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DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

REPORT NO. 36

GEOPHYSICAL SURVEY OF THE RYE PARK SCHEELITE DEPOSIT, NEW SOUTH WALES.

By

J. HORVATH and R. J. DAVIDSON

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Issued under the Authority of Senator the Hon. W. H. Spooner, M.M.,
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LIST OF REPORTS

1. Preliminary Report on the Geophysical Survey of the Collie Coal Basin - N.G. Chamberlain, 1948.
2. Observations on Stratigraphy and Palaeontology of Devonian, Western Portion of Kimberley Division, Western Australia - Curt Teichert, 1949.
3. Preliminary Report on Geology and Coal Resources of Oaklands-Coorabin Coalfield. New South Wales E. K. Sturmfels, 1950.
4. Geology of the Nerrima Dome, Kimberley Division, Western Australia - D. J. Guppy, J. O. Cuthbert and A. W. Lindner, 1950.
5. Observations of Terrestrial Magnetism at Heard, Kerguelen and Macquarie Islands, 1947 - 1948 (Carried out in co-operation with the Australian National Antarctic Research Expedition, 1947 - 1948) - N. G. Chamberlain, 1952.
6. Geology of New Occidental, New Cobar and Chesney Mines, Cobar, New South Wales - C. J. Sullivan, 1951.
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23. Seismic Reflection Survey at Roma, Queensland, 1952-53 - L. W. Williams, 1955.
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Secretary—H. G. RAGGATT, C.B.E.

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ILLUSTRATIONS

ABSTRACT

The Rye Park mineral deposit, situated on the margin of a granite batholith, about 26 miles north of Yass, New South Wales, has been intermittently worked for wolfram since 1915, but it was not until geological surveys were made by officers of the Commonwealth Bureau of Mineral Resources and the New South Wales Department of Mines, that the existence of scheelite in important quantity was established. With the object of delineating the main mineralised areas, the geological surveys were followed by the geophysical survey which forms the subject of this report.

The magnetic method of survey was used, as high magnetite values had been found only in association with the scheelite, and it was assumed that the geophysical picture of the magnetite distribution would be approximately true for the scheelite distribution.

The survey revealed five well-defined anomalies, the largest of which coincides approximately with the ore body exposed in the open cut. Results indicated that the magnetic bodies are probably flat layers with little dip, and sites were recommended for testing the geophysical indications by drilling.

Drilling was carried out by the company shortly after the geophysical survey, and many of the drill holes were sited on the basis of the magnetic results. In general, the drilling results showed good agreement with the geophysical indications, and payable scheelite ore was found mainly in the magnetically disturbed areas.

The geological, geophysical and drilling investigations indicated that the margins of granite batholiths are the most favourable locations for scheelite deposits in the area. The first stage of any further exploration which may be contemplated should be a reconnaissance geological survey with the object of locating other granite bodies.

INTRODUCTION

Rye Park is situated in the County of King, Parish of Olney, on the southern Tablelands of New South Wales, and is about 26 miles, by gravel-surfaced road, north of Yass. The nearest railhead is at Boorowa, 12 miles to the west-north-west. The scheelite deposit is on the north bank of Pudman's Creek, about 1.1/2 miles north of Rye Park village. The mine can be reached by turning off the Boorowa-Rye Park road just before reaching Rye Park, along a poor paddock track, and proceeding for about one mile to the junction of Pudman's Creek and White Rock Creek (Plate 1).

In June, 1951, the deposit was inspected by C.J. Sullivan and W.B. Dallwitz, geologists of the Bureau of Mineral Resources, Geology and Geophysics. Although the existence of wolfram in the deposit had been known since 1915, it was not until the visit of the Bureau geologists that the existence of scheelite in important quantity was established (Sullivan and Dallwitz, 1952). As a result of this investigation and of a request by Tungsten Consolidated Ltd., who had at that time a working option on the area, the New South Wales Department of Mines carried out a geological survey of the deposit during September and October, 1951 (Lloyd, 1951).

The combined results of the two geological investigations led to a recommendation by the Bureau that a geophysical survey be made with the object of delineating the main mineralised areas around the granite cupola. The recommendation was supported by the Department of Mines, New South Wales, and the geophysical survey was commenced on the 8th December, 1951 by a party consisting of J. Horvath (party leader), P. Tenni, W, Compston and C. Pierrehumbert. The main part of the survey was concluded on 22nd December, but some additional geophysical work was carried out by two members of the survey party between the 9th and 26th January, 1952.

HISTORY

The deposit was apparently first worked for wolfram in 1915.

In 1917, L.F. Harper reported on the occurrence of wolfram in the deposit but no production figures or details of the quality of the ore were included in his report (Harper, 1917). At that time, work was concentrated on the open-cut at the site of the present main workings, and a shaft in the centre of the cut had been sunk to a depth of 35 feet. Several other shallow pits had been sunk near the open-cut, and a trench had been cut at the northern workings.

During 1919, 100 tons of ore were raised, of which 22 tons were treated at Wyalong, and about 2 tons of concentrates were sent to Sydney for treatment. Considerable difficulty was experienced, however, in separating magnetite from the wolfram.

Little work appears to have been done at the deposit between 1919 and 1927, but in the latter year prospecting operations were carried out by several parties from Rye Park, and it was probably at this time that the workings south of Pudman's Creek were opened. From the open-cut, one operator raised 200 to 250 tons of ore, averaging 3.5 per cent WO_3.

From 1928 to 1950, the lease was held by various people for short periods, but the only recorded production for these years was that of 45 tons of ore raised in 1937.

The deposits were visited by the New South Wales Inspector of Mines in 1942, at which time the workings were flooded. A grab sample of fine-grained ore from a nearby dump, said to be from the bottom of the shaft, assayed 1.9 per cent WO_3. A sample of coarse-grained ore from the dump assayed 5.6 per cent WO_3.

At the time of the geological and geophysical surveys in 1951 the mine was being worked by a syndicate of three, Messrs. J.O. and L.A.C. Egerton and H.J. Gordon, and was under testing option to Tungsten Consolidated Ltd.

As stated previously, prior to 1951, wolfram was believed to be the only tungsten-bearing mineral present in the Rye Park deposit. Samples examined by the Bureau of Mineral Resources under ultra-violet light revealed that scheelite also formed an important part of the ore. Officers of the Bureau examined the deposit and sampled the ore-body on several occasions. The samples were assayed in the Chemical Laboratory of the Department of Mines, New South Wales, and the values obtained (Lloyd, 1951) indicated that further investigation was warranted. Subsequent work comprised the geological survey by Lloyd, the geophysical investigation described later in this report and the regional geological mapping of the area by Burton and Smith (1953).

OUTLINE OF REGIONAL AND MINING GEOLOGY

The following comments on the geology of the area in which the deposit occurs are based largely on the report by Lloyd (1951), and the geological data shown on Plate 1 are taken from that report.

The mine area consists mainly of flat-lying Silurian interbedded porphyries and tuffs, which appear in the field as a single rock type. The majority of the porphyries are altered to a varying degree and are characterised by the abundance of epidote, zoisite and actinolite. The original rock would appear to be a quartz-felspar porphyry containing a relatively high proportion of biotite. The Silurian rocks are intruded by two granite cupolas, one of which forms the hill near the mine on the northern bank of Pudman's Creek. This cupola, which has a diameter of about 600 feet, is a medium-grained acid granite containing biotite, and is undoubtedly the source of the tungsten ore. A second and larger granite cupola, much of which has been converted to greisen, is found on the south bank of Pudman's Creek, and is known locally as Mica Hill. This granite contains cassiterite and wolfram, the presence of which has resulted in some mining activity, mainly for tin.

The present mine workings are confined to the eastern margin of the northern granite cupola, where scheelite and wolfram occur in a contact deposit in highly altered porphyry. At the time of the geophysical survey, work had been confined to two small areas, about 600 feet apart.

The main (southern) workings, which are on the right bank of White Rock Creek, about 200 feet above its junction with Pudman's Creek, consist of an open-cut about 20 feet in diameter and 10 feet deep. In the centre of the open-cut is the 35 foot shaft referred to by Harper (1917), and several shallow pits and a trench have been sunk near the open-cut. A diamond drill was in operation at the time of the geophysical survey. A vertical drill hole had been put down about 50 feet south of the open-cut, and a second hole had been drilled near the northern end of the open-cut, at an angle of 45° towards the granite cupola. Both drill holes struck ore, although it did not appear to be as rich as that in the open-cut.

The evidence available from the open-cut and from the diamond drill holes and shafts indicated that the porphyries and tuffs occur as flat layers. There are several beds of slightly different texture and composition, which range in thickness from a few feet to about 30 feet. The ore appears to occur only in the tuffaceous beds. It seems, therefore, that the tungsten mineralisation has been deposited selectively in the more favourable layers. In the ore, scheelite is accompanied by a little wolfram and by fine-grained magnetite.

The tungsten content is high in certain portions such as the open-cut, and samples have yielded values up to 10 per cent WO_3, but it is expected that the tungsten content will decrease further away from the granite.

About 600 feet north of the open-cut, similar ore has been exposed in a group of shallow workings. Traces of scheelite occur in a trench and in a small pit. A shaft about 12 feet deep is surrounded by dumps consisting of high-grade biotite-rich ore, quartz and granite, indicating that the granite contact is at shallow depth. Assay values in the northern workings were lower and the ore more sparsely distributed than in the area around the open-cut.

When the geophysical survey was made, high magnetite values had been found only in association with the scheelite, and it was assumed, therefore, that the geophysical picture of the magnetite distribution would be approximately true for the scheelite distribution.

PURPOSE OF GEOPHYSICAL SURVEY AND METHODS USED

A large part of the area is covered by at least a few feet of alluvium, which prevents a complete and detailed geological examination. The area is therefore well suited to a geophysical survey, information from which would supplement that obtained from geological mapping. It was considered that a magnetic survey would help considerably in the investigation of the deposit.

From the observed association of magnetite and scheelite in the ore samples from the mine area, it was considered probable that the magnetite occurs only in association with the scheelite, and that a magnetic survey would be the most likely method of approximately delineating the mineralised areas.

From the evidence available, the following possibilities appeared feasible:-

(i) The ore may be continuous from the southern to the northern workings, or

(ii) There may be separate lens-shaped or pipe-like ore bodies.

One of the main objects of the geophysical survey was to determine which of these two possibilities was correct. The survey included also an investigation of the area around the two cupolas.

The magnetic survey was carried out mainly with a Watts Vertical Magnetic Balance (No.61519), having a scale value of 27.6 gammas per division. Auxiliary magnets had to be used because in places the magnetic anomalies exceeded 1,000 gammas. As the anomalies were so large, it was unnecessary to correct the readings for diurnal variations. To obtain additional information regarding the shape of the magnetic body causing the anomalies, several traverses were also surveyed with a Watts Horizontal Magnetic Balance (No.61911), having a scale value of 47.8 gammas per division.

The forces acting upon the instruments are the vertical and horizontal components of the earth's magnetic field which, in turn, are influenced by the magnetic properties of the underlying rock formations.

In general, granite and porphyry are non-magnetic, except for sporadic occurrences of magnetite disseminated through the granite but not related to any ore deposit. On the other hand, a magnetite deposit becomes highly magnetised by induction in the earth's field. It may also possess some permanent magnetism not necessarily related to the induced magnetisation. The magnetic anomaly observed over an ore body containing magnetite is the resultant of the induced and permanent magnetism. As these sometimes produce conflicting effects, the geological interpretation of a magnetic survey may be very uncertain, particularly if the magnetite is only an accessory mineral, as it is in the tungsten ore at Rye Park.

The correctness of the interpretation of the magnetic survey at Rye Park depends upon the validity of the assumption that the magnetite occurs only in association with the scheelite.

An Atlas Gravity Meter (F21) was used to observe the gravity variation along some of the traverses. This is a light, easily-transported instrument, very suitable for this type of gravimetric prospecting, and is sufficiently accurate to enable gravity observations to be made to within 0.05 milligals. Although the ore bodies were probably too small to give rise to a gravity anomaly of sufficient magnitude to be detected, it was considered possible that the gravity observations would assist in outlining the general geology, especially in the demarcation of the granite intrusives.

The gravity meter measures variations in the earth's gravitational field, and the interpretation of the results depends on the existence of a difference in density between some sub-surface body and its surroundings. If such a difference exists, the results may indicate the approximate location, depth, shape and density of the sub-surface body.

FIELD OPERATIONS

In order that identical observation points could be used for the surveys with the vertical and horizontal magnetic balances and with the gravity meter, a grid was laid out and pegged. The grid, which is shown on Plates 1 and 2, was also used later for setting out indication pegs and drilling targets. The northern part of the base line of the grid, from 600N to 300S, follows roughly the eastern margin of the granite. At 300S the base line changes direction by 15° to the west and continues as far as 600S, at which point another turn to the west is made through an angle of 39°. The object in laying the base line in this way was that the traverses, which are at right angles to the base line, would also be approximately at right angles to the contact of the two granite cupolas. The distance between traverses was mostly 100 feet, but in magnetically undisturbed areas it was increased to 200 feet. Observation points were pegged at 50 feet intervals along each traverse. In the south-western portion of the area surveyed, two traverses (1800S and 2000S) were extended 1,800 feet north-west from the base line. Several short traverses were laid at right angles to these (i.e. parallel to the base line), in order to investigate the marginal area along the south-western contact of the second granite cupola.

As stated previously, the survey was carried out mainly with a magnetic vertical balance. Observations were made every 25 feet in magnetically disturbed areas and every 50 feet in undisturbed areas. As shown on Plate 2, the area surveyed by the magnetic method embraces practically the whole area where mineralisation could be expected around the two granite cupolas. In addition, the traverses extend eastwards over the porphyry for a distance of about 2,000 feet from the granite/porphyry contact.

Several traverses which showed pronounced anomalies in the vertical magnetic component were also surveyed with the horizontal balance so that additional data would be available for interpretation. Because the magnetic anomalies in some parts exceeded 1,000 gammas, auxiliary magnets had to be used extensively, thus considerably reducing the speed of the survey.

The gravimetric survey was limited to only a few traverses, as results on these were inconclusive and did not warrant more extensive use of the method. The need for an a altitude correction to the observed gravity values necessitated levelling of the observation points, but the open character of the country greatly facilitated this work.

RESULTS OF THE SURVEY

The results of the magnetic survey are shown in the form of a contour map of the vertical intensity on Plate 2 and as profiles of vertical intensity on Plates 3A and 3B. The vertical and horizontal magnetic intensities along traverses 00 and 300S are shown on Plate 3C. The small figures shown on Plate 2 are the deviations in units of one hundred gammas from the average value in the undisturbed area. At point 100N/25W, for example, the figure +3 is abbreviated from the observed value of +324 gammas. Where only a minus sign (-) is shown beside the traverse line, the magnetic field is almost undisturbed, being less than 50 gammas from normal.

Over much of the surveyed area the magnetic intensity is fairly uniform, thus showing that these portions are comparatively undisturbed. However, several well-defined anomalies are present, almost exclusively in the marginal area around the northern granite cupola. These anomalies are strong and definitely limited in extent; their form indicates that the magnetic bodies from which they arise are lens-shaped (see Plate 2). The results suggest that the ore bodies in the open-cut and in the northern shaft are unlikely to be parts of one continuous ore body. On the contrary, the form of the contours indicates that there are probably three lens-shaped bodies of various dimensions.

The shape of the profiles does not correspond with that of profiles calculated for bodies polarised by induction. This indicates that the magnetisation is irregular, and that no conclusions can be drawn regarding the depth and dimensions of the magnetic bodies. Anomaly A is in the vicinity of the open-cut and nearby workings. It extends southwards as far as Pudman's Creek and northwards as far as a new shaft (No.2 shaft on Plate 2) which was being sunk at the time of the survey. The irregularity of the profiles suggests a tabular body at shallow depth. The intensities are strongest between 200S and 300S, near the open-cut, which is almost in the centre of the magnetic anomaly. On the assumption that the highest scheelite content corresponds to the highest magnetite content, it appears that the open-cut is probably situated in the best portion of the field, and it is unlikely that better mineralisation will be found anywhere else within the area surveyed.

Anomaly A can be clearly seen on profiles 100S, 200S, 300S and 400S. The magnetic effect is greater at the western end of the anomaly than at the eastern end, thus indicating that either the layer dips to the east or the magnetite content decreases to the east. On the assumption that the latter interpretation was more probable, a recommendation was made that a drill hole be put down at the western end of the anomaly. The undisturbed nature of the profiles for traverses 0 and 600S shows that the magnetic body does not extend as far as these traverses. Unfortunately, the results obtained on traverse 100S in the important part between 100W and 50E are useless for the purpose of interpretation, as the readings were influenced to a great extent by the presence of large quantities of iron scattered around in that area. During the second part of the survey, traverses 50S and 150S were surveyed to provide additional information on this area.

The shapes of the contours and profiles indicate that the magnetic anomaly between 100N/40E and 100S/80E (anomaly B) is not a continuation of the main anomaly between 100S and 400S. They are two distinct anomalies separated by a weakly magnetised area. The No.2 shaft is situated slightly west of the area separating the two anomalies and might contain some ore belonging to the main ore body.

Although anomaly A appears to emanate from a flat magnetic layer at shallow depth, anomaly B appears to originate from a body at greater depth, possibly having some extension in depth. It was recommended, therefore, that the first drill hole put down here should be an inclined one. The magnetic contours suggest also that the body causing anomaly B pitches to the north. The most suitable method of testing this anomaly would be to drill on profile 0 or profile 50S to reach the magnetic body at 0/60E at a depth of 50 to 100 feet.

The profiles of vertical magnetic intensity, which are plotted on Plate 3A at a scale of 1,000 gammas to the inch, show very clearly the magnetically undisturbed area and the limited extent of the northern anomalies. For example, the pronounced anomaly on profile 300N (anomaly C), with a maximum value of more than 1,000 gammas at about 130E, lies between the practically undisturbed profiles of 400N and 250N. This must be due to a very small body.

The mine workings around the northern shaft are to the west of, and outside, anomaly B. The presence of minor amounts of scheelite in the northern shaft indicates that the limit of the scheelite area might not always coincide with the limit of the magnetite area as outlined by the magnetic anomalies, and that further traces of scheelite might be found beyond the limits of the magnetic anomalies.

Although some of the traverses were more than 2,000 feet long, extending over both eastern and western margins of the northern granite cupola and some distance over the porphry east of the granite, no other magnetic indications were obtained in this part of the area.

The survey was extended southwards to traverse 2000S, thus including the area between the two granite cupolas and the southern granite or greisen dome of Mica Hill. The magnetic profiles for this part of the area are shown on Plate 3B. Only two magnetic anomalies were revealed in this section and both are of very limited extent. The anomaly on traverse 600S (anomaly D) is very small and further exploration there does not appear to be warranted. Less than 100 feet to the west of this anomaly is an old shaft, but little prospecting work appears to have been done there. A closer study of the geology of this particular part of the area might be worth while, as the anomaly is the only one remote from the granite margin and may be due to a different type of mineralisation.

The other magnetic anomaly (anomaly E) is a much stronger one, on the northern bank of Pudman's Creek and directly on the south-western edge of the northern granite cupola. Profiles 900S and 950S show distinct magnetic variations exceeding several thousand gammas. The sudden change from large positive to large negative values indicates that the source of the disturbances is at shallow depth. Full examination of the anomaly was impossible because several points on the traverse are situated in the creek bed. The absence of anomalies on profiles 1100S and 800S indicates the limit of mineralisation in both directions. The irregular form of the profiles is indicative of the complex shape of the magnetic body. It is, however, favourably situated at the southern margin of the granite and a recommendation was made that it be tested by drilling. For this purpose, an indication peg was placed at 950S/475W.

The profiles across Mica Hill and the area further to the west revealed no distinct anomalies. The greisen body of Mica Hill does not therefore appear to contain any magnetite, although there are indications there of some mining.

In the second part of the survey, some intermediate traverses were surveyed, as stated previously, and other traverses were extended to cover a large area surrounding the two granite cupolas. No additional magnetic anomalies were found along the extended traverses, thus indicating that the magnetite, with which the scheelite appears to be associated, is confined to the eastern and southern margins of the northern granite cupola.

Several traverses were also surveyed with the gravity meter, but the variations in the gravity values, after correction for elevation, were so small that there appears to be no appreciable differences in density between the granite and the porphyry and other rock formation in the area. In these circumstances there was no purpose in continuing the gravity survey, although it would have been helpful if it had been possible by this method to delineate the granite cupolas and to detect any other batholiths not visible at the surface. Had that been possible, the gravity survey would have been followed by a magnetic survey over the marginal areas.

CONCLUSIONS AND RECOMMENDATIONS

The magnetic survey revealed several strong anomalies near the south-eastern margin of the northern granite cupola and showed that the ore bodies associated with the anomalies are lens-shaped deposits of unequal extent. The largest of the anomalies (A) coincides approximately with the ore body exposed in the open-cut. The anomaly extends from 150S to 450S and has a length of about 300 feet in the direction of strike. A second anomaly (B) is situated between 100N and 150S and smaller ones (C and D) are centred at 300N/125E and 600S/100E. There is no evidence that the anomaly at 950S/475W (E) coincides with an ore-body.

The interpretation of the magnetic results suggests that the magnetic bodies are probably flat layers with little dip. It was recommended, therefore, that the anomalies be tested by vertical diamond drill holes, except for anomaly B, where a probable steeper dip made inclined holes advisable. Indication pegs were placed at the points where the strongest magnetic anomalies were found, and were also shown to the mine manager. Pegs were placed at the following eight positions (see also Plate 2):-

Position of peg	Indication
200S/90W 300S/80W 400S/175W 600S/220W	Anomaly A.
0/60E 50N/60E	Anomaly B.
300N/130E	Anomaly C.
950S/475W	Anomaly E.

The southern portion of anomaly B was not marked by indication pegs because traverses 50S and 150S were surveyed later.

No.2 shaft, which was being sunk at the time of the survey, is situated between anomalies A and B, and must be regarded as being in a less mineralised zone. It would, however, be in a suitable position for working both ore-bodies if drilling were to prove that anomaly B also represented payable scheelite ore.

TESTING

An advance copy of the magnetic contour map was made available to Tungsten Consolidated Ltd. shortly after the completion of the geophysical survey, and many of the drill holes which were put down by the company after the survey were sited on the basis of the magnetic results. The relation of the drill hole positions to the magnetic anomalies is shown on Plate 4. In general, the results of the drilling show good agreement with the geophysical interpretation. Payable scheelite ore has been found mainly within the magnetically disturbed areas.

The results of the drilling investigations are tabulated below. All widths and assay results are based on information supplied by Tungsten Consolidated Ltd., and for which the Bureau accepts no responsibility.

DIAMOND DRILLING RESULTS

(All data supplied by Tungsten Consolidated Ltd.)

Drill hole No.	Angle of depression	Thickness of lode	Assay value (% WO_3)	Depth below surface (ft)	To test anomaly
1	Vertical	12' 2'	0.25 0.8	12 40	A
2	45°	10'	0.69	35	A
3	Vertical	19' 9"	1.04	30	A
4	45°	16' 1"	0.96	31	A
5	"	22' 3"	2.41	40	A
6	Vertical	11' 4"	0.2	30	A
7	"	19' 2"	1.20	40	A-B
8	45°	17' 5"	0.76	85	B
9	"	13' 3"	0.57	115	B
10	Vertical	6' 7"	1.36	102	B
11	"	14'	1.20	80	B
12	"	21'10"	0.65	32	C
13	"	-	-	-	C
14	"	-	-	-	C
15	"	-	-	-	C
16	"	28' 4"	0.14	48	C
17	"	-	-	-	E
18	"	12' 6"	2.49	100	B
19	"	-	-	-	B
20	"	25' 4"	1.63	80	B
21	"	23' 8"	1.22	45	B
22	"	7' 7"	3.3	28	A
23 24 25		Not	Drilled		
26	Vertical	-	Trace	-	A
27	"	-	"	-	A
28	45°	-	-	-	A
29	Vertical	-	-	-	A
30	"	-	Trace	-	A
31	"	18' 2"	0.24	32	A
32	"	2' 2" 16' 4"	1.3 0.27	28 50	A
33	45°	-	Trace	-	A

Anomaly A.

Drill holes Nos.1 to 6, 22 and 26 to 33 were sited within, or on the fringes of, this anomaly. Of those put down near the open-cut, only one (No.22) intersected the ore body (No.1 orebody) exposed in the open-cut. This hole intersected 7 feet 7 inches of ore assaying 3.3 per cent WO_3, and at a greater depth again intersected ore just before striking granite. The other drill holes near the open-cut (Nos.1 to 6) showed no ore values at the level of No.1 orebody, which is therefore very limited in extent. These holes all intersected a lower ore body (hereafter referred to as No.2 orebody), which is therefore much more extensive. Near the eastern and southern margins of the No.2 orebody, only low values were obtained in drill holes Nos.26 to 29 and 31 to 33, while drill hole No.30, which was put down just to the east of the magnetically disturbed area, showed no sign of ore.

The results of the drilling on anomaly A indicate the presence of two orebodies, namely an upper body (No.1) limited in extent, and a lower body (No.2) of limited extent on the east and south and limited by the granite contact on the west.

Anomaly B.

Drill holes Nos.8 to 11 and 18 to 20 were put down near this anomaly. With the exception of No.19, which struck granite, these holes all intersected ore at a level roughly corresponding with that at which the No.2 orebody was intersected by the drill holes within anomaly A. It was evident, therefore, that the results of the above-mentioned drilling indicated that the main ore body (No.2) was a continuous one from near drill hole No.1 in the south to the vicinity of drill hole No.10 in the north. This indication was confirmed by the results from drill hole No.7 which was sited in No.2 shaft, i.e. in the area between anomalies A and B, and which showed 1.2 per cent WO_3 over a depth of about 19 feet.

Anomalies C, D and E.

The northernmost and smallest magnetic anomaly (C) was proved by drill hole No.12, which revealed ore assaying 1.6 per cent WO_3. In drill hole No.16, on the northern edge of this anomaly, only traces of ore were found, and in drill holes Nos.13, 14 and 15 just outside the anomaly, no ore was found. The results from the drilling of this anomaly are an excellent indication of the accuracy of the magnetic method.

A disappointing feature of the testing was the failure to find ore in drill hole No.17, which was put down on anomaly E, at 950S/475W. Although this anomaly is a fairly intense one and is near the granite contact, further testing there is hardly justified as the anomaly indicates a body too small in extent to be of economic importance.

A summary of the results of the drilling shows that No.1 orebody is a shallow body which coincides approximately with anomaly A (Plate 5). No.2 orebody, at a greater depth, is situated below No.1 orebody in the south-west and continues towards the north-east, terminating approximately at the northern end of anomaly B. No.3 orebody coincides fairly closely with anomaly C.

Plate 6 is an east-west section near the open-cut, and illustrates the correlation between anomaly A and Nos.1 and 2 ore-bodies, and the relative position of the two ore-bodies.

The scheelite ore which has been proved in the course of the drilling campaign is a relatively small deposit. Although the magnetic survey was extended from the vicinity of the granite contact to cover a much larger area, no additional anomalies were found and it would not be economical to extend the magnetic survey still further to search indiscriminately for possible ore-bodies.

The geological evidence clearly indicates that the margins of granite batholiths are the most favourable locations for scheelite deposits in this area. If further exploration is contemplated therefore, the first stage should be a reconnaissance geological survey with the object of locating other granite bodies in the vicinity.

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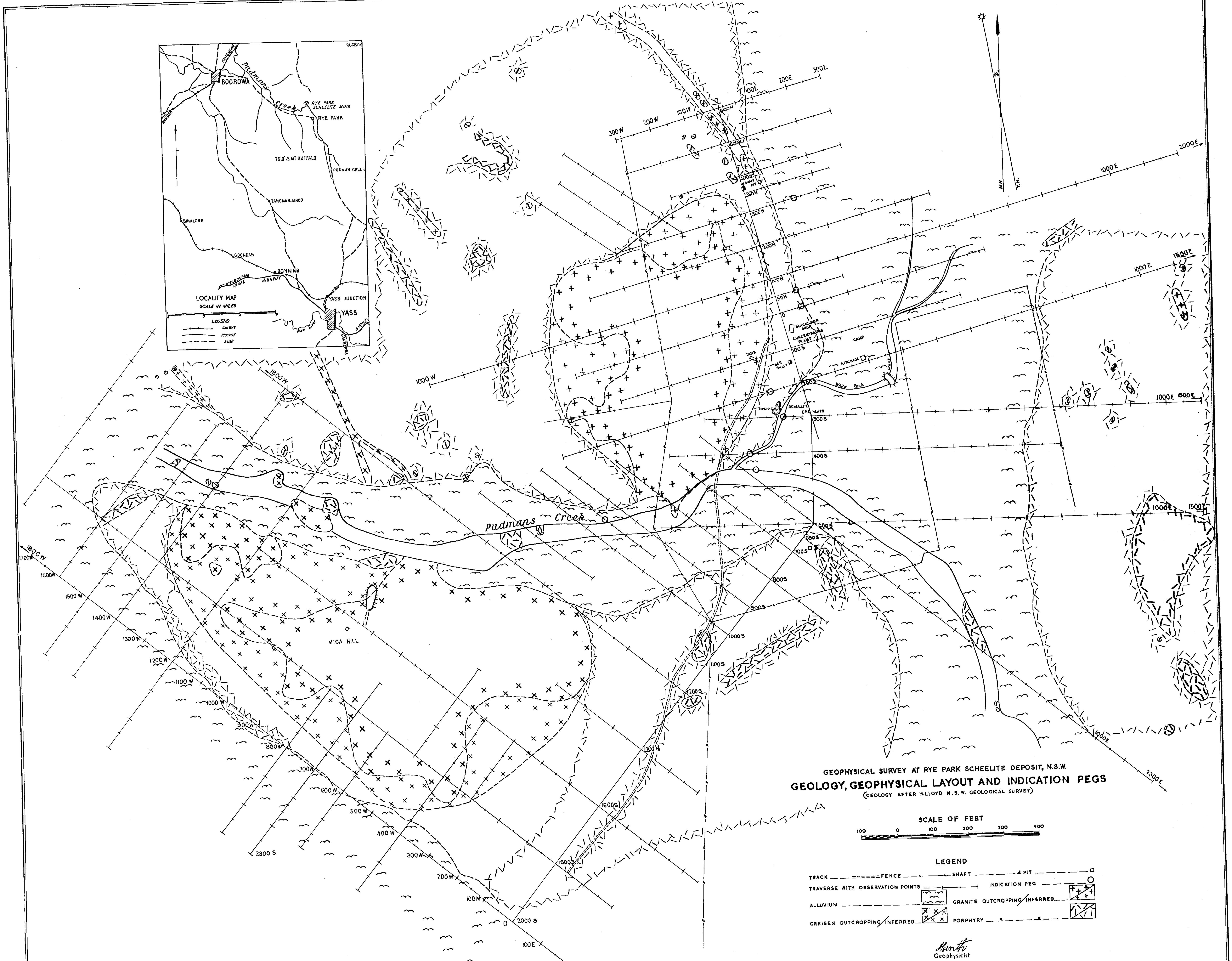
PLATE I



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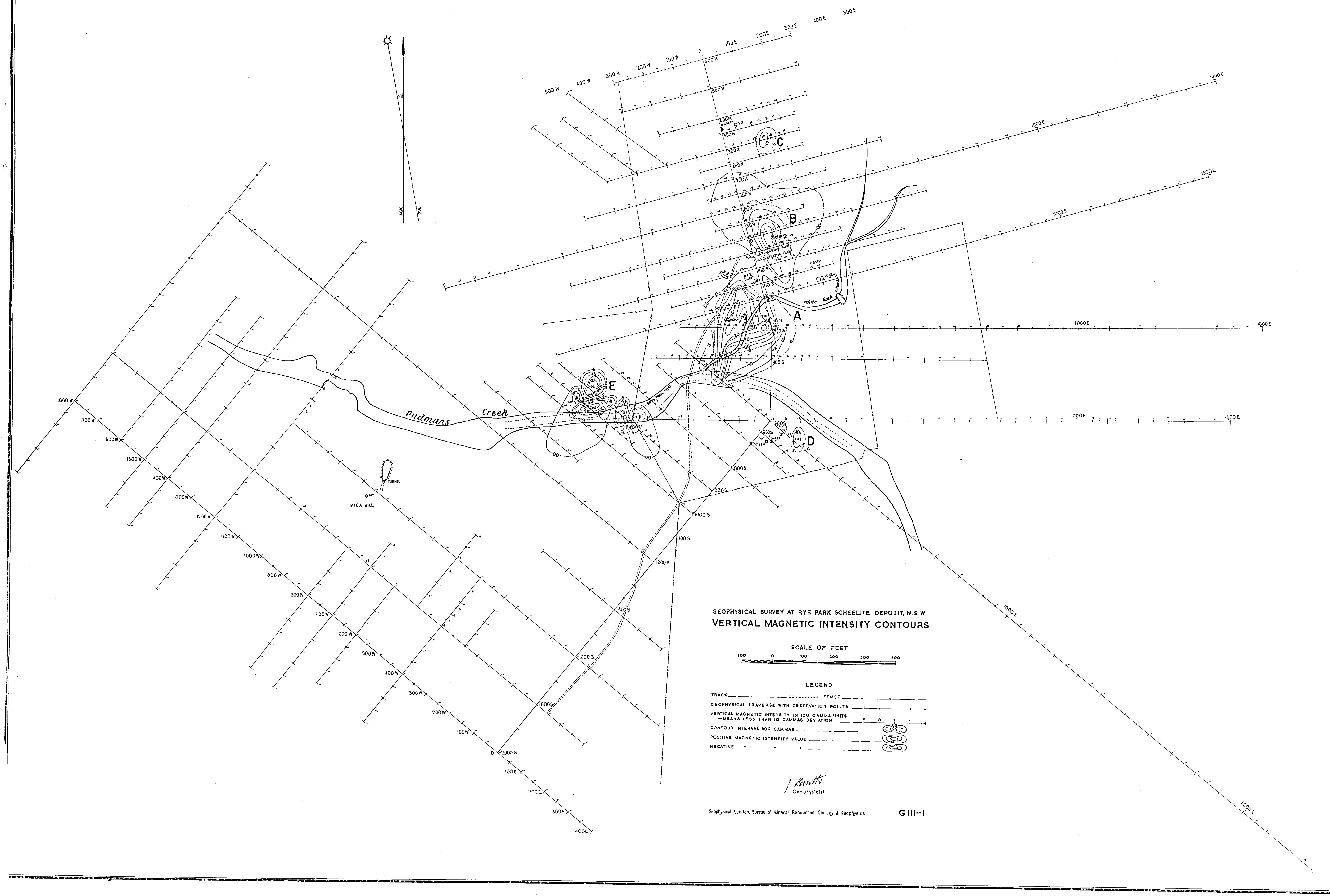
G111-6



GEOPHYSICAL SURVEY AT RYE PARK SCHEELITE DEPOSIT, N.S.W.

VERTICAL MAGNETIC INTENSITY CONTOURS

SCALE OF FEET

100 0 100 200 300 400

LEGEND

TRACK — FENCE

GEOPHYSICAL TRAVERSE WITH OBSERVATION POINTS

VERTICAL MAGNETIC INTENSITY IN 100 GAMMA UNITS
— MEANS LESS THAN 50 GAMMAS DEVIATION

CONTOUR INTERVAL 500 GAMMAS

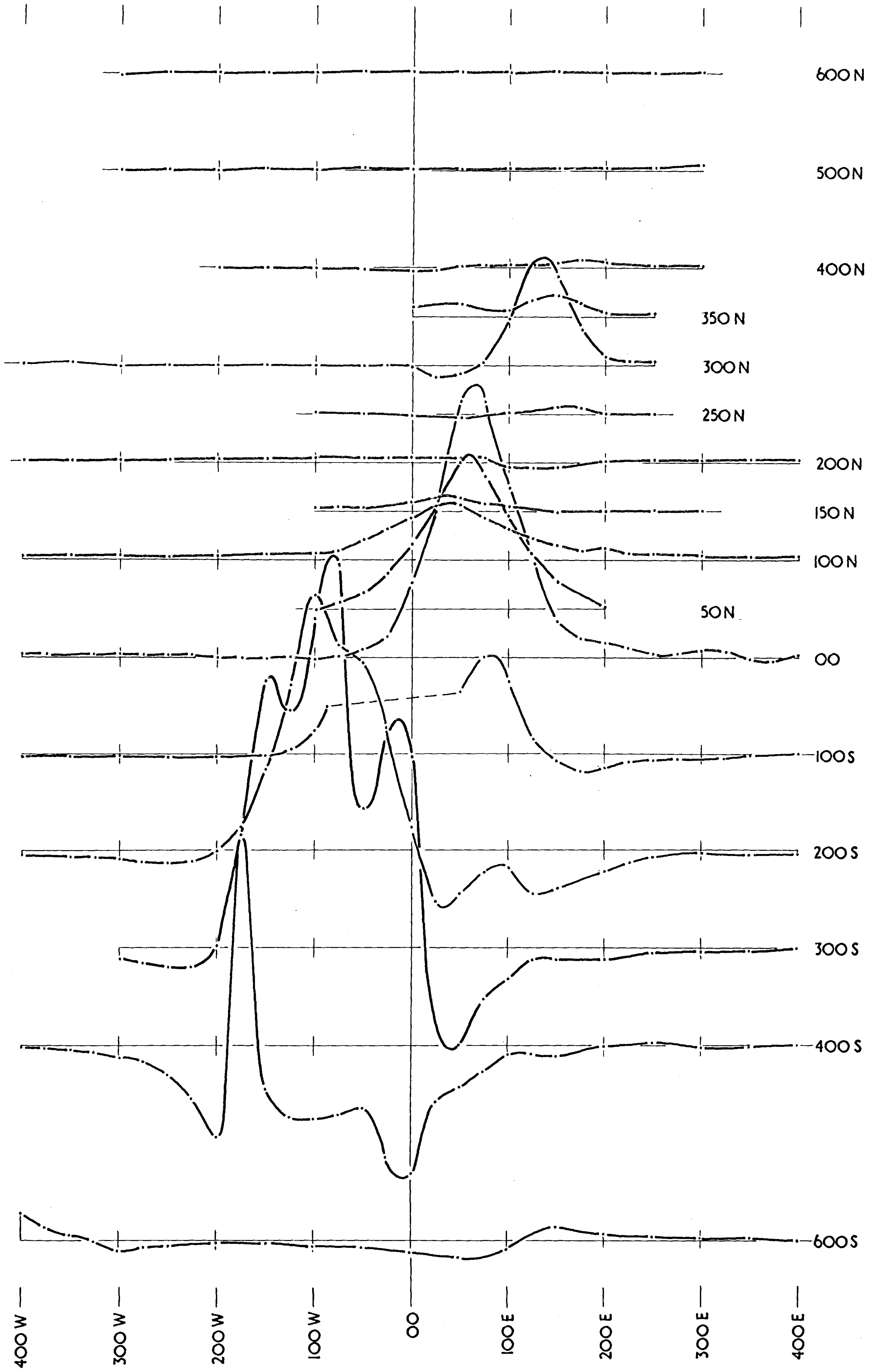
POSITIVE MAGNETIC INTENSITY VALUE

NEGATIVE " " "

J. Horvath
Geophysicist

Geophysical Section, Bureau of Mineral Resources Geology & Geophysics

G 111-1



GEOPHYSICIST

GEOPHYSICAL SURVEY AT RYE PARK, N.S.W.

VERTICAL MAGNETIC INTENSITY PROFILES

600 N TO 600 S

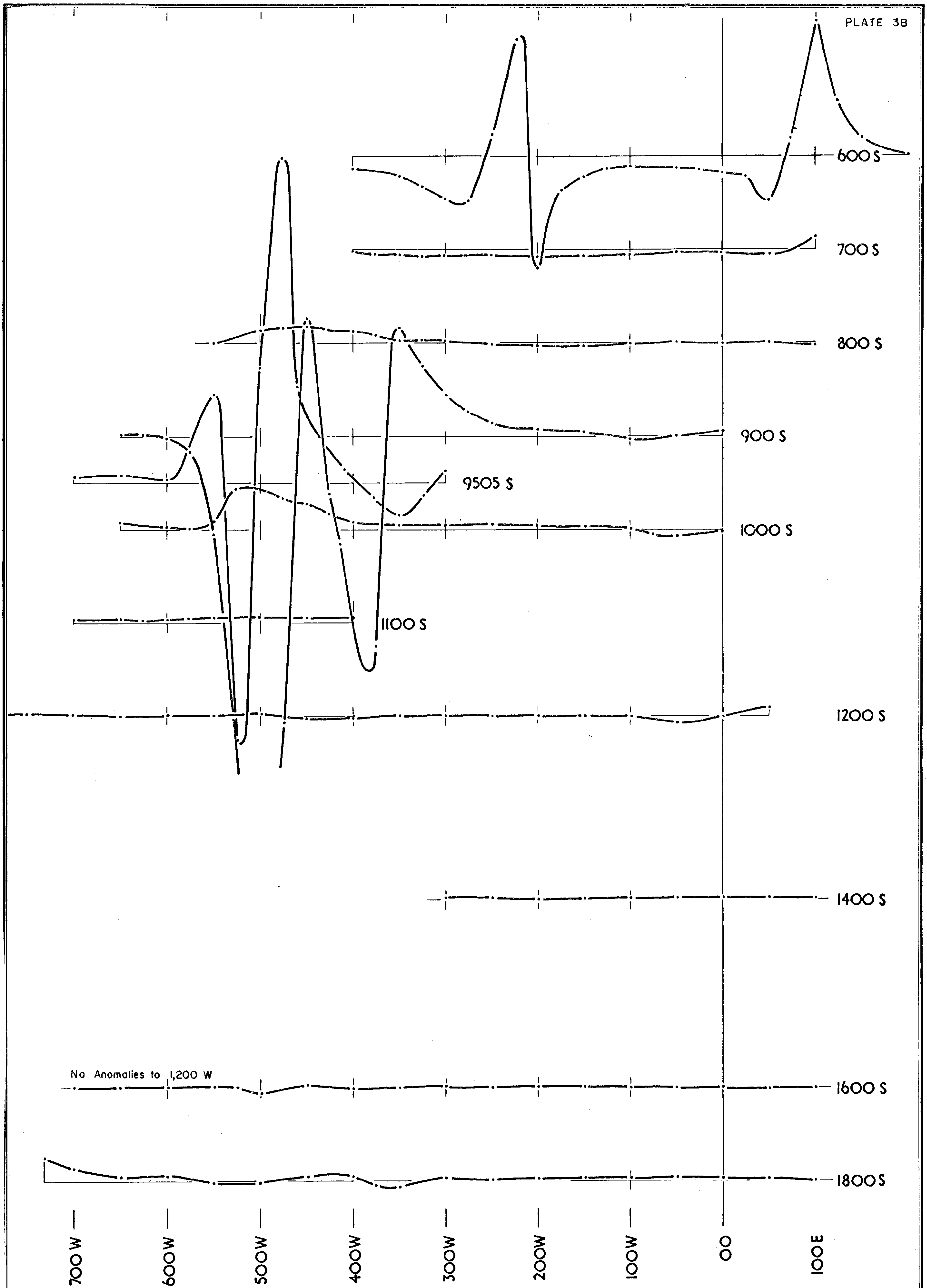
SCALE

DISTANCE 100 0 100 200 FEET

PROFILES 1000 0 1000 2000 GAMMAS

G III-2

Geophysical Section - Bureau of Mineral Resources Geology and Geophysics



I. Horvath
GEOPHYSICIST

GEOPHYSICAL SURVEY AT RYE PARK, N.S.W.

VERTICAL MAGNETIC INTENSITY PROFILES

600 S TO 1800 S

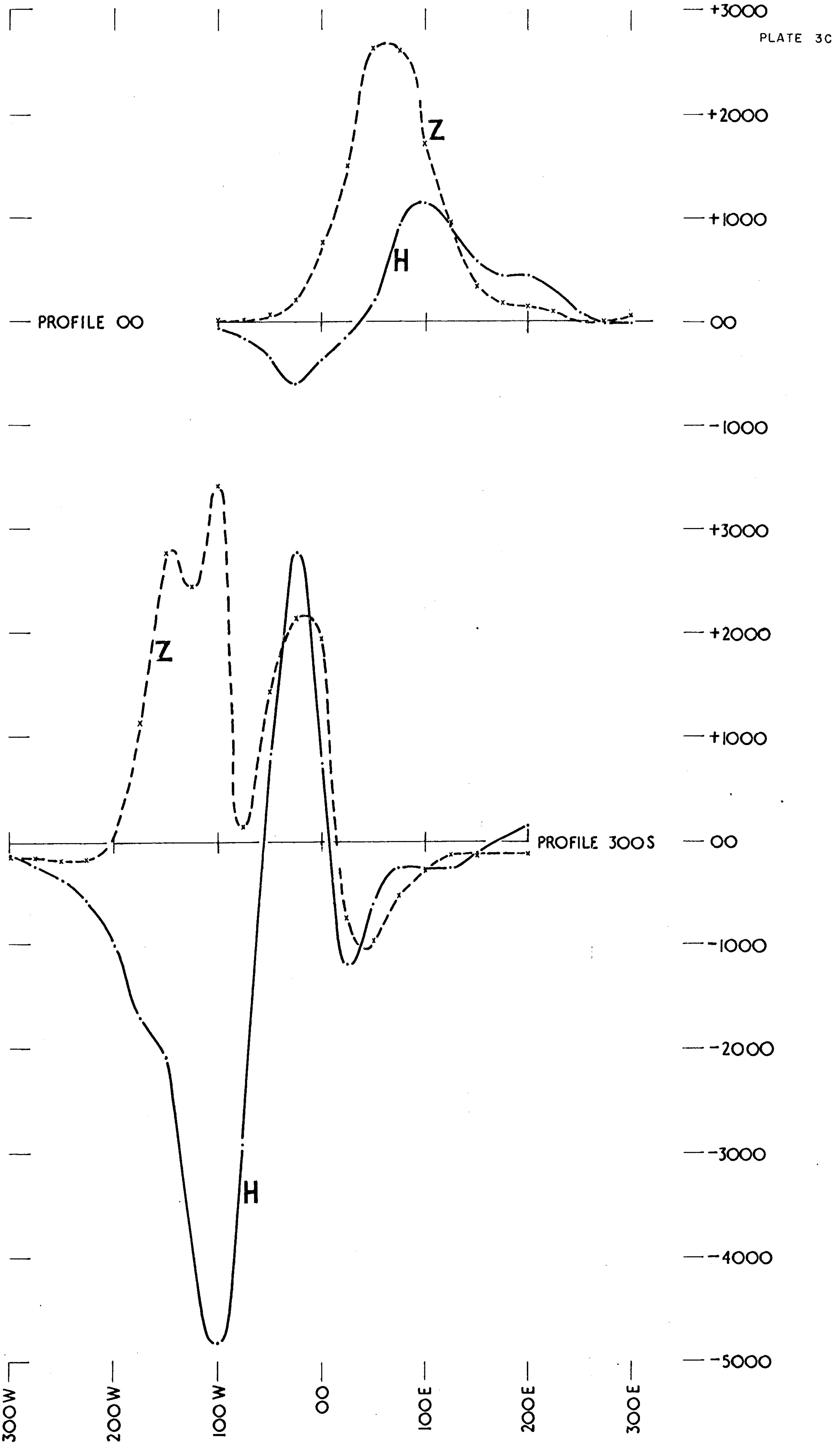
SCALE

HORIZONTAL DISTANCE 100 0 100 200 FEET

PROFILES AND VECTORS 1000 0 1000 2000 GAMMAS

G 111-3

Geophysical Section-Bureau of Mineral Resources, Geology and Geophysics.



GEOPHYSICIST

GEOPHYSICAL SURVEY AT RYE PARK, N.S.W.

VERTICAL AND HORIZONTAL MAGNETIC INTENSITY

PROFILES ALONG TRAVERSES 00 AND 300S

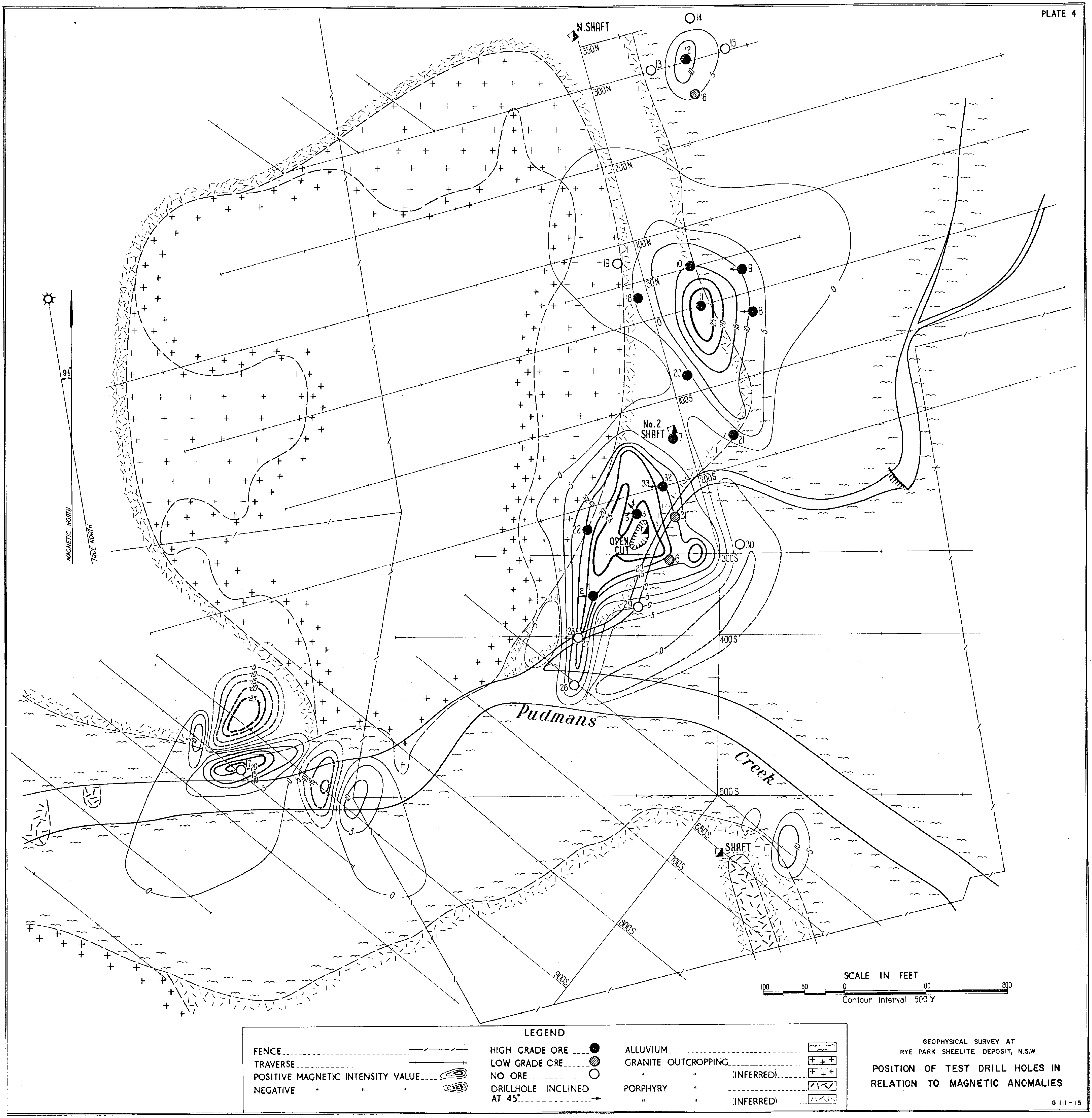
SCALES

HORIZONTAL DISTANCE 100 0 100 200 FEET

VERTICAL 1000 0 1000 2000 GAMMAS

G111-4

Geophysical Section - Bureau of Mineral Resources, Geology and Geophysics



GEOPHYSICAL SURVEY AT
RYE PARK SHEELITE DEPOSIT, N.S.W.

POSITION OF TEST DRILL HOLES IN RELATION TO MAGNETIC ANOMALIES

G 111 - 15

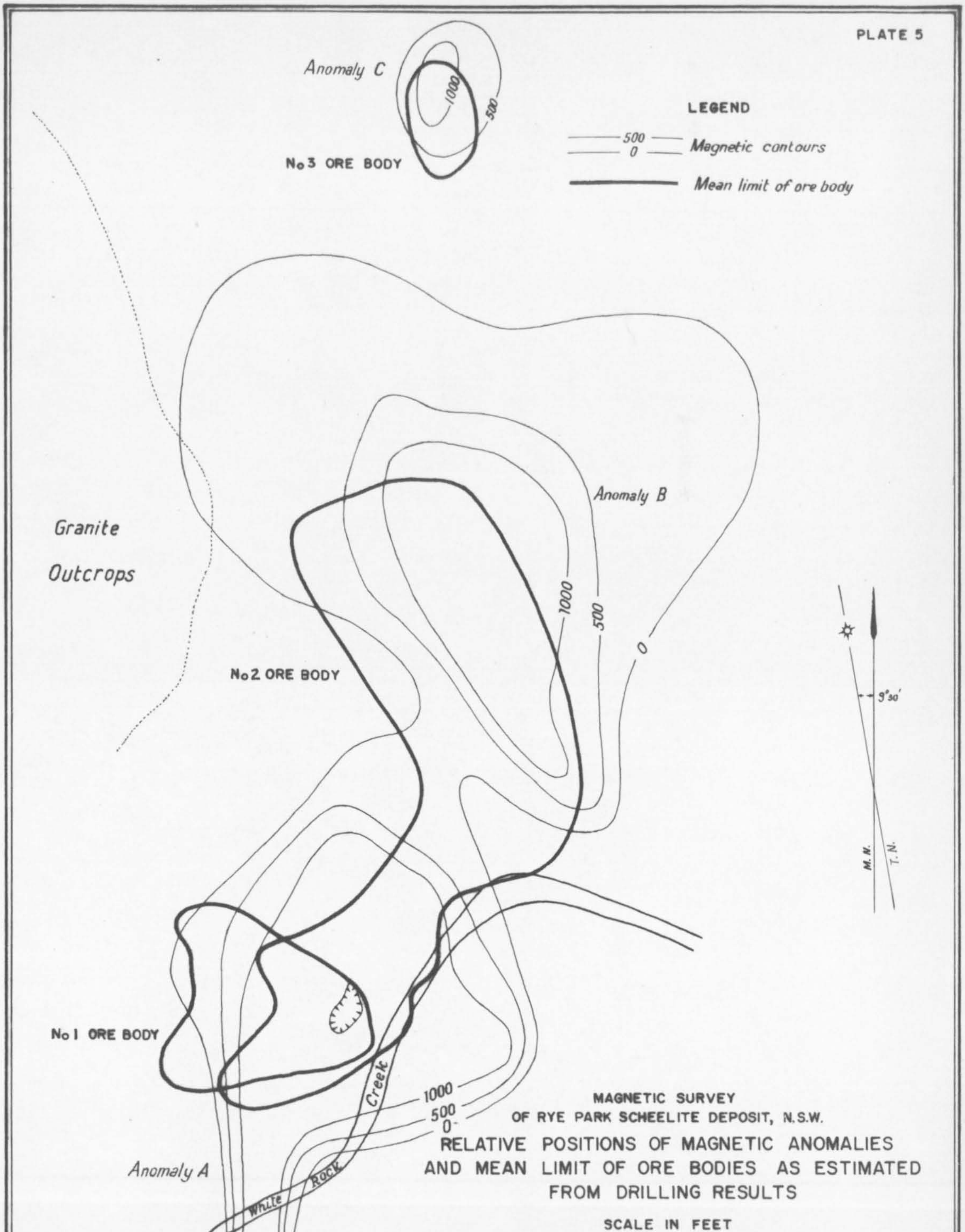
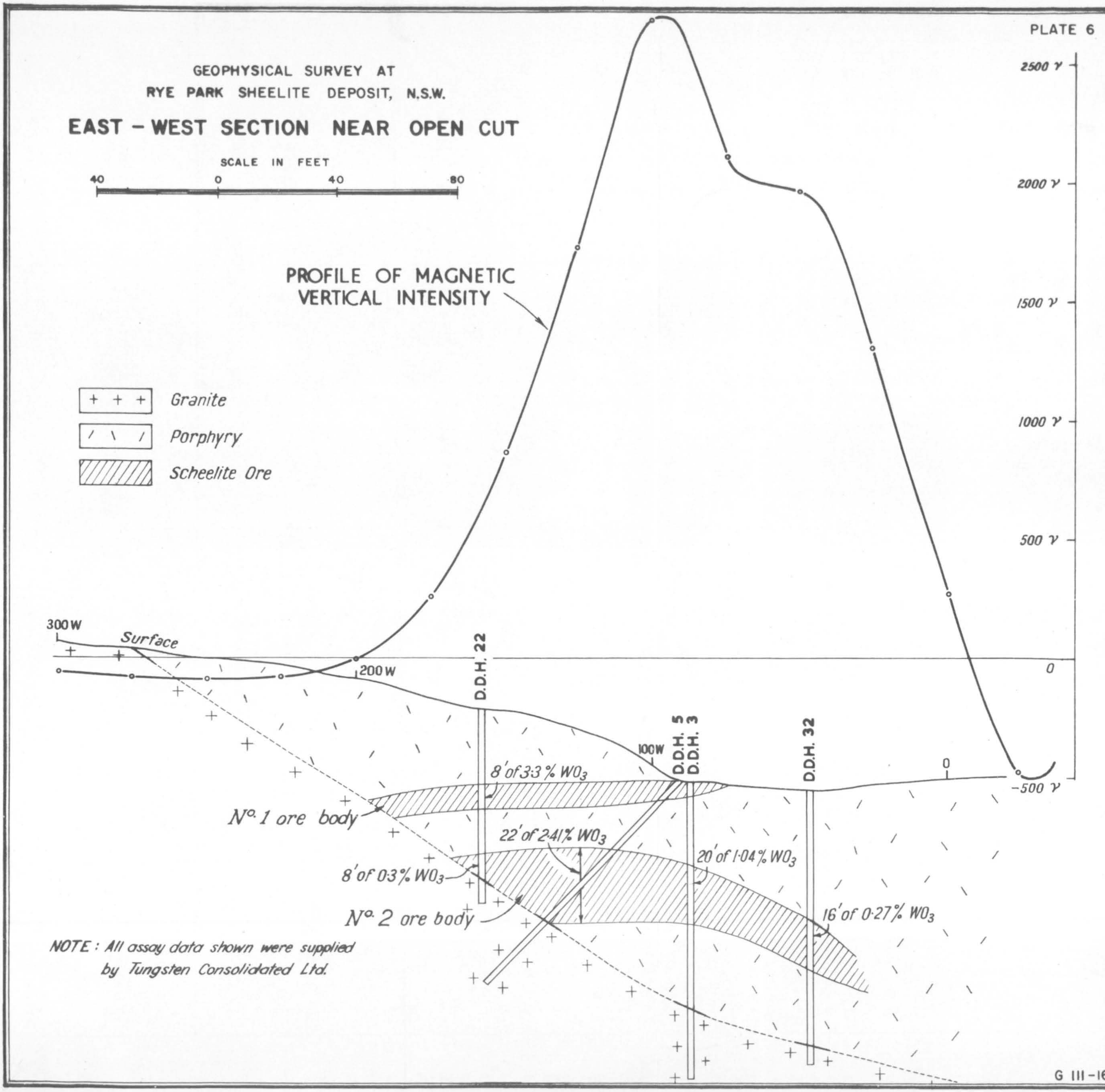


PLATE 5
Anomaly C
1000
500
No 3 ORE BODY
LEGEND
500
0
Magnetic contours
Mean limit of ore body
Anomaly B
Granite
Outcrops
1000
500
0
No 2 ORE BODY
9°30'
M.N.
T.N.
No 1 ORE BODY
Creek
1000
500
0
Anomaly A
White Rock
Pudmans
Creek
MAGNETIC SURVEY
OF RYE PARK SCHEELITE DEPOSIT, N.S.W.
RELATIVE POSITIONS OF MAGNETIC ANOMALIES
AND MEAN LIMIT OF ORE BODIES AS ESTIMATED
FROM DRILLING RESULTS
SCALE IN FEET
100
0
100
200
CONTOUR INTERVAL 500 GAMMAS
Geophysical Section, Bureau of Mineral Resources, Geology and Geophysics.
G III - 14


GEOPHYSICAL SURVEY AT
RYE PARK SHEELITE DEPOSIT, N.S.W.
EAST - WEST SECTION NEAR OPEN CUT
SCALE IN FEET
40 0 40 80
PROFILE OF MAGNETIC
VERTICAL INTENSITY
2500 γ
2000 γ
1500 γ
1000 γ
500 γ
0
-500 γ
Granite
Porphyry
Scheelite Ore
300 W
Surface
200 W
100 W
0
D.D.H. 22
D.D.H. 5
D.D.H. 3
D.D.H. 32
8' of 3·3 % WO3
No. 1 ore body
22' of 2·41% WO3
20' of 1·04 % WO3
8' of 0·3% WO3
No. 2 ore body
16' of 0·27% WO3
NOTE : All assay data shown were supplied
by Tungsten Consolidated Ltd.