

3228

GEOPHYSICAL & GEOCHEMICAL

REPORT

ON 93A/2E

NORA CLAIMS

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 3228 MAP.....

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December 31, 1970

ARDO MINES LTD. (N.P.L.)

INTRODUCTION

Ardo Mines Ltd. (N.P.L.) continued their exploration activities on the Cariboo property situated near Likely, British Columbia. The work carried out in the Summer of 1970 includes line cutting, magnetometer surveys, and diamond drilling. This report mainly deals with the results of the work carried out in 1970.

In the Summer and Fall of 1969 intensive exploration work was carried out on this property, including diamond drilling. The report by this author dated March 5, 1970 describes the results of the work carried out last year.

PROPERTY

The property consists of some one hundred and one contiguously located mineral claims and they are identified as follows:

<u>Claims</u>		<u>Record Numbers</u>
Polley	1 - 4	31394 - 31397
April	1 - 16	48571 - 48586
May	1 - 16	48587 - 48602
Russ	1,2,5,7	53489, 53490, 53491, 53492

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<u>Claims</u>		<u>Record Numbers</u>
<u>Red Rock Group:</u>		
Shirley	1 - 6	51316-319, 318, 317, 53040-41
Jodie	1 - 2	52568-69
Tiki	1 - 10	53494-53503
Fir	1,3,5-18	48483, 48485, 48487 to 48500
Red Rock	1,3,5	31388, 31390, 31392
Pine	2,3,4	48502-04
<u>Pine Group:</u>		
Pine	1, 5 to 18	48501, 48505-48518
Red Rock	2,4,6	31389, 31391, 31393
Fir	2,4	48484, 48486
Russ	8	53493
<u>Nora Group:</u>		
Nora	1 - 16	59053-59068

These claims are recorded at the Mining Records Office in Quesnel, British Columbia.

LOCATION AND ACCESS

The property under discussion is situated in the vicinity of the village of Likely, British Columbia, on the Quesnel River. Access to the different parts of the property is excellent by means of all weather, gravelled secondary roads from the 150 Mile House, which is situated about forty-five miles southwest of the above property.

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Adjacent to the southwest corner of this property are situated the mineral claims belonging to the Cariboo Bell Mines Ltd. It has been announced that this company has already outlined approximately thirty-seven million tons of ore with a grade of 0.515% copper. It is understood that recent exploration programs have added more tonnage to the original reserves. The Gibraltar Mines, which have come up with an announcement of approximately one hundred and eighty-one million tons of .39% copper, are situated approximately twenty miles southwest of the Ardo Mines Ltd. (N.P.L.) property. It appears that all the three properties are situated in a line trending northeast-southwest with a possibility of different parallel mineralized zones.

TOPOGRAPHY AND VEGETATION

The property occupies the north facing slope around the south side of the Quesnel River. Elevations vary from approximately 2400 feet to 3200 feet above sea level. In general, the northward facing slopes are severe and many steep phases are encountered. The area of the property is forest covered with subcommercial and commercial fir, pine, and cedar. Undergrowth consisting of second growth fir, pine and alder is generally extensive. The climate is temperate, with an average rainfall of some 30 inches per year. Supplies of water and timber for exploration and development purposes are more than sufficient.

GEOLOGY

The great majority of the property is covered with an overburden of varying depths from 19 feet to 35 feet. The property is underlain by volcanic andesite which hosts different intrusive rock types. The andesite itself has been subjected to varying grades of metamorphism ranging from slightly altered andesite to highly altered andesitic schists. The next predominant rocks are the intermediate types; the pseudo monzonites of different textures, syenites, some diorites, and breccias. Mostly, the monzonite-breccias carry the mineralization. This hybrid zone is situated at the contact of the andesite and monzonite, but more towards the monzonitic area. Some contact metamorphic minerals were also noticed. Usually, this hybrid formation carries a fair amount of magnetite, some garnets and epidotes. Chalcopyrite is mostly situated within or around the magnetite and epidote. Few narrow zones of lamphrophyr intrusives were also noticed in one drill hole. Pyrite is abundant in most of the rock types. Shearing and minor faults were apparent in all the drill holes. The property has a complex lithology and has a favourable rock type to host mineralized zones which has to be delineated by intensive exploration.

WORK PERFORMED

In the Summer of 1970 about 16 miles of grid lines were laid out on the north side of the Quesnel River and adjoining the claims in which exploration work was carried out in 1969.

Geochemical and magnetometer surveys were conducted on these grid lines. This work was performed on the "Nora" group of claims.

Geochemical Survey

Geochemical samples were taken at every 100 foot intervals along the previously cut lines. The samples were taken by means of a stainless steel ager at the depth of about 10 to 14 inches from the surface in order to consistently sample the "B" horizon. The samples are placed in a manila bag, air dried, catalogued, and dispatched to Crest Laboratories in Vancouver for geochemical assays. The samples were analysed by means of hot acid extraction and by atomic absorption method. The results thus obtained have been plotted on the enclosed map and contoured. The background values on this survey appear to be about 50 p.p.m. Minor anomalous zones with the intensity of approximately 2 to 8 times above the background were indicated. On the line 5+00N. 110+00W there is an anomalous zone of approximately 400 feet in length and 200 feet in width. The highest value indicated on this zone is 510 p.p.m. copper, which is about 10 times above the background reading. Over the northeast corner of this grid line there appears to be another anomalous zone developing which has to be investigated by further geochemical surveys.

Most of these minor anomalous zones indicated seem to have an east west trend and they are very narrow in width. A field examination indicates that these trends appear to coincide with the joint pattern exhibited within this property.

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Magnetometer Survey

Magnetometer surveys using the Fluxgate MF 1 magnetometer were carried out by Primac Exploration Services on this property. The results thus obtained were submitted to Mr. John G. Baird of Seigel Associates Limited for his interpretations. His comments are as follows:

"At the request of Mr. Ramani I have contoured and examined the results of magnetometer surveys recently completed on your property in the Likely area, British Columbia.

The instrument used for this survey was a Scintrex MF-1 vertical force fluxgate magnetometer. The readings have been taken to an accuracy of ± 10 gammas. From Mr. Ramani I have received blueline prints of two grids showing the magnetic values. The North Grid lies just north of the Quesnel River and consists of 13 lines 6000' in length, spaced 500' apart and oriented N 10° E. The South Grid lies just south of the river and consists of 17 lines approximately 4400' in length oriented N 20° E and spaced 200' apart. For both grids magnetic observations were taken each 100' along the grid lines. I have contoured the North Grid with a 100 gamma interval and the South Grid with a logarithmic contour interval by showing the following contours: 0, ± 400 , ± 800 , ± 1600 . The contours are presently in pencil and should be turned over to your draftsman for ink drawing on the original plate with the magnetic values.

G.S.C. Map 3 - 1961, Quesnel Lake, shows the geology of the area including and surrounding the survey grids. The South

Grid is shown to be underlain by Mesozoic volcanic rocks while the North Grid is extensively overburden covered so that the geology is unknown. The Cariboo Bell copper deposit occurs in Jurassic intrusive rocks approximately 7 miles southwest of the present property.

The magnetic contours for the North Grid are seen to be rather uniform and show an increasing gradient from south to north. This south-north relief is approximately 400 gammas over the 6000' length of the lines. Near 13 N on L 100W, 27 N on L 110 W and the south ends of L 155 and L 160, localized rather high amplitude distortions in the magnetic field are seen. Because the coverage of these features is not complete, it is difficult to make quantitative interpretations. It is evident however that these distortions arise from localized increased concentrations of magnetic minerals such as magnetite or pyrrhotite in the bedrocks. Because of the steep gradients, the depth to the magnetic sources is probably not greater than 25'.

A distortion in the contours is seen along the baseline of the North Grid. While it is possible that there is a narrow dike-like structure parallelling the baseline, it is more likely that there is an error in the baseline data. Since adding about 100 gammas to all of the values along the baseline would cause the spurious contours to disappear, it would be wise to check the field notes to determine if there is a possibility of an error in the base level data.

The magnetic contours on the South Grid reveal great distortions in the magnetic field with a total relief over the grid of the order of 3000 gammas. A pronounced northwesterly trending magnetic low lies in the north part of the grid, an area of relatively uniform magnetic intensities lies in the centre of the grid while the abrupt distortions, generally positive reoccur in the south. The general magnetic gradient is therefore down to the north. The general trend of the contours is northwest.

G.S.C Map 1533-G, Hydraulic, shows the results of an airborne magnetometer survey flown at 1000' terrain clearance on the scale of 1" = 1 mile. This map shows the magnetic intensities to decrease gradually from south to north terminating in a low near the Quesnel River and increasing again to the north. The total relief of this trough within the area of the present claim is approximately 400 gammas. The general magnetic gradients seen on the ground surveys are therefore confirmed by the aeromagnetic map.

An interpretation of the aeromagnetic map reveals that a fault may coincide approximately with the Quesnel River. Geological differences north and south of this fault could explain the difference in magnetic activity on the North and South Grids. The intrusive which is host for the Cariboo Bell deposit just west of Polley Lake, is seen as a distinct magnetic high. A fault interpreted to traverse the north part of the intrusive may be extrapolated northeasterly through the

present property although no evidence of a fault is seen on the ground magnetic maps.

The magnetic responses over the South Grid are typical of rather volcanic rocks occurring quite near to the ground surface. The magnetic distortions are caused by changes in the quantity of magnetite and/or changes in the direction of polarization of the magnetite which arise from its extrusive history. The North Grid may also be underlain by volcanic rocks but of a much more uniform magnetic character. Since the G.S.C. geological map reveals that argillites, conglomerate and limestone may occur within this geologic horizon, it is possible that these rocks may lie within the North Grid. The present magnetic surveys have revealed distinct differences in the magnetic character of rocks in two grids separated by the Quesnel River. A study of the geology may therefore indicate that one of the two grids may be a better possibility than the other for mineral exploration. The most applicable geological, geochemical or geophysical methods might then be applied in the most favourable area."

Diamond Drilling

About 1000' of BQ Wireline diamond drilling was carried out on this property in order to investigate the anomalous zones obtained by the induced polarization survey and by the magnetometer survey.

DDH #A6 intersected values of 0.376% copper and 0.003 oz/ton gold over a length of 15 feet, while DDH #A7 encountered values

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of 0.367% copper and 0.003 oz/ton gold. Hole #A8 was drilled to a depth of 364' on a high mag anomaly but no significant values were encountered.

CONCLUSIONS

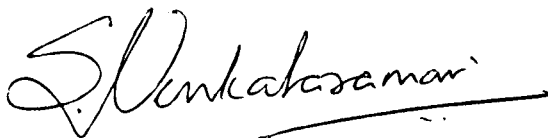
1. The geology and structure on this property appear to be favourable for mineral deposit.
2. The diamond drilling so far carried out has indicated moderate copper values and further geophysical and geological investigations are necessary to asses the property's economic potential.

RECOMMENDATIONS

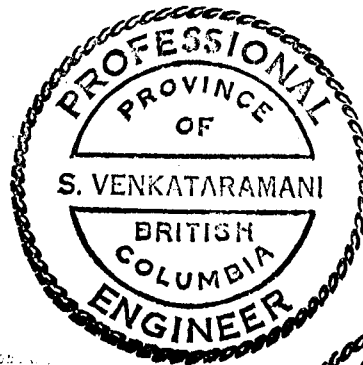
The future exploration program on this property should include line cutting, induced polarization, magnetometer and geochemical surveys on the north and southwest parts of this property.

The exact cost estimation for this program will be submitted later.

Respectfully submitted,



S. Venkataramani, M. Sc., P. Eng.



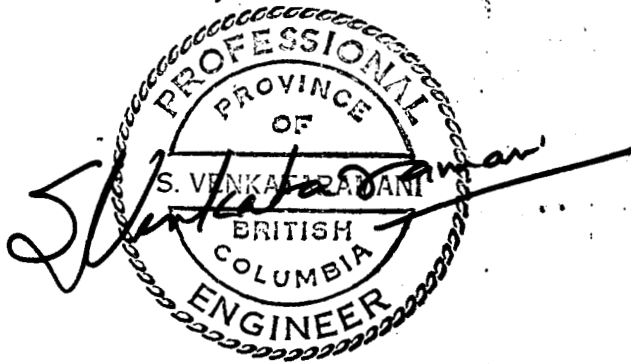
C E R T I F I C A T E

I, S. Venkataramani, of Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geologist with my office located at #630 - 890 West Pender Street, Vancouver 1, B. C.
2. I am a graduate geologist with a Master of Science Degree from the University of Madras, India.
3. I am a member of the Association of Professional Engineers of the Province of British Columbia.
4. I am a certified professional geologist belonging to the American Institute of Professional Geologists, Golden, Colorado, U. S. A.
5. I am a member of the Canadian Institute of Mining and Metallurgy.
6. I have been practicing my profession for over 10 years.
7. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly in this property or the securities of Ardo Mines Ltd. (NPL)
8. This report is based on my personal visit to the area and from previous reports on the property and the published geological literature.

Vancouver, British Columbia

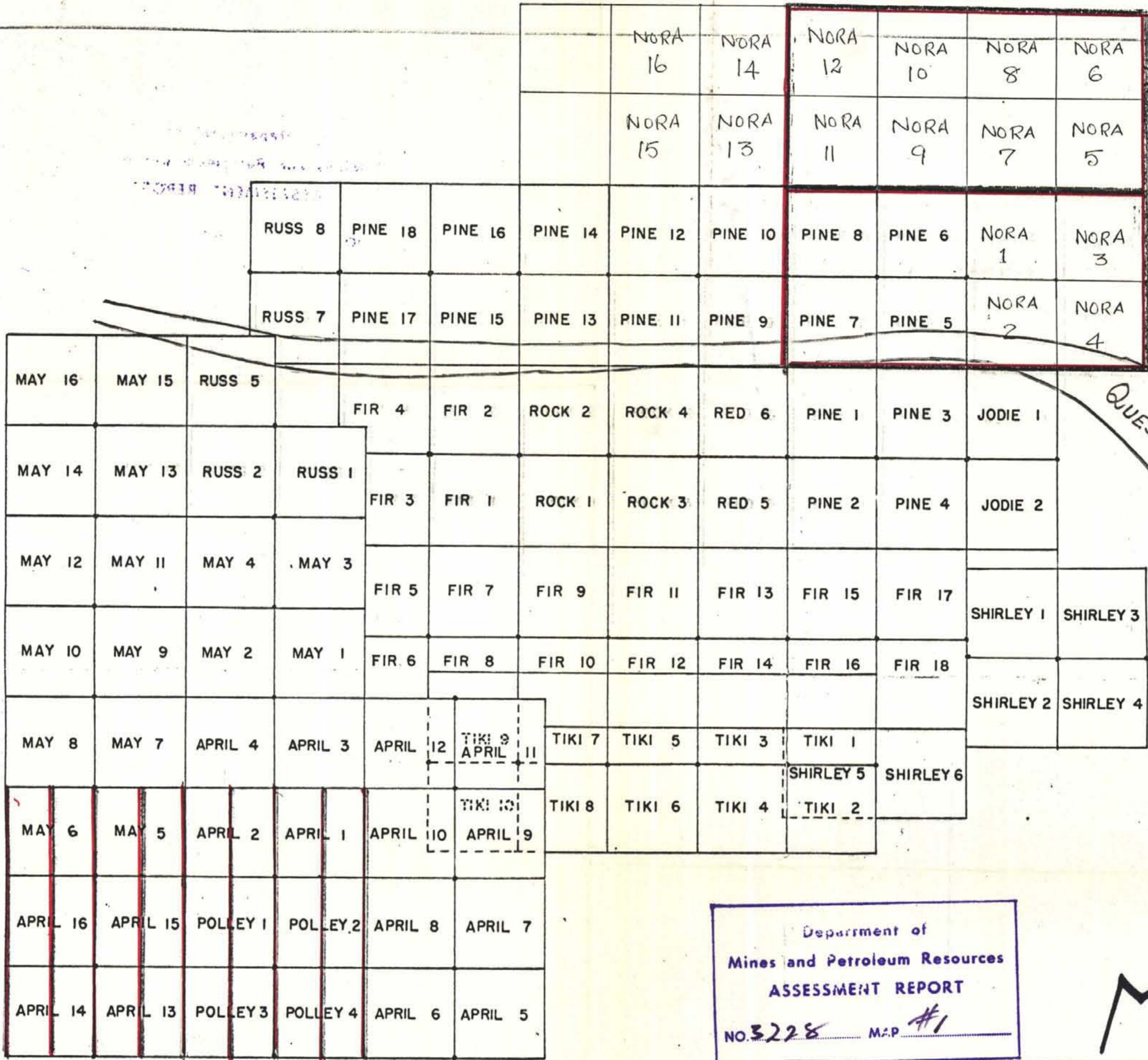
S. Venkataramani, M.Sc. P. Eng.



S. Venkataramani

NORA GROUP

← SURVEY AREA →



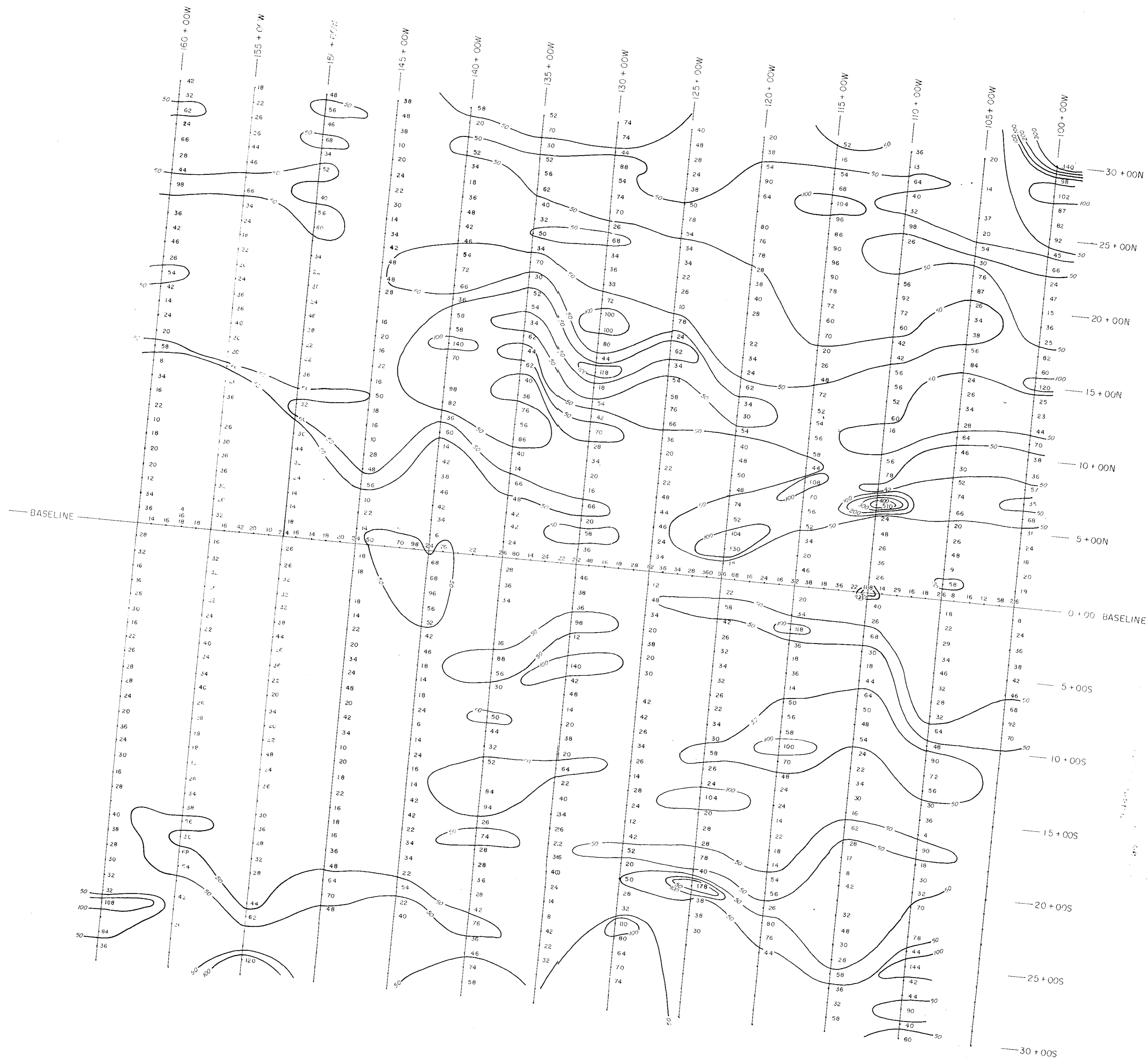
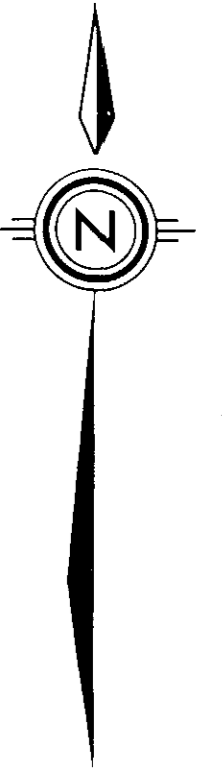
BASE LINES A B C D E F G H I

← **POLLEY GROUP SURVEY AREA** →

3228

ARDO MINES LTD. (N.P.L.)
LIKELY AREA
NORA GROUP.

SCALE : 1" = 1500'
PRIMAC EXPLORATION SERVICES LTD.



LEGEND

70 COPPER VALUE IN P.P.M.

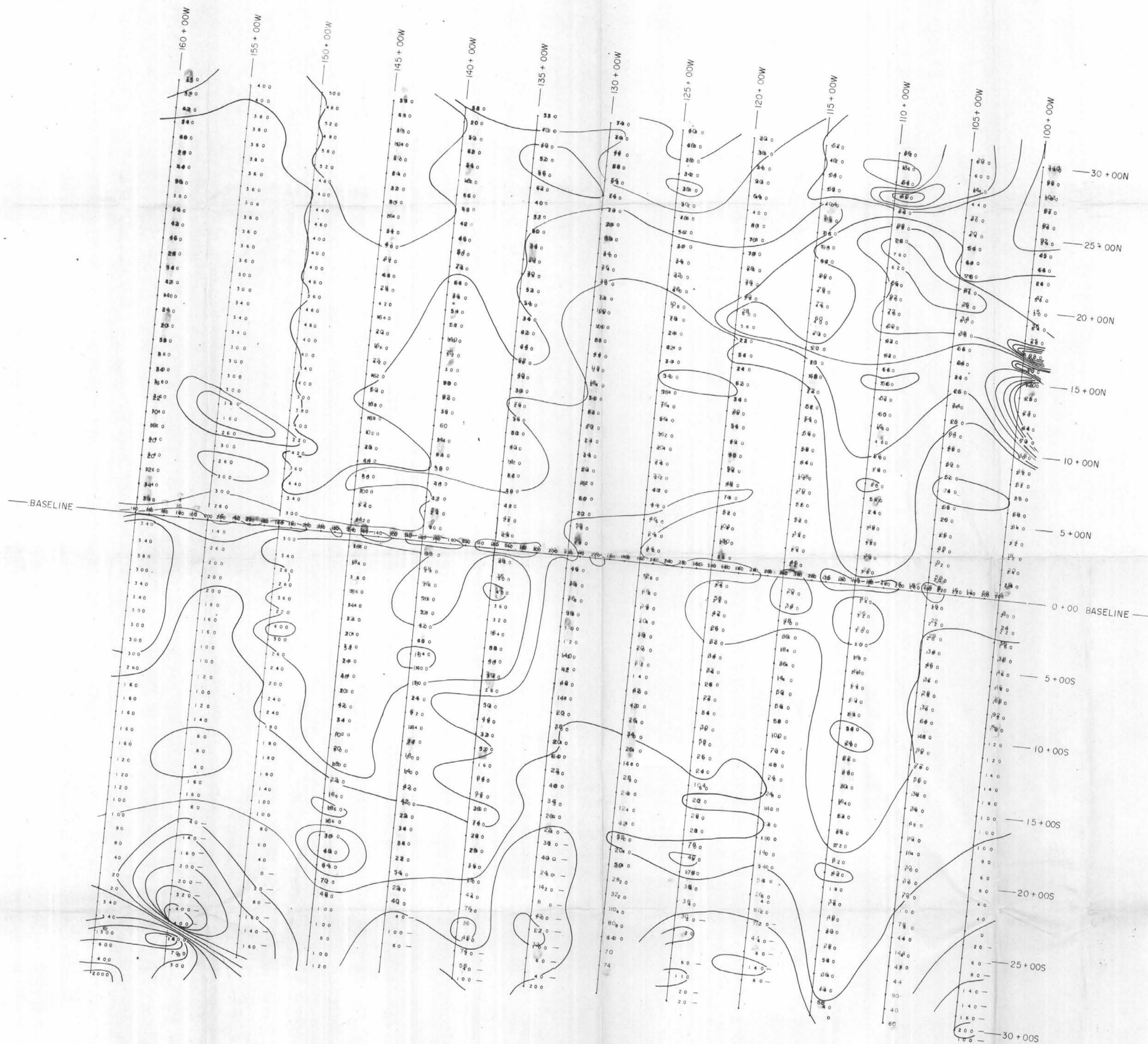
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3228 M.S.P. #2

ARDO MINES LTD. (N.P.L.)
LIKELY AREA
CARIBOO M.D.

GEOCHEMICAL SURVEY
COPPER IN SOIL

FEET 400 0 SCALE 400 800 FEET

PRIMAC EXPLORATION SERVICES LTD. AUGUST, 1970



Department of
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ASSESSMENT REPORT
NO. 3228 MAP #3

ARDO MINES LTD. (N.P.L.)

LIKELY AREA
CARIBOO M.D.

MAGNETOMETER SURVEY
COPPER IN SOIL

FEET 400 0 SCALE 400 800 FEET

PRIMAC EXPLORATION SERVICES LTD.

AUGUST, 1970

LEGEND

200 MAGNETOMETER READING IN GAMMAS