

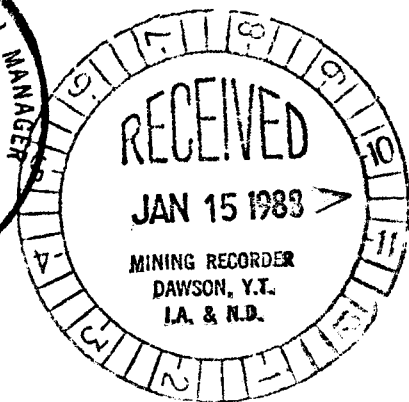
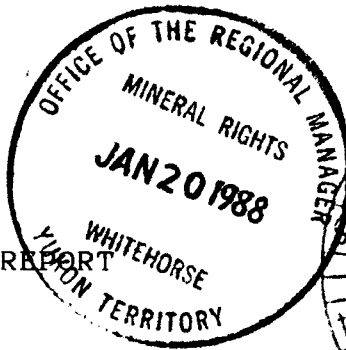
MAP NO. 115 0 6      ASSESSMENT REPORT X  
                          PROSPECTUS  
                          CONFIDENTIAL X  
                          OPEN FILE

DOCUMENT NO.: 092006  
 MINING DISTRICT: DAWSON  
 TYPE OF WORK: Mag. survey, Refraction Seismic

REPORT FILED UNDER: Stetson Resource Management Corp.  
 DATE PERFORMED: October, 1987      DATE FILED: January 20, 1988  
 LOCATION:    LAT.: 63°23'N      AREA: Moosehorn Creek  
                          LONG.: 139°15'W      VALUE \$: 4200.00  
 CLAIM NAME & NO.: RICH 1-21 PLACER CLAIMS

WORK DONE BY: E.T. Pezzot; C.E. Candy (Geoscience Data Analysis Ltd)  
 WORK DONE FOR: Stetson Resource Management Corporation

DATE TO GOOD STANDING	REMARKS:
	PLACER



GEOPHYSICAL REPORT

on a

MAGNETIC AND REFRACTION SEISMIC SURVEY

on the

MOOSEHORN CREEK PROPERTY

NTS 115 0/6

Lat. 63° 23'N Long. 139° 15'W

for

STETSON REOURCE MANAGEMENT CORP.

by

E. Trent Pezzot, B.Sc.

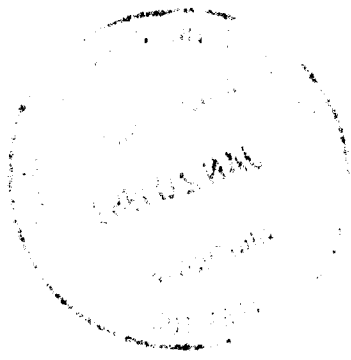
Clifford E. Candy, B.Sc.

GeoSci Data Analysis Ltd.

092006

November 12, 1987

Vancouver, B.C.



This report has been examined by  
the Geological Evaluation Unit  
under Section 53 (4) Yukon <sup>Placer</sup> ~~Quartz~~  
Mining Act and is allowed as  
representation work in the amount  
of \$ ~~FR Min~~ 15,742.88

S.R. Morrison

Regional Manager, Exploration and  
Geological Services for Commissioner  
of Yukon Territory.

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## 1. SUMMARY

Magnetic and hammer seismic surveys were conducted across portions of the Rich claims by Stetson Resource Management Corp. in Oct 1987. Previous exploration of this area indicates a good potential for economic placer gold deposits beneath some 13 feet of gravel overburden. An unusually large amount of black sand was observed in gravel samples taken off bedrock. It was the intention of the seismic survey to determine the depth to bedrock in the area and of the magnetic survey to map black sand and/or bedrock variations.

Useful seismic data was limited to an area some 25 metres by 60 metres. A two layer, critical distance interpretation maps an unconsolidated layer of alluvium averaging 3.6 metres thickness across this area. The basal refractor averages some 3400 m/s apparent velocity, suggesting either a permafrost layer or highly weathered or altered granitic basement.

The magnetic data was relatively noisy, particularly across the western half of the survey grid. The total magnetic field variations were very quiet, varying less than 100 nT across the entire grid, however subtle, line to line correlations were mapped. A small, isolated magnetic high is associated with a black sand accumulation observed in the gravels above bedrock at grid location OE,ON. Two other anomalies of similar size and intensity are mapped within the grid area. A large horseshoe shaped magnetic high dominates the magnetic contour map. A number of interpretations are possible which would explain this response. The most probable is a subtle variation in the bedrock composition. An alteration zone paralleling a buried fault zone or large dispersion train of black sand across the Moosehorn Creek valley are also possible sources of this anomaly.

## 2. INTRODUCTION

GeoSci Data Analysis Ltd. was commissioned by Stetson Resource Management Corp. to process, plot and interpret magnetic and hammer seismic data gathered across the Moosehorn Creek Property some 70 kms south of Dawson City, Yukon Territory. The data was gathered by Stetson Resource Management Corp. personnel in October, 1987 with a Scintrex MP-2 proton precession magnetometer and Hunttec FS-3 single channel seismic recorder. Total field magnetic intensities and time/distance measurements were recorded during the course of this survey.

Two shafts were sunk from surface to bedrock, approximately 450 metres from the confluence of Moosehorn and Henderson Creeks in 1984. Significant coarse gold was recovered from gravel samples gathered off bedrock to warrant continued exploration. An unusually large amount of black sand was observed in these samples which suggests that detailed magnetic data might be used as an effective mapping tool.

It was the intention of this survey to map the depth to bedrock and any accumulations of black sand in order to direct future sampling of the area.

## 3. LOCATION AND ACCESS

The Rich claims lie along Moosehorn Creek, a left limit tributary of Henderson Creek, 70 kms. south of Dawson City, Yukon Territory in NTS 115-0/6. The approximate geographical coordinates are latitude 63° 23'N and longitude 139° 15'W (Figure 1).

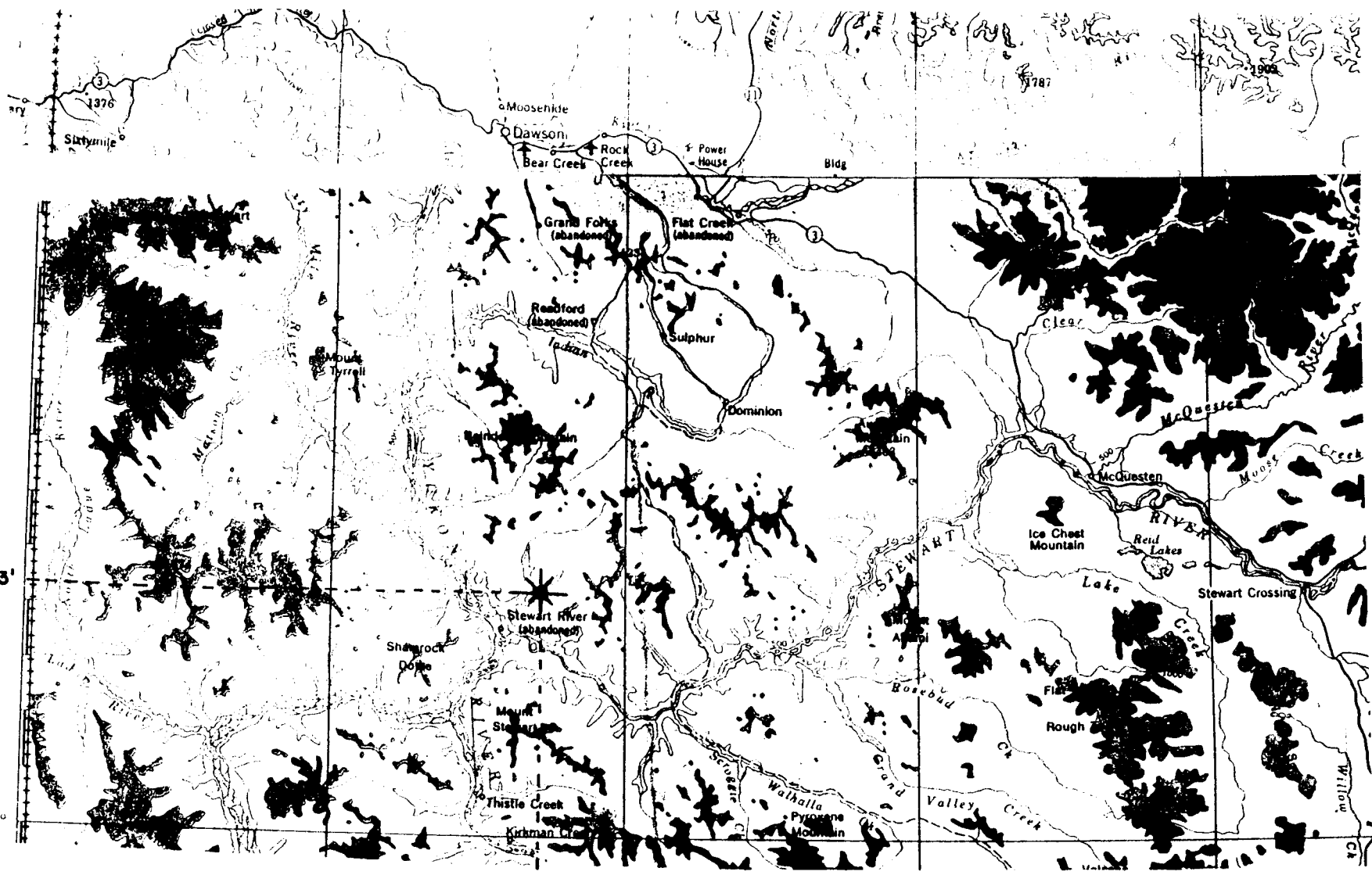
Access to the property is available via an unimproved dirt road from Granville, via Eureka and Black Hills Creeks, over Henderson Dome and down the right fork of Henderson Creek. This road runs down the west side of Henderson Creek, within 500 feet of Moosehorns' mouth, but there is no access other than a foot trail up Moosehorn Creek itself.

## 4. PROPERTY

The following information has been copied from a report prepared for Queenstake Resources Ltd. by A. Woodsend, dated January, 1985.

"In 1983, Bill Preston staked a 2 mile prospecting lease, number PL6884 and a 1500 foot claim, number P24578. In October, 1984 the lease was staked into claims P27989 through P28009, all of which have an assessment due date of 12 October, 1985. The original claim P24578 was restaked as claim P27814, with a due date of 31 August, 1985."

It is the authors' understanding that these claims (Figure 2) have been optioned by Stetson Resource Management Corp. from McRory Holdings Ltd. and Lance Steigenberger. The authors have not confirmed the status of these claims.



**STETSON RESOURCE  
MANAGEMENT CORP.**

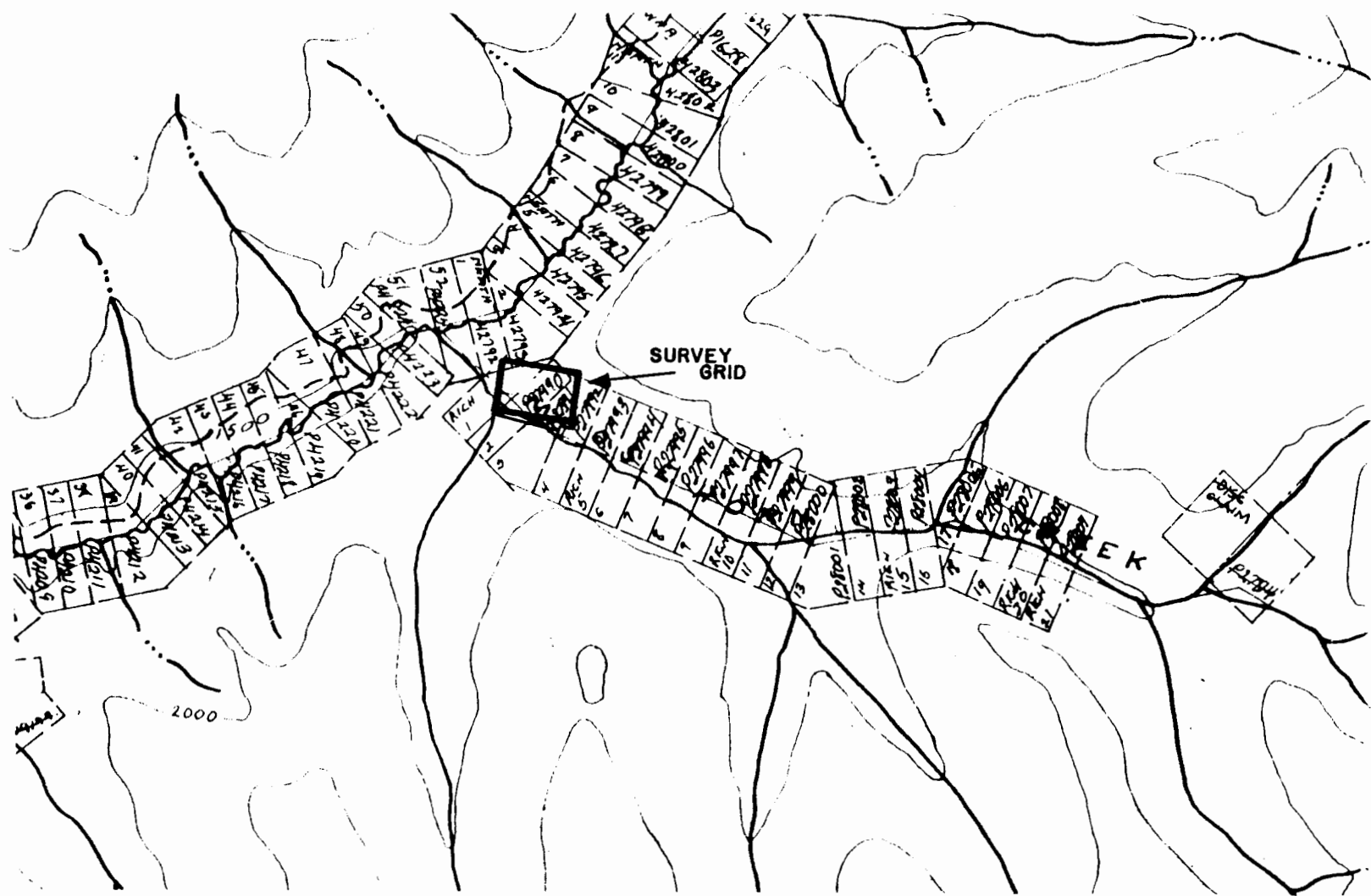
**MOOSEHORN CREEK PROJECT**

**LOCATION MAP**

**DATE: NOV. 10, 1987      FIG: 1**

**GeoSci Data Analysis Ltd.**

**MAP SCALE: 1:1000000**



**STETSON RESOURCE  
MANAGEMENT CORP.**

**MOOSEHORN CREEK PROJECT**

**CLAIM MAP**

**DATE: NOV. 10, 1981**

**FIG: 2**

**GeoSci Data Analysis Ltd.**

**MAP SCALE: 1:31600**

**092006**



## 5. GEOLOGY

The Canadian Department of Mines and Resources map 711A illustrates the general geological environment of Moosehorn Creek. The applicable portion of this map is reproduced as Figure 3 of this report. The survey area is shown as being underlain by Precambrian and later gneissic granite. A number of Tertiary and modern stream deposits parallel Henderson Creek and may pass through the Rich claims. Yukon Group limestone is mapped at the headwaters of Moosehorn Creek.

## 6. HISTORY AND PREVIOUS WORK

In the winter of 1898-1899 many stampeders stayed at Stewart River, the settlement at the mouth of Henderson Creek, and prospected the surrounding area thoroughly. Many claims were staked on Henderson Creek and its' tributaries, including a total of 16 claims on Moosehorn Creek. Evidence of the early activity on Moosehorn Creek can still be seen. There are remains of several cabins and shafts and an open cut near the 1984 shafting location. Since the turn of the century the creek appears to have been abandoned.

The property was restaked in 1983 and again in 1984. Under the terms of an agreement between McCrory Holdings (Yukon) et al and Queenstake Resources Ltd., Queenstake undertook a preliminary exploration program in July, 1984 which consisted of sinking two shafts on Moosehorn Creek and sampling the gravel off bedrock. Grades of 0.053 and 0.022 raw oz Troy per cu. yd. were recovered from these shafts. The gold was fairly coarse and an unusually large amount of 'black sand' was observed in both samples.

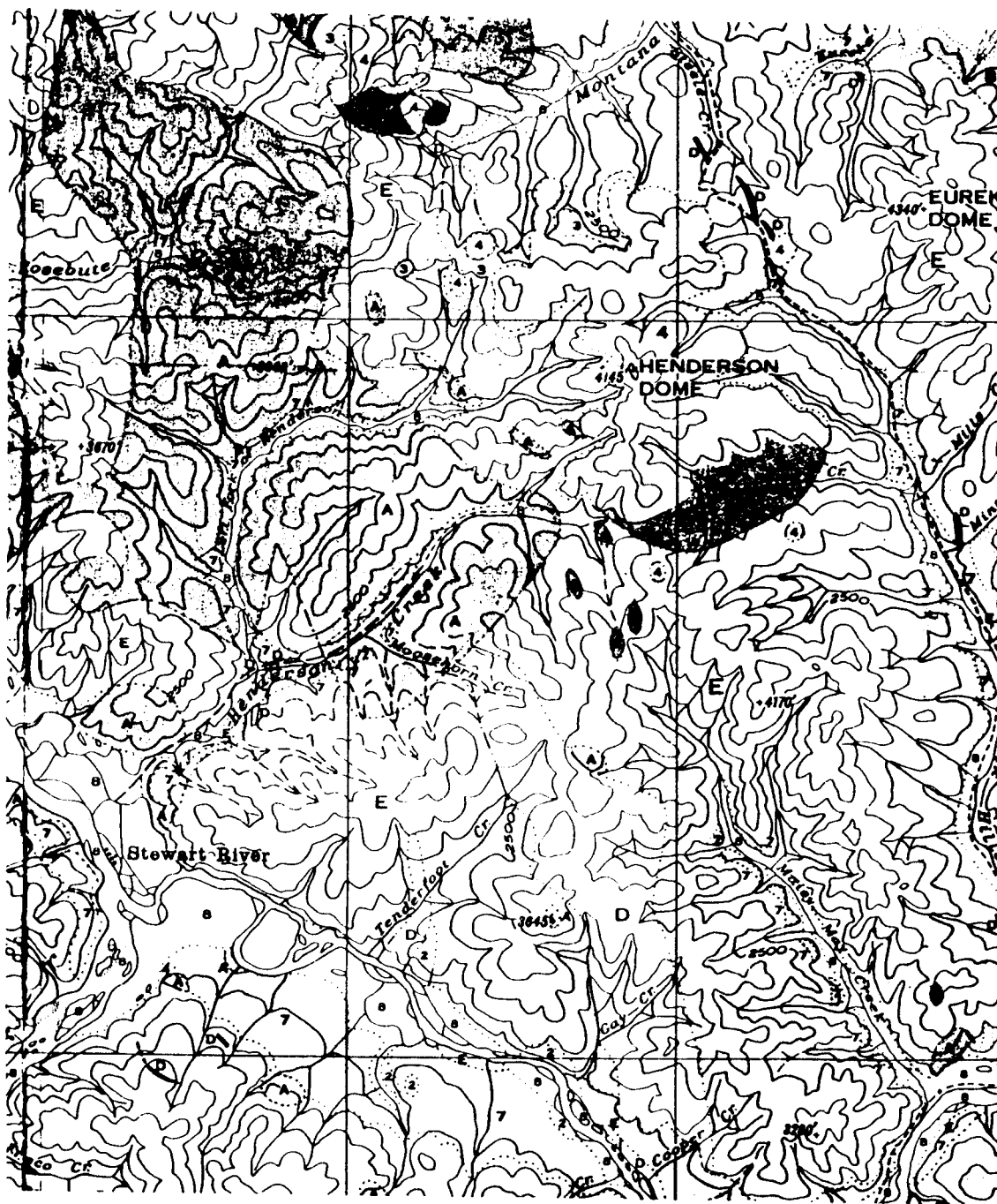
No other production or exploration of this property is known of by the authors.

## 7. GEOPHYSICAL SURVEY


A survey grid baseline was started at Queenstakes' number 1 pit and extended for 400 metres at 116°. Cross lines of varying length were spaced on 10 metre centres along this baseline and stations flagged at 5 metre intervals along each line. Survey lines were numbered OE through 400E and stations labelled N and S from the established baseline.

Each station was occupied with the Scintrex MP-2 magnetometer and the total field magnetic intensity recorded. A base station was established at grid location OE, ON and sub-base stations along the baseline at 100E, 200E and 300E. Diurnal variations were monitored by looping survey lines back to these sub-base stations.

Hammer refraction seismic surveying was conducted on lines 90E through 150E, stations 25N through 95N.



PRECAMBRIAN  
AND  
LATER

- A** Chiefly gneissic granite
  - B** Klondike schist: sericite schist, minor chlorite schist
  - C** Gabbro, pyroxenite, peridotite; serpentine
  - D**  Limestone
  - E** Gneiss, quartzite, schist, slate
- } YUKON GROUP

**STETSON RESOURCE  
MANAGEMENT CORP.**

---

**MOOSEHORN CREEK PROJECT**

---

**GEOLOGY MAP**

---

DATE: NOV. 10, 1981      FIG: 3

## 8. DATA PROCESSING

### 8.1. Seismic

Huntec FS-3 field records of unfiltered seismic refraction profiles were provided to GeoSci Data Analysis Ltd. First break arrival times were picked and plotted on time/distance graphs. These data were used for a critical distance method, two layer case interpretation.

Calculated values of apparent first layer velocity, apparent second layer velocity and apparent depth to second layer are posted in plan format.

### 8.2. Magnetic

The magnetic data was presented to GeoSci Data Analysis Ltd. as field notes with three readings per station and times recorded at each loop to the applicable sub-base station. The data gathered along lines 0E through 100E is considered noisy, with variations of as much as 40 nT being recorded between the three readings for any given station. The data quality gradually improves enough that it is considered to be reliable by line 200E. Using the median of the three readings at each station was considered the most reliable method of analyzing this data.

Reading times were not recorded at each station but rather at each return to the base or sub-base. Diurnal corrections were calculated by dividing the length of time between successive trips to the sub-base stations by the number of stations occupied during this interval. This is not the optimum method of removing diurnal variations since it assumes an equal length of time is required to take readings, travel between stations and travel from the sub-base station to the survey line. The noise and diurnal variations observed on the western portion of the survey grid (0E to 100E) is significant and the data in this area is considered questionable. Noise levels across the eastern half of the grid (200E to 400E) are more subdued and not serious.

Two dimensional filtering has been used as a tool to highlight specific trends observed in the diurnally corrected data. The data has been "gridded" to varying degrees by a weighted ellipse with the size and alignment necessary to highlight trends with preferred strike and/or size characteristics.

Two methods of displaying the magnetic data are employed. The first is the stacked profile where individual survey lines are profiled and aligned in plan format. The second method of display is false-color contour format. Areas of similar magnetic intensity are assigned the same colors and displayed in plan.

## 9. DISCUSSION OF RESULTS

Magnetic intensities were recorded at 1269 stations within a grid approximately 400 metres east-west by 200 metres north south. Diurnal variations were calculated from looping to base stations established within the grid and have been applied prior to plotting. The magnetic intensities are presented in two formats: stacked profiles at a scale of 1:1000 (Figure 4) and false color contour maps (Figures 5A,5B,5C) at a scale of 1:2000.

The refraction seismic information was gathered across a small portion of this grid. The interpreted apparent first layer velocity, apparent second layer velocity and apparent depth to second layer values are posted on Figures 6 to 8 inclusive in the text of this report.

### 9.1. Seismic Refraction Survey

A limited seismic refraction survey was undertaken using a Huntec FS-3 single channel system. The area in which data was obtained is bounded by lines 90E and 150E and by stations 25N and 95N. Apart from line 150E, no use may be made of the data in the north half of the surveyed block, due to operational difficulties.

The data obtained is fairly noisy but enough information is present to allow a critical distance method, two layer case interpretation. The first layer averages 380 metres per second apparent velocity, typical of unconsolidated alluvium. This layer overlies a higher velocity basal refractor averaging 3400 metres per second apparent velocity. This apparent velocity is low by comparison to that expected of a granite, which would occur in the range of 6000 to 8000 metres per second. The refractor velocity may originate in a permafrost layer of which 3400 metres per second would be a characteristic apparent velocity. Alternately, the basal refractor may be highly weathered or altered granitic rock.

The first layer averages 3.6 metres thickness over the survey area. Due to the low quality of the data, little inference can be made from the spatial variation of the observed depths, apart from the suggestion of a slight increase in depth to the east. No allowance for possible hidden layers was made in this interpretation.

### 9.2. Magnetic Survey

Figure 5A is a false color representation of the diurnally corrected magnetic intensities recorded across the subject grid. The data values fall within a 100 nT window from 57546 nT to 57643 nT. Although the variations are relatively subtle, distinct trends are observed. The color map (Figure 5A) is dominated by a large, horseshoe shaped magnetic high centred about line 200E with relatively quiet background values observed to grid northeast and southeast. To the west of line 100E, the magnetic data is more variable, with a number of small high and low anomalies randomly dispersed.

Two orientations of magnetic lineations dominate the area. The more regional trend is towards grid east as exhibited by the magnetic high centred about station 75N, which forms the backbone of the large horseshoe shaped anomaly. The second orientation is grid 15° and is observed in most of the smaller anomalies. This orientation is also reflected by high gradient lineations centred near lines 100E, 200E and 300E. These trends suspiciously coincide with the locations of the sub-base stations used to correct the data for diurnal variations and should be considered questionable.

Two dimensional filtering was applied to highlight the above mentioned features. The magnetic data was processed through an elliptically shaped filter with a north radius of 8 metres and east radius of 40 metres, skewed at grid 0°. This enhanced the large scale, east-west trends in the data (Figure 5B). The data was also processed through a filter with radii of 20 metres (north) and 8 metres (east), skewed towards grid 20° to highlight the smaller, northerly striking magnetic trends (Figure 5C). A number of lineations are evident in this display which were not readily observed in the raw data.

#### 9.2.a. Local Anomalies

One of the primary goals of this magnetic survey was to detect any local placer accumulations of black sand (magnetite). At a suspected depth of 3-4 metres (assumed from both shafting and seismic information), placer target bodies either formed as narrow sandbars or small, isolated pods would be reflected by magnetic highs 6 to 8 metres across with an intensity relative to the concentration of magnetite. One such anomaly is observed oriented along the baseline from OE to 50E. This is likely related to the black sand observed in the Queenstake shaft located at grid position OE,ON. Similar sized, relative magnetic highs are observed across the entire grid, within both higher and lower magnetic backgrounds. Two of these other anomalies: one located on the north ends of lines 50E and 60E and the other on lines 320E through 360E near station 50N, are also similar in terms of the absolute magnetic intensity observed.

#### 9.2.b. Grid Scale Anomalies

The large scale responses are most clearly evident on filtered contour maps (Figs 5B,5C) and can be interpreted in two main ways: a large and isolated horseshoe shaped magnetic high or a series of parallel lineations striking at 035° (true) which intersect a single magnetic high lineation striking 116° (true).

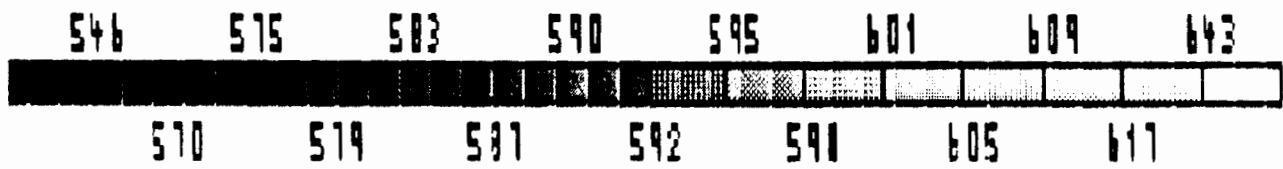
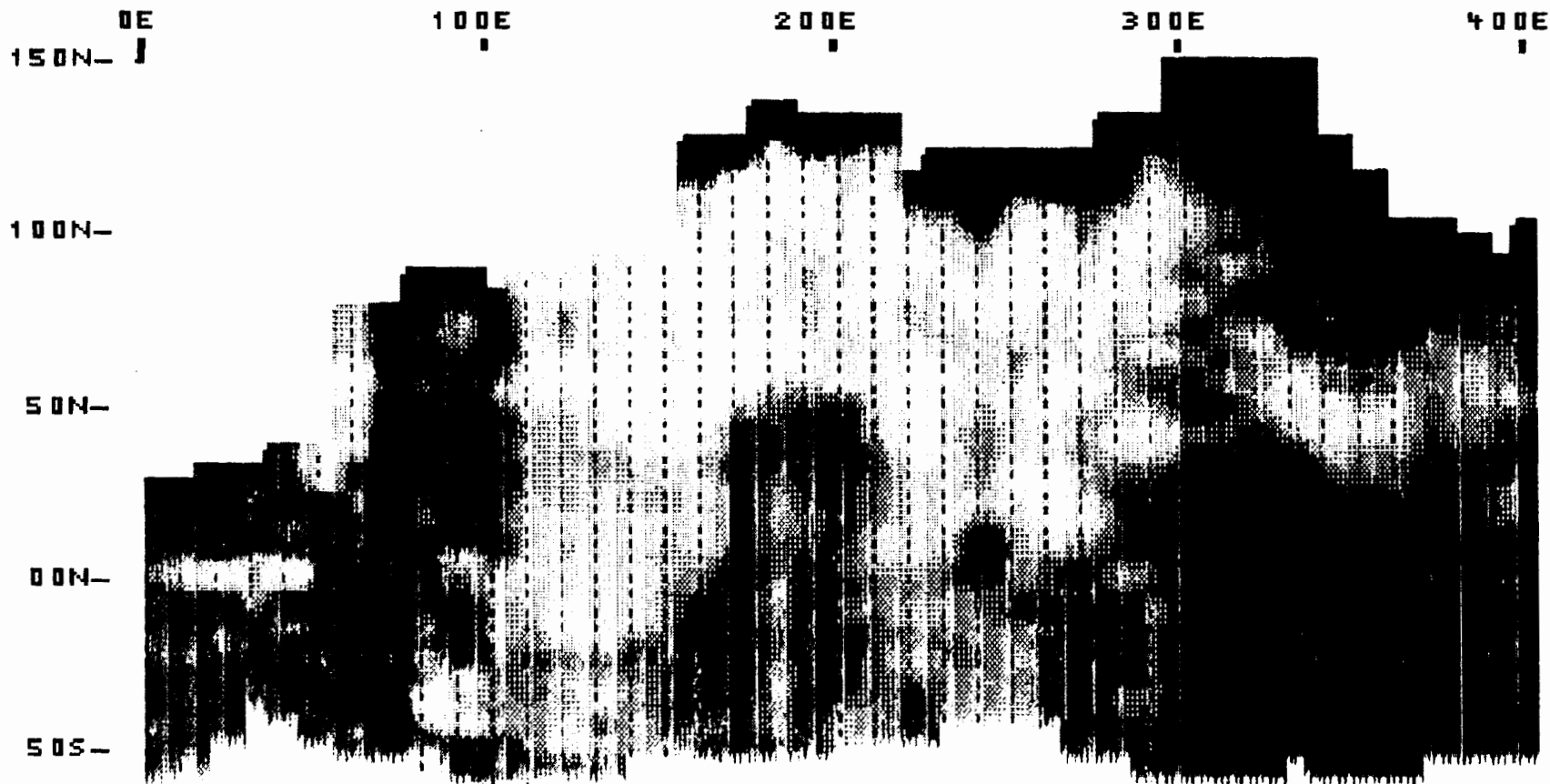
The horseshoe shaped magnetic high is flanked by smaller highs to grid east and west and can be approximated by a number of different geological models.

Variations in the bulk magnetic susceptibility of the bedrock are the most likely cause of this anomaly. The range of magnetic susceptibilities normally observed in granite gneiss can easily account for the amplitude of this magnetic anomaly. This suggests that a change between common lithological variations of the country rock as a possible source.

Considering a black sand placer at a depth of some 3-5 metres as a causitive source suggests that the magnetite must be dispersed in a train approximately 150 metres long and 60 metres wide, paralleling Moosehorn Creek. This would suggest that Moosehorn Creek is presently some 150 metres south of its' location at the time of the magnetite deposition.

This anomaly could also be generated by an isolated body of higher magnetic susceptibility material, buried at approximately 30 to 45 metres depth. This infers the presence of a distinct geological contact and/or structural feature.

The horseshoe shaped anomaly may also be thought of as a series of alternating magnetic high and low bands, striking towards grid 10° which intersect an east-west trending structure. A weakly magnetized alteration zone in an area of fault intersections could generate this resonance. It is unlikely that the magnetic lineations are accurately indicating variations in the depth to bedrock.



**STETSON RESOURCE  
MANAGEMENT CORP.**

**MOOSEHORN CREEK PROJECT**

TOTAL FIELD MAGNETICS COLOR CONTOUR MAP

2D FILTER: 10E\*5N\*0°  
MAGNETIC BASE VALUE: 51000nT  
INSTRUMENT: SCINTREX MP-2

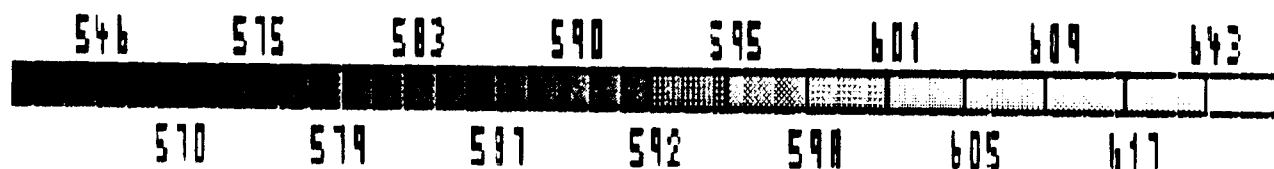
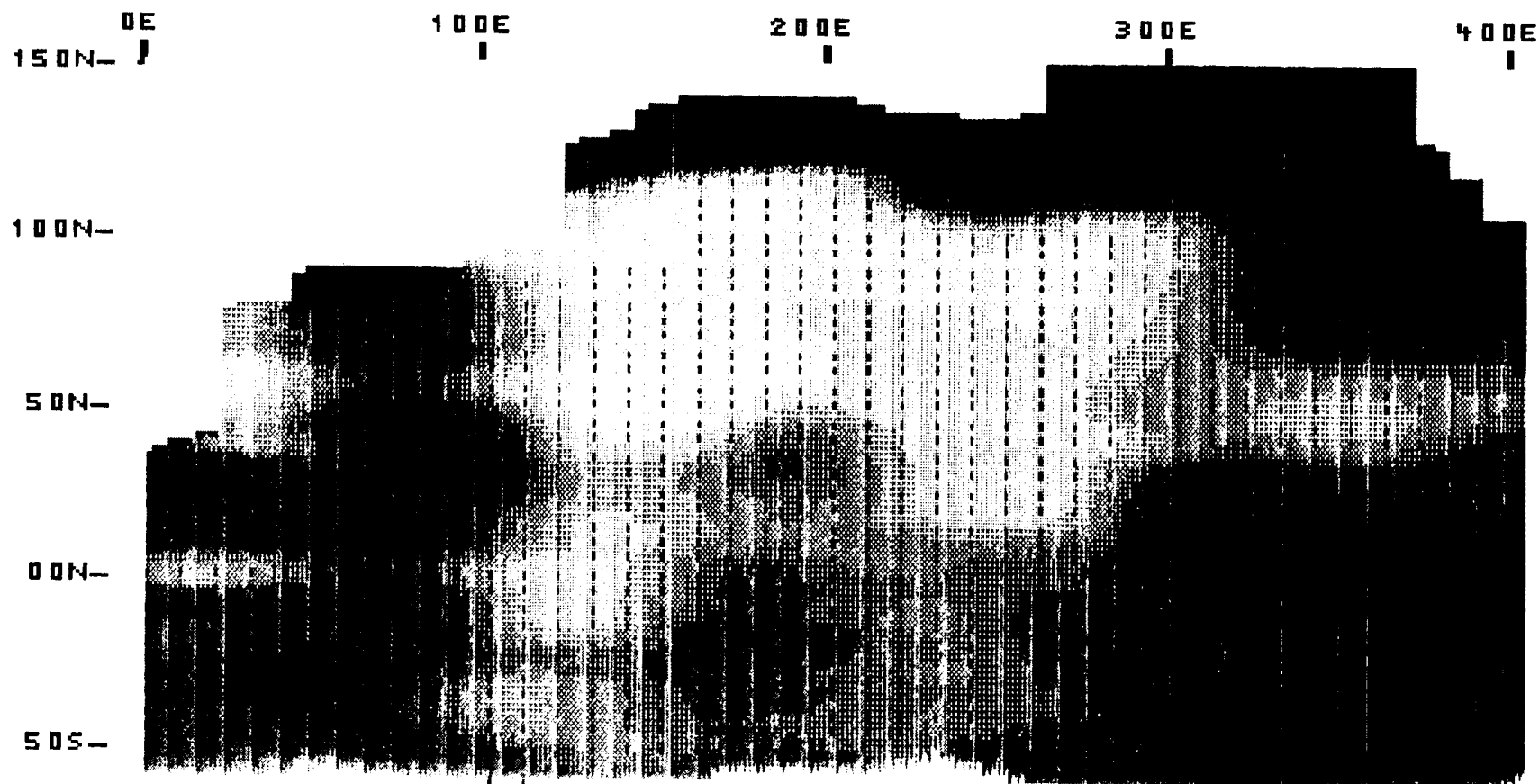
**GeoSci Data Analysis Ltd.**

MAP SCALE: 1:2000

DATE: NOV. 10, 1981

FIG: 5A

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**STETSON RESOURCE  
MANAGEMENT CORP.**

**MOOSEHORN CREEK PROJECT**

TOTAL FIELD MAGNETICS COLOR CONTOUR MAP

2D FILTER : 40E\*8N\*0°  
MAGNETIC BASE VALUE : 51000nT  
INSTRUMENT : SCINTREX MP-2

**GeoSci Data Analysis Ltd.**

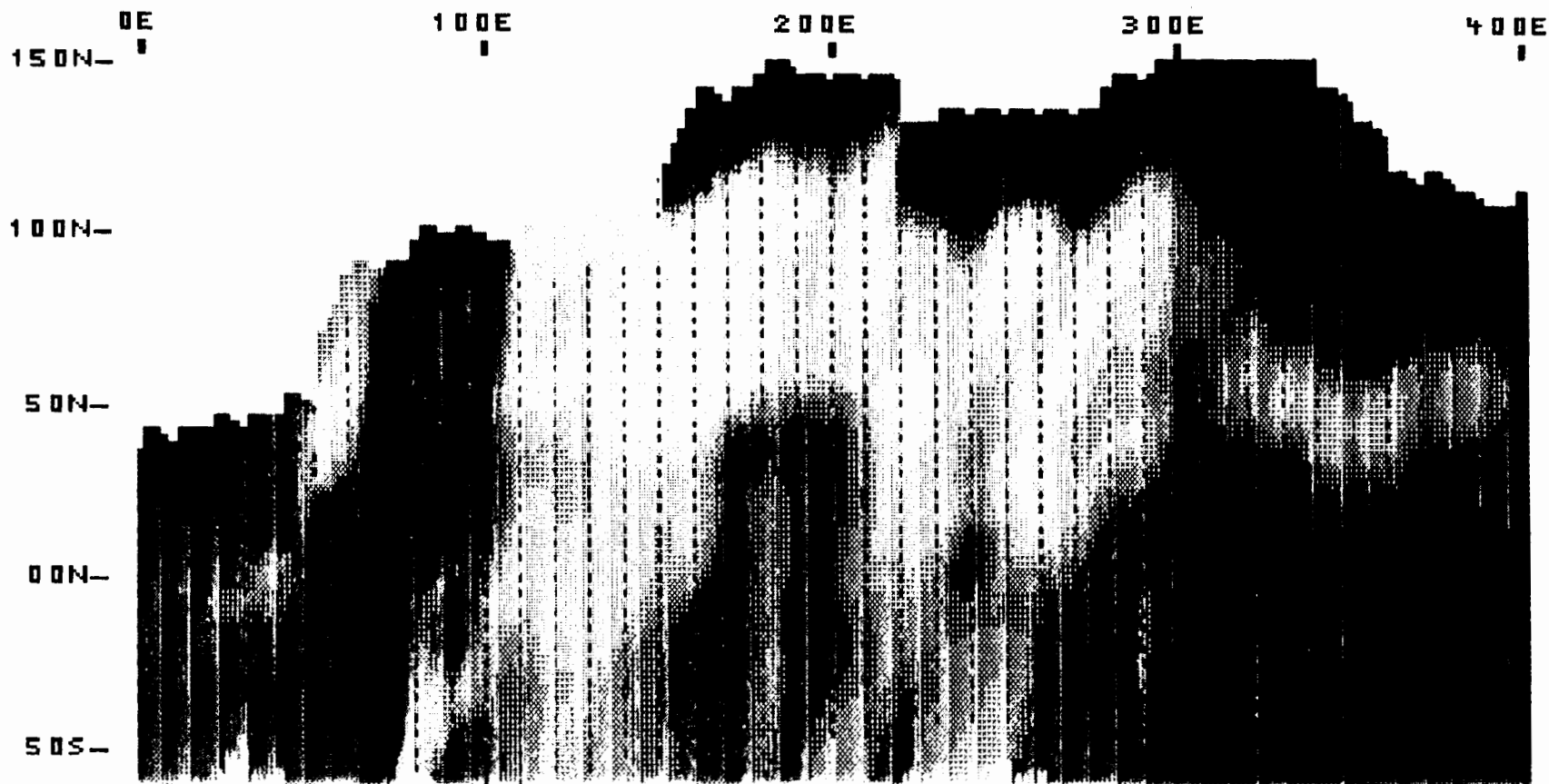
MAP SCALE : 1:2000

DATE : NOV. 10, 1981

FIG : 5B

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2D FILTER: 0E\*20N\*20"  
 MAGNETIC BASE VALUE: 51000nT  
 INSTRUMENT: SCINTREX MP-2

**STETSON RESOURCE  
 MANAGEMENT CORP.  
 MOOSEHORN CREEK PROJECT**

TOTAL FIELD MAGNETICS COLOR CONTOUR MAP

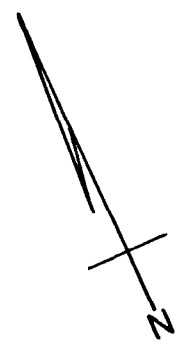
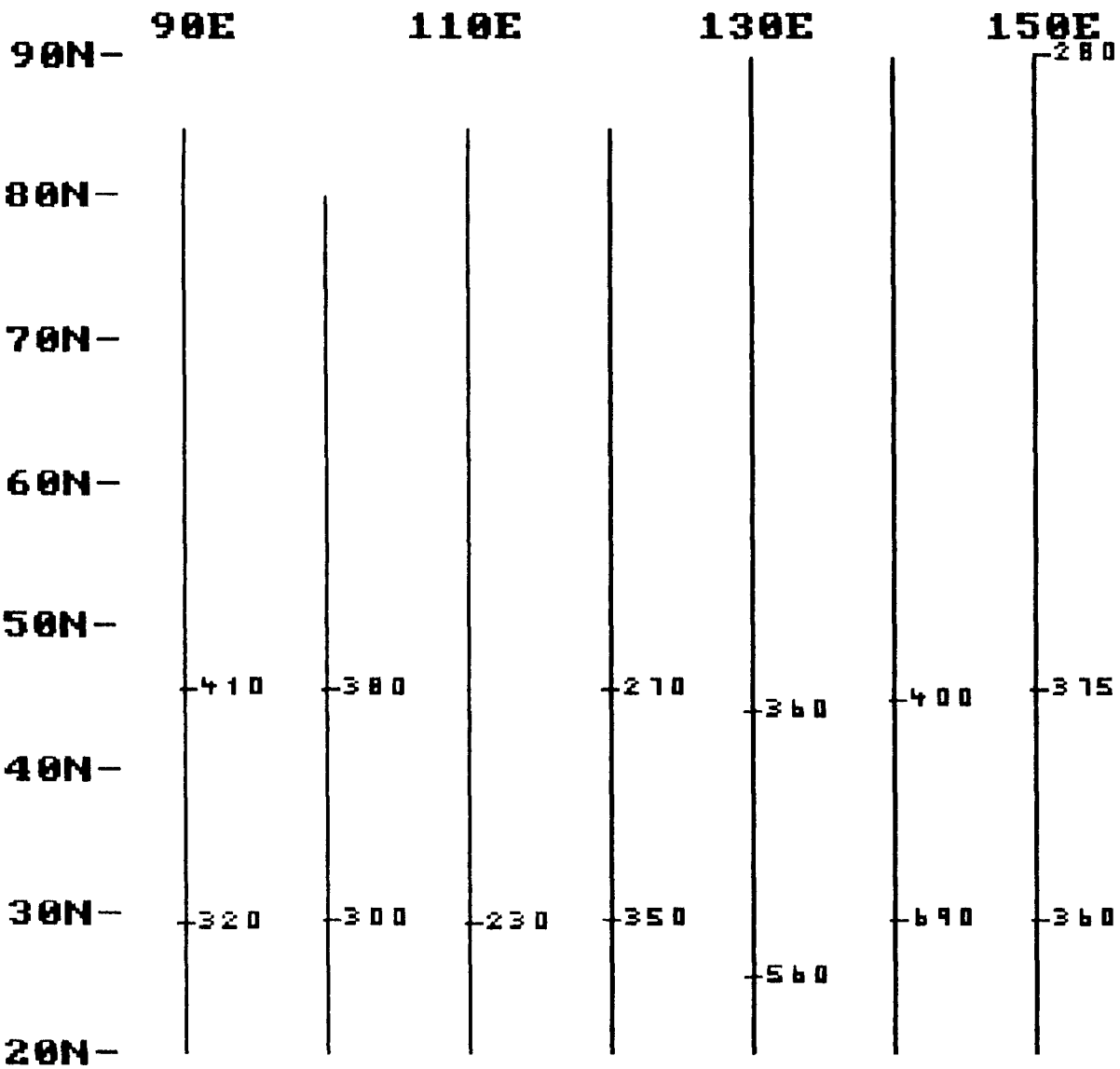
**GeoSci Data Analysis Ltd.**

MAP SCALE: 1:2000

DATE: NOV. 10, 1987

FIG: 5C

002006



**KEY**

INSTRUMENT - HUNTEC FS-3  
 MAP SCALE 1:500

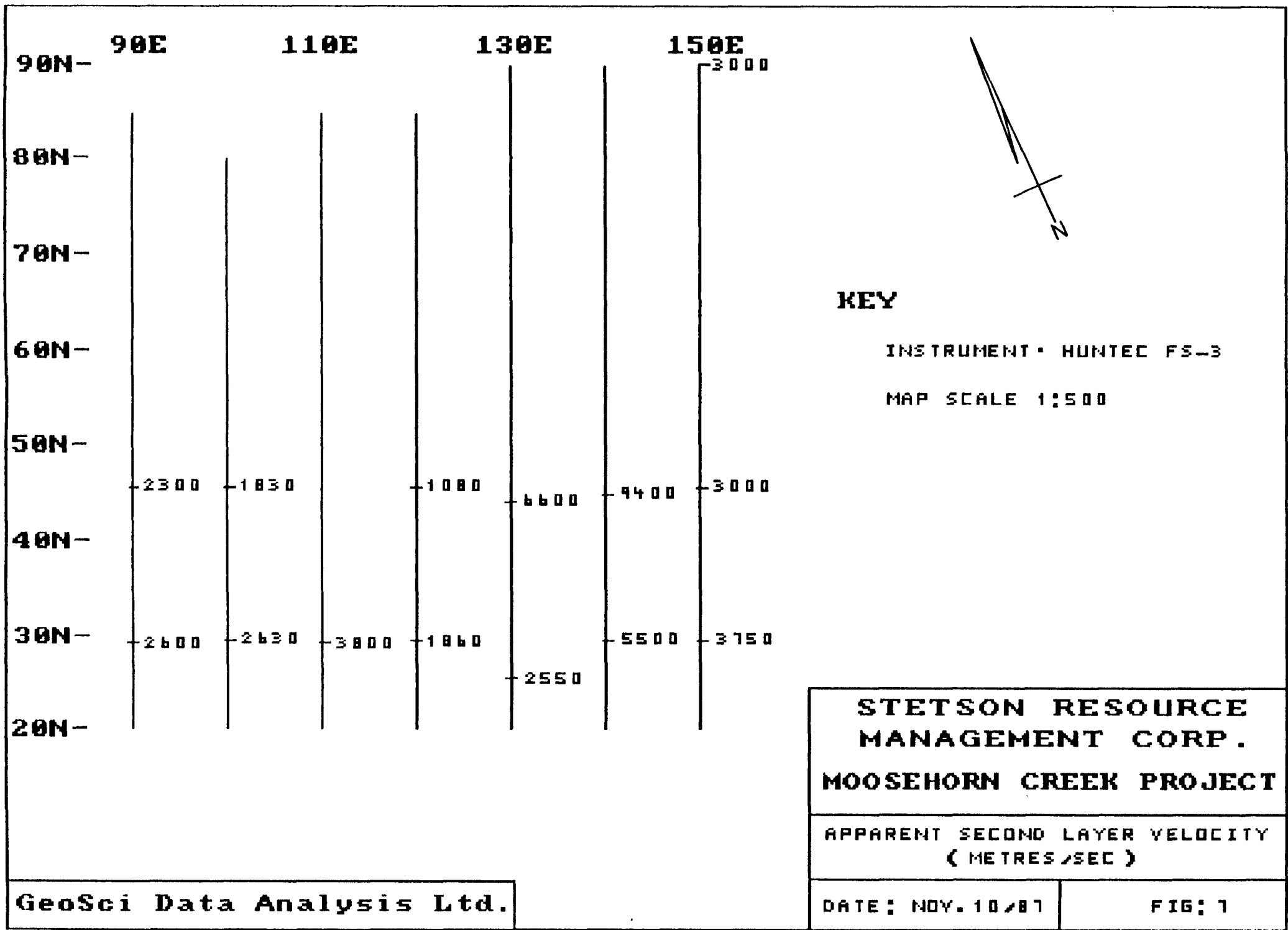
**STETSON RESOURCE  
 MANAGEMENT CORP.  
 MOOSEHORN CREEK PROJECT**

APPARENT FIRST LAYER VELOCITY  
 ( METRES/SEC )

DATE: NOV. 10/81

FIG: 6

GeoSci Data Analysis Ltd.



**KEY**

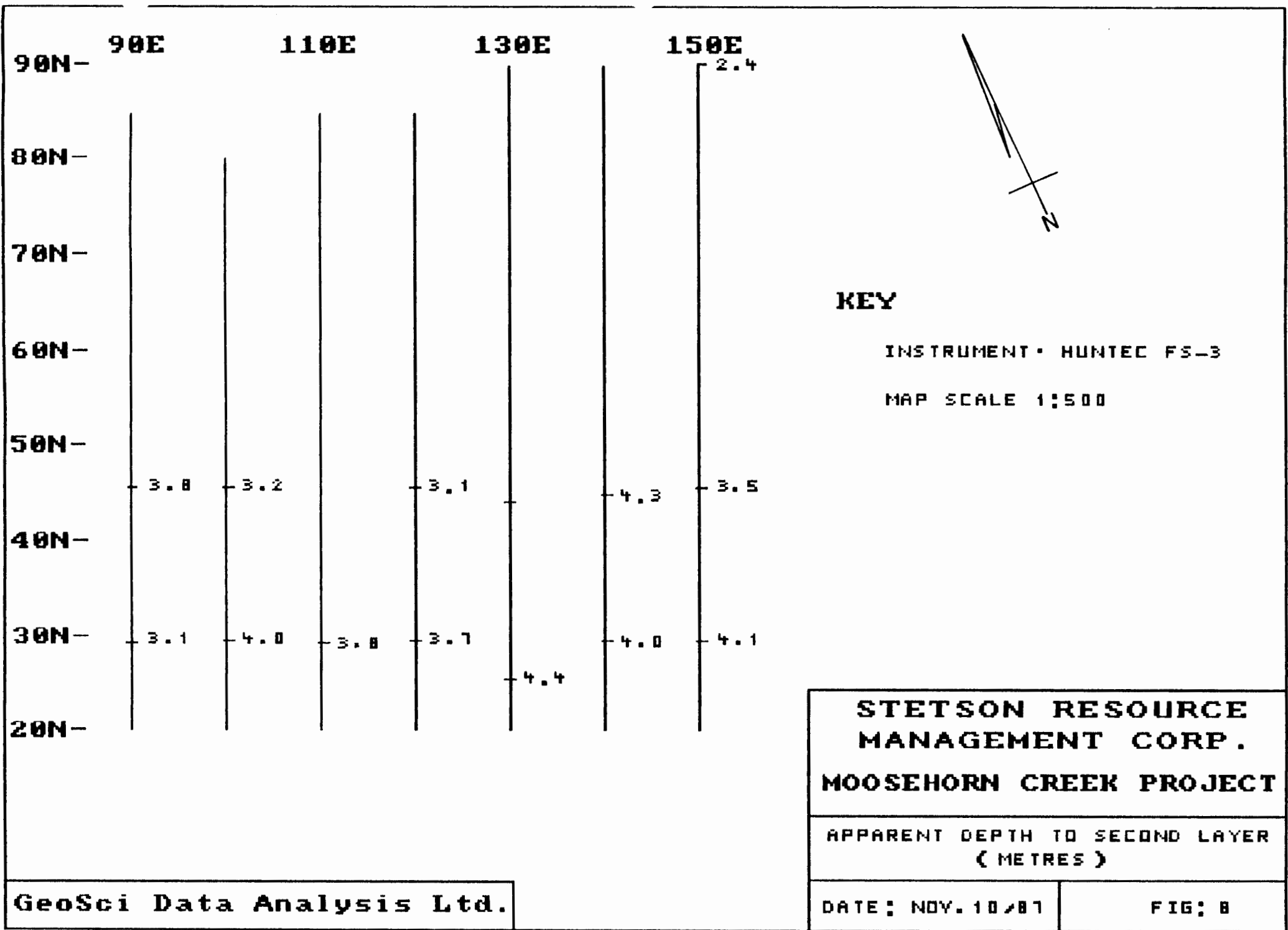
INSTRUMENT • HUNTEC FS-3  
 MAP SCALE 1:500

**STETSON RESOURCE  
 MANAGEMENT CORP.  
 MOOSEHORN CREEK PROJECT**

APPARENT SECOND LAYER VELOCITY  
 ( METRES / SEC )

DATE : NOV. 10/81      FIG: 1

GeoSci Data Analysis Ltd.



GeoSci Data Analysis Ltd.

## 10. CONCLUSIONS

Although the seismic survey was limited in this episode of work, the technique is shown to be useful in delineating the unfrozen, unconsolidated alluvium thickness as averaging 3.6 metres within the surveyed area. This is due to ample velocity contrast between this layer and the underlying refractor. Should shallow sourced permafrost be encountered elsewhere on the property, this condition would not be met and the survey approach would have to be altered. It is possible under these conditions the seismic refraction approach would not be useful.

The magnetic data was relatively flat across the survey grid but subtle variations were observed which could be generated from a number of different geological environments. Geological input is required to determine which of the various interpretations is the most probable.

## 11. RECOMMENDATIONS

This data could be further analyzed by modelling techniques however considering the relatively high noise factors observed in the data set, this is not advisable. The source of the high magnetic anomalies should be resolved by direct geological investigations of the bedrock geology in the anomalous areas. This will likely involve the removal of 3 to 5 metres of overburden in selected areas.

Should the sources of the magnetic highs be traced to various concentrations of black sand, a systematic sampling of the trends outlined here as well as an extension to the magnetic survey will be warranted.

An extension of the seismic survey may be useful in mapping buried bedrock channels.

Respectively submitted,



E. Trent Pezzot, BSc.  
Geology, Geophysics



Clifford E. Candy, BSc.  
Geophysics

CERTIFICATION

I, E. TRENT PEZZOT, of the City of Richmond, Province of British Columbia, hereby certify as follows:

- I am a principal of GeoSci Data Analysis Ltd., a company incorporated under the laws of the Province of British Columbia.
- The Richmond office of GeoSci Data Analysis Ltd. is located at 3740 Lockhart Road, Richmond, B.C.
- I graduated from the University of British Columbia in 1974 with a BSc. degree in the combined honors Geology and Geophysics program.
- I have practiced my profession continuously from that date.
- I hold no interest, direct or indirect, in Stetson Resource Management Corp. or any of its' affiliates, nor do I expect to receive any.
- I consent to the use of this report or the information contained within it, provide the context is not changed to alter the intended meaning, in or in connection with a Prospectus or in a Statement of Material Facts.



E. TRENT PEZZOT  
BSc. Geophysics/Geology

Nov. 12, 1987

CERTIFICATION

I, Clifford E. Candy, of 1270 Kings Ave, West Vancouver, British Columbia, hereby certify as follows:

- I am a principal of GeoSci Data Analysis Ltd., a company incorporated under the laws of the Province of British Columbia.
- The Richmond office of GeoSci Data Analysis Ltd. is located at 3740 Lockhart Road, Richmond, B.C.
- I graduated from the University of British Columbia in 1977 with a BSc. degree in the Geophysics program.
- I have practiced my profession continuously from that date.
- I hold no interest, direct or indirect, in Stetson Resource Management Corp. or any of its' affiliates, nor do I expect to receive any.
- I consent to the use of this report or the information contained within it, provide the context is not changed to alter the intended meaning, in or in connection with a Prospectus or in a Statement of Material Facts.



CLIFFORD E. CANDY  
BSc. Geophysics

Nov. 12, 1987

COST BREAKDOWN

The following breakdown includes only those costs related to the processing, plotting and interpretation phases. Field and logistical costs must be included to calculate the total assessment value of this project.

Processing & Plotting	
Mag Stacked profiles .....	\$ 123.45
Mag False Color mapping .....	\$ 135.00
Seismic Posting .....	\$ 90.00
Data Entry .....	\$ 317.25
Geophysicist (Data Analysis/Interpretation).....	\$ 750.00
Drafting .....	\$ 50.00
Reproduction .....	\$ 40.00
Secretarial/Materials .....	\$ 65.00
Report Compilation .....	\$ 750.00
	<hr/>
TOTAL	\$2320.70



December/1987

STETSON COST STATEMENT

PERSONNEL:

J. C. Freeze	Supervisor		
Sept. 21, Oct. 9, Nov. 9	3 days @ \$300/day	\$	900.00
J. F. Wetherill	Geologist		
Sept. 25 to Oct. 13	16 days @ \$225/day	\$	3,600.00
M. Pym	Geophysical Technician		
Sept. 29 to Oct. 9	11 days @ \$175/day	\$	1,925.00
R. Prois	Geophysical Technician		
Sept. 28	1 day @ \$175/day	\$	175.00
			=====
	Total:	\$	6,600.00

TRANSPORTATION/TRAVEL:

Airfares; Vancouver to Whitehorse - Return	\$	1,304.00
Truck Rental; Whitehorse to Dawson Property Return	\$	1,238.13
Shipping		177.20
Gasoline		279.10
		=====
	Total:	\$ 2,998.43

SUPPORT:

Hotel Accommodation	3 Nights	\$	237.55
Camp	14 man days @ \$25/day		350.00
Food	20 man days		387.16
			=====
	Total:	\$	974.71

**MISCELLANEOUS:**

Geophysical Equipment Rental	
12 days @ \$30.50/day plus prep	\$ 387.06
Supplies & Fuel	1,055.28
Communications	300.00
	=====
Total:	\$ 1,742.34

**REPORTING:**

Secretarial	\$ 40.00
Reproduction	50.00
GeoSci Data Analysis Ltd.	2,320.70
	=====
Total:	\$ 2,410.70

Subtotal: \$ 14,726.18

15% Overhead And Administration: \$ 2,208.93  
=====

Grand Total: \$ 16,935.11

## APPENDIX

The MP-2 has the following specifications:

Resolution	1 gamma
Total Field Accuracy	$\pm 1$ gamma over full operating range
Range	20,000 to 100,000 gammas in 25 overlapping steps.
Internal Measuring Program	A reading appears 1.5 seconds after depression of the Operate Switch and remains displayed for 2.2 seconds for a total of 3.7 seconds per single reading. Recycling feature permits automatic repetitive readings at 3.7 second intervals.
External Trigger	External trigger input permits use of sampling intervals longer than 3.7 seconds.
Display	5 digit LED (light emitting diode) readout displaying total magnetic field in gammas or normalized battery voltage.
Data Output	Multiplied precession frequency and gate time outputs for base station recording using interfacing optionally available from Scintrex.
Gradient Tolerance	Up to 5000 gammas/meter.
Power Source	8 alkaline "D" cells provide up to 25,000 readings at 25°C under reasonable signal/noise conditions (less at lower temperatures). Premium carbon-zinc cells provide about 40% of this number.
Sensor	Omnidirectional, shielded, noise-cancelling dual coil, optimized for high gradient tolerance.
Harness	Complete for operation with staff or back pack sensor.
Operating Temperature Range	-35°C to +60°C
Size	Console, with batteries: 80 x 160 x 250 mm Sensor: 80 x 150 mm Staff: 30 x 1550 mm (extended) 30 x 660 mm (collapsed)
Weights	Console, with batteries: 1.8 kg Sensor: 1.5 kg Staff: 0.6 kg

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**SECTION 1****GENERAL INFORMATION****1.1 Description**

The FS-3 Portable Facsimile Seismograph is a single channel time-distance plotting instrument which permanently records an entire seismic event produced either by a hammer blow to the surface of the ground, or by an electrically detonated explosive charge. The record produced on electro-sensitive paper, is in the form of short dashes which signify the positive zero crossings of each cycle of the shock waves (wavelength) initiated by the hammer or explosive charge.

A large variety of engineering and mining problems can be solved by the FS-3 employing either refraction or reflection techniques. In the latter method, a form of wavelength or velocity filtering employing two geophones or geophone arrays is used.

**1.2 Specifications**

- |     |                             |   |
|-----|-----------------------------|---|
| (a) | Geophones:                  | Hall Sears HS-J Model L1<br>Velocity Sensitive<br>Coil Resistance - 280 ohms<br>Natural Frequency - 14 Hz   |
| (b) | Amplifiers<br>Dual Channel: | Input Impedance - 700 ohms<br>Frequency Response  |
| (c) | Gain Control:               | Adjustable attenuator; 6 db<br>steps from 0 to -66 db   |
| (d) | Printing<br>Sensitivity:    | 2 microvolts peak to peak with<br>attenuator control at 0 db  |
| (e) | Time Base:                  | 3 to 180 milliseconds (Normal)<br>163 to 340 milliseconds<br>(Delayed)<br>Accuracy - ±1%  |
| (f) | Temperature:                | 0°F to 115°F (-18°C to 46°C)  |
| (g) | Power Supplies:             | Internal battery pack employ-<br>ing 20 D cells or external 24<br>volt battery<br>Option: Nickel cadmium bat-<br>tery pack employing external<br>Battery Charger. |

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- (h) Size: 18" x 14" x 6"
- (i) Weight: 27.5 lbs (32.5 lbs with Nickel Cadmium Batteries)
- (j) Accessories:
1. Shot box for remote detonation of seismic caps and explosives
  2. Inter-connection cables
  3. Nylon tape measure

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