312001

SCINTREX

COMMENTS ON FURTHER GEOPHYSICAL SURVEYS OVER THE WHITE SPUR GRID NEAR QUEENSTOWN, WEST COAST TASMANIA ON BEHALF OF THE MT. LYELL MINING & R'WAY COMPANY LTD.

000

312002

SCINTREX

PRIVATE AND CONFIDENTIAL

COMMENTS ON
FURTHER GEOPHYSICAL SURVEYS
OVER THE WHITE SPUR GRID
NEAR QUEENSTOWN, WEST COAST TASMANIA
ON BEHALF OF
THE MOUNT LYELL MINING & RAILWAY COMPANY LTD.

BY

A.W. HOWLAND-ROSE

MSc,DIC,AMAusIMM,FGS.

GEOPHYSICIST

SYDNEY, N.S.W.

JUNE, 1979

TAS-062C

SCINTREX

CONTENTS

002

312004

SCINTREX PTY. LTD.

GEOPHYSICAL CONSULTANTS AND CONTRACTORS

SUMMARY

Additional EIP gradient array and total magnetic field surveys in the western and eastern zones of interest have mapped the associated EIP zones more definitively. It is suggested that targets be selected on the western zone of interest to ascertain the source of the chargeability only after correlation with the geochemistry which it is understood is now available. Thus, no specific recommendations are made at this time.

The drill hole, WSP-1, is considered to have intersected both sources of chargeability responses defined on the surface surveys. The source is considered to be along-strike variants of the sulphide - carrying Vitric Lithic Tuff unit.

1031 WELLINGTON STREET,
WEST PERTH, 6005
WESTERN AUSTRALIA

TELEPHONE: 321 6934
TELEX: 92353
TELEGRAMS: SCINTREX, PERTH

6 TRAMORE PLACE,
KILLARNEY HEIGHTS, 2087
N.S.W. AUSTRALIA.

TELEPHONE: 451 5367
TELEX: 26859
TELEGRAMS: SCINTREX, SYDNEY

SCINTREX

COMMENTS ON FURTHER GEOPHYSICAL SURVEYS OVER THE WHITE SPUR GRID NEAR QUEENSTOWN, WEST COAST TASMANIA ON BEHALF OF THE MOUNT LYELL MINING & RAILWAY COMPANY LTD.

INTRODUCTION

As part of a series of geophysical surveys undertaken by Scintrex Pty. Ltd., at the request of Mr. K. Reid, Chief Geologist, for the Mount Lyell Mining & Railway Company Ltd. during the 1978/79 field season, additional gradient array and magnetic field surveys were carried out on the White Spur grid.

The induced polarization work was carried out over some 5 double and one single operator day between 24th November and 2nd December, 1978, while the magnetic survey was undertaken on 13th and 15th January, 1979.

Also discussed in this report are the results of down-hole and core test surveys carried out by Mt. Lyell personnel.

The additonal surveys were carried out to give greater information as to the continuity of chargeability anomalies located in previous surveys which are discussed in reports on the area by the author (TAS-035C dated April, 1977, TAS-054B dated June, 1978).

DATA PRESENTATION

The additional work carried out over the two seasons subsequent to the original work, together with a repositioning of lines in past surveys, has necessitated the re-contouring of the whole area. All three contour maps therefore are thoroughly revised. The contouring method used is graded colours which have been chosen to enable plan printing to be carried out. Not only is this procedure cheaper (no drafting is required) but enables recontouring at any time without major trouble and expenditure.

At a number of localities lines show displacements in the position of distinct zones which *may* be real, but are considered by the author to be due to relative positions of the intermediate fill-in lines and reconnaissance lines being mis-placed. Therefore it is recommended that the positioning of the following lines be checked at some convenient time:- 30.5N, 29.5N and 28.5N in the south-west and line 42N east of 3500E in the north-east.

The scale used for the contour presentation is 1:6000 for all three parameters, while the data profiles employ a horizontal scale of 1 inch = 200 feet (1:2400). The vertical scales were 1 inch = 100 gamma for magnetics, 1 inch = 10 millivolts/volt for chargeability and a five inch log cycle for the resistivity. Note that while the profiles are presented in millivolts/volt having been read with the IPR-8, the chargeability contour map is presented in milliseconds as the original data was read using an IPR-7.

DISCUSSION OF RESULTS

I - INTERMEDIATE LINES, WESTERN SECTION OF THE GRID

The lines surveyed in this section in the current programme included, 27.5N, 28.5N, 29.5N, 30N, 30.5N, 31.5N, 32.5N. These are individually discussed from south to north. Comments are made on the magnetic field data also on lines to 42.5N.

Due to some uncertainty as to the *precise* relative positions of some of the lines, the comments below refer to the geophysical correlation between lines, whereas the contour interpretation assumes the line position to be correct.

LINE 27.5N (2950W -1850W and 050E - 2650E)

The western section of the line is relatively uneventful, however, the eastern section has a number of significant features.

The "facies change" referred to in earlier reports between the more resistive/less chargeable sequence in the east, and the more chargeable/less resistive section in the west, is seen well on this line. East of about 2200E resistivities rise very significantly to over 14,000 ohm-metres, while to the immediate west they fall to as low as 300 ohm-metres at 2050E. Associated with this change is a significant chargeability response of some 45 millivolts/volt above the 20 millivolts/volt background at 2250E. The maximum depth to source looks to be of the order of 200 feet. The response is associated with the change in resistivity and lies on, or in close proximity to this contact. The induced polarization maxima is clearly correlated with a 100 gamma total field anomaly. While the magnetite (or pyrrhotite) content thereof may contribute to the induced polarization maximum, magnetite as such does not explain its amplitude, therefore sulphide (or graphite) must also be present.

This response is in an identical position to W1 on line 28N (see TAS-035C/054B)

Three distinct 20 millivolts/volt anomalies were located at 1150E, 1400E and 1750E from sources whose maximum depths are estimated to be 100 feet, 150 feet and 100 feet respectively. They are, from west to east, associated with falls in local resistivity level of 50%, 30% and 10% respectively to 750 ohm-metres, 1000 ohm-metres and 1000 ohm-metres. This infers hosts to the chargeability which while being *less resistive* than the enclosing rocks are not *conductive* as such. No correlation is seen between these three maxima and the line to the *north* (28N).

LINE 28.5N (3400W-2000E)

The most significant feature on the eastern section of the line was recorded below 1800E to 2000E where the resistivity rises from 500 ohm-metres to in excess of 10,000 ohm-metres, with the chargeability falling to a low 15 millivolts/volt in the eastern section. This marks the "facies" contact referred to above. The western section of this dramatic resistivity change is marked by a resistivity "shoulder" of about 1500 ohm-metres together with a distinct induced polarization maximum and an 80 to 100 gamma increase in total magnetic field. The depth to source is estimated as being not greater than 150 metres at 1900E. This zone correlates with W1 on line 28N and that at 2250E on line 27.5N to which it bears a strong resemblance.

At 1000E a 15 millivolts/volt above the high 40 millivolts/volt background response which characterises the rocks west of the 'facies' boundary, was recorded. The maximum depth to source does not exceed 100 feet, while the 40% depression in resistivity to 1300 ohm-metres infers a host less resistive than the enclosing rocks.

Smaller 10 millivolts/volt induced polarization responses from hosts lower than the surrounding resistivities were recorded centred at 00, 1150W and 1800W from sources whose maximum depths are between 100 feet and 150 feet. Only over the anomaly at 1200W was there a slight increase in total magnetic field of about 40 gamma.

Between 3200W and 2200W increased chargeabilities were recorded with distinct maxima at 2800W (48 millvolts/volt) and 3050W (40 millivolts/volt) with high 1500 to 3000 ohm-metres resistivities inferring a disseminated source.

LINE 29.5N (3000W-1350E)

A rapid increase in resistivity east of 800E allied with a decrease in chargeability indicates the 'facies' boundary to be at, or in close proximity to 850E. There is no discernible change in total magnetic field over this zone.

Two related chargeability maxima of 12 and 10 millivolts/volt above the 30 millivolts/volt background, were noted at 00 and 250E respectively. The accompanying resistivities are of the order of 2000 to 2500 ohm-metres and thus the sources are essentially disseminated in nature. The profile form suggests a maximum depth to source of the order of 150 to 200 feet. The anomaly at 250E has a local 20 gamma increase in magnetic field. This, however, cannot explain the induced polarization response. These two maxima probably relate to maxima of similar form at 250E and 450E on line 30N (TAS-035C) which have been designated zone W7.

A very similar response at 350W of about 15 millivolts/volt above the 35 millivolts/volt background was defined from a source estimated to be at a maximum depth of 125 feet. A depression in the resistivity to 2000 ohm-metres infers a disseminated source within a less resistive host. This anomaly probably corresponds to a similar response at 050W on line 30N (TAS-035C).

A minor chargeability maximum of 8 millivolts/volt at 1600W just east of a 12,000 ohm-metres feature, probably correlates with a similar feature at 1250W on line 30N(W4?). To the west of the resistive unit a chargeability maximum of 35 millivolts/volt at 2300W, with a 12 millivolts/volt low at 2550W correpsonds to a similar feature (W9) on line 30N. The low is accompanied by a high resistivity, inferring a siliceous acid rich source.

LINE 30N (2800W-1600E)

The line was re-surveyed between the limits above as a single block. Given differing current dipoles separations on the first survey and different receivers, the correlation between the reconnaissance and repeat data is as would be expected. The higher impedance of the IPR-8/10 units shows up in the signal to noise ratio of the data. As the results are substantially the same, no detailed comments are made.

LINE 30.5N (2850W-1600E)

East of 400E the resistivity rises from a 2000 ohm-metres background to in excess of 10,000 ohm-metres, while the background chargeability falls from 40 millivolts/volt to 15 millivolts/volt (±). The supposed 'facies change' therefore takes place at about 425E(±).

West of this feature the most significant events recorded were high chargeability values of 40 millivolts/volt (20 millivolts/volt above background) between 800W and 350E. Individual maxima were defined at 650W, 200W and 250E. These, however, represent variations within a broad zone rather than separate sources. They correlate with the zone from 600W to about 600E on line 30N (TAS-035C), the eastern extremity of which includes zone W7.

A 12 millivolts/volt above background response from a source estimated to lie no deeper than 120 feet at 1520W is coincident with a resistivity 'low' of 3000 ohm-metres, the source being disseminated chargeable material within a less resistive host. A coincidental 120 gamma increase in the local magnetic field was also observed. The profile pattern suggests that this relates to zone W4 on line 30N (TAS-035C).

For correlation purposes, relative chargeability maxima of 35 millivolts/volt at 2250W and 2650W, with a distinct 12 millivolts/volt low at 2425W correlate with zones W9 and W8 on line 30N (TAS-035C).

LINE 31.5N (2250W-450E)

The chargeability background is of the order of 20 to 25 millivolts/volt over this line which is significantly less than observed on previous lines to the south. Superimposed on this lower background were a number of significant induced polarization responses worthy of mention.

The most significant in terms of amplitude was of 25 millivolts/volt centred at 1750W which is coincident with a 70% fall in resistivity to 1700 ohm-metres. The form of the profile suggests (?) a west dip to the source, which, while not being conductive as such, is contained within a less resistive host. The maximum depth to source is estimated at 200 feet. A secondary maximum of 10 to 14 millivolts/volt for rocks whose resistivity is 3000 ohm-metres was recorded at 1450W. This anomaly together with the significant response described in detail above, are very similar in form to maxima recorded at 1650W and 1300W (W6) on line 31N (TAS-035C). These two maxima have magnetic field increases of 200 gamma and 80 gamma at 1750W and 1450W which indicate the sources contain either magnetite or pyrrhotite, but these are considered not to be the sole source of the chargeability.

To the east, between 1000W and 350W, chargeabilities reach over 40 millivolts/volt from 400W to 800W, with two maxima inferred at 650W(±) and 450W(±). The associated resistivities are a high 3000 ohm-metres which infer a disseminated source for the anomaly.

The most easterly response of significance was recorded at 100W where a 13 millivolts/volt anomaly is coincident with 3500 ohm-metres resistivities. The source must also contain magnetite (and/or pyrrhotite) as a coincidental increase in magnetic field of 60 gamma was recorded. The source therefore is disseminated sulphides or graphite containing magnetite or perhaps pyrrhotite as a constituent. The maximum depth is estimated to be of the order of 150 feet. This zone coincides with W7 at 050E on line 31N (TAS-035C).

LINE 32.5N (1750W-750E)

The chargeability background at about 25 to 30 millivolts/volt is similar to that observed on line 31.5N, also the profile forms are similar. When allowance is made for scale, the profile form is also very similar to the original reconnaissance line 32N (TAS-035C).

The most westerly response recorded was centred at 1350W where a 20 millivolts/volt anomaly was defined coincident with a 90% fall in apparent resistivity to 600 ohm-metres. The maximum depth is of the order of 200 feet, while the profile form, although an unreliable indicator, infers a west dip. This response clearly correlates with zone W6 at 1650W on line 32N (TAS-035C), and the striking anomaly at 1750W on detailed line 31.5N (discussed above). Also, this anomaly correlates well as do its correlatives, with an increase in magnetic field, this time to 250 gamma plus. The source therefore contains magnetite and/or pyrrhotite together with other sulphides and/or graphite which are weakly interconnected. This response is considered of prime importance.

A smaller 15 millivolts/volt response at 1050W superimposed on a 25 to 28 millivolts/volt background was accompanied by a 45% depression in resistivity to 3000 ohm-metres and is associated with a much broader local increase in magnetic field of 150 gamma. The source therefore has similar constituents to the anomaly at 1400W. It is obviously related to the anomaly at 1450W on 31.5N which also has an associated magnetic signature.

Between 350W and 700W the chargeability shows a significant increase of 20 millivolts/volt over background, while the resistivity shows a 50% depression to still high values of 2000 to 4000 ohm-metres. The form of the profile infers separate sources at 650W and 450W whose maximum depths to source are of the order of 150 feet (± 25 feet). Only a very slight increase in magnetic field of some 15 gamma was noted at 500W. The source therefore is considered to be disseminated sulphides or graphite weakly interconnected, or within a less resistive host.

The most significant event seen on the eastern margin was a very substantial change in resistivity from 430 ohm-metres at 450E to 6000 ohm-metres at 650E. The chargeability within the distinct low is a high background 40 millivolts/volt, while maxima of 47 and 56 millivolts/volt were recorded at 350E and 550E. This zone marks the contact between the two eastern and western zones and may have significance as such.

LINE 33.5N (1850W-600E magnetics only)

A magnetic survey was conducted on this line as per the above co-ordinates. The induced polarization data is discussed in report TAS-054B.

There is an interesting correlation worthy of comment. The substantial chargeability response W13 in excess of 30 millivolts/volt at 1150W, which is accompanied by a dramatic 80% fall in resistivity to 650 ohm-metres is situated to the immediate east of a 200 gamma local increase in magnetic field. Both the induced polarization source and the source of the magnetic response have an inferred west dip.

LINE 34.5N (2200W-00 magnetics only)

(For chargeability data see report TAS-054B)

The magnetic field shows a relatively minor 40 to 50 gamma response at 1550W. This could be a significant marker in differentiating the two related induced polarization responses centred at about 1925W and 1550W. The former has *no significant* magnetic signature.

LINE 36.25N (2900W-600W magnetics only)

(For chargeability data see report TAS-054B)

A broad increase in magnetic field was recorded between 2000W and 2800W which reaches 150 gamma above background at 2300W ±200 feet. These values are associated with high chargeabilities of 10 millivolts/volt above background between 2000W and 3000W, however, the *highest* magnetic fields are associated with a lower saddle within the chargeability maximum.

LINE 36.5N (3100W-1100W magnetics only)

(For chargeability data see report TAS-054B)

A sharp 120 gamma increase in total magnetic field between 1975W and 2900W was recorded. While these increased fields are associated with high background chargeabilities of 40 millivolts/volt, they are not uniquely associated, as the high chargeability backgrounds extend east and west of the increased magnetic field.

LINE 37.5N (3500W-1300W magnetics only)

For the most part the magnetic field shows only a slight variation from the background 62,600 gamma. However, a broad increase to 62,670 gamma centred at 2300W was located which is not associated with any specific EIP anomaly, however, it is associated with a marked increase in resistivity (Zone W15?)

LINE 38.5N (4000W-1750W magnetics only)

The line remains about background except for a sharp sinlge point increase of about 150 gamma at 2600W. This is associated with an increase in resistivity. Therefore the source probably marks the presence of a magnetic, resistive rock unit.

None of the significant EIP responses on this line show material increases in the local magnetic field.

LINE 39.5N (3800W-1900W magnetics only)

There are no significant increases in magnetic field on this line.

LINE 40.5N (3700W-2500W magnetics only)

The sole significant feature is a marked increase in local magnetic field to just under 62,900 gamma at 2500W over the 62,600 gamma background. This increase is not mirrored by any *major* increase in chargeability, although a slight increase of about 5 millivolts/volt was recorded with a marked slowing of the decay form (see report TAS-054B).

LINE 41.5N (3800W-2600W magnetics only)

No significant magnetic field anomalies.

LINE 42.5N (3300W-1500W)

No significant magnetic field anomalies.

II - INTERMEDIATE LINES CENTRAL EASTERN GRID

Comments on the relationship of the magnetic field data acquired during the 1978/79 field season are made with respect to the EIP data acquired in the previous season (discussed in detail in TAS-054B) for lines 37.5N to 41.5N.

LINE 37.5N (3900E-5900E)

Two significant above background increases in magnetic field of 200 and 160 gamma were located at 4200E and from 4800E to 5050E respectively. Each is in close proximity to major increases in apparent resistivity to 12,600 ohm-metres (from 5000 ohm-metres) and to 9000 ohm-metres (from 3500 ohm-metres) respectively. The source therefore is considered to be a resistive volcanic unit carrying magnetite. As there is no associated increase in chargeability, sulphides are not present.

LINE 38.5N (3900E-3700E)

The background magnetic field increases from about 62,600 gamma at 3900E to 62,700 gamma at 5700E. Superimposed on this increase are three 'local' anomalies of 120 gamma at 4100E, a broad 100 gamma anomaly at 4900E ±100 feet, and 180 gamma at 5500E. The most westerly of these has no correlation with any EIP event, however, the broad central anomaly traverses a minor EIP source at 4750E and a more significant 15 to 17 millivolts/volt response centred at 5050E. Magnetite *may* therefore contribute to this source, although it is not the sole source thereof. The most easterly response, however, is clearly associated with a broad increase in chargeability to 15 millivolts/volt above background. The source here also then contains either minor magnetite, and/or a greater quantity of pyrrhotite as a constituent.

LINE 39.5N (3700E-5350E)

Two related maxima of about 180 gamma and 250 gamma above background were centred at 4700E and 5000E respectively. While not directly correlated to increases in chargeability they lie within a series of anomalies which rise over 20 millivolts/volt above the otherwise low 6 to 10 millivolts/volt background. Magnetite, or pyrrhotite therefore contribute to the source in this case which shows a broad decline in the local resistivity to 2000 ohm-metres from 5000 ohm-metres.

LINE 40.5N (3500E-5500E)

Only a single point 120 gamma anomaly rises above background at 4000E which can be correlated to a sympathetic increase in apparent resistivity to 7000 ohm-metres plus, from 4500 ohm-metres. The source in this case therefore is a resistive volcanic rock carrying magnetite or minor pyrrhotite, as no increase in EIP was noted.

LINE 41.5N (3500E-5600E)

The sole significant rise in the otherwise fairly uniform background was at 4800E (±50 feet) where a 200 gamma increase in background was noted. This correlates with a *fall* in background resistivity from 17,000 ohm-metres to 7500 ohm-metres *and* a minor rise in chargeability to 16 millivolts/volt from 11 millivolts/volt. The associated *fall* in normalised decay form infers either a fine grained sulphide (i.e. pyrrhotite) or magnetite to be the causative source.

III - GEOPHYSICAL LOG OF DDH WSP-1

INTRODUCTION

The hole was logged to 137 metres (where the hole was blocked) by Mt. Lyell personnel using a Scintrex 25 watt transmitter as the energisation source, and an IPR-8 to investigate the resultant primary (resistivity) and secondary (chargeability) equipotential fields so generated.

This work was carried out by Murray Hutton on 29th March, 1979.

DISCUSSION

The data is presented on a down-hole scale of 1 centimetre = 25 metres while the resistivity is displayed on a 10 centimetre log scale. The chargeability is at the vertical scale of 1 centimetre = 2 millivolts/volt and the decay form ΔMn is shown as 1 centimetre =

5% ($\Delta Mn = \Delta M/M_3 = (M_5 - M_1)/M_3$.

The array employed was a 2.5 metre three array.

The comments on the electrical log are made in conjunction with the geological log kindly supplied by Mt. Lyell.

Medium Grained Crystal Lithic Tuff ..... This unit was recorded to 41.1 metres. At 32.5 metres resistivities reached a maximum of 4300 ohm-metres, then fall to 300 ohm-metres at 37.5 metres. The chargeability however, remains a high 38 to 54 millivolts/volt plus over the entire section. This is reflected on the surface by higher chargeabilities of 25 millivolts/volt than noted to the west (10 millivolts/volt). The minor pyrite and pyrrhotite certainly seems low for the very high chargeability backgrounds observed, particularly in light of the slower than normal (ΔMn) decay forms, which indicate a coarse rather than fine grain source.

Tuffaceous Shale and Fine Grained Tuff - 41.1 to 82.9 metres ..... This section is noted for a variable fall in resistivity from over 1000 ohm-metres above to 200 ohm-metres below. The chargeability in the upper section is 32 millivolts/volt rising to 59 millivolts/volt at 60 metres and then falling again to 16$\pm$ millivolts/volt in the lower sections. The minor pyrite and pyrrhotite noted, again does not well explain the high chargeabilities noted.

Vitric Tuff - 82.9 to 104.2 metres and Medium to Coarse Grained Lithic Crystal Tuff - 104.2 to 142.0 metres ..... This unit is characterised by a steady (if uneven) rise in resistivity from 200 ohm-metres at 85 metres to in excess of 9000 ohm-metres between 107 and 127 metres, after which it falls rapidly again. The upper sections within the Vitric Tuffs and Shales have high 44 millivolts/volt to 65 millivolts/volt chargeabilities, while relatively low chargeabilities less than 10 to 20 millivolts/volt were recorded between 107 and 127 metres. Below 127 metres chargeability rises rapidly as the Tuffaceous Shales and Fine Grained Tuff unit is approached.

It would appear to the author that the high 40$\pm$ millivolts/volt chargeability response accompanied by high resistivity backgrounds at 50E-51E on the drill line are adequately explained by the chargeabilities observed in the upper Vitric Tuff section logged between 82.9 metres and 104.2 metres.

Unfortunately the electrical log ends at 137 metres, however, if the surface chargeability response centred at about 55E$\pm$100 metres is projected down dip, it is significant that it projects between 239 and 264 metres where Vitric Crystal Tuff (with minor pyrite) and Vitric Lithic Tuff with 2% pyrite over 10 metres, was recorded. Now, should the pyrite show the same *enhanced* chargeability it does between 82.9 metres and 104 metres, namely 65 millivolts/volt to 36 millivolts/volt, then what has been intersected in the hole *does* explain the chargeability anomaly located on the surface, particularly as the 82.9 to 104 metres section *contains no 2% section and still* *has high chargeability.*

While it is most unfortunate that the hole was not able to be electrically logged through the down dip section of the anomaly located on the surface between 54E and 55.5E, the author considers the up dip section of sulphide bearing Vitric Tuffs do represent the source. It can only be assumed that the fine grain of the sulphide accounts for the higher than expected response. Also, it must be assumed that the up dip section contains disseminated pyrrhotite (or magnetite) to account for the increase in magnetic field over this EIP anomaly.

A number of samples for the section below the limit of the electrical log were investigated for induced polarization. Unfortunately, over the critical sections, the chargeability data shows a distortion indicative of unstable conditions. These often occur within sulphide sections and in 'tight' rocks where the current densities are too high. (This situation was recorded on all samples below 210 metres). Therefore, as far as chargeability is concerned, the data below 200 metres is, for the most part, suspect.

CONCLUSIONS

1 - The additional EIP and magnetic field survey work has defined the anomalous areas well. While a number of the chargeability responses are worthy of investigation by diamond drilling, no specific recommendations are made at this time as the author

intends to review this data with Mt. Lyell geologists to select targets in conjunction with geological and geochemical data available.

2 - With respect to WSP-1, it is concluded that the Crystal Tuff section which encloses the Vitric Crystal Tuff between 239 and 254 metres and Vitric Lithic Tuff betwwen 254 and 264 metres, is capable by comparison with a similar section between 82.9 metres and 104.2 metres, of having produced the EIP anomaly centred on the surface at 55E, as the former zones produced a significant surface anomaly at 50.5E from apparently *less* sulphide content. Therefore, while the intersection at depth as such may contribute little to the total surface EIP response, it is concluded that sulphides on this stratigraphic horizon are the cause and therefore no additional drilling is warranted on this source.

Respectfully submitted on behalf of:

SCINTREX PTY. LTD.

A.W. HOWLAND-ROSE, MSc, DIC, AMAusIMM, FGS.

GEOPHYSICIST

023

Line 27·5 N
White Spur Area
GRADIENT ARRAY EIP
TAS-062
Resistivity in ohm-metres
10,000
7,000
5,000
3,000
2,000
1,000
ρa
Chargeability in millivolts per volt.
60
50
40
30
20
10
M3
3000W
2800W
2600W
2400W
2200W
2000W
1800W
00E
200E
400E
600E
800E
1000E
1200E
1400E
1600E
1800E
2000E
2200E
2400E
2600E

312025


Line 27.5 N
White Spur Area
Magnetics
TAS - 062
62800 γ
62700 γ
62600 γ
3000W
2600W
2200W
1800W
200W
200E
600E
1000E
1400E
1800E
2200E
2600E

025

Line 28.5 N
White Spur Area
GRADIENT ARRAY EIP
TAS-062
Resistivity in ohm-metres
10,000
7,000
5,000
3,000
2,000
1,000
Chargeability in milliseconds
60
50
40
30
20
10
ρa
M3
3400W
3200W
3000W
2800W
2600W
2400W
2200W
2000W
1800W
1600W
1400W
1200W
1000W
800W
600W
400W
200W
00
200E
400E
600E
800E
1000E
1200E
1400E
1600E
1800E
2000E

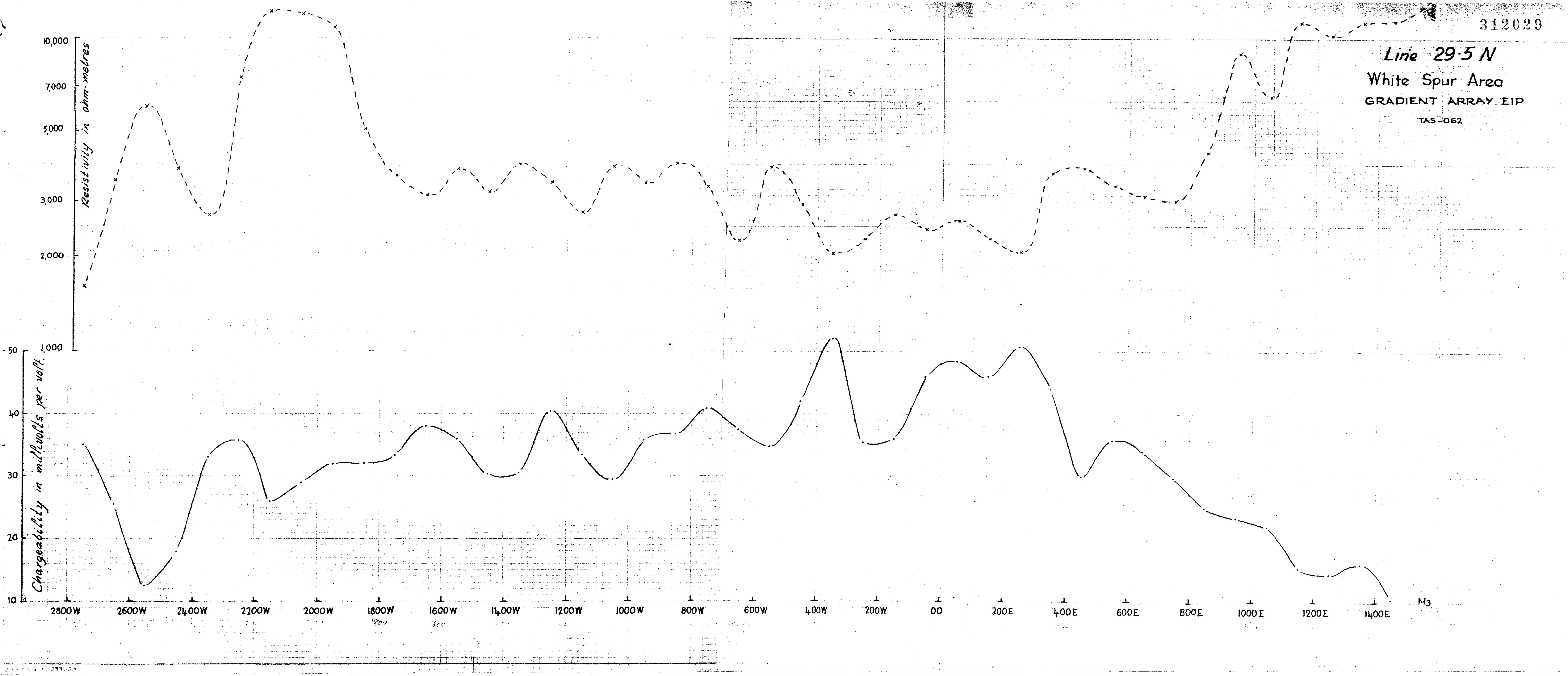
312027

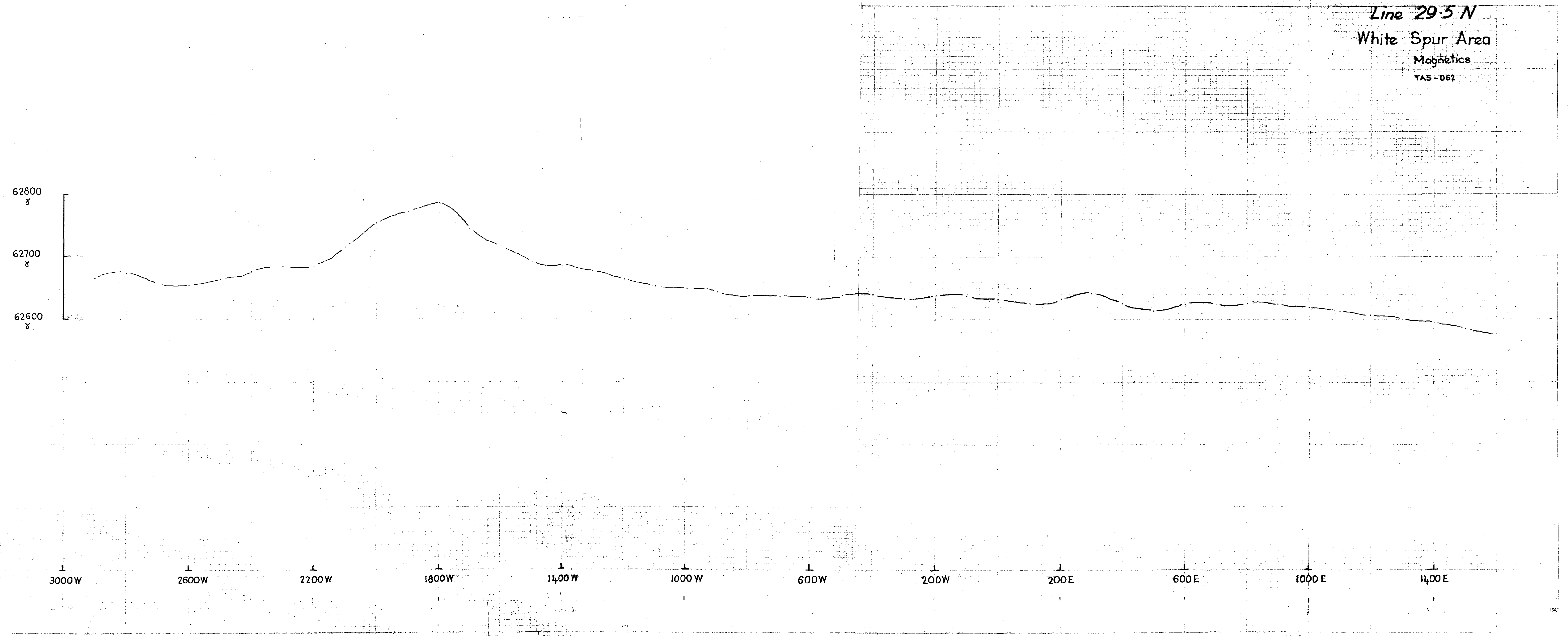
312028


Line 28.5 N
White Spur Area
Magnetics
TAS-062
62800 γ
62700 γ
62600 γ
3400W
3000W
2600W
2200W
1800W
1400W
1000W
600W
200W
200E
600E
1000E
1400E
1800E
2200E

027

312029


Line 29·5 N
White Spur Area
GRADIENT ARRAY EIP
TAS-062
Resistivity in ohm-metres
10,000
7,000
5,000
3,000
2,000
1,000
Chargeability in millivolts per volt.
50
40
30
20
10
2800W
2600W
2400W
2200W
2000W
1800W
1600W
1400W
1200W
1000W
800W
600W
400W
200W
00
200E
400E
600E
800E
1000E
1200E
1400E
M3



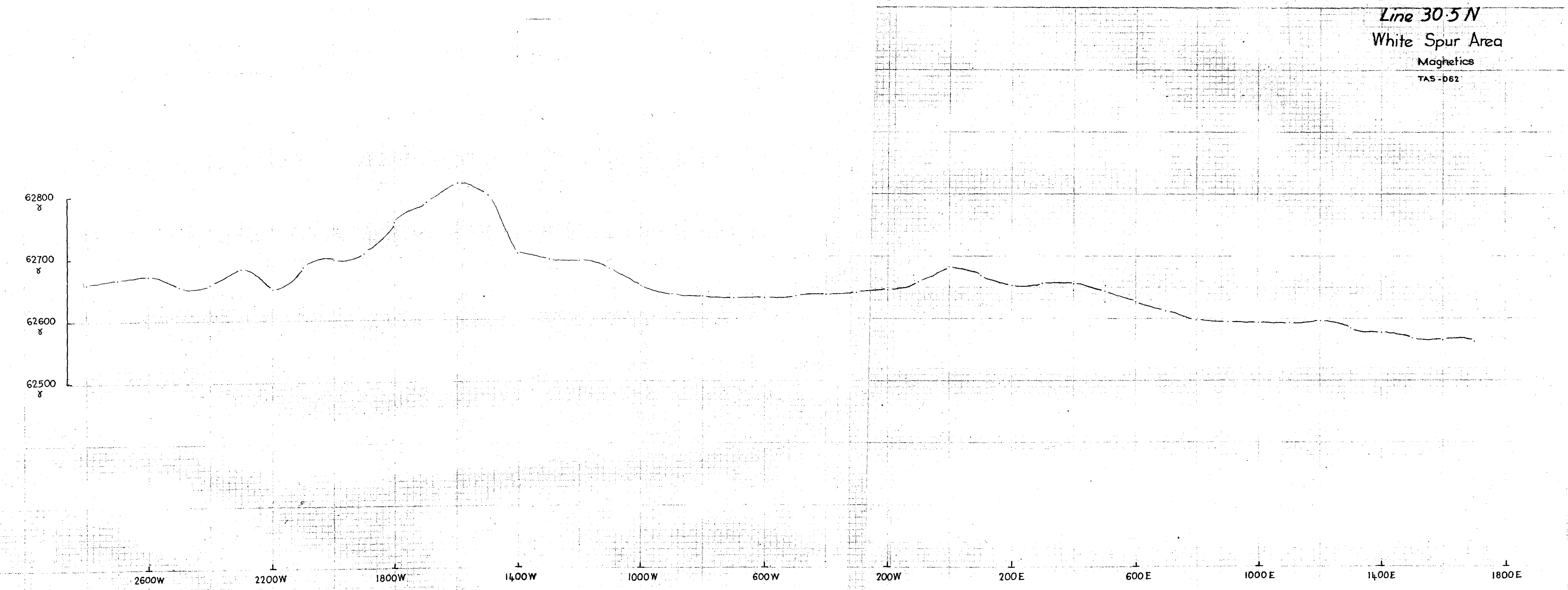
Line 29.5 N
White Spur Area
Magnetics
TAS-D62
62800 γ
62700 γ
62600 γ
3000W
2600W
2200W
1800W
1400W
1000W
600W
200W
200E
600E
1000E
1400E

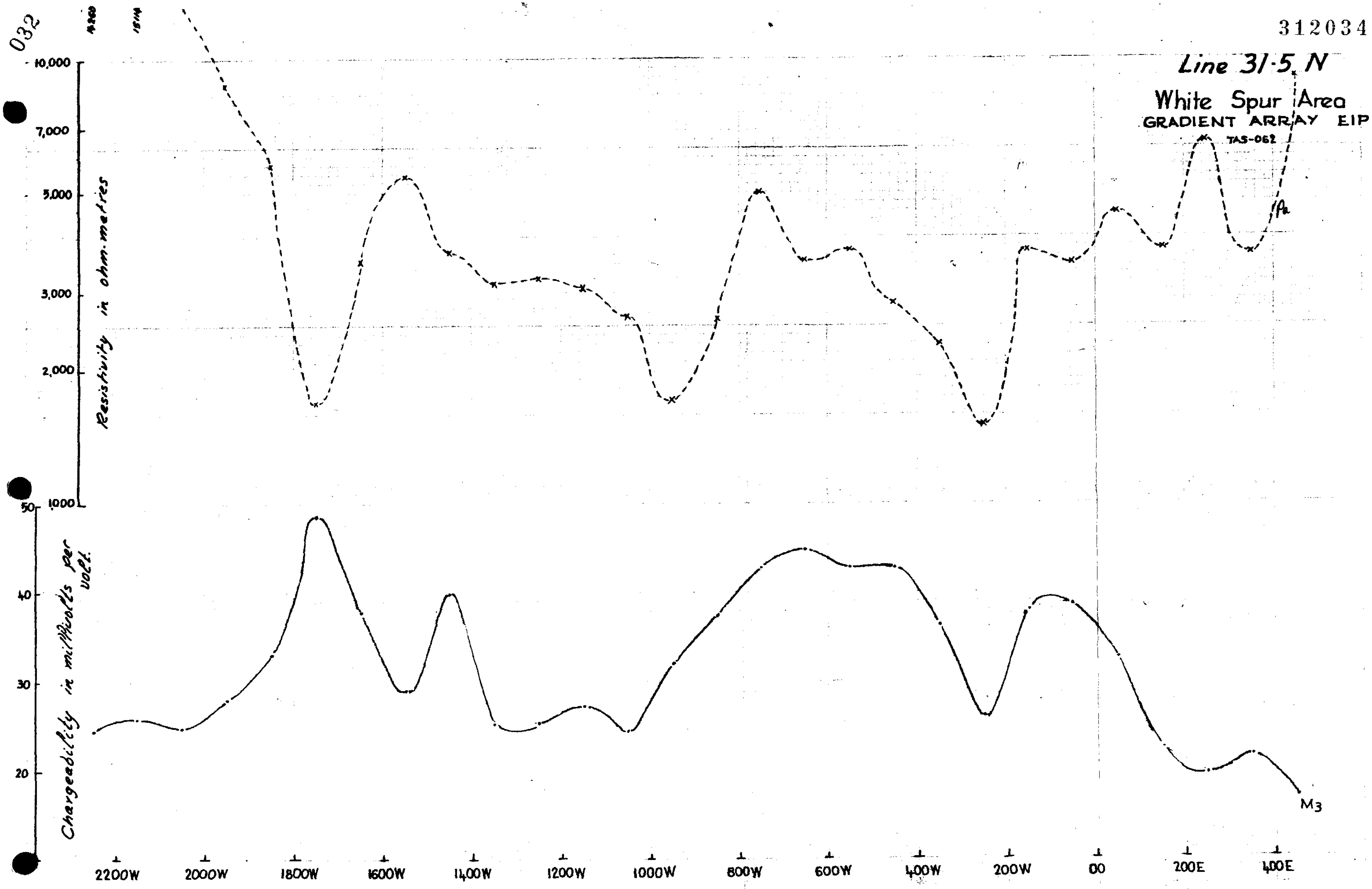

029
312031
Line 30 N
White Spur Area
GRADIENT ARRAY EIP
TAS-062
Resistivity in ohm-metres
10,000
7,000
5,000
3,000
2,000
1000
Chargeability in millivolts per volt
50
40
30
20
10
2800W
2600W
2400W
2200W
2000W
1800W
1600W
1400W
1200W
1000W
800W
600W
400W
200W
00
200E
400E
600E
800E
1000E
1200E
1400E
1600E
M3

030
312032
Line 30·5 N
White Spur Area
GRADIENT ARRAY EIP
TAS-062
Resistivity in ohm.metres
10,000
7,000
5,000
3,000
2,000
1,000
50
40
30
20
10
0
M3
2800W
2600W
2400W
2200W
2000W
1800W
1600W
1400W
1200W
1000W
800W
600W
400W
200W
00
200E
400E
600E
800E
1000E
1200E
1400E
1600E

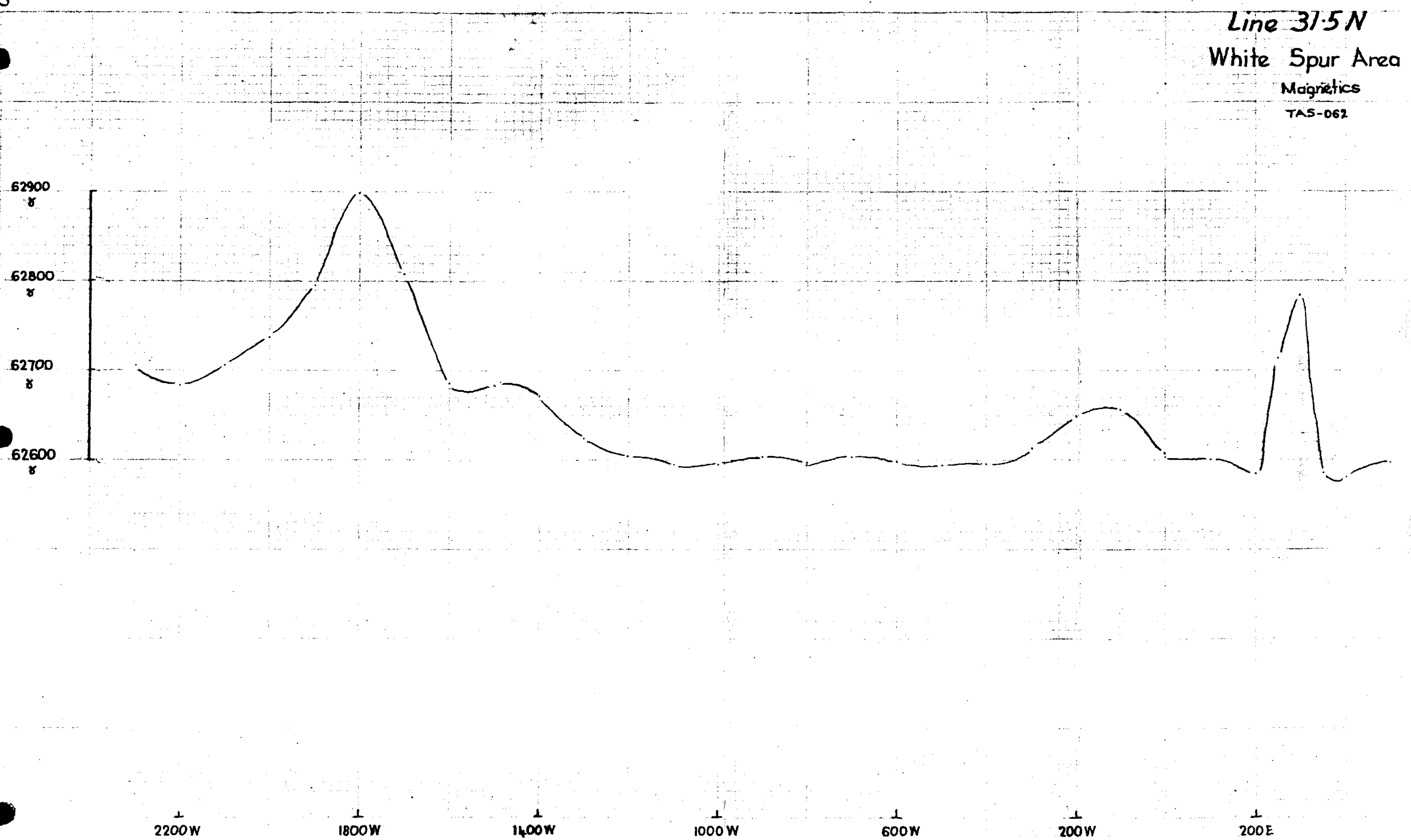
031

312033


Line 30.5 N
White Spur Area
Magnetics
TAS-062
62800 γ
62700 γ
62600 γ
62500 γ
2600W
2200W
1800W
1400W
1000W
600W
200W
200E
600E
1000E
1400E
1800E

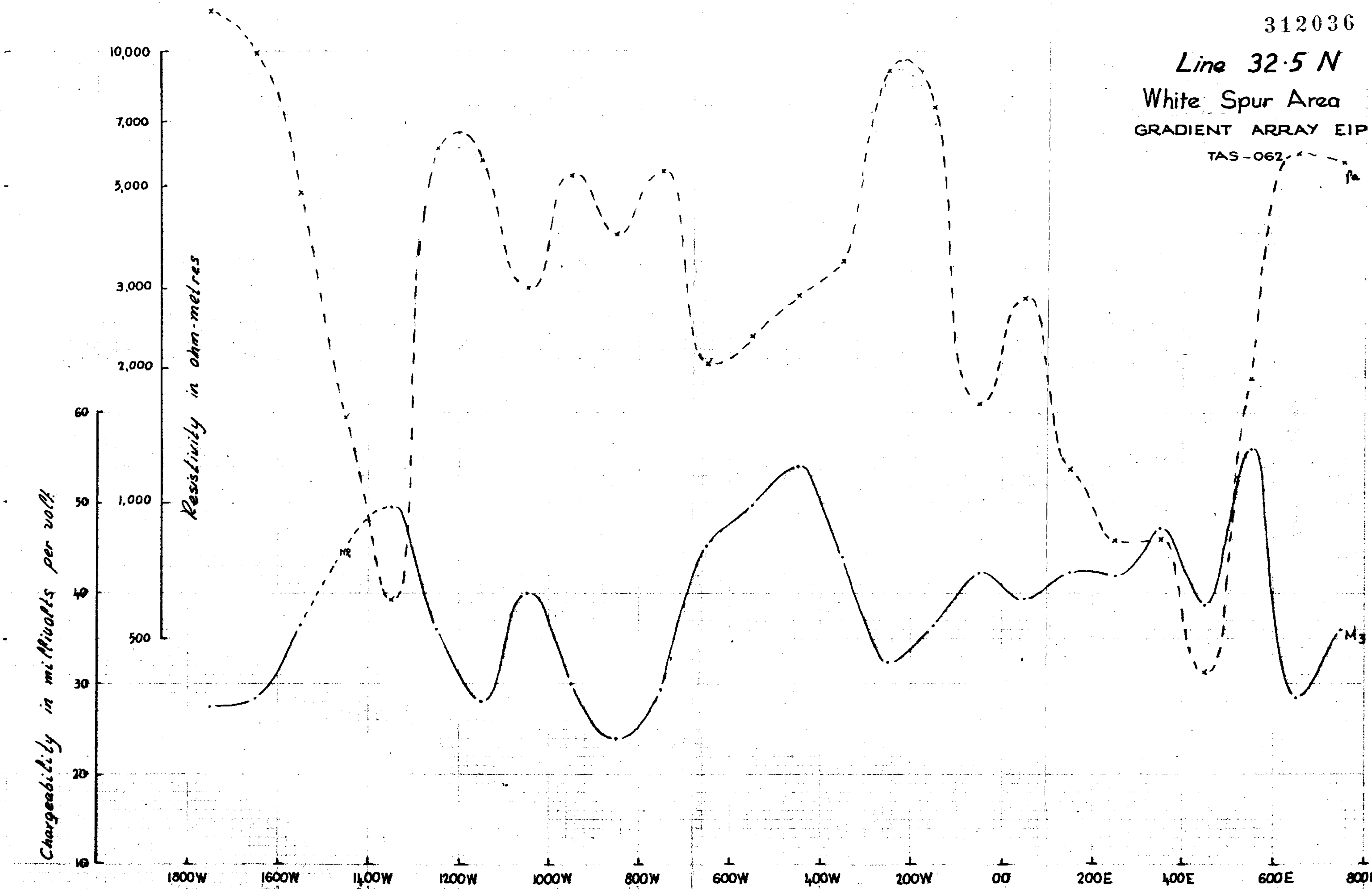

032
Line 31·5 N
White Spur Area
GRADIENT ARRAY EIP
TAS-062
10,000
7,000
5,000
3,000
2,000
1000
Resistivity in ohm.metres
ρa
50
40
30
20
Chargeability in millivolts per volt.
M3
2200W
2000W
1800W
1600W
1400W
1200W
1000W
800W
600W
400W
200W
00
200E
400E

312035


Line 31.5 N
White Spur Area
Magnetics
TAS-062
62900 γ
62800 γ
62700 γ
62600 γ
2200 W
1800 W
1400 W
1000 W
600 W
200 W
200 E

034

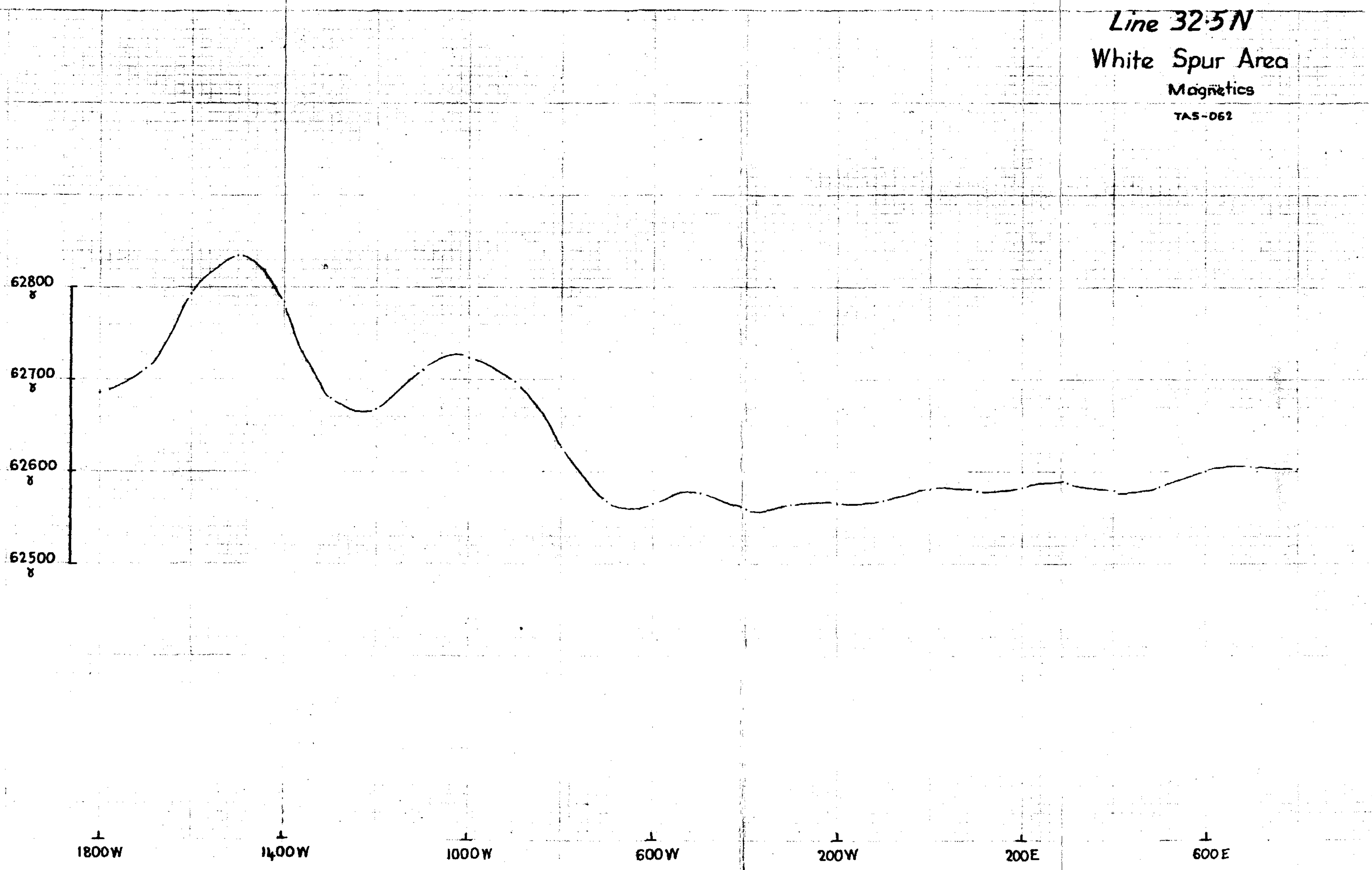
312036



Line 32·5 N
White Spur Area
GRADIENT ARRAY EIP
TAS - 062
ρa
M3
Resistivity in ohm-metres
Chargeability in millivolts per volt
10,000
7,000
5,000
3,000
2,000
1,000
500
60
50
40
30
20
10
1800W
1600W
1400W
1200W
1000W
800W
600W
400W
200W
00
200E
400E
600E
800E

035

312037



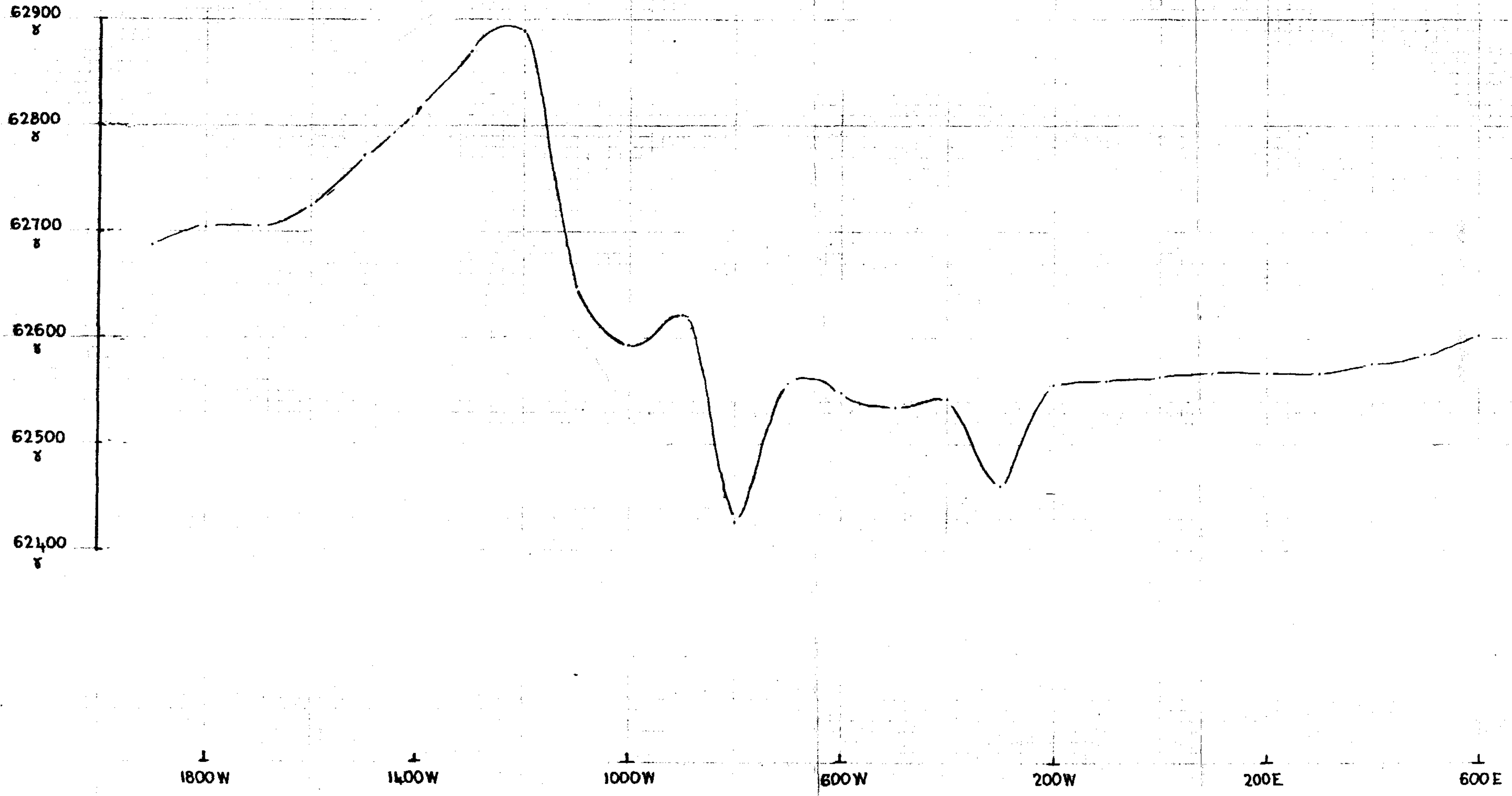
Line 32.5N
White Spur Area
Magnetics
TAS-062
62800 γ
62700 γ
62600 γ
62500 γ
1800W
1400W
1000W
600W
200W
200E
600E

036

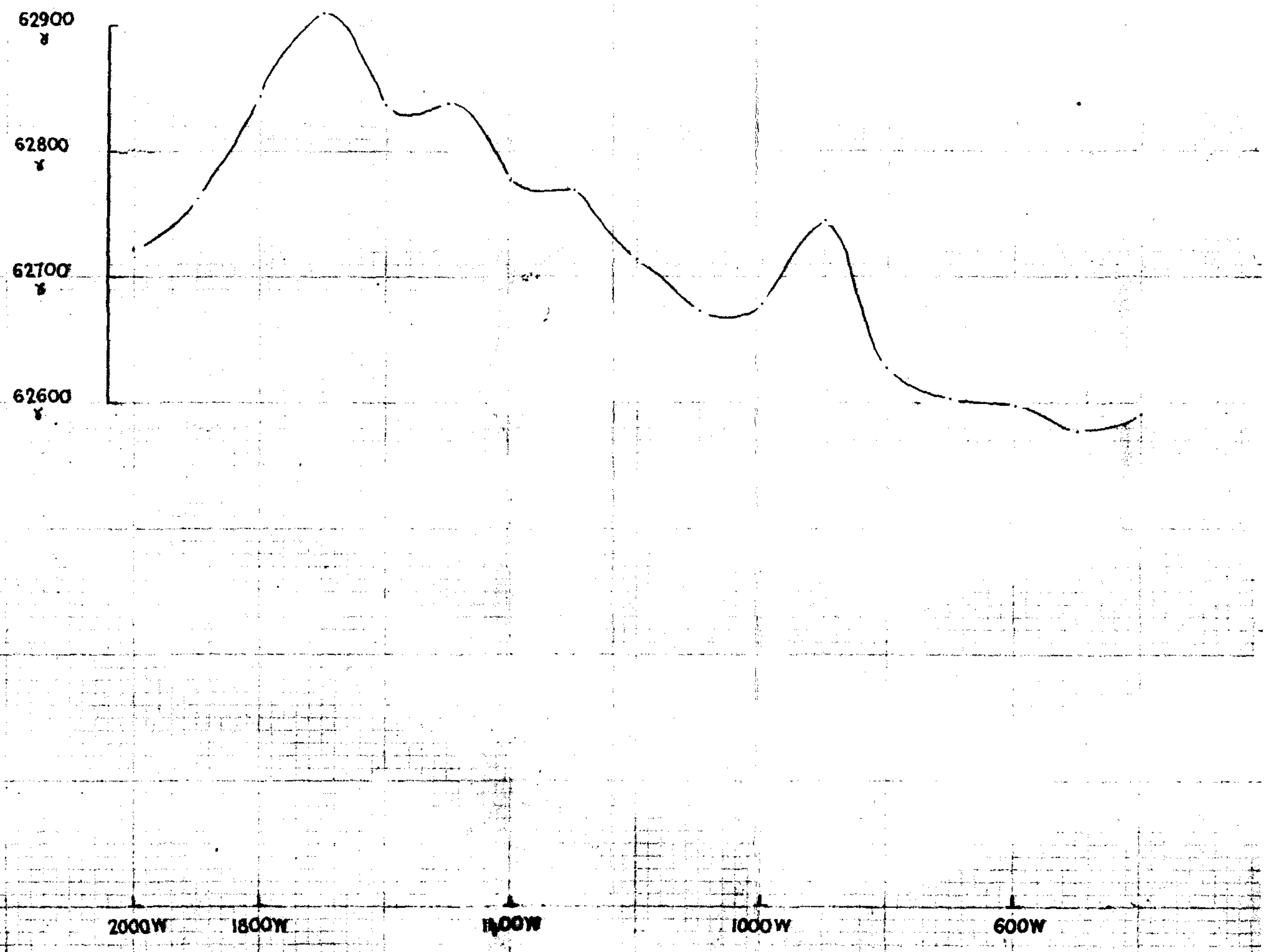
312038

Line 33·5 N
White Spur Area
Magnetics

TAS-062



Line 36 N
White Spur Area
Magnetics
TAS-062



038

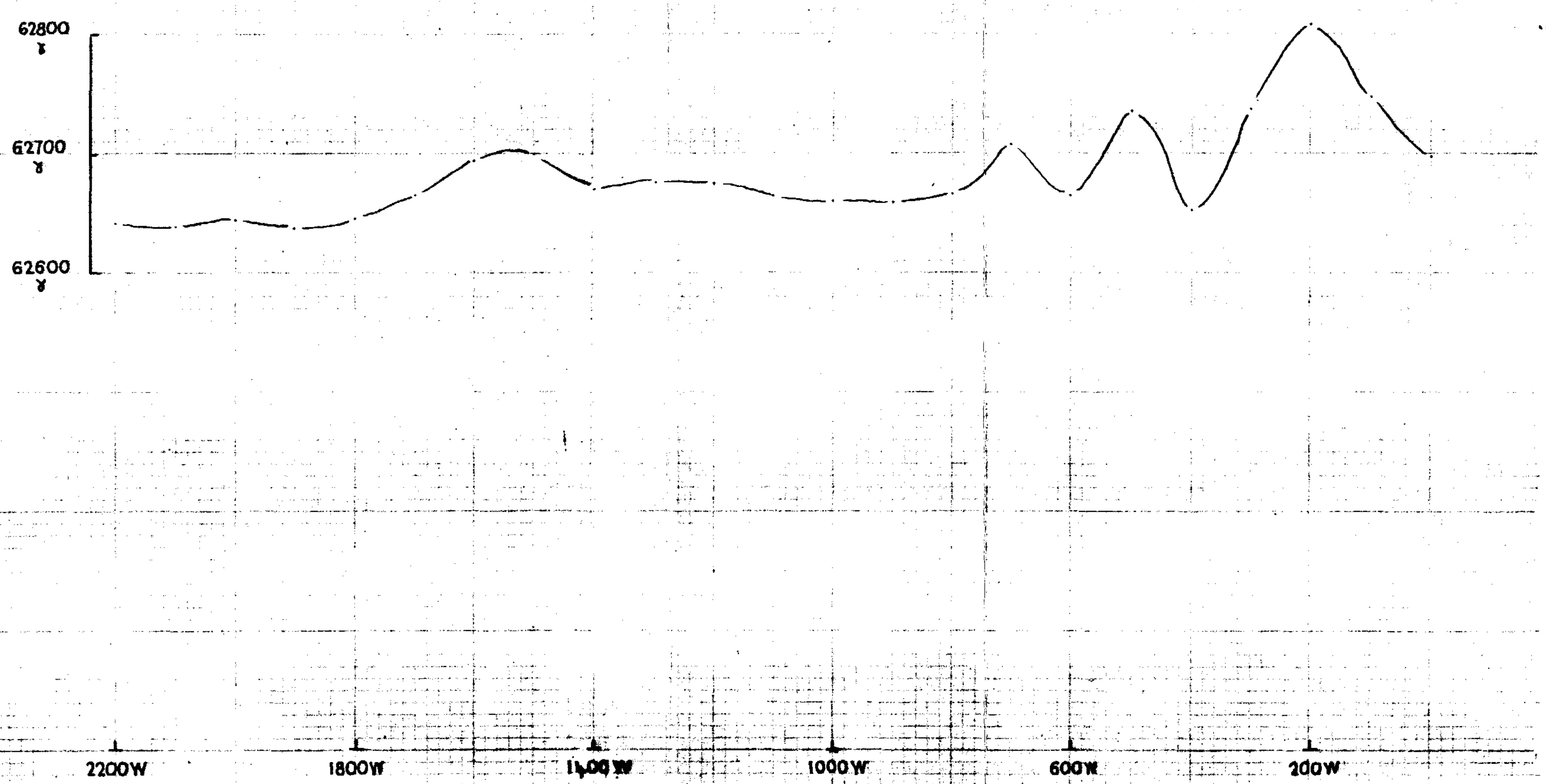
312040

Line 34.5 N

White Spur Area

Magnetics

TAS-062

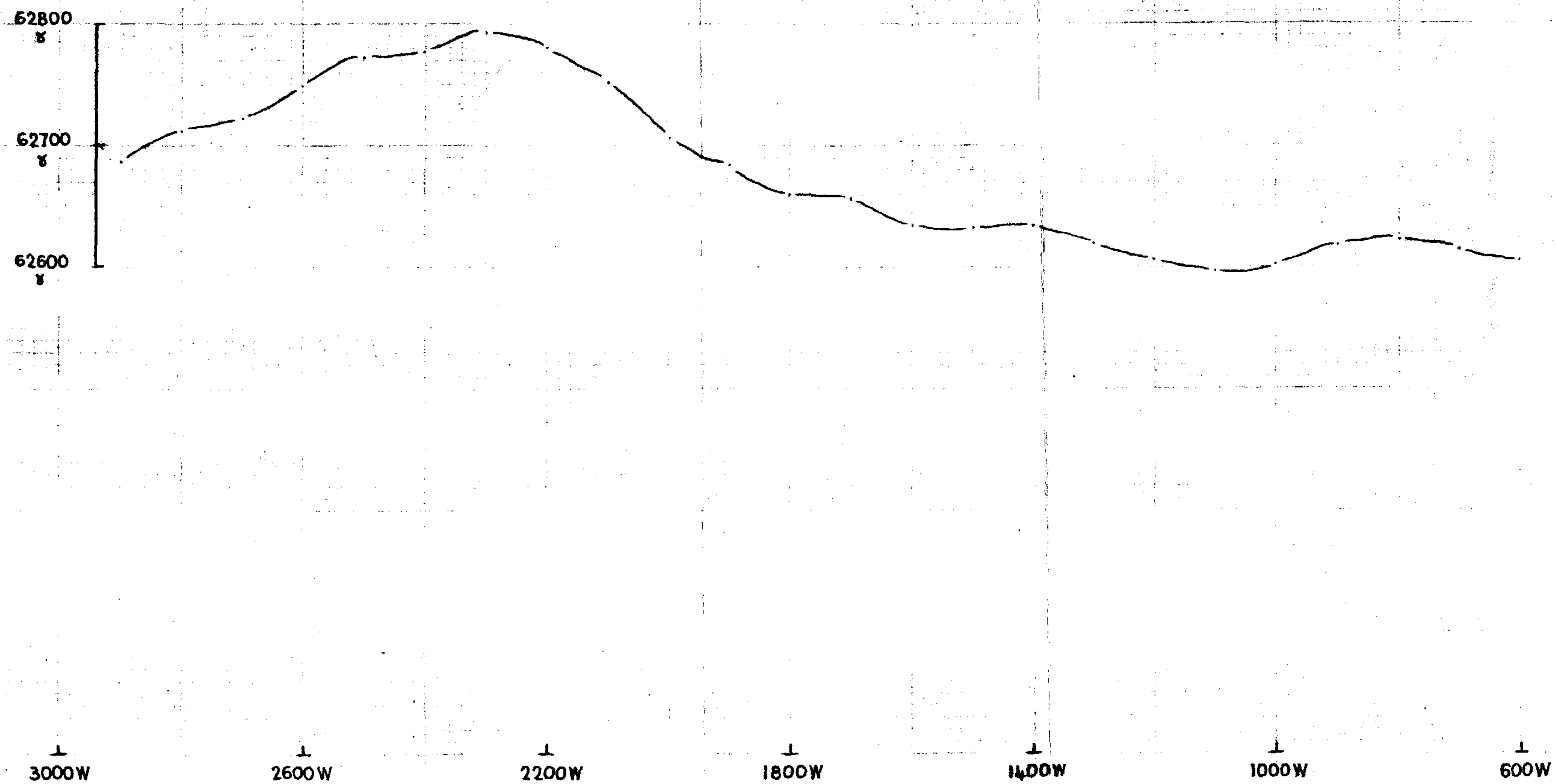


Line 36.25 N

White Spur Area

Magnetics

TAS-062



040

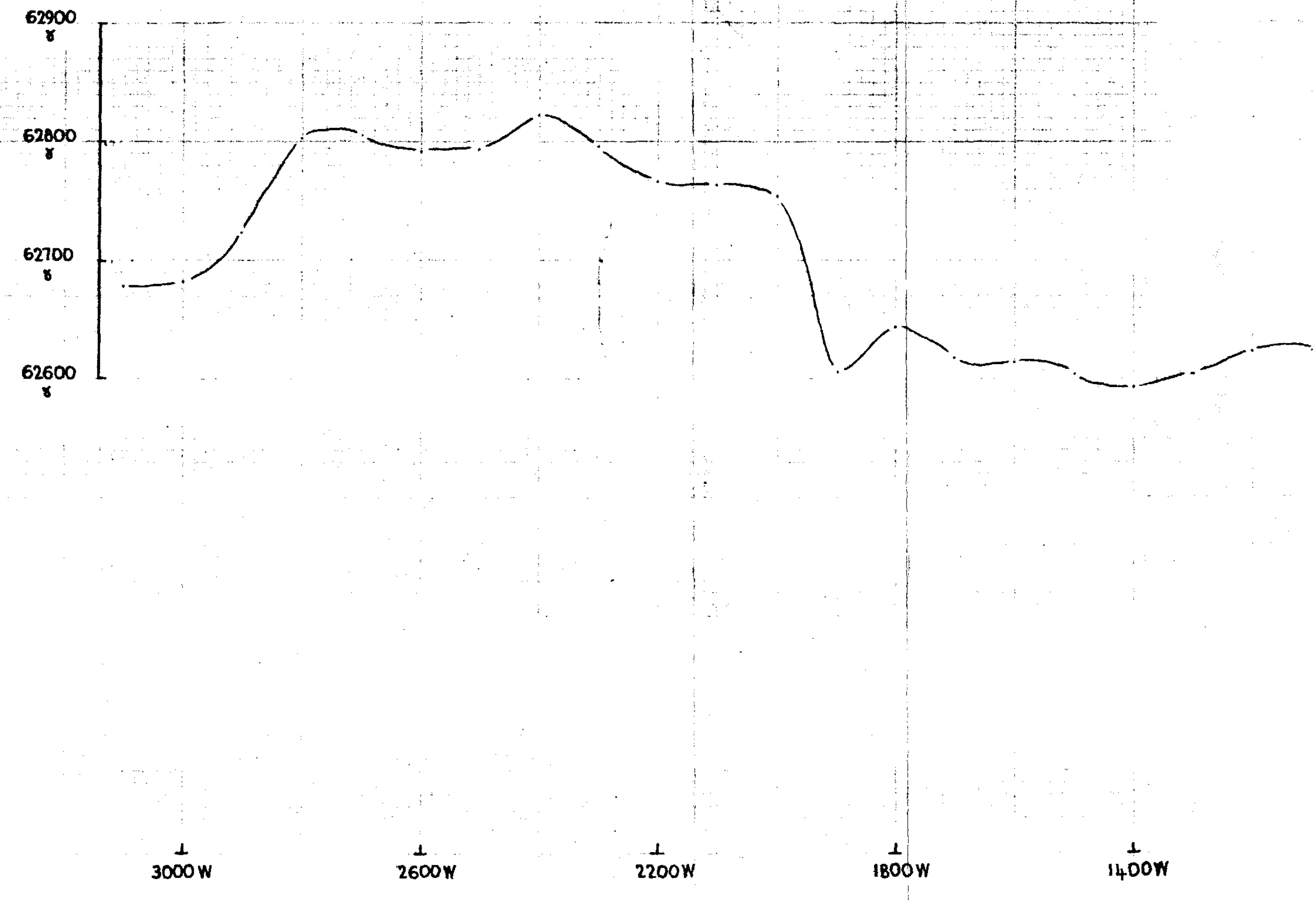
312042

Line 36·5 N

White Spur Area

Magnetics

TAS-062



041

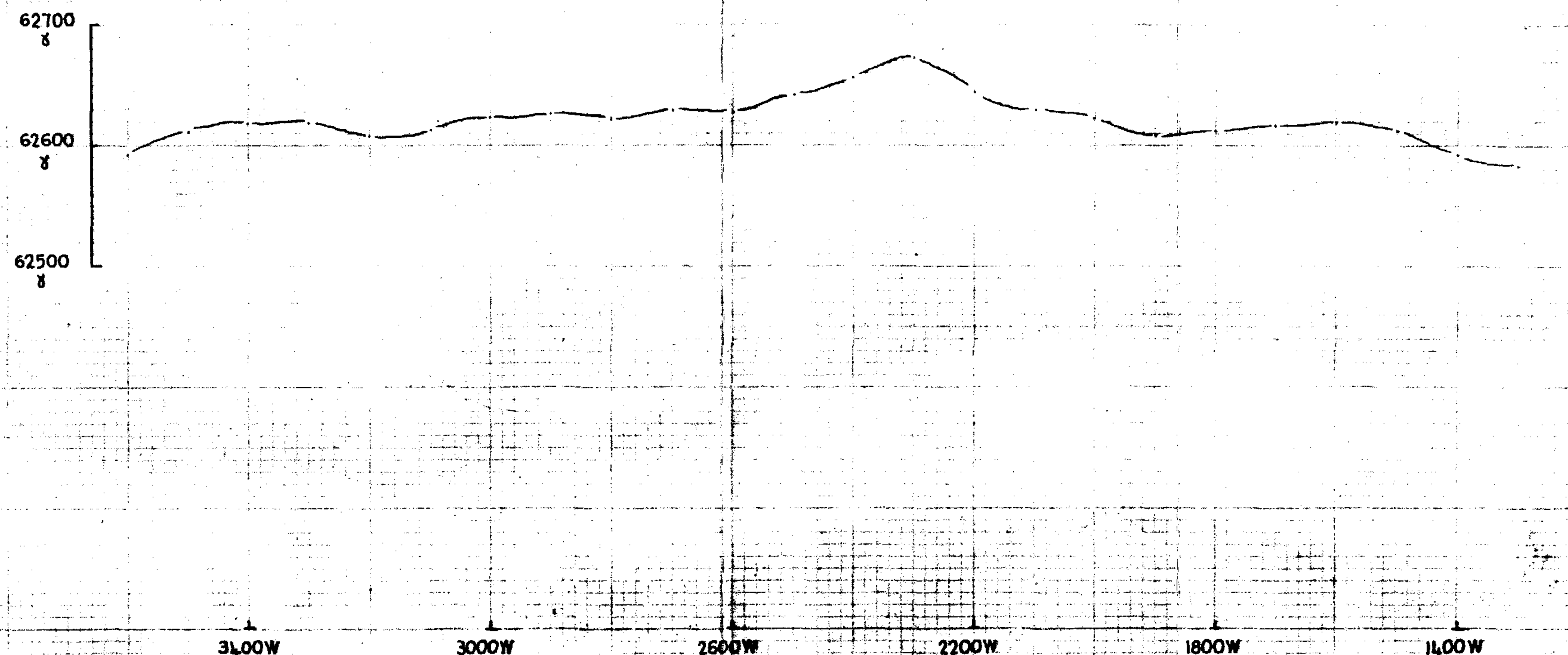
312043

Line 37·5 N

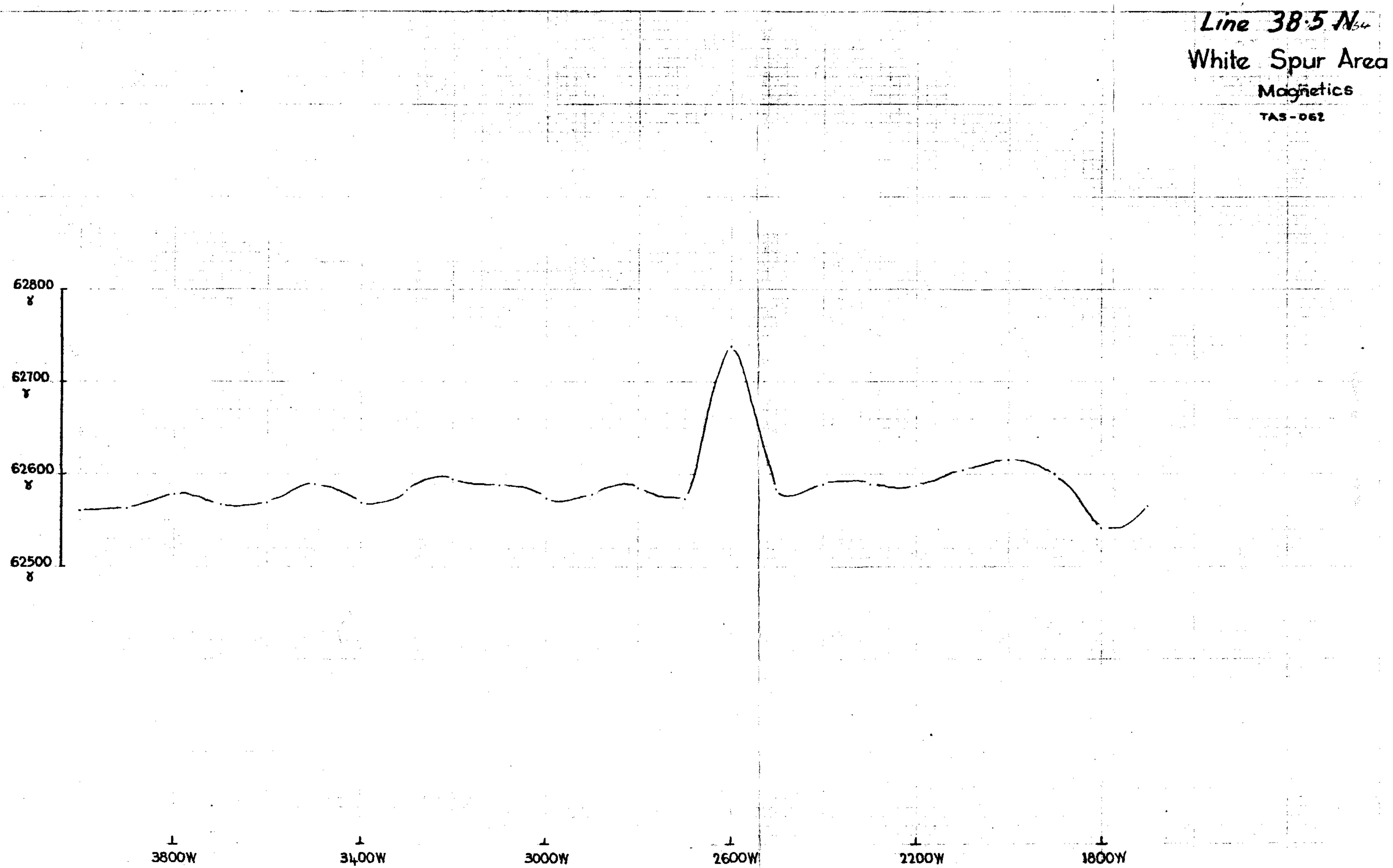
White Spur Area

Magnetics

TAS-062



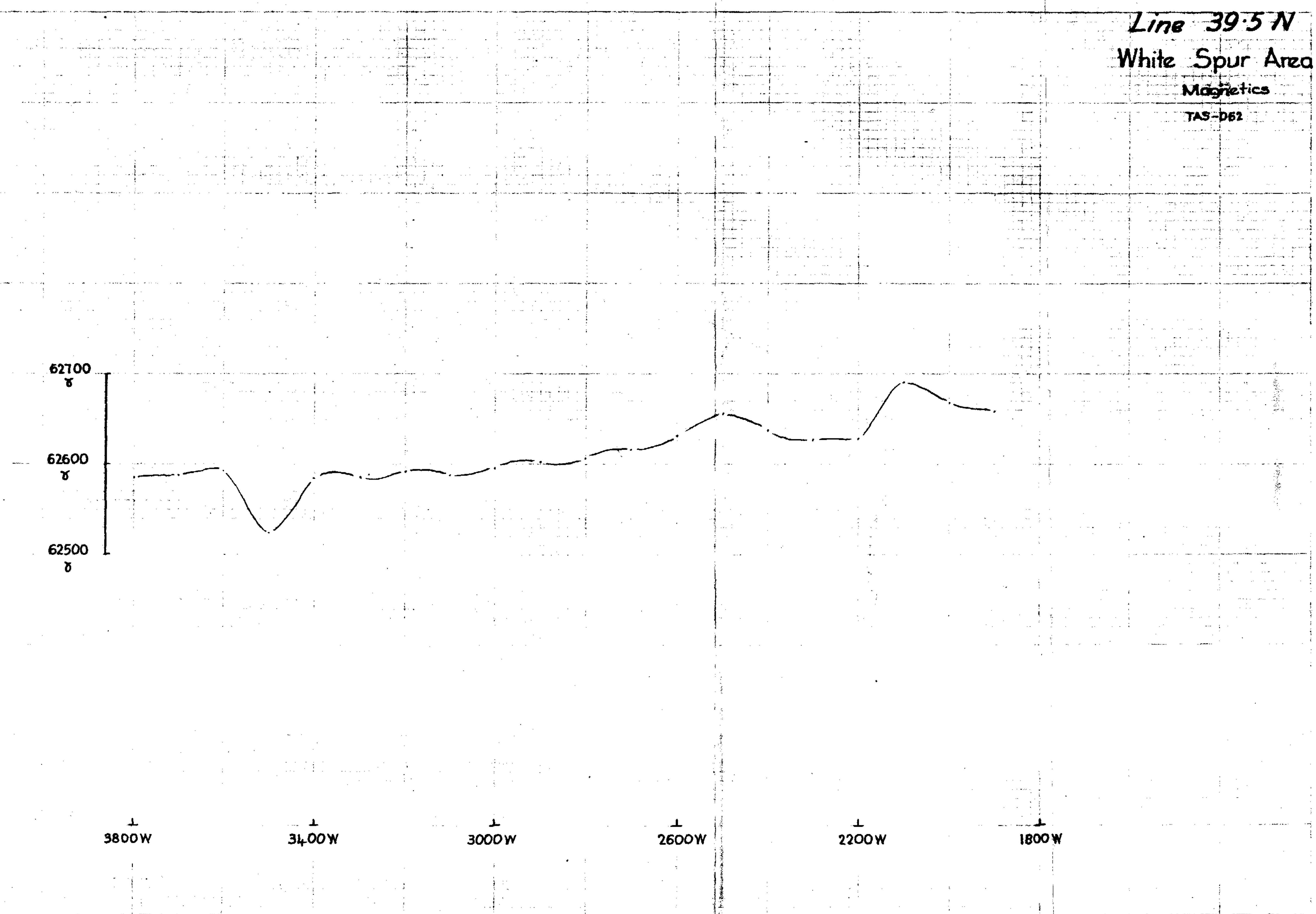
312044



Line 38.5 N
White Spur Area
Magnetics
TAS-062
62800 γ
62700 γ
62600 γ
62500 γ
3800W
3400W
3000W
2600W
2200W
1800W

043

312045


Line 39·5 N
White Spur Area
Magnetics
TAS-D62
62700 γ
62600 γ
62500 γ
3800W
3400W
3000W
2600W
2200W
1800W

044

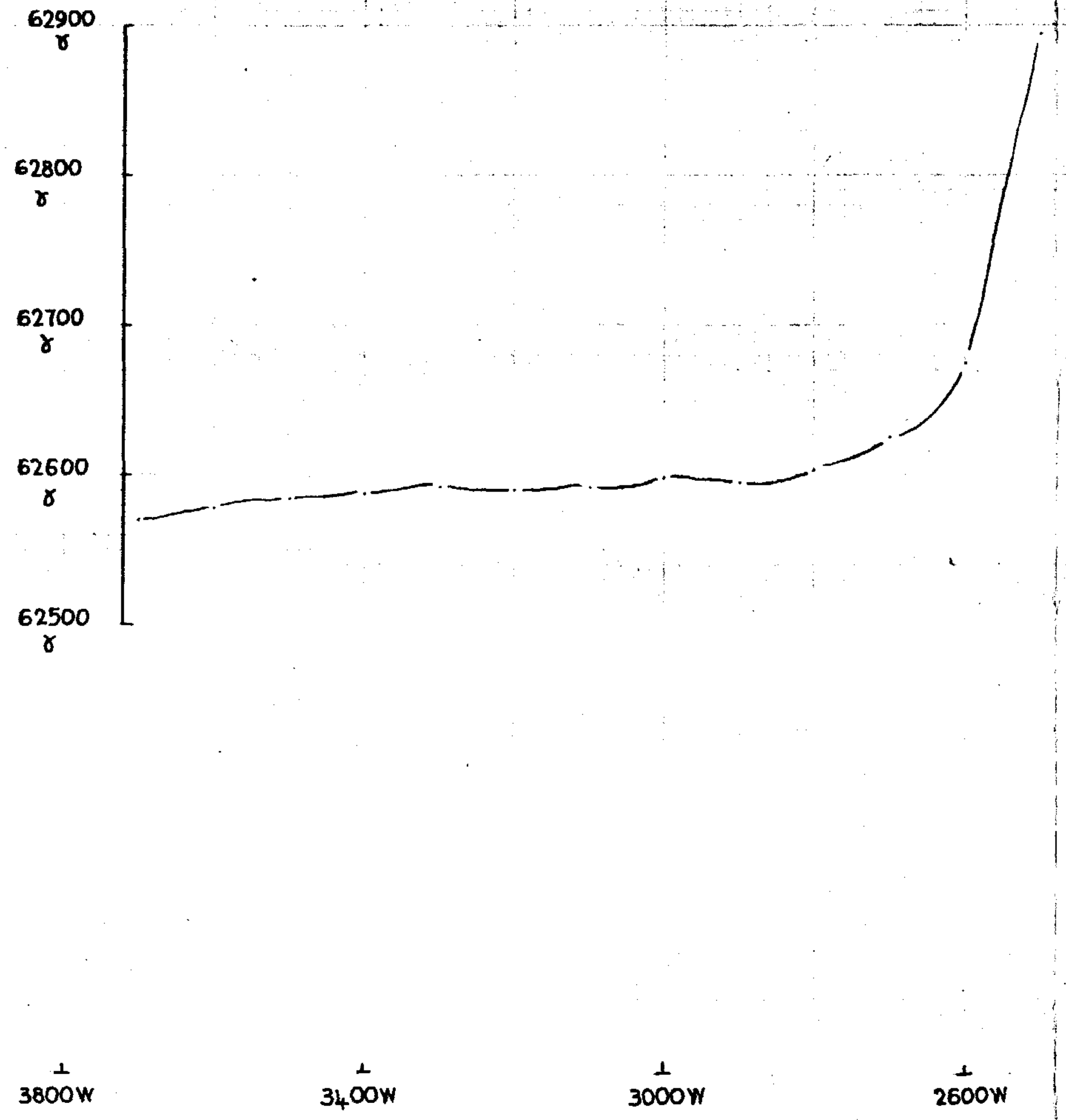
312046

Line 40·5 N

White Spur Area

Magnetics

TAS-062



045

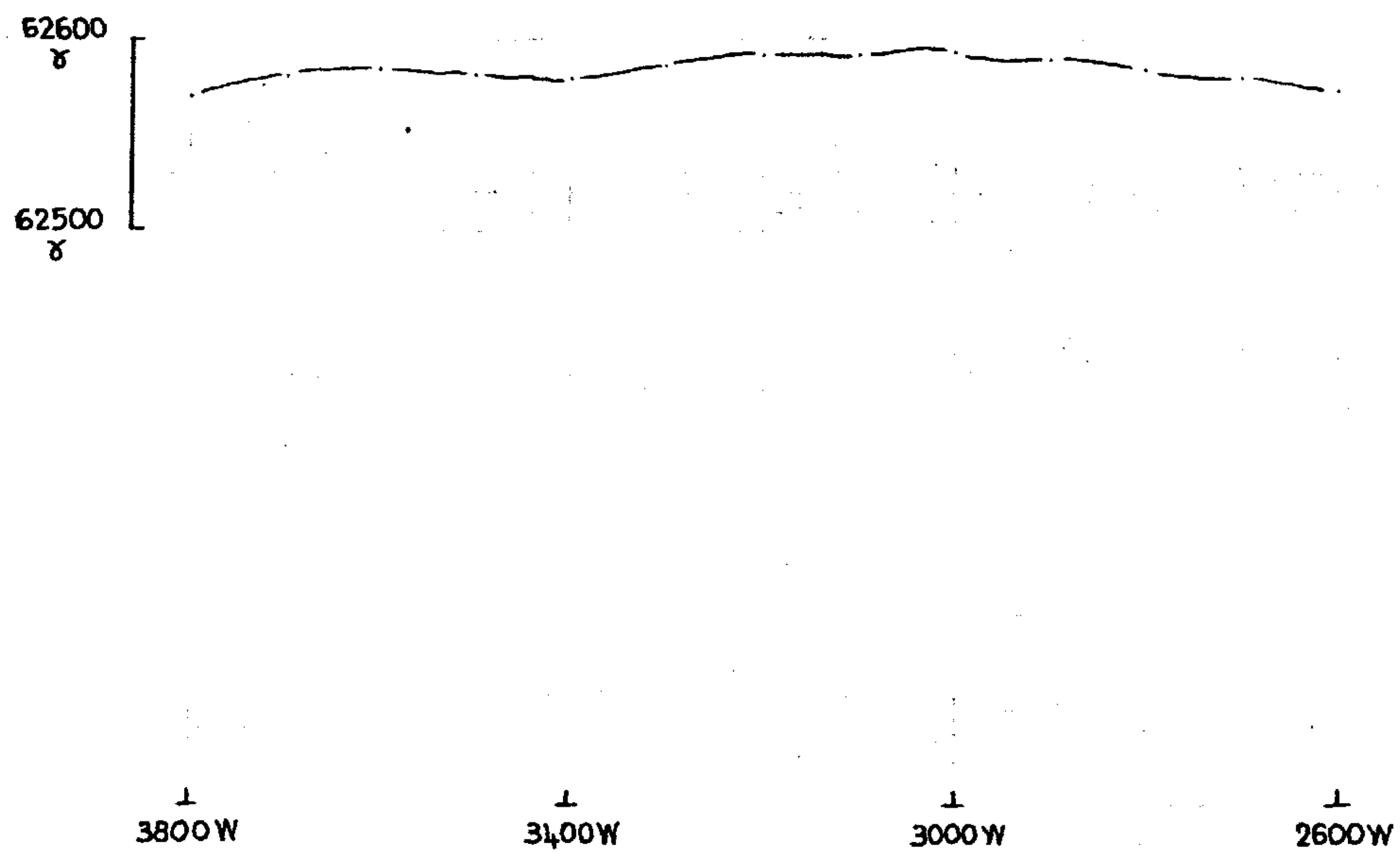
312047

Line 41·5 N

White Spur Area

Magnetics

TAS-D62



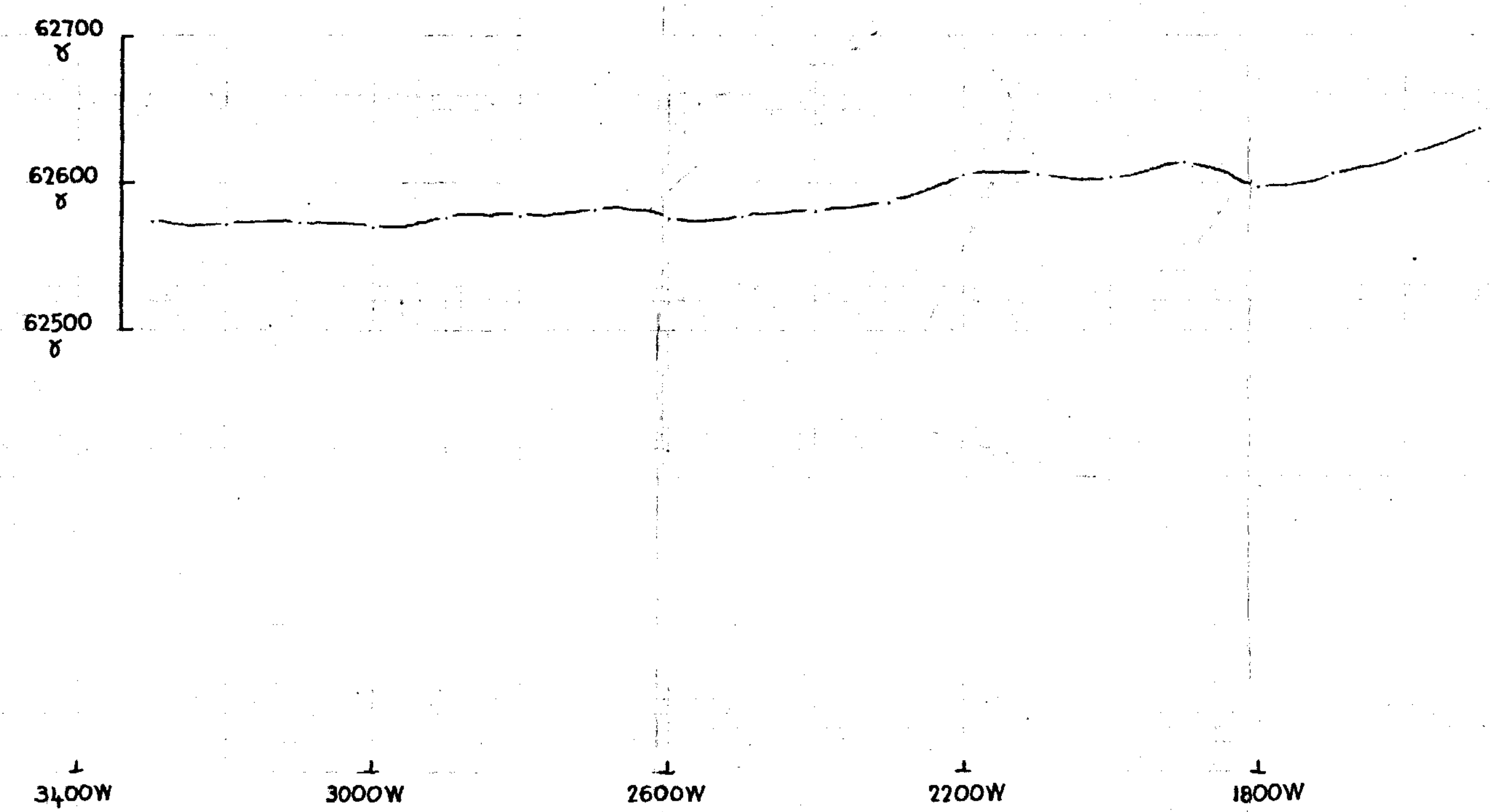
312048

Line 42·5 N

White Spur Area

Magnetics

TAS -062



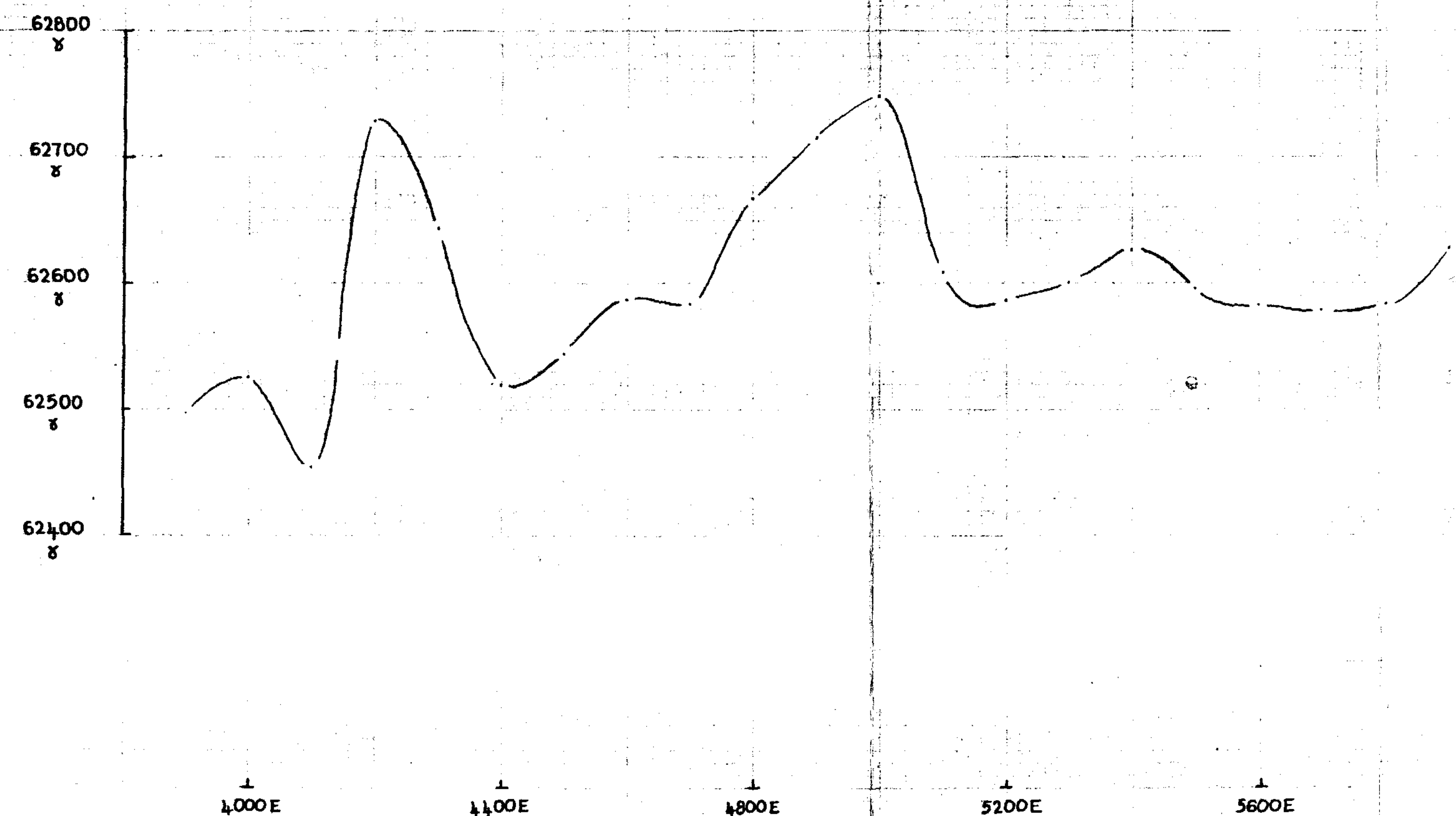
312049

Line 37.5 N

White Spur Area

Magnetics

TAS-062



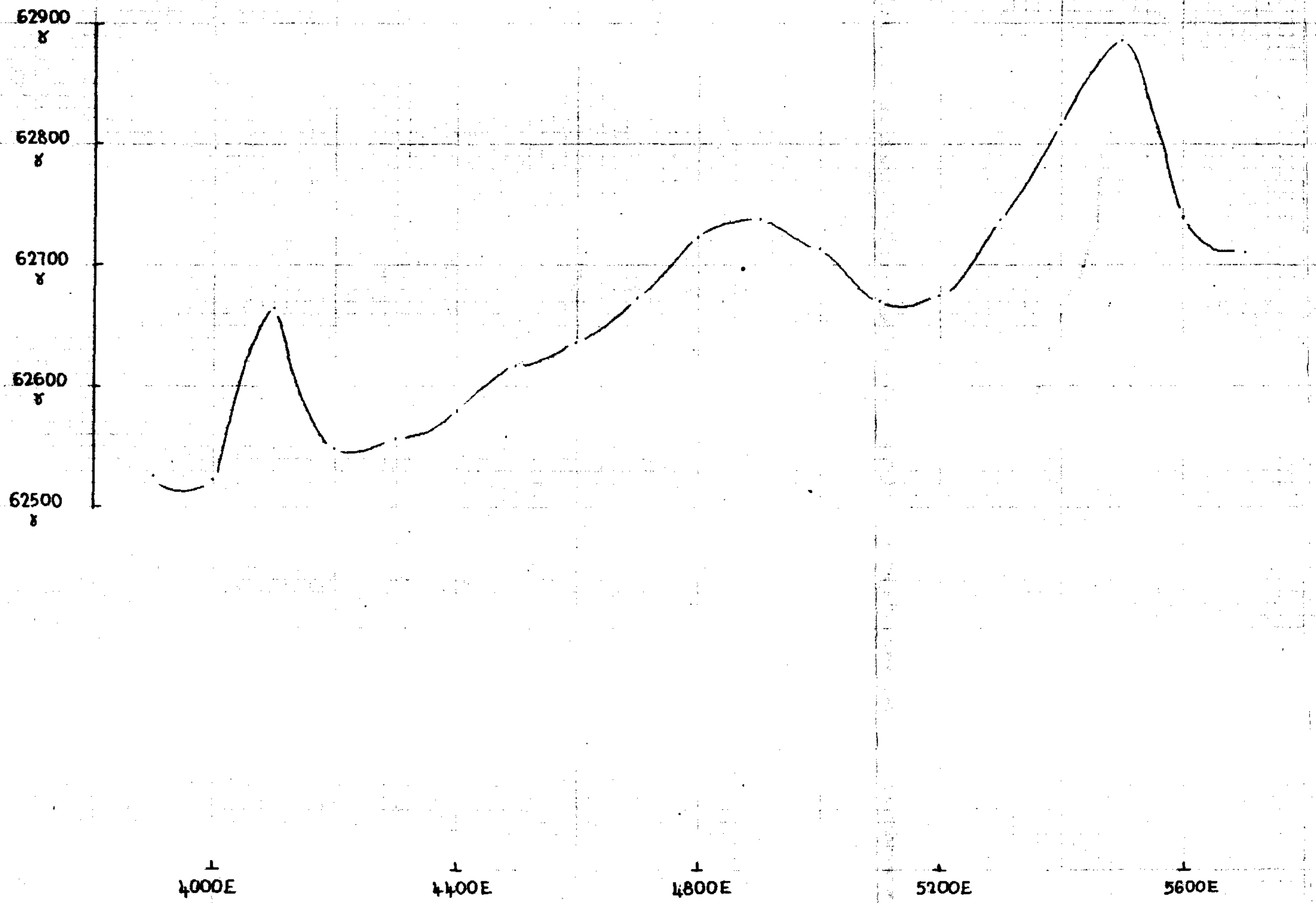
312050

Line 38.5 N.

White Spur Area

Magnetics

TAS-062

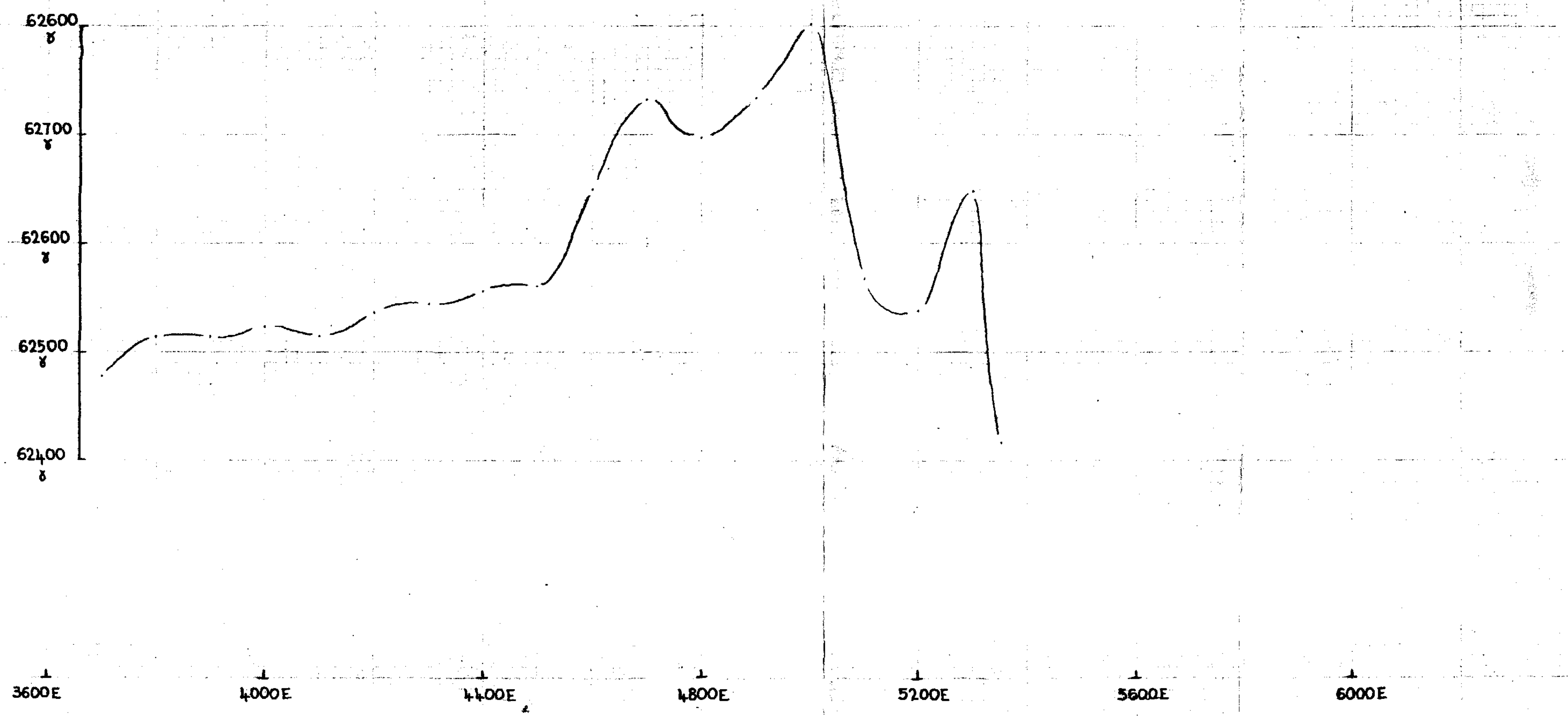


Line 39·5 N

White Spur Area

Magnetics

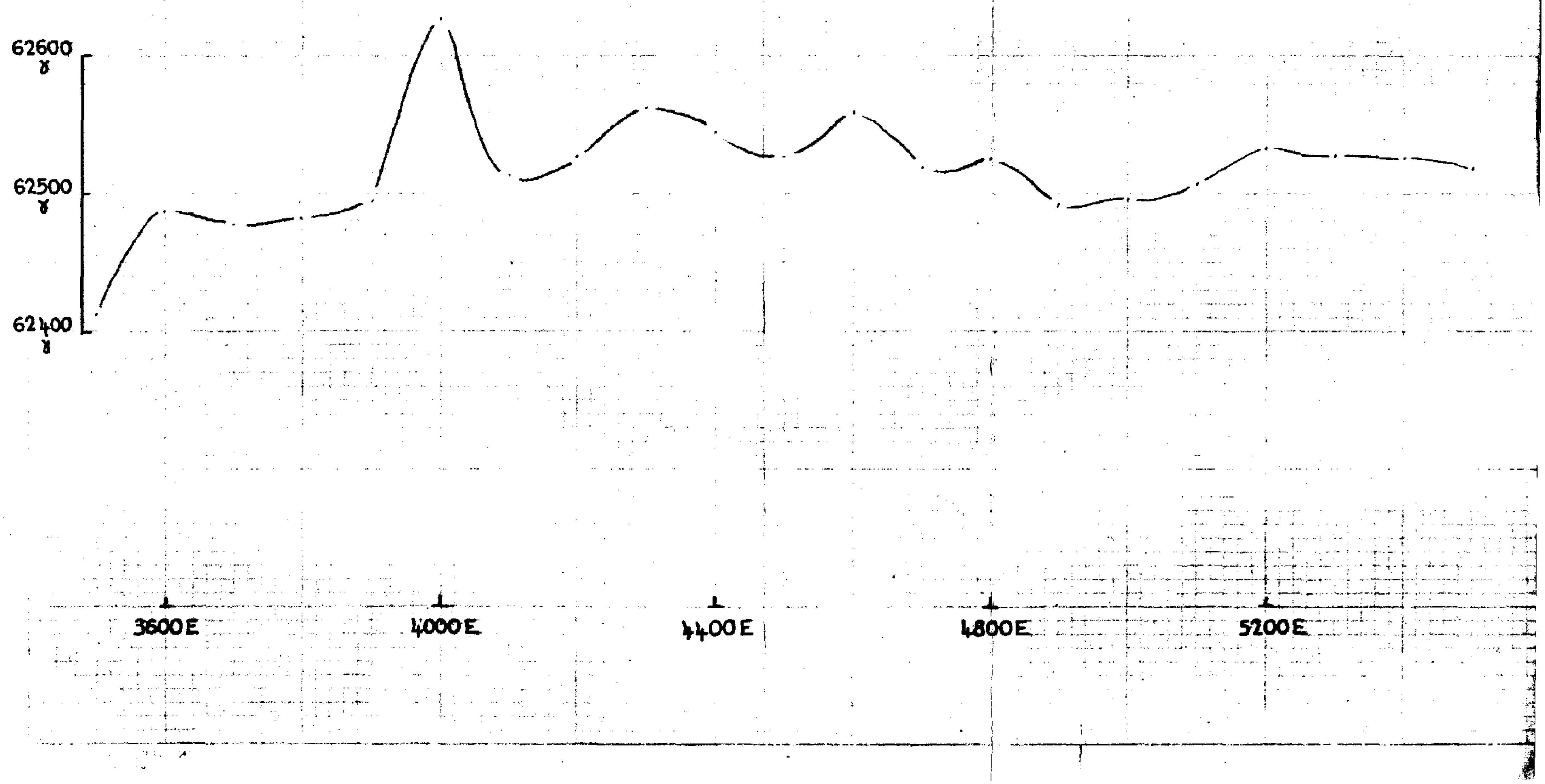
TAS-062



050

312052

Line 40·5 N
White Spur Area
Magnetics
TAS-062



051

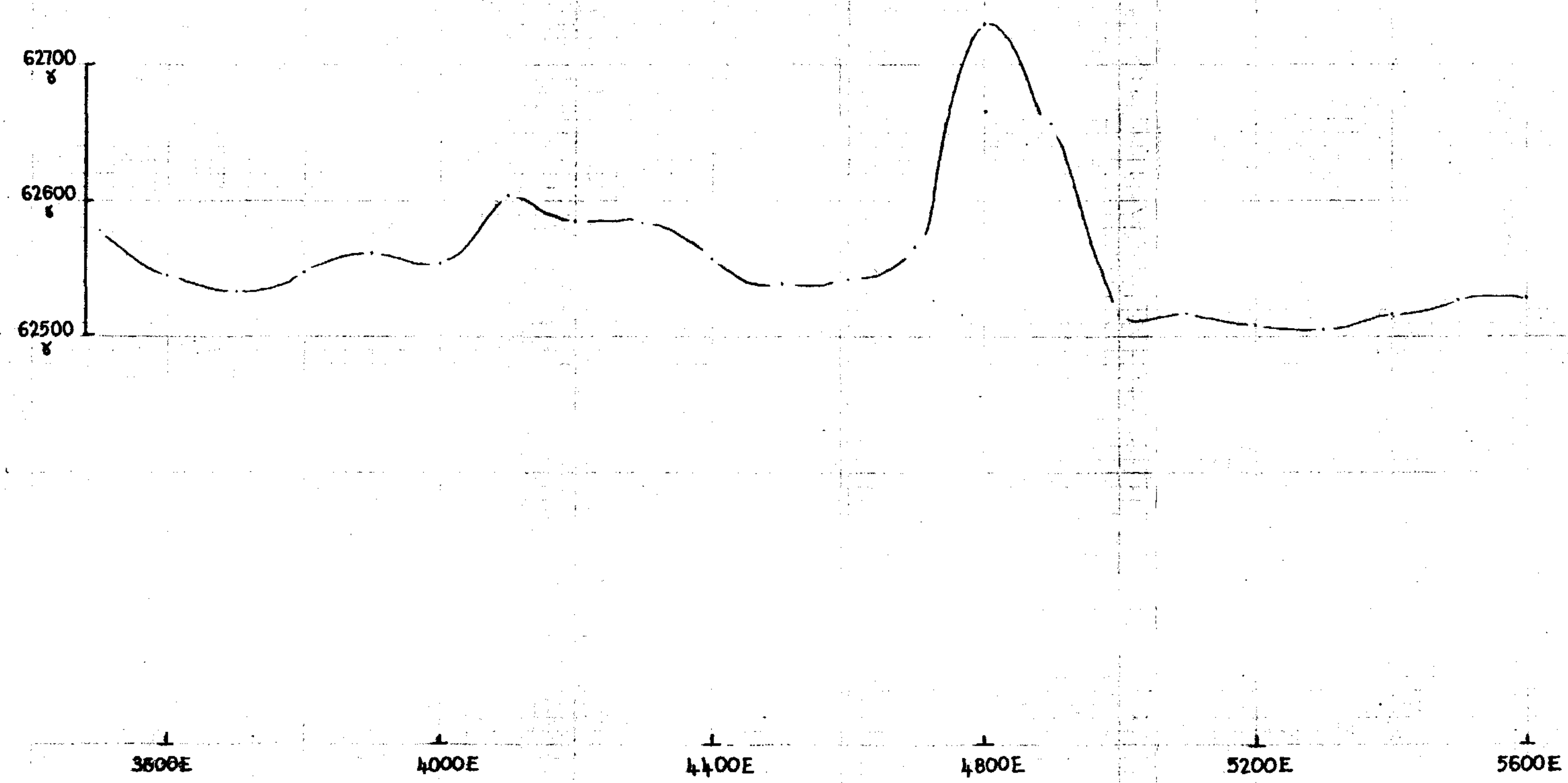
312053

Line 41.5 N

White Spur Area

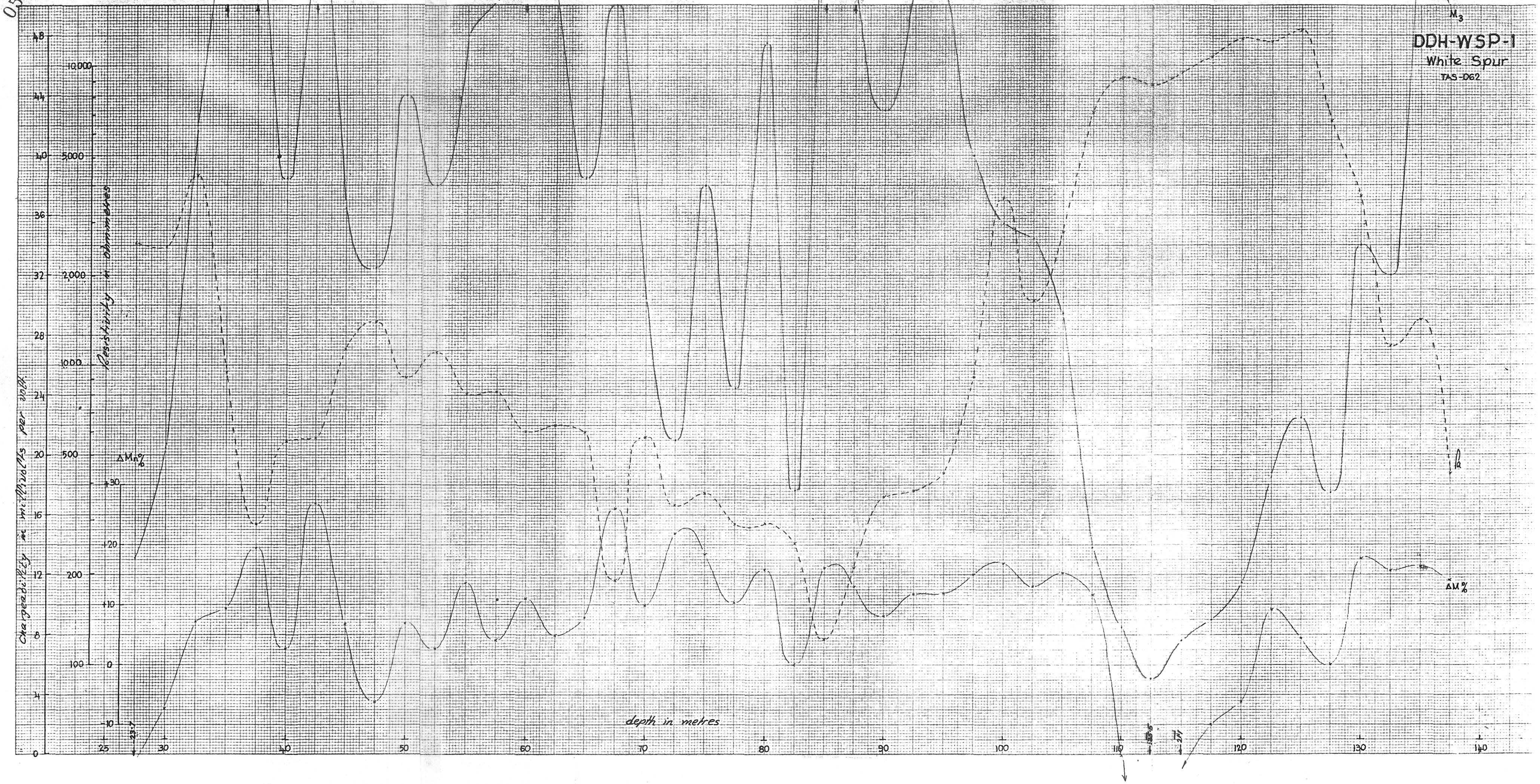
Magnetics

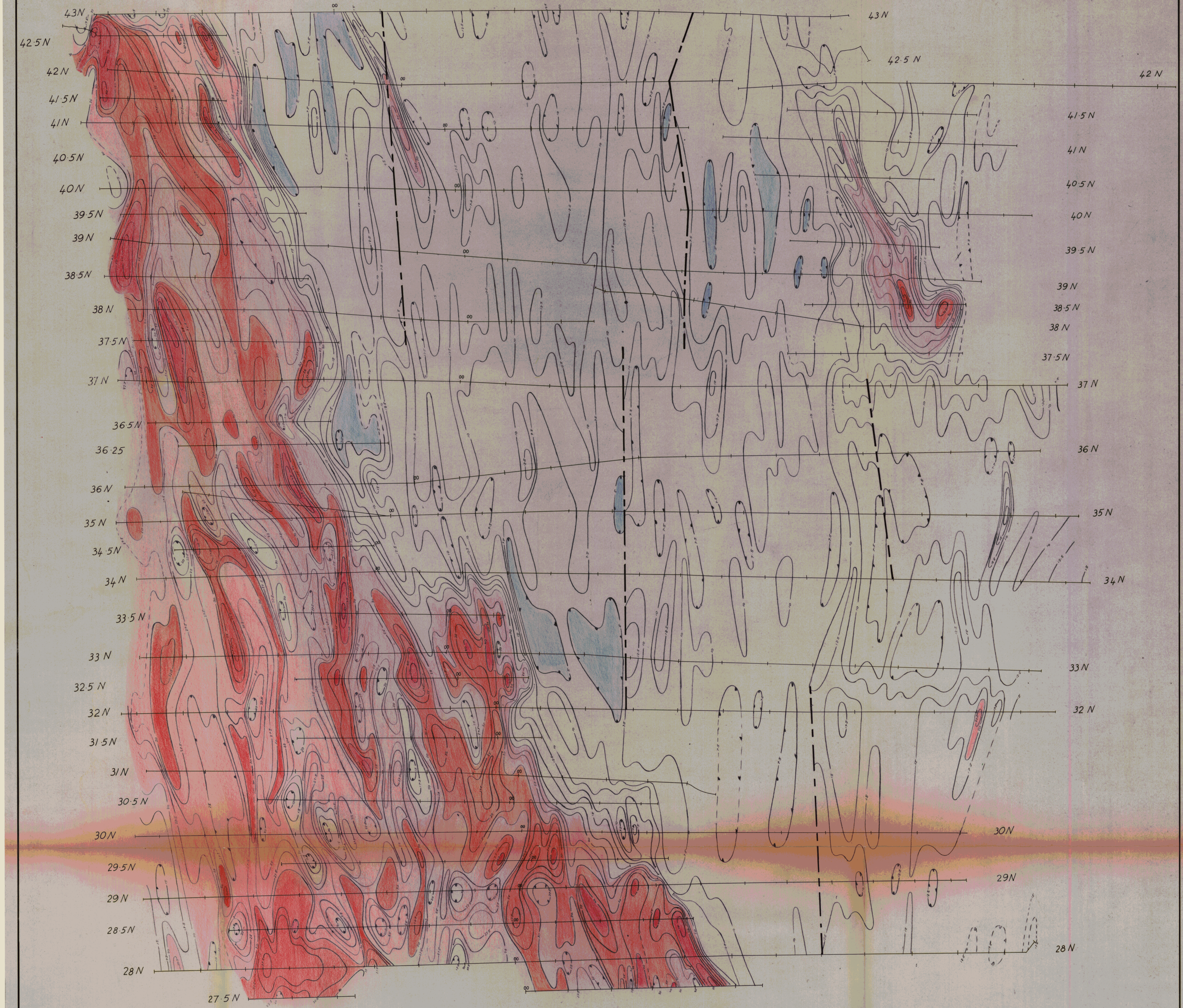
TAS-062



312054

DDH-WSP-1
White Spur
TAS-D62





NOTE: Contours in milliseconds

312055

MOUNT LYELL MINING & RAILWAY COMPANY LTD

WHITE SPUR GRID

NEAR QUEENSTOWN - TAS

GRADIENT ARRAY EIP SURVEY
CHARGEABILITY CONTOUR PLAN

SURVEYED & COMPILED BY
SCINTREX

NOV/JAN '78/'79

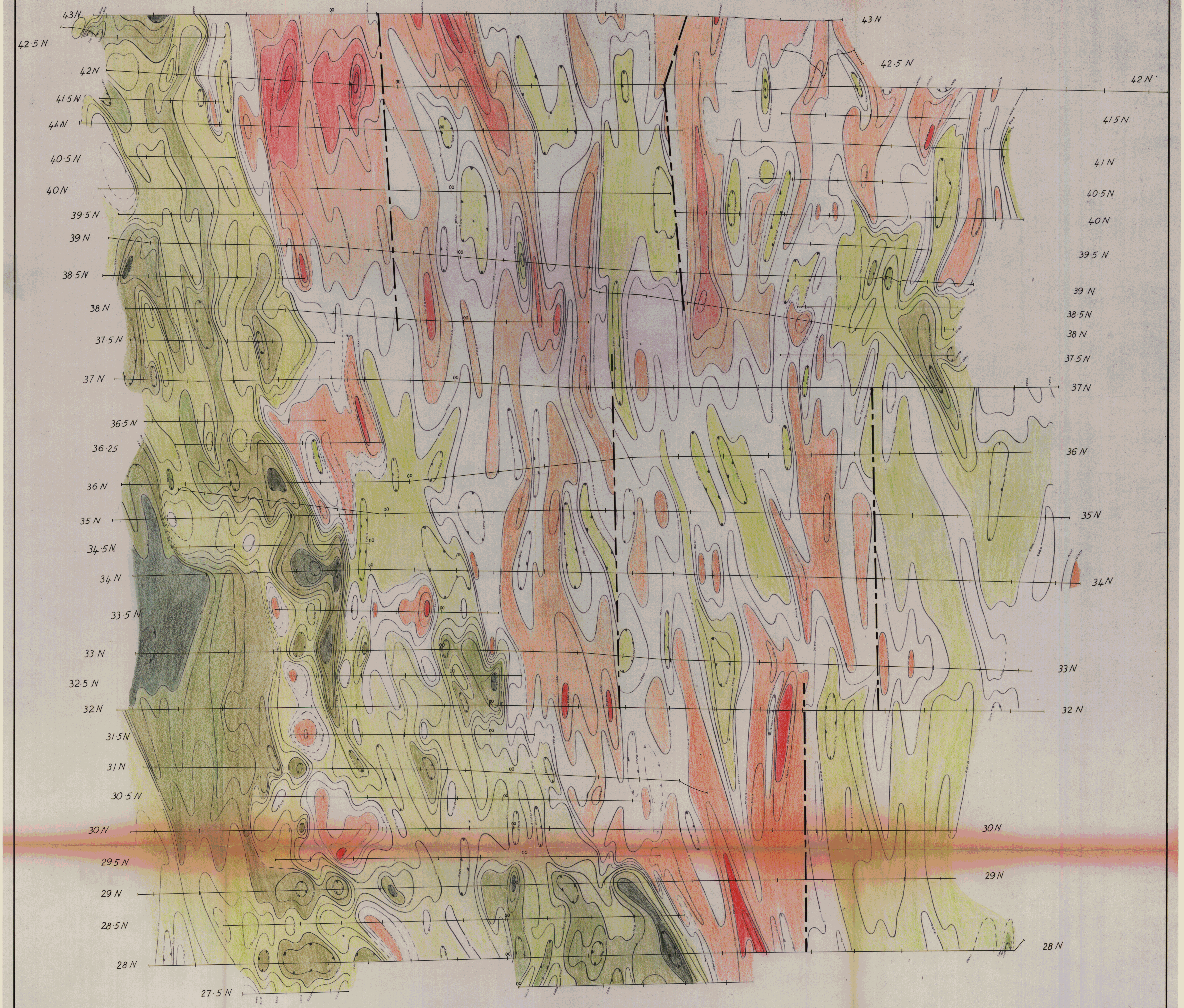
SCALE 1:6000

Job Nº TAS-062 Sht 1 of 1 PLATE 1.

5 cm

053

84-2248 vol 2



312056

MOUNT LYELL MINING & RAILWAY COMPANY LTD.

WHITE SPUR GRID
NEAR QUEENSTOWN - TASMANIA

GRADIENT ARRAY EIP SURVEY
RESISTIVITY CONTOUR PLAN

SURVEYED & COMPILED BY
SCINTREX

NOV/JAN 78/79

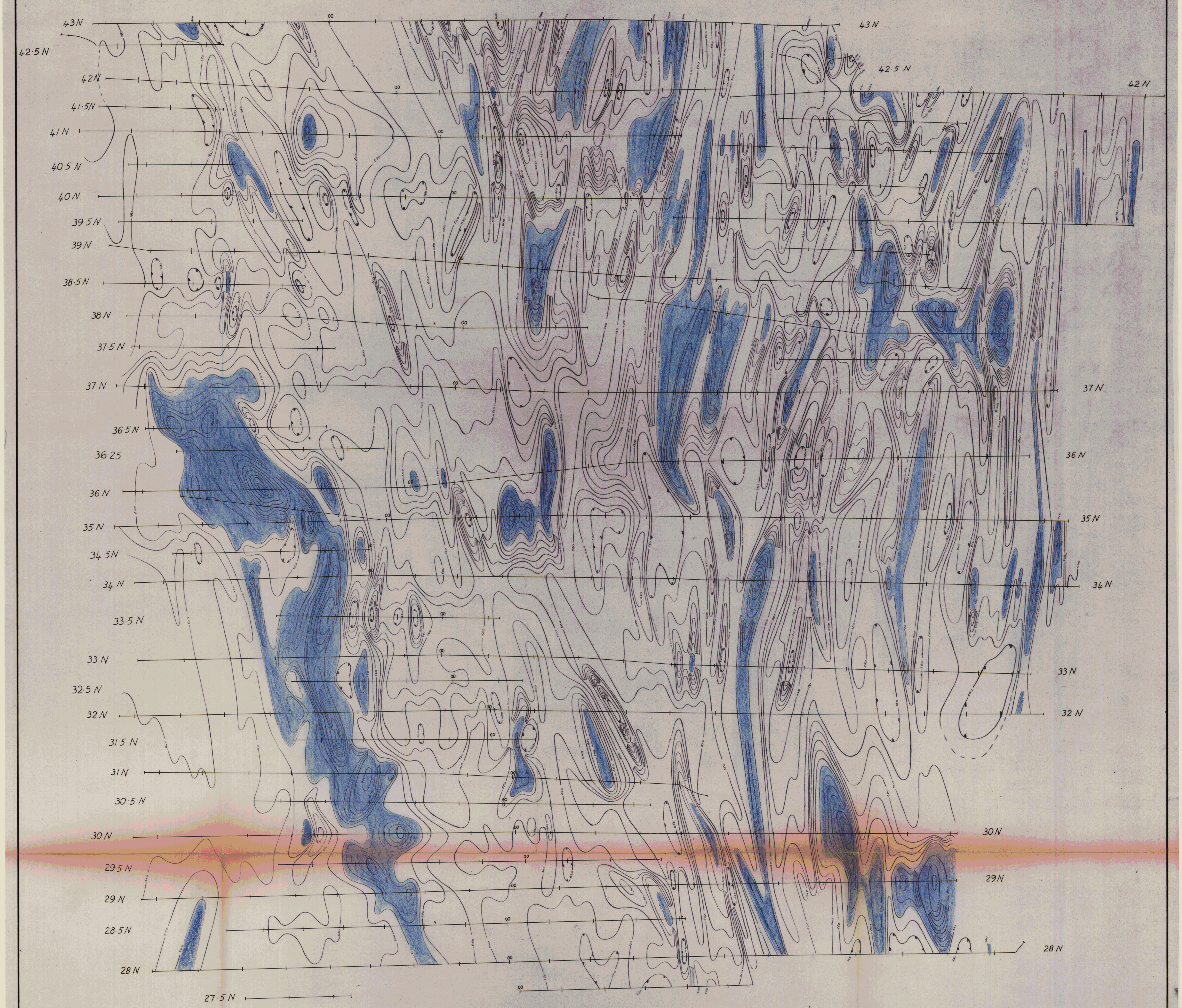
SCALE 1:6000

Job Nº TAS-062 Sht 1 of 1 PLATE 2

054

5 cm

84-2248 vol 2



Legend

For total magnetic field
add 62,000 gammas to all values

MOUNT LYELL MINING & RAILWAY COMPANY LTD

WHITE SPUR GRID

NEAR QUEENSTOWN - TASMANIA

TOTAL MAGNETIC FIELD SURVEY CONTOUR PLAN

SURVEYED & COMPILED BY
SCINTREX

NOV/JAN '78/'79

SCALE 1 : 6000

Job Nº TAS-062 | Sht 1 of 1 | PLATE 3.