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

CENTRAL AUSTRALIA

RECEIVED
-2 JUL 1975
MINES BRANCH

OPEN FILE

FINAL REPORT ON AREA RELINQUISHED FROM

EXPLORATION LICENCE No. 860

Compiled

by

J.R.Reynolds

CR 75/91

TENNANT CREEK, N.T.

MAY, 1975

FINAL REPORT ON AREA RELINQUISHED FROM EXPLORATION LICENCE NO.860.

CONTENTS.

LIST OF PLANS

1. INTRODUCTION.

Exploration Licence No.860 held by Peko Mines Ltd., was granted on March 16th, 1973. It covered an area of 12.95 sq.kms and its south-east corner was situated 32 kms on a true bearing of 310 degrees from Tennant Creek. Under Section 38B Subsection (11) of the Mining Ordinance 1939-1972, at least half of the area held must be relinquished after the second year of tenure. Consequently, renewal has been applied for on the southern half only as from March 16th, 1975.

Access to the Exploration Licence is via a bitumen road from Tennant Creek to the Warrego Mine of Peko Mines Ltd., . The location, access and boundaries of the Exploration Licence and the area to be relinquished are indicated in Fig.1.

An aeromagnetic survey which covered the area to be relinquished was carried out by the Bureau of Mineral Resources in 1967. No further airborne survey was undertaken. Exploration consisted of regional geological mapping in conjunction with reconnaissance ground magnetics using the vehicle magnetometer navigator over the areas of interest delineated from the aeromagnetics.

One prospect has been covered by reconnaissance traverses using the vehicle magnetometer-navigator and has been covered by a survey grid. Leases have been applied for. The remainder of the area to be relinquished is considered to have little potential.

2. TENURE

The following Mineral Leases have been applied for within the area to be relinquished.

No.	Name	Area (ha)	Leasee
ML 901E	Explorer 119 No.1	15	Peko Mines Limited
ML 902E	Explorer 119 No.2	15	" " "

3. REGIONAL GEOLOGY.

Detailed geological mapping of the Exploration Licence was carried out at a scale of 1:12,000. The mapping was accomplished by plotting the geology directly onto aerial photographs and transferring information subsequently to a series of controlled base sheets (see Fig.2).

3.1 Stratigraphy

The Warramunga Group was subdivided as follows:- (Dunnett & Harding, 1967)

Carraman Formation
Bernborough Formation
Whippet Sandstone
Monument Beds.

The rocks within the area to be relinquished are categorised as part of the Carraman Formation A further subsivision was recognised in the area.

1. Upper Carraman Member
2. Middle Carraman Member

The Upper Carraman Member has been folded into a broad synclinal structure known as the Great Western Syncline, and covers most of the area to be relinquished. Sediments of the Middle Carraman Member cover the remainder.

Upper Carraman Member

The Upper Carraman Member consists of interbedded greywacke, siltstone, shale, hematite shale, chert and cherty sediments. It is differentiated from the Middle Carraman Member in that it contains chert and cherty sediments and has no disseminated hematite or magnetite. The boundary between the Upper and Middle Carraman Member is defined by the appearance of the first chert out-crops (see Fig.2)

Middle Carraman Member

The Middle Carraman Member consists predominantly of greywacke, siltstone, minor shale, including hematite shales and a broadly conformable quartz-feldspar porphyry band which cuts the sediments towards the top of the Member.

The Middle Carraman Member sediments characteristically contain an average of 5% magnetite and hematite. This is either disseminated through the sediment as small octohedra or concentrated at the base of the sediment bed in slightly larger aggregates. The magnetite and hematite tends to decrease towards the top of the unit.

3,2 STRUCTURE.

The structure of the sediments within the area to be relinquished is dominated by one major fold, The Great Western Syncline which plunges to the west at approximately 20^{o} and is an isoclinal type of fold.

The cleavage strikes predominantly east-west and the dip varies from 75^{o} to the north and 75^{o} to the south.

The cleavage is axial plane cleavage which was formed while the sediments were still undergoing diagenesis, and were comparatively mobile. This is evident by the considerable number of dewatering structures observed in the cleavage planes.

4. REGIONAL GEOPHYSICS.

The Bureau of Mineral Resources have carried out a low level aeromagnetic survey over the area to be relinquished. This survey (Fig.4) was considered sufficient to determine areas on which to commence ground geophysical surveys. The area therefore was not reflown.

Analysis of the aeromagnetic results indicated, within the area to be relinquished, one anomaly which warranted further investigation.

The anomaly is located at the intersection of latitude $19^{o}25'30"$ and longitude $133^{o}56'20"$. It has been entitled Explorer 119. Five reconnaissance traverses using the vehicle magnetometer-navigator were carried out over the anomaly area (For Chart Records see Figs. 5,6,7,8 & 9).

5 PROSPECT EVALUATION.

5.1 EXPLORER 119.

5.1.1 Location.

Explorer 119 Prospect is located 2.8 kms north-north-east of the Peko-Wallsend Metals Limited Tennant Creek Smelter at the intersection of latitude 19°25'50" and longitude 133°56'05". Access to the prospect is via a bush track from the Smelter which is situated on a bitumen road from Tennant Creek to Warrego Mine of Peko Mines Limited.

5.1.2 Tenure.

Two mineral leases have been applied for by Peko Mines Limited. Details are as follows:-

No.	Area	Name
ML 901E	15ha	Explorer 119 No.1
ML 902E	15ha	Explorer 119 No.2

5.1.3 Grid Survey.

The Explorer 93 Grid line 2400mE was extended from 1700mN to 4000mN. A sub-baseline was constructed from 2250mE; 3800mN to 2500mE; 3800mN.

Traverses were surveyed in at:-

2250mE	from	3600mN	to	4000mN
2300mE	"	3600mN	"	4000mN
2350mE	"	3600mN	"	4000mN
2400mN	"	3600mN	"	4000mN
2450mN	"	3600mN	"	4000mN
2500mN	"	3600mN	"	4000mN

5.1.4 Geology.

Outcrop in the immediate vicinity of the prospect is very sparse. Greywacke and siltstone with a little chert and hematite shale outcrop to the north.

5.1.5 Geophysics.

Five vehicle magnetometer-navigator traverses were done over the prospect (For Chart Records see Figs.5,6 7, 8 & 9).

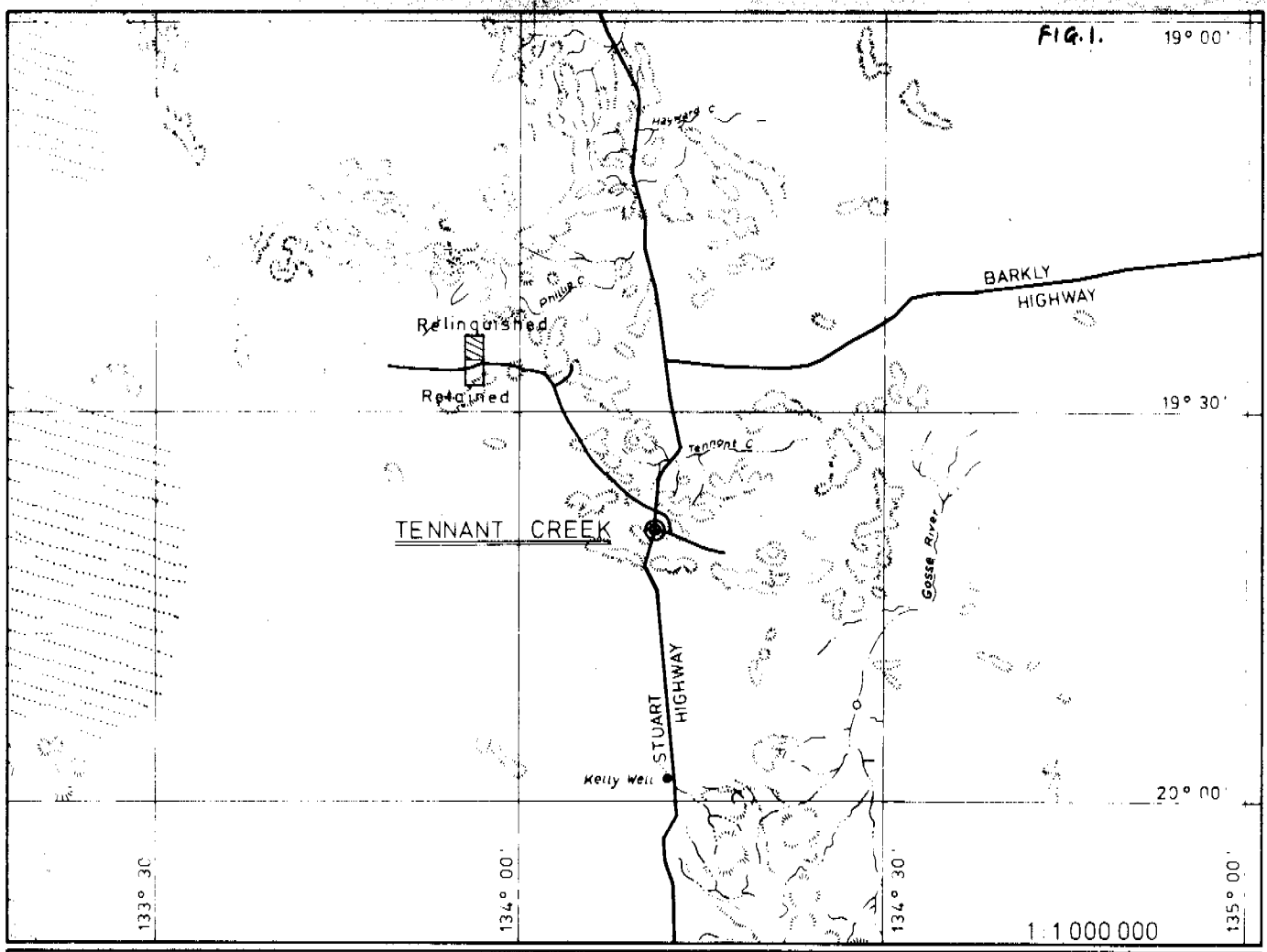
6. **EXPENDITURE.**

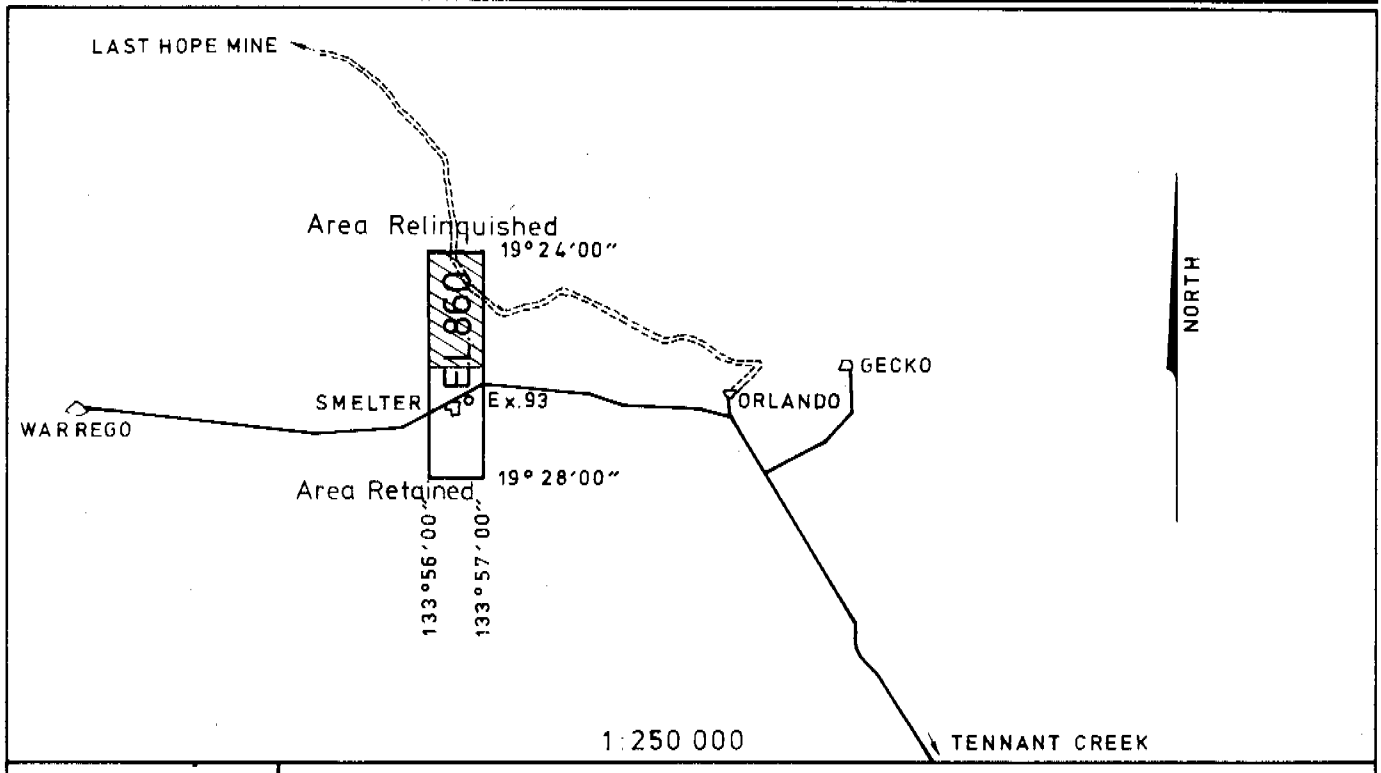
The expenditure incurred on the area relinquished from the Exploration Licence cannot be determined from the cost analysis system used. However, the expenditure incurred on the Exploration Licence has been documented fully in Annual Reports submitted previously.

The total expenditure to date is as follows:-

7/3/1973 - 5/3/1974	$31,176:00
6/3/1974 - 18/3/1975	$42,536:00
	$73,712:00

FIG. 1.





AMENDED
Date / Geologist

GEOPEKO LTD.
CENTRAL AUSTRALIA TENNANT CREEK

Scale 0 m

DATE 20.5.1974
GEOLOGIST M.C.L.
DRAWN F.W.T.
CHECKED

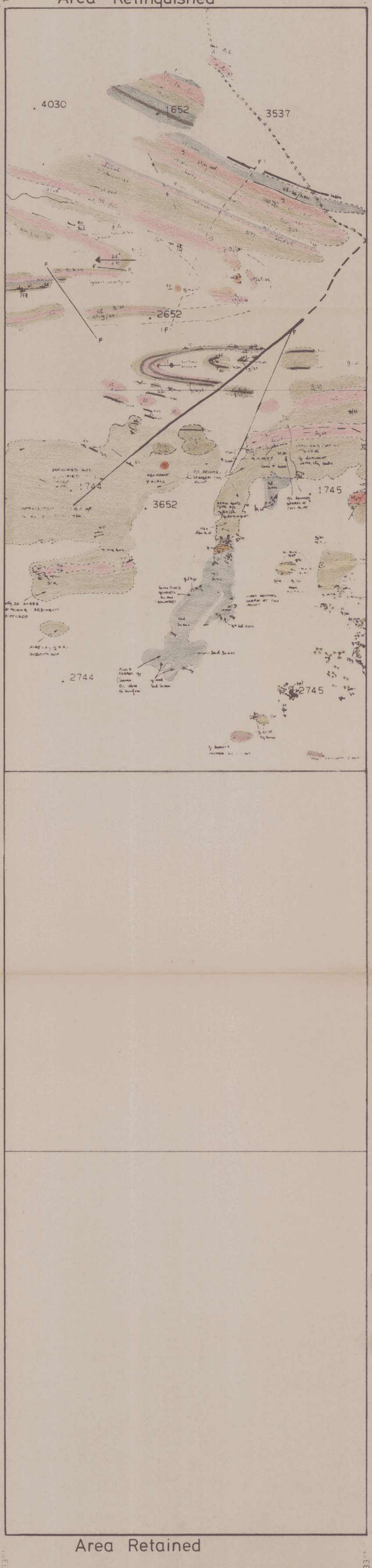
LOCALITY PLAN OF E.L. 860

TF 1218

133°56'

19°24'

Area Relinquished



133°57'

19°24'

Area Retained

133°28'

133°29'

LEGEND

- Lithologic Boundary, measured
- Lithologic Boundary, approximate
- Scree Boundary
- Fault
- Anticline, showing plunge
- Syncline, showing plunge
- 20° Strike and Dip of Strata
- Horizontal Strata
- Vertical Strata
- Overturned Strata
- 60° Strike and Dip of Cleavage
- Vertical Cleavage
- Quartz Vein
- Road
- Vehicle Track
- Lease Peg
- Trig Point
- 2 Photo Centre
- Wing Point
- Survey Grid Lines

ROCK TYPES

- Greywacke / Siltstone / Shale (g/ss/sh)
- Fine Greywacke / Siltstone / Shale
- Greywacke and/or Grit (g/gt)
- Hematite Shale (hsh)
- Chert and Cherty Sediment (ct & ct-sed)
- Quartz Feldspar Porphyry, Rheopelite type (qfp)
  Quartz Feldspar Porphyry, other types (qp)
- Dolerite (d)
- Bedded Ironstone
- Sediment Scree
- Quartz Eye Scree
- Quartz Veins and Scree
- Hematite Scree
- Quartz Jasper Scree
- No Outcrop

SCALE

1 12000 / 1000' to 1"

500 0 500 1000 METRES

1000 500 0 1000 2000 3000 FEET

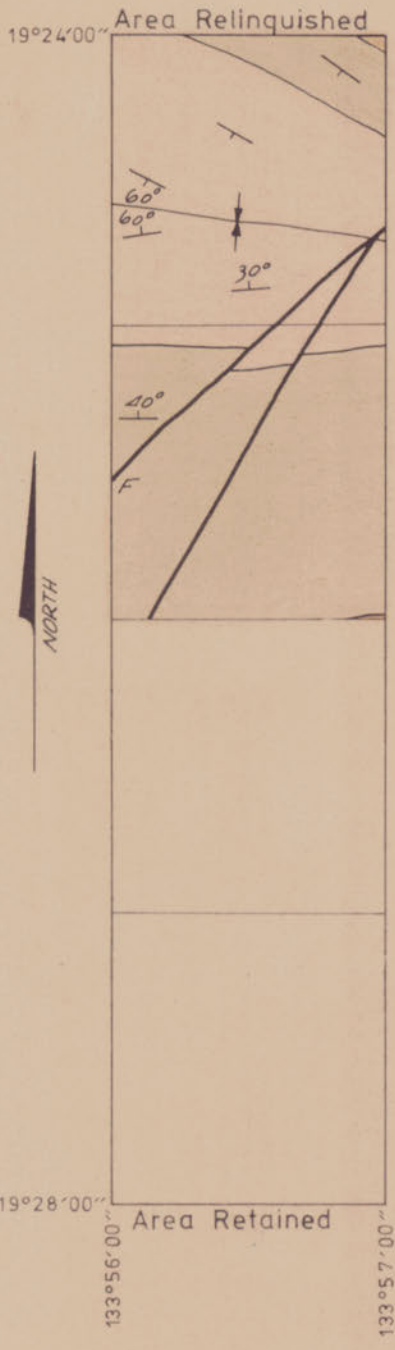
GEOPEKO LIMITED

No. TF 1221

Fig. 2 GEOLOGICAL MAP E.L. 860

CR 75/91

GEOLOGIST M Lowe DRAWN [illegible] DATE 27 5 1975



CARRAMAN FORMATION

UPPER CARRAMAN MEMBER

QUARTZ FELDSPAR PORPHYRY

MIDDLE CARRAMAN MEMBER

LITHOLOGICAL BOUNDARY

BEDDING TREND

60° STRIKE AND DIP OF STRATA

SYNCLINAL AXIS

F FAULT

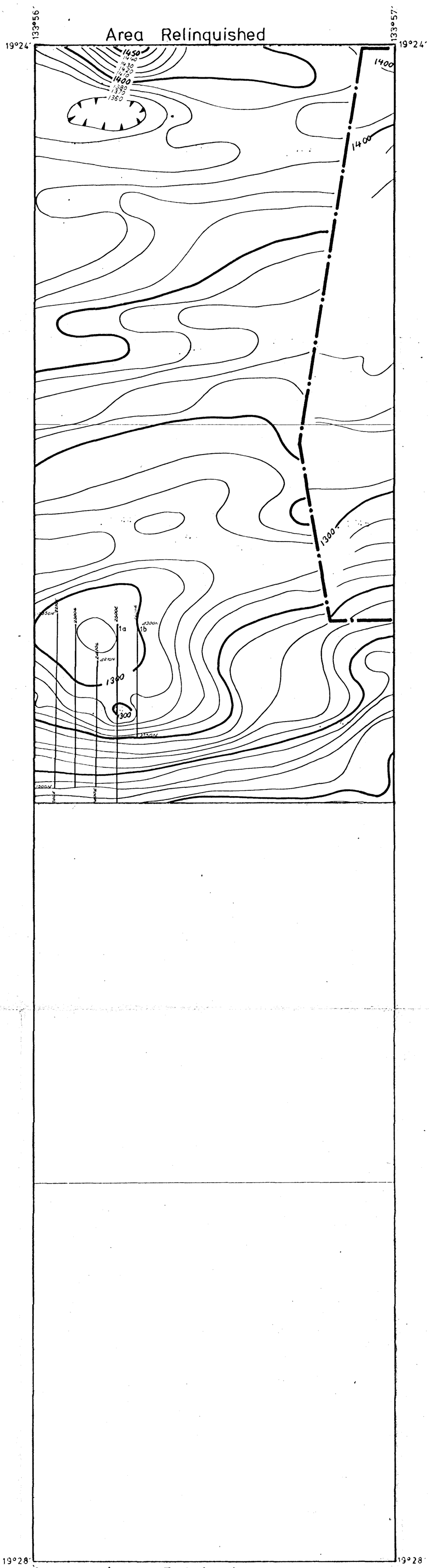
Fig.3

GEOPEKO LTD. TENNANT CREEK

GEOLOGIST	M.C.L.	6/74
DRAWN	F.W.T.	6/74
SCALE	1 TO 48,000	
PLAN N°	TF 1248	

Area Relinquished from EL 860

SIMPLIFIED STRUCTURE



LEGEND

- Survey Grid
- 6d — Vehicle Magnetometer Traverse
- 1450 / 1400 — Magnetic Contours
- Magnetic 'low'
- .2 — Photo Centre
- Wing Point
- Trig. Point
- △ Lease Peg
- Lease Boundary

SURVEY INDEX

SURVEY AREA B
Contours compiled from B.M.R. survey, 1967

SURVEY AREA A
Contours compiled from B.M.R. survey, 1966

SCALE
1" 12000 / 1000' to 1"

500 0 500 1000 METRES
1000 500 0 1000 2000 3000 FEET

GEOPEKO LIMITED
Nº TF 1223

Fig.4 AEROMAGNETICS E.L. 860

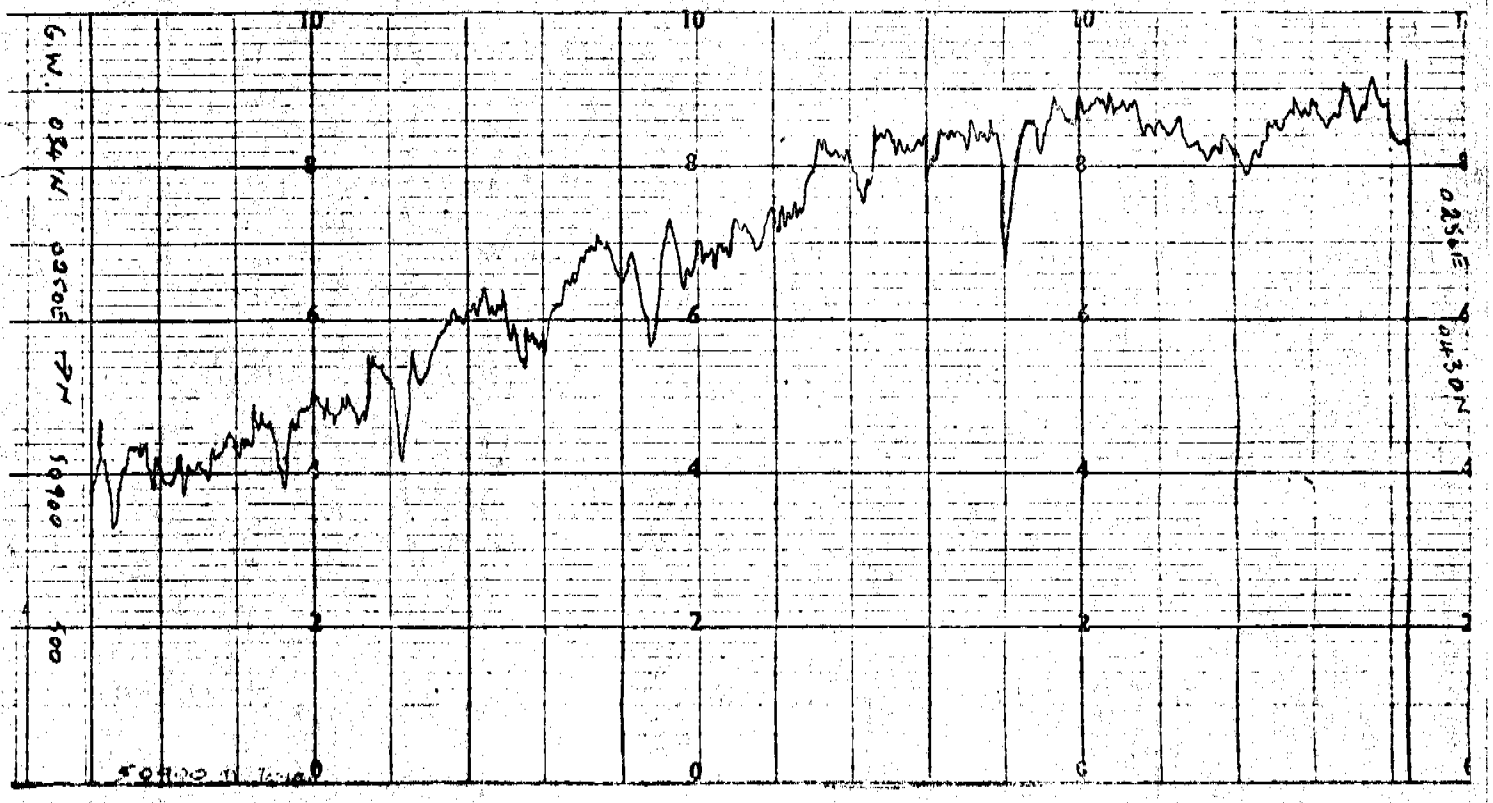
CR 75/91

GEOLOGIST M Lee

DRAWN [illegible] DATE 28 5 1975
AMENDED: [illegible] DATE 26 9 1975
20-5-1975

Figure 5.

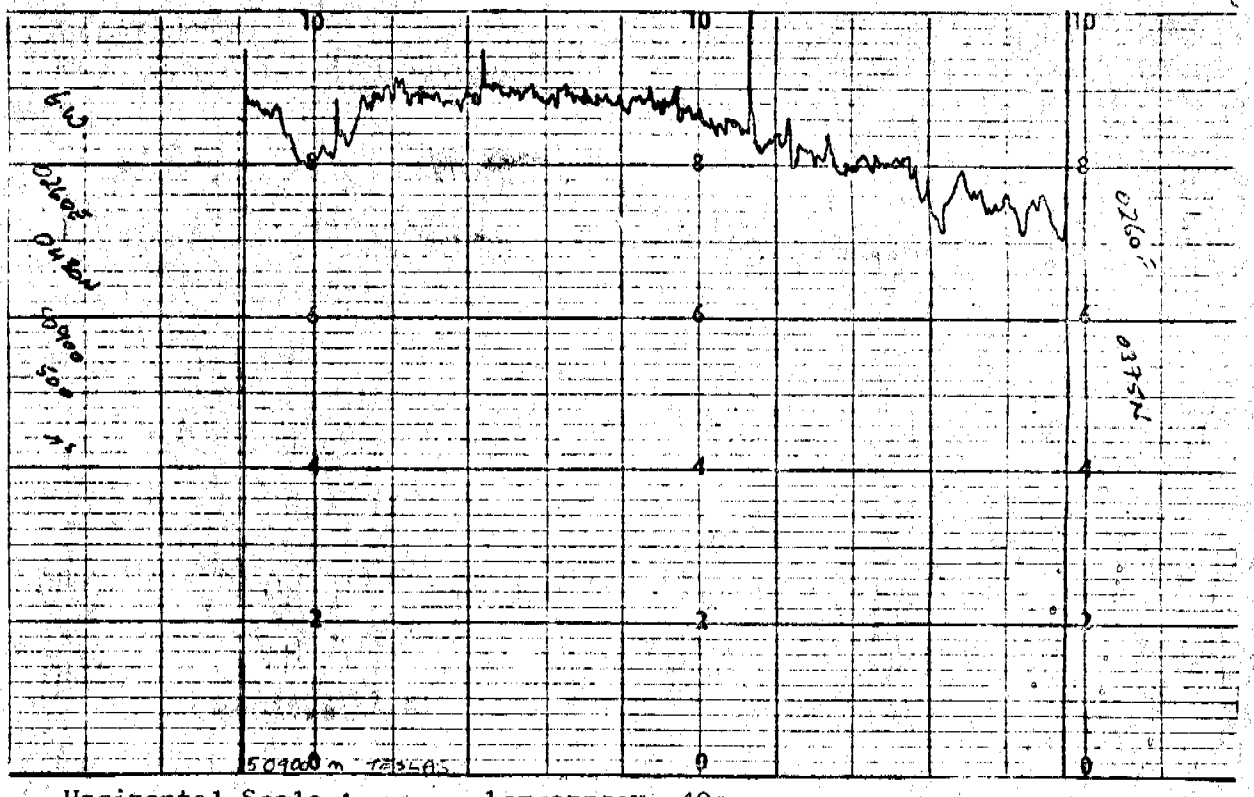
Vehicle Magnetometer Chart Record 1a.



Horizontal Scale : 1cm approx. 50m
Vertical Scale : 1cm = 50m TESLAS

Figure 6.

Vehicle Magnetometer Chart Record 1b.



Horizontal Scale : 1cm approx. 40m
Vertical Scale : 1cm = 50m TESLAS

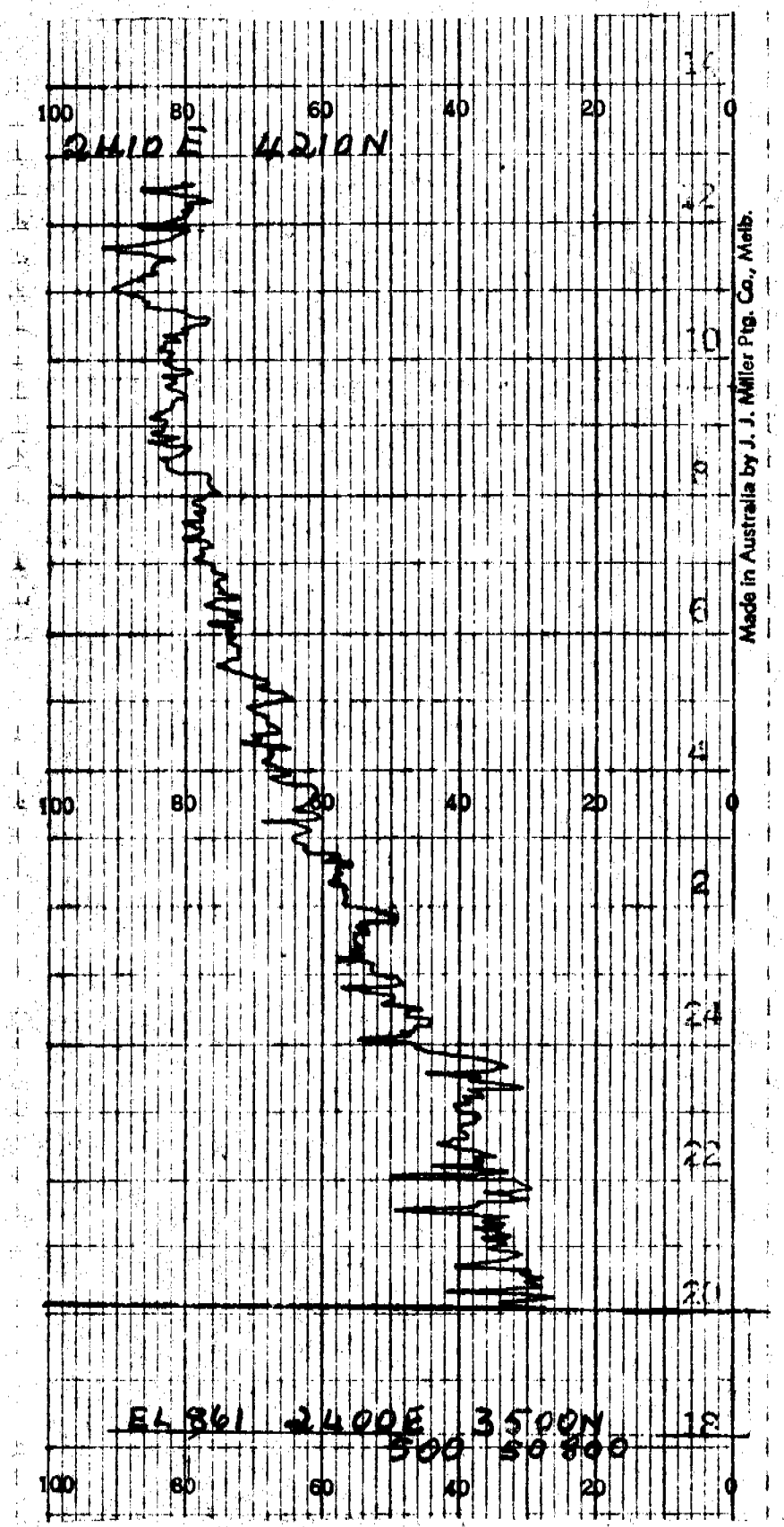


Fig. 7 , VEHICLE MAGNETOMETER CHART RECORD lc
from 2400mE 3500mN to 2410mE 4210mN
referred Great Western Regional Grid
Horizontal scale lcm=50m approx
Vertical scale lcm=50n TESLAS

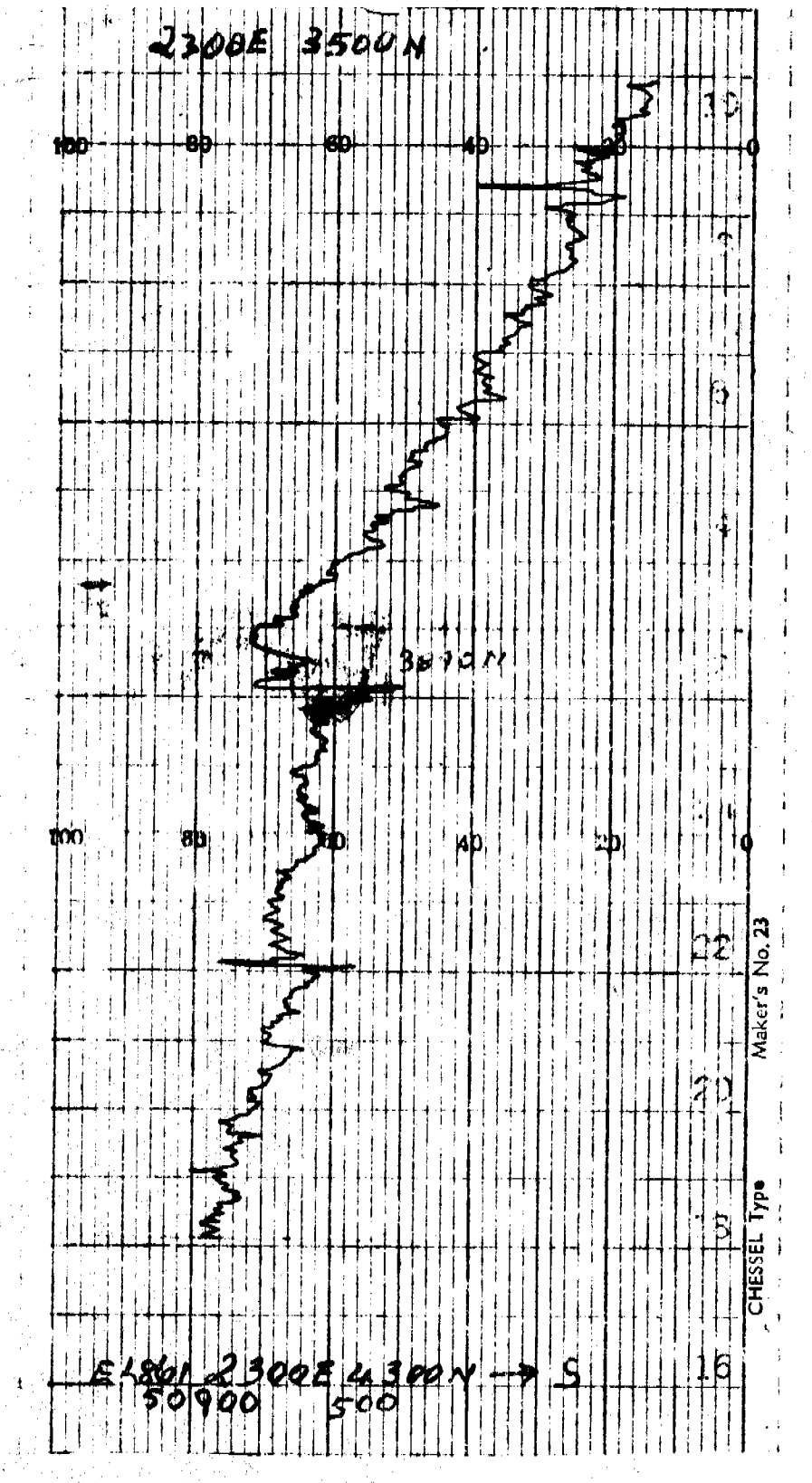


Fig. 8 VEHICLE MAGNETOMETER CHART RECORD 1d
from 2300mE 4300mN to 2300mE 3500mN
referred to Great Western Regional Grid
Horizontal scale 1cm=50m approx
Vertical scale 1cm=50n TESLAS

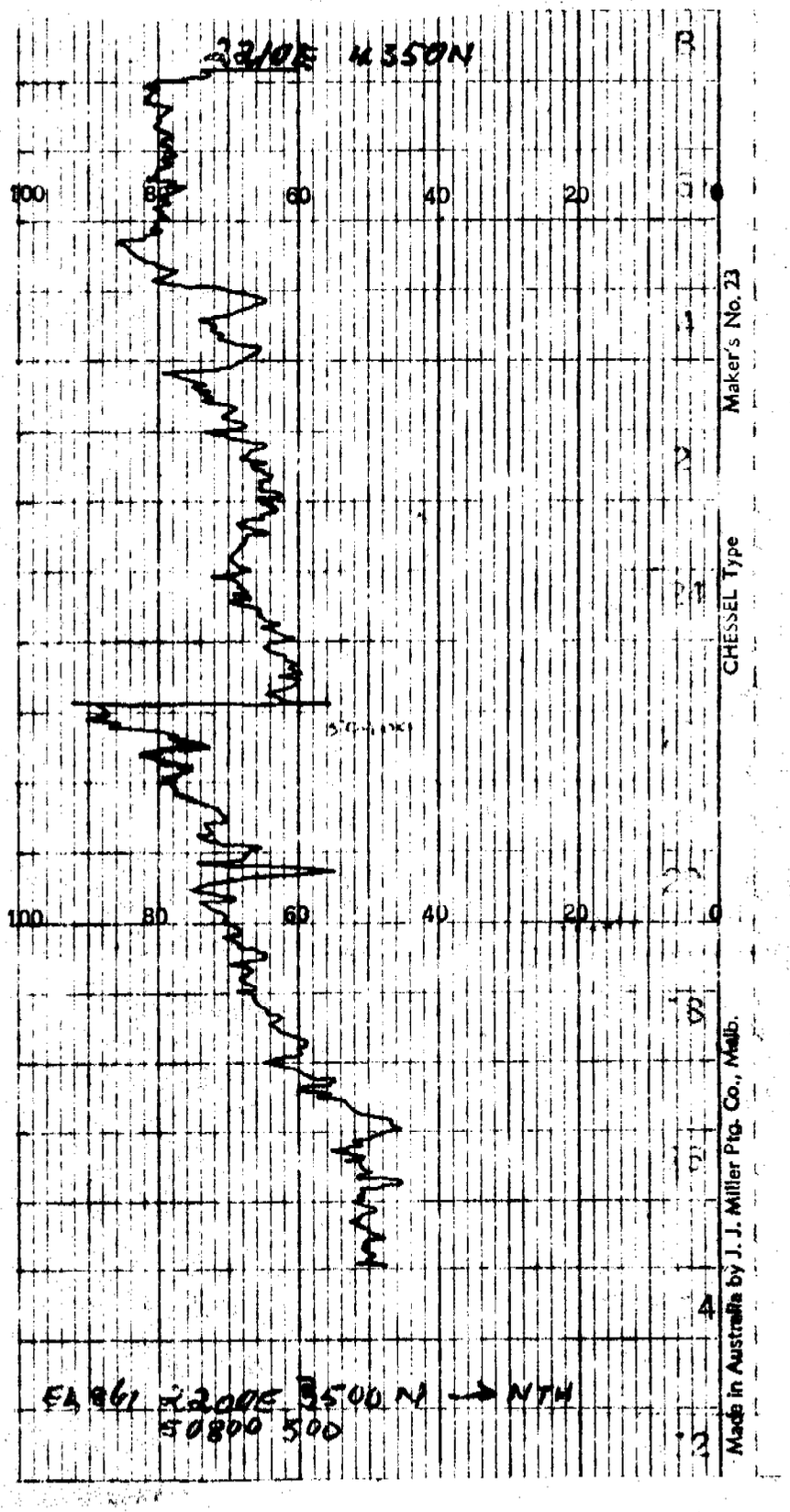


Fig.9 VEHICLE MAGNETOMETER CHART RECORD le
from 2200mE 3500mN to 2210mE 4350mN
referred to Great Western Regional Grid
Horizontal scale 1cm=50m approx
Vertical scale 1cm=50n TESLAS