GRAVITY SURVEY REPORT

Y6/18

VANGORDA CREEK PROPERTY, YUKON TERRITORIES

PROSPECTORS AIRWAYS COMPANY LIMITED

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RADAR EXPLORATION COMPANY

1955

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GRAVITY SURVEY REPORT

PROSPECTORS AIRWAYS COMPANY LIMITED

VANGORDA CREEK PROPERTY, YUKON TERRITORIES

THE SURVEY

Like all geophysical methods the gravity meter detects a physical property of rock. In this case the property measured is weight. The complete survey is thus a map of the underlying weight distributions.

It is to be noted that a heavy subsurface body is not only detected but actually weighed, that is, the excess mass of the body is measured. This excess mass determination is independent of any assumptions and it can be translated to an actual tonnage estimate by assuming the average densities of the ore and host rock.

The gravity meter itself has been rapidly developed over the last three years. It is an amazing instrument measuring to one part in 100,000,000 of the earth's field yet is more rugged and can be used with the same speed as a magnetometer.

A survey measuring to such an accuracy is affected by causes other than subsurface masses. These causes can however be accurately corrected for resulting in a "total gravity reading" which represents only what is below the ground. The corrections necessary are (1) elevation - due to change in distance from centre of earth, (2) instrument drift due to affect of temperature and changes in position of the sun and moon, (3) latitude - due to change of shape of earth with latitude, (4) terrain - due to pull of large hills.

LOCATION OF AREA

The property straddles Vangorda Creek approximately 12 miles by road north of the Pelly River, Yukon Territories.

PREVIOUS WORK IN AREA

The area has been covered by magnetic and geochemical surveys. Considerable drilling has also been done both exploratory and outlining the known deposit.

Some portions of the ore are magnetic, other well mineralized zones are not, this plus the fact that the overburden contains considerable magnetite renders the method to an uncertain prospecting tool.

The soil testing geochemical survey has the advantage of directly detecting the lead, zinc concentration. However the concentration is of the soil content only and does not necessarily represent what lies in the rock below. Thus the anomalies tend to be numerous and broad. The method however still remains a good primary exploration method.

CONDUCT OF SURVEY

The survey was run on the grid of lines cut for the magnetic survey. A station interval of 100 feet was primarily used with a varying line separation. The survey covered primarily the region adjacent to the known ore zone with sections run out to test magnetic anomalies.

All gravity and elevation runs were made in closed loops with all errors being adjusted. Elevation misclosures were kept under .5 of a foot and gravity misclosures under .05 milligals. Drift, elevation, latitude and terrain corrections were applied to the gravity readings.

INTERPRETATION

The following maps have been prepared. The purpose for each map is also noted.

(1) Gravity Plan Map - scale 1" = 200'
- to compare results with known surface geology
- to detect strikes and trends

(2) Elevation Plan Map - scale 1" = 200'
- to compute terrain effects
- for use in property development

(3) Gravity Profiles - scale 1" = 200'
1" = .50 milligals
- to mark contacts

(4) Residual Gravity Plan Map - scale L" = 200'
- for tonnage estimation
- outlining of individual anomalies

Density measurements carried out on both surface and core speciments gave the following values:-

Hole	Depth	Comment	Density
-	Surface	Granite outcrop	2.64
122	139'	Schist	2.69
"	188'	"	2.75
		Graphite Schist	2.78
33	393'	Serecite schist	2.76
122	45'	Gabro	2.85
"	80'	"	2.84
33		Massive Sulphides	4.38
Unmarked		" "	4.23
"		" "	4.62

The schists are of relatively uniform density with the granite slightly lighter and the gabbro slightly heavier. There is a marked density contrast between these rocks and the mineralized samples with the result that near surface deposits of massive sulphides would be expected to produce sharp high gravity anomalies.

With reference to the total gravity map and the gravity profiles it is noted that from lines 40+00W to 10+00W the gravity is fairly flat with a uniform regional rising towards the southwest. The irregularities are in the order of ± .10 milligals and best explained as due to overburden variations.

Lines 10+00W, 8+00W and 6+00W gravity profiles rise considerably towards the southwest suggesting that they may be on the edge of an anomaly. Extensions of these lines is recommended.

Commencing on line 2+00W the first traces of the anomaly are detected. The true portions of the anomaly are best shown on the residual gravity map. The residual map is simply what is left when the regional gravity is removed.

The regional gravity in this case consists of a gradual slope to the southwest and is caused by the large gabbro intrusives in that direction.

The residual is thus a gravity map of the local structures. On the residual map suggested faults and contacts of the known deposit are marked.

The gravity work reveals that the massive mineralization is banded in parallel zones along its length. One explanation of this is that the mineralization is controlled by faulting and/or shear zones. These supposed faults are shown on the map.

Some of the contacts of the deposit are noticeably sharp, others gradual. It is suspected that some of the sharp contacts, particularly the northwestern termination of the deposit, are fault contacts. These are also marked as questionable faults.

Approximately 500' southwest of the orebody and running parallel to it is a small broad low. This is probably caused by a rock formation slightly less dense than the surrounding schists.

Tonnage calculations were made from the residual gravity map. The excess tonnage obtained was 6 million long tons. This was transferred into actual tonnage with the assumption that the average schist density is 2.8 gr./cc and the average mineralized density is 4.0 gr./cc. The amount obtained is 20 million long tons. This figure includes all sulphide mineralization and thus would be considerably greater than the lead-zinc ore tonnage.

CONCLUSION

The ore body is clearly detected and its edges well defined. No other sizeable anomaly was uncovered in the area surveyed.

Due to the sharp rise at the southwestern ends of 6+00W, 8+00W and 10+00W and the presence of a geochemical anomaly over this area it is suggested that this is the most interesting area for further exploration.

It is recommended that all the geochemical anomalies in the area be covered by a gravity survey with a line separation of 400' and station interval of 100', if further exploratory work is considered on the property.

Respectfully submitted.

Radar Exploration Company

J. Duncan Crone

J. Duncan Crone

Toronto, Ontario.
July 29 1955

ASSESSMENT WORK DECLARATION

A gravity survey was conducted by Radar Exploration Company, Toronto, for Prospectors Airways Company Limited, Toronto, on their Vangorda Creek Property, Yukon Territories.

The area covered is shown on the enclosed map. A station interval of 100', and in some areas 50', was used on a grid system with a varying line separation. A Worden Gravity meter #8, sensitivity .10024 milligals per scale division, was used.

A survey crew, consisting of three men, (1) surveyor and party chief, (2) meter operator, and (3) rodman, was employed throughout the survey.

The office work consisted of (a) computation of field results, (b) computation of latitude and terrain corrections, (c) draughting, and (d) interpretation. This required the labour of 3 people, (1) geophysicist, (2) computer, and (3) draughtsman.

Following is a man days field work weekly breakdown which does not include travelling time:-

Week	Days x No. of men		Man days field work
June 6-12	3 x 3	=	9
" 13-19	7 x 3	=	21
" 20-26	7 x 3	=	21
" 27-July 3	7 x 3	=	21
July 4-10	7 x 3	=	21
" 11	1 x 3	=	3
Total man days field work		=	96
Man days office work		=	45
Total man days		=	141

This does not include line cutting which was supplied by Prospectors Airways Company Limited.

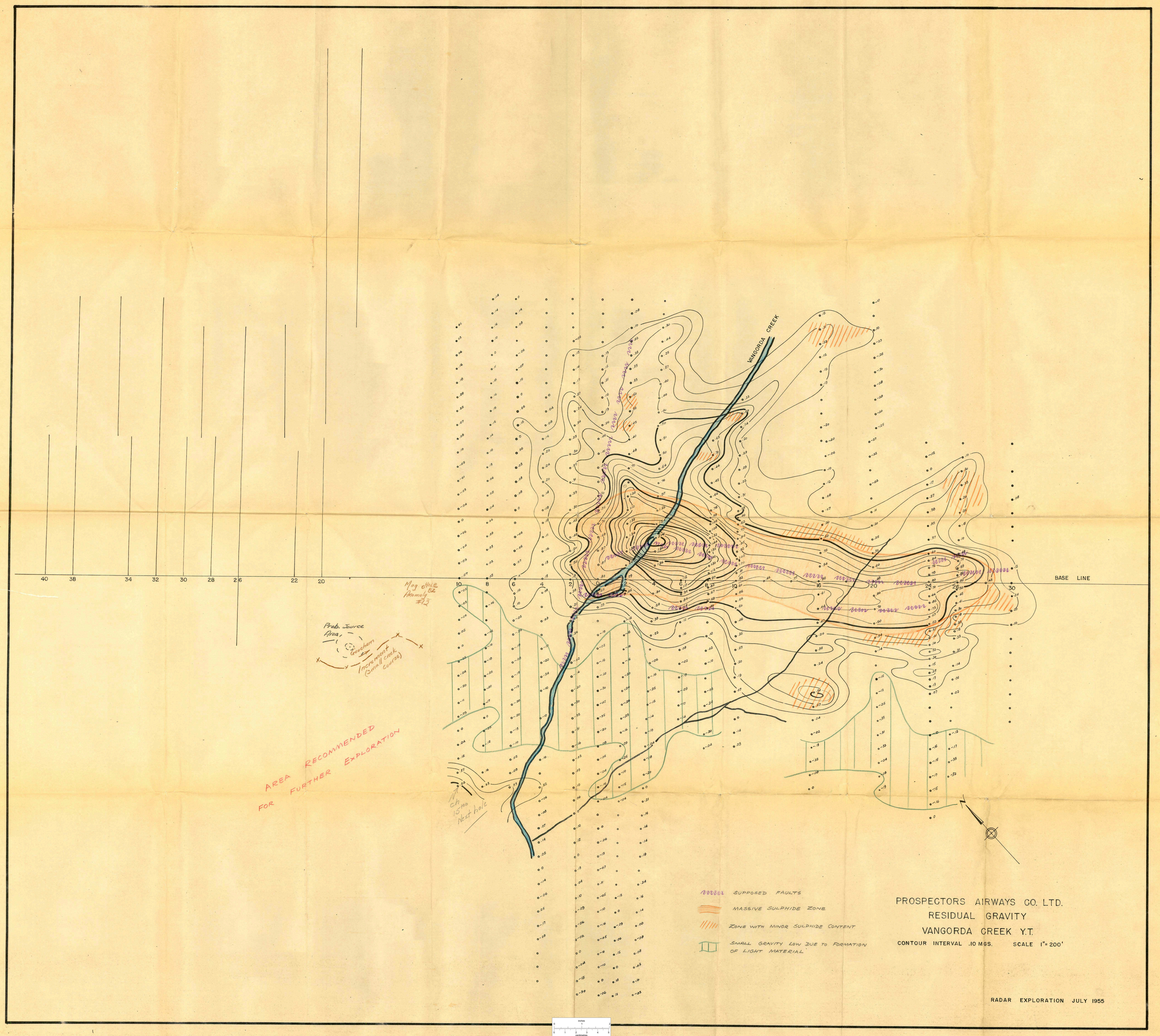
The survey was on a contract basis at a rate of $3500.00 per month. The cost of this survey was $4033.33.

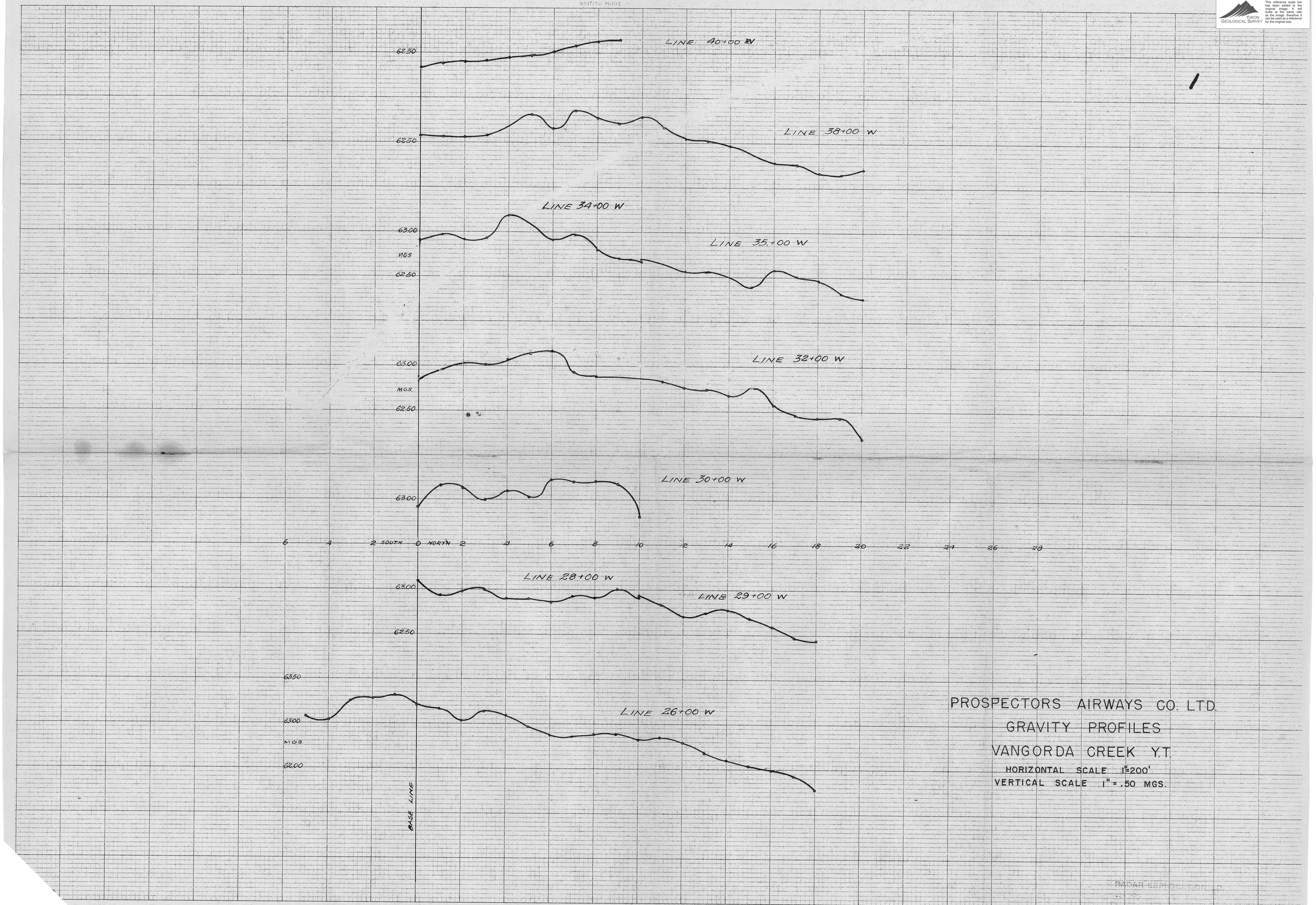
J. Duncan Crone

J. Duncan Crone
Radar Exploration Company

Toronto, Ontario.
July 29 1955

BASE LINE
N
PROSPECTORS AIRWAYS CO. LTD.
VANGORDA CREEK Y.T.
TOTAL GRAVITY SURVEY
CONTOUR INTERVAL 0.10 MGS. SCALE 1"= 200'
RADAR EXPLORATION JULY 1955


VANGORDA CREEK
BASE LINE
40
38
34
32
30
28
26
22
20
10
8
6
4
2
0
2
4
6
8
10
16
20
24
26
30
Mag. Hole 82
Anomaly #13
Prob. Source Area
Geochem
Increment (Small creek course)
AREA RECOMMENDED FOR FURTHER EXPLORATION
Ch 15+00 Next hole
SUPPOSED FAULTS
MASSIVE SULPHIDE ZONE
ZONE WITH MINOR SULPHIDE CONTENT
SMALL GRAVITY LOW DUE TO FORMATION OF LIGHT MATERIAL
PROSPECTORS AIRWAYS CO. LTD.
RESIDUAL GRAVITY
VANGORDA CREEK Y.T.
CONTOUR INTERVAL .10 MGS.
SCALE 1"= 200'
RADAR EXPLORATION JULY 1955



PROSPECTORS AIRWAYS CO. LTD.
GRAVITY PROFILES
VANGORDA CREEK Y.T.
HORIZONTAL SCALE 1"=200'
VERTICAL SCALE 1"=.50 MGS.

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

BRITISH MADE

BRITISH MADE

inches
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centimetres
YUKON GEOLOGICAL SURVEY
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2

63.50
MGS.
63.00

LINE 22+00 W

LINE 23+00 W

63.50

63.00

62.50
MGS.
62.00

LINE 20+00 W

61.50

61.00

60.50

62.50

62.00

LINE 18+00 W

61.50
MGS.
61.00

14 12 10 8 6 4 2 SOUTH 0 NORTH 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

60.50

65.00

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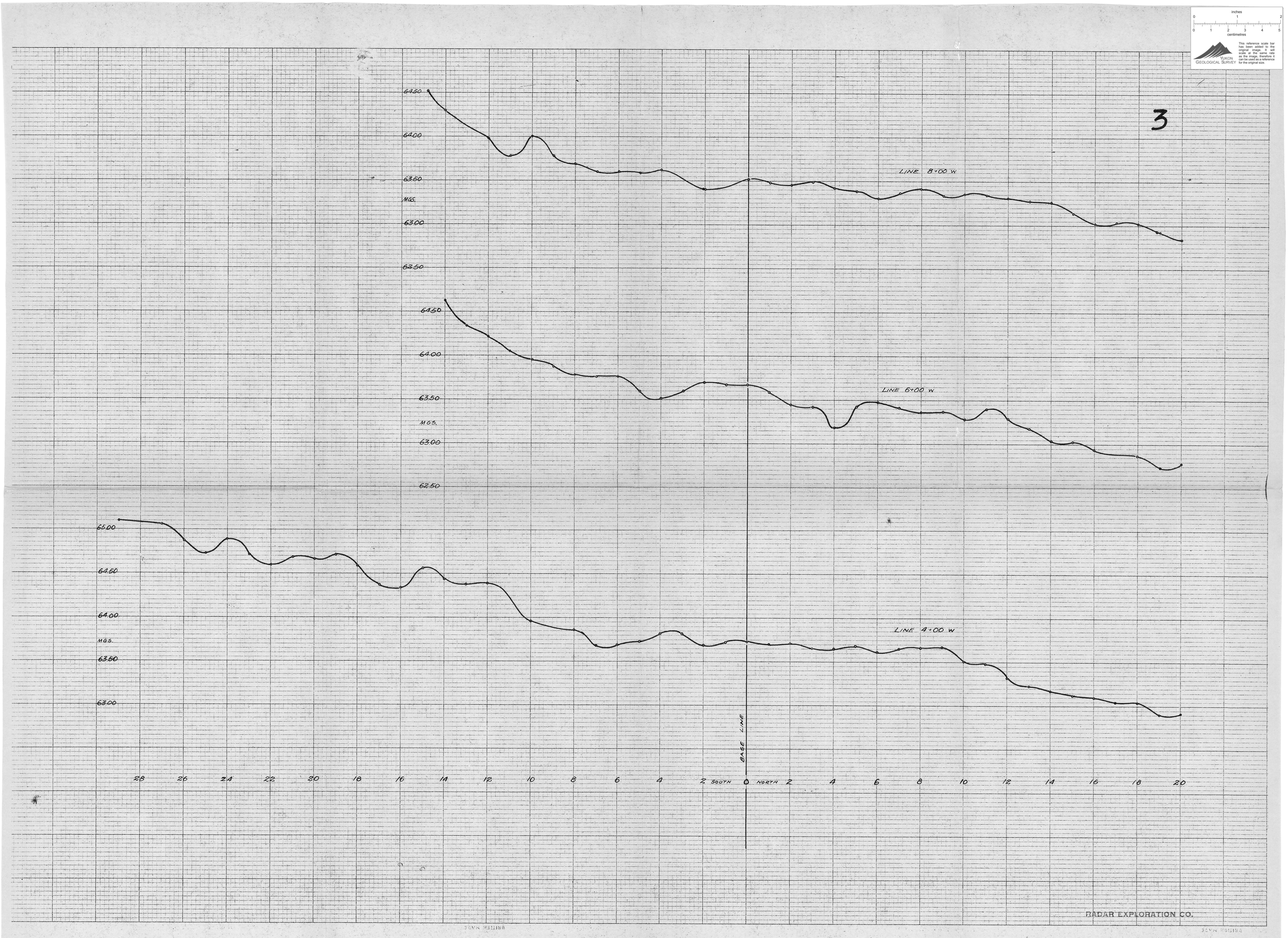
BASE LINE

LINE 10+00 W

RADAR EXPLORATION CO.


3
64.50
64.00
63.50
MGS.
63.00
62.50
LINE 8+00 W
64.50
64.00
63.50
MGS.
63.00
62.50
LINE 6+00 W
65.00
64.50
64.00
MGS.
63.50
63.00
LINE 4+00 W
BASE LINE
28 26 24 22 20 18 16 14 12 10 8 6 4 2 SOUTH 0 NORTH 2 4 6 8 10 12 14 16 18 20
RADAR EXPLORATION CO.

BRITISH MADE

BRITISH MADE

4

LINE 2+00 W

65.00
64.50
64.00
MGS.
63.50
63.00

LINE 0+00

65.00
64.50
64.00
MGS.
63.50
63.00

LINE 2+00 E

6300
6500
64.50
MGS.
64.00
6350
63.00

30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 SOUTH 0 NORTH 2 4 6 8 10 12 14 16 18 20

BASE LINE

RADAR EXPLORATION CO.

inches
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centimetres
YUKON GEOLOGICAL SURVEY
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BRITISH MADE

BRITISH MADE

5

LINE 4100 E

66.50
65.00
MGS.
64.50
64.00
63.50
63.00

LINE 6100 E

65.00
64.50
MGS.
64.00

LINE 8+00 E

65.50
65.00
MGS.
64.50
64.00

LINE 10+00 E

65.00
64.50
MGS.
64.00

30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 SOUTH 0 NORTH 2 4 6 8 10 12 14 16 18 20

BASE LINE

RADAR EXPLORATION CO.

36

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.

BRITISH MADE

BRITISH MADE

6

LINE 16+00 E

6500
6450
6400
MGS.
6350
6300

LINE 20+00 E

6600
6450
6400
MGS.
6350
6300

16 14 12 10 8 6 4 2 SOUTH 0 NORTH 2 4 6 8 10 12 14 16 18 20

LINE 24+00 E

6500
6450
MGS.
6400
6350

LINE 26+00 E

6500
6450
MGS.
6400

BASE LINE

RADAR EXPLORATION CO.

inches
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0 1 2 3 4 5
centimetres
YUKON GEOLOGICAL SURVEY
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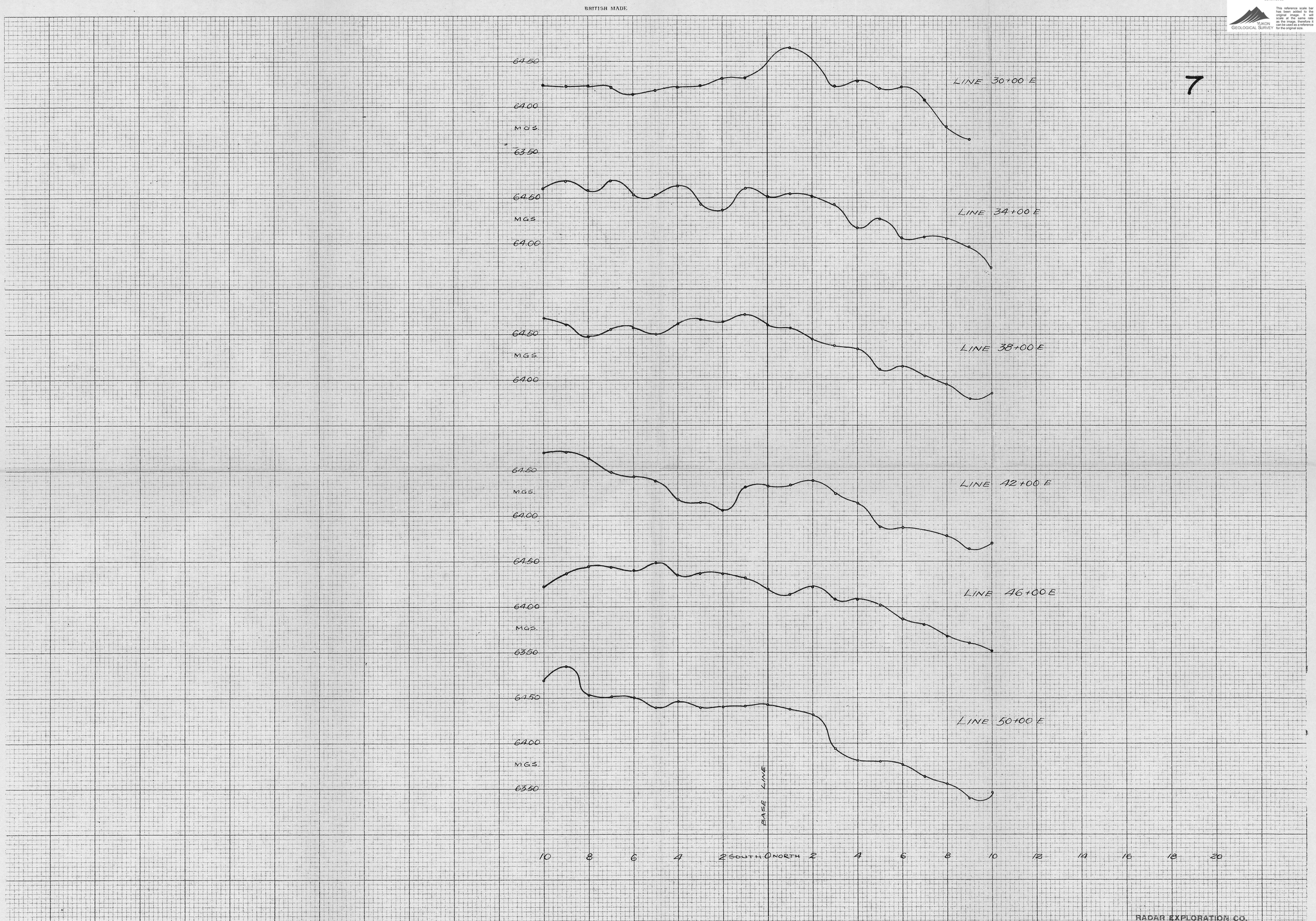

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BRITISH MADE

BRITISH MADE

8

LINE 54+00 E

6450

6400

MGS.

6350

LINE 58+00 E

6450

6400

MGS.

6350

LINE 62+00 E

6450

6400

MGS.

6350

LINE 66+00 E

6400

MGS.

6350

LINE 70+00 E

6400

MGS.

6350

BASE LINE

10 8 6 4 2 SOUTH 0 NORTH 2 4 6 8 10

RADAR EXPLORATION CO.

inches
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0 1 2 3 4 5
centimetres
YUKON GEOLOGICAL SURVEY
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YUKON GEOLOGICAL SURVEY
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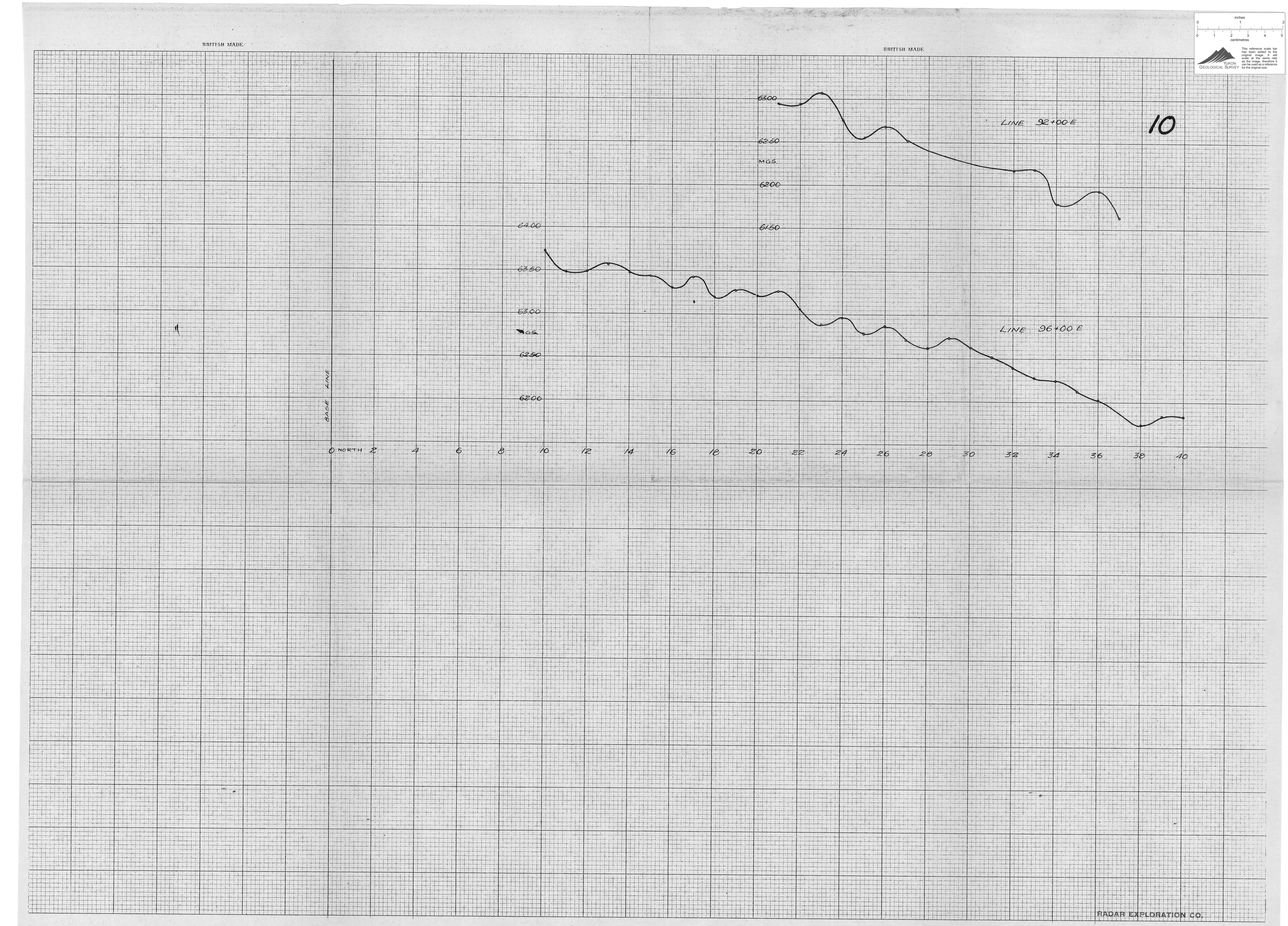

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YUKON GEOLOGICAL SURVEY

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RADAR EXPLORATION CO.

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