GRAVITY SURVEY

of the

FORTIN LAKE AREA, N.W.T.

for

ATLAS EXPLORATIONS LIMITED

by

OVERLAND EXPLORATION
SERVICES LTD.

INDEX

INTRODUCTION

A gravity survey was conducted in the Fortin Lake area of the Yukon Territory for Atlas Explorations Limited by Overland Exploration Services Ltd., in June and July, 1969. Overland contracted the survey, metered the stations, and provided an interpretation on lines cut by Atlas Explorations.

The survey was conducted on a loose grid with varying line spacing up to 3,000 feet apart. The station spacing along the grid lines were at both 100 feet and 200 feet intervals.

SURVEY & FIELD PROCEDURE

The horizontal and vertical survey was conducted with transit and chain. The survey was closed on various base lines run across the area, and single extension lines without closure were double surveyed.

The gravity readings were taken with a Worden Master meter and stations were metered on two and one-half hour runs from base stations. The base station plots were used for graphing the diurnal gravity drift which in turn was applied to all station readings. Each gravity station run had several repeat stations from preceding runs in order to prove and maintain repeatability of the gravity meter. The repeats were all within a 0.00 to 0.05 milligal range.

All gravity readings are corrected for:

- Diurnal Tidal Drift
- Bouguer Free-Air-Correction

- Latitude Correction

- Terrain Correction

A density factor of 0.060 for a surface density of 2.65 has been used in this interpretation.

INTERPRETATION

The main body of this interpretation is derived from gravity profiles of the surveyed lines. From these profiles a regional gradient has been determined which forms the basis for defining local positive and negative anomalies. These gravity anomalies show as density highs and lows relative to the regional gradient and are mapped on the Residual Gravity Map. All model studies of the positive anomalies which could relate to sulphide bodies together with (depth and magnitude calculations) have assumed a density contrast of 0.9 to exist between native rock and the anomaly source. This contrast supports the majority of our calculations and it is to be construed that the source of the major anomalies are either dense sulphides or extremely dense basic rock intrusions. A third possibility could be an escarpment of native rock adjoining a deep layer of unconsolidated surface till. However, from both the pattern present and repeatability necessary to reproduce such effects

as shown on the Residual Map, we doubt that this latter possibility exists.

BOUGUER MAP

The Bouguer Map displays the total gravity field. The intensity of the gravity field over the surveyed area ranges from 542.0 to 557.2 milligals for a total difference of 15.2 milligals.

The Bouguer Map shows several areas of interest. One is a suspected fault trend that traverses the prospect from the Base Line on Line 88 W. southwestwards to the 50 + 00 S. Base Line at Line 136 W. This fault roughly parallels the "A" anomaly and is probably greatly involved with the "A" residual density high. Another area of interest is the massive density high area in the south central portion of this map. This high is no doubt attributed to a rock type change. A second area of suspected faulting is on Line O just north of the O Base Line.

RESIDUAL MAP

Residual gravity highs and lows have been extracted from the total gravitational field by constructing a regional gravity datum from the Bouguer profiles. The relationship of the total field to the regional datum results in residual gravity data. The gravity highs are what we primarily investigated in this report because the areas of suspected base metal content will have a positive gravitational relationship to the surrounding native rocks.

We are greatly hampered with the interpretation of this area by lack of regional gradient control due to the absence of east-west gravity lines. Also the great distance between grid lines is a drawback in placing any continuity to the anomalies from line to line. With the exception of the "A" anomaly we have declined to suggest large areal extent to any of the anomalies.

DISCUSSION OF ANOMALIES

We have lettered the positive anomalies on the Residual Map and the following is a discussion of them.

ANOMALY "A"

- The "A" anomaly is a series of gravity positives which extends in a northeast-southwest direction between Lines 88 W., and Line 136 W. This anomaly is coincident with a suspected fault and there is a possibility that the positive mass mapped on the Residual Map is an upthrust of native rock flanked by a thick section of surface till. There is also a distinct possibility that mineralization is present in the faulted area causing the localized intense highs that are intermittently spaced over the "A" trend.

ANOMALIES "B" & "C"

- The "B" and "C" anomalies are similar in appearance and magnitude. A study of the causative mass discloses that a density differential of 0.60 best defines these anomalies. This contrast is in the range of an overburnden to native rock contrast and there is a possibility that these anomalies could be thinning in the surface till.

ANOMALY "D"

- The "D" anomaly is a long linear feature that appears to flank the 40 W., and 48 W. Lines. There is a suspicious that this positive is of greater magnitude immediately east of the No. 40W.Line. Two cross lines should be run between the O and 48 W. Line at 70 + 00 S., and 110 + 00 S.

ANOMALY "E"

- The "E" anomaly is similar to "B" and "C", and the same statements are applicable.

ANOMALY "F"

- The "F" anomaly is a sharper high which may be from a dense rock source associated with sulphides. A cross line should be run across "F" to determine the areal extent.

CONCLUSIONS

We feel the area is worthy of further exploration to follow up the leads defined in this survey. If drilling is contemplated to investigate the residual anomalies, a closer spaced grid would be helpful to delineate the maximum position of the density highs. There is a distinct possibility that none of the lines have crossed the anomalies at the point of their greatest mass distribution.

Respectfully submitted by:

OVERLAND EXPLORATION
SERVICES LTD.

William T. Salt

William G. Crook
P. Geol.

Assisted by:
David K.Y.Chen, P. Geoph.

WTS/jp

CERTIFICATE OF PROFESSIONAL QUALIFICATIONS

1. I, William G. Crook, reside at 3404-8A Street, S.W., Calgary 6, Alberta.

2. I have a B.Sc. in Geology from the University of Alberta, Edmonton (1955).

3. I am a Professional Geologist registered with the Alberta Association of Professional Engineers.

4. I possess experience in the following fields of Geology: Surface Geology, Sub-Surface Geology, Geomorphology, Mineralogy, Structural and Stratigraphic Geology, Photogeology, Geophysics, Engineering Geology and Investigations, Economic Geology, Sub-Surface Mining and Petroleum Exploration.

5. I have worked on a great variety of exploration projects in the plains and mountainous regions of western and northern Canada, and South America.

6. I belong to the following professional societies: Alberta Association of Professional Engineers, Alberta Society of Professional Geologists.

7. I have not, directly or indirectly received, nor do I expect to receive any interest, direct or indirect, in the property of the Company (Atlas Explorations Limited), or any affiliate, nor do I beneficially own, directly or indirectly, any securities of the Company or any affiliate.

Respectfully submitted by:

William G. Crook

WILLIAM G. CROOK,
P. Geol.

DATED: September, 1969.

CERTIFICATE OF QUALIFICATIONS

I, DAVID K.Y. CHEN, Geophysicist, of 6405 Center Street North, Calgary 47, Alberta, Canada. hereby certify that:

1. I am a professional geophysicist associated with Overland Exploration Services Ltd., 1347 - 12th Avenue S.W., Calgary, 3, Alberta, Canada.

2. I have no direct or indirect interest in, nor do I expect to receive any direct or indirect interest in any properties or securities of New North Minerals Ltd.

3. I have attended the National Hunan University of Changsha Hunan, China, 1947, receiving a Bachelor of Science Degree in Mining Engineering; that I hold a Master's Degree in Earth Sciences (geophysics major) from New Mexico Institute of Mining Technology. at Socorro, New Mexico, U.S.A. During the period of 1964-67 I under-took part-time graduate studies in geophysics at Washington University, St. Louis, Missouri, U.S.A. I have completed all requirements of the graduate courses for my Ph. Degree work in geophysics except the thesis.

4. Since 1957, I have been intensively engaged in seismic, gravity and magnetic surveys and interpretations for oil/ore exploration in the U.S.A. and Far East with several Chinese, U.S. and Canadian oil and geophysical companies. In 1947, I was engaged

.....(Cont'd).....

as a Petroleum Engineer supervising oil well drilling and production. In 1957 I became involved in the geophysical oil/ore exploration field. I have held the following positions;

- Geophysicist
- Research Geophysicist
- Assistant Professor in Geophysics.

5. I am a member of the following academic and professional societies;

- Society of Exploration Geophysicists
- American Geophysical Union
- European Association of Exploration Geophysicists
- Association of Professional Engineers of Alberta
- Geological Society of Republic of China
- Chinese Petroleum Institute
- Chinese Institution of Mining and Metallurgical Engineers

6. I have published several papers (in both China and the United States, together with periodicals.

DAVID K.Y. CHEN
Professional Geophysicist

DKYC/jp

0 10 N 20 N 30 N 40 N 45 N

546.00

545.00

544.00

543.00

800' ASL

700' ASL

gravity

elevation

10 X 10 TO THE CENTIMETER 47 1512
25 X 38 CM. MADE IN U.S.A.
KEUFFEL & ESSER CO.

FORTIN LAKE AREA LINE 0
Sheet 1

80 S 70 S 60 S 50 S 40 S 30 S 20 S 10 S 0

gravity

elevation

750' ASL

700' ASL

600' ASL

551.00

550.00

549.00

548.00

547.00

FORTIN LAKE AREA LINE 0
Sheet 2

146 S

140 S

130 S

120 S

110 S

100 S

90 S

80 S

70 S

gravity

elevation

700'ASL

600'ASL

500'ASL

555.00

554.00

553.00

552.00

551.00

K&E 10 X 10 TO THE CENTIMETER 47 1512
25 X 25 CM
KEUFFEL & ESSER CO.
MADE IN U.S.A.

FORTIN LAKE AREA LINE 0
Sheet 3

2.06 S

2.00 S

1.90 S

1.80 S

1.70 S

1.60 S

1.50 S

1.40 S

557.00

556.00

555.00

gravity

660' AGL

600' AGL

500' Asl

400' Asl

300 Asl

elevation

FORTIN LAKE AREA

LINE 0
Sheet 4

22+5
210 S
200 S
190 S
180 S
170 S
167 S

557.00
556.00

gravity

330' ASL
300' ASL
200' ASL
180 ASL

elevation

FORTIN LAKE AREA

LINE 16
Sheet 1

102 S 100 S 90 S 80 S 70 S 60 S 50 S 49 S

553.00

552.00

551.00

550.00

gravity

elevation

700'ASL

600'ASL

560'ASL

FORTIN LAKE AREA

LINE 40
Sheet 1

167 S
160 S
150 S
140 S
130 S
120 S
110 S
100 S
98 S

500'ASL
400'ASL
340'ASL

gravity
elevation

55700
556.00
555.00
554.00
553.00

10 X 10 TO THE CENTIMETER 47 1512
25 X 25 CM.
KEUFFEL & ESSER CO.
MADE IN U.S.A.

FORTIN LAKE AREA LINE 40
Sheet 2

50S 40S 30S 20S 10S 0 10N 20N

1150' ASL
1100' ASL
1000' ASL
900' ASL
800' ASL
700' ASL

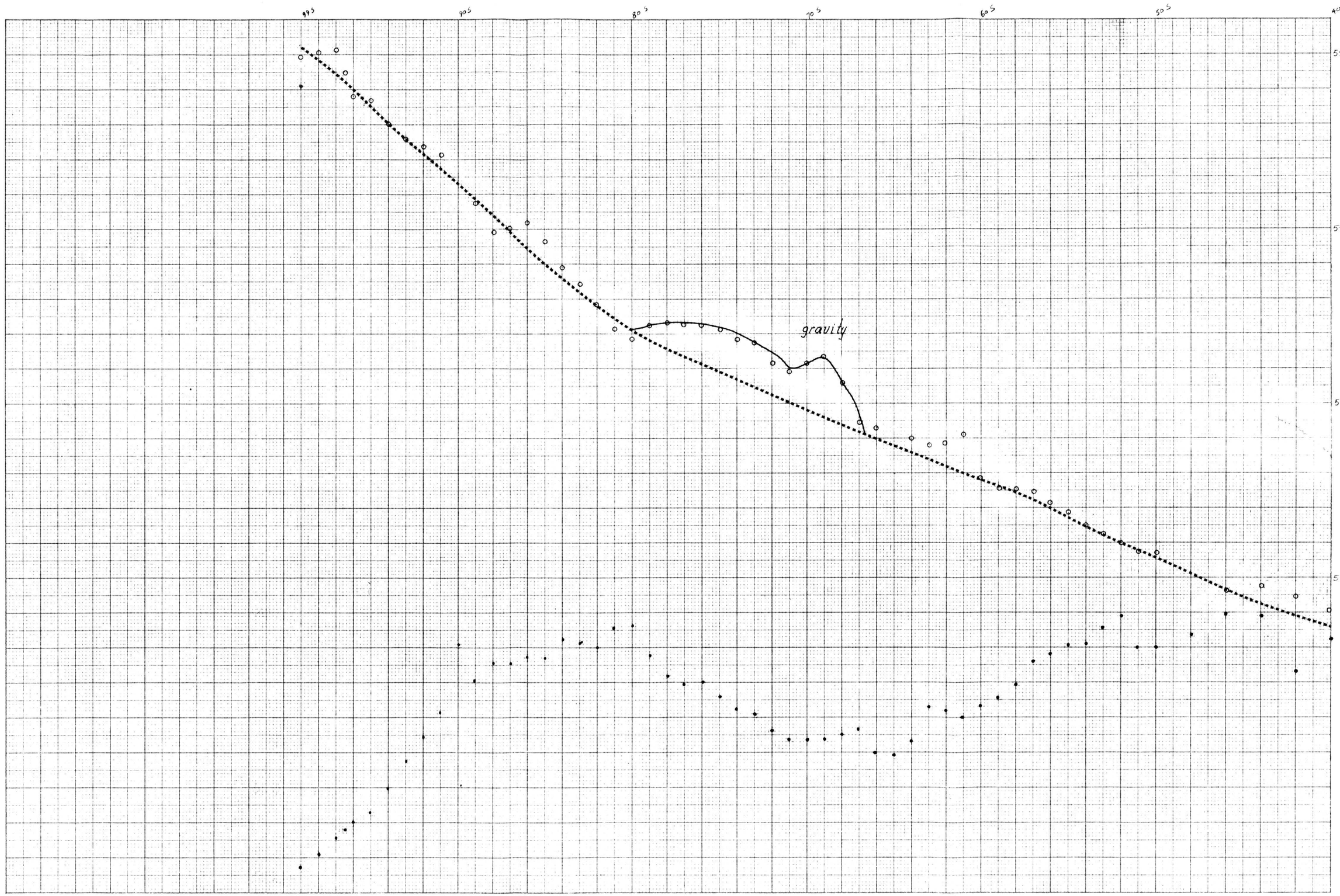
550.00
549.00
548.00
547.00
546.00

gravity

elevation

10 X 10 TO THE CENTIMETER 47 1512
25 X 38 CM. MADE IN U.S.A.
KEUFFEL & ESSER CO.

FORTIN LAKE AREA LINE 48
Sheet 1



FORTIN LAKE AREA LINE 48
Sheet 2

3S 0 10N 20N 30N 40N 50N 60N 67N

546.00

545.00

544.00

543.00

542.00

gravity

1000' ASL

900' ASL

800' ASL

elevation

10 X 10 TO THE CENTIMETER 47 1512
25 X 36 CM.
KEUFFEL & ESSER CO.
MADE IN U.S.A.

FORTIN LAKE AREA LINE 88
Sheet 1

0.8 S 6 S 5 S 4 S 3 S 2 S 1 S 0 6 N

gravity

1000'ASL
900'ASL
800'ASL
700'ASL
600'ASL
570'ASL

550.00
549.00
548.00
547.00

elevation

FORTIN LAKE AREA LINE 88
Sheet 2

185 S 130 S 120 S 110 S 100 S 90 S 80 S 70 S 60 S

600'ASL

500'ASL

400'ASL

300'ASL

250'ASL

gravity

elevation

553.00

552.00

551.00

550.00

10 X 10 TO THE CENTIMETER 47 1512
25 X 25 CM. MADE IN U.S.A.
KEUFFEL & ESSER CO.

FORTIN LAKE AREA LINE 88
Sheet 3

201 S 200 S 190 S 180 S 170 S 160 S 150 S 140 S 130 S

gravity

554.00

553.00

300' ASL

200' ASL

100' ASL

elevation

FORTIN LAKE AREA LINE 88
Sheet 4

51S 50S 48S 40S 30S 20S 10S 0 10N 20N

850 ASL
800' ASL
700' ASL
600' ASL
550' ASL

gravity

elevation

550.00
549.00
548.00
547.00
546.00

10 X 10 TO THE CENTIMETER 47 1512
25 X 35 CM. MADE IN U.S.A.
KEUFFEL & ESSER CO.

FORTIN LAKE AREA

LINE 116
Sheet 1

← L112 | L116 →

100 S 91 S 81 S 71 S 61 S 51 S 50 S 49 S 40 S

551.00

550.00

549.00

700 ASL

600 ASL

500 ASL

400 ASL

350 ASL

gravity

↑ 400' 309

elevation

FORTIN LAKE AREA

← LINE 112 — 50S — LINE 116 →

Sheet 2

2S 1.5S 1S .5S 0 2S 0 2N 10N 20N 30N 40N 52N

548.00

547.00

546.00

545.00

700' AGL

600' ASL

500' ASL

400' ASL

300' ASL

elevation

gravity

LINE 136
Sheet 1

87°S 80°S 70°S 60°S 50°S 40°S 30°S 22°S 20°S 10°S

551.00

550.00

549.00

548.00

gravity

500'ASL

450'ASL

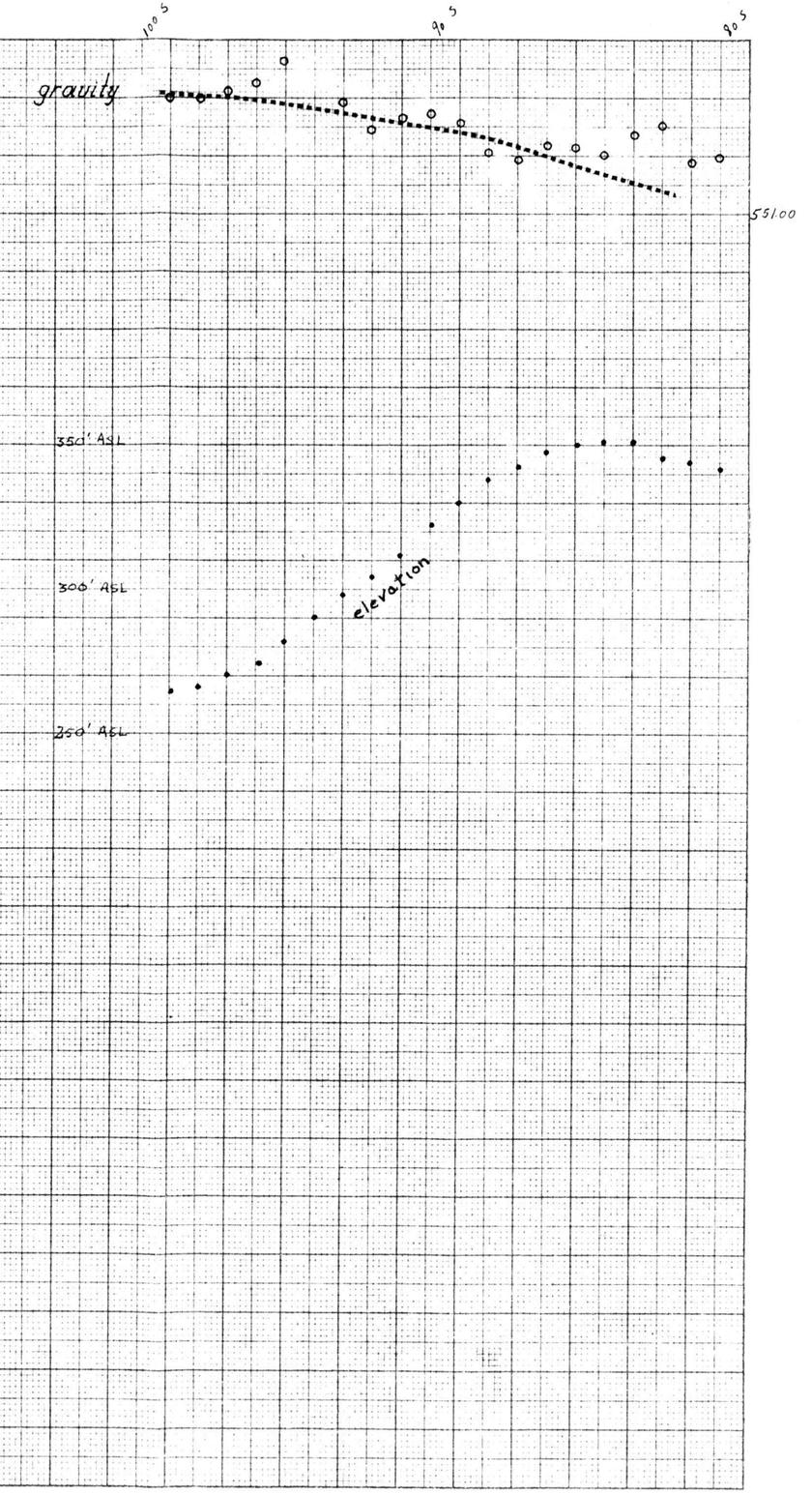
400'ASL

340'ASL

elevation

10 X 10 TO THE CENTIMETER 47 1512
25 X 25 CM. MADE IN U.S.A.
KEUFFEL & ESSER CO.

LINE 136
Sheet 2



FORTIN LAKE AREA

LINE 136
Sheet 3

LINE — 88 W.

LINE — 0

BASE LINE 150+00 S.

BASE LINE 150+00 S.

LINE 40 W.

LINE 16 W.

552.00

553.00

554.00

554.00

553.00

553.00

554.00

555.00

556.00

557.00

554.00

555.00

557.00

556.00

OES

OVERLAND
EXPLORATION SERVICES LTD.

FOR

ATLAS EXPLORATIONS LIMITED

FORTIN LAKE AREA, YUKON

BOUGUER GRAVITY MAP

SCALE : 1" = 400 FT. 105-B-16. C.I. = 0.20 MGL.

inches
0 1 2
0 1 2 3 4 5
centimetres

YUKON GEOLOGICAL SURVEY

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

BOUGUER GRAVITY MAP

Clearland Exploration Survey,
Watson Lake, 105 D-16.

LINE — 136 W.
LINE — 116 W.
LINE — 112 W.
LINE — 88 W.
LINE — 48 W.
LINE — 40 W.
LINE — 0

BASE LINE 0+00
BASE LINE 50+00 S
BASE LINE 100+00 S

GRID LAKE

542.00
543.00
544.00
545.00
546.00
547.00
548.00
549.00
550.00
551.00
552.00
553.00

inches
centimetres

This reference scale bar has been added by the original image. It will change if the image is resized as the image therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

LINE — 88 W.

0

0

0.20

0

0

0

0

0

0

0

0.20

0

LINE — 0

D

0.40

0

BASE LINE 150 + 00 S.

LINE — 0

F

0.40

0

— LINE 16 W. — — LINE 40 W. —

BASE LINE 150 + 00 S.

OES

OVERLAND
EXPLORATION SERVICES LTD.

FOR
ATLAS EXPLORATIONS LIMITED

FORTIN LAKE AREA, YUKON

RESIDUAL GRAVITY MAP

SCALE 1" = 400 FT. 105-B-16 C.I. 010 MGL.

inches
0 1 2
0 1 2 3 4 5
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

NORTHERN PORTION OF MAP

SOUTHERN PORTION OF MAP

LINE — 136 W.

LINE — 116 W.

LINE — 88 W.

LINE — 48 W.

LINE — 0 W.

LINE — 40 W.

LINE — H12 W.

BASE LINE 0+00

BASE LINE 50+00 S

BASE LINE 100+00 S

0+00

50+00 S

100+00 S

GRID LAKE

A

B

C

D

E

0

20

30

40

50

70

inches
centimetres

This reference scale bar has been added to the original image so that scale of the same can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

RESIDUAL GRAVITY MAP

Aberdeen Exploration Survey

Fortin Lake, 105-G-16.