINE SPACING: 1000 METERS E/W
CONTROL LINE SPACING: 2000 METERS N/S
FLYING HEIGHT: 100 METERS DRAPE
DATUM: NAD27

PROJECTION PARAMETERS

PROJECTION:	UTM
ELLIPSOID:	CLARKE 1866
UNITS:	METERS
CENTRAL MERIDIAN:	-117 DEGREES WEST
LATITUDE ORIGIN:	0.0 DEGREES
SCALE FACTOR:	0.9996
FALSE EASTING:	500000.0 METERS
FALSE NORTHING:	0.0 METERS



MIN9816 #6

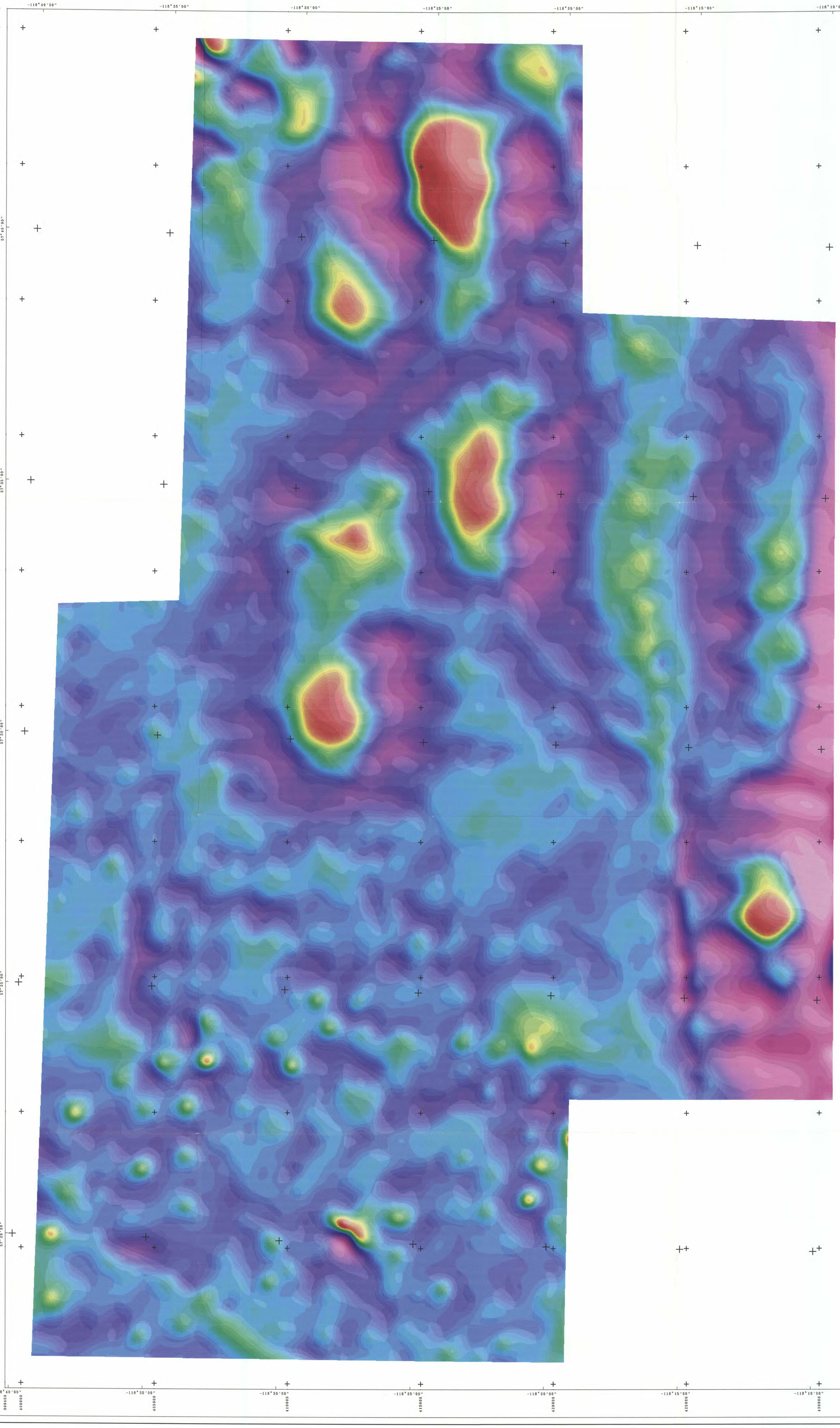
APEX LTD.

CRANBERRY HRAM SURVEY

SPECTRA Exploration Geoscience Corp.

PRELIMINARY MAP
HG/VD combination filter of TMI

Date: 1998-05-19 | ELS Consulting Inc.



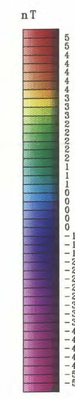
PROCESSING

PRELIMINARY PROCESSING ONLY!
CULTURE SIGNAL NOT REMOVED
PRELIMINARY LEVELLED
WIENER FILTERED (0.09)
REDUCED TO POLE

SHADED RELIEF PARAMETERS

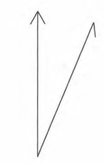
LINEAR STRETCH
SUN ANGLES:
Azimuth: 45 DEGREES
Elevation: 40 DEGREES

nT



Scale 1:50000

1 0 0.5 1 1.5 2 Kilometers
1 0 0.5 1 Miles



56.5N 118W; 500 m; 1998-04-30

Magnetic Field: 59980 nT
Magnetic Inclination: 77.22
Magnetic Declination: 22.75

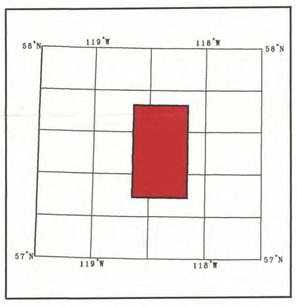
SURVEY PARAMETERS

FLOWN BY: SPECTRA EXPLORATION LTD.

TRAVERSE LINE SPACING: 1000 METERS E/W
CONTROL LINE SPACING: 2000 METERS N/S
FLYING HEIGHT: 100 METERS DRAPE
DATUM: NAD27

PROJECTION PARAMETERS

PROJECTION:	UTM
ELLIPSOID:	CLARKE 1866
UNITS:	METERS
CENTRAL MERIDIAN:	-117 DEGREES WEST
LATITUDE ORIGIN:	0.0 DEGREES
SCALE FACTOR:	0.9996
FALSE EASTING:	500000.0 METERS
FALSE NORTHING:	0.0 METERS



MIN 9816 - #7

APEX LTD.

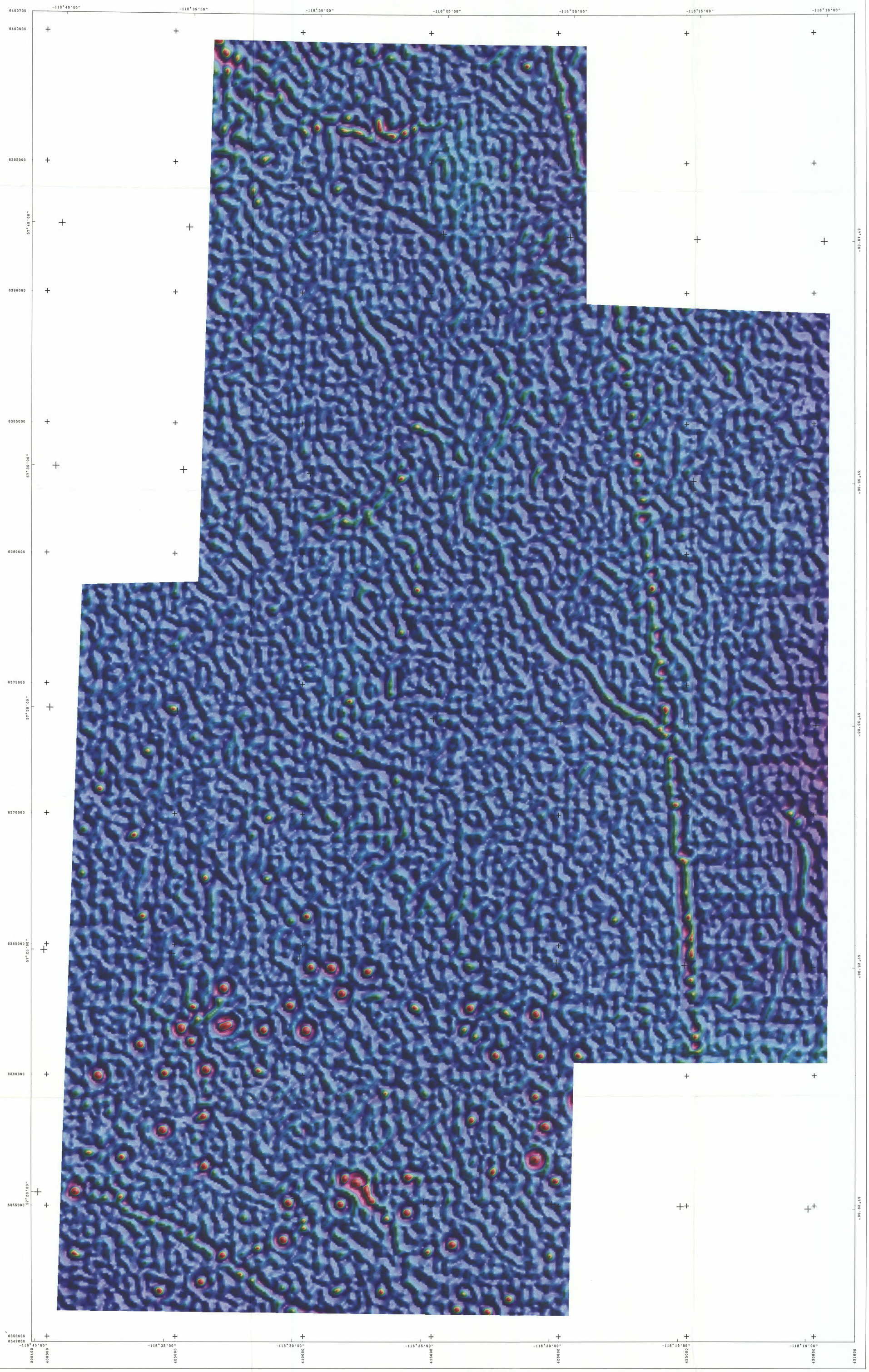
CRANBERRY HRAM SURVEY

SPECTRA Exploration Geoscience Corp.

PRELIMINARY MAP

1.3 - 4.9 km BAND PASS OF TMI

Date: 1998-05-19 | ELS Consulting Inc.



PROCESSING

PRELIMINARY PROCESSING ONLY!
CULTURE SIGNAL NOT REMOVED
PRELIMINARY LEVELLED
WIENER FILTERED (0.09)
REDUCED TO POLE

SHADED RELIEF PARAMETERS

LINEAR STRETCH
SUN ANGLES:
Azimuth: 45 DEGREES
Elevation: 40 DEGREES

nT/m*

500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
-25
-50
-75
-100
-125
-150
-175
-200
-225
-250
-275
-300
-325
-350
-375
-400
-425
-450
-475
-500

Scale 1:50000

1 0 0.5 1 1.5 2 Kilometers
1 0 0.5 1 Miles

56.5N 118W; 500 m; 1998-04-30

Magnetic Field: 59060 nT
Magnetic Inclination: 77.22
Magnetic Declination: 22.75

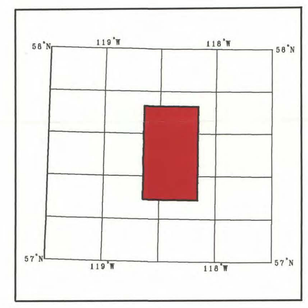
SURVEY PARAMETERS

FLOWN BY: SPECTRA EXPLORATION LTD.

TRAVERSE LINE SPACING: 1000 METERS E/W
CONTROL LINE SPACING: 2000 METERS N/S
FLYING HEIGHT: 100 METERS DRAPE
DATUM: NAD27

PROJECTION PARAMETERS

PROJECTION:	UTM
ELLIPSOID:	CLARKE 1866
UNITS:	METERS
CENTRAL MERIDIAN:	-117 DEGREES WEST
LATITUDE ORIGIN:	0.0 DEGREES
SCALE FACTOR:	0.9996
FALSE EASTING:	500000.0 METERS
FALSE NORTHING:	0.0 METERS



MIN9816 #8

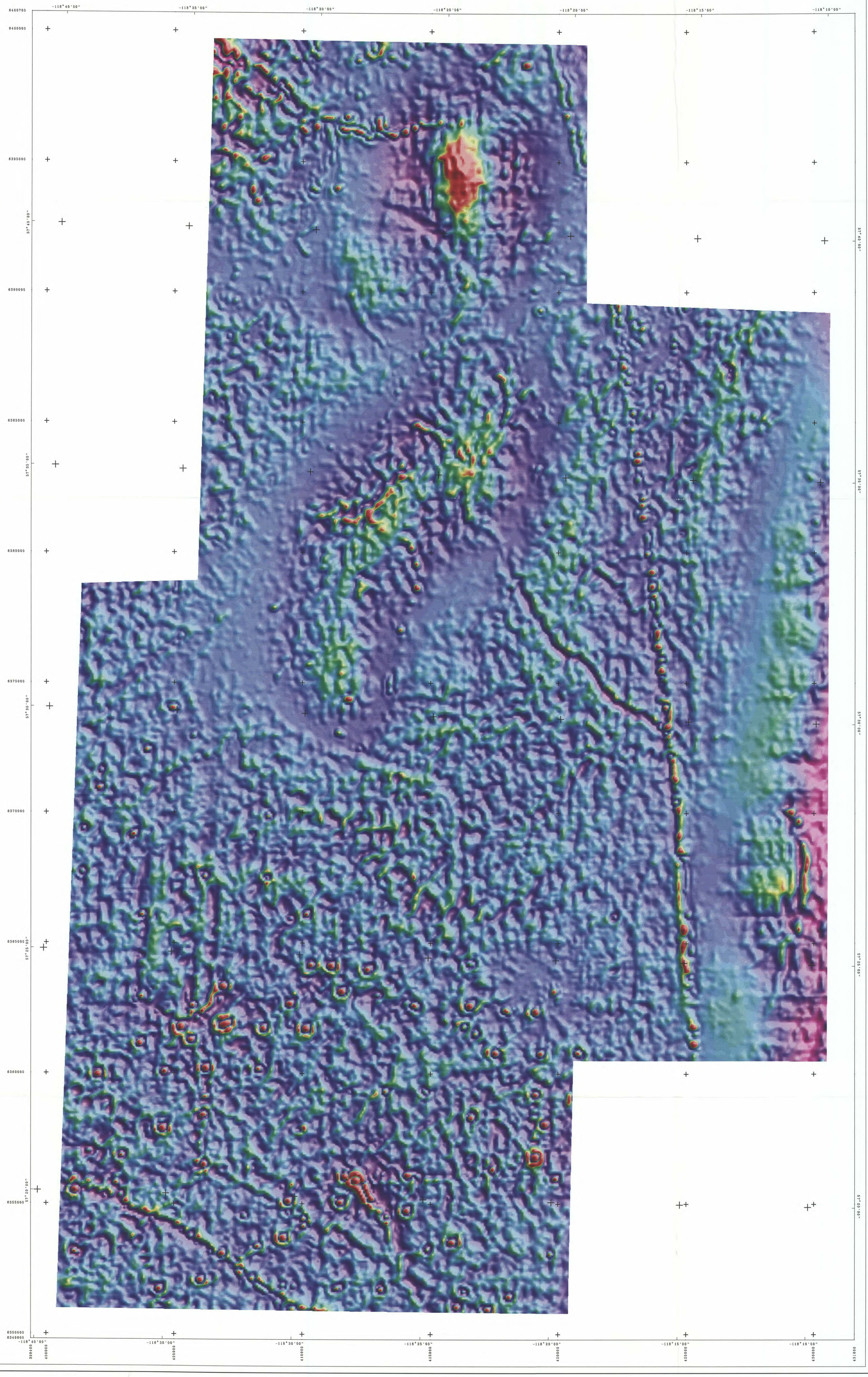
APEX LTD.

CRANBERRY HRAM SURVEY

SPECTRA Exploration Geoscience Corp.

PRELIMINARY MAP
2nd VERTICAL DERIVATIVE OF TMI

Date: 1998-05-19 | ELS Consulting Inc.



PROCESSING

PRELIMINARY PROCESSING ONLY!
CULTURE SIGNAL NOT REMOVED
PRELIMINARY LEVELLED
WIENER FILTERED (0.09)
REDUCED TO POLE

SHADED RELIEF PARAMETERS

LINEAR STRETCH
SUN ANGLES:
Azimuth: 45 DEGREES
Elevation: 40 DEGREES

nT/m*

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 -1 -2 -3 -4 -5 -6 -7 -8 -9 -10 -11 -12 -13 -14 -15 -16 -17 -18 -19 -20

Scale 1:50000

1 0 0.5 1 1.5 2 Kilometers
1 0 0.5 1 Miles

56.5N 118W; 500 m; 1998-04-30

Magnetic Field: 59060 nT
Magnetic Inclination: 77.22
Magnetic Declination: 22.75

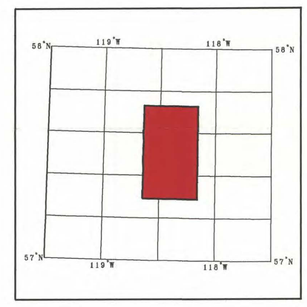
SURVEY PARAMETERS

FLOWN BY: SPECTRA EXPLORATION LTD.

TRAVERSE LINE SPACING: 1000 METERS E/W
CONTROL LINE SPACING: 2000 METERS N/S
FLYING HEIGHT: 100 METERS DRAPE
DATUM: NAD27

PROJECTION PARAMETERS

PROJECTION:	UTM
ELLIPSOID:	CLARKE 1866
UNITS:	METERS
CENTRAL MERIDIAN:	-117 DEGREES WEST
LATITUDE ORIGIN:	0.0 DEGREES
SCALE FACTOR:	0.9996
FALSE EASTING:	500000.0 METERS
FALSE NORTHING:	0.0 METERS



MIN9816 # 9

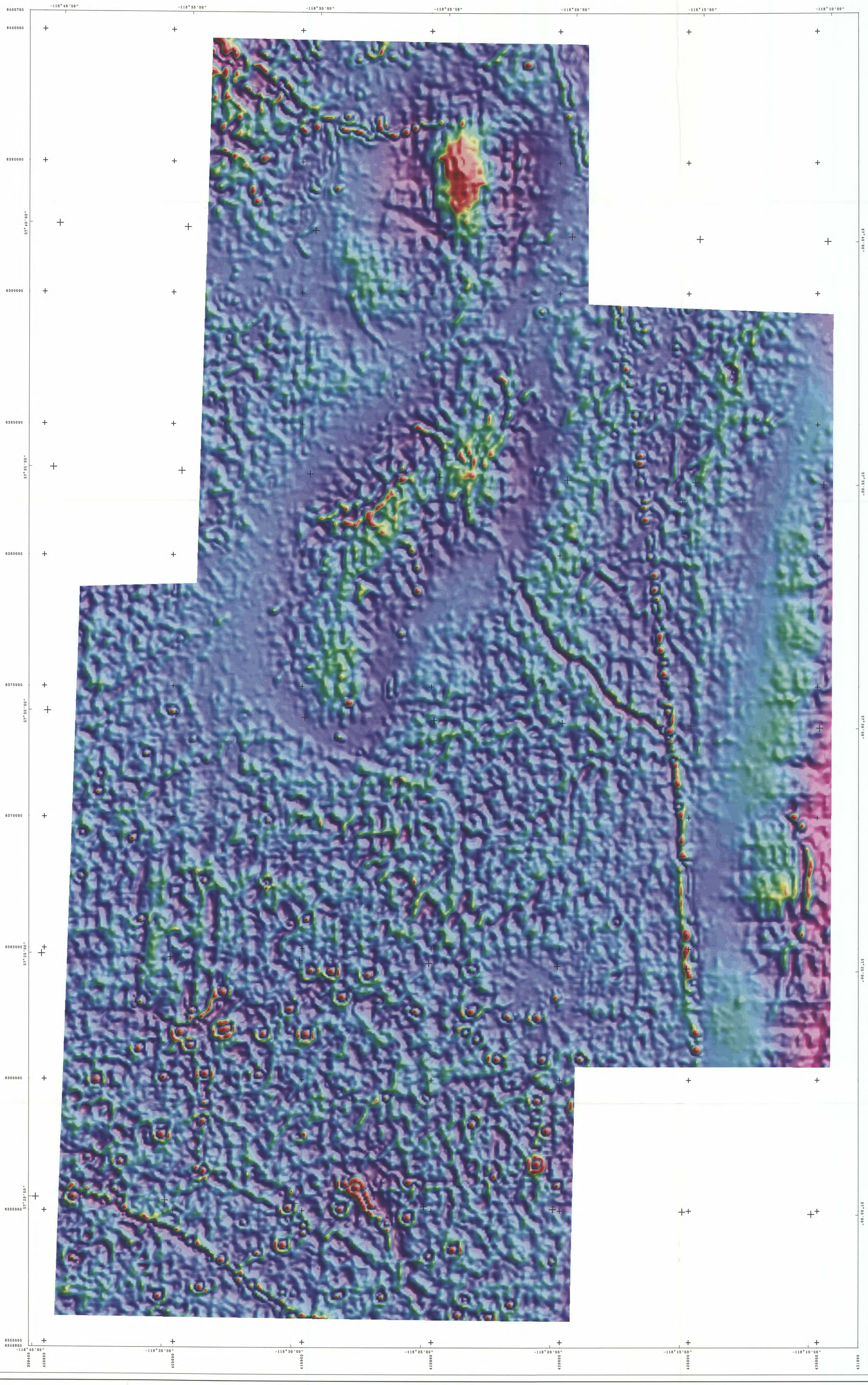
APEX LTD.

CRANBERRY HRAM SURVEY

SPECTRA Exploration Geoscience Corp.

PRELIMINARY MAP
CALCULATED VERTICAL GRADIENT OF TMI

Date: 1998-05-19 | ELS Consulting Inc.



PROCESSING

PRELIMINARY PROCESSING ONLY!
CULTURE SIGNAL NOT REMOVED
PRELIMINARY LEVELLED
WIENER FILTERED (0.09)
REDUCED TO POLE

SHADED RELIEF PARAMETERS

LINEAR STRETCH
SUN ANGLES:
Azimuth: 45 DEGREES
Elevation: 40 DEGREES

nT/m*

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 -1 -2 -3 -4 -5 -6 -7 -8 -9 -10 -11 -12 -13 -14 -15 -16 -17 -18 -19 -20

Scale 1:50000

1 0 0.5 1 1.5 2 Kilometers

1 0 0.5 1 Miles

56.5N 118W; 500 m; 1998-04-30

Magnetic Field: 59060 nT
Magnetic Inclination: 77.22
Magnetic Declination: 22.75

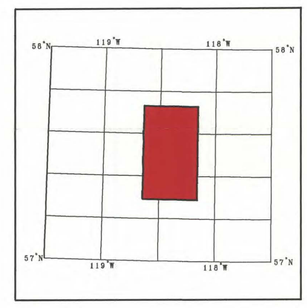
SURVEY PARAMETERS

FLOWN BY: SPECTRA EXPLORATION LTD.

TRAVERSE LINE SPACING: 1000 METERS E/W
CONTROL LINE SPACING: 2000 METERS N/S
FLYING HEIGHT: 100 METERS DRAPE
DATUM: NAD27

PROJECTION PARAMETERS

PROJECTION:	UTM
ELLIPSOID:	CLARKE 1866
UNITS:	METERS
CENTRAL MERIDIAN:	-117 DEGREES WEST
LATITUDE ORIGIN:	0.0 DEGREES
SCALE FACTOR:	0.9996
FALSE EASTING:	500000.0 METERS
FALSE NORTHING:	0.0 METERS



MIN9816 # 9

APEX LTD.

CRANBERRY HRAM SURVEY

SPECTRA Exploration Geoscience Corp.

PRELIMINARY MAP
CALCULATED VERTICAL GRADIENT OF TMI

Date: 1998-05-19 | ELS Consulting Inc.