

PRIVATE AND CONFIDENTIAL

A REPORT ON
GRADIENT ARRAY ELECTRICAL INDUCED POLARIZATION,
MAGNETOMETRIC RESISTIVITY (MMR), AND TOTAL MAGNETIC FIELD SURVEYS
OVER THE EAST CETHANA GRID, NEAR DEVONPORT, TASMANIA
ON BEHALF OF
C.R.A. EXPLORATION PTY. LIMITED

BY

OPEN FILE

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**SCINTREX PTY. LTD.**

GEOPHYSICAL CONSULTANTS AND CONTRACTORS

SUMMARY

A magnetometric resistivity (MMR) survey executed over the discovery area at Cethana showed no conductive zones over those lines where meaningful data was able to be obtained. Subsequent detailed six-slice decay curve data at 10 metre intervals was able to differentiate the main chargeable zone into a number of separate units having distinct properties. Reconnaissance EIP gradient surveys run to the west of the discovery zone failed to reveal further highly chargeable zones as seen in the discovery area, although chargeable horizons of lesser magnitude were recorded.

The magnetometer survey, together with the chargeability and apparent resistivity data have been compiled into a physical property map which reflects the underlying geology.

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002

CONTENTS

Summary	
Introduction	Page 1
Survey Equipment	Page 2
Magnetometric Resistivity Survey	
Introduction	Page 3
Discussion of Results	Page 4
Conclusions	Page 5
Detailed EIP Gradient Survey	
Introduction	Page 6
Discussion of Results	Page 9
Conclusions	Page 19
Extensions to EIP Gradient Array Survey	
Introduction	Page 24
Discussion of Results	Page 24
Conclusions	Page 30
Two EIP Test Lines at West Cethana	
Introduction	Page 32
Discussion of Results	Page 33
Conclusions	Page 35
Physical Property Map	Page 36
Data Profiles	
Plate 1 - Chargeability Contour Plan	
Plate 2 - Resistivity Contour Plan	
Plate 3 - Total Magnetic Field Contour Plan	
Plate 4 - Interpretation Plan	



003

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INTRODUCTION

At the request of Mr. M. Kirton, Senior Geophysicist Eastern Division, and Mr. G. Purvis, Project Geologist for the Cethana area, Scintrex Pty. Ltd. performed a series of geophysical surveys in the East Cethana area.

The details of the surveys are as follows.....

- | | | |
|----|--|------------|
| 1. | 3 single production days between 5th and 8th May | MMR |
| 2. | 4 double production days between 17th and 24th May | MMR |
| 3. | 2 ³ / ₄ double production days between 25th and 27th May | EIP |
| 4. | 13 single production days between 21st June and 7th July | EIP detail |
| 5. | 2 ¹ / ₂ production days between 28th and 30th July | Magnetics |

On phase 1 the senior operator was Mr. R. Lindberg, while on phase 2 and 3 the senior operator was Mr. B. Ekstrom with Mr. R. Lindberg as second operator. On phase 4 the senior operator was Mr. G. Street B.Sc., assisted by Mr. R. Bennett. The magnetic field survey (5) was executed by Mr. B. Ekstrom and Mr. G. Street.

Phases 1 and 2 were much delayed by bad weather, magnetic storms

004

and extreme noise in the vicinity of the major power line. Weather conditions over the remainder of the survey period were generally good. These surveys were carried out in conjunction with gradient EIP and total magnetic field surveys over the Gowrie Park grid, which is the subject of a separate report.

SURVEY EQUIPMENT

The initial phase 1 work employed a Scintrex 2.5 kilowatt time domain induced polarization transmitter, together with a Scintrex MFM-3 horizontal field magnetometer, coupled to a Scintrex IPR-8 induced polarization receiver. The second phase upgraded the transmitter to a Scintrex 10/15KW unit while retaining the same measuring units.

The third gradient EIP survey employed the 10/15KW transmitter with the Scintrex IPR-8 receiver, while the detailed EIP survey executed over the previously defined high chargeability zones employed a 2½KW transmitter together with the IPR-8 utilising a six slice programme.

The magnetic field survey was executed using two Scintrex MP-2 proton precession magnetometers, one at a base station, and one working on line.

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MAGNETOMETRIC RESISTIVITY (MMR) SURVEY

INTRODUCTION

The initial gradient array surveys carried out by a C.R.A. Exploration Pty. Limited crew under the direction of Mr. M. Kirton showed the main discovery area (Line 21750E/025S) to be highly resistive (1000 to 2500 ohm-metres). However, it was considered likely that, as chalcopyrite mineralisation (1.2% Cu) had been located in hole 77-CC5 at 38 metres with 15% pyrite, sections within the broad zone of mineralisation *may be* chalcopyrite rich, and even if of limited strike length, be capable of detection by the magnetometric resistivity method.

This method relies on there being a *contrast* in resistivity between the target and the enclosing host rock, rather than the target being "conductive" in the absolute sense.

The current line was placed *along* strike and the magnetic field due to the passage of current monitored using the MFM-3/IPR-8. Readings (H_p) were taken every 10 metres and were normalised for the position of the current electrodes, and these normalised readings (H_N) were plotted on the data profiles in terms of percentages of normal. The vertical scale used for this plot was 1 centimetre = 5%.

The following lines were surveyed.....

Line 21400E	3500S - 3700S
Line 21500E	3400S - 3820S
Line 21700E	3400S - 3850S
Line 21750E	140N - 300S
Line 21800E	3400S - 3900S
Line 21900E	100N - 300S
Line 22000E	3500S - 3800S
Line 22200E	3350S - 3560S

DISCUSSION OF RESULTS

Detailed comments are as follows...

Line 21400E..... Over the major portion of the induced polarization response between 3575S and 3637S, the *southern* half is seen to be more conductive than the northern half. The detailed EIP resistivity and MMR resistivity are in broad agreement.

Line 21500E..... No truly conductive section was recorded over the zone of anomalous induced polarization.

Line 21700E..... The anomalous zone of induced polarization between 3670S and 3800S is in general *more resistive* than the enclosing rocks. However, *minor* local increases in H_N at 3680S and 3730S were noted, indicating greater conduction at those points. The maximum depth to the source is of the order of 10 metres.

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The rocks to the immediate north of the chargeable horizon are significantly less resistive than the induced polarization zone itself. This is particularly true between 3470S and 3575S.

Line 21750E..... The data on this line appears to have been somewhat influenced by the major powerlines. Nevertheless *minor* H_N maxima were recorded at 140S to 150S, *moderate* maxima at 210S and 235S which *may* be of local significance.

Line 21800E..... No significant H_N maxima were noted within the chargeable horizon.

Lines 21900E, 22000E and 22200E..... The data on these lines was significantly influenced by the proximity of the major power line.

CONCLUSIONS

1. The MFM-3 magnetometer was certainly rendered in-operative in the vicinity of the major power line. No meaningful data could be obtained on lines 21900E to 22200E.
2. The MMR data over the chargeable horizon clearly indicates the absence of major narrow conductors within it.
3. The data obtained, therefore, confirms the essentially resistive nature of the sulphides in this location. Such resistivities as have been observed are characteristic of pyrite/sphalerite/

008

galena mineral assemblages lean in copper.

DETAILED EIP GRADIENT SURVEY
OVER THE CHARGEABLE HORIZON AT EAST CETHANA

INTRODUCTION

The lack of outcrop together with the ubiquitous geochemical anomalies over the zone of high induced polarization required that some method of further differentiating units within the wide sulphide source be found. It was therefore decided that a detailed gradient array EIP survey would be conducted.

The parameters of the survey were as follows.....

1. a potential dipole of 10 metres was used
2. a two second energisation was used.
3. all six decay slices were measured at each station.

From the above, the following parameters were calculated and plotted on the data profiles at the scales given.

M_3 the third decay slice at a scale of 1 centimetre = 2 millivolts/volt (mv/v)

ρ_a the apparent resistivity expressed in ohm-metres on a 10 centimetre log cycle.

M_3/ρ_a The chargeability/resistivity ratio (or "metal factor").

This parameter was multiplied by a factor of 1000 for plotting

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purposes and the scale employed was 1 centimetre = 2 units.

ΔM the rate of decay $|M_6| - |M_1|$ at the scale of 1 centimetre = 1 millivolt/volt

$\Delta M/M_3$ the decay rate *normalised* for the absolute magnitude of the induced polarization response. (For the purposes of presentation this ratio was multiplied by a factor of 100). The scale used was 1 centimetre = 2 units.

(Note: The latter parameter is plotted on a separate sheet).

Some comments are warranted on the geological significance of the more complex parameters in order that their significance can be readily appreciated.

Firstly... the chargeability/resistivity ratio, or metal factor, M_3/ρ_a . This parameter emphasises those zones which are both *chargeable* and *less resistive* than background. This parameter is an attempt to adjust the chargeability which is always proportional to the *total effective surface area* of the chargeable material for the *lessening* of chargeability which occurs when sulphide grains become electrically connected, which necessarily would reduce their chargeability. Put in another way, this is an attempt to emphasise "*massive*" mineralisation as opposed to *disseminated* mineralisation. In the author's opinion this is *not* a very meaningful parameter, but it *is* worth considering in a case such as Cethana where *differences* are required to be emphasised.

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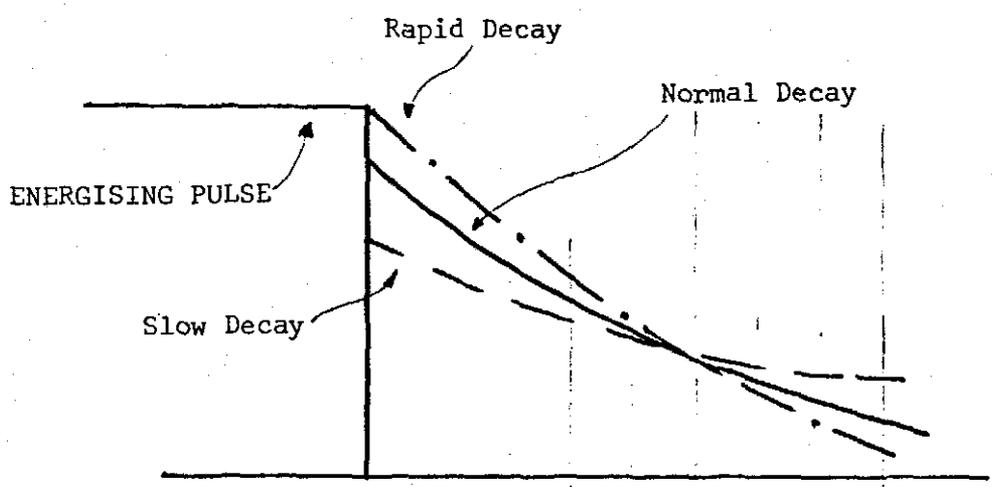
Secondly... the rate of decay ΔM . Some six slices under the decay curve were analysed. Some additional explanation is necessary in respect of this data. Each of the six slices is *normalised* to take account of the "normal" decay form. This is done within the IPR-8 itself. Thus, if the decay form *is* normal, all six slices will be equal, i.e. $M_1 = M_2 = M_3 = M_4 = M_5 = M_6$. For abnormally slow decay forms, $M_1 < M_2 < M_3 < M_4 < M_5 < M_6$, and for abnormally fast decay forms, $M_1 > M_2 > M_3 > M_4 > M_5 > M_6$. This is diagrammatically shown in Figure 1. It follows that ΔM will be *POSITIVE* for slow decay rates and *NEGATIVE* for fast decay rates.

The geological meaning of decay rates is as follows: The decay rate is determined predominantly by the grain size of the causative mineralisation. Slow decay rates are caused by "large" effective grain size, while fast decays are due to fine grain size mineral assemblages. While the grain size is not the sole determinant, in our experience it is the dominant one.

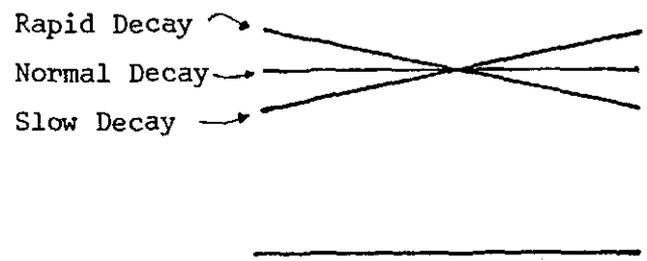
Thirdly... the decay rate ΔM itself cannot be assessed, as the *magnitude* of the chargeability itself must be considered. Therefore in an attempt to adjust for the size of the induced polarization responses, a parameter entitled normalised decay rate, ΔM_n , is defined as follows;

$$\Delta M_n = \frac{\Delta M}{M_3} = \frac{M_6 - M_1}{M_3}$$

011



I(a) Actual Decay



I(b) Decay as read in IPR-8 after normalisation

Decay Slice

M₁ M₂ M₃ M₄ M₅ M₆

FIGURE I

Actual (a) and normalised (b) decay form as read and processed by Scintrex IPR-8

Consideration of this parameter, ΔM_n , in conjunction with the chargeability M_3 , will indicate those zones which have "massive", but in this case, non-electrically continuous sulphide mineralisation. The signature should be large positive ΔM_n together with anomalous M_3 and preferably lower than background (but not necessarily low) apparent resistivity. It is perhaps significant that just such conditions were recorded over the intersected mineralisation in DDH 77-CC5, line 21750E, 020S-030S

DISCUSSION OF RESULTS

The data over the discovery line 21750E shows a sharp contact between the chargeable zone and the enclosing rocks. The contacts are at 012S and 237S. The chargeabilities within the enclosing rocks are an abnormally low 4 to 6 millivolts/volt immediately flanking the chargeability zone.

Within the chargeability anomaly there are clearly two separate zones.

235S-137S with chargeabilities to 44 millivolts/volt

137S-012S with chargeabilities to 22 millivolts/volt

The former is characterised by slow decay forms over its entire width, which infers a coarser than average causative grain size, while only the northern two-thirds of the second zone has slow decay forms.

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The "discovery" intersection is seen to be the *first* major rise in chargeability moving from north to south, while the resistivity shows no major changes in this section. The normalised decay form (ΔMn) however shows *slow* decays characteristic of a coarser effective grain size to the causative mineralisation.

The clear impression on this line is that the two chargeable zones located are comprised of a series of well defined, narrow sources at a maximum depth below surface of the order of 20 metres. Each individual peak on the data profiles indicates such a zone.

Lines to the East (surveyed on two adjacent arrays)

Line 21800E..... On this line the chargeability response was recorded between 3850S and 3530S with the most substantial section being between 3600S and 3790S. Major chargeability peaks were noted at 3625S, 3695S and 3720S.

Within this high chargeability zone there are three zones showing slow decay forms where the ΔMn index is about 8. These are as follows...

a.... first major increase in chargeability at 3545S. This point also shows a *local* decrease in resistivity, and is *probably* the correlative of the mineralised zone located in CC-5.

b.... coincident with high, 36 millivolts/volt, chargeabilities is an overall reduction in apparent resistivity to 1500 ohm-metres from

3000 ohm-metres and a slow decay form. This was observed at 3695S.

c.... a shoulder on the southern flank of the response of 24 millivolts/volt at 3775S is accompanied by slow decay forms ($\Delta M_n = 9$), but in this case *higher* apparent resistivities, making it of lesser interest than a) or b) above.

As would normally be expected, differences in detail were observed on the adjacent electrode spread (the line was surveyed twice, once from each current dipole), but in general both lines were similar.

Line 21900E..... On this line the zone of highest chargeability was defined between 025S and 280S with two distinctly different zones indicated.

- between 280S and 160S 20 millivolts/volt
- between 155S and 050S 28 millivolts/volt - 40 millivolts/volt

Within the southern zone apparent resistivities are between 1500 and 2500 ohm-metres, while in the northern zone the *average* would not exceed 1500 ohm-metres, with the two greatest chargeability anomalies at 090S and 105S showing the lowest resistivities of 1200 and 1000 ohm-metres respectively. Both show slower than normal decay forms ($\Delta M_n = 4$) and are considered of secondary interest from this standpoint, although the lowering of apparent resistivity within the source must increase their interest.

The most interesting feature is the *first* significant induced polarization response moving from north to south situated at 037S of 22 millivolts/volt. This shows a slow decay ($\Delta M_n = 10$) but no lowering of resistivity.

Stratigraphically this anomaly could be the same as the discovery zone in CC-5 and it is therefore recommended for further investigation.

Line 22000E..... The general form of both the induced polarization data and apparent resistivity data is similar on this line to that seen on line 21900E, and to a lesser extent on line 22100E.

A higher zone of up to 36 millivolts/volt was recorded between 3600S and 3710S which, in general, is equivalent to 155S to 050S on line 21900E, while chargeabilities of 16 to 20 millivolts/volt between 3710S and 3825S are equivalent to 280S to 160S on line 21900E.

The first major increase in chargeability from north to south is a distinct shoulder/peak at 3580S and this peak correlates with 035S on line 21900E. This feature shows a distinct ΔM_n peak of 7 and a slight lowering of the generally high resistivity. Therefore it may present a target of interest, providing that more prominent features on other lines confirm the interest of this zone.

The whole of the most chargeable northern section between 3600S

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and 3710S is associated with slower than normal ΔMn values of about 4, which together with lower than background apparent resistivities of 1200 to 1500 ohm-metres as against 2500 to 3000 ohm-metres outside this zone, warrants some further consideration.

Line 22100E..... As remarked above, the profile form on this line does bear some relation to that observed on line 22000E, however, the most significant section was observed between 3525S and 3660S. Here, the chargeability rises to 36-38 millivolts/volt at 3525S as against 12-14 millivolts/volt only 30 metres to the north. Chargeability progressively falls to the south, however, two relatively low apparent resistivity anomalies at 3625S of 800 ohm-metres and at 3575S of 900 ohm-metres against backgrounds of 2000 and 3000 ohm-metres to the immediate north and south respectively were recorded. Both these zones show slower decay forms, with ΔMn being 9 at 3585S and 7 at 3635S. Of course due to low resistivity and higher chargeability, there are distinct metal factor ($M_3/\rho a$) highs over each.

The geological interpretation of this zone is as follows: In the north, finely disseminated (low ΔMn) sulphides were defined between 3525S and 3570S. A coarsening of grain size occurs progressively to 3587S, at which point lower resistivity infers either interconnectio between grains, or a more conductive host. A second similar zone, although showing lesser chargeability, was defined at 3625S. The

zone defined at 3585S should be further investigated by drilling, should the other parameters be considered positive.

Line 22200E..... The profile form on this line shows a material difference to that seen on line 22100E. Higher chargeabilities above 18 millivolts/volt were recorded between 3355S and 3585S. Within this zone a more prominent maxima of 29 millivolts/volt at 3480S was recorded, and is coincident with a 1300 ohm-metres apparent resistivity low as against background to the immediate north and south of 2000 to 3000 ohm-metres. The decay form within this zone is *faster* than normal (i.e. $\Delta M_n = -2$). The source therefore is considered to be finer grained source mineralisation within a host which is less resistive than the enclosing material.

The first major induced polarization feature going from north to south was located at 3375S and has a maxima of 22 millivolts/volt as against the low 4 to 10 millivolts/volt background to the north. There is a coincident lowering of apparent resistivity to 1400 ohm-metres as against 4000 ohm-metres to the immediate north, and 2500 ohm-metres to the south. Over this zone the decay form shows a progressive increase from north to south.

At this stage no drilling recommendations are made on this line.

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Lines to the West

Line 21700E..... The profile form observed on this line is similar to that seen to the immediate east on line 21750E, with two sections being clearly differentiated.

- 3800S to 3675S very high chargeability to 48 millivolts/volt and generally lower, 1300 ohm-metres, resistivities
- 3675S - 3512S high, declining to moderate, chargeabilities south to north, with higher, 2000 ohm-metres, resistiviti

Chargeabilities on both the northern and southern zones are characterised by slow decay forms with ΔMn varying between 4 \pm 1. On the basis of decay form, *the whole* of this chargeability zone would appear to be of some interest!

The particularly high chargeability between 3740S and 3800S is accompanied by a minor, but significant, lowering of resistivity. It is considered that the "mass" of the sulphides present over this section must influence the absolute conductivity over this section.

No specific drilling recommendations are made on this line at this time, although the sheer size of the chargeability together with the depression in apparent resistivity, make a tempting secondary target.

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Line 21600E..... In general, the form of the chargeability response is similar to that seen on line 21700E, however, it cannot be absolutely correlated to it.

The major zone of interest is the very substantial 60 millivolts/volt response recorded on the southern flank of this zone at 3770S, which is associated with a very significant 65% to 70% fall in apparent resistivity to 700 ohm-metres. As this is accompanied by a marked slow decay rate as indicated by the normalised decay (ΔM_n) of 8 to 9, this zone is considered of prime interest. This zone is inferred to be due to larger grained sulphide (or graphite?) mineralisation which is partially interconnected - the prime set of parameters in this environment.

Two other zones of perhaps secondary interest having the same parameters of low resistivity and high chargeability, but not as marked as at 3770S, were located between 3615S and 3655S, and between 3555S and 3585S. The latter zone, although dwarfed by that at 3770S, could be significant as it is stratigraphically equivalent to the copper mineralisation intersected in CC-5. Both these targets are of secondary interest.

Line 21500E (Surveyed from two adjacent set-ups)..... While the general profile form is very similar to that observed on line 21600E, the amplitude of the anomalies is very much reduced. The higher (to 24 millivolts/volt) chargeabilities recorded between about 3620S

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and 3780S are considered to be equivalent to the higher chargeabilities recorded between 3610S and 3790S on line 21600E.

The major zone of interest centred at 3770S on the previous line (21600E), has no material expression here, but stratigraphically is seen as higher 26 millivolts/volt chargeabilities between about 3710S and 3750S. High resistivities indicate a wholly disseminated or electrically discontinuous source.

The two zones of secondary interest noted on line 21600E (see above) are considered to be present on this line also at 3650S and 3560S. The decay forms over both positions were noted to be slow, ΔMn being about 6.

Both set-ups show similar resistivity and chargeability profiles, however, the decay form shows some variation.

Line 24150E..... the form of the chargeability response on this line shows no relationship with that seen on line 21500E, and very little clear correlation with that seen on 21400E either. Lensing of the various units is the suspected cause in both cases.

The major feature observed is a sharp well defined anomaly whose source has a width from 3610S to 3690S. The chargeable sulphides make a *sharp* contact with the enclosing rocks. There is a clear

021

reduction in apparent resistivity from 2500 ohm-metres to the north and south to about 1200 ohm-metres within this zone, with individual lows within the anomaly.

Individual sources within this zone are interpreted to be at 3637S and 3675S, where the apparent resistivity is *slightly higher* than *between* these highs. This indicates a more disseminated nature to the source, and this tends to be confirmed by the slower decay forms *between* the highs, and the relatively *faster* decay forms within them.

Line 21400E..... While superficially there is some correlation between lines 21400E and 21450E, in detail there is no clear correlation, while to the west with line 21200E, there is no correlation at all. This is again put down to lensing in and out of chargeable zones along strike, rather than to faulting.

The most striking feature is a substantial 30 millivolts/volt response between 3580S and about 3637S. The source must have sharp contacts with the enclosing material, and coarser than normal grain size. At this stage the anomaly is of limited interest.

A second smaller 20 millivolts/volt anomaly was recorded centred at 3705S within high, 3500 ohm-metres, apparent resistivities. As the decay form is slower than normal ($\Delta M_n = -4$), the source is interpreted to be finely disseminated sulphides (or graphite) within a highly resistive source.

022

Line 21200E..... No significant responses.

CONCLUSIONS

General....

1 - The objective of being able to detect differences within the broad chargeability high at East Cethana located in the initial C.R.A. survey, has been realised. The problem of being able to interpret the geological implications of these differences remains. Great variation in grain size, apparent resistivity and decay form are seen in all volcanogenic deposits. Those which on a basis of experience are considered the most significant are...

i... a lowering of background resistivity *but not necessarily being conductive as such.*

ii... moderate chargeabilities *but not necessarily large or even the largest in the zone.*

iii... a slow decay form

This data has been studied with (i) to (iii) in mind.

2 - The most meaningful use of this data will only be made in conjunction with a study of the geology, geochemistry and structure. Further, the proposed drilling programme should be able to be adjusted as the economic significance of the geophysical data becomes understood.

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Detailed....

3 - The chargeability anomalies are contained within rocks of abnormally low chargeability background. In this respect, the data is reminiscent of other volcanogenic deposits on the West Coast.

4 - The background resistivities are high *outside* the chargeable zone, and while they decrease within it, they still remain high, and rarely decrease below 1000 ohm-metres.

Therefore, should a volcanogenic Koroko type deposit be present here, it is considered that it would be a pyrite-zinc-lead type, lean in copper. However, the overall high resistivities are not considered a negative feature for the presence of pyrite-zinc-lead as such.

5 - The clear impression from the data is of a series of chargeable lenses of limited, 50 to 150 metres, strike length which lense in, and lense out along strike.

6 - In general, the chargeable horizons seem to make a very sharp contact with the enclosing host rocks.

7 - The maximum depths to sources are estimated always to lie between 10 and 20 metres.

024

8 - In detail, the features which are considered worthy of consideration as drill targets are as follows....

Line 21750E - DISCOVERY LINE On a basis of anomalous slow decay form, the zone at 025S would have been found to be of interest, while on a basis of RELATIVELY lower apparent resistivity with increase in chargeability AND slow decay form, the zone at 180S would have been found to be of interest. In this case the source was probably the banded 10%-15% pyrite in 5 centimetre bands between 60 metres and 62 metres. Nevertheless, such anomalies must still be considered to be of interest due to the fundamental geophysical characteristics of the mineralisation sought.

Line 21800E Of Secondary Interest

3545S..... shoulder of 10 millivolts/volt which is stratigraphically equivalent to the discovery mineralisation, slow decay form ($\Delta M_n = 9$) with lower resistivity of 1400 ohm-metres at 3555S.

3695S..... 36 millivolts/volt chargeability peak, lower 1400 ohm-metres apparent resistivity as against 3000 ohm-metres + 50 metres to north and south, slow decay form, $\Delta M_n = 7$

3775S..... slow decay forms of $\Delta M_n = 9$ within moderate chargeability of 24 millivolts/volt and generally high resistivities of 2500+ ohm-metres.

Line 21900E Of Primary Interest

035S..... slow decay form, $\Delta M_n = 10$, together with moderate 22

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millivolts/volt chargeabilities. No change in local resistivity background of 1600 ohm-metres. Stratigraphically equivalent to "discovery" mineralisation.

Of Secondary Interest

090S & 105S..... two significant resistivity lows are coincident with high 40 millivolts/volt chargeabilities and slow decay forms of $\Delta M_n = 4$

Line 22000E Of Secondary Interest

3580S..... distinct shoulder of 20 millivolts/volt with lower resistivities of 1500 ohm-metres and slow ($\Delta M = 7$) decay forms. Stratigraphically equivalent to the discovery line.

3655S..... high 36 millivolts/volt chargeabilities, 50% to 60% reduction in background resistivity to 1200 to 1300 ohm-metres, slow decay form of $\Delta M_n = 4$.

Line 22100E Of Primary interest

3585S..... significant reduction in background resistivity of 55% to 900 ohm-metres, 28 millivolts/volt chargeability and slow decay form, $\Delta M_n = 9$.

Of Secondary Interest to Primary Interest

3635S..... significant 75% reduction in background resistivity to 800 ohm-metres, moderate 20 millivolts/volt chargeability, slow decay forms $\Delta M_n = 7$.

Line 21600E Of Primary Interest

3770S..... 70% fall in apparent resistivity to 700 ohm-metres, slow decay form with $\Delta M_n = 8$, large coincidental chargeability of 60 millivolts/volt.

Of Secondary Interest

3615S-3655S.....50% fall in apparent resistivity to 1200 ohm-metres slow decay form to $\Delta M_n = 4$ to 8 with high 28 millivolts/volt chargeabilities.

3555S-3585S.....50% fall in apparent resistivity to 1000 ohm-metres, slow decay form $\Delta M_n = 4$ to 10.

Line 21500E Of Secondary Interest

3650S.....40% fall in apparent resistivity to 1300 ohm-metres, higher chargeability of 25 millivolts/volt, slow decay form of $\Delta M_n = 6$

3560S..... 55% fall in apparent resistivity to 1100 ohm-metres, moderate chargeability of 18 to 20 millivolts/volt, slow decay form also.

Line 21450E Secondary to Primary Interest

3610S/3700S.....a 50% fall in apparent resistivity to +1200 ohm-metres together with chargeability in excess of 32 millivolts/volt, and slow decay forms.

027

Lines 21400E and 21200E

No major recommendations at this time.

EXTENSIONS TO EIP GRADIENT ARRAY SURVEY EAST CETHANA GRID

INTRODUCTION

Using the large 10/15KW induced polarization transmitter, some 8 lines were surveyed to the west of the discovery area. The details of the lines surveyed are as set out in the discussion of the data.

These surveys used a 2 second energising square wave pulse, and were read using Scintrex IPR-8 receivers on a three slice programme, with only M_3 being plotted. The data is shown on a 1:2500 scale with chargeability at a vertical scale of 1 centimetre = 2 millivolts/volt and apparent resistivity on a 10 centimetre log cycle.

A 2200 metre current dipole was used with a potential dipole of 20 metres with stations every 20 metres.

DISCUSSION OF RESULTS

Each line is discussed below.

*Line 21200E 3800S-3500S & 3100S-2800S0.....*The southern sector of the line showed low apparent resistivities of less than 150 ohm-

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metres together with low apparent chargeabilities of 4 to 5 millivolts/volt, as against backgrounds of the order of 1000 ohm-metres and 16 millivolts/volt respectively.

This section was repeated on the detailed survey executed over the Discovery grid, and while the *form* of the data profiles is similar, the resistivity is very much lower. This is considered to be due to an edge effect of the gradient set-up used, however, no meaningful response has been missed.

The northern ends of the surveyed line are characterised by high 3000 ohm-metre resistivities, with three relatively resistive sections at 3010S, 2910S and 2850S.

A minor response of 5 to 6 millivolts/volt superimposed on a low 8 millivolts/volt background was recorded at 2910S and is due to minor disseminated chargeable material within a resistive host. Similar minor responses were recorded at 3010S and 3050S. The maximum depths in all three cases were 25 to 40 metres.

Line 21000E..... A gradual increase in resistivity from about 600/800 ohm-metres in the south to 2000 ohm-metres in the north was observed. In general the chargeability background *decreases* from about 16 millivolts/volt in the south to a low 8 millivolts/volt in the north. Superimposed on this gradual background change were a number of responses of secondary interest.

An 8 millivolts/volt response superimposed on a 16 millivolts/volt background was located centred at 3740S, with a local decrease in resistivity between 3700S and 3750S. While this response may be "formational", it also has the basic characteristics of *higher chargeability and low resistivity* which may be of interest. It is suggested that rock chip geochemistry be considered as a follow-up. Without further geochemical or geological support, no further work is suggested.

At 2930S a sharp 10 millivolts/volt response superimposed on the 12 millivolts/volt background was recorded from a source whose host shows no contrast with the resistive (1600 ohm-metres) rocks. The disseminated sulphide (graphite?) source has a maximum depth of 25 metres.

A second similar response of 8 millivolts/volt on a 16 millivolts/volt background was noted at 3090S, again within resistive (1600 ohm-metres) rocks. The disseminated source is considered to have a maximum depth of 25 metres.

Line 20800E..... While the gradual increase in resistivity background from south to north, and decrease in chargeability background in the same direction is again seen, the changes are not gradual as observed on line 21000E.

The significant induced polarization responses recorded on this

030

line all occur together with an increase in apparent resistivity. Thus their sources are disseminated or electrically discontinuous material within a resistive host. Such sources are most often formational in nature.

Between about 3100S and 3230S, apparent chargeabilities rise from backgrounds of 14 millivolts/volt and 8 millivolts/volt to two distinct maxima of 28 millivolts/volt (under the powerline) at 3210S and 24 millivolts/volt at 3150S. The resistivity within the host rocks is a high 2000 ohm-metres, so a disseminated source is interpreted in both cases. The maximum depths estimated are 20 metres and 40 metres respectively.

A 6 to 8 millivolts/volt response whose broad shape is sympathetic to the resistivity, was recorded between 3350S and 3450S and centred at 3425S. The resistivity rises from 500 ohm-metres to over 1800 ohm-metres. The source is again interpreted to be disseminated material within a resistive host. The source is again considered to be formational.

At 3560S an 8 millivolts/volt response was recorded, again coincident with a sympathetic rise in resistivity from 800 ohm-metres to 1600 ohm-metres. A disseminated sulphide (or graphite?) source is suspected.

Line 20600E..... The same *general* trends in background chargeability and apparent resistivity were noted on this line as observed on the

previous two lines.

Higher chargeabilities of 24 millivolts/volt were recorded between 3050S and 3200S within high 2000 ohm-metres resistivities. The interpreted sources are disseminated chargeable material within a resistive host, and maximum depths are considered to be of the order of 30 to 40 metres. This zone probably is the western extension of that recorded on line 20800E between 3100S and 3230S. Three individual maxima were noted at 3070S, 3130S and 3170S.

A similar zone was noted between 3610S and 3450S which shows *rapid* increase in chargeability from 6 millivolts/volt in the south to a maximum of 23 millivolts/volt at 3590S. While this individual peak occurs on an *inflection* in the resistivity profile indicating the source to lie on a contact between less resistive (400 to 500 ohm-metres) and more resistive (1500 ohm-metres) rock units. Those peaks which occur to the north of this (3550S, 3510S and 3470S) lie wholly within more resistive units (1800 ohm-metres+), and their source is thus interpreted to be disseminated sulphides or graphite.

Line 20400E..... While the general form of the resistivity data over the section surveyed can be related both east and west, no significant chargeability anomalies were recorded superimposed on the 16 millivolts/volt background recorded.

Line 20200E..... While higher apparent chargeabilities were observed between 3300S and 2950S superimposed on the 14 millivolts/volt \pm background, these, with the possible exception of an 8 millivolts/volt response at 3250S within 1800 ohm-metres resistivities, are not considered significant.

Line 20000E..... The profile form on this line is similar to that observed on line 20200E. The broad (3170S-3075S) 6 to 8 millivolts/volt response centred at 3100S is considered equivalent to that recorded at 3250S on line 20200E.

Other than this, there are no significant responses.

Line 19800E..... This is the most westerly line run on the East Cethana grid and varies significantly in form to that 200 metres to the east (line 20000E). While the resistivity data is similar, the chargeability data shows a broad zone of higher chargeabilities of 22 millivolts/volt \pm between 2850S and 3050S with lower background of 8 to 10 millivolts/volt on either side. The apparent resistivities also show a general increase over this zone, and always remain above 1500 ohm-metres. The source is considered to be disseminated chargeable material within a resistive host. Individual peaks at 2870S, 2930S and 2990S represent local increases in chargeable material below these points. The maximum depths to source are 20 to 30 metres.

033

CONCLUSIONS

- 1 - The rapid reconnaissance EIP gradient array survey did not show any zone similar to that located in the main East Cethana discovery area to be present on lines 19800E to 21200E.
- 2 - Those chargeability responses which were located are all typical of disseminated sulphides within resistive rock units and are considered to be of "formational" origin for the most part. The order of the bulk sulphide content is estimated at 1%-1½% at most, assuming average grain size.
- 3 - Maximum depths to source are estimated to be of the order of 20 to 40 metres.
- 4 - In detail the significant responses on each line are summarised as follows:

Line 21200E

No anomalies of either primary or secondary interest.

Line 21000E Of tertiary to secondary interest

3740S 8/16 millivolts/volt and lower (600 ohm-metres) resistivities are of possible interest.

Of secondary interest

2930S 10/12 millivolts/volt resistive 1600 ohm-metres source. Maximum depth 25 metres. Disseminated sulphide(?) source.

034

Line 20800E Of secondary interest

3210S & 3150S Disseminated sulphide (or graphite?) material
at maximum depths of 20 and 40 metres respectively.

3425S Disseminated material with resistive (1800 ohm-metres)
source. Considered to be formational.

Of tertiary interest

3560S Disseminated sulphide (?) with a resistive source.

Line 20600E Of secondary to tertiary interest

3050S-3200S Disseminated sulphide (or graphite?) at a maximum
depth of 30 to 40 metres recorded at 3070S, 3130S
and 3170S.

3610S-3450S Disseminated sources within resistive host material
recorded from 3570S - 3470S.

Of secondary interest

3590S A 24 millivolts/volt response situated on the contact
between two rock types of significantly contrasting
apparent resistivities.

Line 20400E

No significant responses.

035

Line 20200E

No significant responses.

Line 20000E

No significant responses.

Line 19800E *Of secondary tertiary interest*

2850S-3050S A broad zone of disseminated material interpreted within a resistive host. Individual maxima at 2870S, 2930S and 2990S. Maximum depths, 20 to 30 metres.

TWO EIP TEST LINES AT WEST CETHANA

INTRODUCTION

Two test lines were surveyed on the West Cethana grid between Claude Creek and the main road. The current dipole employed was 1100 metres, while the resultant field was investigated by a 20 metre potential dipole moved at 20 metre station intervals. A two second energising square wave was used while the IPR-8 used a two second three slice programme to record the observed chargeability. The data profiles, however, only display the middle (M₃) slice.

036

DISCUSSION OF RESULTS

Individual comments are made on each of the two surveyed lines.

Line 19400E (3370S-2610S)..... The apparent resistivity varies for the most part between 1000 and 2000 ohm-metres, but in the extreme south (at 3350S), rises to just under 5000 ohm-metres. (Such resistivities are typical of Owen Conglomerates or granites in the area)

The chargeability profile shows a number of significant features.

The background north of 3100S decreases from about 12 millivolts/volt at this point to about 6 millivolts/volt at 2600S. South of 3100S, the chargeability increases dramatically to reach a peak of 33 millivolts/volt at 3150S, 36 millivolts/volt at 3240S and 31 millivolts/volt at 3350S. The resistivities remain a high 1500 to 3000 ohm-metres over these responses, thus the source must be either disseminated sulphides (or graphite). The maximum depths to source are considered not greater than 20 to 40 metres.

Within the low background zone north of 3100S at 2875S, a single narrow response was recorded of 18 to 20 millivolts/volt *superimposed* on the low 10 millivolts/volt background, and with a lessening of apparent resistivity from 2500 ohm-metres to about 1500 ohm-metres. This *classic* response is certainly of interest, however, it occurs under and/or in the vicinity of major power lines and the main road.

037

Nevertheless further ground follow-up is recommended as the data does not infer an artificial source in this case, although of course it does not rule one out. As the area is accessible, short additional traverses are recommended 50 to 100 metres along strike to both east and west to test the continuity of this response.

Line 19000E (3490S-2730S)..... The apparent resistivity background varies about 1500 ohm-metres +500 ohm-metres, while the chargeability shows a decrease in background from about 24 millivolts/volt in the south to about half this level in the north. While the apparent resistivity profile is broadly similar to that seen on line 19400E, with high 5000 ohm-metres resistivity noted on the extreme south and "lows" at 2700S/19400E \cong 2825S/19000E and 3090S/19400E \cong 3100S/19000E, the chargeability data is difficult to correlate between the two lines.

However, the 8 millivolts/volt response centred at 2910S *could be* interpreted as a continuation of that observed on line 19400E at 2875S, and if so, this implies the continuity of the latter along strike. Similarly, the 12 and 9 millivolts/volt anomalies superimposed on the 10 millivolts/volt background at 3310S and 3340S respectively are considered to be the western correlative of that observed over line 19400E at 3240S.

Notwithstanding the above, no individual response on this line is considered to be of particular interest.

038

CONCLUSIONS

- 1 - The very high chargeabilities recorded south of 3100S on line 19400E are interpreted as being caused by disseminated chargeable material within a resistive host, the maximum depths of which are 20 to 40 metres. The three individual sources at 3150S, 3240S and 3350S represent *separate* chargeable zones.

- 2 - Again on line 19400E a significant anomaly of 18 to 20 millivolts/volt superimposed on the low 12 millivolts/volt background was noted at 2875S. While this *could* be due to an artificial conductor (due to the vicinity of two power lines and the main road) the data *does not* imply this. Thus should the geology/geochemistry infer continued interest at this site, further *short* traverses 50 to 100 metres along strike are recommended to further investigate this response.

- 3 - On line 19000E a 8 to 10 millivolts/volt response on a background of 14 millivolts/volt at 2910S is considered the possible along line correlative of the anomaly located at 2875S on line 19400E, and as such does warrant some attention. Also, if this correlation is in fact valid, it confirms the response on line 19400E to be of interest, and considering its *form*, therefore supports the argument that follow-up mag may be warranted.

039

PHYSICAL PROPERTY MAP

An attempt has been made to summarise the three geophysical parameters of chargeability, resistivity and total magnetic field on Plate 4.

For the most part the strike of all units is grid east west in the west, veering grid west-north-west between lines 20400E to 21200E, then east west to about 21800E, and finally west-south-west by west between 21800E to 22000E.

Outside of the close spaced discovery area and between 21400E to 22200E, the strike cannot always be determined with accuracy due to the large 200 metres spacing between lines, however, all three parameters appear in general to conform to the above strike pattern.

The zone of greatest induced polarization response is confined to the original discovery area, and the clear impression is of a series of en-echelon induced polarization responses within this zone, which between lines 21600E and 21500E *may* be displaced by faulting. However when the strike length of individual geophysical units is limited to the distance between lines, or thereabouts, as is the case at Cethana, it is difficult to be positive as to whether clear differences between lines are *faults* or *lensing out*. In this case lensing out is the favoured interpretation of the data, but some faulting is perhaps to be expected also.

Overall the chargeable zone within the discovery area is seen to

040

rapidly pass into areas of abnormally low chargeability both up and down strike. In general the areas of high chargeability in the discovery area are mutually exclusive to those areas which show local increases in the magnetic field.

A series of grid north-north-west *discontinuities* have been suggested, based on the discontinuities noted on all three, or at least two of the geophysical parameters. It is not known whether these "*discontinuities*" are *faults* or *flexures*. However, they do appear valid features as they are independent of array in the case of IP and resistivity data, and are often seen on all three parameters.

The amplitude of the magnetic anomalies is about 50 gamma + above background for the most part. Most features are narrow and seen on one or two lines only. They do not correlate with any other parameter, but appear to be parallel to them. Two areas of broad anomalism were noted - "MA" between lines 21200E and 20800E and "MB" on the southern ends of lines 22000E, 21900E and 21800E. In both cases they are terminated suddenly along strike by discontinuities and are not associated with any induced polarization features. It is not known whether they represent merely broader magnetic units within the volcanogenic sequence, or perhaps intrusives. MA appears to be conformable, however, MB runs counter to strike, having a grid north-east/south-west northern margin, and therefore *may* be intrusive in nature.

041.

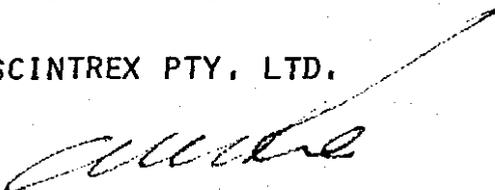
Further studies of each of the contour interpretations of the geophysical parameters in conjunction with the geological outcrop data will without a doubt help the interpretation of the latter, including the fixing of the boundaries.

The author will make further comments on the above data when the adjacent Gowrie Park grid is discussed, and when discussions have been held on the known geology of each of the two areas, Gowrie Park and East Cethana.

Meanwhile the physical property map is considered to represent some function of the underlying geology which cannot run counter to the major physical property trends mapped.

Respectfully submitted on behalf of:

SCINTREX PTY, LTD.


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

GEOPHYSICIST

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GRADIENT ARRAY EIP
MMR, AND TOTAL MAGNETIC FIELD SURVEYS
EAST CETHANA GRID, TASMANIA

DATA PROFILES

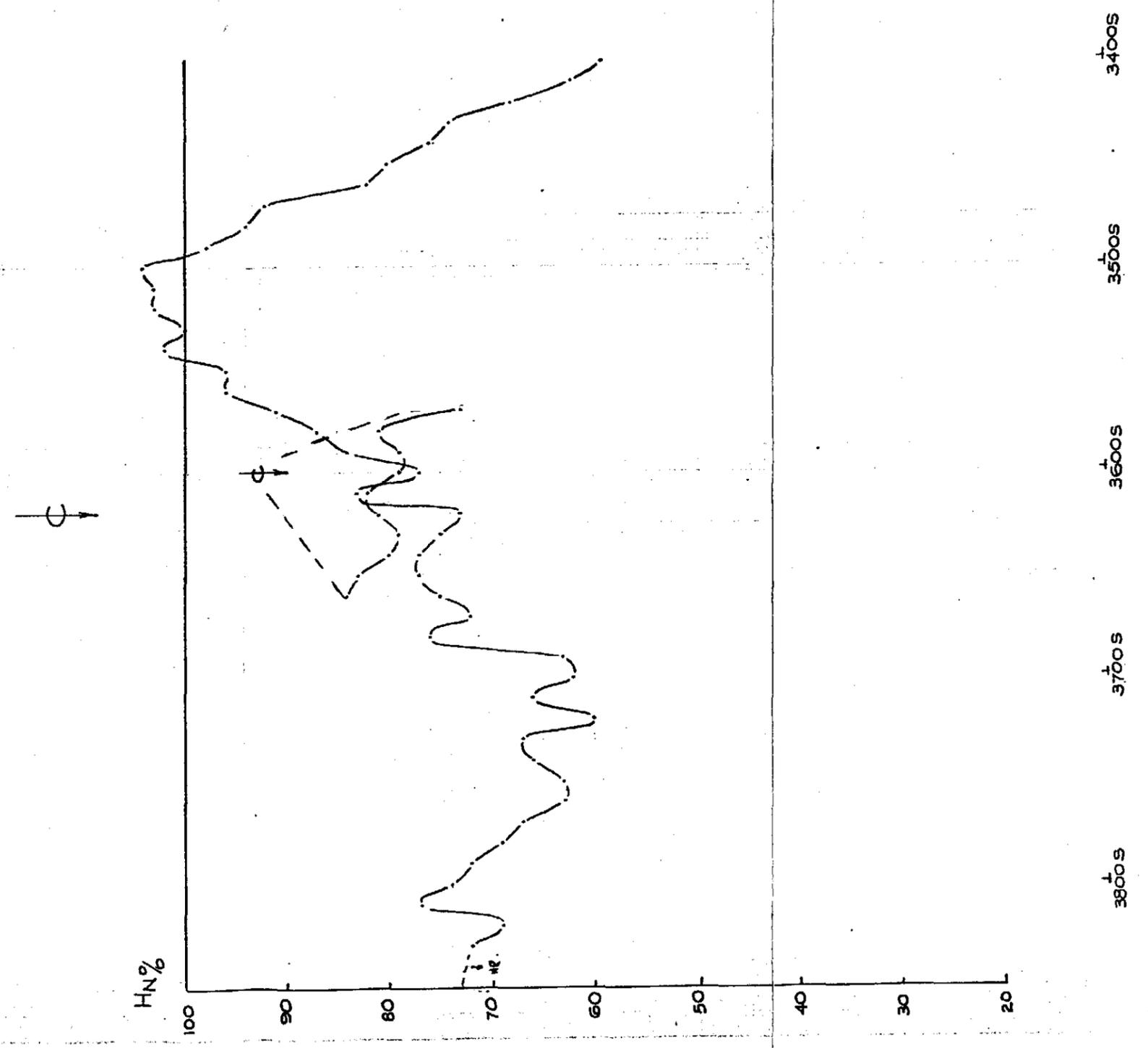
C.R.A. EXPLORATION PTY. LTD.
P.O. BOX 656
FYSHWICK
A.C.T. 2609

043

85-2354

LINE 21700E
East Cethana-H_N
TAS-043

211045



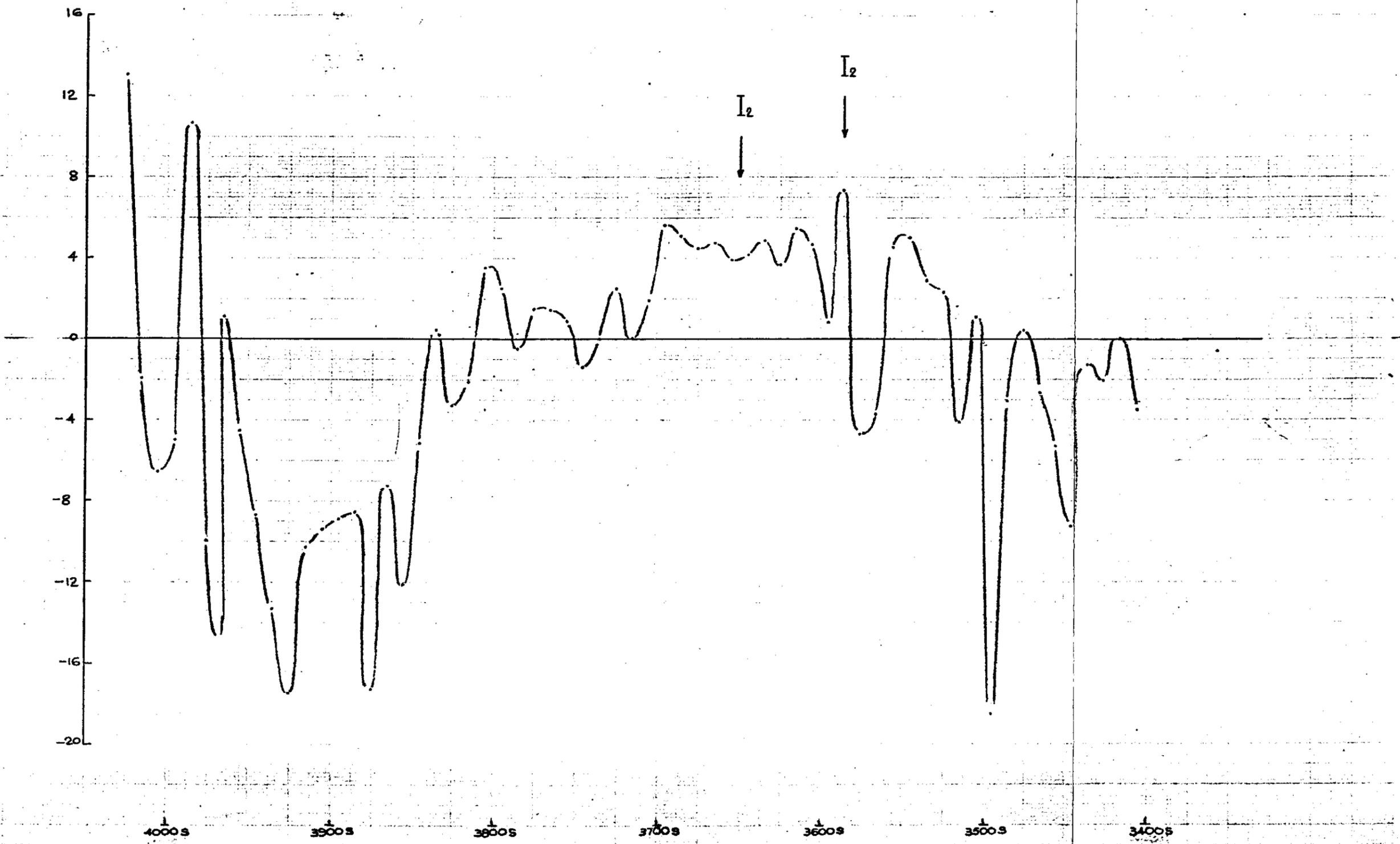
LINE 22000 E
East Cethana - $\frac{\Delta M}{M_3} \times 100$
TAS-045

$\frac{\Delta M}{M_3} \times 100$

16
12
8
4
0
-4
-8
-12
-16
-20

4000s 3900s 3800s 3700s 3600s 3500s 3400s

I_2
 I_2

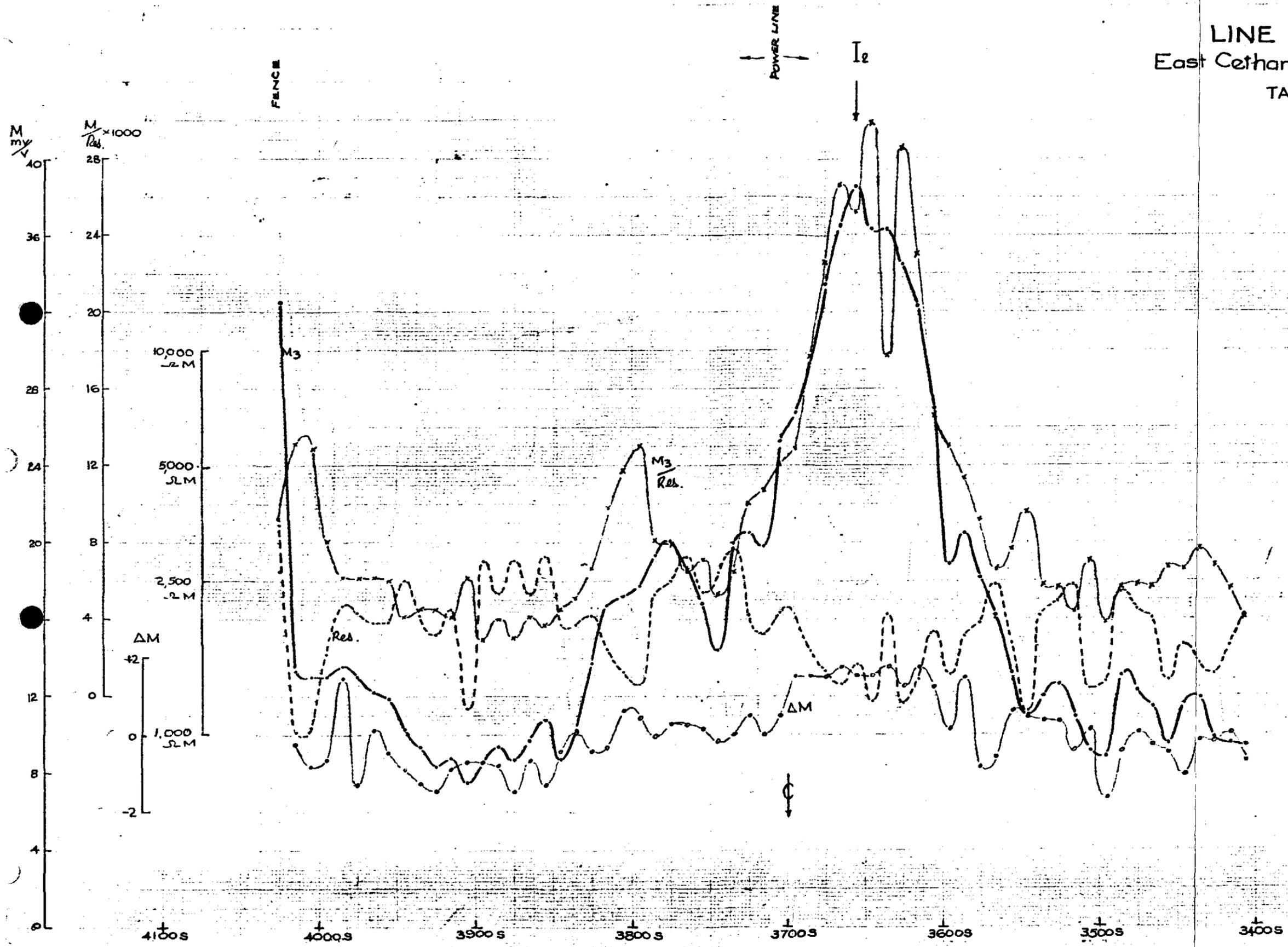


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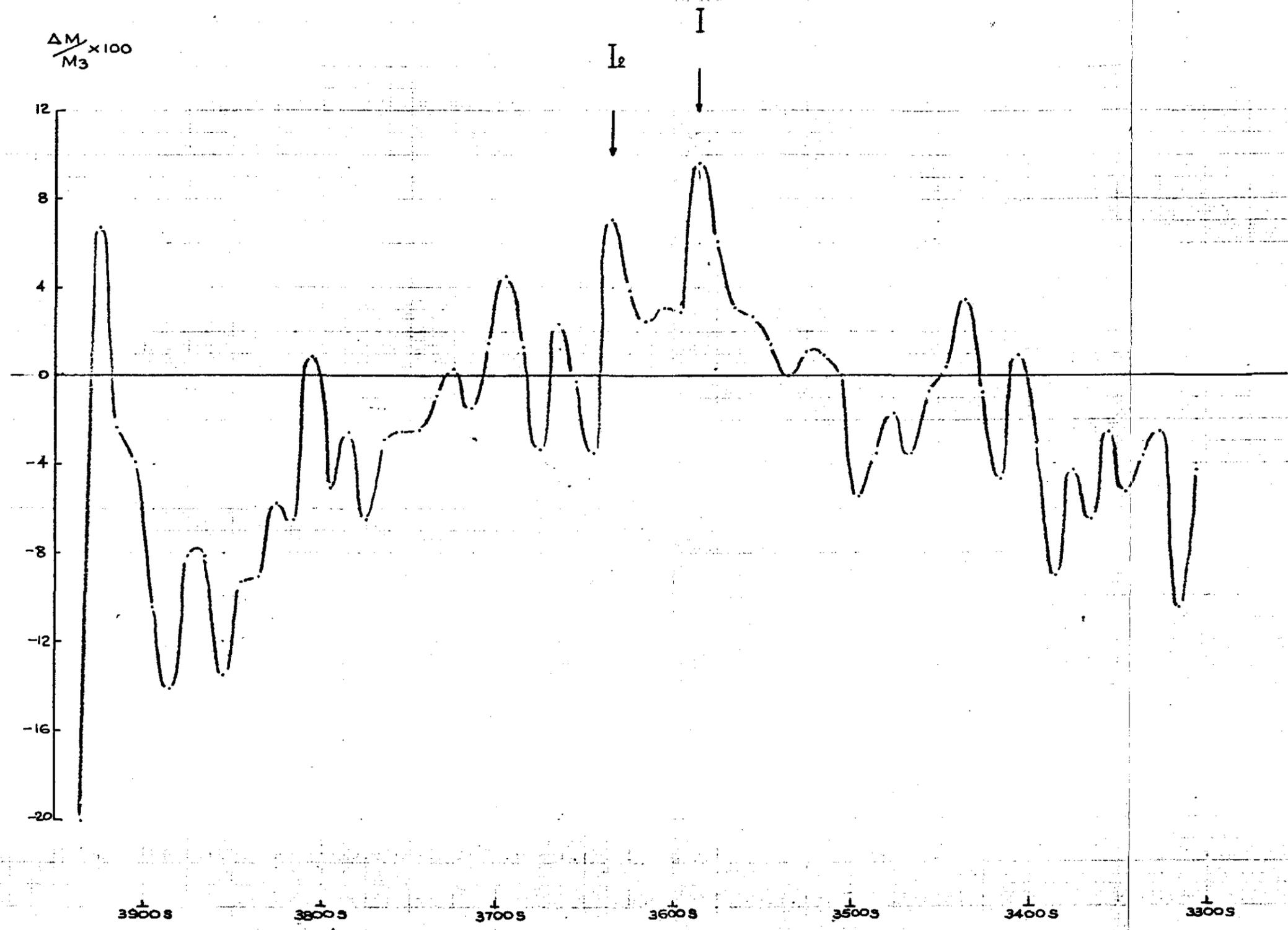
LINE 22000 E
East Cethana - gradient array EIP
TAS-045



LINE 22100 E

East Cethana - $\frac{\Delta M}{M_3} \times 100$

TAS-045



047

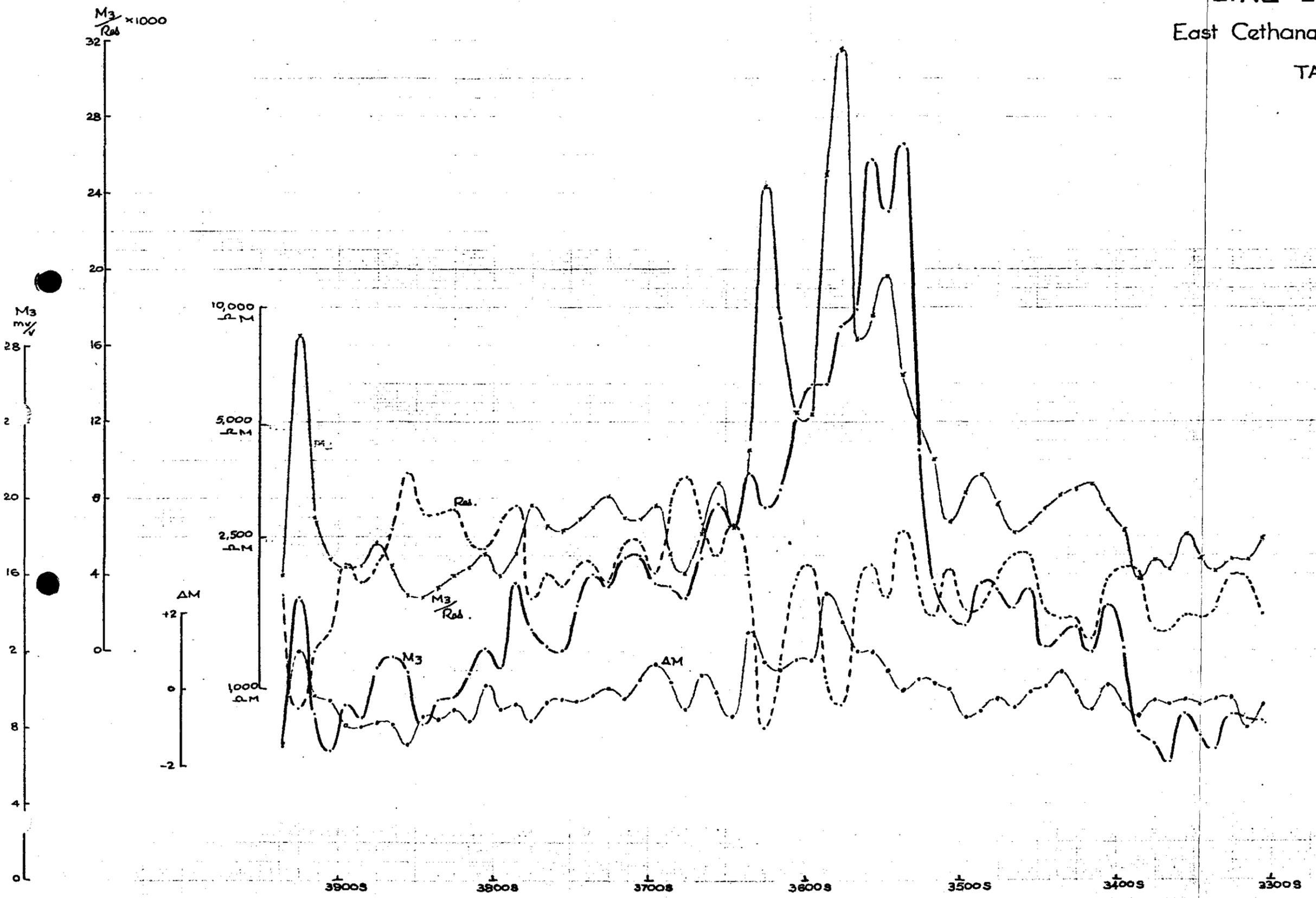
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LINE 22100E

East Cethana - gradient array EIP

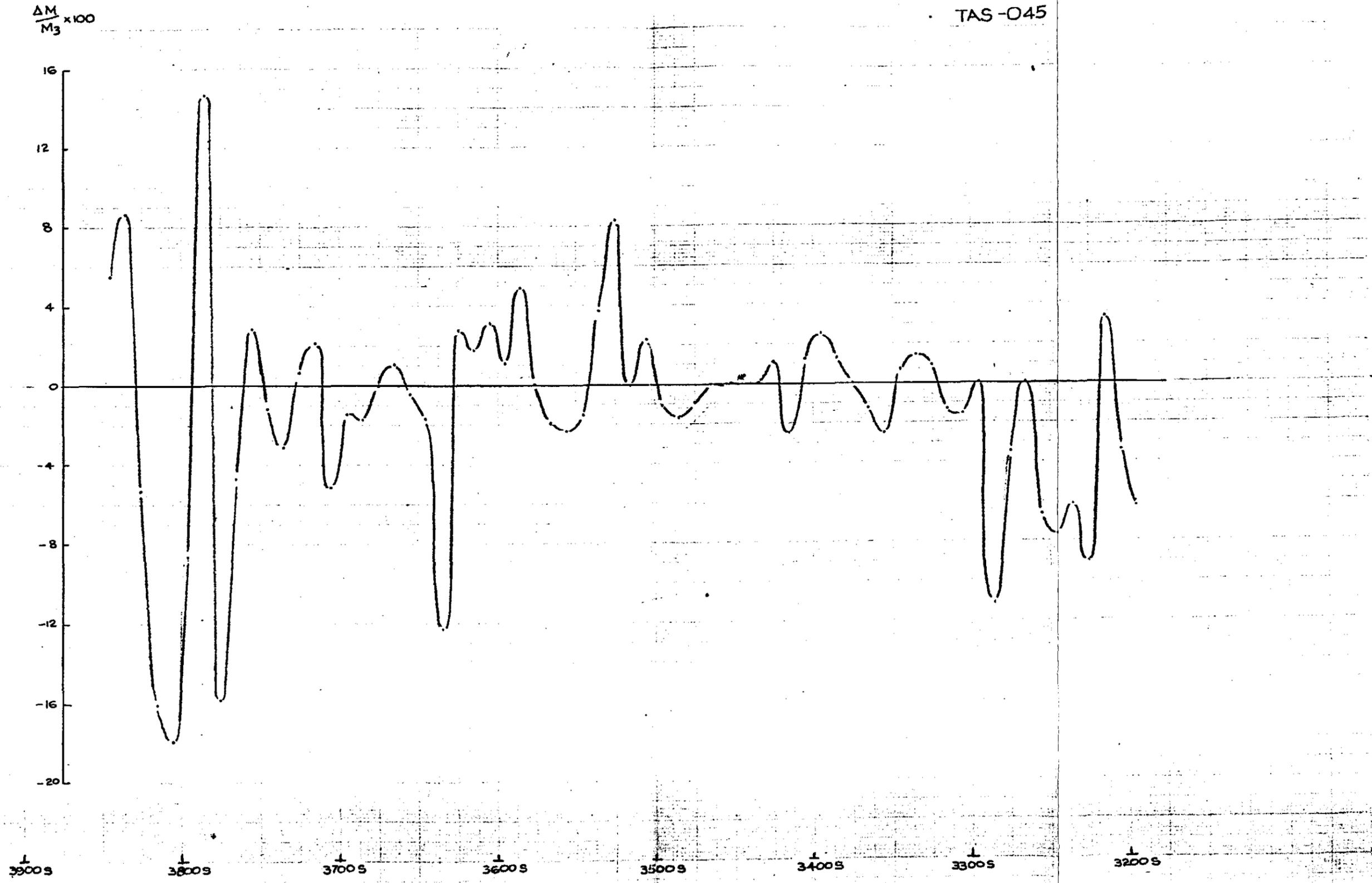
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LINE 22200 E

East Cathana - $\frac{\Delta M}{M_3} \times 100$

TAS-045



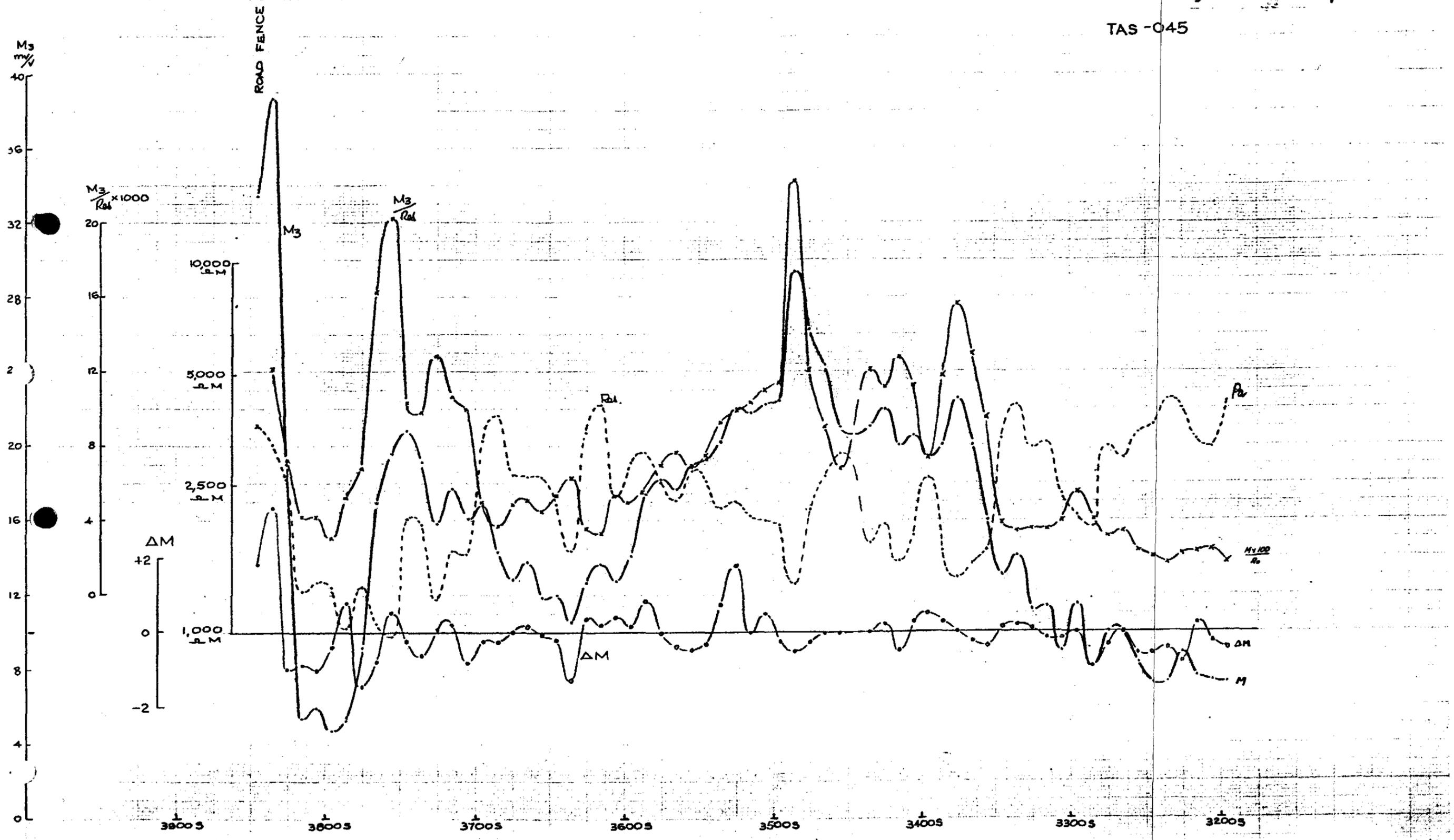
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LINE 22200 E
East Cethana - gradient array EIP

TAS-045



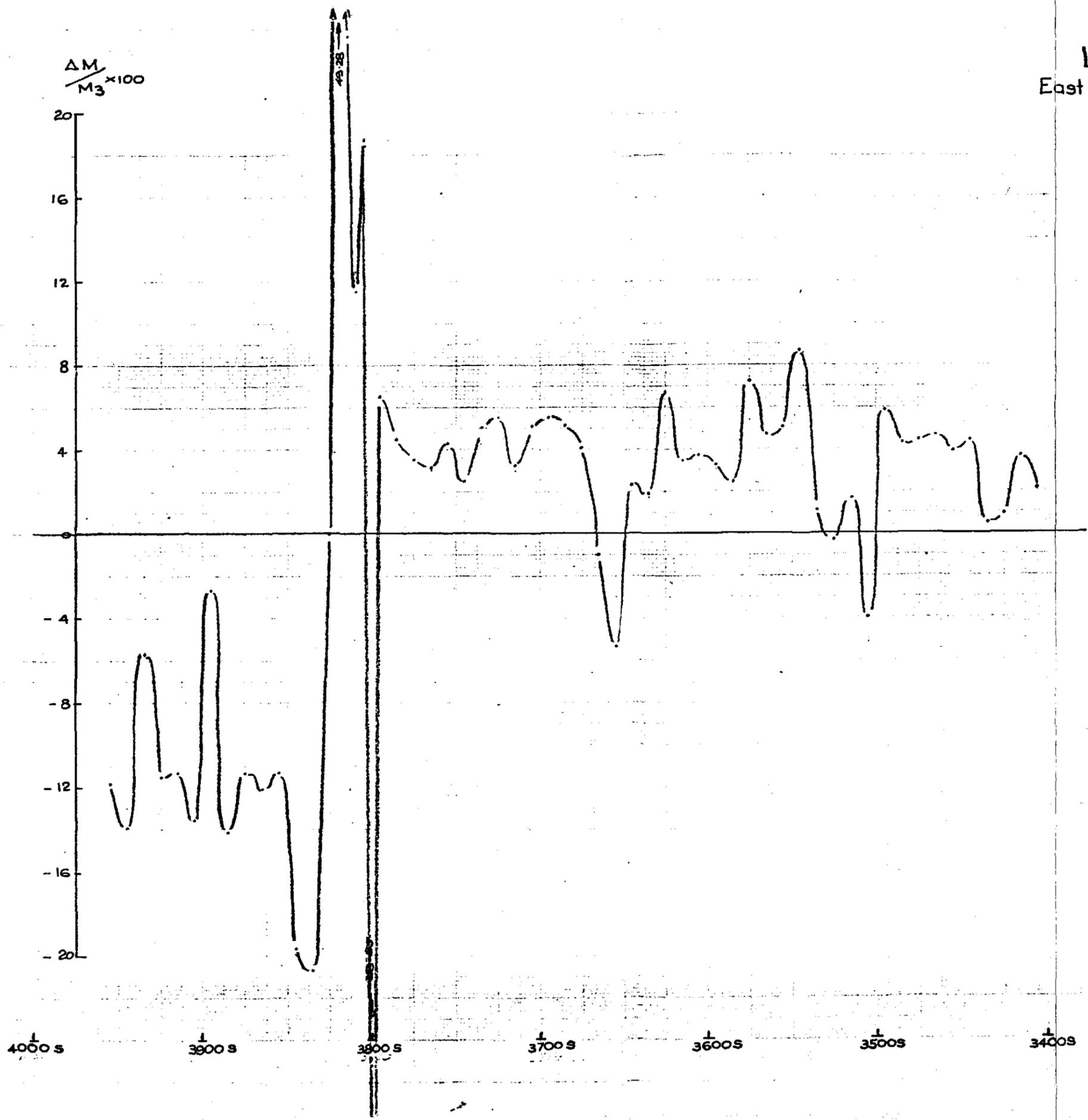
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85-2354

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East Cethana - $\frac{\Delta M}{M_3} \times 100$

TAS-045

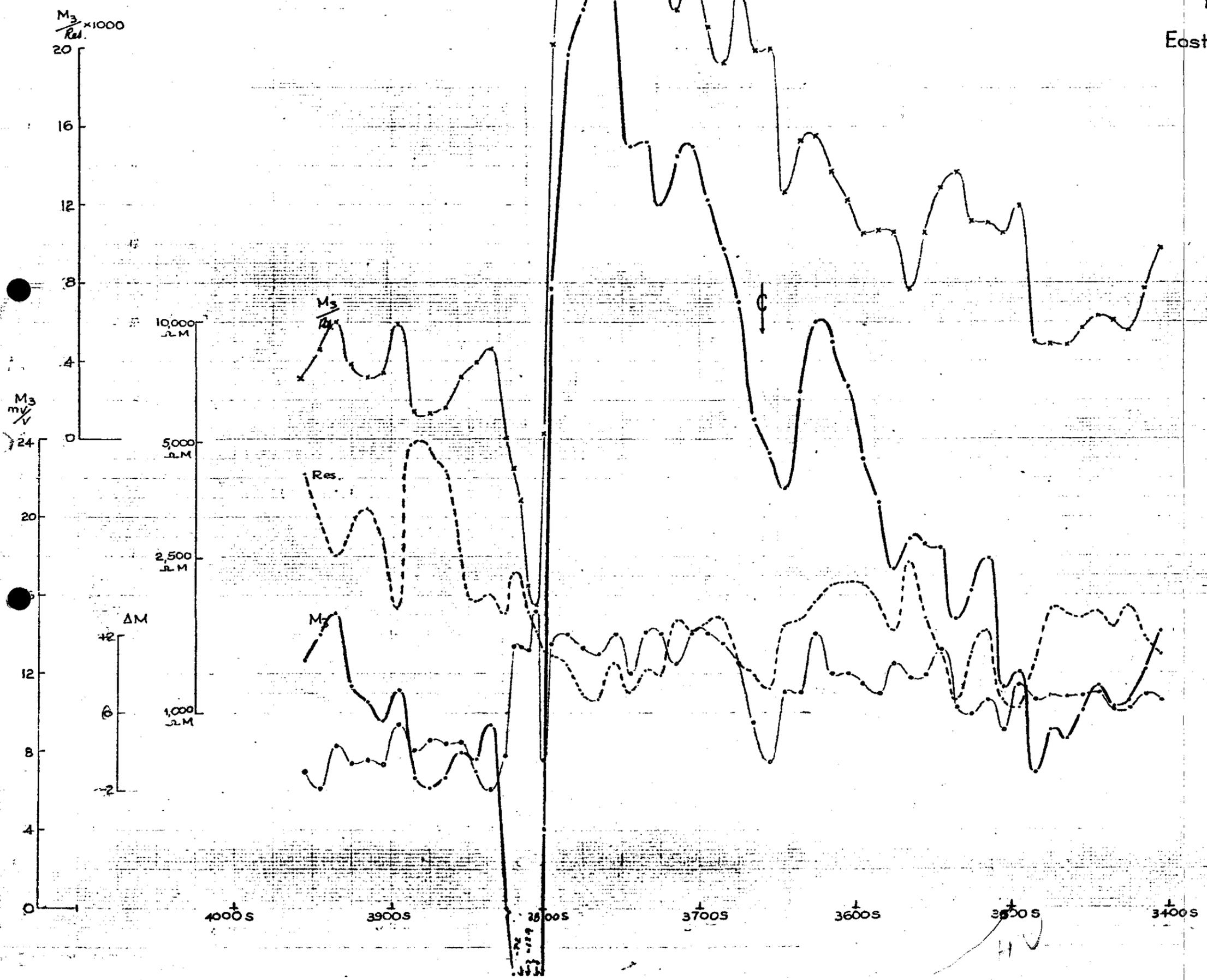


LINE 21700 E

East Cethana -gradient array EIP

TAS-045

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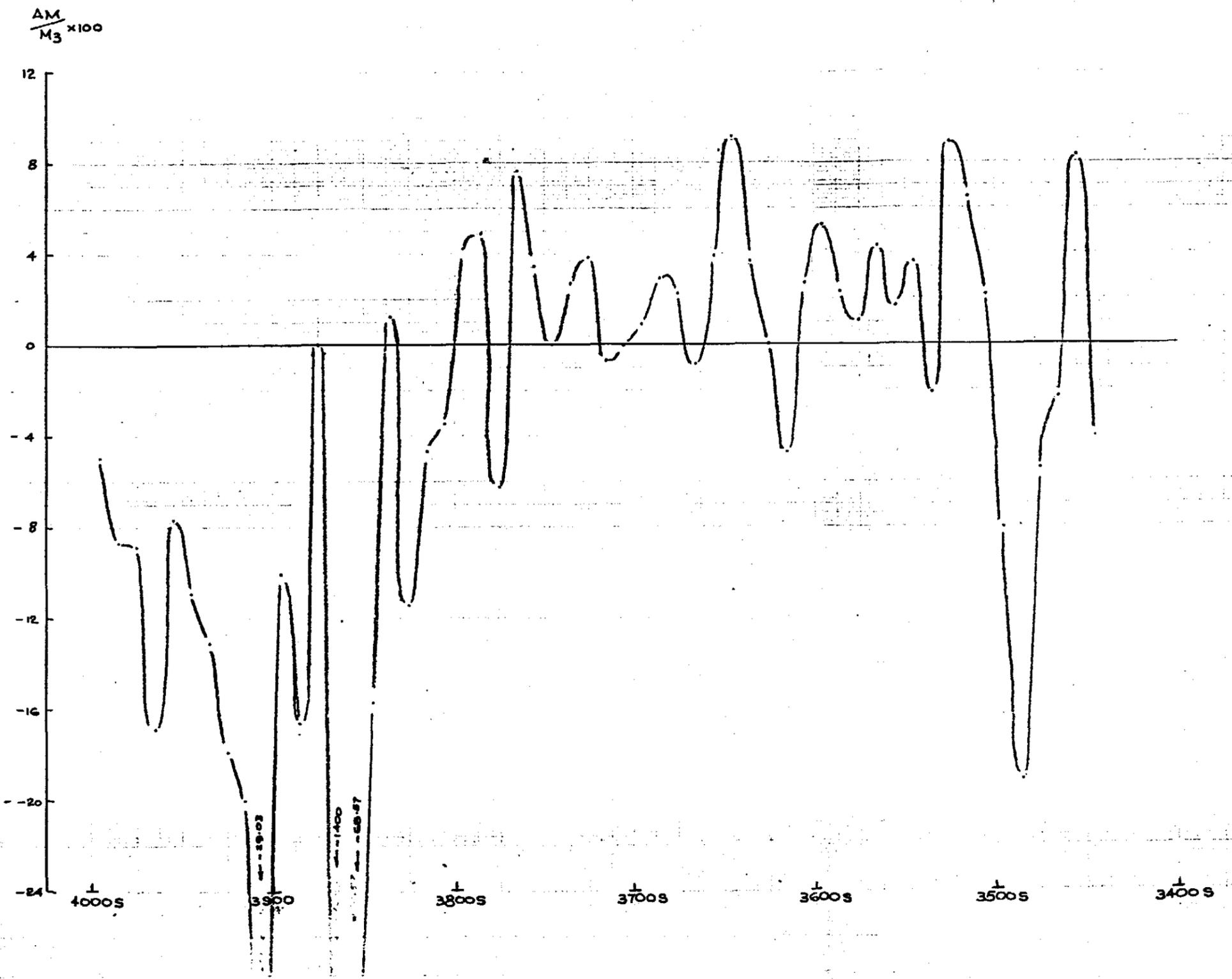
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LINE 21800E

East Cethana - $\frac{\Delta M}{M_3} \times 100$

TAS-045

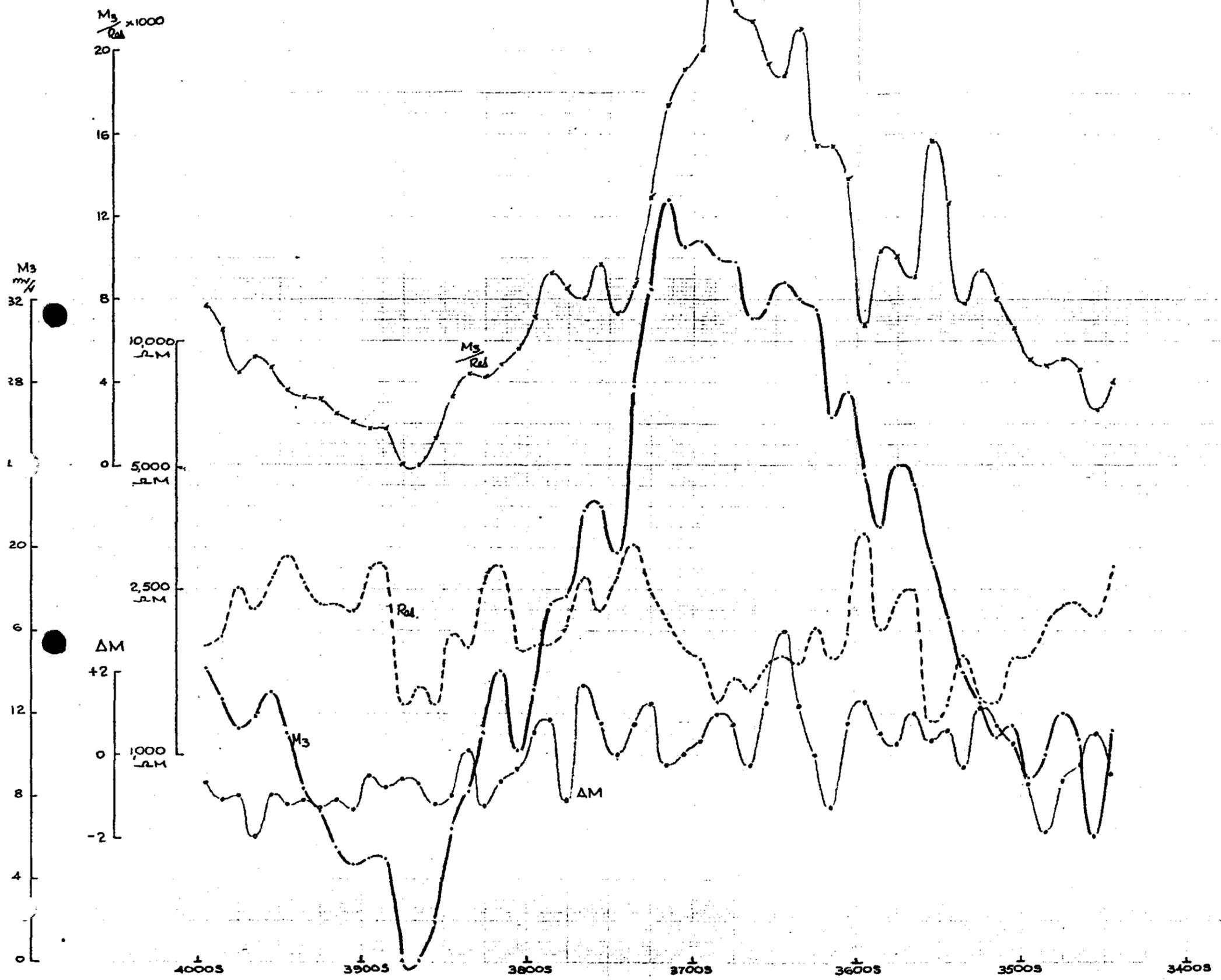


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LINE 21800 E
East Cethana - gradient array EIP
TAS-045



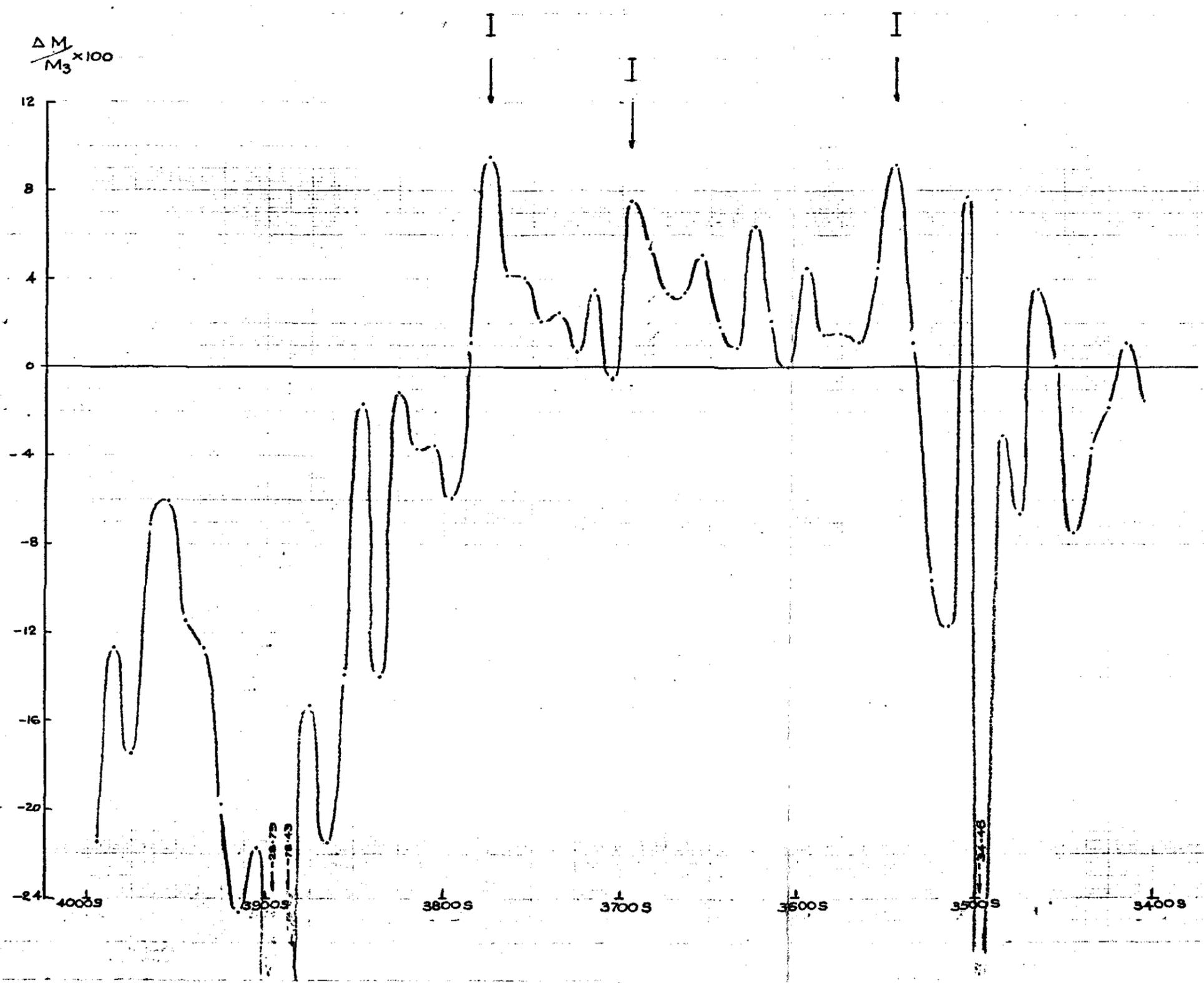
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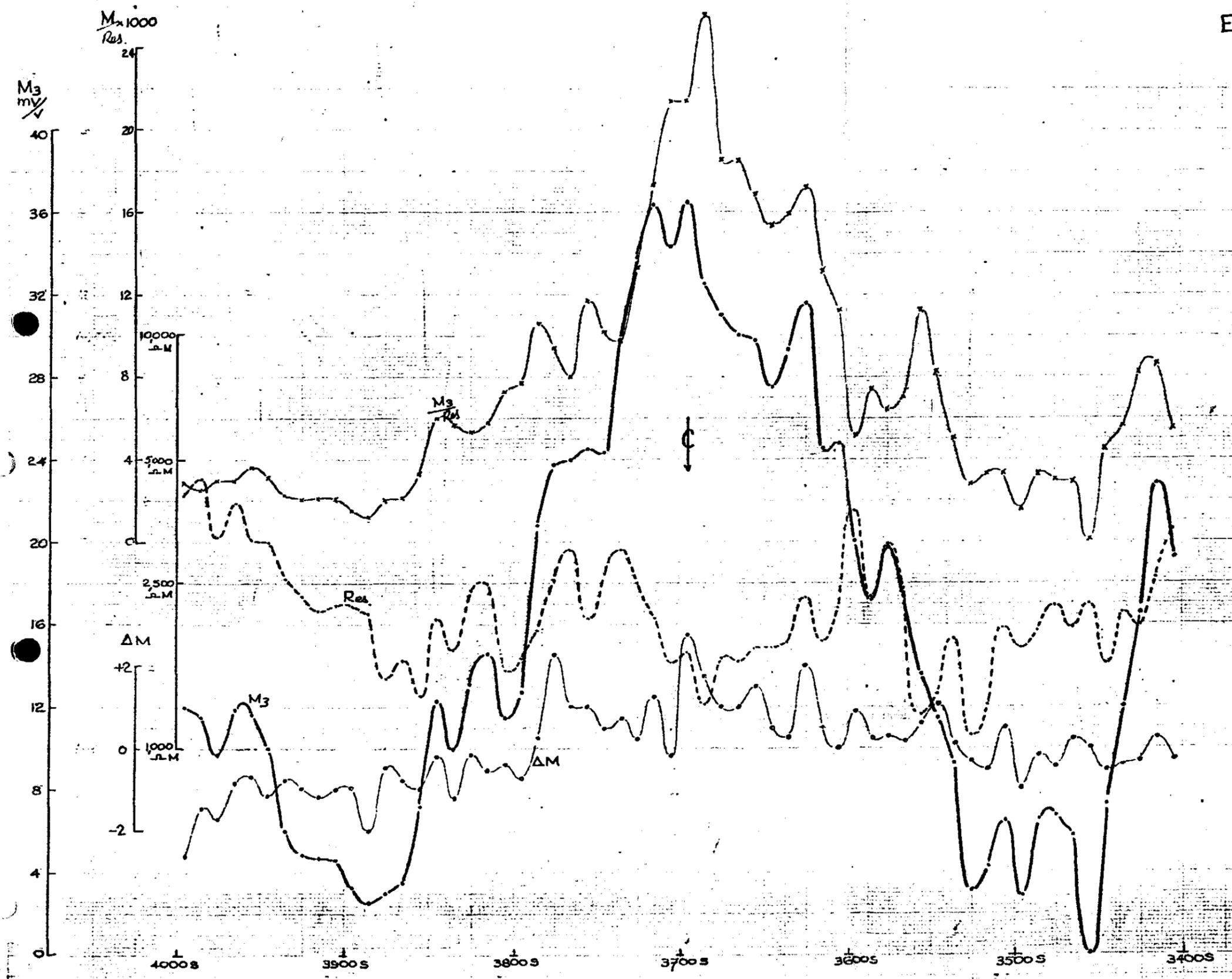
LINE 21800E
East Cethana - $\frac{\Delta M}{M_3} \times 100$

TAS-045



LINE 21800E
East Cethana - gradient array EIP

TAS r-045



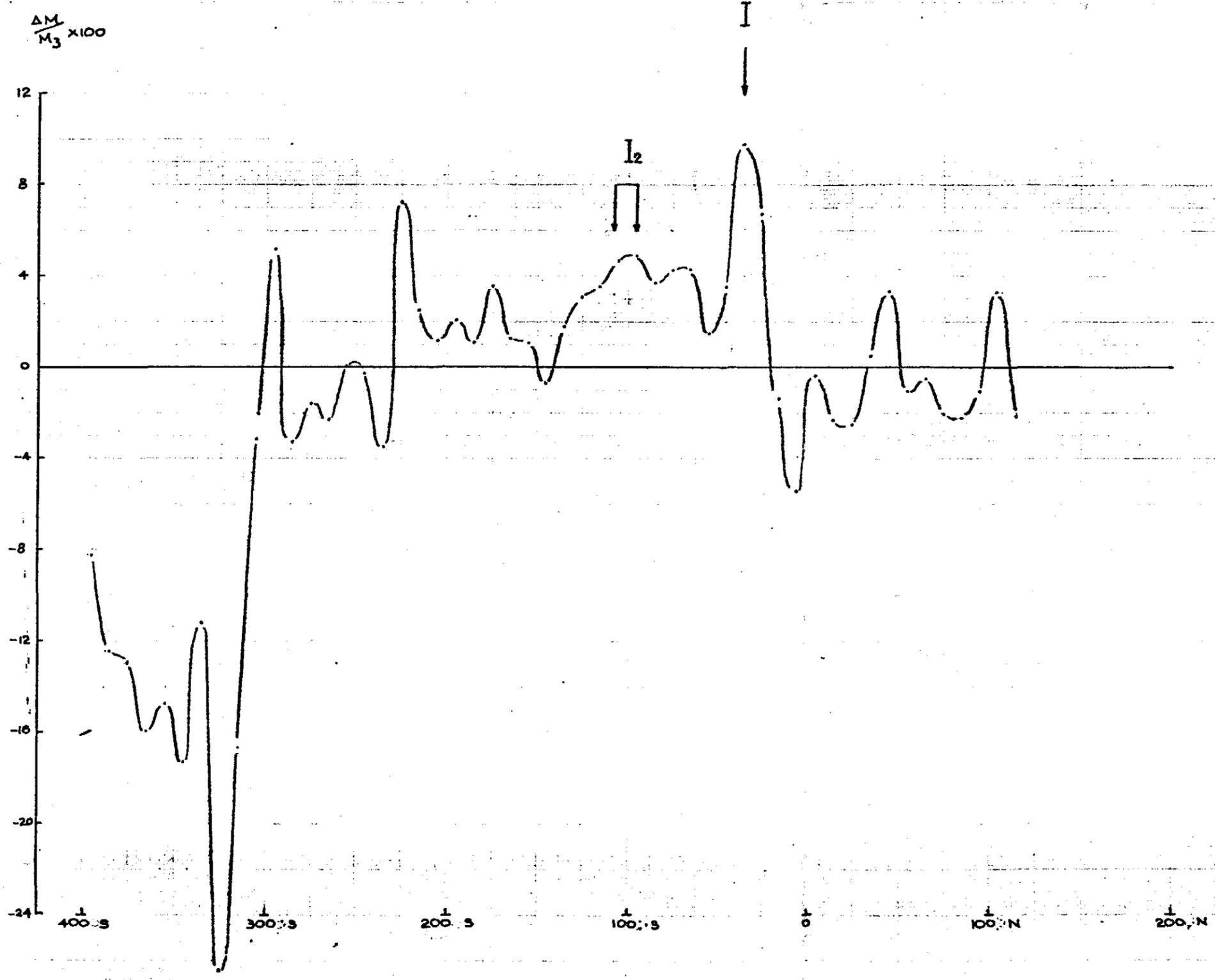
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East Cethana - $\frac{\Delta M}{M_3} \times 100$
TAS-045

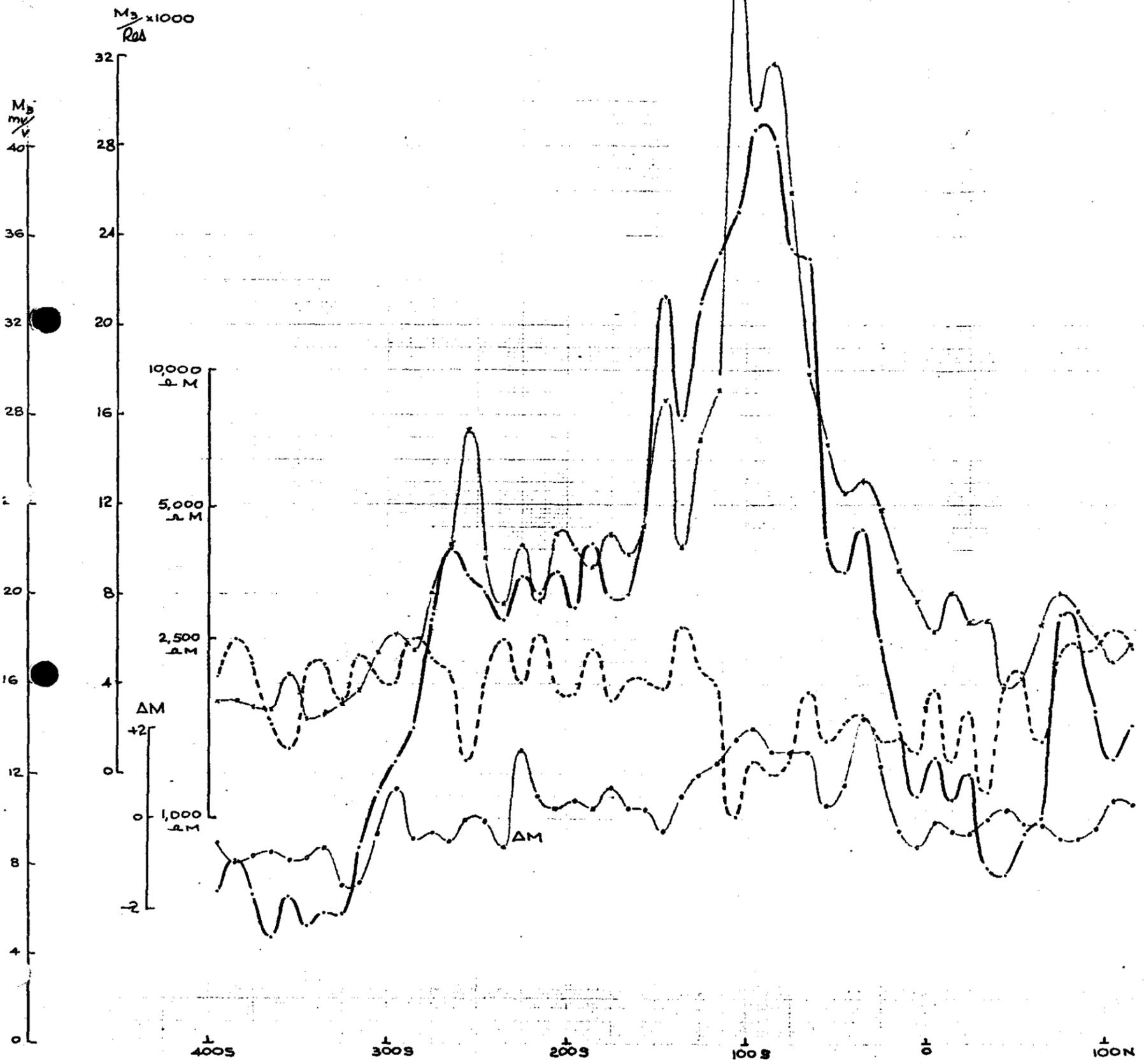


057

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LINE 21900 E
East Cethana - gradient array EIP
TAS-O45

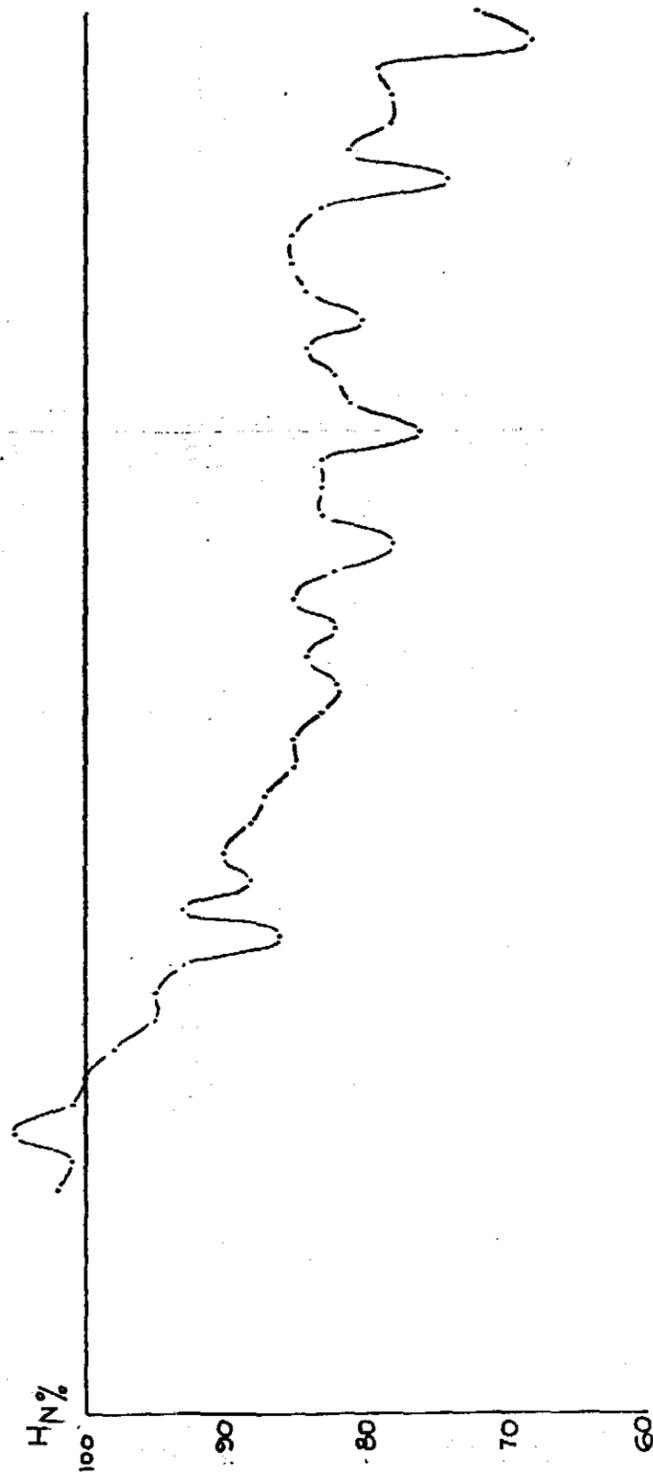


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LINE 21500E
East Cethana-H_N
TAS-043

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3400S

3500S

3600S

3700S

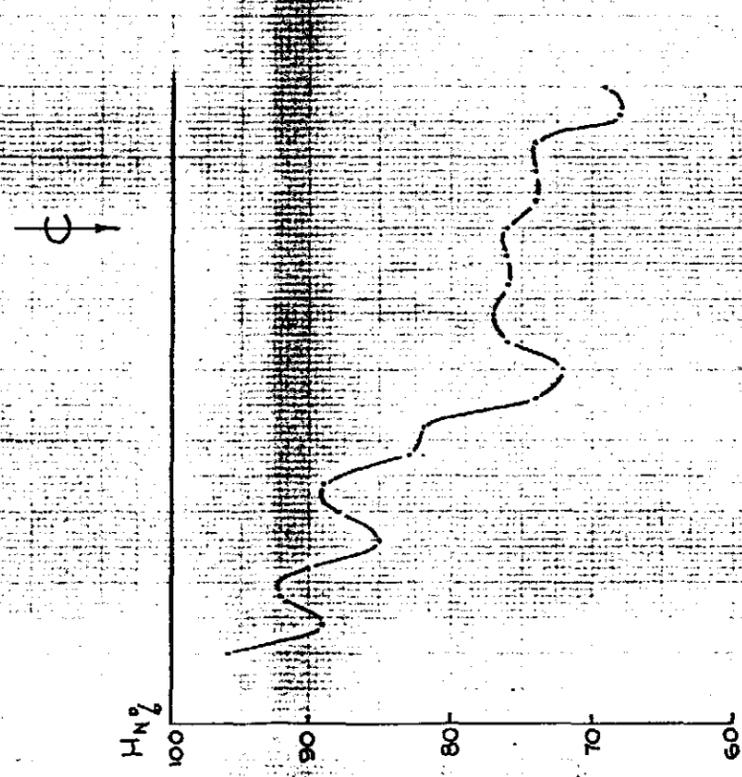
3800S

059

85-2354

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LINE 21400E
East Cethana - H_N
TAS-043



3500 S

3600 S

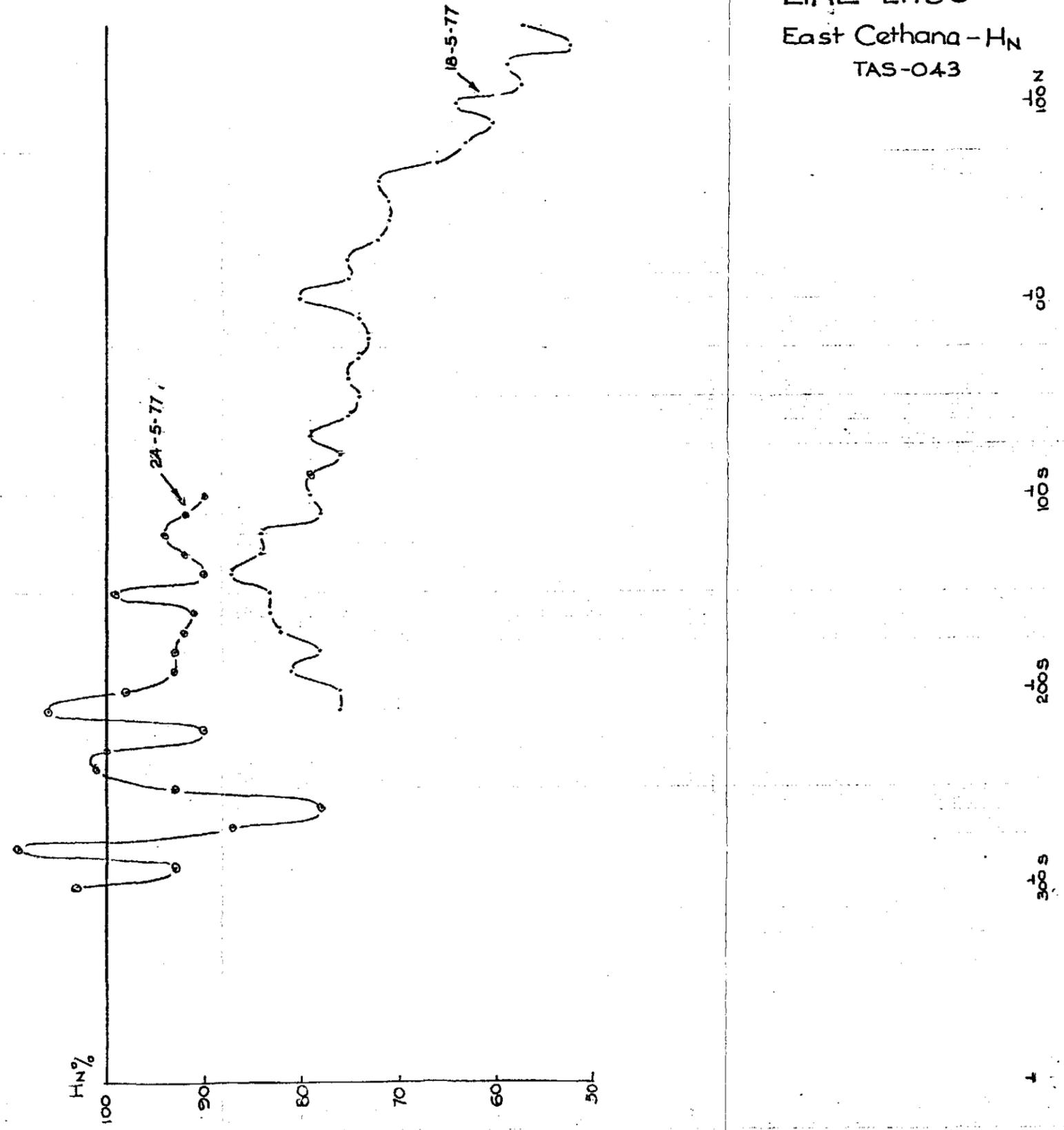
3700 S

LINE 21750E
East Cethana - H_N
TAS-043

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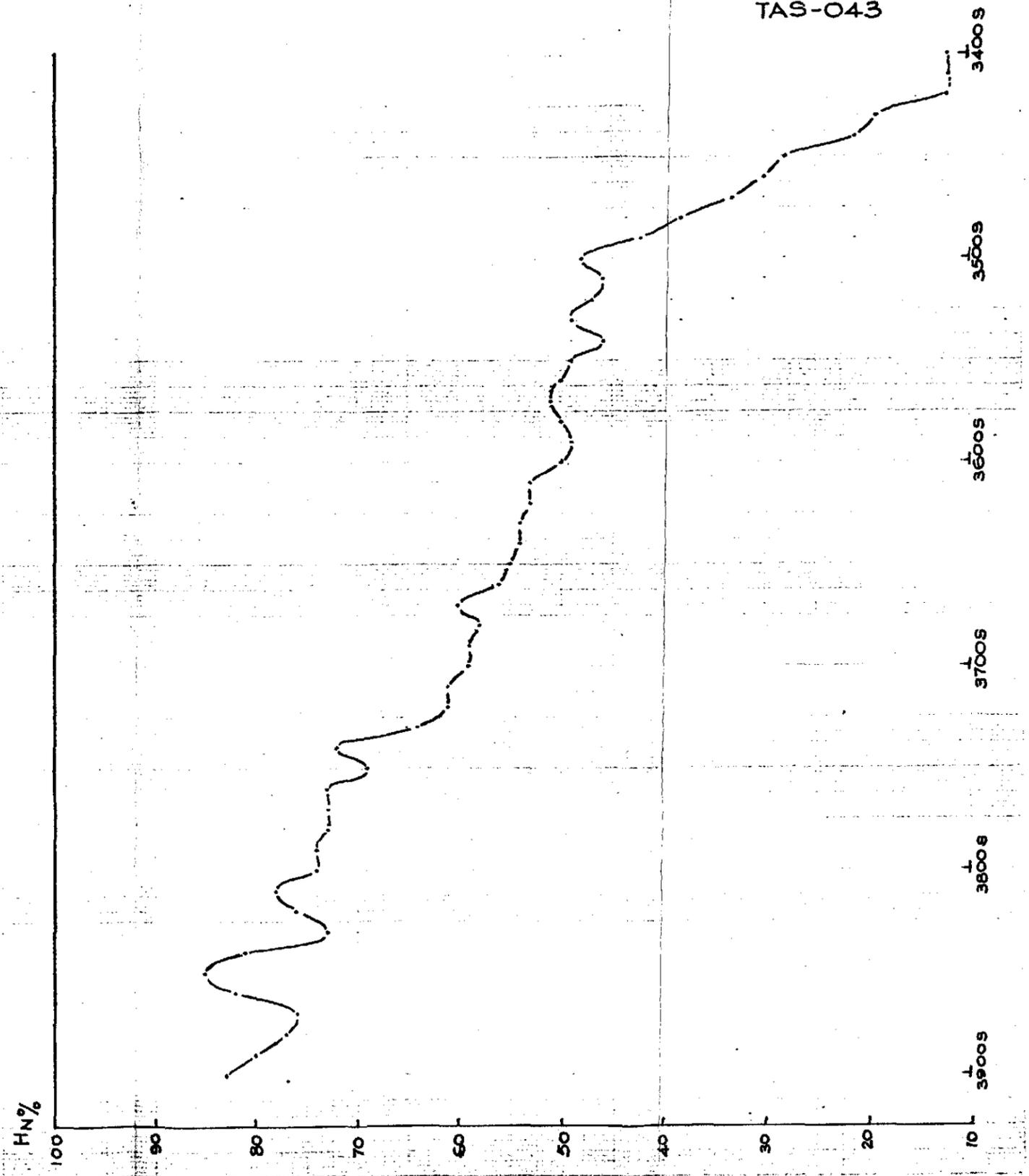
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1000 2000 3000 100 200 300

060

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LINE 21800E
East Cethana - H_N
TAS-043



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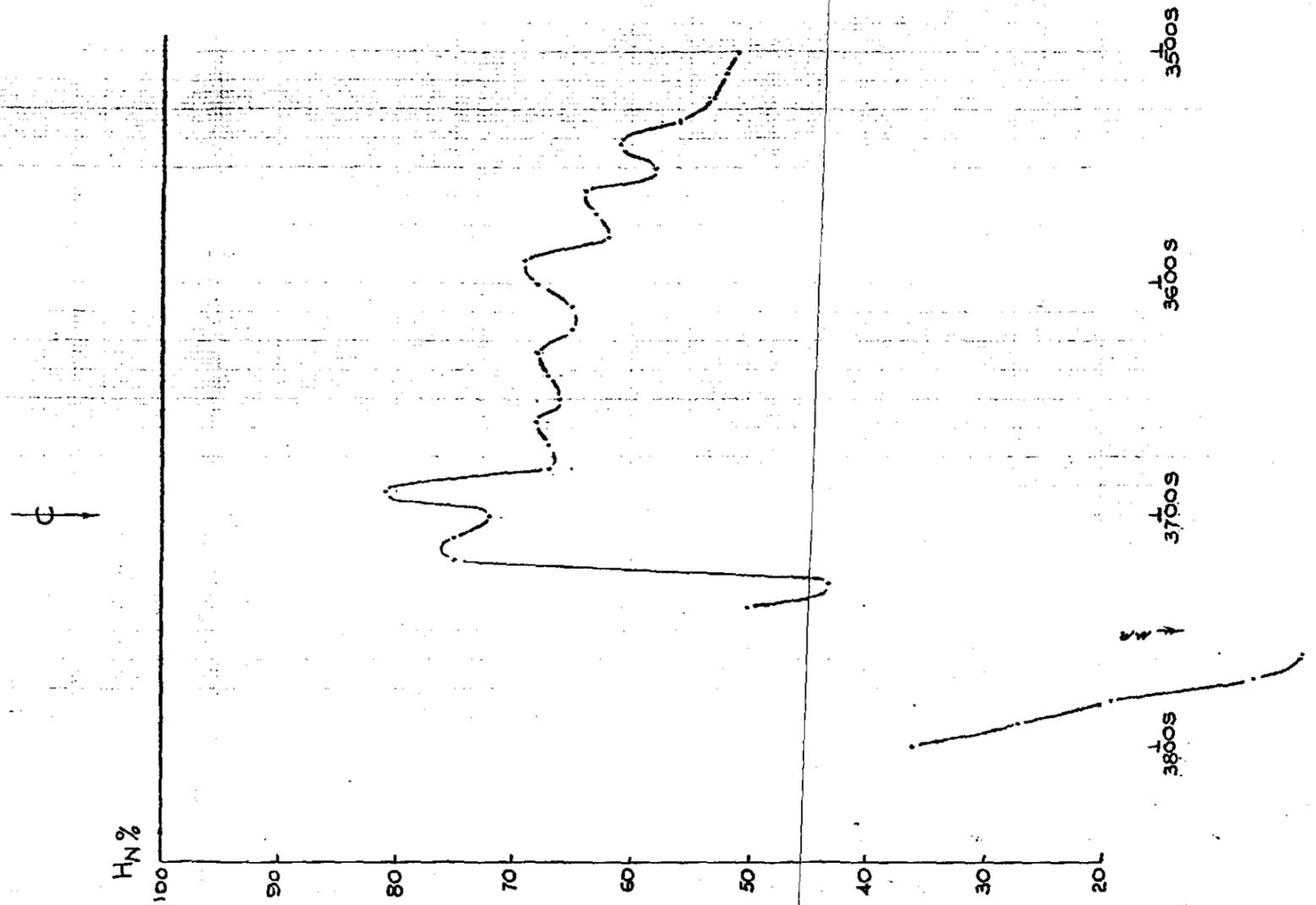
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LINE 22000E
East Cethana - H_N
TAS-043

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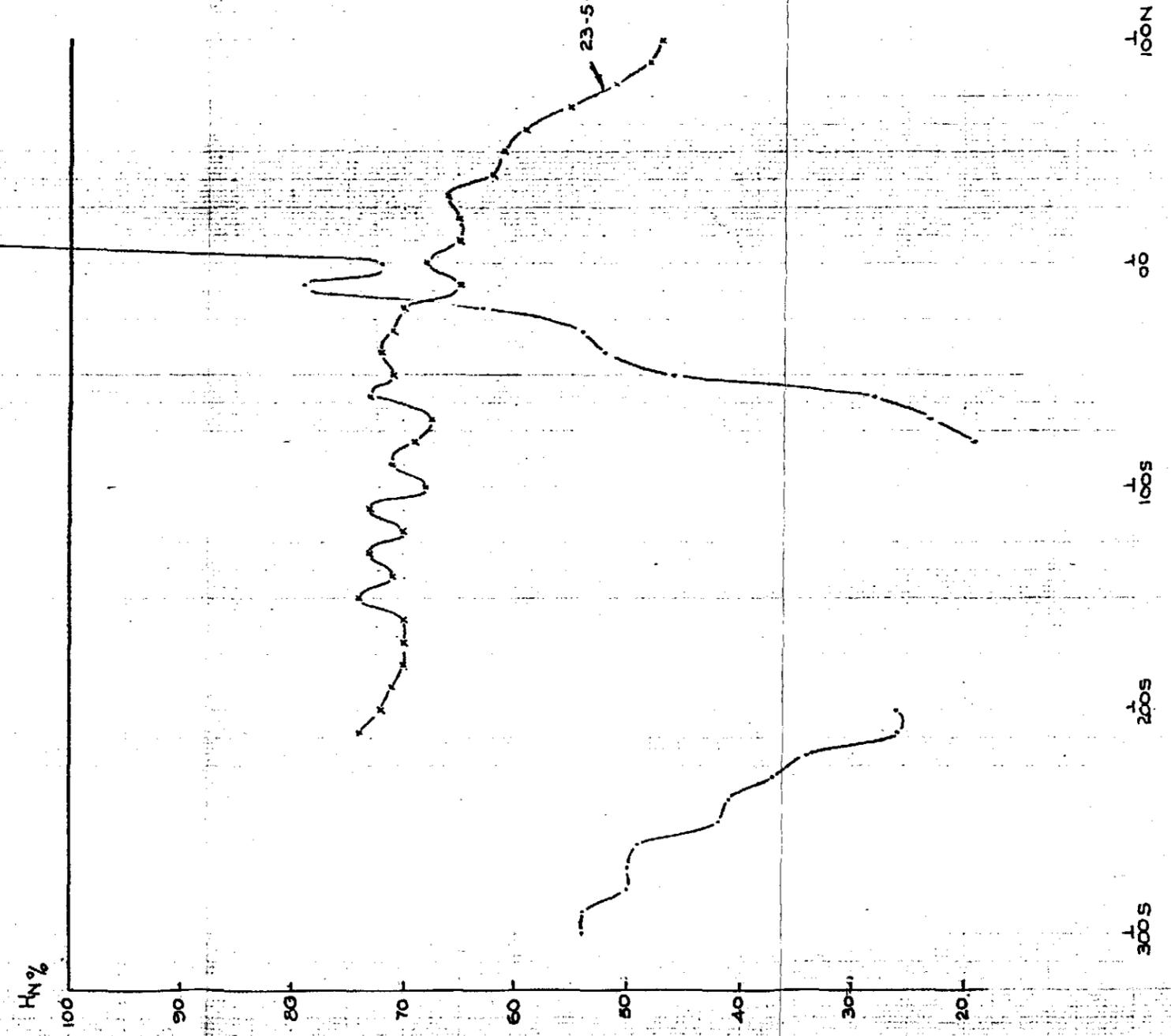
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LINE 21900E
East Cethana - HN
TAS-043

569
479
427
317
253
210

18-5-77 WIRE ON LINE 2200E
(100M OFF LINE 21900E)

23-5-77 WIRE ON LINE 22400E
(APPROX)

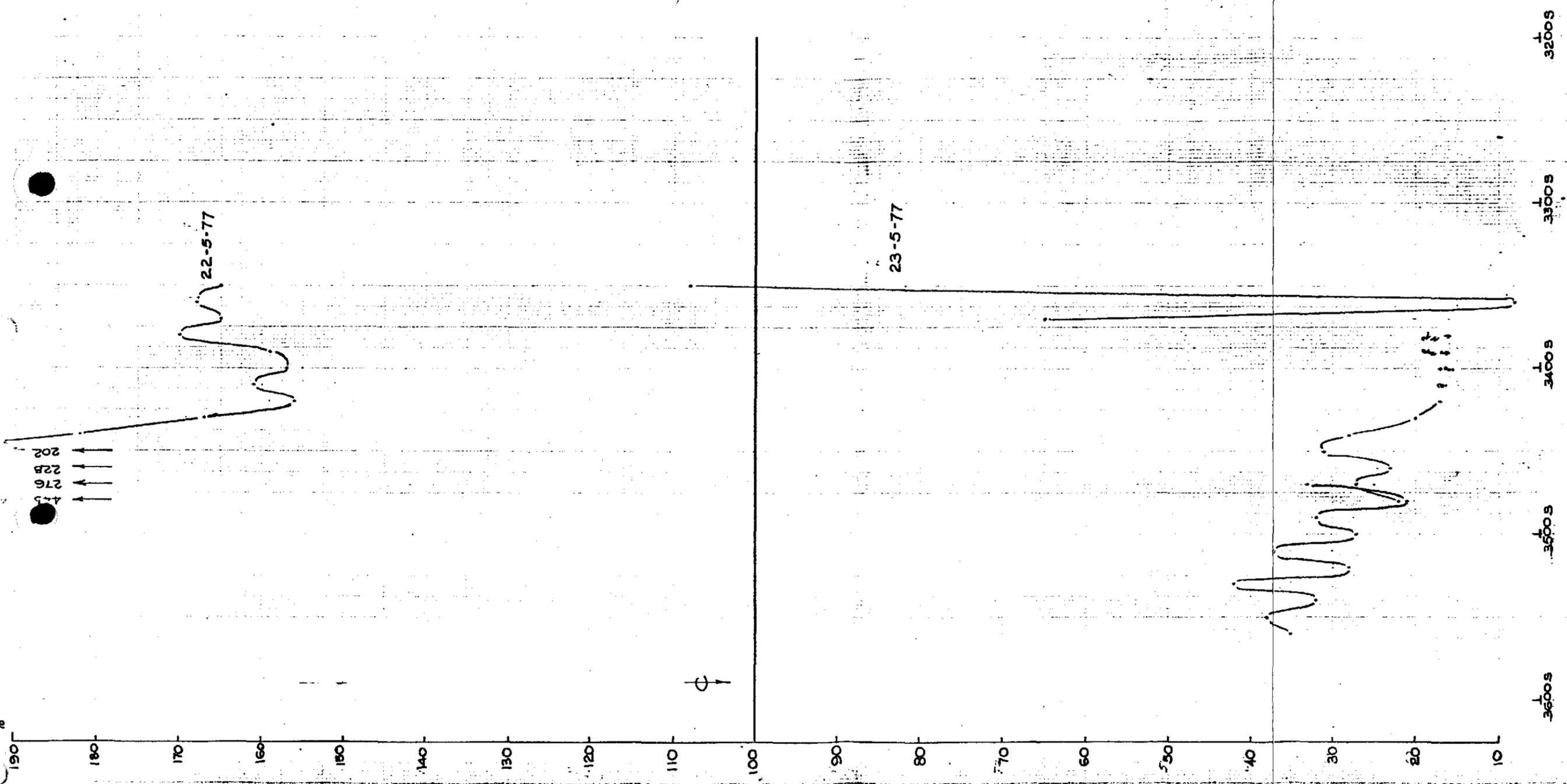


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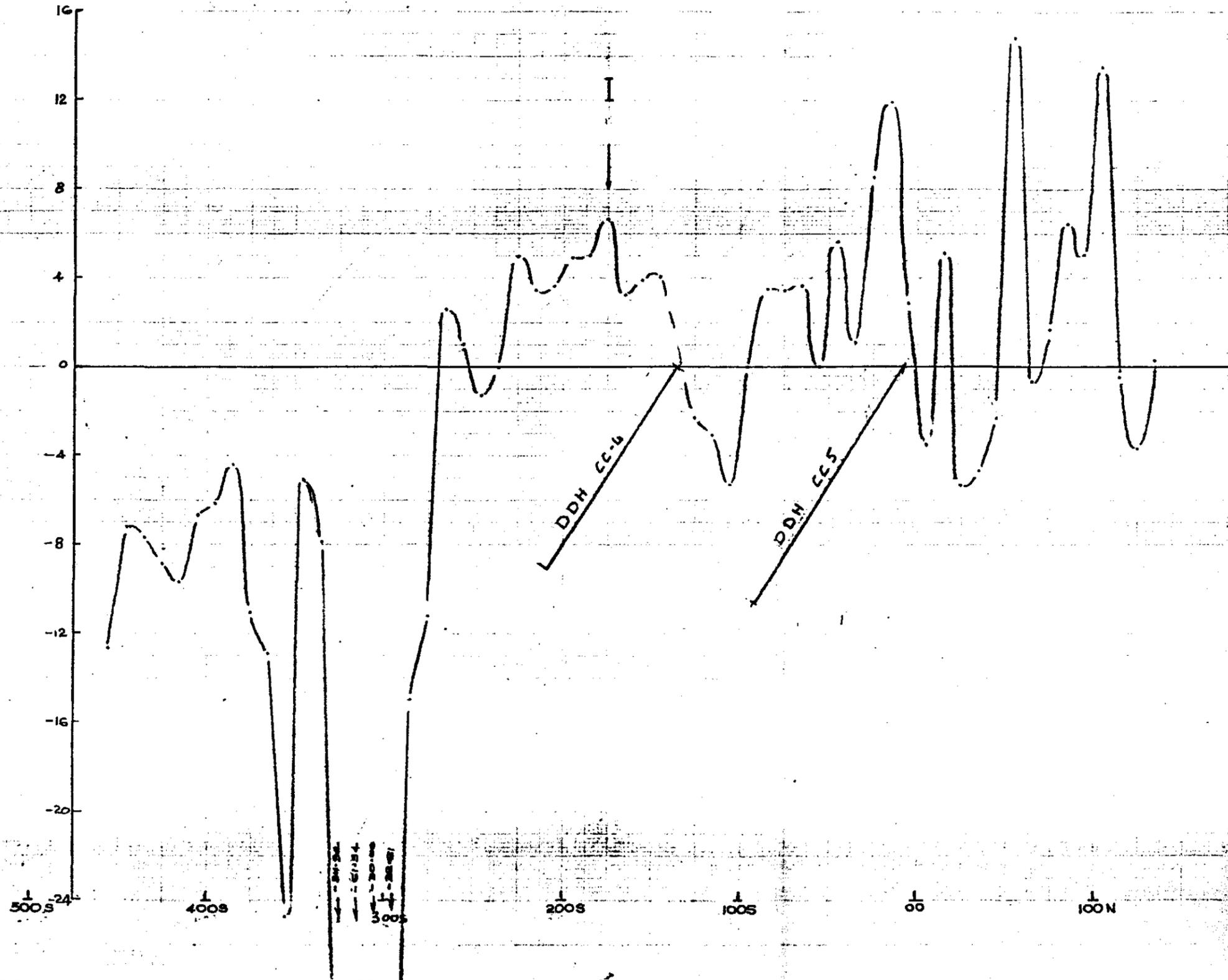
LINE 22200E
East Cethana - H_N
TAS-043

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LINE 21750 E
East Cethana - $\frac{\Delta M}{M_3} \times 100$
TAS-045

$\frac{\Delta M}{M_3} \times 100$



066

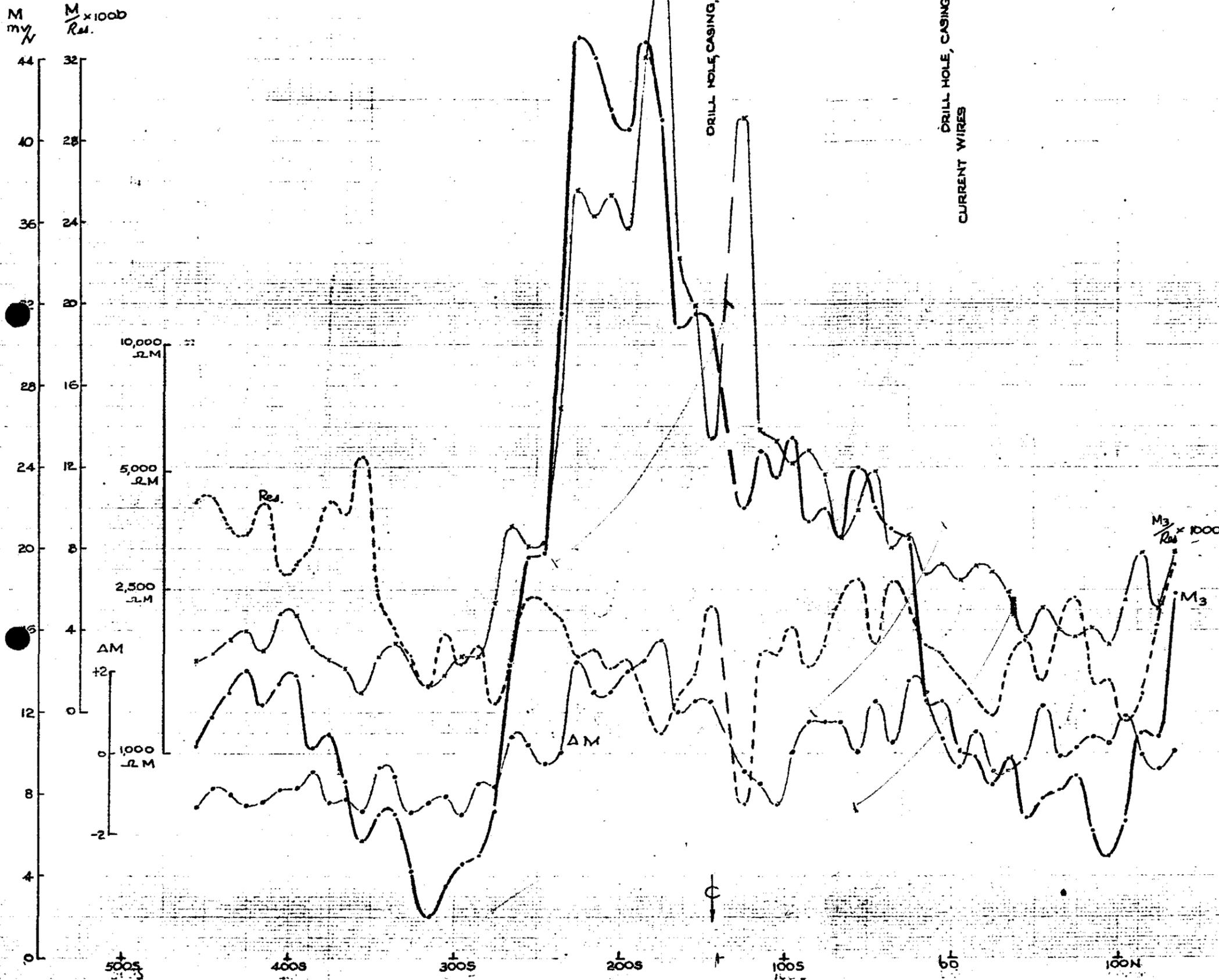
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LINE 21750 E

East Cethana - gradient array EIP

TAS-O45



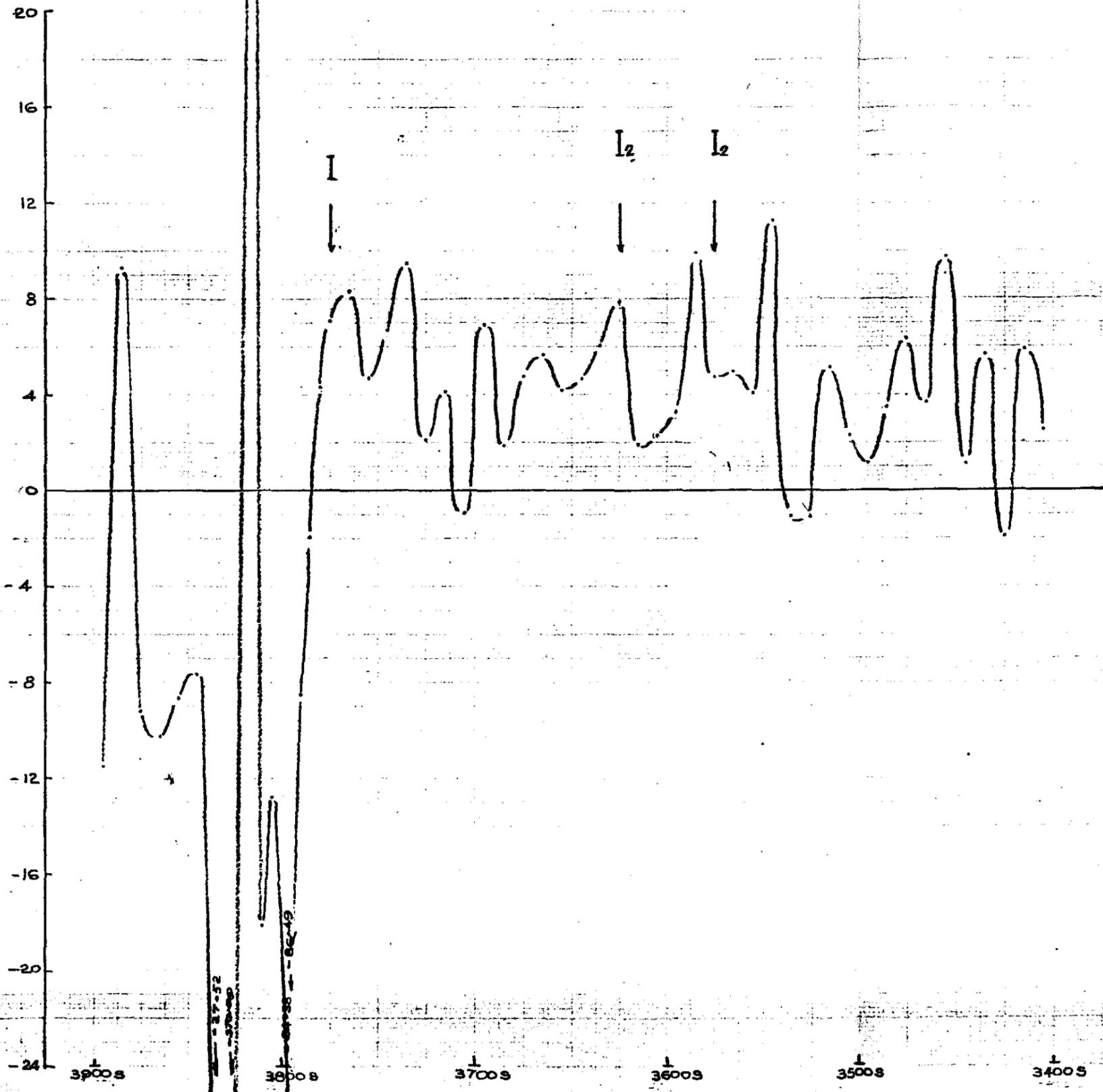
067

85-2354

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LINE 21600E
East Cethana - $\frac{\Delta M}{M_3} \times 100$
TAS-045

$\frac{\Delta M}{M_3} \times 100$

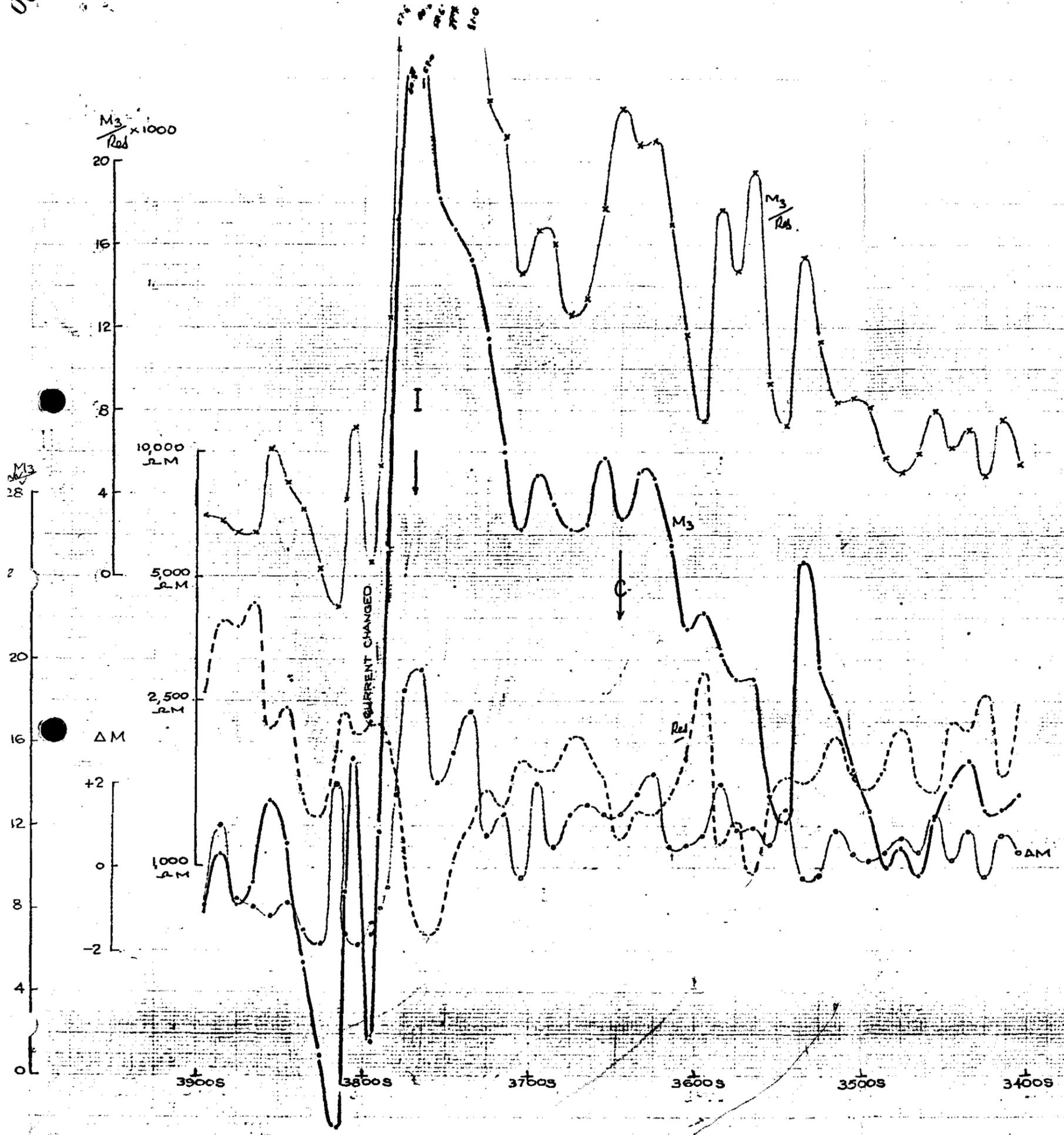


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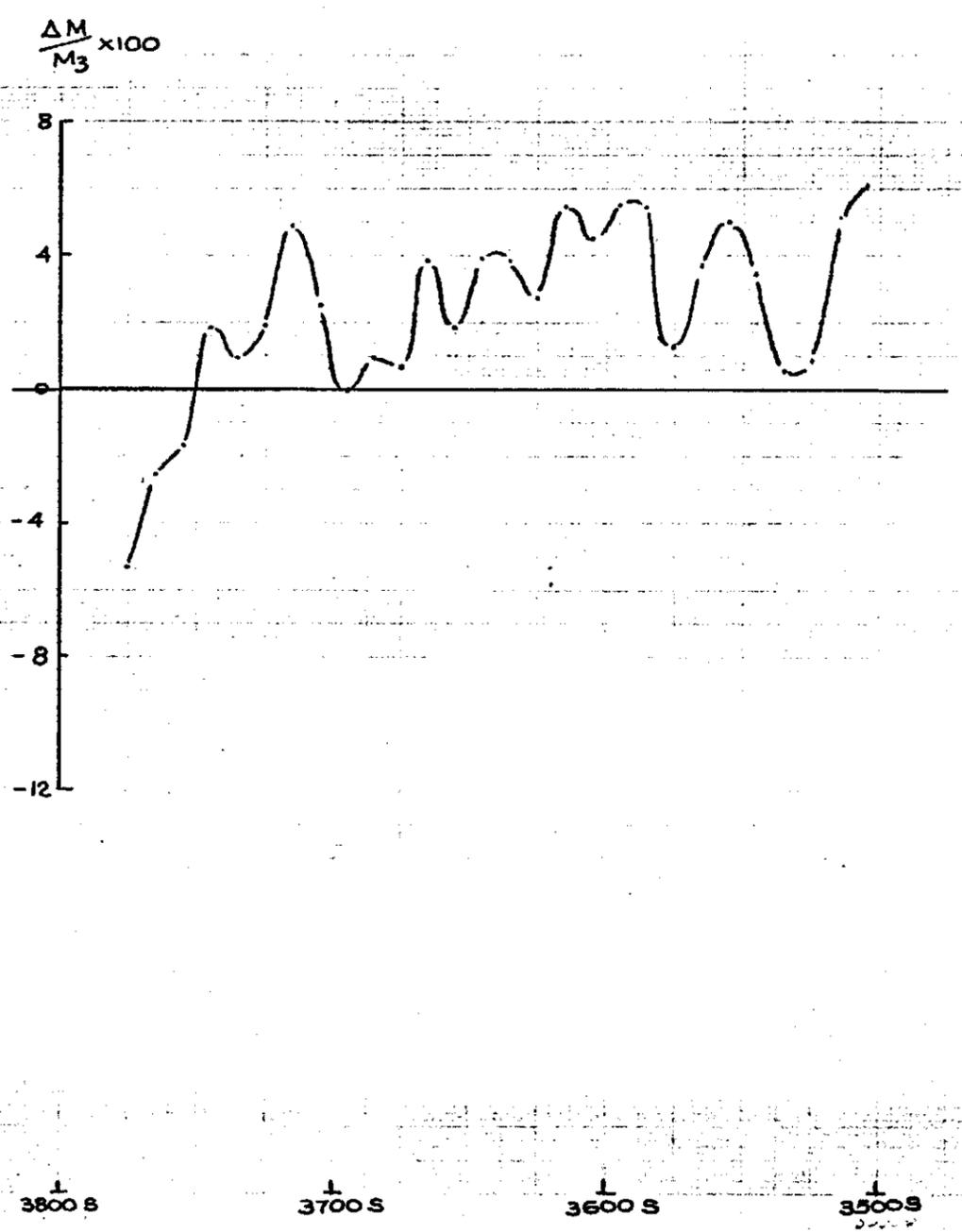
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211070

LINE 21600E
East Cethana-gradient array EIF
TAS-045



LINE 21500E
East Cethana - $\frac{\Delta M}{M_3} \times 100$
TAS-045

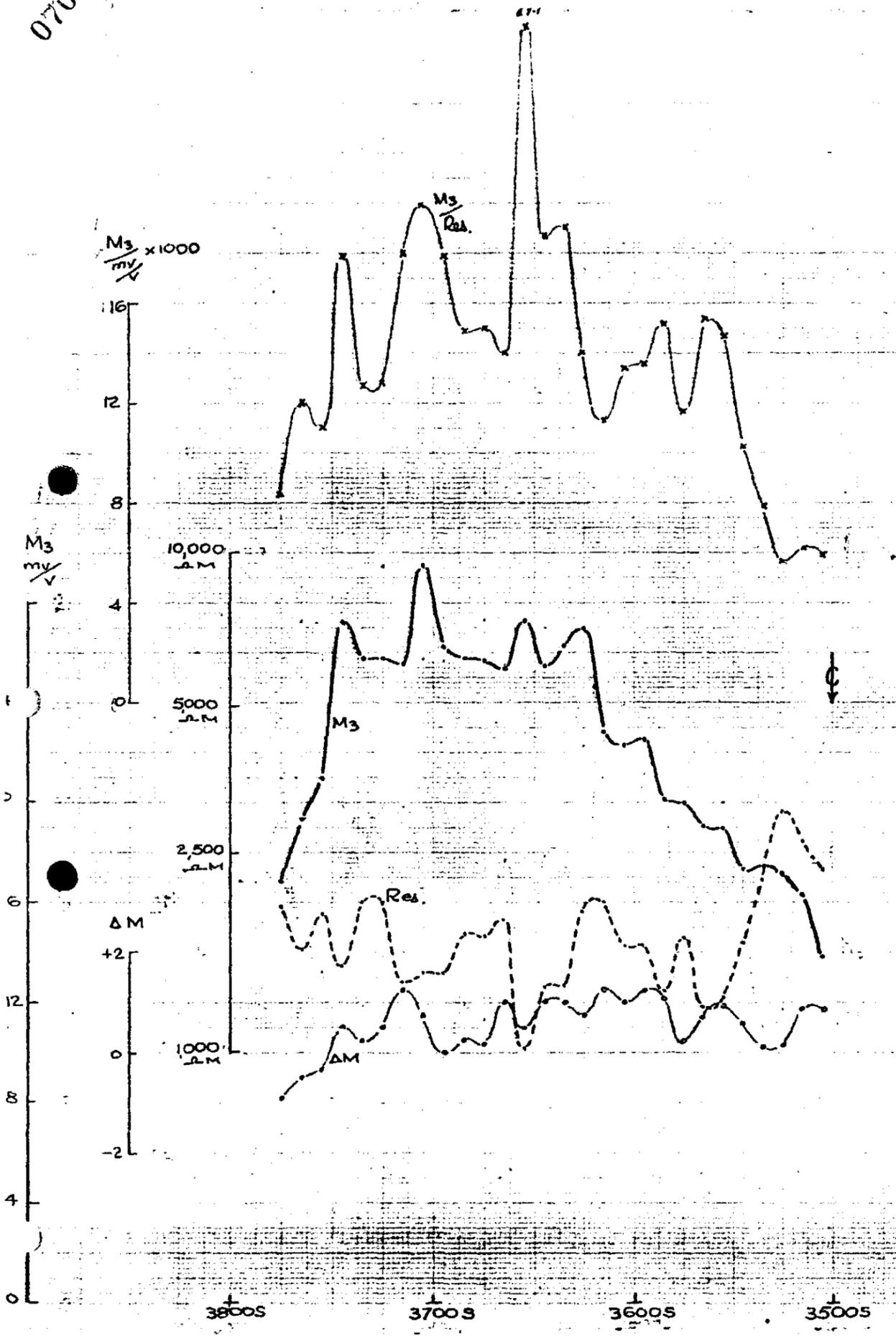


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85-2354

211072

LINE 21500E
East Cethana-gradient array EIP
TAS-045

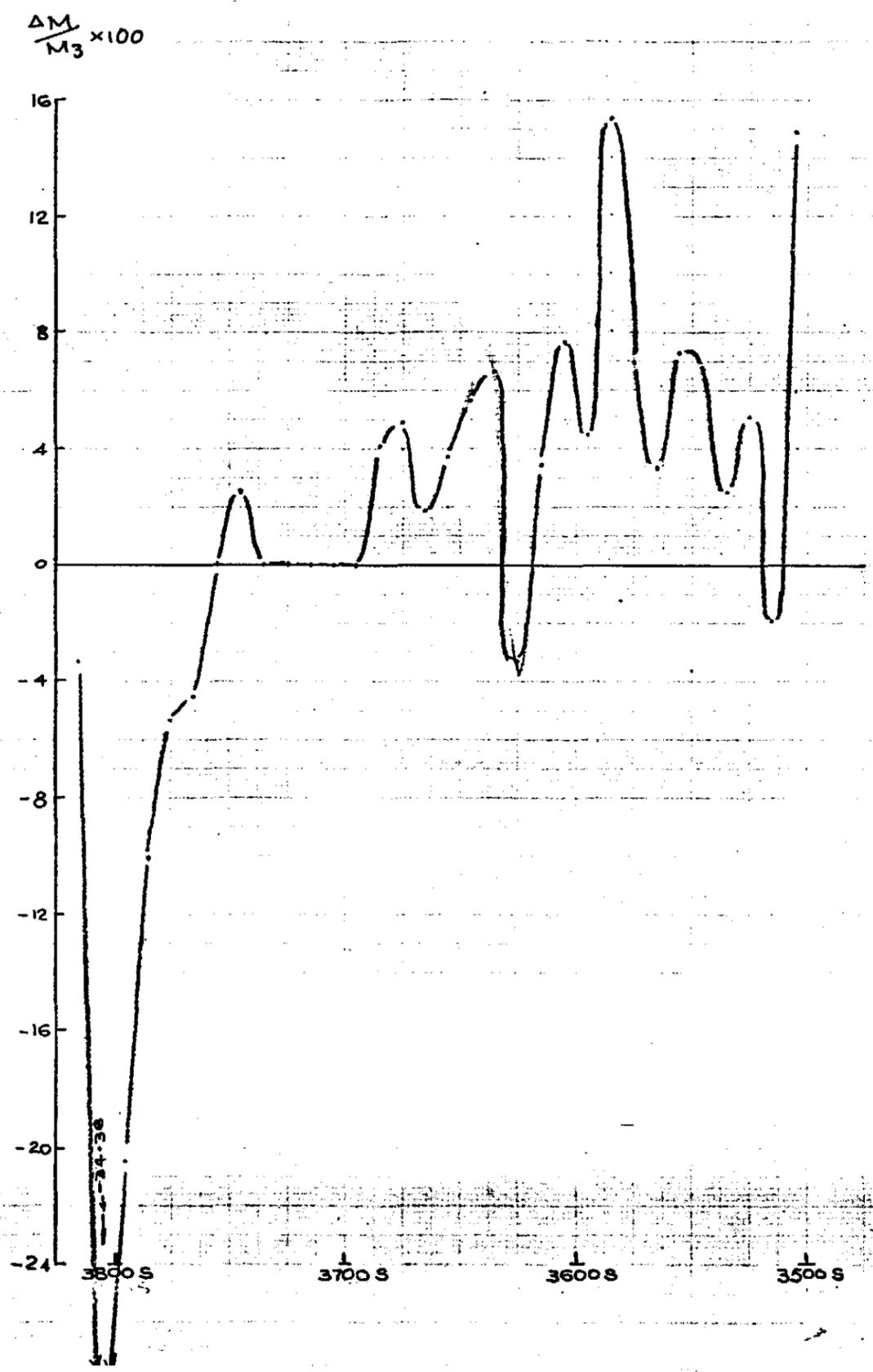


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85-2354

211073

LINE 21500E
East Cethana - $\frac{\Delta M}{M_3} \times 100$
TAS-045

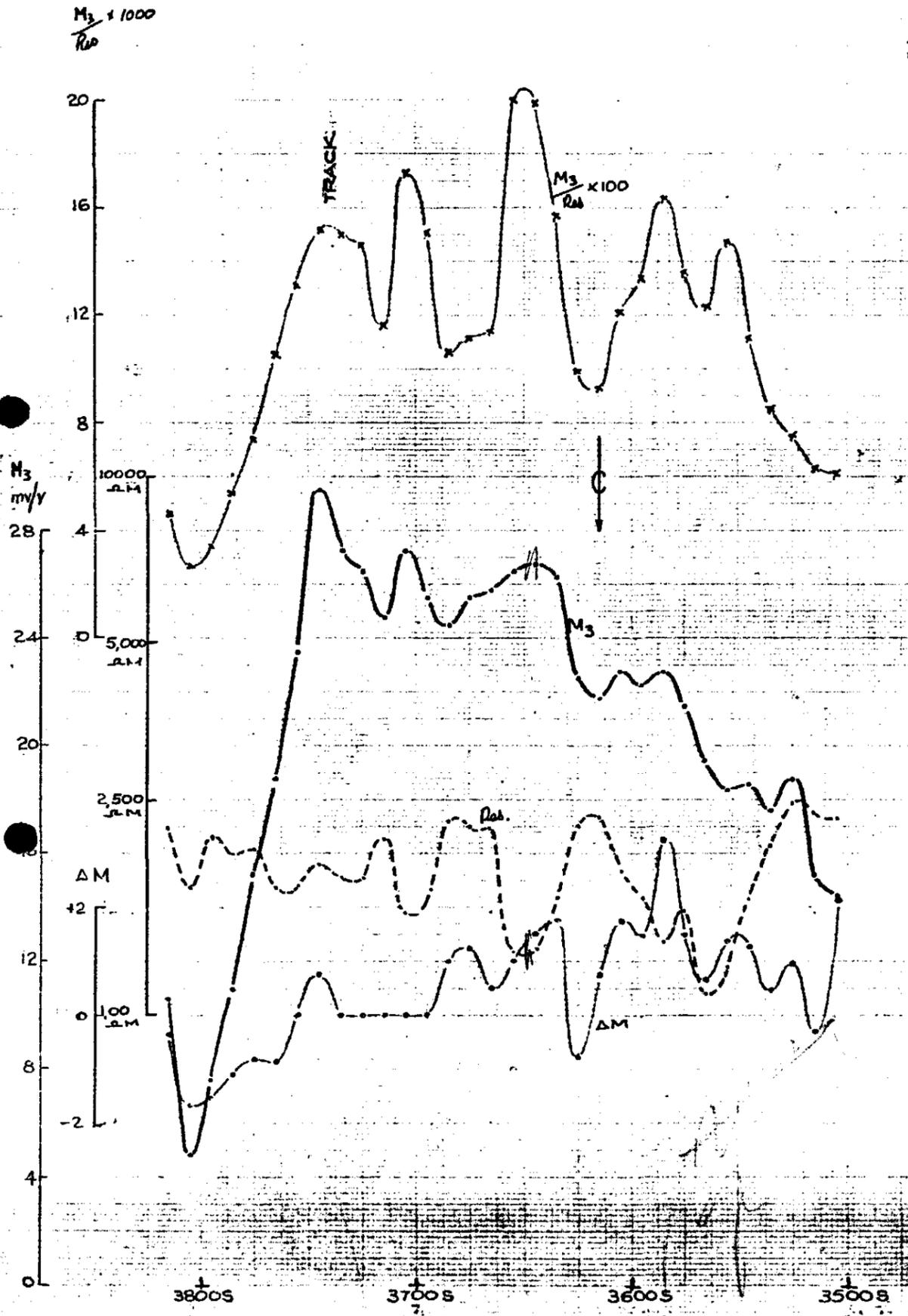


072

85-2354

211074

LINE 21500E
East Cethana - gradient array EIP
TAS-045



073

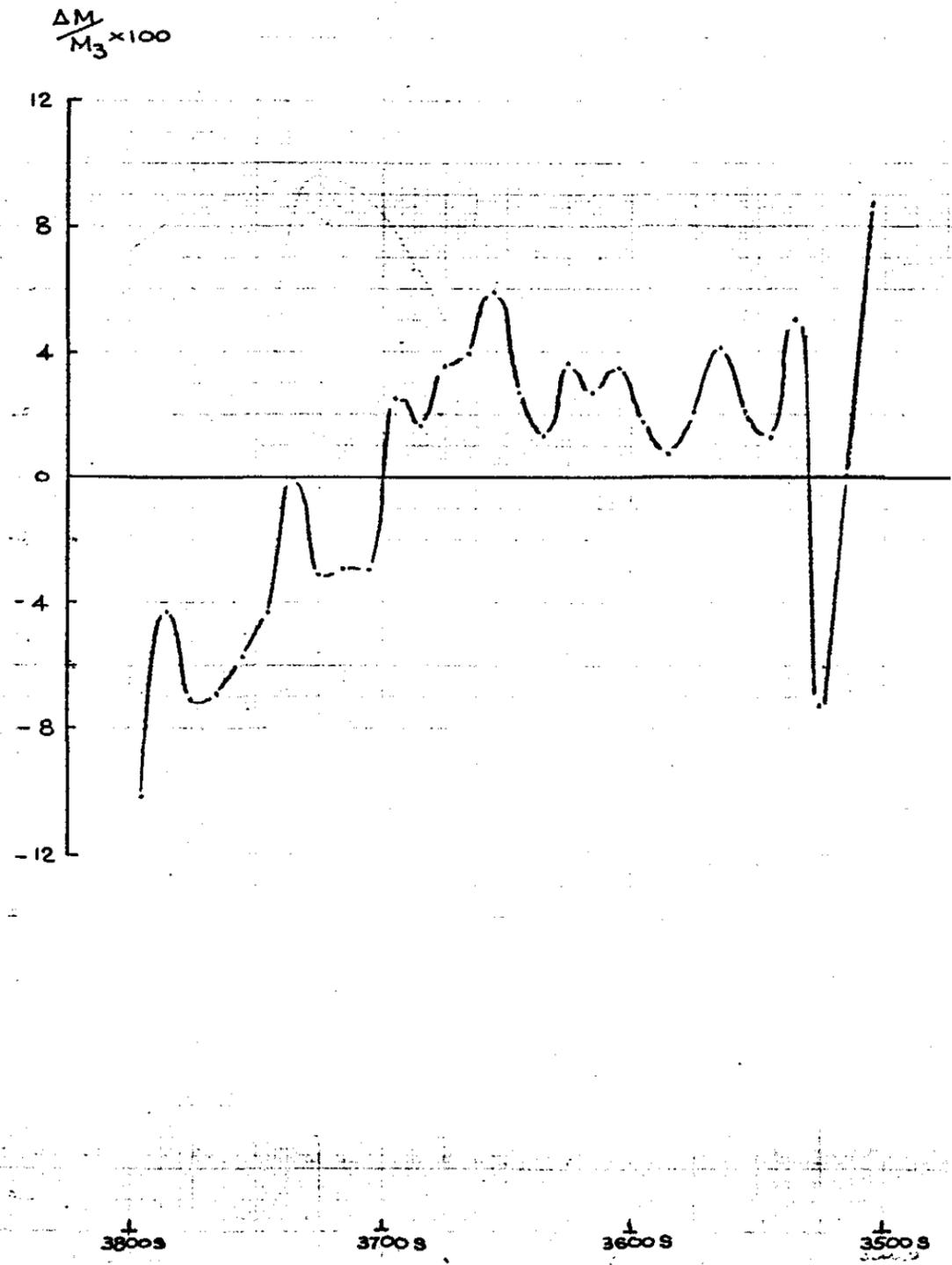
85-2354

211075

LINE 21450 E

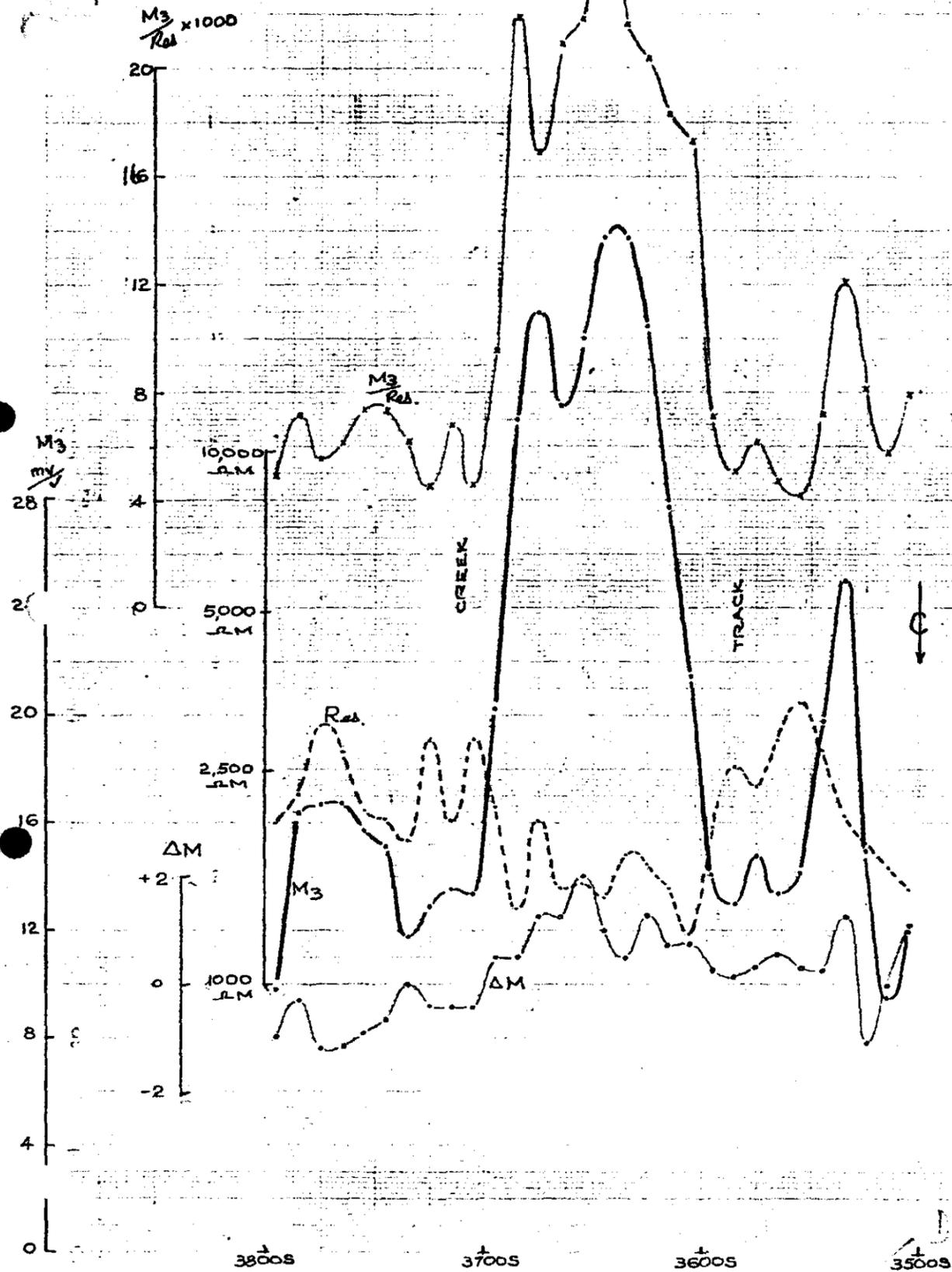
East Cethana - $\frac{\Delta M}{M_3} \times 100$

TAS-045



074

LINE 21450 E
East Cethona - gradient array E1
TAS-045



075

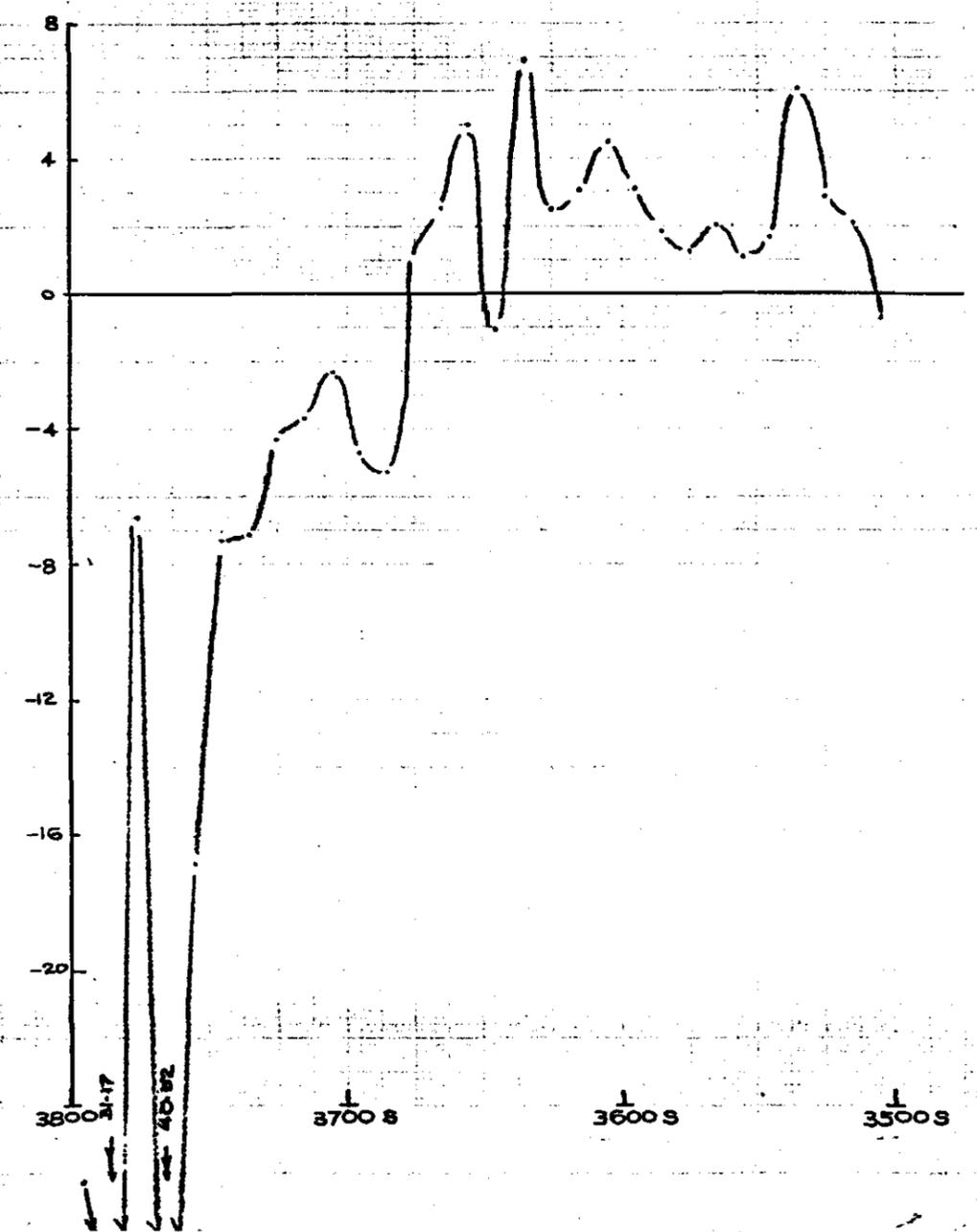
211077

LINE 21400 E

East Cethana - $\frac{\Delta M}{M_3} \times 100$

TAS-045

$\frac{\Delta M}{M_3} \times 100$



076

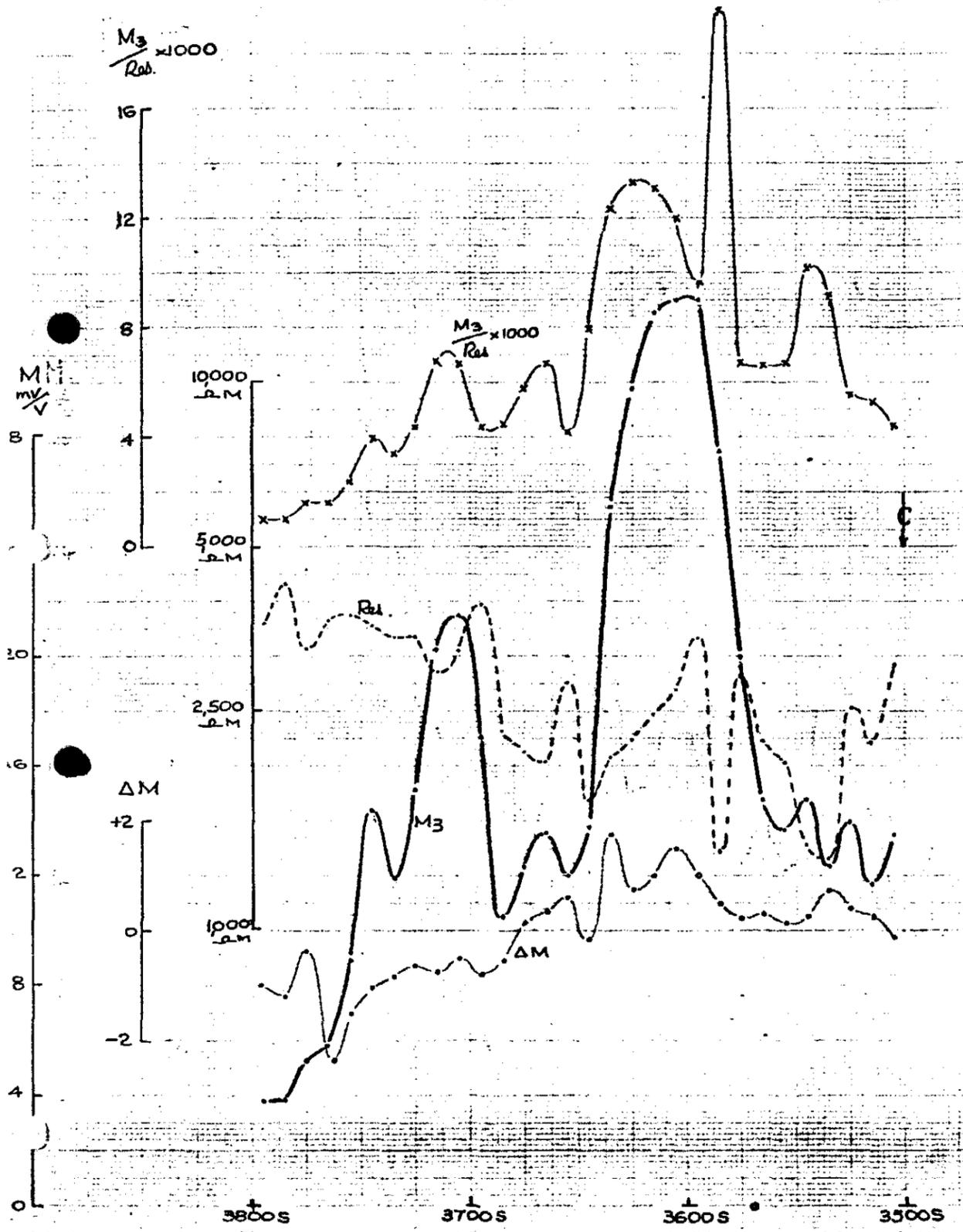
85-2354

211078

LINE 21400E

East Cethana - gradient array EIP

TAS-045

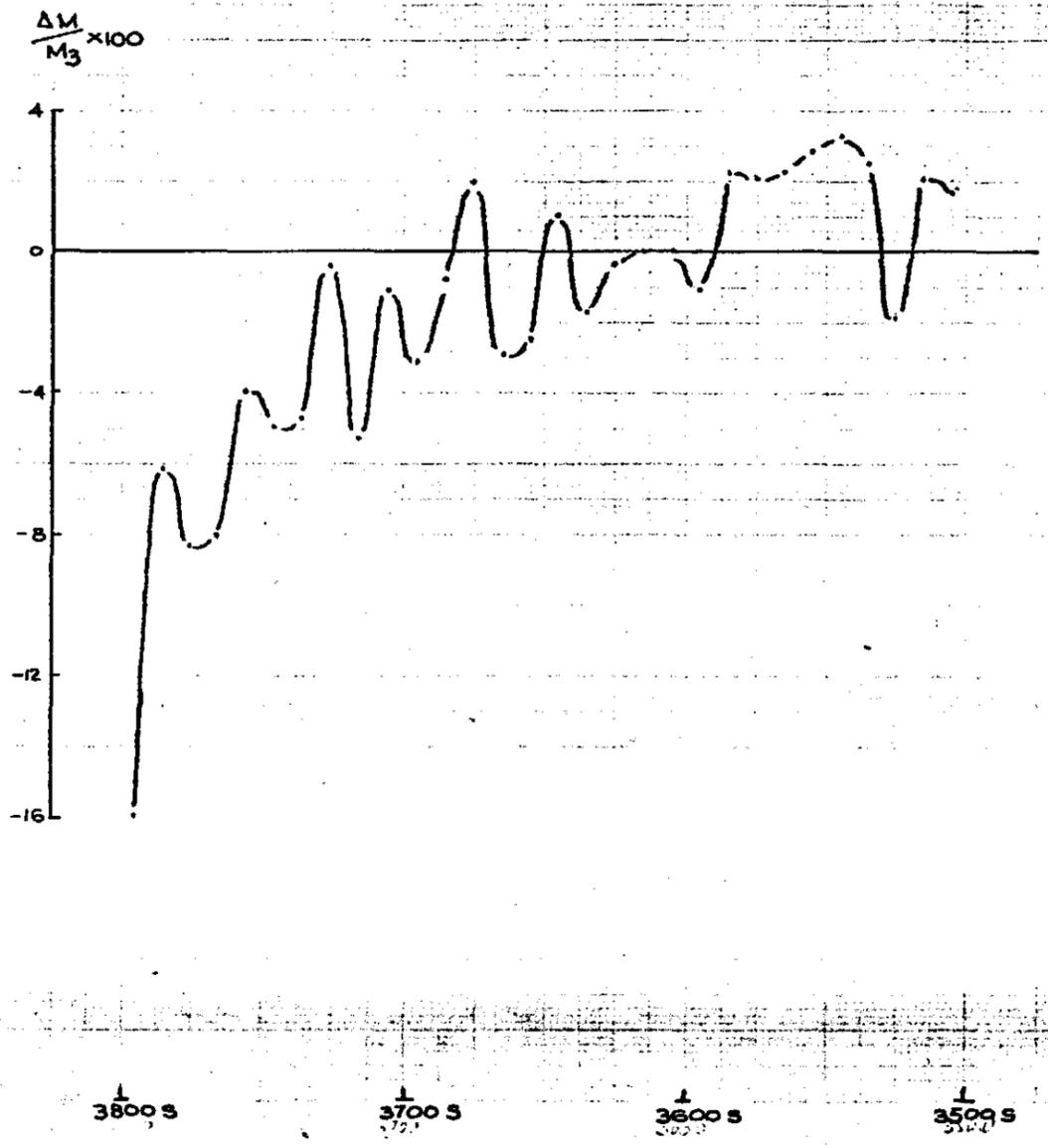


077

85-2354

211079

LINE 21200 E
East Cethana - $\frac{\Delta M}{M_3} \times 100$
TAS-045

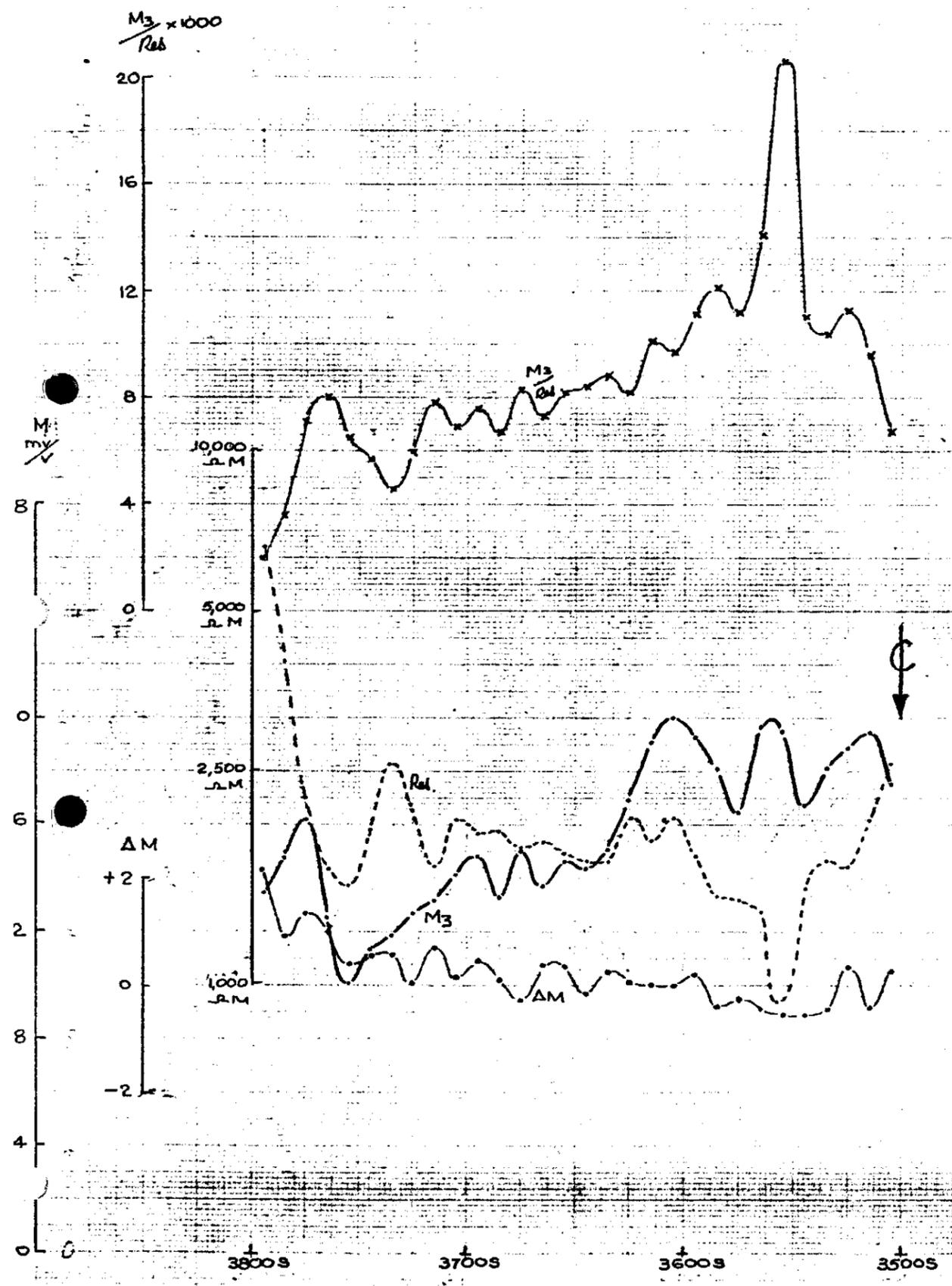


078

85-2354

211080

LINE 21200 E
East Cethana - gradient array EIP
TAS-045

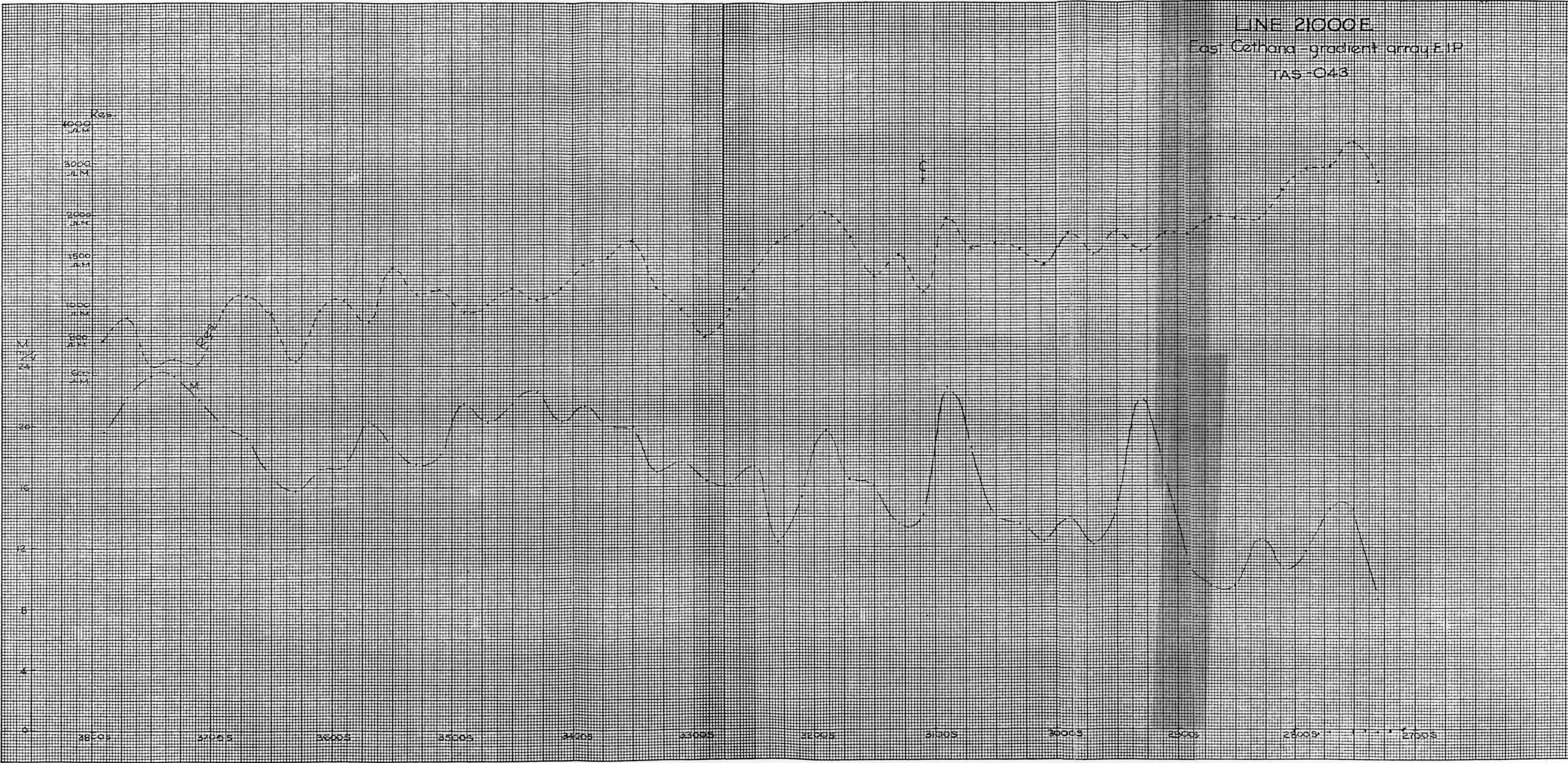


080

211082

85-2354

LINE 21000E
East Cathana - gradient array EIP
TAS-043



K&E 15 1/2 IN. TUBE DIAL METER 47 1517
MADE IN U.S.A.
NEUFFEL & ESSER CO.

211083 85-2354

LINE 20800E
East Cethana - gradient array EP
TAS-043

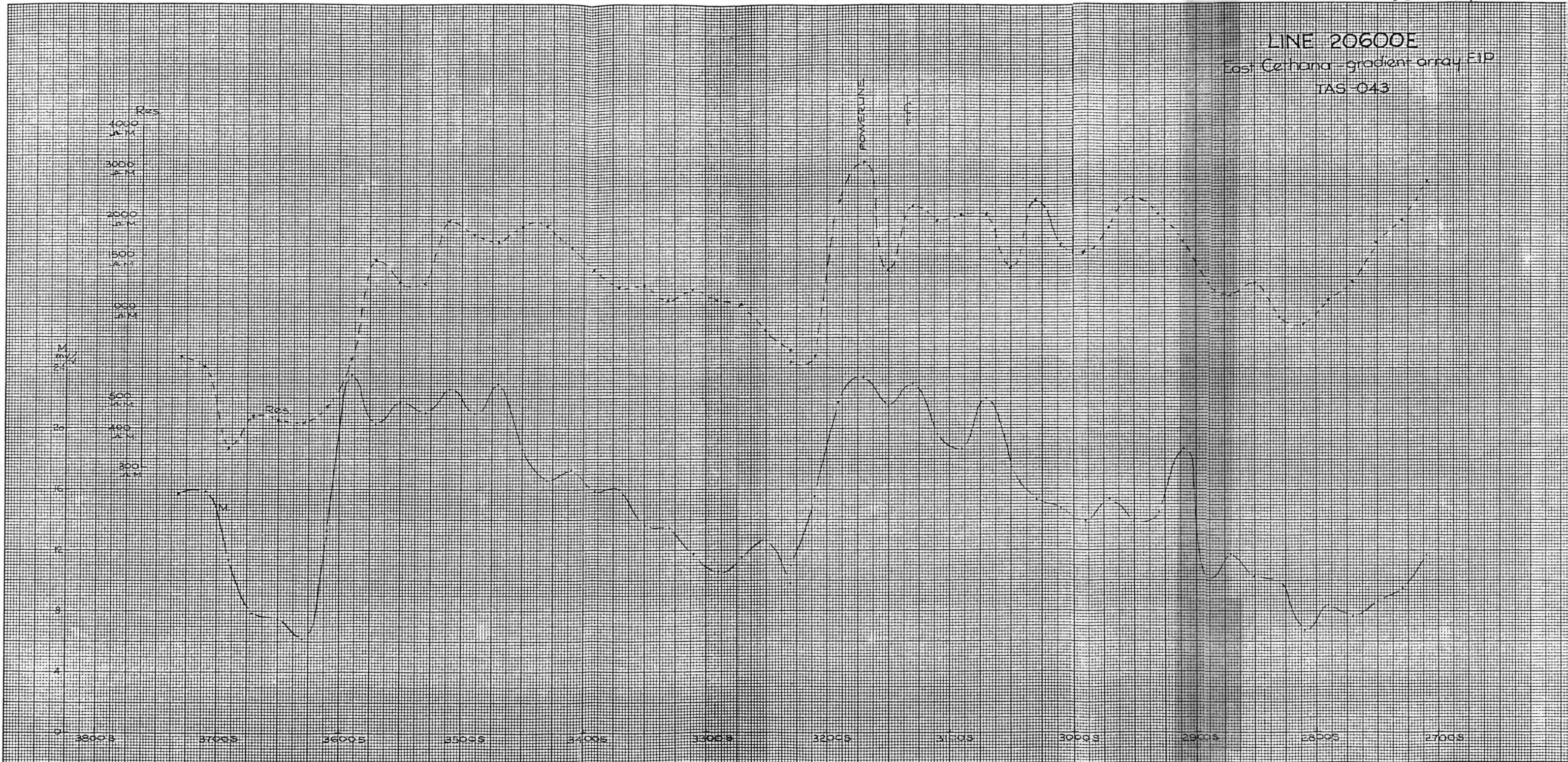


082

211084 85-2354

82

LINE 20600E
East Cethana - gradient array FIP
IAS 043



KEUFFEL & ESSER CO. MADE IN U.S.A.

083

211085 85-2254

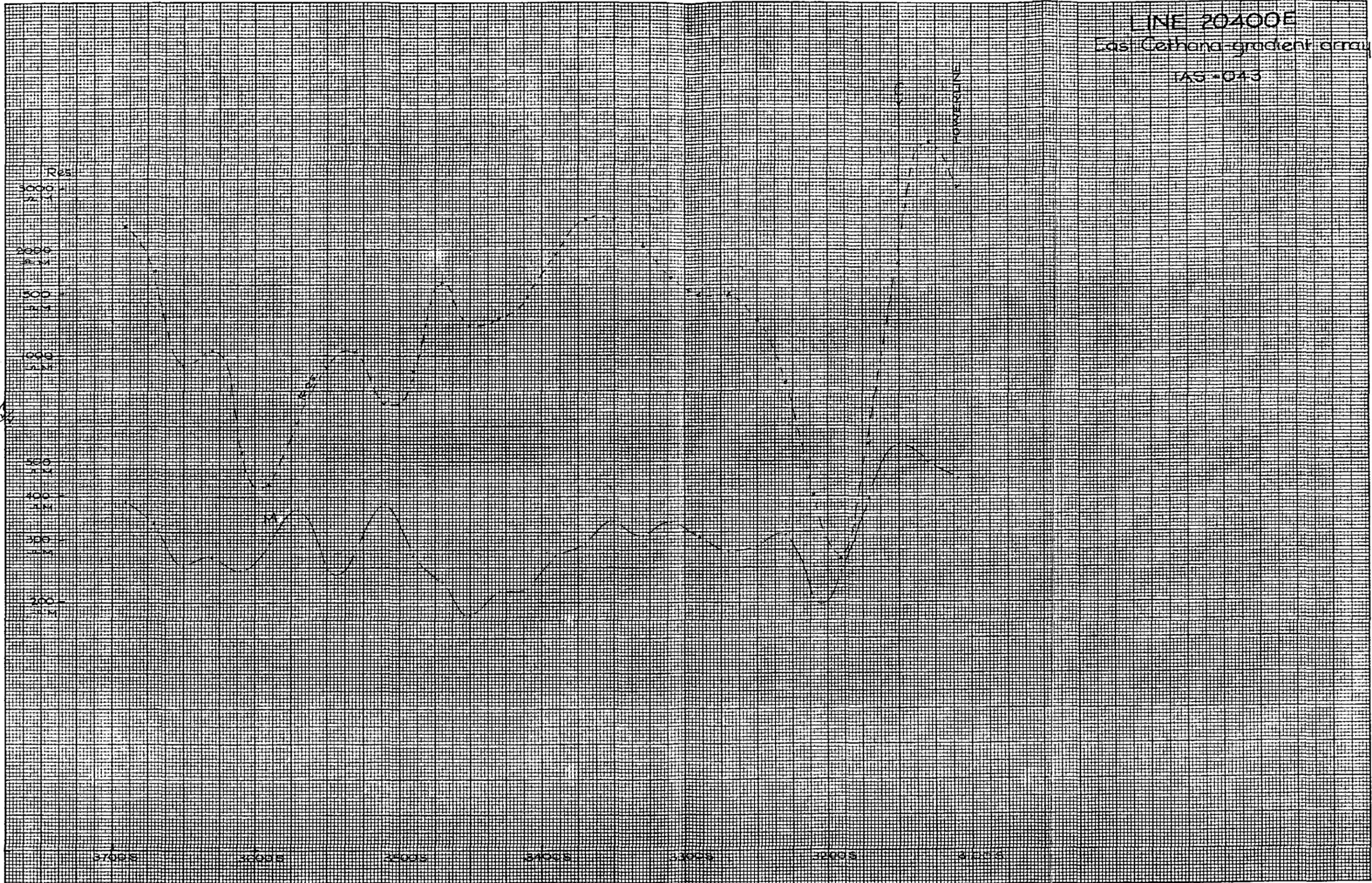
LINE 20400E
East Cathana gradient array EIP

IAS-043

M
my
24
20
16
12
8
4
0

3700S 3600S 3500S 3400S 3300S 3200S 3100S

1 1/2" 25 X 38 CM. ALBANIENE® KEUFFEL & ESSER CO. MADE IN U.S.A.



084

211086 85-2354

LINE 20200E

East Gethano-gradient array EIP

AS-043

Res
400
300
200
150
100
22
20
16
12
8
4
0

3500 S 3400 S 3300 S 3200 S 3100 S 3000 S 2900 S 2800 S 2700 S

MADE IN U.S.A.
KEUFFEL & ESSER CO.



085

211087 85-2364



MADE IN U.S.A.
KEUFFEL & ESSER CO.

086

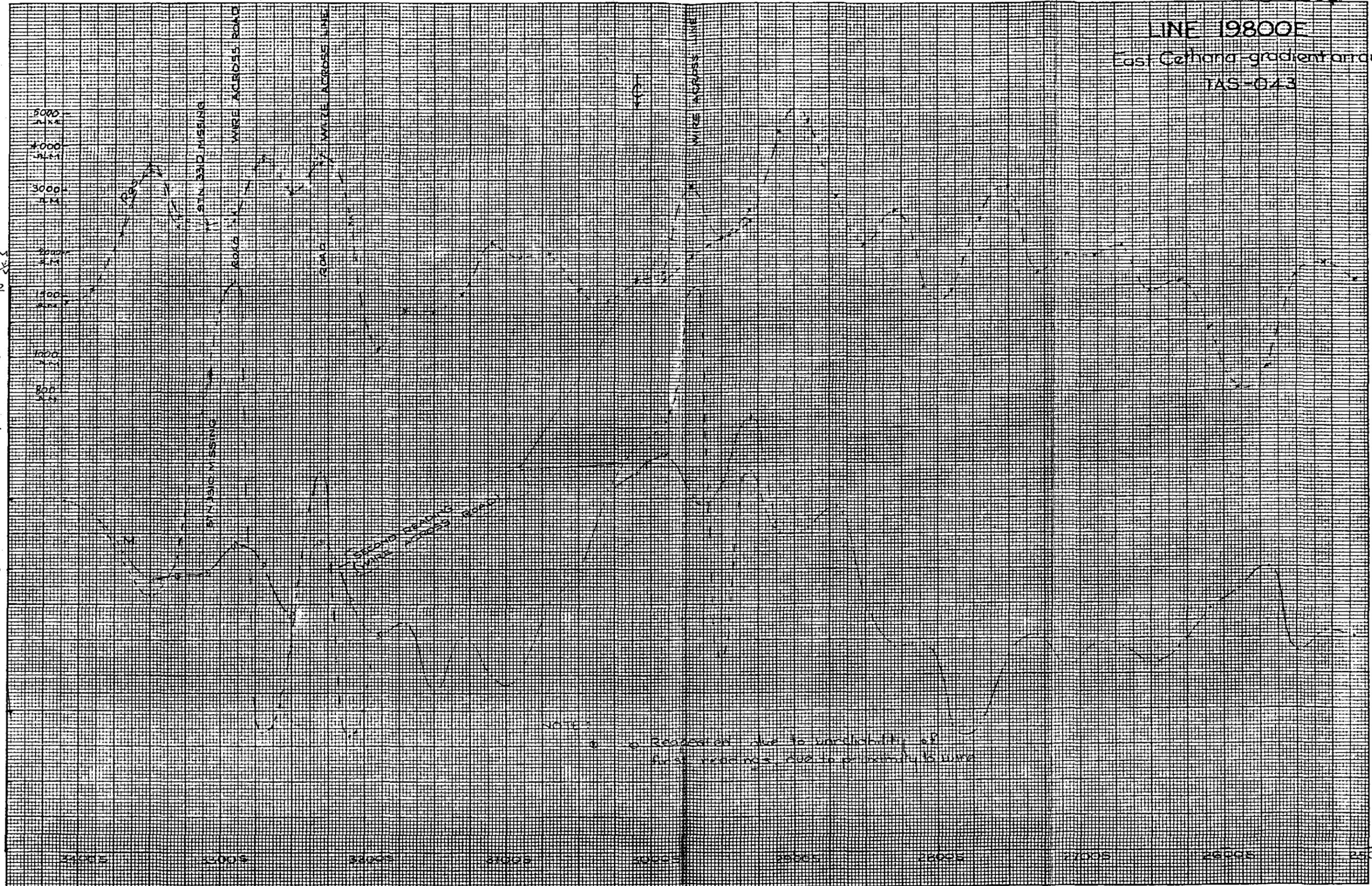
READ A SECOND TIME WITH WIRE IN A DIFFERENT POS'N.

211088 85-2354

LINE 19800E

East Cefana gradient array Ell

IAS-043

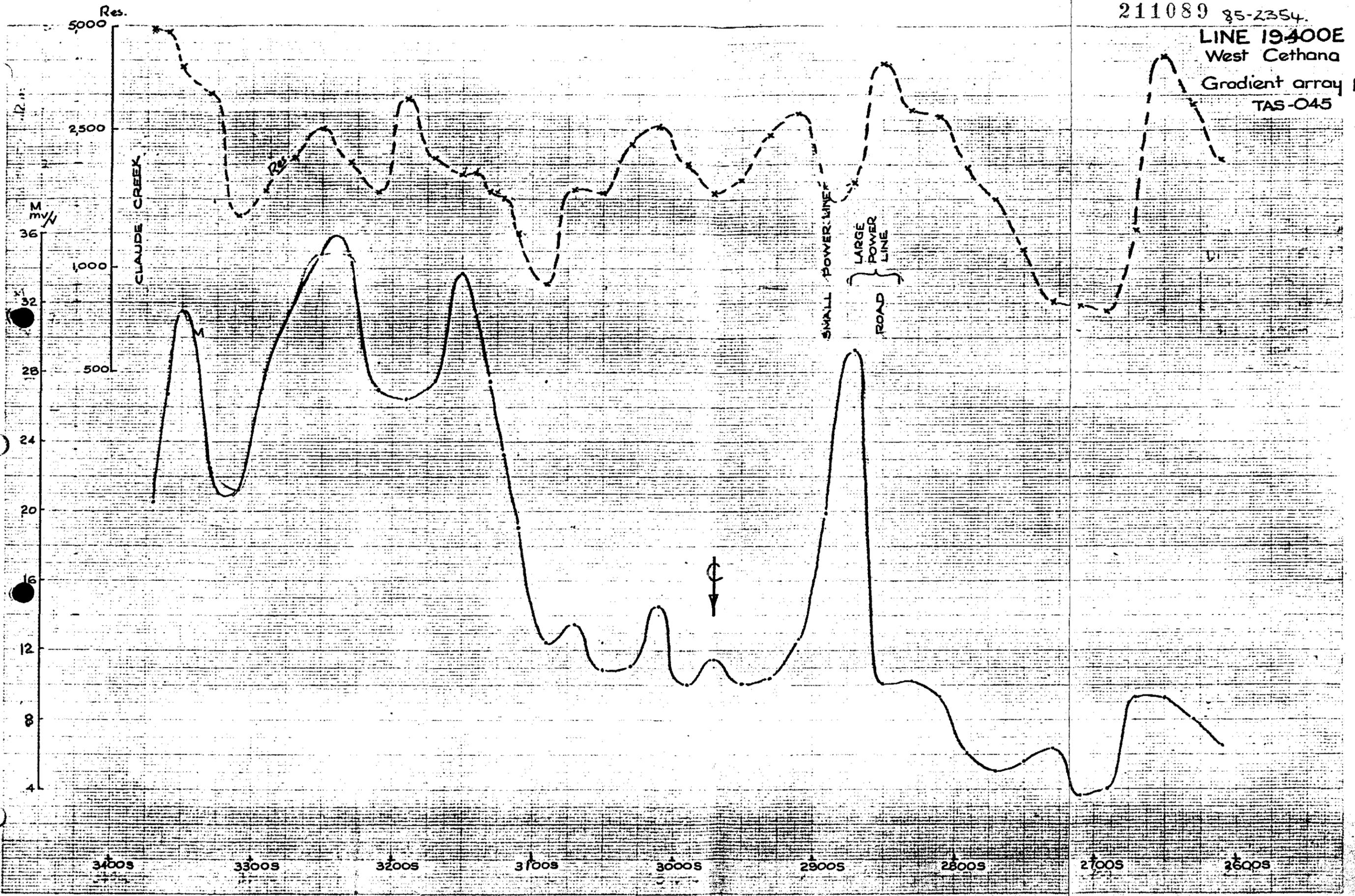


1 1/2" 25 X 36 CM. ALBANY KEUFFEL & ESSER CO. MADE IN U.S.A.

037

211089 85-2354.

LINE 19400E
West Cethana
Gradient array EIP
TAS-045



089
TUT

211091

85-2364

LINE 19800E

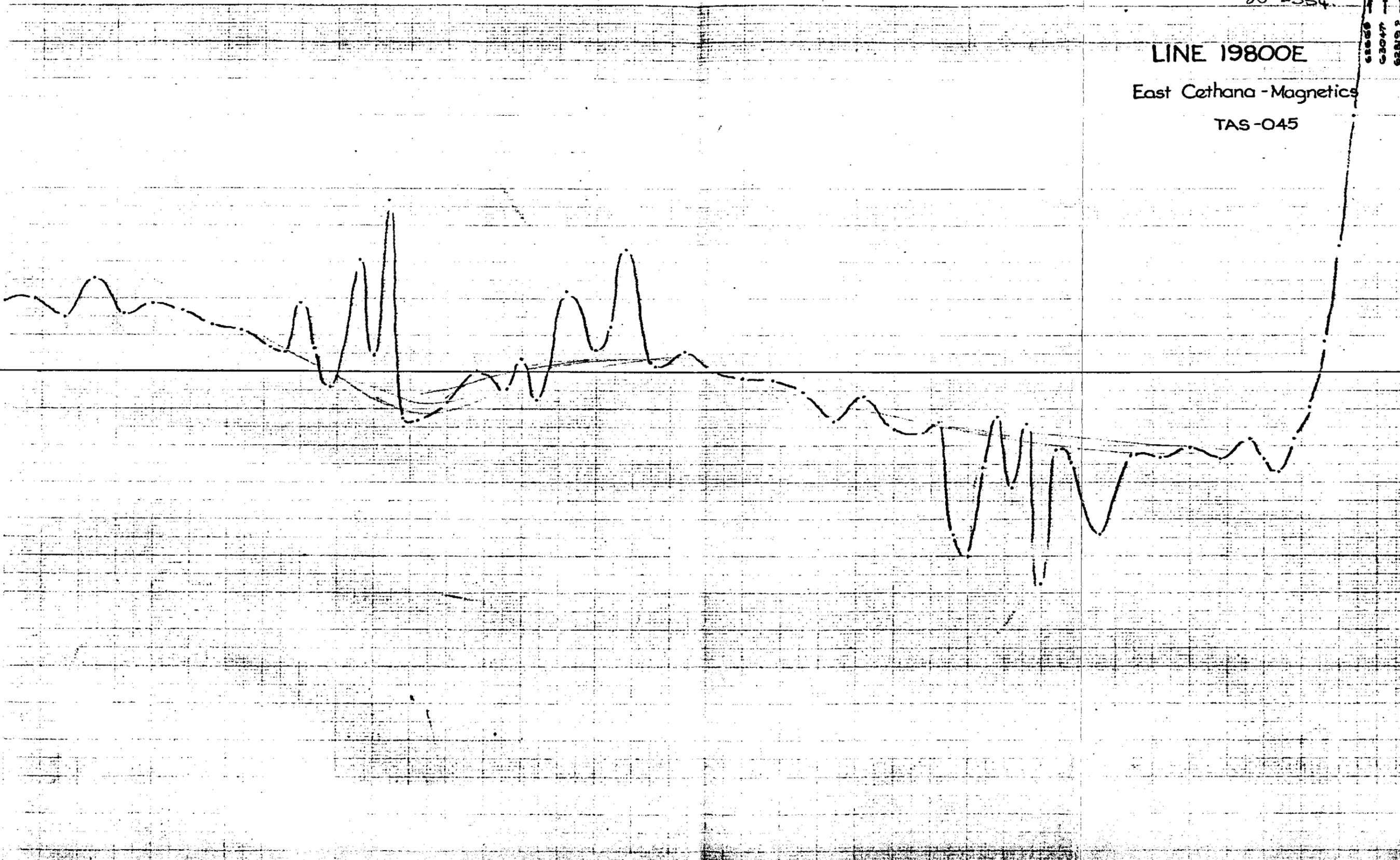
East Cethana - Magnetics

TAS-045

62808
62817
62819
62867
62848

2,500 γ
2,400 γ
2,300 γ
2,200 γ

3600 S 3500 S 3400 S 3300 S 3200 S 3100 S 3000 S 2900 S 2800 S 2700 S

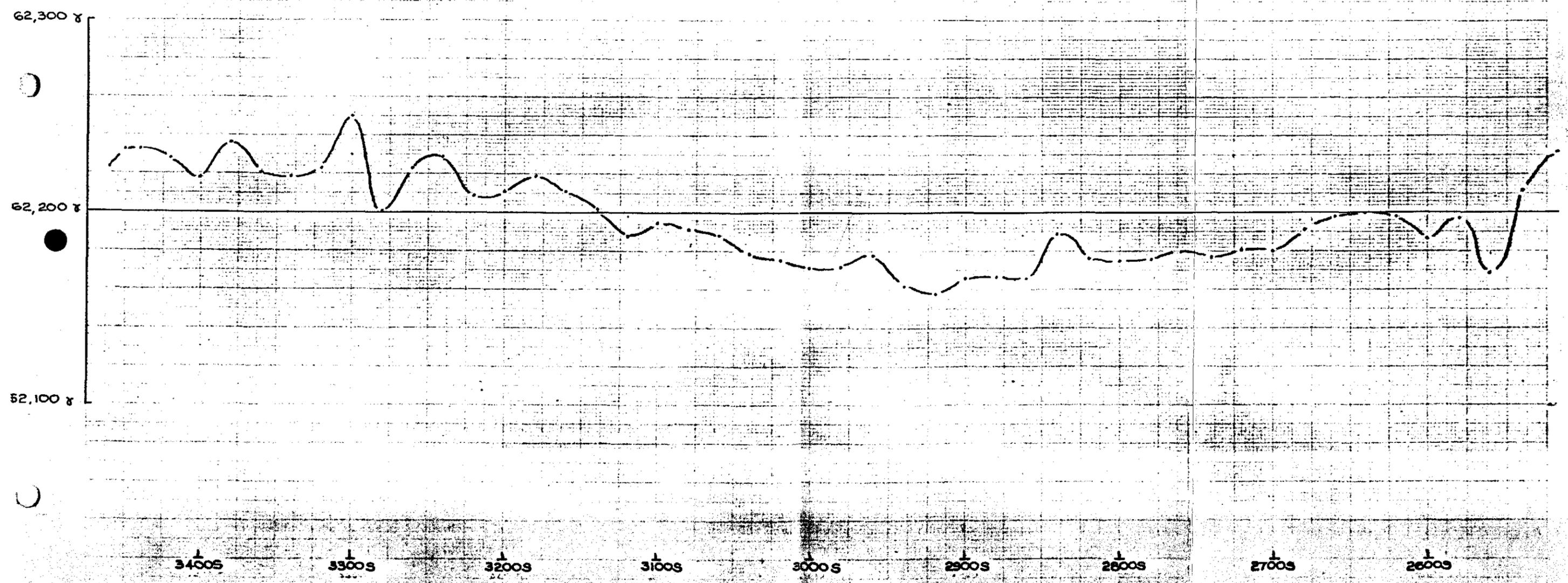


000

211092

85-2354

LINE 2000E
East Cethana - Magnetics
TAS-045



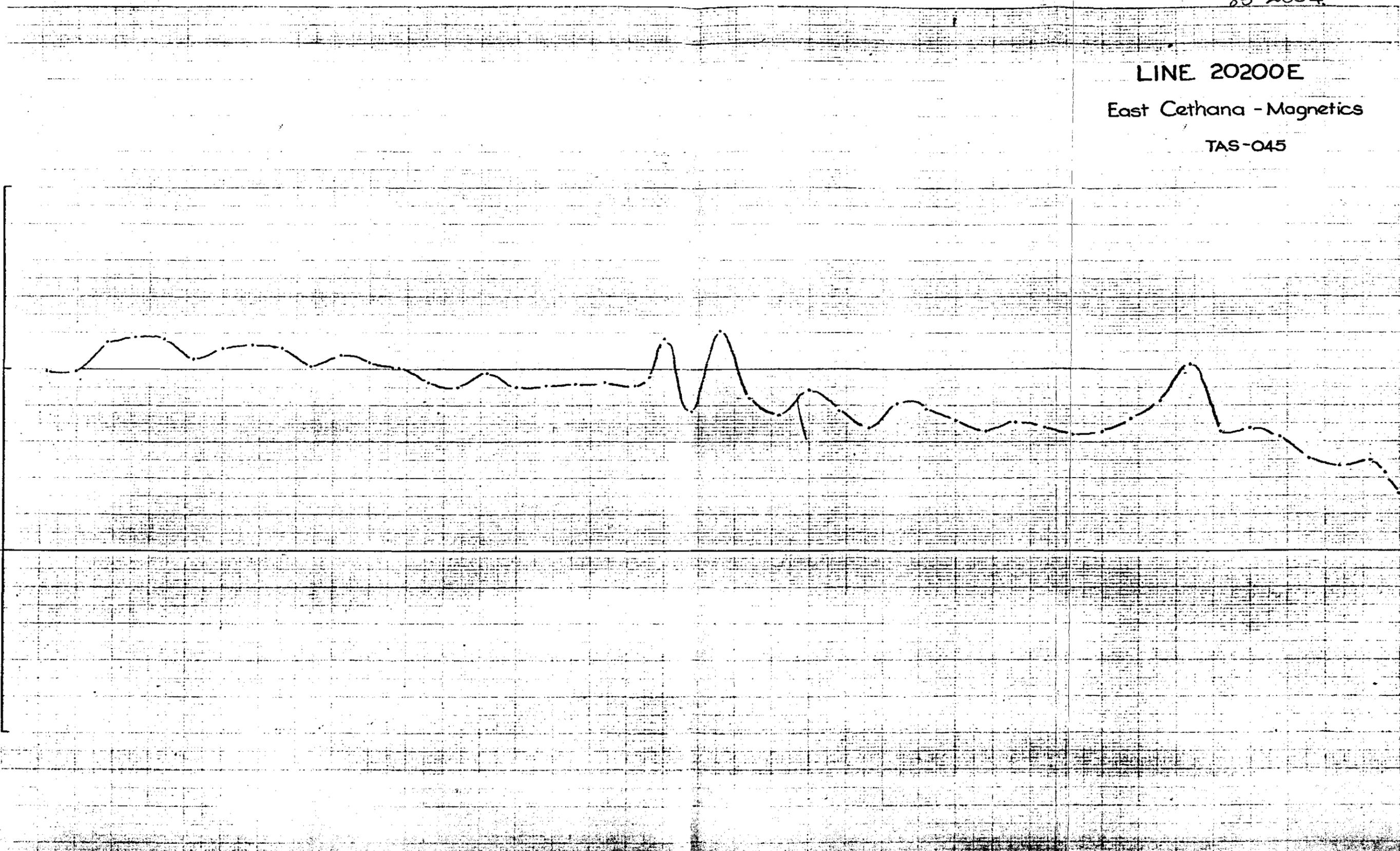
091

211093

85-2354

LINE 20200E
East Cethana - Magnetics
TAS-045

62,400 γ
2,300 γ
2,200 γ
2,100 γ



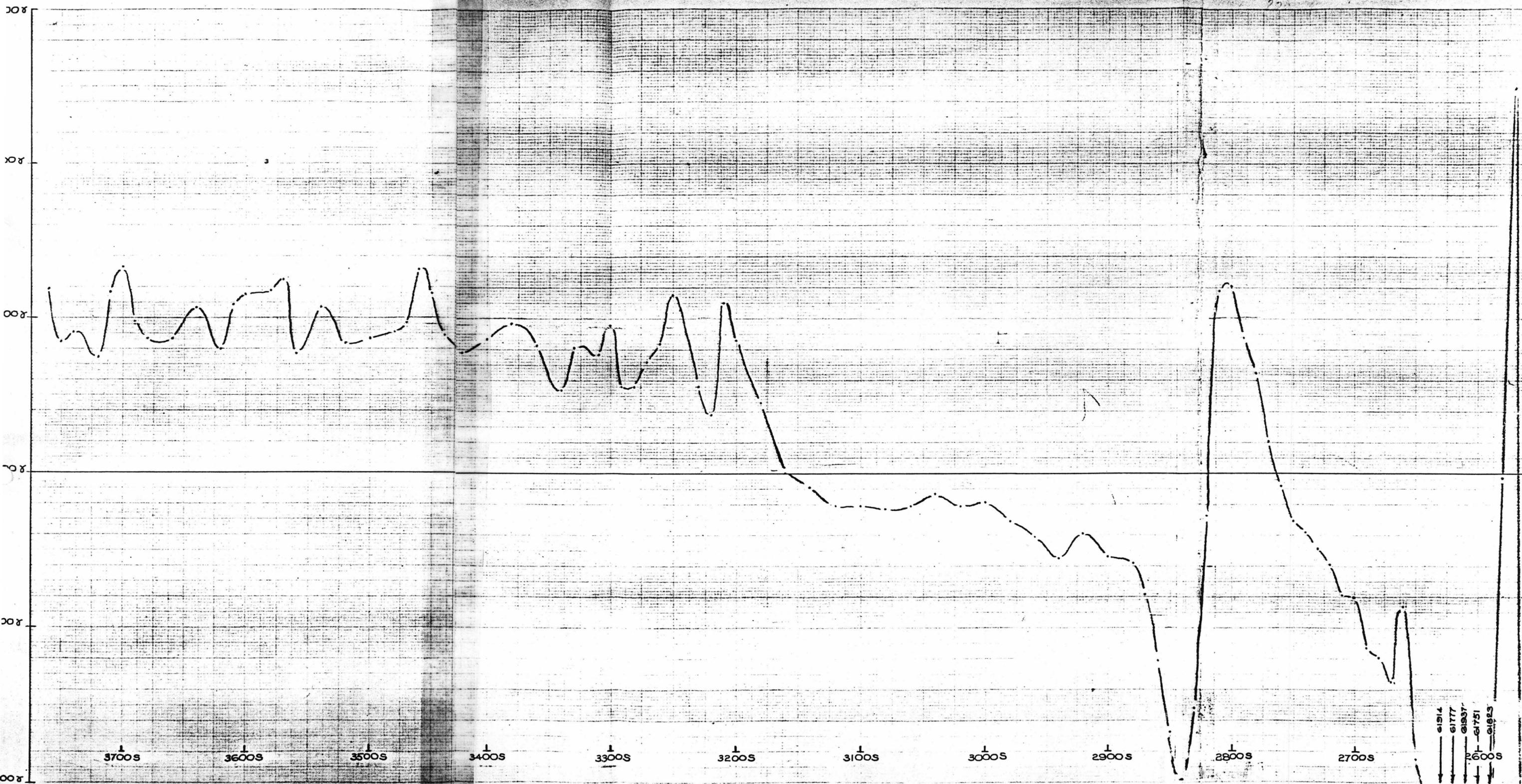
3500s 3400s 3300s 3200s 3100s 3000s 2900s 2800s 2700s 2600s

211095

LINE 20600E

East Cethana - Magneti

TBS - TAS-045



61914
 61777
 61937
 61751
 61823
 2600S
 61794
 61840

094

85-2354

94

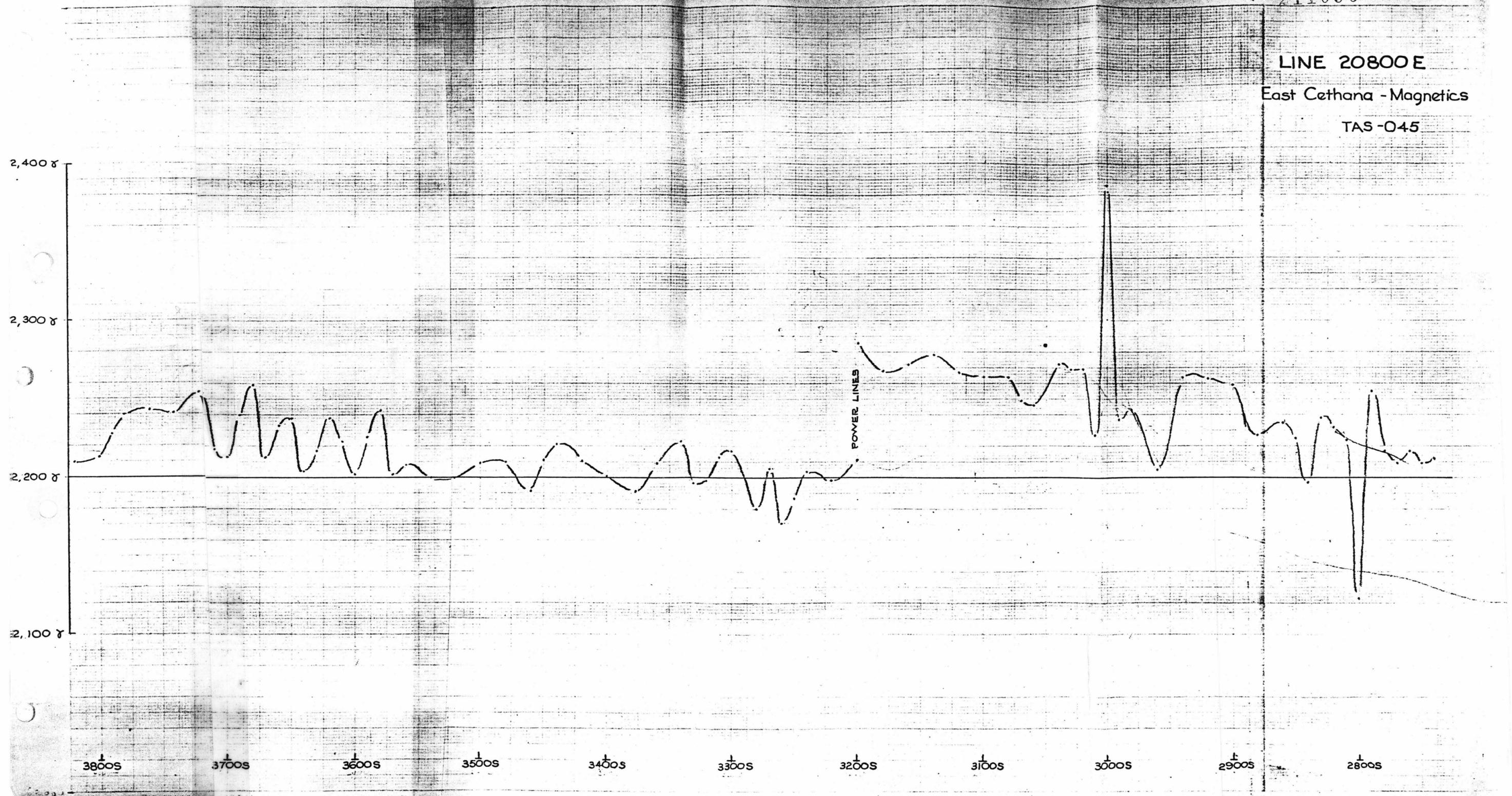
211096

LINE 20800 E
East Cethana - Magnetics
TAS-O45

2,400 γ
2,300 γ
2,200 γ
2,100 γ

3800S 3700S 3600S 3500S 3400S 3300S 3200S 3100S 3000S 2900S 2800S

POWER LINES

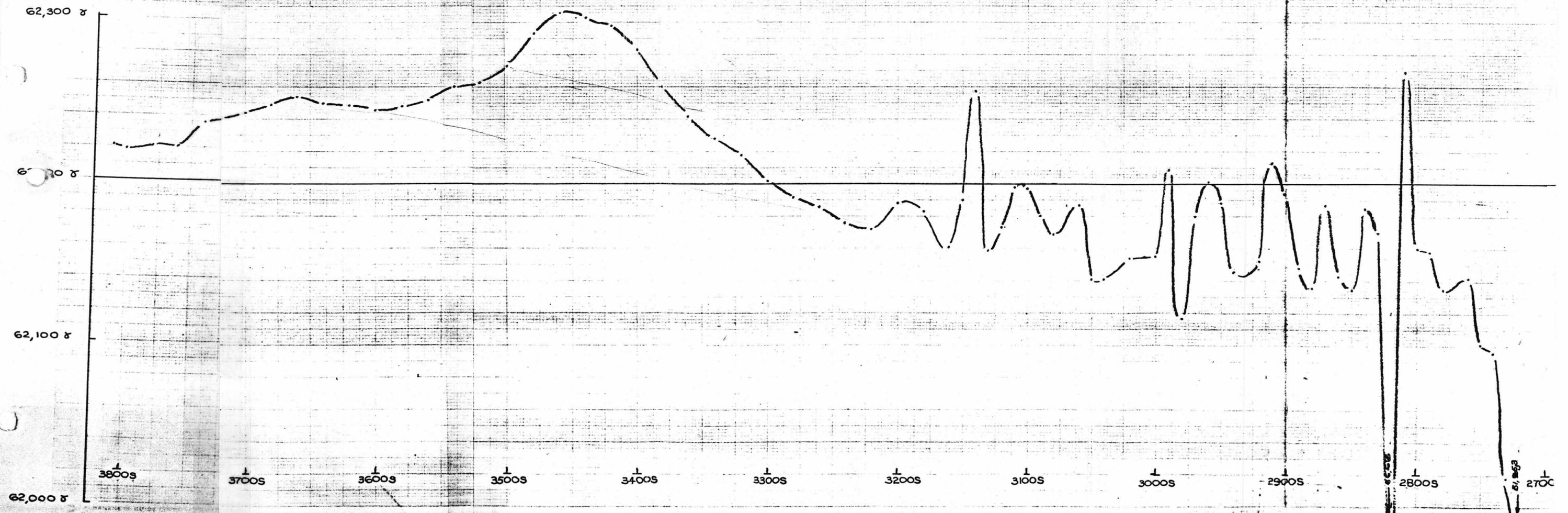


095

85-2354

211097 95

LINE 21000
East Cethana - Magnetics
TAS-045



096

85-2354

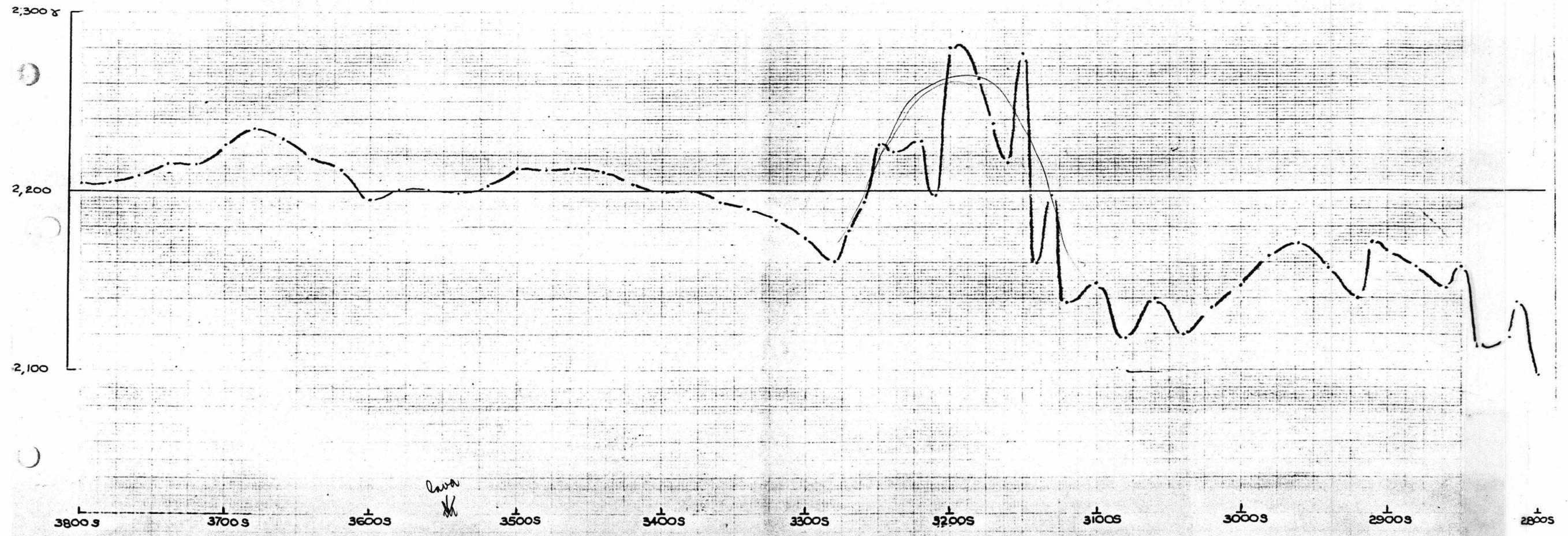
211098

qfb

LINE 21200E

East Cethana - Magnetics

TAS-045



097

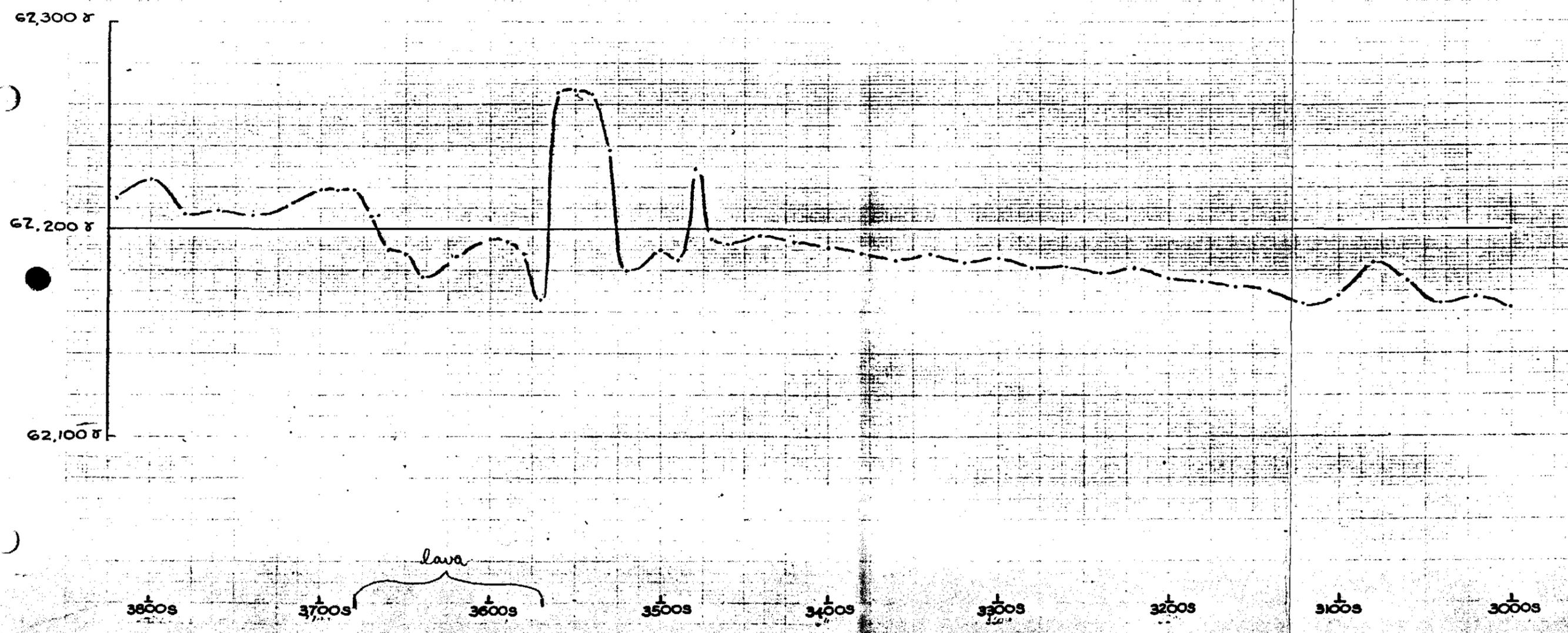
85-2364

211099

97

LINE 21400E
East Cethana - Magnetics

TAS-045

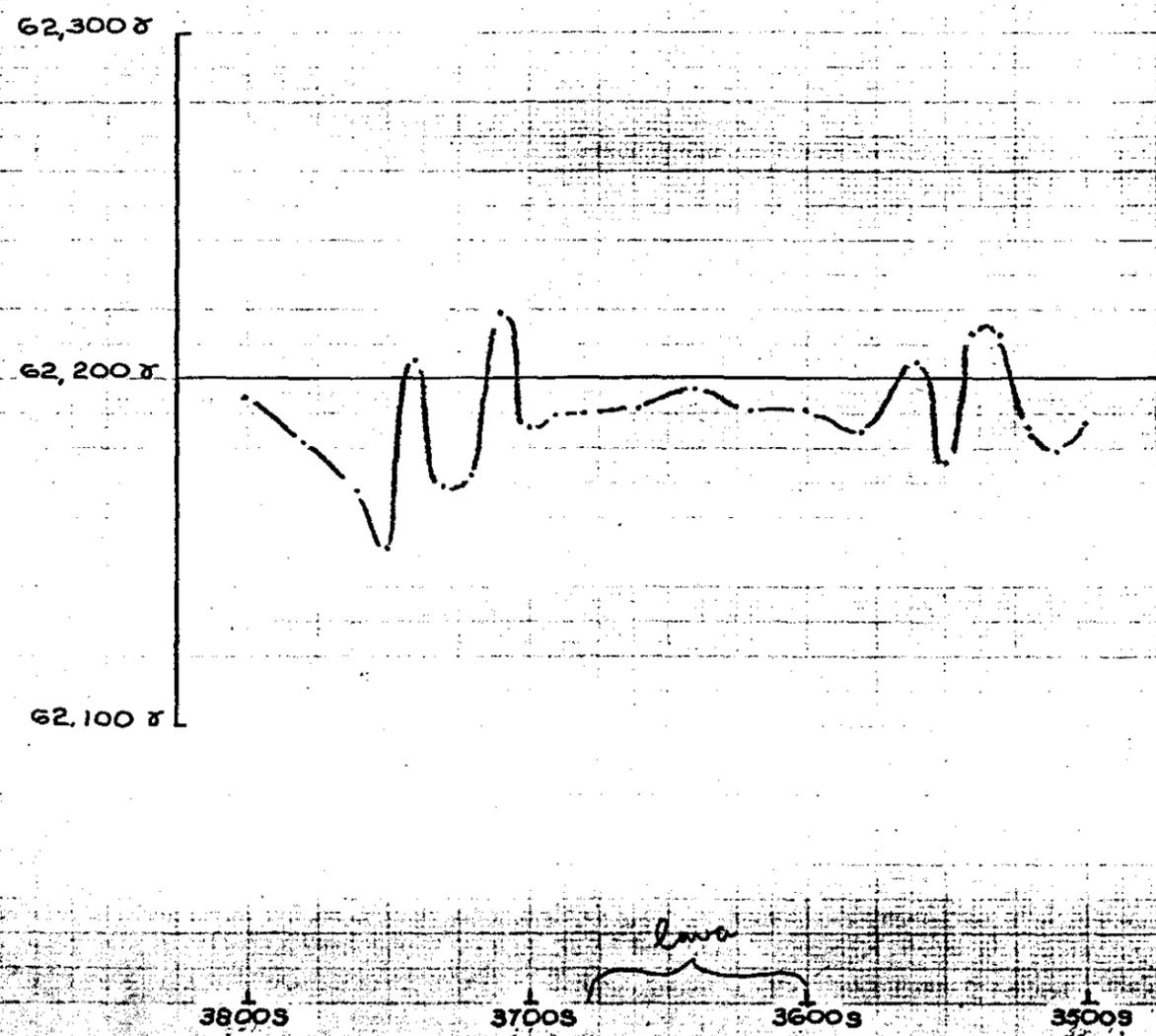


098

85-2354

211100

LINE 21450 E
East Cethana - Magnetics
TAS-045

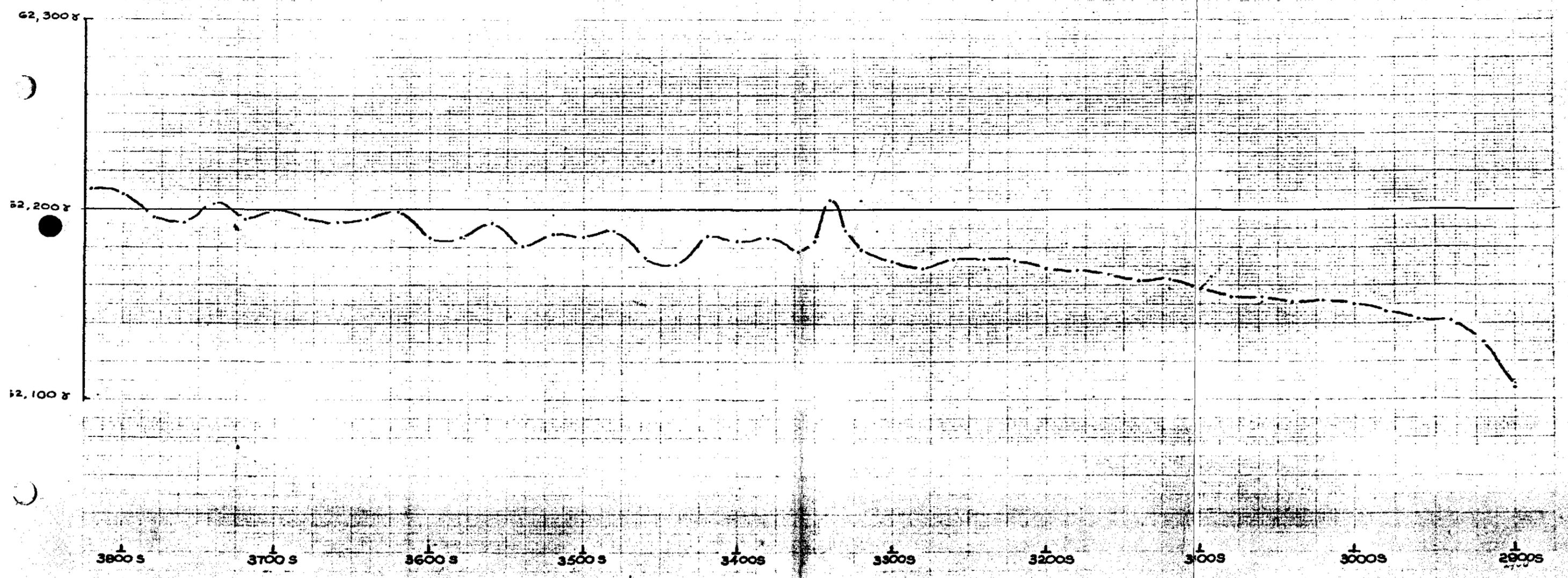


099

85-2354.

211101

LINE 21500E
East Cethana - Magnetics
TAS-O45



85-2354

211102

LINE 21600E

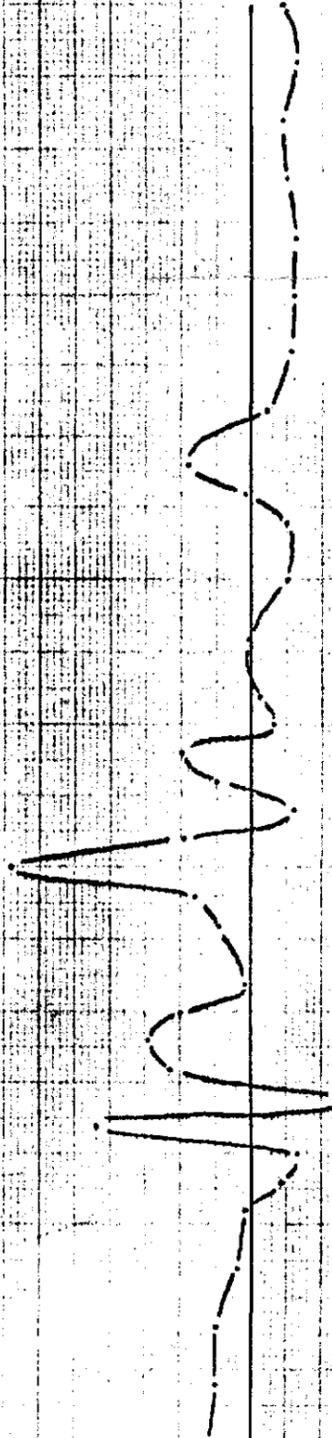
East Cethana - Magnetics

TAS-045

62,300 γ

62,200 γ

62,100 γ



39000

38000

37000

36000

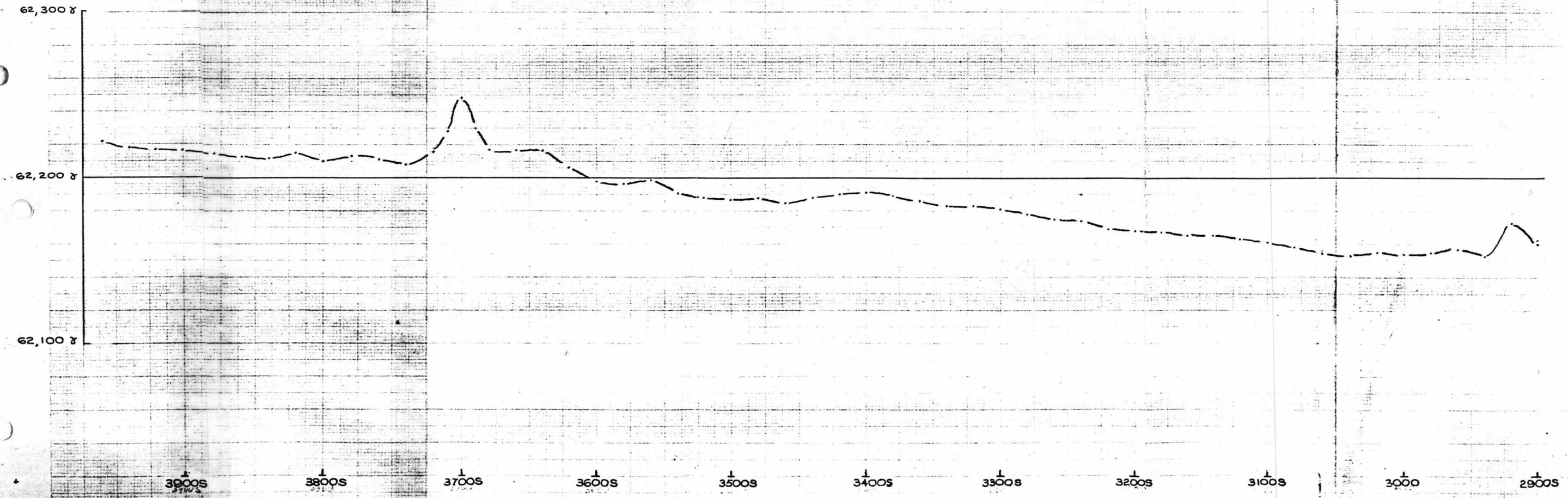
35000

34000

LINE 21700E
East Cethana - Magnetics
TAS-045

MAG 30 177

101

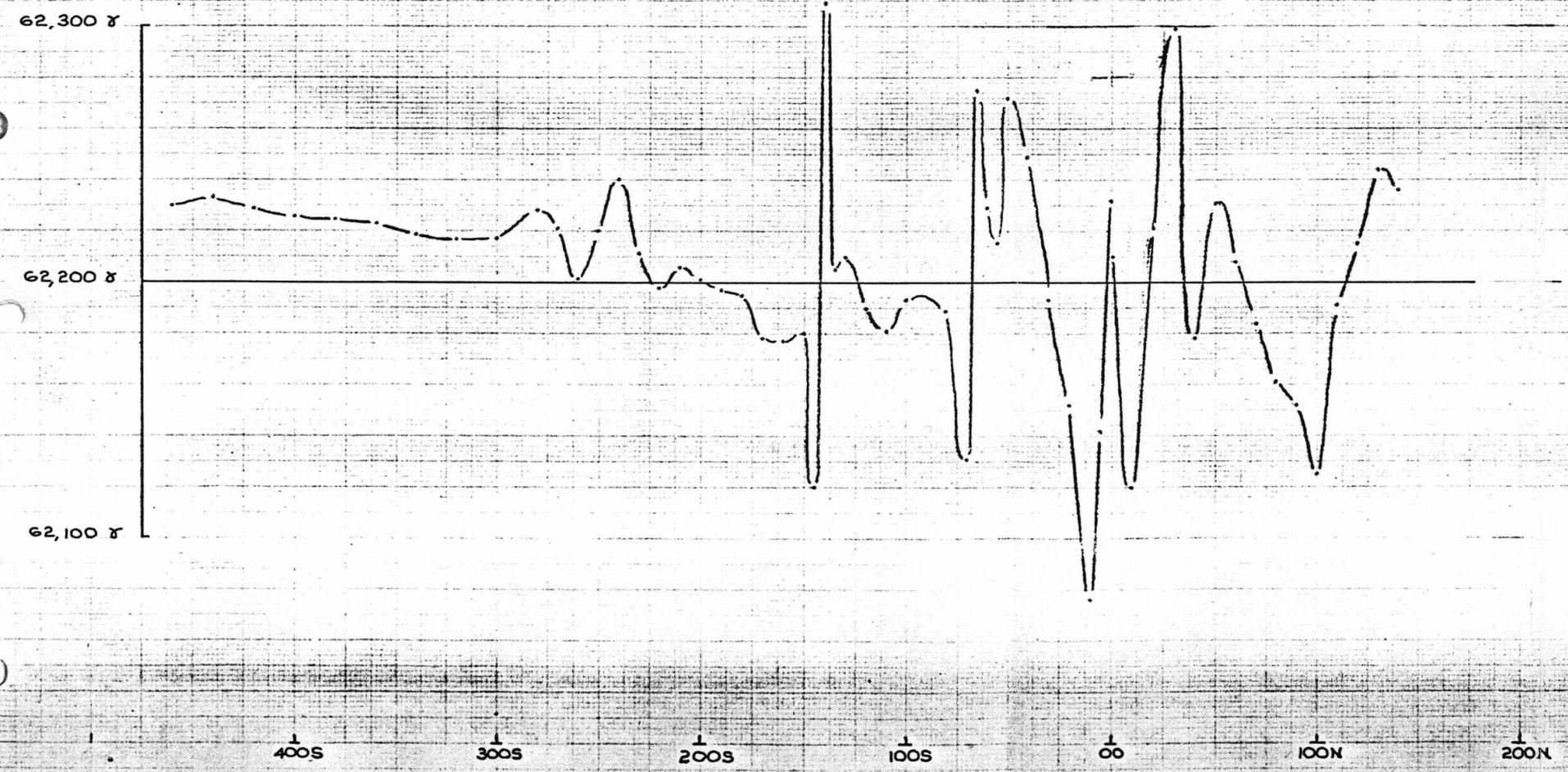


211104

LINE 21750

East Cethaná - Magnetics

TAS-045



62,000

103

103

211105

85-2354

LINE 21800
East Cethana - Magnetics
TAS-045

62,300

62,200

62,100

ROAD

Small powerline

Big Powerline

4000S

3900S

3800S

3700S

3600S

3500S

3400S

3300S

3200S

3100S

3000S

211105

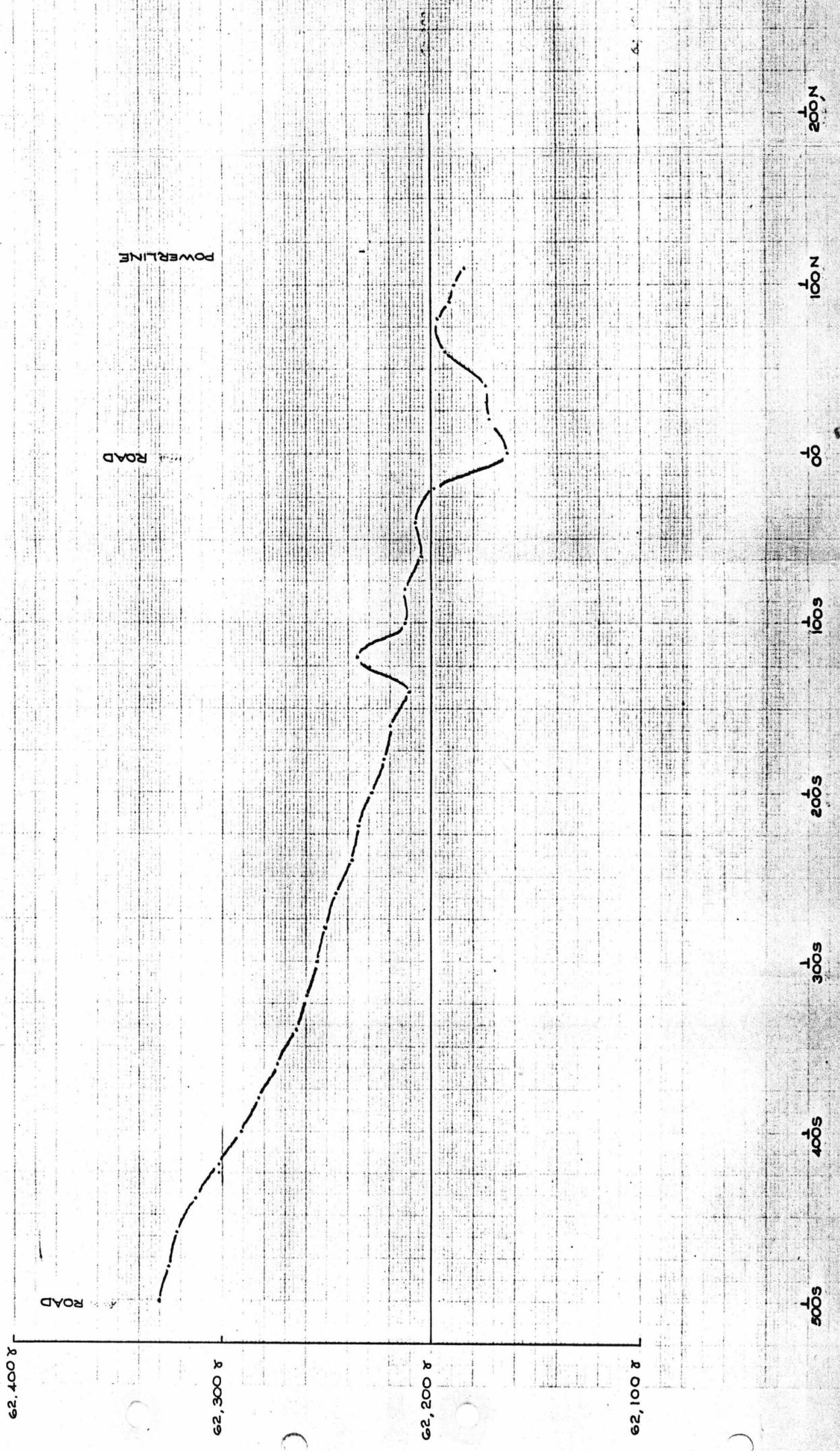
85-2354

211106

LINE 21900E

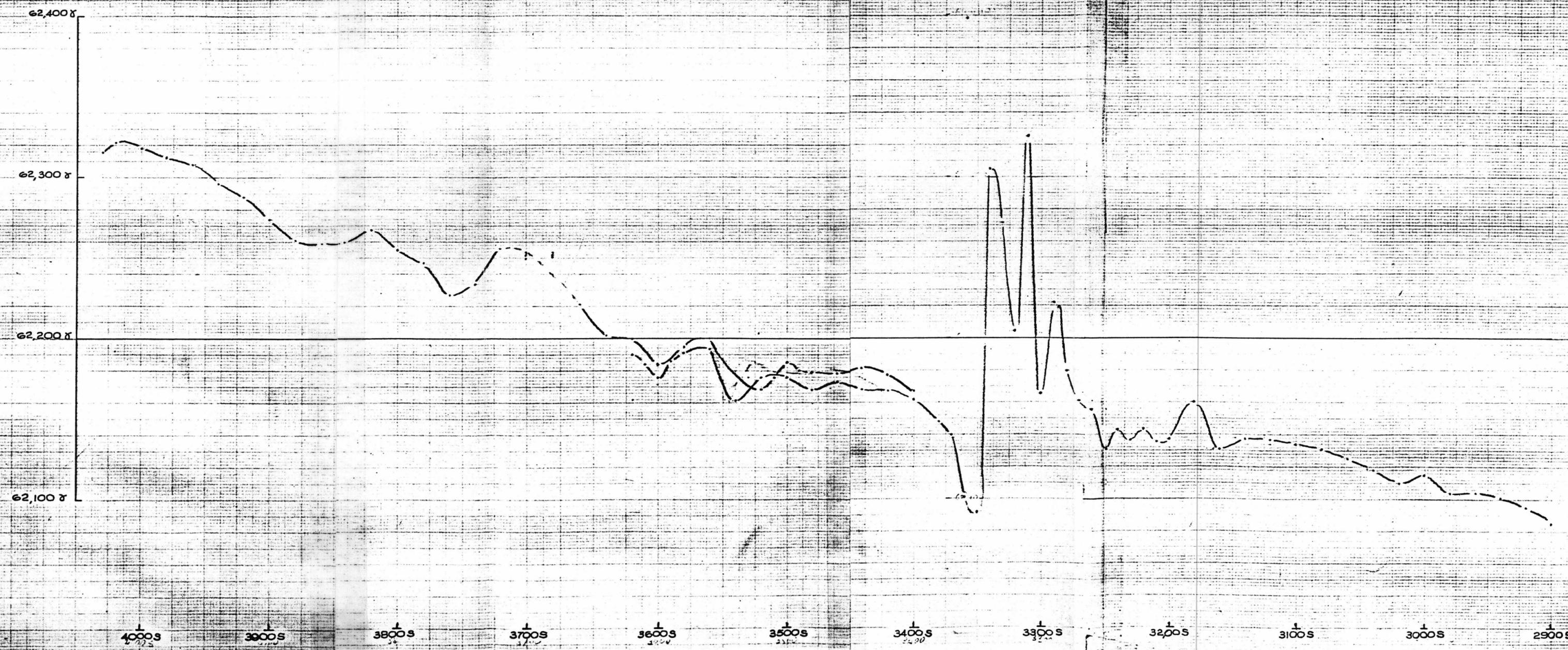
East Cethana - Magnetics

TAS-045



104

LINE 22000E
East Cethana - Magnetics
TAS-O45



53,000

AREA

211108

LINE 22100E

East-Cethana - Magnetics

TAS-045



107

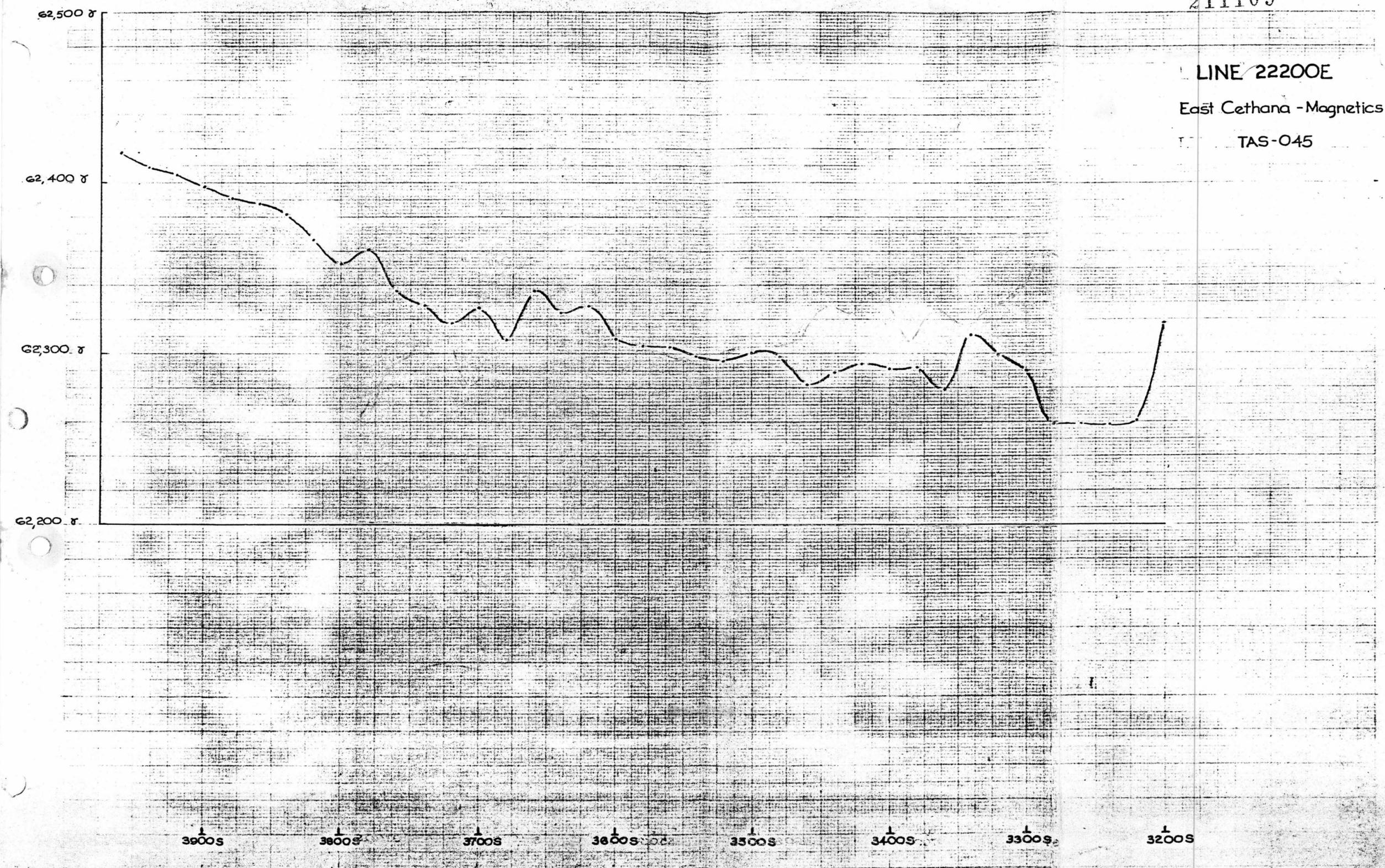
85-2354

211109

LINE 22200E

East Cethana - Magnetics

TAS-045





ASARCO - CRAE JV
 EL 7/73
 EL 10/76
 CRAE

Cethana

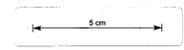
Sealed road
 Unsealed road
 Grid line with soil sample sites at 20m int.

CHARGEABILITY CONTOUR PLAN

SURVEYED & COMPILED BY
 SCINTREX PTY LTD
 For
 C.R.A. EXPLORATION PTY LIMITED
 May - July 1977

CETHANA EAST - E.L. 10/76
 NORTH - WEST TASMANIA
 BURNIE SK 55-3

SCALE 1:2500 (approx)



Geologist: J.G.P. Date: Report No:
 Drawn: N.A.P. Plate No: 2057

Revised SEPT 1977 for inclusion in report TAS-043 PLATE 5
 Job No TAS-043/TAS-045 Sheet 1 of 1 PLATE I

211110

2057
 85-2354



Sealed road

Unsealed road

Grid line with soil sample sites at 20m int.

RESISTIVITY CONTOUR PLAN

SURVEYED & COMPILED BY
SINTREX PTY LTD

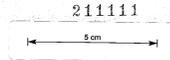
CRA EXPLORATION PTY LIMITED
MAY - JULY 1977

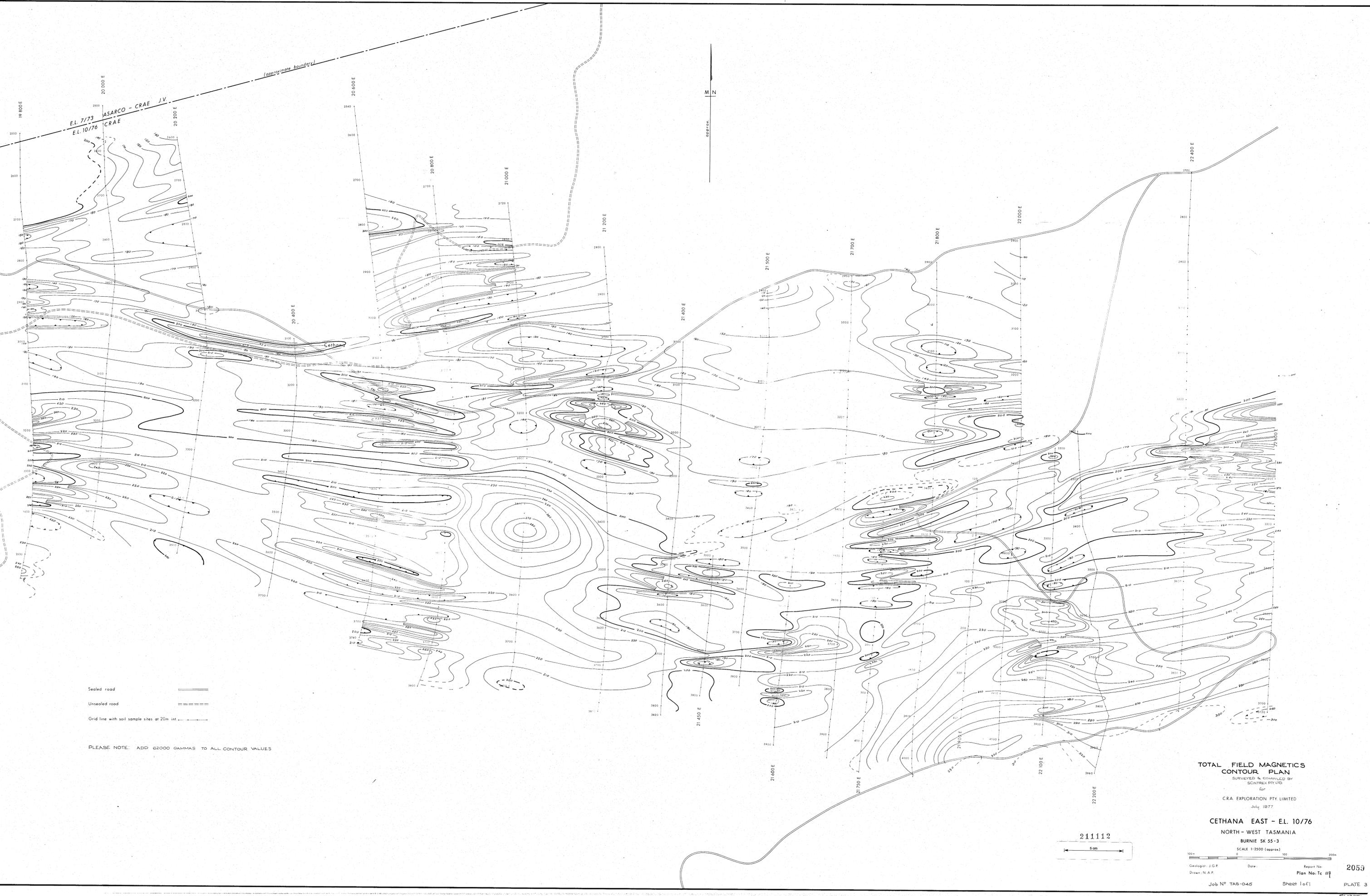
CETHANA EAST - EL. 10/76

NORTH - WEST TASMANIA

BURNIE SK 55-3

SCALE 1:2500 (approx)





ASARCO - CRAE JV
 EL. 7/73
 EL. 10/76 CRAE

(approximate boundary)

M N
 approx.

Sealed road
 Unsealed road
 Grid line with soil sample sites at 20m int.

PLEASE NOTE: ADD 62000 GAMMAS TO ALL CONTOUR VALUES

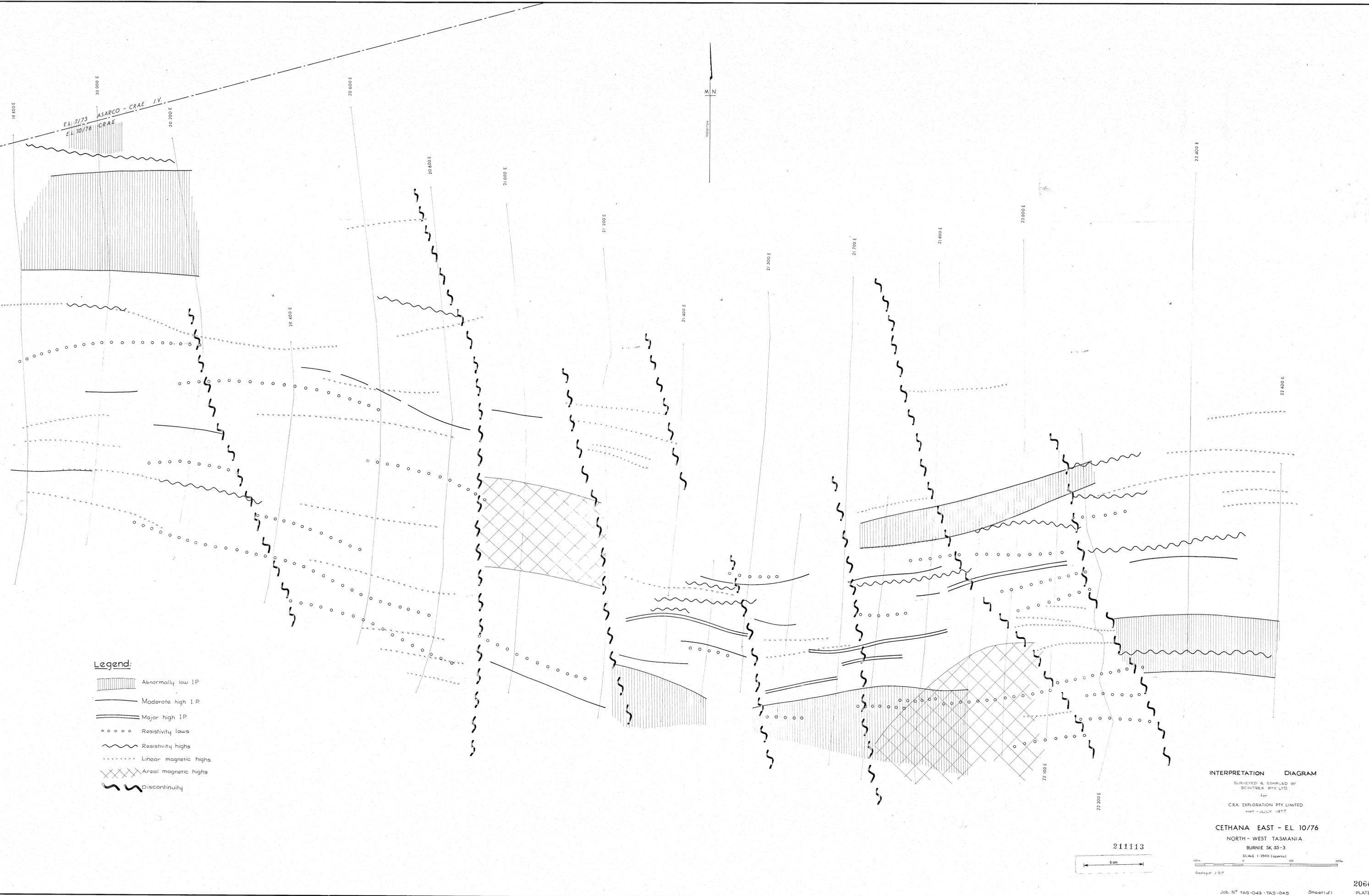
TOTAL FIELD MAGNETICS
 CONTOUR PLAN
 SURVEYED & COMPILED BY
 SCINTREX PTY LTD

for
 CRA EXPLORATION PTY LIMITED
 July 1977

CETHANA EAST - EL. 10/76
 NORTH - WEST TASMANIA
 BURNIE SK 55-3
 SCALE 1:2500 (approx)

211112
 50m

Geologist: J.G.P. Date: Report No: 2059
 Drawn: N.A.P. Plan No: Tc 117
 Job No: TAS-045 Sheet 1 of 1



Legend:

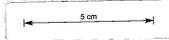
-  Abnormally low IP
-  Moderate high IP
-  Major high IP
-  Resistivity lows
-  Resistivity highs
-  Linear magnetic highs
-  Areal magnetic highs
-  Discontinuity

INTERPRETATION DIAGRAM

SURVEYED & COMPILED BY
SCINTREX PTY LTD
for
CRA EXPLORATION PTY LIMITED
MAY - JULY 1977

CETHANA EAST - EL. 10/76
NORTH - WEST TASMANIA

211113



Geologist: J GP