MAGNETIC AND ELECTROMAGNETIC GEOPHYSICAL SURVEYS GOD MINERAL CLAIM GROUP

August 7 - August 22, 1966

by

JOHN S. BROCK
ATLAS EXPLORATIONS LIMITED

GRASS LAKES AREA
Watson Lake Mining Division
Yukon Territory

Long. 131° 15' West
Lat. 61° 34' North
Map Sheet: 105 G 11

2232

MAGNETIC AND ELECTROMAGNETIC
GEOPHYSICAL SURVEYS

GOD MINERAL CLAIMS

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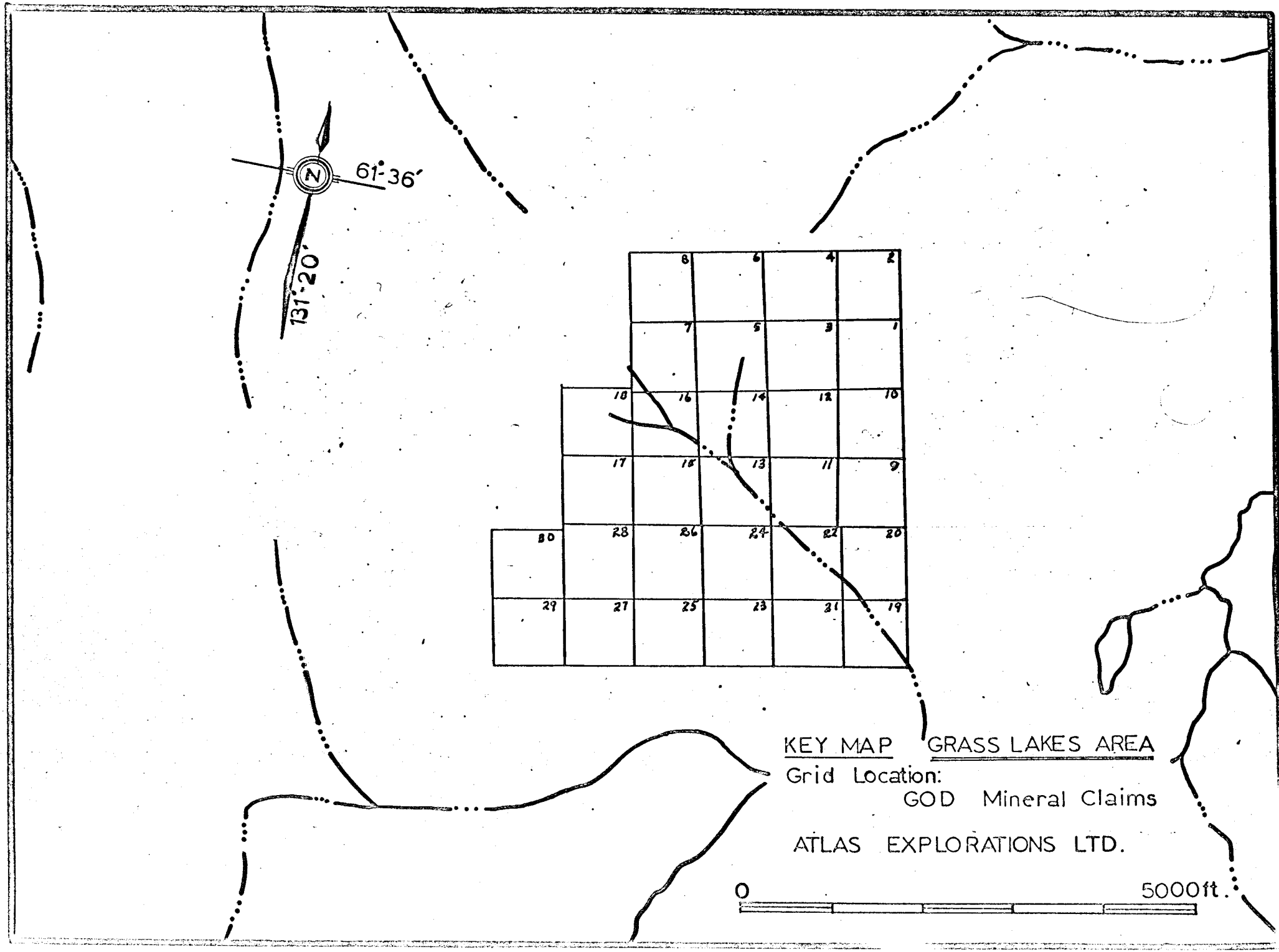

N
61°-36'
131°-20'
8
6
4
2
7
5
3
1
10
16
14
12
10
17
15
13
11
9
30
28
26
24
22
20
29
27
25
23
21
19
KEY MAP GRASS LAKES AREA
Grid Location:
GOD Mineral Claims
ATLAS EXPLORATIONS LTD.
0
5000ft.

LIST OF CLAIMS

Claim No.	Grant Nos.	Date Recorded
GOD 1 - 30	Y7894-Y7323	May 11, 1966

TELEPHONE 685-4331

ATLAS EXPLORATIONS LIMITED
(N.P.L.)
330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

INTRODUCTION

After the Dub mineral claims were acquired by Atlas Explorations in the Fyre Lake area, the Grass Lakes region was flown with airborne electromagnetic and magnetic surveys. As a result of the geophysical surveys outlining anomalies in proximity to the Gun group, an area of known favorable geologic conditions, the God group of 30 mineral claims was staked and recorded May 11, 1966.

The claims were staked by Atlas Explorations as part of an intensive follow-up program after completion of the airborne surveys. Ground was obtained in preparation of ground geochemical, geophysical and geologic surveys that were to be employed to delineate airborne anomalies. Commencing August 7, 1966, a crew consisting of geologic, geophysical, geochemical, linecutting and camp support personnel, were placed on the property to investigate the anomalous electromagnetic and magnetic airborne responses.

LOCATION AND ACCESS

The God mineral claims are located at latitude 61°34' north and longitude 131°15' west, about three miles west of Mink Lake and the Gun claims on the Finlayson Lake map sheet. Mink Lake is situated at the headwaters of Mink Creek. The Gun group lies at an elevation of 4000 feet above sea level.

The lower elevations of the claim group are over ground that consists mainly of water covered muskeg due to the drainage system at the headwaters of Mink Creek. Higher elevations are mainly covered with dwarf birch (buckbrush) and some sparse spruce stands, but most of the area is comprised of "burn".

Access to the properties was made with the aid of aircraft only. Mink Lake is suitable for all aircraft equipped with floats and skis. A base camp was established on the Gun claim group for examination of the claims. Due to the distance from Mink Lake the camp was serviced mainly by helicopter from Ross River. Work on the property was administered from Field Offices at Ross River, 46 miles north of Mink Lake; constant communication was kept with the camp by means of single sideband radio. All expediting of supplies was done from Ross River.

PREVIOUS WORK

To the knowledge of Atlas Explorations, no work was done in the Grass Lakes area prior to an airborne geophysical survey and staking in April of 1966.

METHOD OF SURVEY

Instruments Used

For the magnetometer survey, a Jalander 46-65 magnetometer was used; the instrument is hand-held and measures the vertical magnetic component by use of an oil-dampened fluxgate which automatically levels itself in the direction of the vertical field. The range of this instrument is 10 to 250,000 gammas over five sensitivity ranges, the lowest being 10 gammas per scale division. The magnetometer is of light weight and readings can be obtained quickly, a conversion factor is necessary before gamma values can be determined.

The electromagnetic survey was carried out with a Crone JEM dual frequency unit. The Crone is of the inductive type and may be either used as a horizontal or vertical loop apparatus. Measurements are made of the resultant dip angle of the field and the width of null or out of phase component. It is designed to be operated with a maximum coil spread of 300 feet on frequencies of 480 and 1800 cycles per second with no interconnecting cables. The effective depth penetration

is 300 feet for a horizontal conductor with maximum coil spread (no skin effect allowance) and 100 feet for a vertical conductor. The effective lateral coverage is a direct function of the spread under ideal conditions. The equipment was chosen in order to give reliable information on the attitude and configuration of a conductor, the physical properties of the host rock, dimensions of the conductor and results free from error due to topographic relief.

Survey Method, Linecutting

All grids designed for ground geophysical and geochemical surveys were laid out using eight hundred foot line spacing with one hundred foot station intervals. Over areas of interest, four hundred foot spacing was used and two hundred foot spacing over areas requiring detailed information. Central base lines were used for survey control, all cross lines were surveyed by picket and chain methods. Linecutters were hired from the native settlement of Ross River; survey control was checked by the party chief.

Magnetometer Survey

Prior to the actual magnetometer survey, readings were taken along the central base line at cross line intersection points. These stations were looped and re-read every hour as a means of controlling drift and diurnal variations. With base

stations of an established value serving as a means of controlling drift and diurnal variations, a rapid and precise check was kept on magnetic variations and the entire survey was thus kept on a relative basis during day to day operation. Each cross line was read with re-checks at the base station within every hour, this method provided an internal control for detecting diurnal and drift variations. The survey was done by one operator using the same instrument.

Electromagnetic Survey

All surveys were run with horizontal loop configuration and 300 foot coil spacing in order that highest response could be obtained from flat lying sulphide bodies. Both 1800 and 480 cps readings were taken at each station. The coil configuration was not adaptable to conditions of conductive overburden and maximum response from such was expected. All traverses were made by the "in line method" and done over the same grid as used for the magnetometer surveys. In some cases shorter spacing was adopted for better resolution of shallow conductors, for the same reason line spacing was reduced to 300 feet over areas of interest. The two man EM crew did all their ground work in coincidence with the magnetometer and soil sampling crew.

Treatment of Data

Magnetic Results

Magnetic results were corrected for diurnal and

drift each night by the field operator. The final gamma values were then plotted on a grid plan using scale of 400 feet to 1 inch. This data was presented to the party chief who profiled and contoured the data on overlay material in order that he could remain familiar with day to day results and progress of the survey, direct its course and have results available for comparison with electromagnetic and geological-geochemical data. Field plots of this information were forwarded to the base office at Ross River at the end of the survey for final plotting and examination on a scale of 1 inch to 400 feet. Magnetic data is presented in this report on such maps showing gamma value profiles and contoured results. (See Appendix). All maps show major topographic features and locations of mineral claim posts.

Electromagnetic Results

All results as derived in the field were plotted each night by the EM operators on a grid plan using a scale of 1 inch to 400 feet. High and low frequency results were presented to the party chief for inspection and profiling in order that this data be compared with the other surveys and the course of the electromagnetic survey be directed on a daily basis. Plots of readings and profiles were sent to Ross River base at the end of the survey for final plotting

and compilation on grid plans similar to those used for the magnetic maps. Electromagnetic data is presented in this report showing values-profiles (1800 and 480 cps, a contour map of high frequency dip angles.)

GEOLOGY

The Gun group lies on the northeast side of the Tintina Trench in an area of low relief and extensive overburden; therefore, there are no significant bedrock outcrops on the claim group. However, the surrounding outcrops indicate that the claim areas are underlain by north-northeast striking and gently easterly dipping quartz-biotite and quartz chlorite schists similar to the Vangorda Creek host rocks. In the area are numerous small stocks of granodiorite which are intrusive into the schists, one body about two miles in diameter crops out between the Gun and Gil claim groups. Further information on geologic environment can be obtained through G.S.C. mapping of the Finlayson Lake sheet. Some geologic reconnaissance was done by Atlas Explorations during 1966; however, a report on this is not available at this time.

GEOPHYSICAL RESULTS

The God mineral claims were staked to cover three isolated conductors (over 5 ppm each) and a number of magnetic

anomalies of closures over 3500 gammas (survey intensity). The individual anomalies have no magnetic-electromagnetic coincidence; however, over the areas that respond electromagnetically, high conductivity was recorded near the flanks of magnetic highs. There is no obvious strike length to the magnetics but the conductors as a whole (over 1 ppm) generally strike in a northwesterly direction and are open at the northern end.

Incomplete coverage through ground geophysics was obtained due to the close of the exploration season, more detail work is scheduled to examine all airborne geophysical expressions on the grid. During 1966 the grid was surveyed from line OS to 36S. Four magnetic responses of small dimension were outlined at line OS 19W, 20S 9W, and 28S 19W. These values were obtained on single lines only and have a minimum closure of 900 gammas and 1000 gammas maximum response or 100 gammas above background. A more elongate magnetic high lies between lines 20 and 32 S, station 3E and is of the same intensity as the abovementioned. It is believed that these magnetic anomalies are not coincident with the three airborne anomalies outlined on the grid but that they do correspond with the 3400 gamma closures to the north of the higher readings. Relative intensities of the ground and aeromag correspond by a factor of 5.

Good correspondence is obtained between the aeroelectromagnetic survey and the ground EM follow-up. The survey is not considered as being complete, as full coverage of the grid was not obtained as previously mentioned. The aero-EM anomaly reaches a peak intensity (in phase) of 12 ppm and a high conductivity ratio of approximately 4. This apparently matches a -40^{o} (1800 cps) resultant dip angle peak obtained by ground surveys at line 32S, station 7E. The conductor strikes in a northwest direction for approximately 2500 feet and is open at its northern end.

There is some magnetic electromagnetic coincidence but no direct matching of peak intensities was found. The magnetic anomalies at line 0S, 19W line 20S 9W and 28S 3E, all lie within the conductive belt although strike directions are not similar. The magnetics generally appear to trend in a northerly direction across the northwesterly striking conductor. Geochemical anomalies are observed in localized areas both off and on the zones of geophysical interest and no direct comparison of results can be obtained.

CONCLUSIONS AND RECOMMENDATIONS

The conductive zone appears to be similar in intensity and strike direction to other zones in the area that have been matched to graphitic schist horizons. The magnetics that are within the conductor, strike across it

and are probably due to cross cutting basic intrusive dikes and plugs. Although there is some geochemical correlation with the geophysics, it is probably not extensive enough to warrant further investigation. It is recommended that the rest of the grid area to the south be covered in order to fully delineate the remainder of airborne results.

Respectfully submitted,

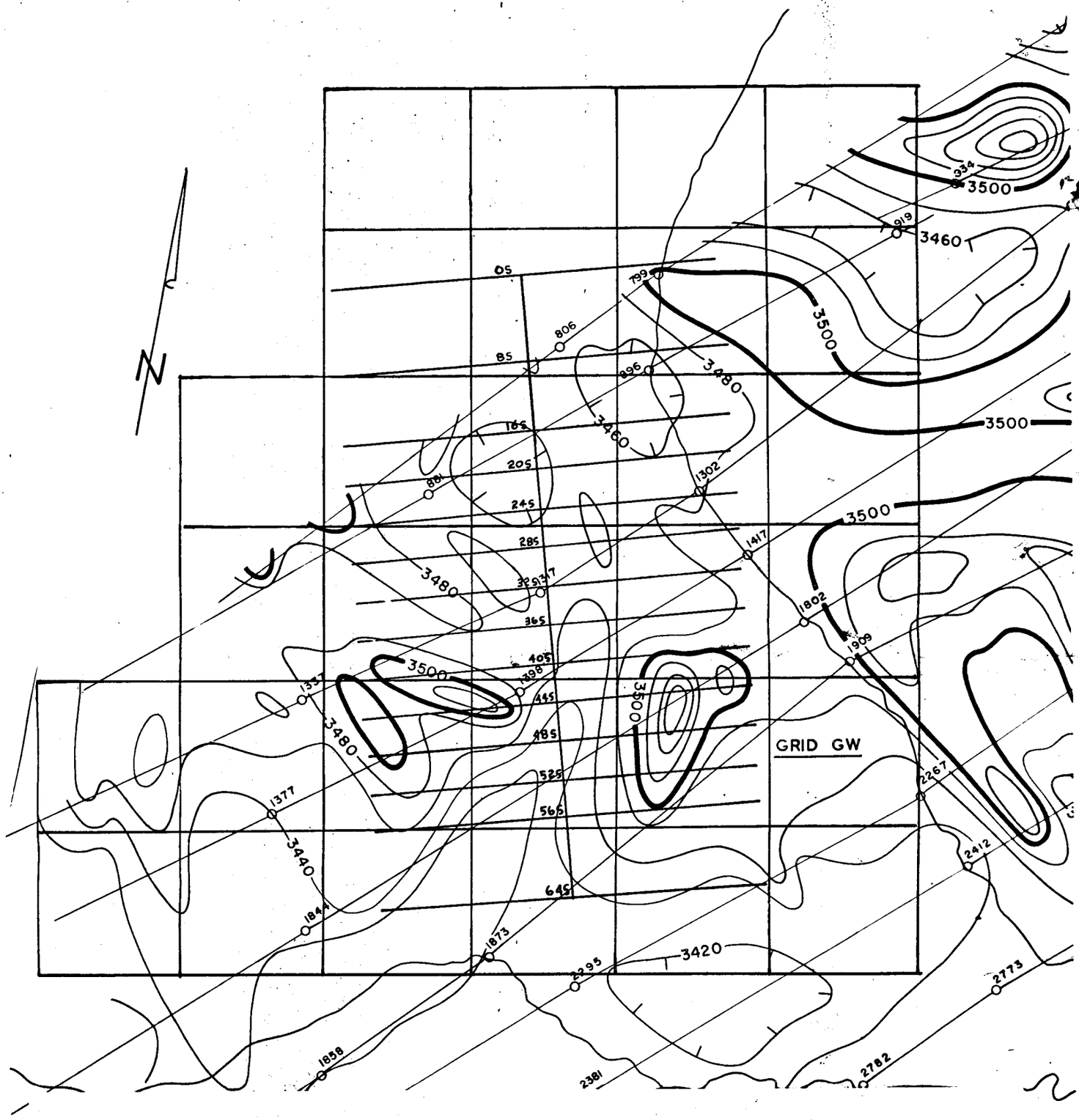
John S. Brock,
Atlas Explorations Limited.

MAGNETIC AND ELECTROMAGNETIC GEOPHYSICAL SURVEYS

GOD MINERAL CLAIM GROUP

A P P E N D I C E S

APPENDIX I



GRASS LAKE AREA

YUKON TERRITORY

GOD MINERAL CLAIMS

SCALE

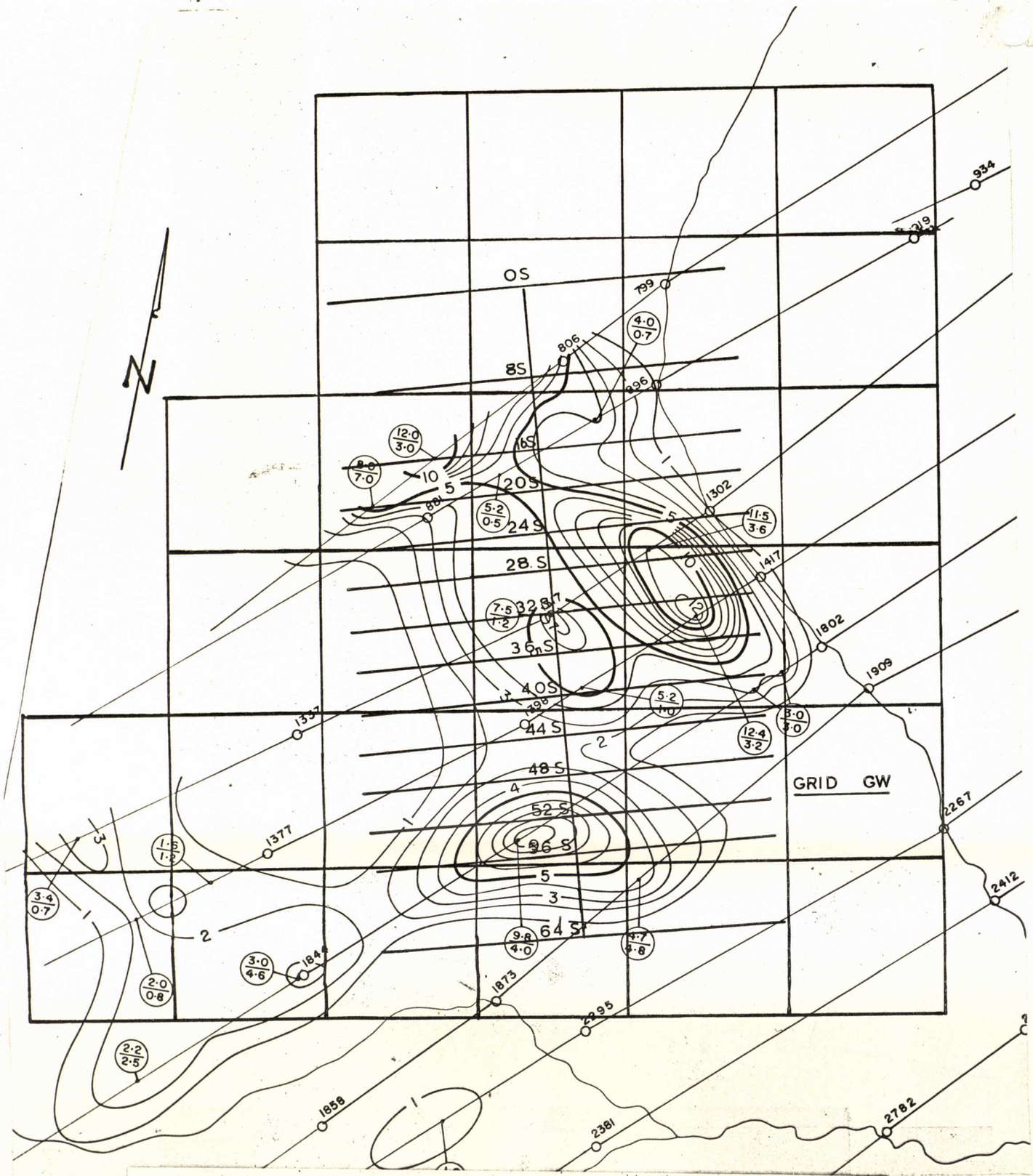
1000 0 1000 2000 3000 4000 5000

FEET FEET

1 Inch to 1320 Feet

MAGNETOMETRIC MAP

APPENDIX II



GRASS LAKE AREA

YUKON TERRITORY
GOD MINERAL CLAIMS

SCALE

1000 0 1000 2000 3000 4000 5000

FEET FEET

1 Inch to 1320 Feet

ELECTROMAGNETIC MAP

APPENDIX III

GRASS LAKES AREA PROJECT

GOD Mineral Claim Group
Magnetic and Electromagnetic Ground
Geophysical Surveys

SUMMARY OF COSTS

A.	Linecutting	a) Total footage cut	40,400 ft.	
		b) Overall cost/1000'	$10.00	$ 404.00
B.	Magnetometer Survey	a) Total Line Miles	6.3	
		b) Overall cost/line mile	$50.00	315.00
C.	Electromagnetic Survey	a) Total Line Miles	6.3	
		b) Overall cost/line mile	$110.00	693.00
D.	Helicopter Support	4 hrs. @ $130/hr.		520.00
E.	Fixed Wing Aircraft Support	4 hrs. @ $75/hr.		300.00
	TOTAL COST, Geophysical Surveys, GOD Group			$ 2,232.00

TELEPHONE 685-4331

APPENDIX IV

ATLAS EXPLORATIONS LIMITED
(N.P.L.)
330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

A F F I D A V I T

Supporting Summary of Costs

I, E. O. Chisholm, Exploration Manager, Atlas Explorations Limited, of Vancouver, British Columbia, do hereby state that to the best of my knowledge and belief the statement of costs as presented in Appendix IV of this report "Magnetic and Electromagnetic Geophysical Surveys, God Mineral Claim Group", is both true and correct.

DATED at the City of Vancouver in the Province of British Columbia this 16th day of May A.D. 1967.

SWORN BEFORE ME in the City of Vancouver in the Province of British Columbia this 16th day of May A.D. 1967.

A Commissioner for taking Affidavits in the Yukon Territory

E. O. Chisholm

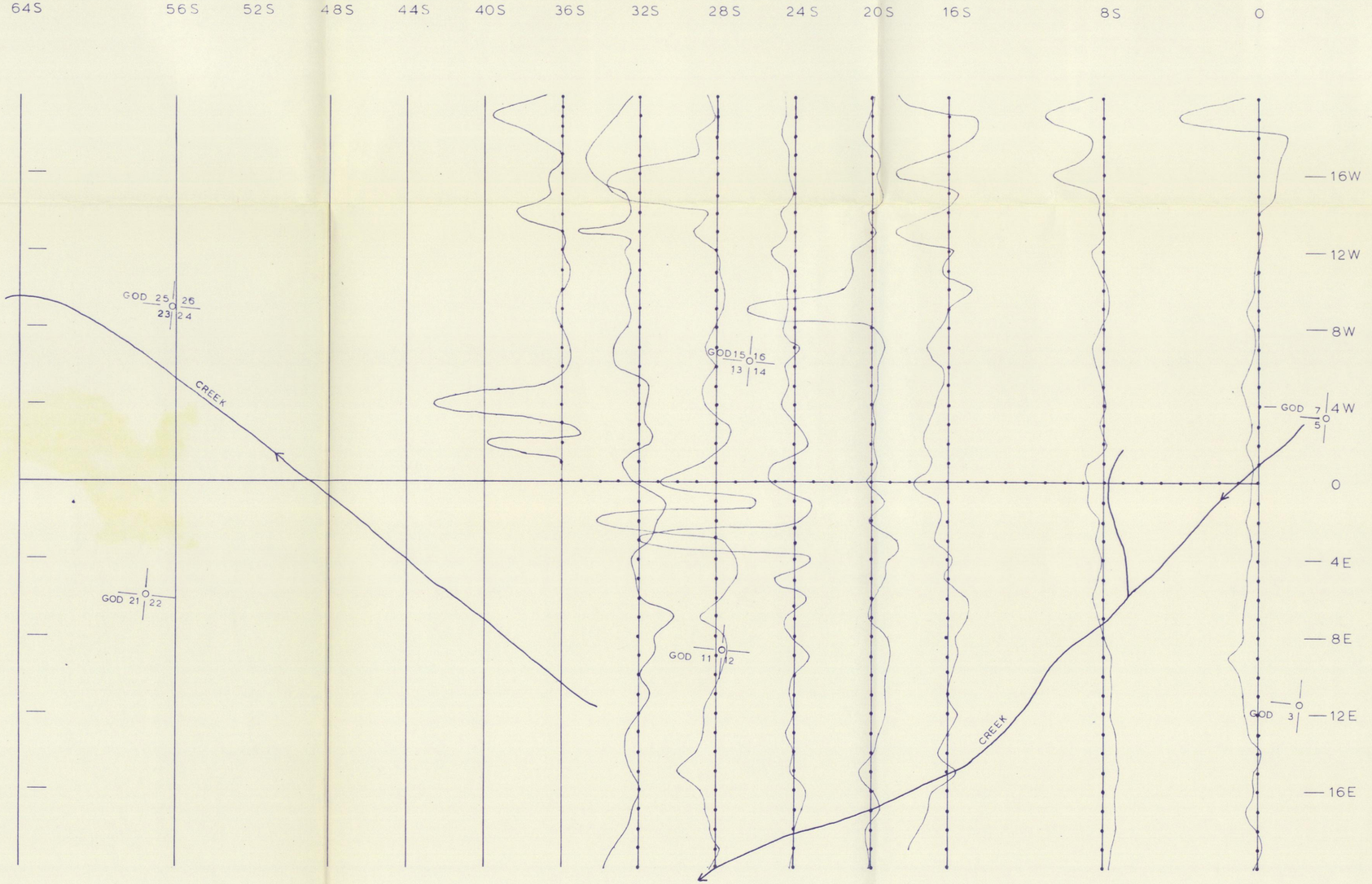
APPENDIX V

PERSONNEL

Grass Lakes Area
Geological, Geophysical, Geochemical Crew
Surveys

GOD MINERAL CLAIMS

Bob Harvey	Party Chief	Vancouver, B. C.
Bill Markin	Magnetometer Operator	Vancouver, B. C.
Paul Cartwright	EM Operator	Vancouver, B. C.
Vic Wright	EM Operator	Vancouver, B. C.
Ike Johnston	Linecutter	Whitehorse, Y. T.
Michael Shorty	Linecutter	Ross River, Y. T.
Herman Asp	Linecutter	Whitehorse, Y. T.
Bill Etzel	Linecutter	Ross River, Y. T.
Clara Tizya	Cook	Whitehorse, Y. T.
John S. Brock	Manager	Ross River, Y. T.



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ROSS RIVER, YUKON
GRASS LAKES AREA
GOD MINERAL CLAIMS "GW" GRID

GROUND MAGNETOMETER SURVEY
GAMMA VALUES - PROFILE MAP

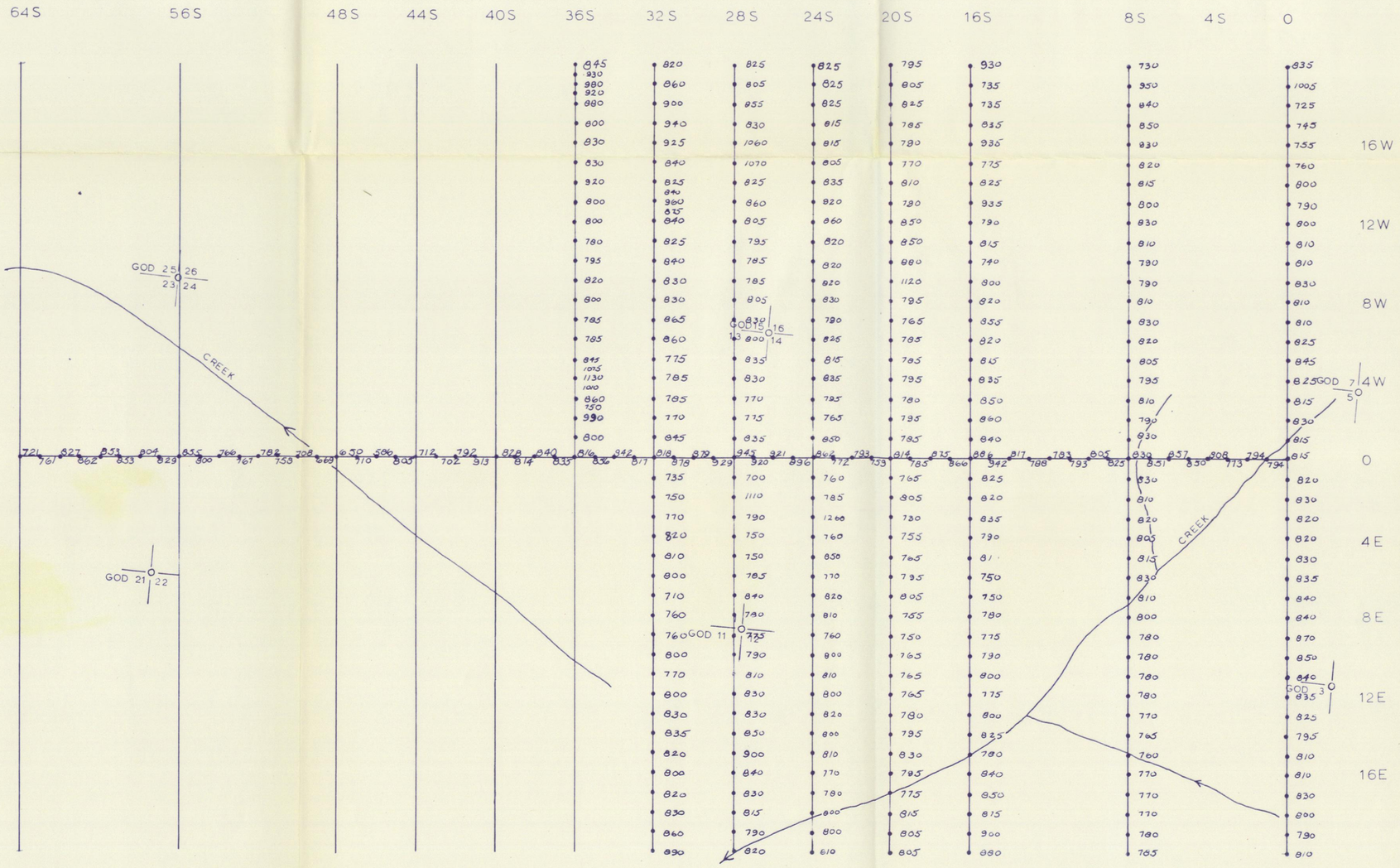
Profile scale: 1" = 200 ft
Instrument: Jalander
Operator: V. Markin
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: ae Hatton
Checked by:

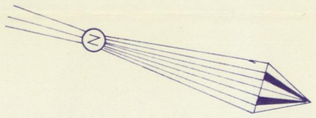
CLAIM POST GOD 11 | 12
9 | 10

SCALE

400 0 400 800 1200

1 inch to 400 feet





ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
GRASS LAKES AREA
GOD MINERAL CLAIMS "GW" GRID
GROUND MAGNETOMETER SURVEY
GAMMA - VALUES

Instrument : Jalander

Operator : V. Markin

Party chief : R. Harvey

Date : Aug., 1966

Drawn by : A. Fitchner

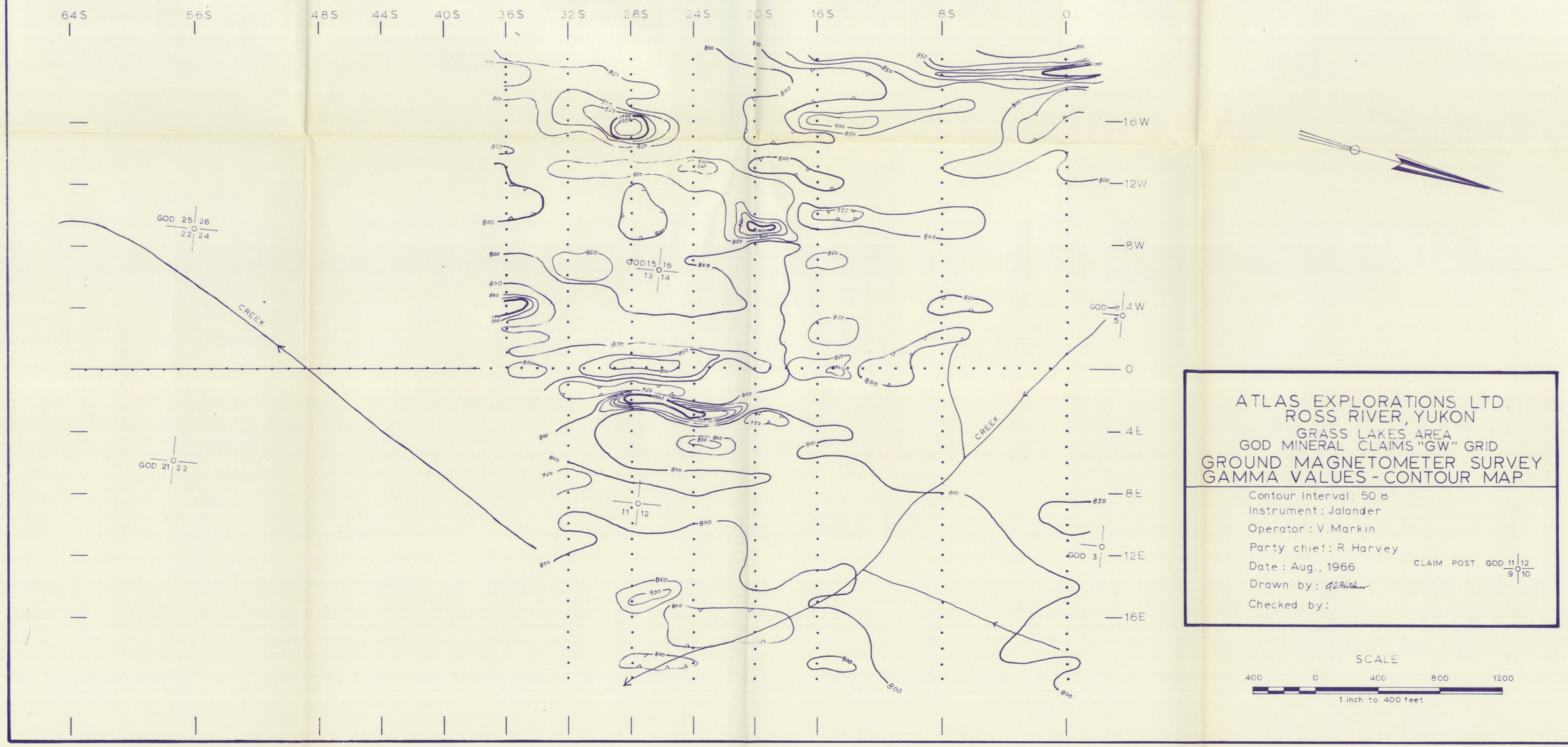
Checked by :

CLAIM POST GOD 11 12 / 9 10

SCALE

400 0 400 800 1200

1 inch to 400 feet



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ROSS RIVER, YUKON
GRASS LAKES AREA
GOD MINERAL CLAIMS "GW" GRID

GROUND MAGNETOMETER SURVEY
GAMMA VALUES - CONTOUR MAP

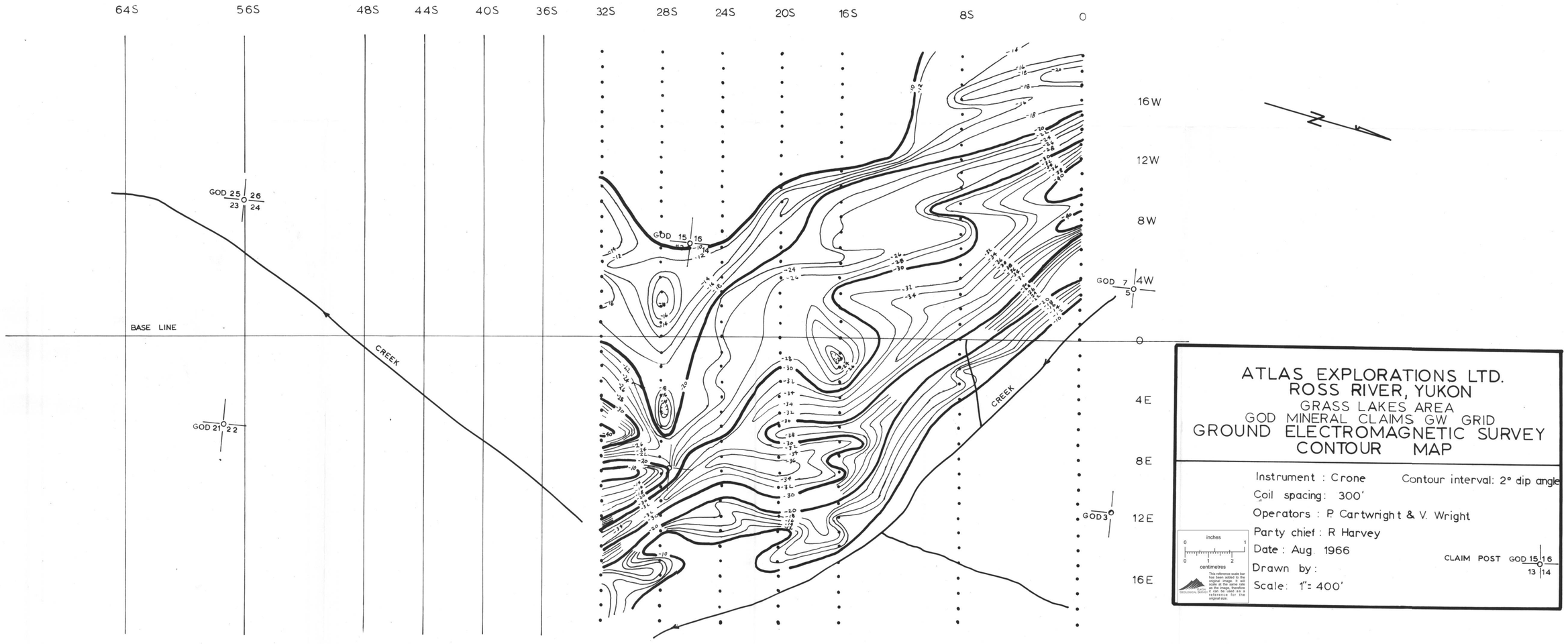
Contour Interval: 50 ϒ
Instrument: Jalander
Operator: V. Markin
Party chief: R. Harvey
Date: Aug., 1966
Drawn by: d. Ritchie
Checked by:

CLAIM POST GOD 11 12 / 9 10

SCALE

400 0 400 800 1200

1 inch to 400 feet



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
GRASS LAKES AREA
GOD MINERAL CLAIMS GW GRID
GROUND ELECTROMAGNETIC SURVEY
CONTOUR MAP

Instrument : Crone — Contour interval: 2° dip angle

Coil spacing: 300'

Operators : P. Cartwright & V. Wright

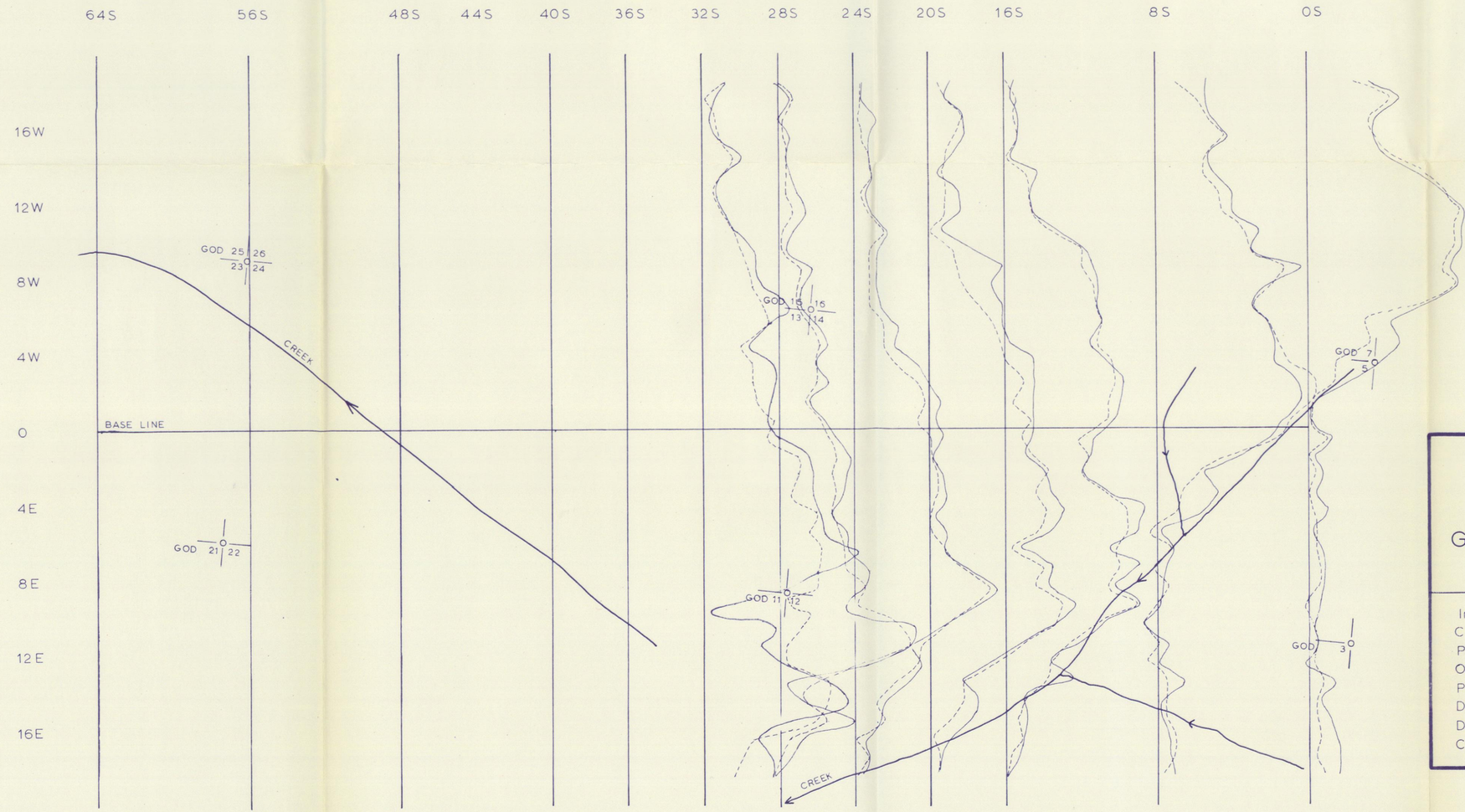
Party chief : R Harvey

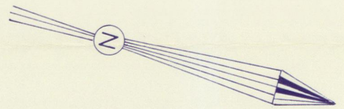
Date : Aug. 1966

Drawn by :

Scale: 1"= 400'

CLAIM POST GOD 15 16 / 13 14





ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON

GRASS LAKES AREA
GOD MINERAL CLAIMS "GW" GRID

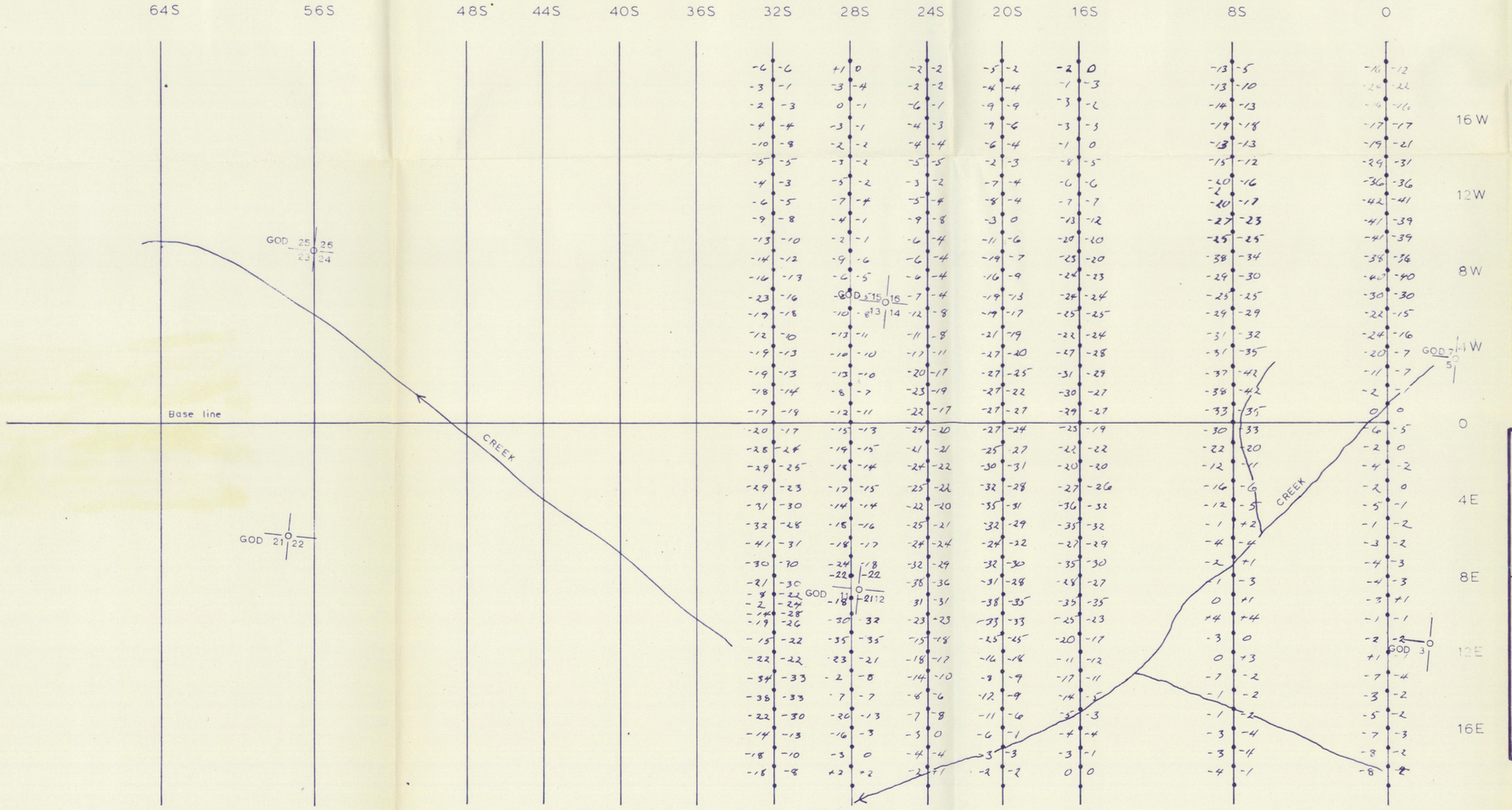
GROUND ELECTROMAGNETIC SURVEY
JEM HORIZONTAL LOOP
ELECTROMAGNETIC PROFILES

Instrument : Crone
Coil spacing: 300'
Profile interval: 1" = 20°
Operators : P. Cartwright & V Wright
Party chief : R Harvey
Date : Aug , 1966
Drawn by: Al Pilchuk
Checked by:

RESULTANT DIP ANGLE +ve -ve
1800 c.p.s.
480 c.p.s.

CLAIM POST GOD 11 12 / 9 10

SCALE
400 0 400 800 1200
1 inch to 400 feet



ATLAS EXPLORATIONS LTD.
ROSS RIVER, YUKON
GRASS LAKES AREA
GOD MINERAL CLAIMS "GW" GRID
GROUND ELECTROMAGNETIC SURVEY
JEM HORIZONTAL LOOP

Instrument: Crone — 1800 c.p.s. / 480 c.p.s.

Coil spacing: 300'

Operators: P. Cartwright & V. Wright

Party chief: R. Harvey

Date: Aug., 1966

Drawn by: Al Pitcher

Checked by:

CLAIM POST GOD 15 16 / 13 14

SCALE

400 0 400 800 1200

1 inch to 400 feet