OMIP APPLICATION FOR GRANT

Linecutting, Magnetometer, and Induced Polarization Surveying on the Eldorado Option

GRANGES INC.
136 Cedar Street South,
Timmins, Ontario

H. Miree
February 11, 1992

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SUMMARY

This report describes activities undertaken to evaluate the gold potential of the central portion of Granges' former Eldorado Option following the discovery of anomalous concentrations of gold in till by a Granges overburden drill program. The anticipated style of mineralization was gold associated with disseminated pyrite and quartz veins hosted by hydrothermally altered ultramafic volcanics, associated with a north-south trending regional fault. This mineralization should be marked by low magnetic susceptibility within ultramafic rocks where magnetite has been altered to pyrite, and a chargeability high where disseminated sulphides respond to an induced electrical field. The program to test this model consisted of linecutting and detatiled magnetometer surveying performed on north-south and east-west lines, and induced polarization (IP) surveying performed on five selected east-west lines. The magnetometer survey traced anomalous susceptibility low areas within the ultramafic units in close association with the regional fault. These areas were then IP surveyed. The IP survey did not detect chargeability or resistivity responses indicative of disseminated sulphides associated either with the regional fault or the ultramafic rocks. Thus, this gold exploration program was discontinued. As nickel potential on the property had previously been tested with negative results, it was decided that no exploration targets remain on the property, and the option was returned to the optionees.

INTRODUCTION

This report describes work performed on Granges' former 'Eldorado Option' while the property was under option from R. Rousseau and G. Fournier, of Timmins, Ontario. Nickel exploration had been previously performed on the property with negative results. Work described by this report investigated anomalous concentrations of gold which Granges previously found during an overburden drill program. This gold exploration program focused on the east-central portion of the 'E-1 Grid' and consisted of linecutting, detailed magnetometer, and induced polarization (IP) surveys. Work commenced February 5, and was completed March 7, 1991. Work totalled the following:

No. line kms cut	17.8
No. line kms geophysics performed	
Magnetometer	24.0
Induced Polarization	4.0

PROPERTY DESCRIPTION, LOCATION, AND ACCESS

Granges' former Eldorado Option is located 20 km southeast of Timmins, Ontario in Eldorado Township. At the time that work was being performed, the property consisted of 80 unpatented mining claims in the Porcupine Mining Division (Figure 1, Table 1). The Eldorado Option is contiguous to the southeast with the Bonanza Project, consisting of 28 claims which are 100% Granges held. Access to the project is by all weather road from South Porcupine and several logging and drill access trails. The project area is encompassed by 81°08', 48°19'30" in the northwest corner, and 81°04'30", 48°17'30" in the southeast corner.

PREVIOUS WORK

Previous work on the property is listed on Table 2 as researched from assessment files. Prior to 1950, exploration in the area was primarily for gold (this work is largely unrecorded). With the discovery of the Langmuir Deposit, exploration since 1959 has primarily been for nickel.

GEOLOGIC DESCRIPTION

The property is located with an ultramafic to felsic volcanic sequence on the south margin of the Shaw Dome, a major structural feature south of Timmins in the western portion of the Abitibi Subprovince (Coad, 1979, and Pyke, 1975). Units dip and face to the south. Two current nickel producers, the Redstone and the Langmuir Mines, are situated within the same general ultramafic unit. It is generally accepted that massive nickel sulphide mineralization tends to occur in a preferred stratigraphic interval, particularly basal ultramafic flow units where the MgO content is >30% and background nickel content is >1200 ppm. Correlation of stratigraphy indicates that the area

Timmins 20 km

N(Astronomic)

Redstone Mine

1035252 1035249 1073270 1073272
1035251 1035250 1073271 1073273 1074006 1074007 1074014 1074015 1086386 1086391 1086393
1073267 1074434 1074431 1073274 1073279 1074008 1074003 1074016 1086387 1086390 1086394
1073268 1074433 1074432 1073275 1073278 1074009 1074002 1074017 1086388 1086389 1086395
1073269 1074436 1074435 1073267 1073277 1074010 1074001 1089999
1089992 1089991 1089990 1089989 1089988
1090551 1090550 1090547 1090546 1090543 1090158 1090163 1074005 1074004 1074029 1074028
1090552 1090549 1090548 1090545 1090544 1090159 1090162 1074019 1074020 1074023 1074024 1074027
1090160 1090161 1074018 1074021 1074022 1074025 1074026

ELDORADO OPTION

BONANZA PROJECT

M3426 M3427 M3428 M3429 M3430 M3431
M4071 M4070 M4069 M4068
M4072 M4073 M4074 M4075 M4076 M4077
M4078
M4089 M4090 M4093 M4094 M4095
M4088 M4091 M4092 M4097 M4096 M4079

ELDORADO TWP.

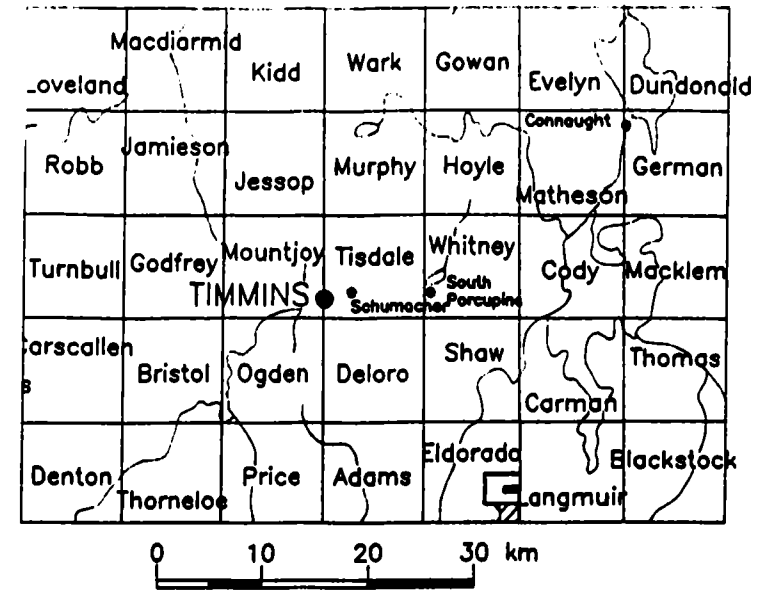
DOUGLAS TWP.

FALLON TWP.

0 1000 m

0 4000 feet

LOCATION MAP



LANGMUIR TWP.

Forks River

Trail

FIGURE 1

GRANGES INC.		
ELDORADO OPTION and BONANZA PROJECT CLAIM MAP		
H.M.	Feb., 1991	1:25,000

TABLE 1: Claim List

ELDORADO OPTION #

CLAIM #
1035249
1035250
1035251
1035252
1073267
1073268
1073269
1073270
1073271
1073272
1073273
1073274
1073275
1073276
1073277
1073278
1073279
1074006
1074007
1074008
1074009
1074010
1074011
1074012
1074013
1074014
1074015
1074016
1074017
1074431
1074432
1074433
1074434
1074435
1074436
1089988
1089989
1089990
1089991
1089992
1089999

CLAIM #
1088393
1088386
1088387
1088388
1088389
1088390
1088391
1088394
1088395
1074004
1074005
1074018
1074019
1074020
1074021
1074022
1074023
1089024
1074025
1074026
1074027
1074028
1074029
1090158
1090159
1090160
1090161
1090162
1090163
1090543
1090544
1090545
1090546
1090547
1090548
1090549
1090550
1090551
1090552

* all located in ELDORADO TOWNSHIP

BONANZA PROJECT

CLAIM #	TOWNSHIP
1113426	ELDORADO
1113427	ELDORADO
1113428	ELDORADO
1113429	ELDORADO
1113430	ELDORADO
1113431	ELDORADO
1114068	ELDORADO
1114069	ELDORADO
1114070	ELDORADO
1114071	ELDORADO
1114072	ELDORADO
1114073	ELDORADO
1114074	ELDORADO
1114075	ELDORADO
1114076	ELDORADO
1114077	LANGMUIR
1114078	LANGMUIR
1114079	FALLON
1114088	DOUGLAS
1114089	ELDORADO
1114090	ELDORADO
1114091	DOUGLAS
1114092	DOUGLAS
1114093	ELDORADO
1114094	ELDORADO
1114095	ELDORADO
1114096	DOUGLAS
1114097	DOUGLAS

TABLE 2: Summary of Previous Work

Work Performed	Performed by	Date Performed
-Geological mapping, mag, VLEM -3 ddh's (location uncertain, no source for VLEM anomaly)	Abacus Mines Ltd.	1959
-Mag survey -7 ddh's (Hart Zone)	Terrex Mines Ltd.	1965
-Mag, VLEM (to west) -3 ddh's	Mining Corp. of Canada	1966
-Mag, slingram EM -5 ddh's	Pyrotec Mining & Expl. Co. Ltd.	1967
-Mag, HLEM -4 ddh's (iron formation)	Urban Quebec Mines Ltd.	1968
-7 ddh's (NE portion of property)	Falconbridge Nickel Mines Ltd.	1969
-Mag (western portion of property) -7 ddh's, 3 on property	Canico	1969-1973
-Overburden drilling (regional program)	Canico	1987
-HLEM -1 ddh	Hudson Bay Exploration & Development Ltd.	1978
-Acquired option	Granges Inc.	April 1989
-Linecutting	"	June 1989
-Ground mag & HLEM	"	June 1989
-Geological mapping and sampling	"	Sept-Oct 1989
-Overburden stripping	"	Sept-Oct 1989
-Overburden drilling	"	Feb-March 1990
-Diamond drilling	"	Oct 1990

of interest for potential nickel mineralization lies at the west-central portion of the E-1 grid, within the preferred stratigraphic interval (Moon, 1976, and Miree, 1990). With attention to the geochemical, geophysical and geological parameters required for nickel mineralization, this area was tested in previous Granges surveys. Geophysical (HLEM and mag) targets were delineated by Granges in 1989, and geochemical targets were located by overburden drilling in 1990. The target area was tested by diamond drilling in the fall of 1990. Results indicative of nickel sulphide mineralization were not encountered.

Overburden drilling also detected anomalous gold concentrations in the several thousand ppb range in basal till in the central portion of the property, ie. the east-central portion of the E-1 Grid. Gold exploration in this area is the focus of activities described by this report.

The exploration program consisted of the following activities:

1) Detailed Linecutting
2) Detailed Magnetic surveying
3) I.P. surveying

The locations of these activities can be referenced on Figure 2.

The area of interest is transected by a north-south trending regional fault as shown on Figure 3. The model for potential gold mineralization is that late hydrothermal alteration of ultramafic (UM) flow units, where intersected by a fault or shear structure, may have resulted in the precipitation of gold + pyrite. This could be accomplished through the following series of (generalized, unbalanced) reactions:

$$\text{Olivine} + \text{water} \xrightarrow[\text{(regional metamorphism)}]{\text{oxidization}} \text{Magnetite} + \text{Serpentine}$$

$$(Mg,Fe)_2SiO_4 + H_2O \xrightarrow[\text{(regional metamorphism)}]{\text{oxidization}} Fe_3O_4 + Mg_3Si_2O_5(OH)_2$$

$$\text{Magnetite} + \text{Gold in solution} \xrightarrow[\text{(hydrothermal alteration)}]{\text{reduction}} \text{Pyrite} + \text{Free Gold}$$

$$Fe_3O_4 + \text{Au thiosulphate} \xrightarrow[\text{(hydrothermal alteration)}]{\text{reduction}} FeS_2 + \text{Au}$$

Thus gold is expected to be found where the regional fault cuts or truncates the UM flow units resulting in a magnetic susceptibility low containing disseminated sulphides and gold. Exploration for this model of gold mineralization has been undertaken by utilizing the following:

1) Establishment of a detailed grid over the area of interest - cut N/S and E/W lines

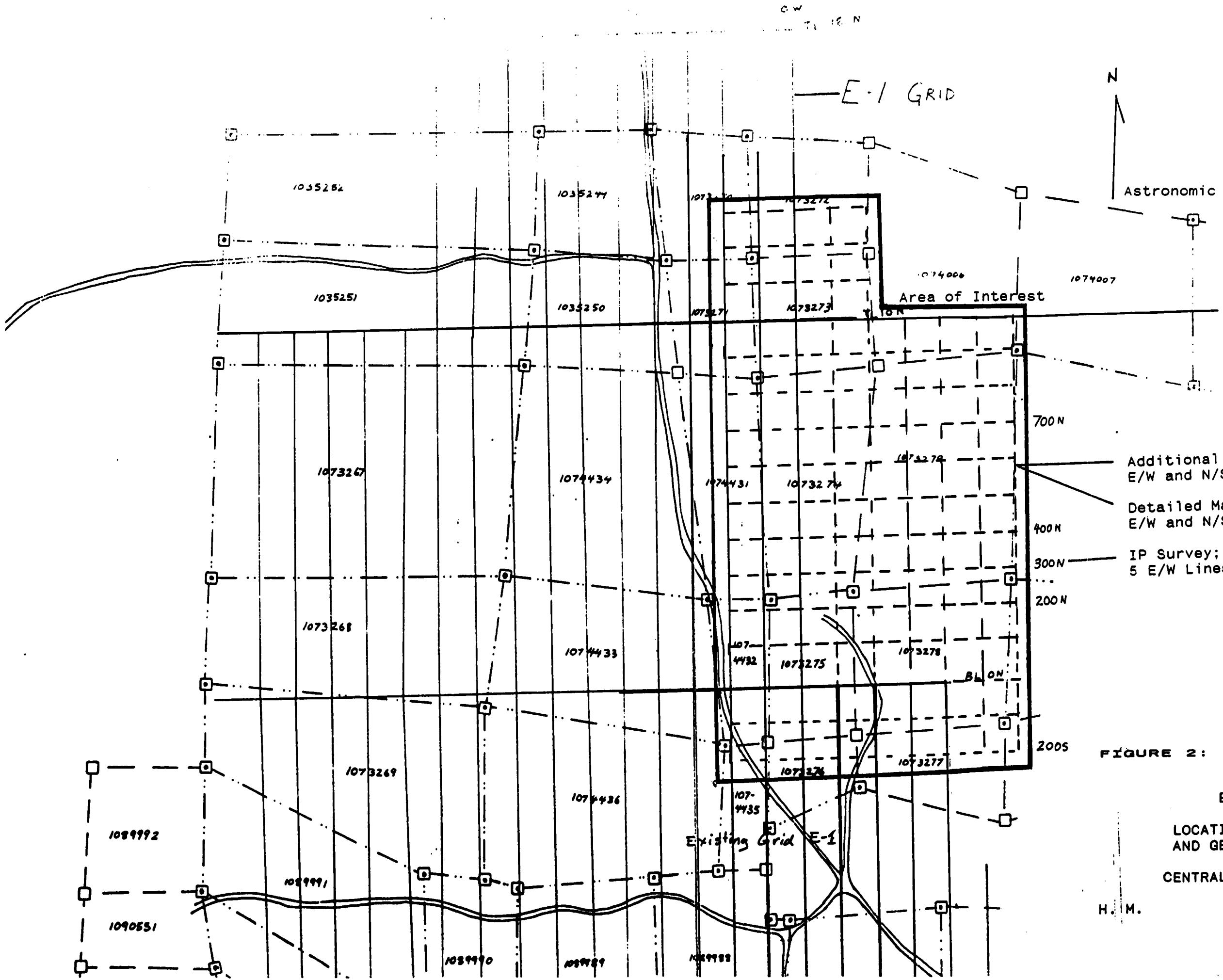


FIGURE 2:

GRANGES INC.
ELDORADO OPTION

LOCATION OF LINECUTTING
AND GEOPHYSICAL SURVEYS

CENTRAL PORTION E-1 GRID

H. M. 03/10/91 1:10,000

2) Detailed mag surveying on N/S and E/W lines
   - in order to: better define UM flow units
     define mag lows within UM units, ie areas where magnetite has been reduced to pyrite

3) IP surveying on selected E/W lines
   - in order to: define the position of the fault and related structures, and their relation to UM units
     detect disseminated sulphide mineralization associated with the fault or UM units

These surveys are described following. Expenditures are listed on Table 3.

THE MAGNETOMETER SURVEY

The magnetometer measures the 'total magnetic field' of a point over the earth's surface which is the vector sum of two components, the geomagnetic field ie. the earth's magnetic field, and the induced magnetic field ie. the field that is produced by the magnetic field of rock bodies. The induced magnetic field is a 'distortion' of the geomagnetic field. This distortion is produced as rocks generate their own magnetic field within the geomagnetic field. The induced field varies with the concentration of ferro-magnetic minerals in a rock body ie. the rock's magnetic susceptibility eg. ultramafic rocks which contain relatively abundant magnetite and pyrrhotite have high susceptibilities. Hence, interpretation of the total magnetic field provides a valuable interpretation of the rocks of an area.

The magnetometer used in this survey was an Omni Plus proton precision magnetometer. Specifications are provided in Appendix A.

Magnetometer surveying was performed on north-south and east-west lines totalling 24.0 km in order to obtain detailed coverage of the ultramafic flows, and in particular to detect magnetic low areas within the ultramafics, ie. areas where magnetite may have been hydrothermally altered to pyrite. The area surveyed included existing grid lines of the 'E-1 Grid', as well as an additional 17.8 km which were established specifically for this program (Figure 2). Lines are spaced 100m apart with pickets marking 25m intervals. Magnetometer readings were taken at 12.5m intervals. A total of 944 readings were recorded from east/west lines, and 847 readings were from north/south lines, for a total of 1793 readings in all. Linecutting and magnetometer surveys were commenced February 5, and completed February 20, 1991 by Rayan Exploration Ltd of 676 Murray Street, Timmins, Ontario. Expenditures are listed on Table 3.

TABLE 3: Summary of Expenditures

Work Performed	Performed by	Date Performed	Amount	Cost
Linecutting	Rayan Exploration Ltd	Feb 5-20, 1991	17.8 km	$ 4450.00
Magnetometer Survey	" "	Feb 9-20, 1991	24.0 "	1920.00
Induced Polarization Survey	" "	Feb 28-Mar 5, 1991	4.0 "	5737.50
		TOTAL COST		$ 12107.50

THE INDUCED POLARIZATION SURVEY

When an electric field is applied to a rock containing disseminated metallic particles, negative ions orient in one direction causing a polarization effect. The polarization effect impedes current flow. When the current is shut off, the polarization decreases to zero over a (relatively short) period of time. This time varying response is measured with two components; apparent resistivity and apparent chargeability. A transmitter provides a time-varying electromagnetic field which interacts with the conductive material inducing the time-varying eddy currents. The eddy currents genterate the secondary electromagnetic field which are then measured with the IP reciever. From the apparent chargeability and resistivity readings, interpretation of rock properties can be made.

The IP system used in this survey consisted of a Huntec M-4 transmitter, and a EDA IP-2 reciever. It is a time domain system. The time domain system compares a residual voltage (Vt) existing at a time (t) after a steady voltage (Vc) is cut off. A pole-dipole array was used in this survey with an 'a' spacing of 25 m. Readings were taken at n=1, 2, 3, and 4.

IP surveying was conducted on selected east-west lines in order to obtain coverage perpendicular to the regional fault; the suspected conduit for mineralizing fluids, particularly where the fault appears to truncate the ultramafic units. Lines surveyed were 200S, 200N, 300N, 400N, and 700N (Figure 2). A total of 4.0 km were surveyed with 275 stations. IP surveying was commenced February 28 and completed March 5, 1991. Plotting of all data was completed March 7, 1991.

RESULTS and CONCLUSIONS

Magnetometer results are presented on Figures 3 and 4. Raw data aquired from the east-west lines, and the north-south lines are located in Appendix C. Figure 3 combines the data from the two survey. Detailed magnetometer surveying over the area of interest defined the position of three ultramafic (UM) flow units, labelled A, B, and C on Figure 3. Unit C had been considered somewhat doubtful from previous survey data. Further, the detailed mag survey delineated two subtile mag lows associated with the flow units, labelled I and II. This resulted in the definition of three possible targets, one for each UM unit. These target areas were evaluated by limited IP surveying. Five lines were selected for IP surveying based on the position of ultramafic flow units where the units are truncated by the regional fault. IP results over lines 200 S, 200 N, 300 N, 400 N and 700 N are presented as Figures 5, 6, 7, 8, and 9 respectively. The IP defined the fault structure and UM units, but did not indicate chargeability and resistivity responses attributable to disseminated sulphide mineralization, as expected from the exploration model. This reflects low prospectivity on the probability of gold mineralization associated with hydrothermal alteration along the fault.

RECOMMENDATIONS

Based on the negative results of the activities described by this report, it was decided not to attempt diamond drilling of the area of interest. Since nickel potential had been previously investigated, also with negative results, all avenues of exploration on the property were deemed exhausted. It was further decided not to renew the option on the property. The option was terminated on April 3, 1991. Notice of termination was provided to the Incentives Office on April 11, 1991 (Appendix D).

Respectfully,

Heather Miree

Heather Miree,
Project Geologist

REFERENCES

Coad, P.R.
1979: Nickel Sulphide Deposits Associated with Ultramafic Rocks of the Abitibi Belt and Economic Potential of Mafic-ultramafic Intrusions; Ont. Geol. Survey, Study 20, 84p.

Miree, H.L.
1990: Eldorado Project Status Report in Granges' 1990 Expl. Meeting Project Description (internal report).

Moon, W.
1976: Magnetic Survey of Eldorado and Langmuir Twps. O.D.M. Geologic Report #137.

Pyke, D.R.
1975: Geology of Adams and Eldorado Twps., District of Cochrane; Ont. Div. Mines, GR 121, 51 p. Accomp. by Map 2274, Scale 1" to 1/2 mi.

CERTIFICATE OF QUALIFICATIONS

I, Heather L. Miree, of #38 - 4th Avenue, Schumacher. in the Province of Ontario, DO CERTIFY THAT:

1. I am an employee of Granges Inc.. which maintains offices at the following addresses:

   Suite 2300 - 885 West Georgia Street
   Vancouver. B.C.
   V6C 3E8

   and 136 Cedar Street South
   Timmins, Ontario
   P4N 2G9

2. I am a graduate of the University of Waterloo, Waterloo, Ontario obtaining a Bachelor of Science Degree (Honours) in Earth Sciences (Co-operative) in May. 1986.

3. I have practised my profession in Ontario since 1986.

Dated this 13 th day of February . 1992.

Respectfully,

Heather L. Miree, B.Sc.

Appendix A:

Specifications for the EDA Omni Plus Proton Precision Magnetometer

OMNI PLUS
VLF/Magnetometer System

EDA

Major Benefits of the OMNI PLUS

- Combined VLF/Magnetometer/Gradiometer System
- No Orientation Required
- Three VLF Magnetic Parameters Recorded
- Automatic Calculation of Fraser Filter
- Calculation of Ellipticity
- Automatic Correction of Primary Field Variations
- Measurement of VLF Electric Field

Specifications

Dynamic Range	18,000 to 110,000 gammas. Roll-over display feature suppresses first significant digit upon exceeding 100,000 gammas.
Tuning Method	Tuning value is calculated accurately utilizing a specially developed tuning algorithm
Automatic Fine Tuning	± 15% relative to ambient field strength of last stored value
Display Resolution	0.1 gamma
Processing Sensitivity	± 0.02 gamma
Statistical Error Resolution	0.01 gamma
Absolute Accuracy	± 1 gamma at 50,000 gammas at 23°C ± 2 gamma over total temperature range
Standard Memory Capacity	
Total Field or Gradient	1,200 data blocks or sets of readings
Tie-Line Points	100 data blocks or sets of readings
Base Station	5,000 data blocks or sets of readings
Display	Custom-designed, ruggedized liquid crystal display with an operating temperature range from –40°C to +55°C. The display contains six numeric digits, decimal point, battery status monitor, signal decay rate and signal amplitude monitor and function descriptors.
RS 232 Serial I/O Interface	2400 baud, 8 data bits, 2 stop bits, no parity
Gradient Tolerance	6,000 gammas per meter (field proven)
Test Mode	A. Diagnostic testing (data and programmable memory) B. Self Test (hardware)
.nsor	Optimized miniature design. Magnetic cleanliness is consistent with the specified absolute accuracy.
Gradient Sensors	0.5 meter sensor separation (standard), normalized to gammas/meter. Optional 1.0 meter sensor separation available. Horizontal sensors optional.
Sensor Cable	Remains flexible in temperature range specified, includes strain-relief connector
Cycling Time (Base Station Mode)	Programmable from 5 seconds up to 60 minutes in 1 second increments
Operating Environmental Range	–40°C to +55°C; 0–100% relative humidity; weatherproof
Power Supply	Non-magnetic rechargeable sealed lead-acid battery cartridge or belt; rechargeable NiCad or Disposable battery cartridge or belt; or 12V DC power source option for base station operation.
Battery Cartridge/Belt Life	2,000 to 5,000 readings, for sealed lead acid power supply, depending upon ambient temperature and rate of readings
Weights and Dimensions	
Instrument Console Only	2.8 kg, 238 x 150 x 250mm
NiCad or Alkaline Battery Cartridge	1.2 kg, 235 x 105 x 90mm
NiCad or Alkaline Battery Belt	1.2 kg, 540 x 100 x 40mm
Lead-Acid Battery Cartridge	1.8 kg, 235 x 105 x 90mm
Lead-Acid Battery Belt	1.8 kg, 540 x 100 x 40mm
: ensor	1.2 kg, 56mm diameter x 200mm
Gradient Sensor (0.5 m separation-standard)	2.1 kg, 56mm diameter x 790mm
:radient Sensor (1.0 m separation-optional)	2.2 kg, 56mm diameter x 1300mm
Standard System Complement	Instrument console; sensor; 3-meter cable, aluminum sectional sensor staff, power supply, harness assembly, operations manual.
Base Station Option	Standard system plus 30 meter cable
Gradiometer Option	Standard system plus 0.5 meter sensor

E D A Instruments Inc.
4 Thorncliffe Park Drive
Toronto, Ontario
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Telex: 06 23222 EDA TOR
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(416) 425 7800

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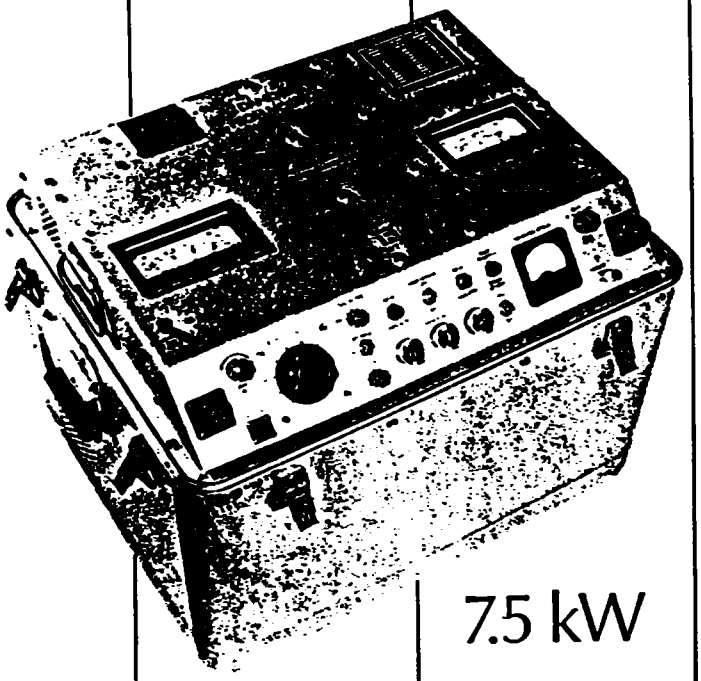
Printed in Canada

Appendix B:

Specifications for the Huntec M-4 IP Transmitter and the EDA IP-2 IP Receiver

Transmitters



7.5 kW

2.5 kW

DESCRIPTION

The HUNTEC M-4 7.5 and 2.5 kW Induced Polarization transmitters are designed for time domain, frequency domain (PFE) and complex resistivity applications. The units convert primary 400 Hz ac power from an engine-alternator set to a regulated dc output current, set by the operator. Current regulation eliminates output waveform distortion due to electrode polarization effects. It is achieved in the transmitter by varying the alternator field currents. The transmitters are equipped with dummy loads to smooth out generator load variations.

FEATURES

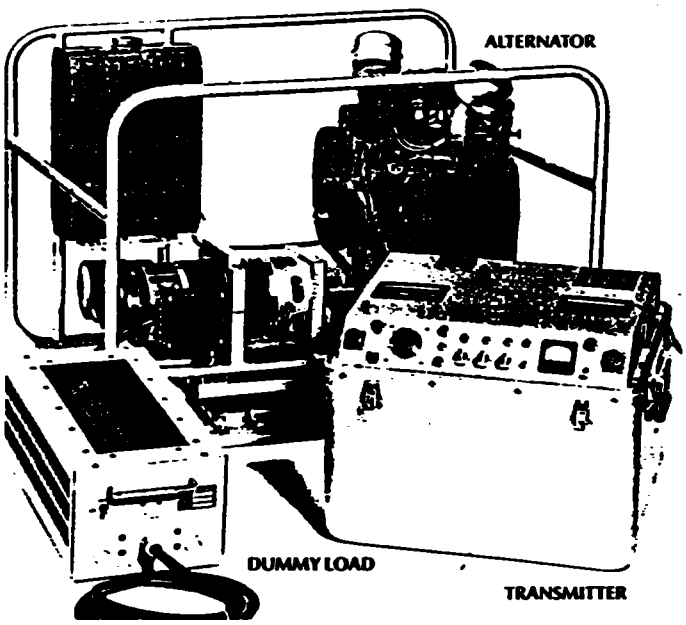
- Solid-state switching for long life and precise timing.
- Open circuit during the "off" time ensures no counter current flow.
- Resistance measurement for load matching.
- Precision crystal controlled timing.
- Failsafe operation protects against short-circuit and overvoltage.
- Automatic regulation of output current eliminates errors due to changing polarization potential and load resistance.

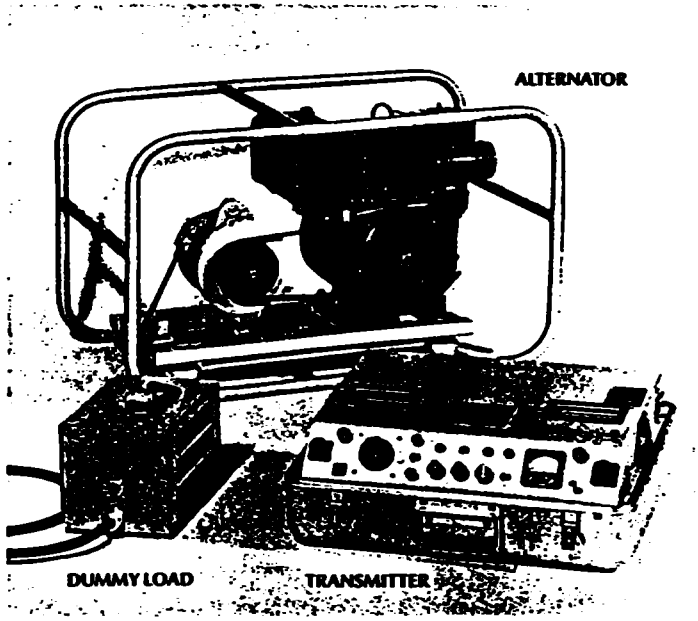
HUNTEC / SYSTEMS

TORONTO MIAMI

1750 BRIMLEY RD.,
SCARBOROUGH
ONTARIO,
CANADA M1P 4X7
PHONE: (416) 299-4100
TELEX: 06-963640
CABLE HUNTOR,
TORONTO

Transmitters





SPECIFICATIONS

	M-4 7.5 kW Transmitter	M-4 2.5 kW Transmitter
Power input:	96 — 144 V line to neutral 3 phase, 400 Hz (from Huntec generator set)	96 — 144 V line to line 3 phase, 400 Hz (from Huntec generator set)
Output:	Voltage: 100 — 3200 V dc in 10 steps Current: 0.4 — 16 A regulated**	Voltage: 150 — 2200 V dc in 8 steps Current: 0.2 — 7 A regulated**
Current regulation:	Less than ±0.1% change for ±10% load change	Less than ±0.1% change for ±10% load change
Output frequency:	0.0625 Hz to 1 Hz (time domain, complex resistivity) 0.0625 Hz to 4 Hz (frequency domain) selectable on front panel	0.0625 Hz to 1 Hz (time domain, complex resistivity) 0.0625 Hz to 4 Hz (frequency domain) selectable from front panel An additional range of frequencies between 0.78 and 5.0 Hz is available and can be selected by an internal switch.
Frequency accuracy:	±50 ppm −30°C to +60°C	±50 ppm −30°C to +60°C
Output duty cycle: $T_{on}/(T_{on} + T_{off})$	0.5 to 0.9375 in increments of 0.0625 (time domain) 0.9375 (complex resistivity) 0.75 (frequency domain)	0.5 to 0.9375 in increments of 0.0625 (time domain) 0.9375 (complex resistivity) 0.75 (frequency domain)
Output current meter:	Two ranges: 0-10 A and 0-20 A	Two ranges: 0-5 A and 0-10 A
Ground resistance meter:	Two ranges: 0-10 kΩ, 0-100 kΩ	Two ranges: 0-10 kΩ, 0-100 kΩ
Input voltage meter:	0-150 V	0-150 V
Dummy load:	Two levels: 2 kW and 6 kW	Two levels: 500 kW and 1.75 kW
Temperature range:	−34°C to +50°C	−34°C to +50°C
Size:	53 cm x 43 cm x 43 cm	53 cm x 43 cm x 29 cm
Weight:	50 kg	26 kg

***Smaller currents are obtainable, but outside the current regulation range the transmitter voltage is regulated, not the current.*

Specifications subject to change without notice.

SPECIFICATIONS

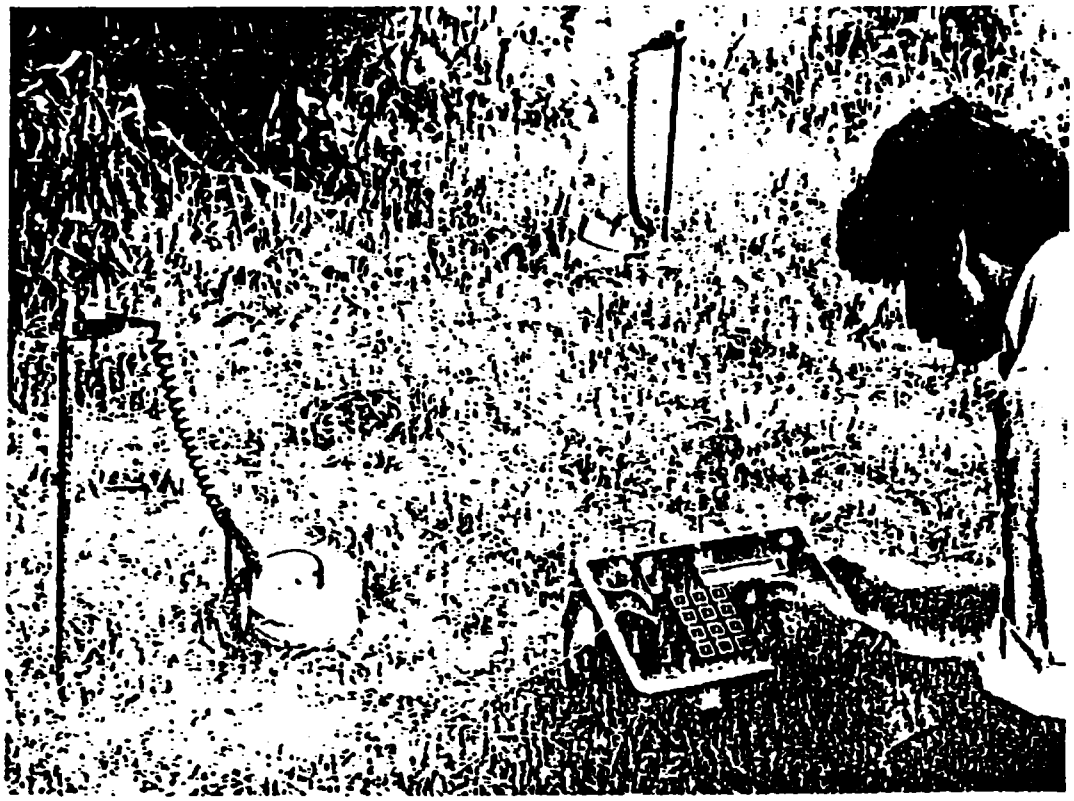
M-4 7.5 kW Engine Driven Alternator	
Output:	120 V ac 400 Hz 3 phase 18 kVA Maximum
Engine:	18.6 kW air cooled twin cylinder four cycle piston engine with electric start
Fuel:	Regular grade gasoline, tank capacity 14 L to give 2 h duration
Alternator:	Star connected aircraft type, belt driven, forced air cooled
Construction:	Tubular protective carrying frame with resiliently mounted engine and alternator
Size:	79 cm x 79 x 102 cm
Weight:	205 kg

M-4 2.5 kW Engine Driven Alternator	
Output:	120 V ac 400 Hz 3.5 kVA maximum
Engine:	Briggs & Stratton 6 kW air cooled, single cylinder four cycle piston engine with manual start
Fuel:	Regular grade gasoline, tank capacity 3.8 L to give 4 h duration
Alternator:	Delta connected heavy duty automobile type, belt driven, air cooled
Construction:	Tubular protective carrying frame with resiliently mounted engine and alternator
Size:	51 cm x 48 x 76 cm
Weight (dry):	61 kg

EDA

Product Information

IP-2 TWO DIPOLE TIME DOMAIN IP RECEIVER



MAJOR BENEFITS

- TWO DIPOLES SIMULTANEOUSLY MEASURED
- SOLID STATE MEMORY
- AUTOMATIC PRIMARY VOLTAGE (Vp) RANGING
- AUTOMATICALLY CALCULATES APPARENT RESISTIVITY
- COMPUTER COMPATIBLE

EDA Instruments Inc., Head Office: 4 Thorncliffe Park Drive, Toronto, Canada M4H 1H1
Telephone: (416) 425-7800, Telex: 06 23222 EDA TOR, Cables: INSTRUMENTS TORONTO

In USA, EDA Instruments Inc., 5151 Ward Road, Wheat Ridge, Colorado 80033
Telephone: (303) 422-8112

EDA

Specifications

Dipoles	Two simultaneous input dipoles.
Input Voltage (Vp) Range	40 microvolts to 4 volts, with automatic ranging and overvoltage protection.
Vp Resolution	10 microvolts.
Vp Accuracy	0.3% typical; maximum 1% over temperature range.
Chargeability Resolution	1 %.
Chargeability Accuracy	0.3% typical; maximum 1% over temperature range for Vp > 10 mV.
Automatic SP Compensation	± 1 V with linear drift correction up to 1 mV/s.
Input Impedance	1 Megohm.
Sample Rate	10 milliseconds.
Automatic Stacking	3 to 99 cycles.
Synchronization	Minimum primary voltage level of 40 microvolts.
Rejection Filters	50 and 60 Hz power line rejection greater than 100 dB.
Grounding Resistance Check	100 ohm to 128 kilo-ohm.
Compatible Transmitters	Any time domain waveform transmitter with a pulse duration of 1 or 2 seconds and a crystal timing stability of 100 ppm.
Programmable Parameters	Geometric parameters, time parameter, intensity of current, type of array and station number.
Display	Two line, 32-character alphanumeric liquid crystal display protected by an internal heater for low temperature conditions.
Memory Capacity	600 sets of readings.
RS-232C Serial I/O Interface	1200 baud, 8 data bits, 1 stop bit, no parity.
Console Power Supply	Six- 1.5V "D" cell disposable batteries with a maximum supply current of 70 mA and auto power save.
Operating Environmental Range	−25°C to +55°C; 0–100% relative humidity; weatherproof.
Storage Temperature Range	−40°C to +60°C.
Weight and Dimensions	5.5 kg, 310x230x210 mm.
Standard System Complement	Instrument console with carrying strap, batteries and operations manual.
Available Options	Stainless steel transmitting electrodes, copper sulphate receiving electrodes, alligator clips, bridge leads, wire spools, interface cables, rechargeable batteries, charger and software programs.

EDA Instruments Inc
4 Thorncliffe Park Drive,
Toronto, Ontario
Canada M4H 1H1
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In USA
EDA Instruments Inc.
5151 Ward Road,
Wheat Ridge, Colorado
USA 80033
(303) 422 9112

Printed in Canada

Appendix D:
Notice of Termination of Project

GRANGES INC.
136 CEDAR STREET SOUTH
TIMMINS, ONT., CANADA P4N 2G9
TELEPHONE: (705) 264-1228
FAX: (705) 267-2645

April 11, 1991

Incentives Office
Ministry of Northern Development
and Mines
10 Elm Street, 3rd Floor
SUDBURY, Ontario
P3C 5N3

Dear Sir/Madam,

Granges has recently completed exploration activities on its 'Eldorado Option' as per the program submitted for grant. The conclusion of the program is that mineralization was not encountered in a distribution which would allow Granges to mine successfully. This letter serves to inform your office that Granges is terminating its option on the property.

Activities performed constitute a portion of the grant. We would like to use this portion to cover the allocated 30% of our expenses, and transfer the unused portion of the grant to another project, as yet undetermined. We will contact your office when a suitable project has been found.

Thank-you for your consideration. Should you have any concerns, please call.

Respectfully,

Sylvia David

for Warren Bates,
Acting Regional Manager

WB/sd

GRANGES INC.

ELDORADO OPTION E-1 GRID

MAGNETOMETER SURVEY RAW DATA

NORTH-SOUTH LINES

Rayan Expl Ltd. Feb 1991 1:2500

N Astronomic

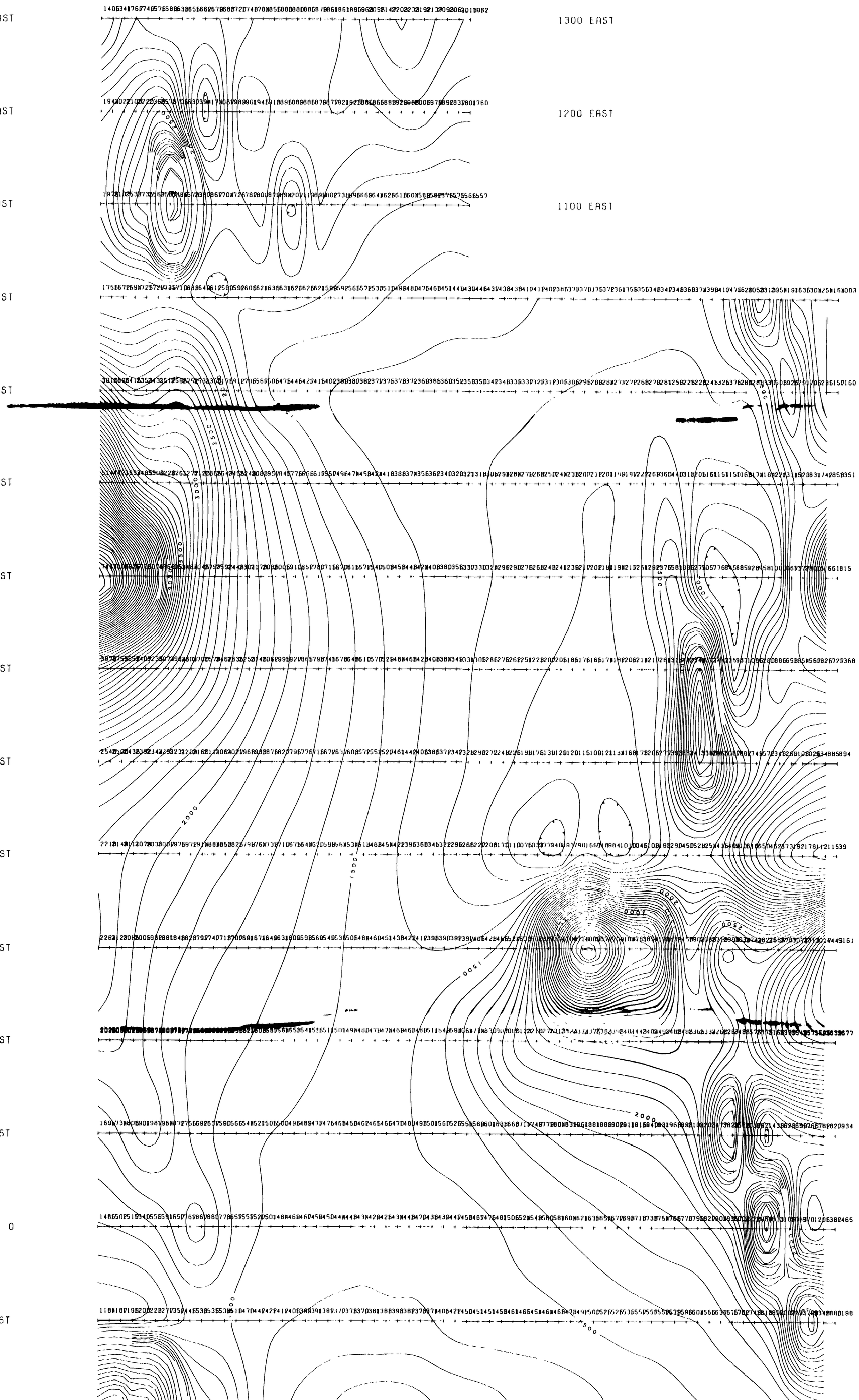
1300 NORTH
1200 NORTH
1100 NORTH
1000 NORTH
900 NORTH
800 NORTH
700 NORTH
600 NORTH
500 NORTH
400 NORTH
300 NORTH
200 NORTH
100 NORTH
BASE LINE
100 SOUTH
200 SOUTH

600 EAST
500 EAST
400 EAST
300 EAST
200 EAST
100 EAST
0
100 WEST
200 WEST

200 m
100
0
200

200 SOUTH | 100 SOUTH | BASE LINE | 100 NORTH | 200 NORTH | 300 NORTH | 400 NORTH | 500 NORTH | 600 NORTH

1300 EAST
1200 EAST
1100 EAST
1000 EAST
900 EAST
800 EAST
700 EAST
600 EAST
500 EAST
400 EAST
300 EAST
200 EAST
100 EAST
0
100 WEST
200 WEST



N
Astronomic

0 100 m

GRANGES INC.

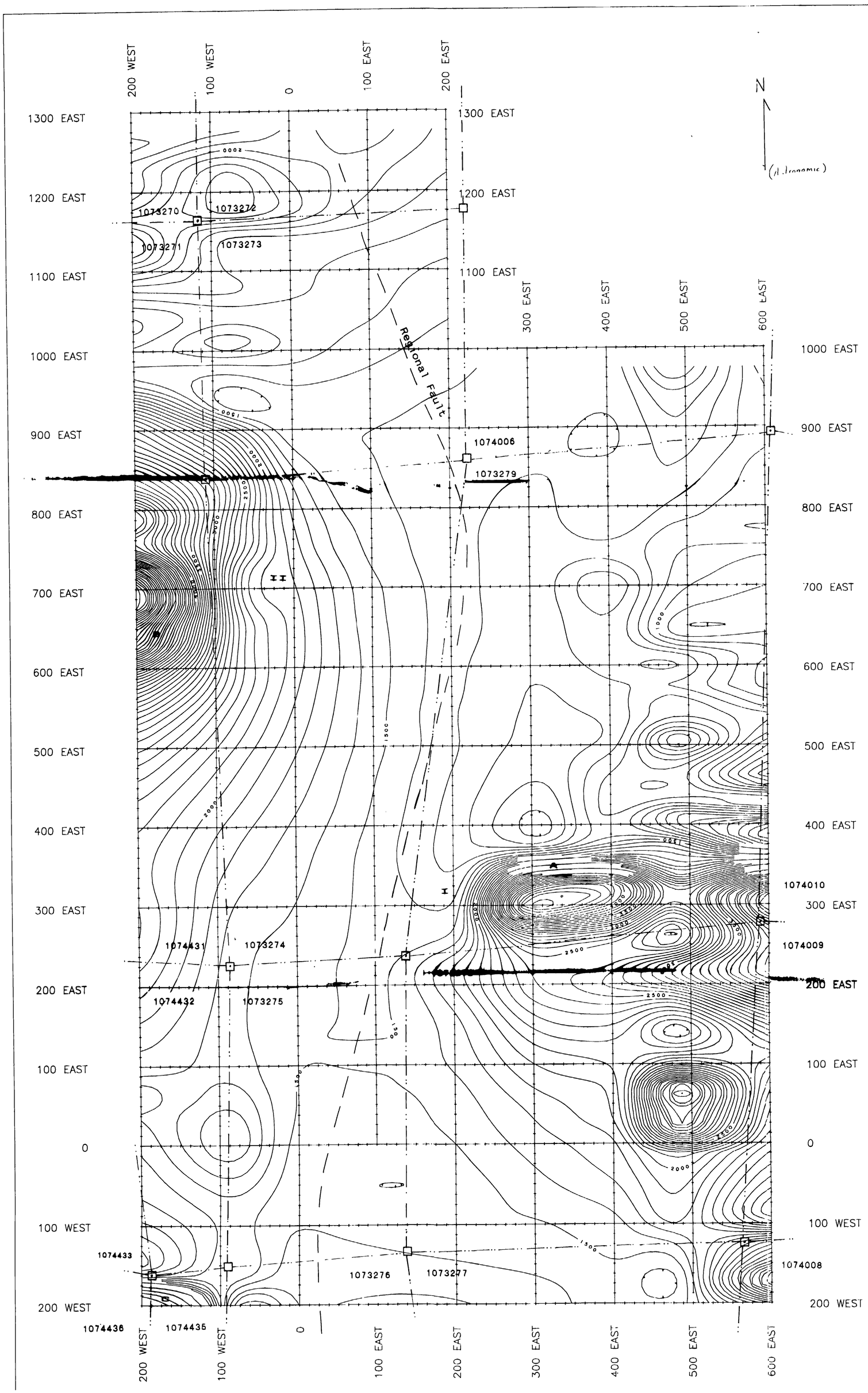
ELDORADO OPTION E-1 GRID

MAGNETOMETER SURVEY RAW DATA
EAST-WEST LINES*

Rayan Expl Ltd. Feb 1991 1:2500

* Data plotted with north being east

200 SOUTH | 100 SOUTH | BASE LINE | 100 NORTH | 200 NORTH | 300 NORTH | 400 NORTH | 500 NORTH | 600 NORTH



INDEX

A Ultramafic Flow Unit*

I Magnetic Low Area

* Referenced in text of report

Claim Post; location known, inferred

Claim Line

1073270 Claim Number

LEGEND

PARAMETERS MEASURED: Earth's Total Magnetic Field
INSTRUMENT: EDA OMNI-IV Tie-line Magnetometer
SERIAL No: 428061
READING INTERVAL: 12.5 metres
DIURNAL CORRECTIONS: Base Station Corrected
DATUM SUBTRACTED: 0 GAMMAS
REFERENCE FIELD: 58500 Gammas
BASE STATION LOCATION: 1+80W, BL 0+00
Contour Interval: 100 gammas

Figure 3

GRANGES EXPLORATION

ELDORADO TOWNSHIP

TOTAL FIELD
MAGNETOMETER SURVEY

PROCESSED: R.J.M	CHECKED: R.J.M.
DATE: FEB., 1991	TOWNSHIP: ELDORADO
PROVINCE: ONTARIO	NTS:
SCALE: 1:2500	DRAWING #: CONT-LINE

RAYAN EXPLORATION LTD.
CONTRACT/CONSULTING GEOPHYSICS
637 ALGONQUIN BLVD E
TIMMINS, ONTARIO

0 50 100 150 200 METRES

N

Astronomic

0 500 m

FIGURE 4:

GRANGES INC.

ELDORADO OPTION PROJECT #529

E-1 GRID, EAST-CENTRAL PORTION

COLOUR CONTOURED TOTAL FIELD
MAGNETIC SUSCEPTIBILITY

Rayan Expl Ltd. 03/10/91 1:10,000

230

LINE : 200 S

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY

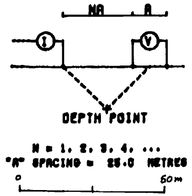


FIGURE 5:

GRANGES EXPLORATION CO.

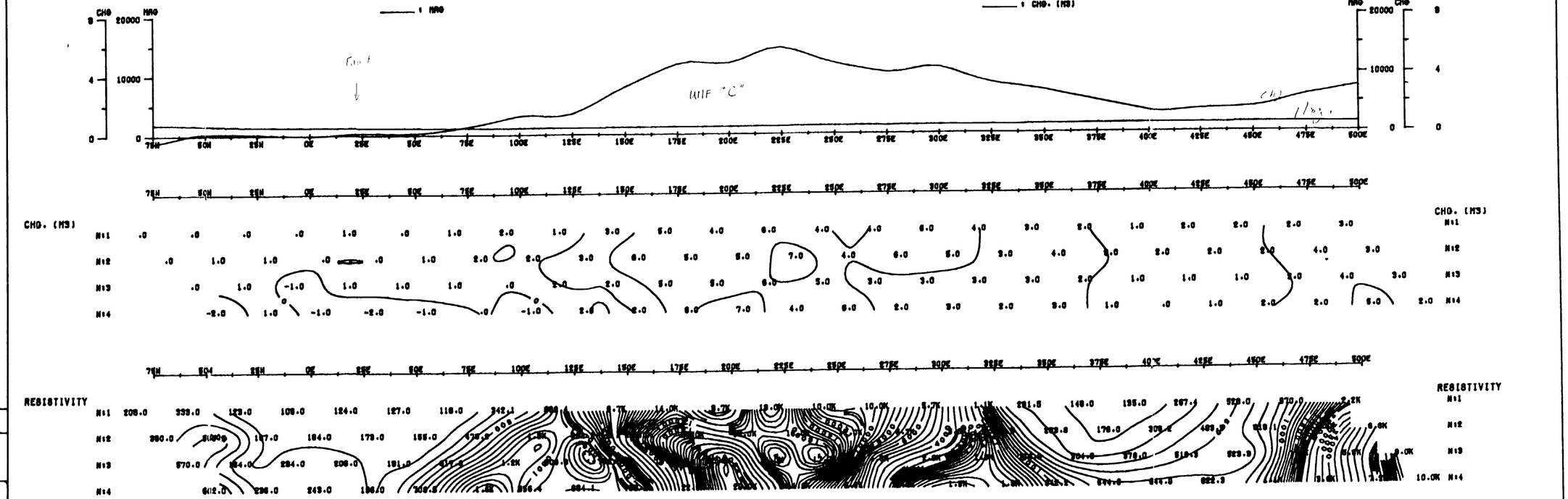
E-1 GRID

ELDORADO TOWNSHIP

DATE : 28/02/91 | REF :

SCALE = 1:1250.0

RAYAN EXPLORATION LTD.



LINE : 200 N

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY

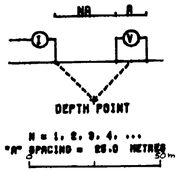
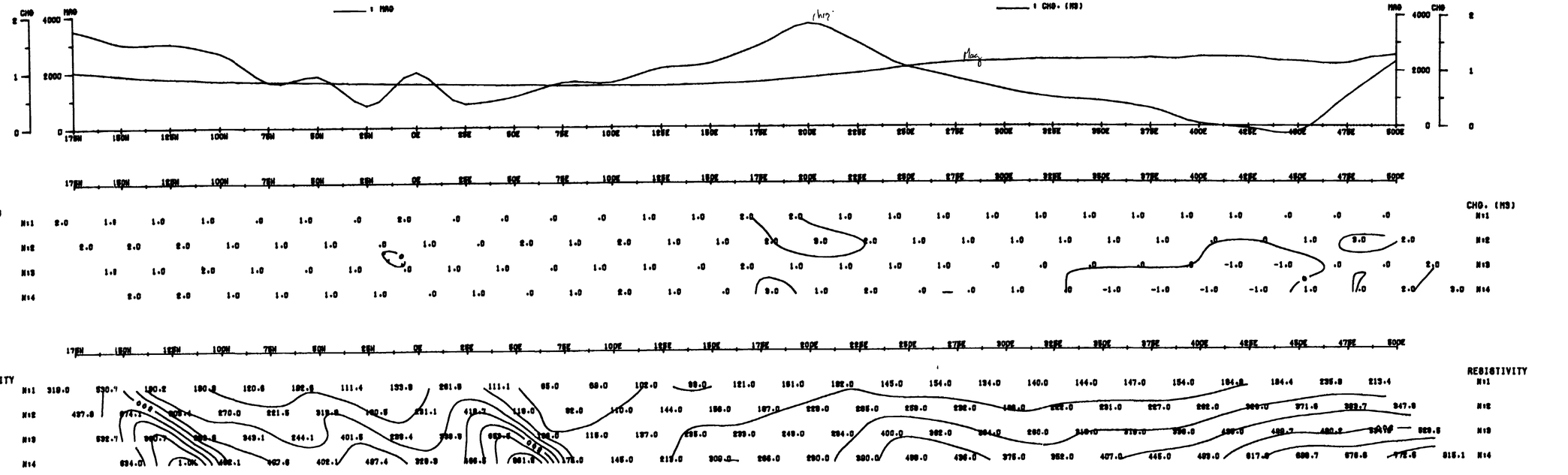


FIGURE 6:



GRANGES EXPLORATION CO.

E-1 GRID

ELDORADO TOWNSHIP

DATE : 28/02/91 | REF :

SCALE = 1:1250.0

RAYAN EXPLORATION LTD.

LINE : 300 N

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY

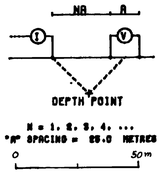


FIGURE 7:

GRANGES EXPLORATION CO.

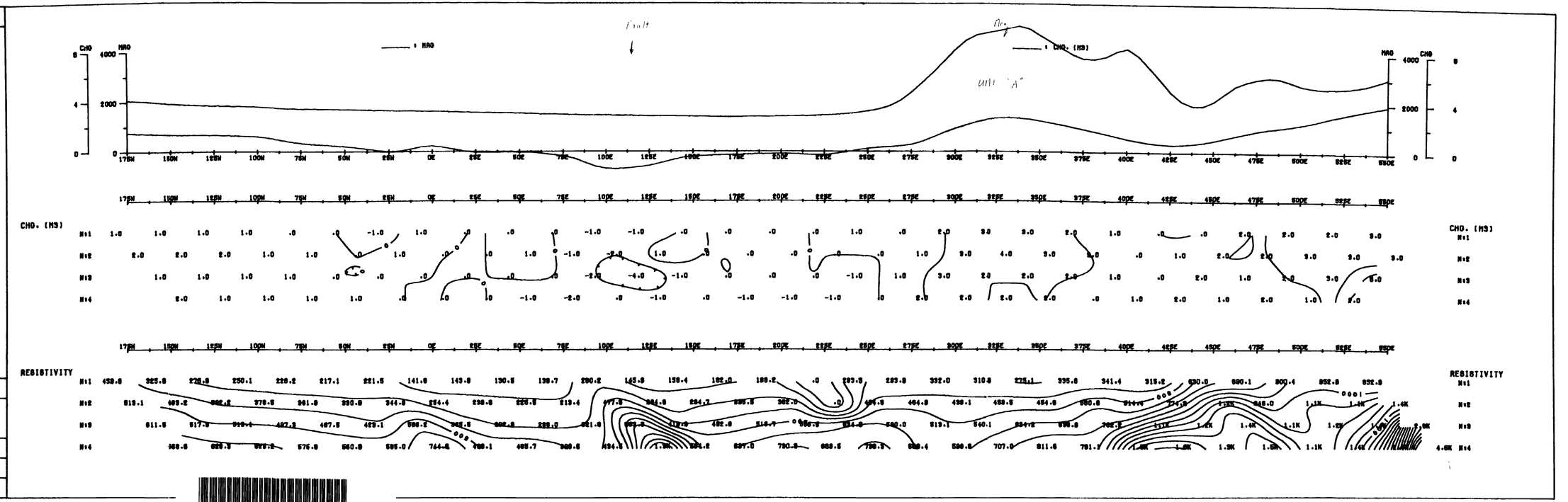
E-1 GRID

ELDORADO TOWNSHIP

DATE : 28/02/81 | REF :

SCALE = 1:1250.0

RAYAN EXPLORATION LTD.



LINE : 400 N

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY

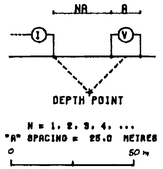


FIGURE 6:

GRANGES EXPLORATION CO.

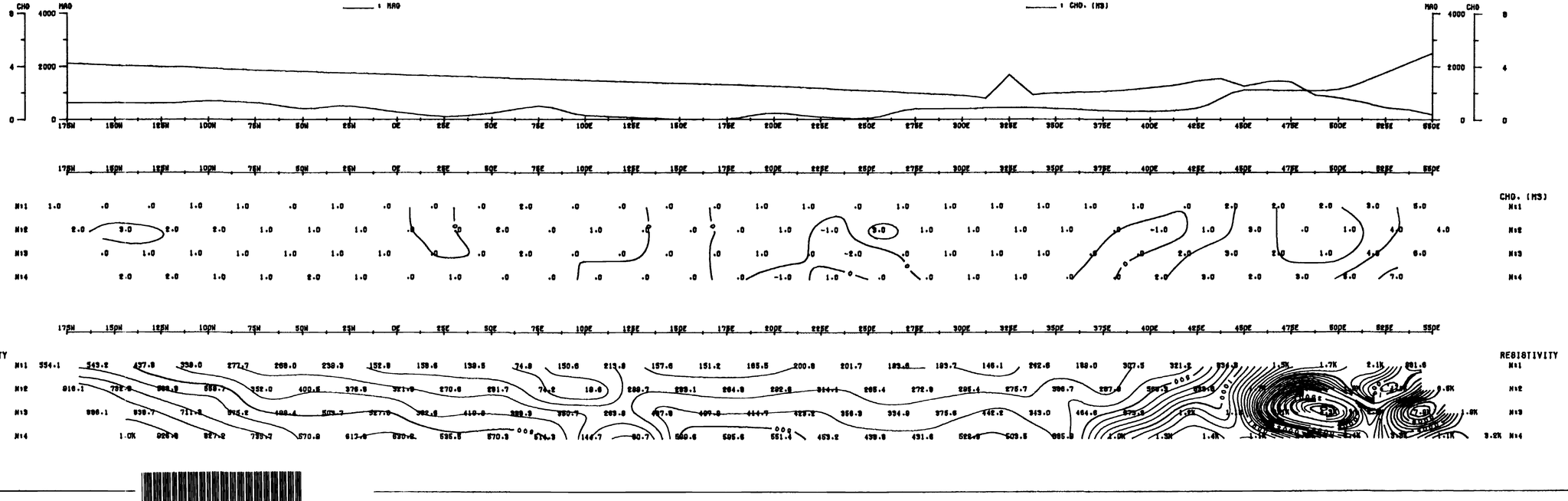
E-1 GRID

ELDORADO TOWNSHIP

DATE : 28/02/81 | REF :

SCALE = 1:1250.0

RAYAN EXPLORATION LTD.



LINE : 700 N

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY

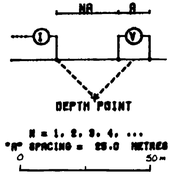


FIGURE 9:

GRANGES EXPLORATION CO.

E-1 GRID

ELDORADO TOWNSHIP

DATE : 28/02/91 | REF :

SCALE = 1:1250.0

RAYAN EXPLORATION LTD.