GEOPEKO LIMITED

REPORT ON AUTHORITY TO PROSPECT No. 1844

BLACK ANGEL EAST

by

Gary J. Jones.

TENNANT CREEK, N.T. DECEMBER, 1968

I N D E X

INTRODUCTION

Authority to Prospect No. 1844 is situated to the east of the old Black Angel mine. During the year the area was mapped in detail and some systematic geochemical testing carried out.

Geophysical reconnaissance has revealed little of interest in the northern half.

SUMMARY AND CONCLUSIONS

Mapping has revealed little of significant interest. The bulk of the rocks outcropping in the area consist of a regular strongly folded sequence of interbedded fine grained sub-greywackes and slates.

The porphyroid outcropping in the north appears to have been developed along a shear zone and therefore has limited potential as a source rock for economic mineralization. The exception here is the possible development of a fluid channel somewhere along this shear zone and therefore any magnetic anomalies in the immediate vicinity should be closely investigated.

Geochemical soil sampling has revealed no anomalous values for the elements Cu, Pb, Zn, Mo and Se within the area tested.

RECOMMENDATIONS

Geophysical reconnaissance has revealed little of interest in the northern half of the Authority to Prospect. However the southern half remains untested.

It is therefore recommended that on expiry of the A.P. 1844 a larger Authority to Prospect be applied for encompassing more ground to the south and east of the present A.P. This will enable geophysical surveys to be carried out in the area during the coming year.

GEOLOGY

General.

This area has quite a substantial amount of outcrop, the rocks in general being well exposed due to moderate relief above the bull dust flat. The bulk of the rocks outcropping consist of a monotonous and fairly regular sequence of interbedded sub-greywackes and slates. Small outcrops of porphyroid and a few ironstone pods have been mapped in the north.

Rock Types

Slates. These are regularly bedded and in general show well developed cleavage. In fact in places the cleavage often obscures the true bedding trends. In the south and south west the slates are somewhat siliceous and take on a distinct cherty appearance.

Sub-greywackes. These occur as beds up to 2 ft thick and are regularly interbedded with the slates. The rocks are normally very fine grained and in one or two places show some minor cross bedding. The main mineral constituent is quartz together with minor clay and micaceous minerals.

Interspersed throughout the greywacke-slate sequence of the area are numerous breccia pods. These had been previously mapped as conglomerates. However it is fairly certain that these are in fact breccias as the rock shows a distinct angular fragmentation. These fragments are generally of the fine grained sub-greywacke and vary in size from some 4 - 5 centimetres across down to a mere 1 - 2 millimetres. Although angular in general outline they show some minor rounding of the corners, suggesting that the rock was rather "soft" at the time of brecciation. The matrix of the breccia is mainly a ?clay - silica mix which appears to have been injected in a mobile state forcing into narrow cracks between the sub-greywacke fragments. Also in the matrix are small lensoid blebs of chert. These breccia pods are considered to have been formed by tectonic action during late diagenesis.

Porphyroid. This is a typical Warramunga quartz porphyroid and outcrops as a narrow belt and one or two pods within the slate-greywacke sequence in the northern part of the A.P. Also in the vicinity of the porphyroid a few small ironstone pods have been mapped. The porphyroid shows well

developed, ovoid quartz collocrysts and appears fairly rich in iron. It has a general lack of feldspars as such. However there are developed segregations of "murky" looking clayey minerals which could possibly represent partial crystallization of feldspars.

It appears at this stage that the porphyroid has been developed along some form of shear zone, possibly similar to the Ivanhoe-Explorer 17 shear.

Structure

The main structural feature appears to be a large assymmetrical anticline with the axis trending approximately north west - south east. The beds on the northern limb have the shallower dips, these being in the range of 50° to 70°, while the dip of the beds on the southern limb take on a steeper attitude, dips here generally in the 70° to 80° range. No sound evidence exists to ascertain a plunge in either direction of this anticline. The beds in the northern portion of the area have a strike trend tending more to the north east and generally dip fairly steeply to the north. No sufficient explanation for the contradictory strike trends can be offered apart from perhaps a rotational movement along a possible shear approximately paralleling the road.

A major north-south trending fault exists on the eastern side of the area shown up by a long narrow quartz dyke in the south and a major photo linear with associated quartz scree in the north. Dips of beds on either side of the fault indicate that the eastern block has suffered some movement to the north relative to the western block.

GEOCHEMICAL TESTING

During May and June of this year a grid was placed over a low rise on the eastern margin of the A.P. in order to test the mineral content of the bed rock by systematic Gemco sampling.

The grid consisted of 3,000 ft base line with 1,600 ft cross traverses spaced at 400 ft intervals. Gemco holes were drilled at 200 ft intervals along these cross traverses. In all a total of 72 holes were drilled for a total footage of 880 ft. The average depth to primary rock was 12 ft.

Originally it was thought that this low rise consisted entirely of breccia, and that this large mass of disturbed sediments may be associated with a mineral body. However subsequent mapping and auger drilling revealed that the breccia in fact only occurs as small pods within the sub-greywacke - slate sequence. Results from the bedrock samples show no anomalously high values and therefore the presence of a mineral body is extremely unlikely.

Gary T Jones.

	00	2E	6E	10E	14E	18E	22E	26E	30E
8N		<5 5 5 <3	5 <5 <5 <3	5 5 10 <3	5 10 10 <3	5 5 10 <3	<5 5 <5 <3	<5 5 5 <3	5 5 5 <3
6N		5 5 5 <3	<5 5 <5 <3	<5 5 5 <3	<5 5 5 <3	<5 5 5 <3	5 <5 5 <3	<5 5 <5 <3	5 5 5 <3
4N		<5 10 5 <3	<5 5 <5 <3	<5 10 <5 <3	<5 5 5 <3	5 5 5 <3	5 5 <5 <3	<5 10 5 <3	5 25 5 <3
2N		<5 10 5 <3	<5 5 <5 <3	5 5 5 <3	<5 5 5 <3	<5 10 <5 <3	5 25 5 <3	5 10 5 <3	5 5 <5 <3
00		25 5 5 <3	10 5 <5 <3	10 10 5 <3	5 5 5 <3	<5 5 5 <3	5 25 5 <3	5 5 10 <3	10 5 5 <3
2S		<3 5 5 <3	<5 5 5 20	5 5 <5 <3	<5 5 5 <3	5 10 5 <3	5 5 5 <3	5 5 5 <3	5 5 5 <3
4S		<5 <5 5 <3	<5 5 <5 5	<5 5 <5 <3	5 10 5 <3	<5 5 5 <3	5 5 <5 <3	<5 5 5 <3	5 10 <5 <3
6S		<5 5 5 <3	+	<5 10 <5 <3	<5 10 5 <3	<5 5 5 <3	<5 5 <5 <3	<5 5 5 <3	<5 5 5 <3
8S		<5 5 5 <3	<5 5 5 <3	<5 10 5 <3	<5 5 5 <3	<5 5 10 <3	10 5 <5 <3	<5 <5 5 <3	<5 5 5 <3

FORMAT:

Cu Pb
Zn Mo

Values shown are in ppm.

All tests showed Se values to be <2

PLAN SHOWING GEOCHEMICAL RESULTS ON BLACK ANGEL EAST. – A.P. 1844

Scale 1" rep. 400'

T.N.

Quartz rubble

GEOCHEMICAL SAMPLE GRID

Breccia beds

Quartz rubble

Breccia beds

Slates siliceous with cherty appearance - some breccia beds

Sediments siliceous

LEGEND

- Quartz porphroid
- Slate, sub-greywacke
- Quickstone
- Quartz
- Ironstone
- Mainly breccia
- Track
- Fault
- Geological boundary
- Outcrop boundary
- Gemco auger hole

GEOLOGICAL PLAN OF A.P. 1844
BLACK ANGEL LOCALITY

Scale: 1" reps. 1000'

GEOPEKO LIMITED

PROGRESS REPORT

ON PROSPECTING AUTHORITY No. 1844 in the Tennant Creek locality
September to December, 1968.

The geological mapping of the A.P. on the scale of 1,000 ft to 1 inch was completed and the geological map drawn up. It was decided that the geochemical results from the auger drilling were too insignificant for follow up work. More detailed work on the magnetic anomaly previously reported revealed that it is actually on A.P. 1845. The anomaly is now known as Explorer 69.

Results of prospecting work on the A.P. have been generally discouraging and renewal will not be requested. A final report has been prepared and is enclosed with these reports.

Expenditure for the period September to December:

Salaries, wages and on costs	103.89
Assaying	314.61
Field Expenses allocated	223.11
Administration overheads allocated	388.45
	$ 1,030.06

G E O P E K O L I M I T E D

Black Angel Area
Tennant Creek

REPORT ON EXPLORATION ASPECTS

by

L. A. Richardson

with Appendix comprising copies of
Peko Drill Hole Logs

SYDNEY

18th January, 1968.

INTRODUCTION

The two accompanying plans show the results of ground magnetic surveys completed by A.G.G.S.N.A. during 1937 and by Peko Mines N.L. during 1957.

The plan showing the latter also shows the positions of,

4 diamond drill holes completed by Peko Mines in 1957 and

5 diamond drill holes completed by Aurous Development in 1964.

Copies of the Drill Logs for the Peko drill holes are included as an Appendix.

The Peko drill holes B.A.1 and B.A.2 were planned to test the two major anomaly bodies. The hole B.A.3 was planned to test the "intersection of grit bed with the main shear". The hole B.A.4 was planned to test the "extension of mineralised zone beneath the Black Angel workings".

The Aurous Development drill holes A1 to A5 were planned to test scattered areas of geochemical anomaly, within the oxidised zone only.

The Peko drill hole B.A.1 encountered considerable magnetite-rich material within the depth range 417'6" to 634'. Only 14 feet of this material was assayed for copper. No gold assays were made.

The drill hole B.A.2 intersected a magnetic body at depth 550'-655'. 35 feet of this material was assayed for gold. Four feet of a smaller magnetite body found at depth 672'-680' was also assayed for gold. The best assay result from drill hole B.A.2 was 0.6 dwt per ton, at depth 645'-650'.

The Peko drill hole B.A.3 intersected scattered magnetite-rich material below the depth 310½ feet. Twenty-three scattered assays were made for gold only. The total length of hole assayed was 51¼ feet from positions between the depths 161 feet and 468 feet. Three bands of quartz magnetite, of total thickness 37 feet, were not assayed. The best assay results were

17.7 dwts per ton at 427'-428¾', and

6.5 dwts per ton at 429½'-431½'.

The Peko drill hole B.A.4 was assayed for gold in 5 feet sections from 285' to 330' and at 3 other positions. The best result was 0.8 dwts.

It is understood that the Aurous Development drill holes gave only very low assay results.

DISCUSSION OF GEOPHYSICAL AND DRILLING RESULTS

The characteristics of the Anomaly No. 1 reveals the existence of a long line of possible interest which might extend still further, north-easterly, beyond the area covered by our geophysical survey.

The Anomaly No. 2 also has substantial length and it might extend further, north-westerly, beyond the area covered by geophysical survey.

The Anomaly No. 3 and the one of minor strength at the western end of the geophysical grid could be of interest.

Thus the geophysical work completed to date establishes the existence of a major prospect area.

The 4 drill holes completed by Peko do not adequately test the anomaly environments present and, furthermore, the assays made on the drill core obtained from those holes appears to be insufficient.

The diamond drill holes completed by Aurous Development add some useful exploration information. It is possible that their geochemical results warrant further study.

RECOMMENDATIONS

Extension of the geophysical survey in several parts is favoured.

Three diamond drill holes are recommended, as an immediate first step in the further exploration of this prospect area. Particulars of the recommendations are given below:

Drill Hole B.A.5. Drill in the direction 330° (A.G.G.S.N.A. Grid) to intersect the point 600 feet vertically below the grid position 1880E/570N (A.G.G.S.N.A. Grid).

Drill Hole B.A.6. Drill in the direction 360° (A.G.G.S.N.A. Grid) to intersect the point 600 feet vertically below the grid position 380W/100N (A.G.G.S.N.A. Grid)

Drill Hole B.A.7. Drill in the direction 180° (A.G.G.S.N.A. Grid) to intersect the point 700 feet vertically below the grid position 4800E/300N.

600N

9/1/69

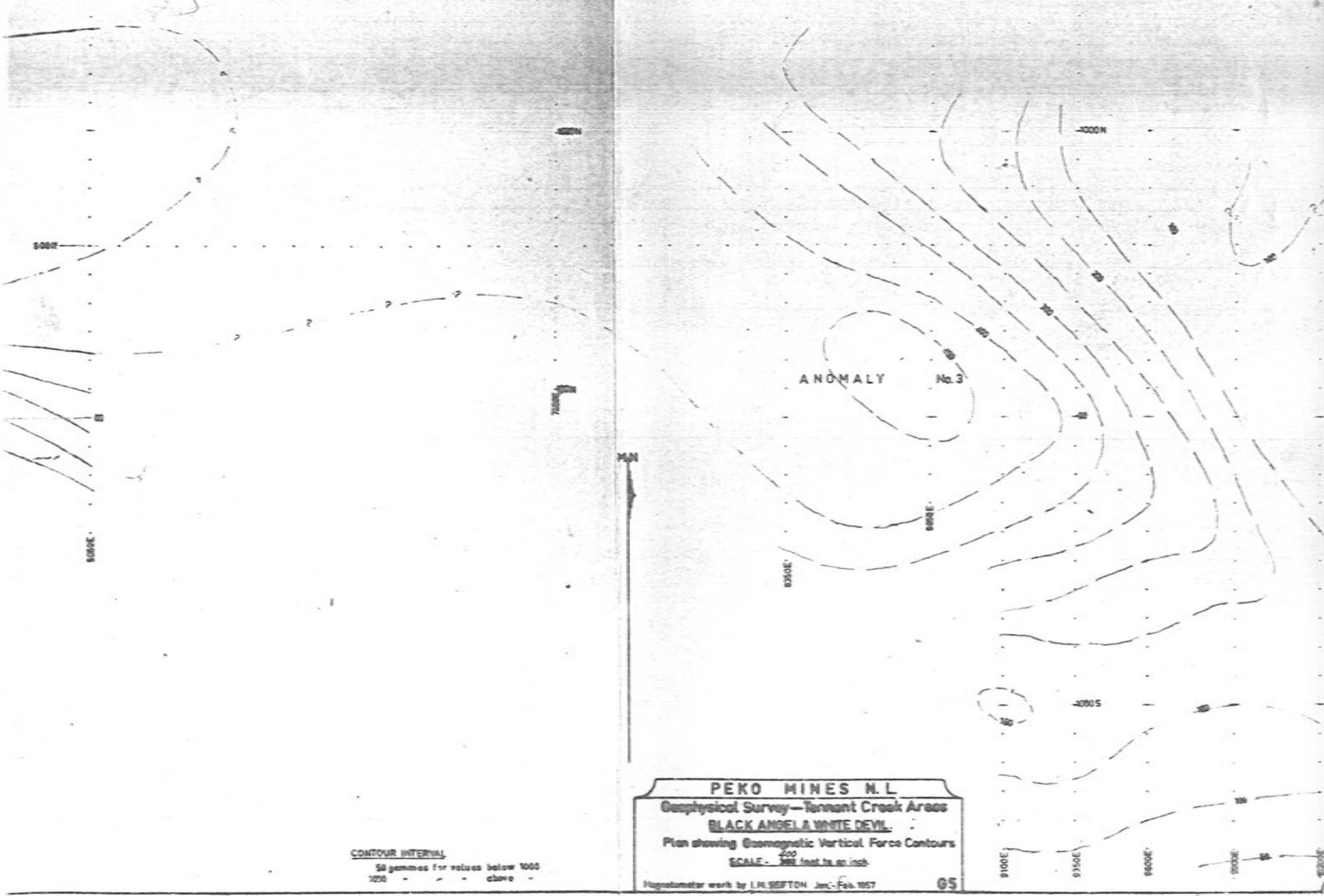
The collar positions for the drill holes B.A.5 and B.A.6 could be located relative to the two A.G.G.S.N.A. Pipe Beacons, one on Traverse 1800E and the other on Traverse 400 W. Magnetometer work might be needed to re-establish the Peko 1957 pegging for locating the collar position of drill hole B.A.7.

It is suggested that the "Mine Grid" used for co-ordinates of drill holes B.A.1 to B.A.4 be abandoned and the A.G.G.S.N.A. Grid adopted for all further work. We shall give attention to the re-establishment of that grid on the ground as early as possible.

L. A. Richardson

(L. A. Richardson)

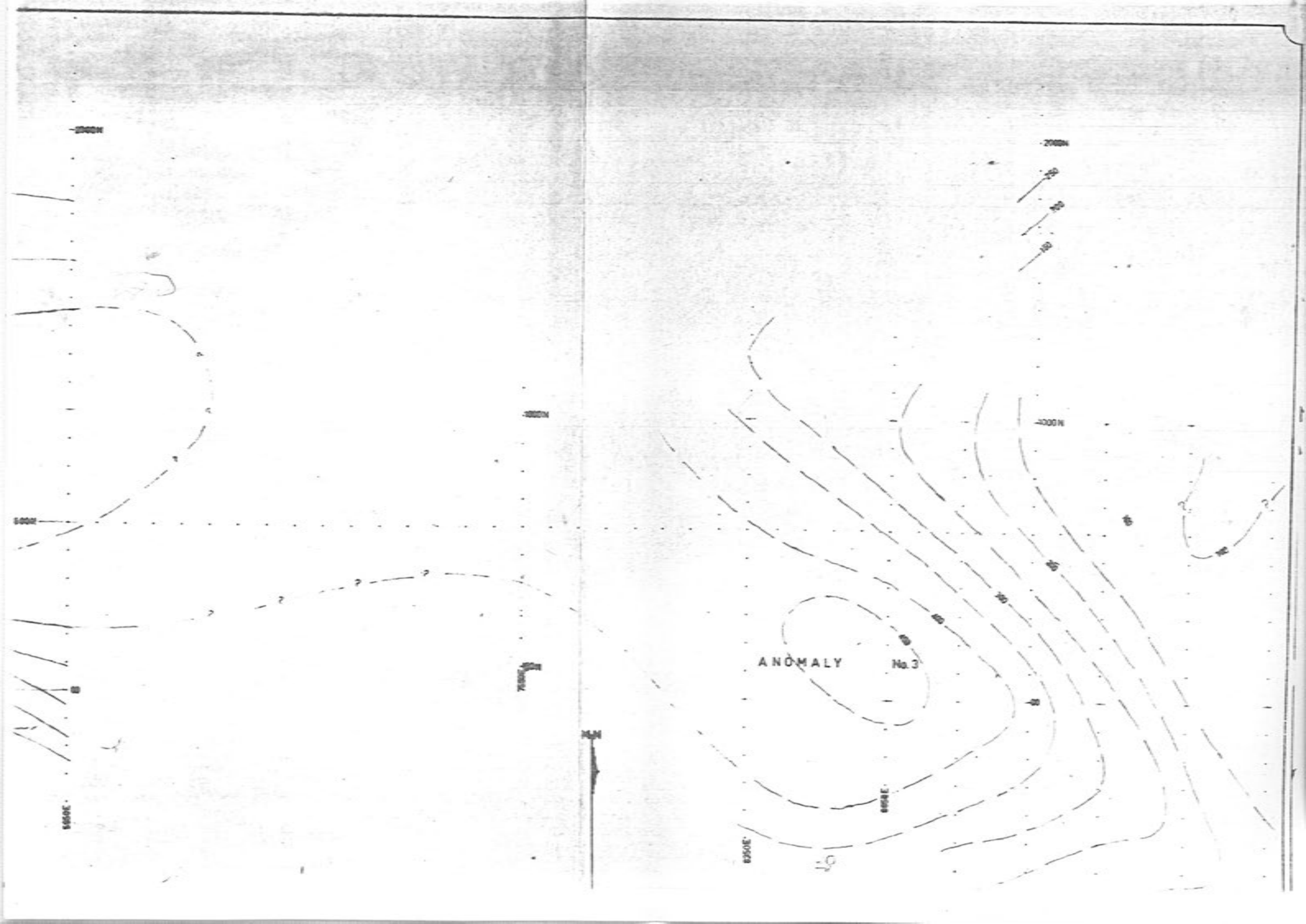
18th January, 1968.

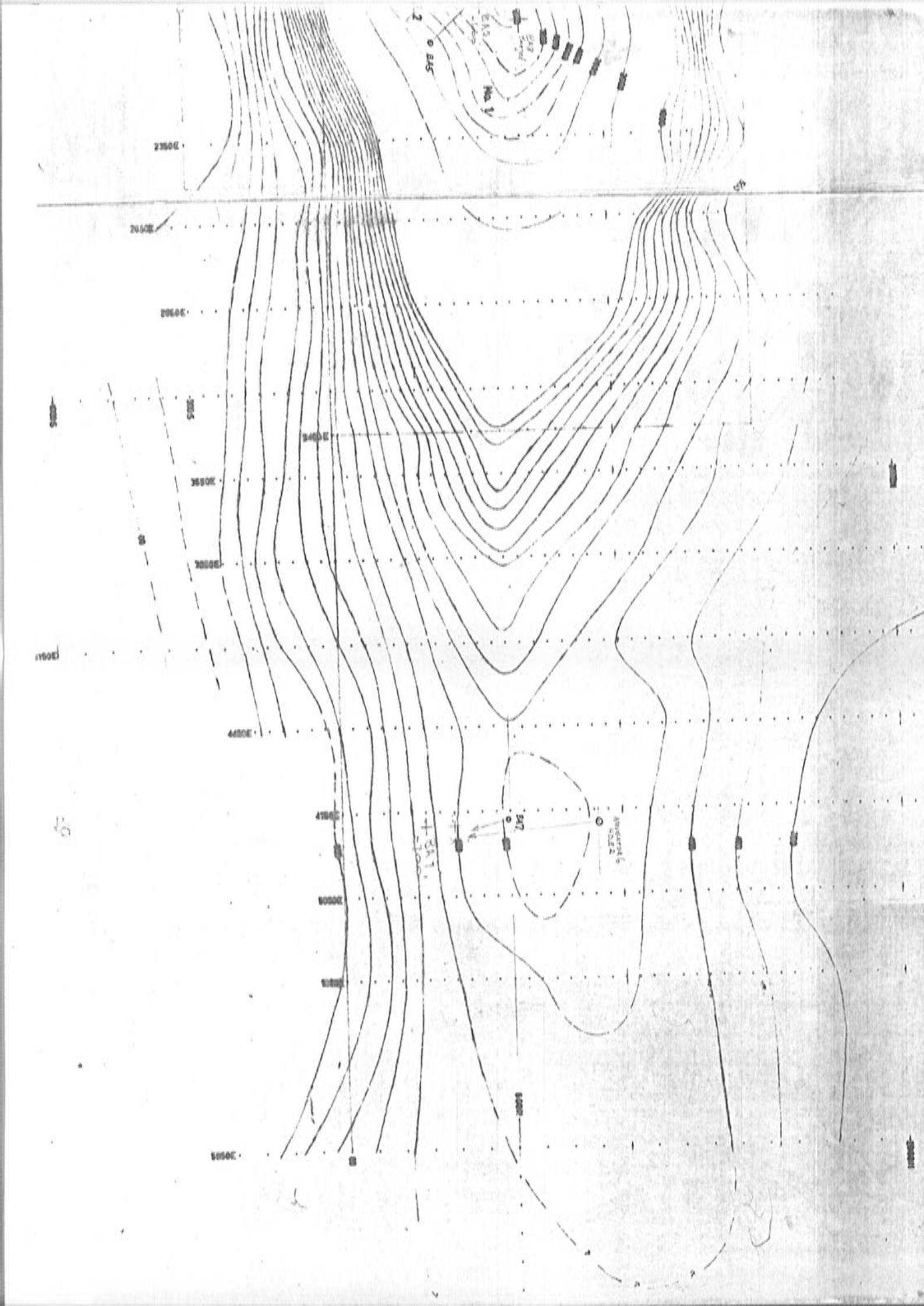


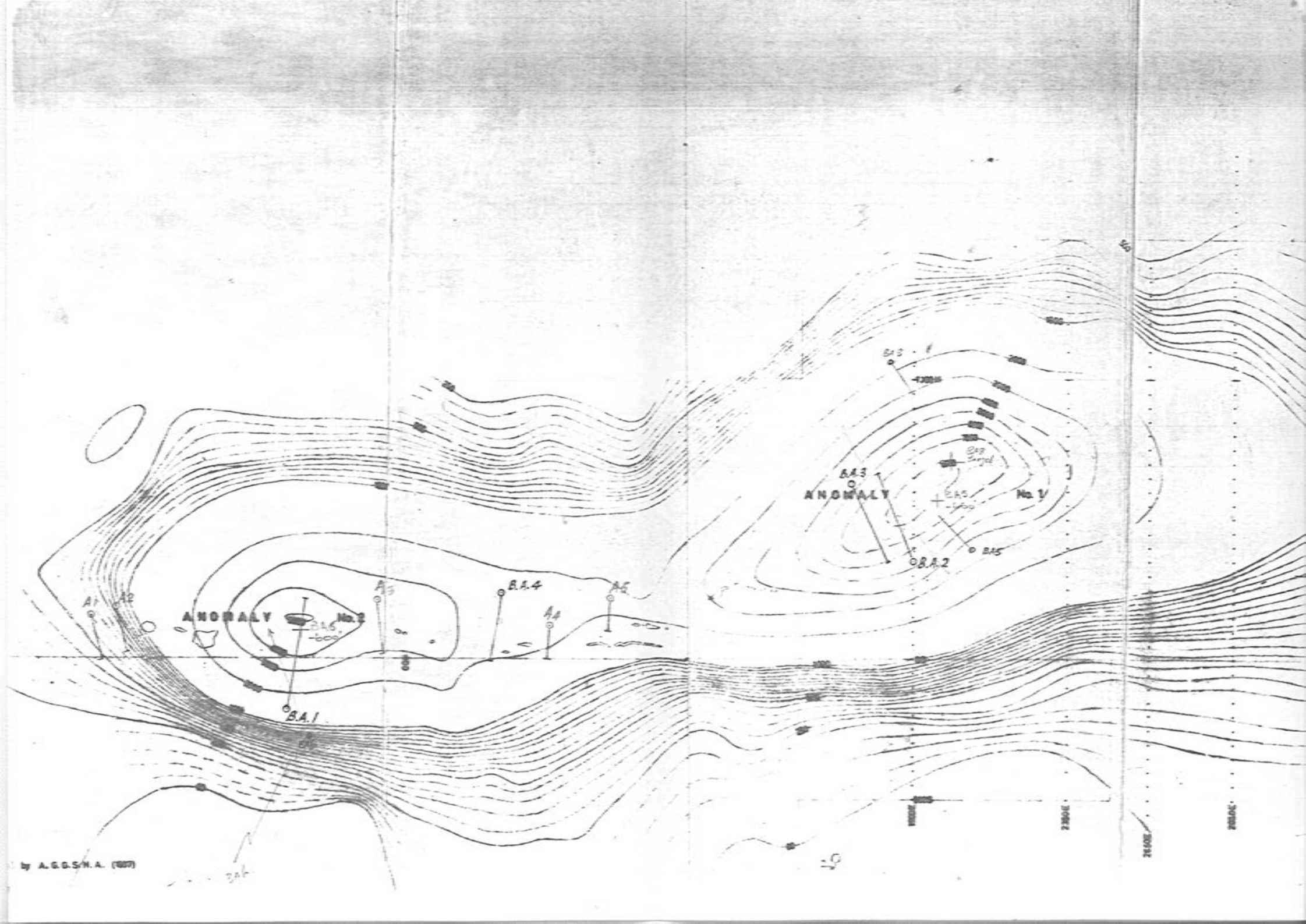
CONTOUR INTERVAL
50 gammas for values below 1000
100 " " " above "

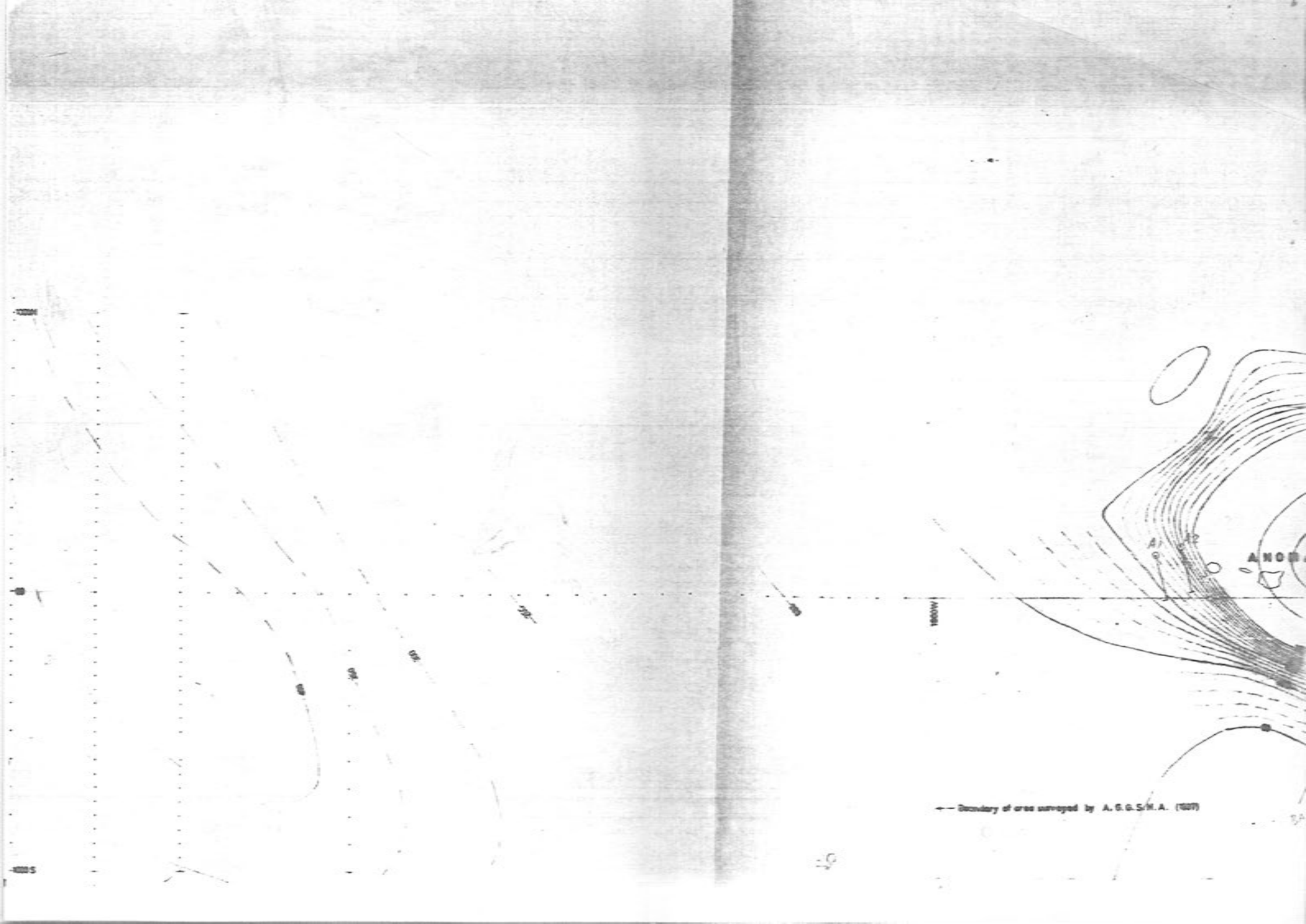
PEKO MINES N.L.
Geophysical Survey—Tennant Creek Area
BLACK ANGELA WHITE DEVIL
Plan showing Geomagnetic Vertical Force Contours
SCALE:- 200 feet to an inch
Magnetometer work by I.M. SEFTON Jan.-Feb. 1957
G5

TCR/189


ANOMALY No. 3




ANOMALY No. 2
B.A.1
B.A.2
B.A.3
B.A.4
B.A.5
ANOMALY No. 1
A1
A2
A3
A4
A5
by A.G.G.S./N.A. (1959)


Boundary of area surveyed by A.G.G.S.N.A. (1977)