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EXPLORATION LICENCE EL 8246

"MURCHISON RANGE 2"

BONNEY WELL AREA, NORTHERN TERRITORY

ANNUAL EXPLORATION REPORT

FOR THE YEAR 29.12.93 TO 28.12.94

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George Sakalidis
North Star Resources N.L.
26 January 1995

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1.0 SUMMARY

This report summarises the first year of exploration carried out on EL 8246, Murchison Range 2. The work consisted of preliminary identification and ground follow-up of magnetic targets based on Tennant Creek - style copper and gold deposits.

At Tennant Creek, gold occurs with iron and copper sulfides in magnetite or hematite-rich (ironstone) lodes, with or without quartz. The mineralised zones are generally found with chlorite alteration envelopes in shears within the Proterozoic Warramunga Group of sedimentary rocks, their distribution suggesting an association with major regional structures. The chloritic alteration indicates a hydrothermal origin.

Magnetite is a common accessory mineral in many of the known lodes, making these detectable by magnetic survey methods. Several significant ore deposits in the region were initially detected by aeromagnetic and ground magnetic surveys, though at least one deposit (Noble's Nob) was an essentially non-magnetic quartz-hematite lode.

The probability of unknown non-magnetic bodies is being addressed in various ways, though magnetic survey methods remain an important exploration tool in the Tennant Creek region.

EL 8246 is one of a group of Exploration Licences taken up by North Star Resources N.L. over peripheral zones of the Tennant Creek field where Warramunga Group rocks have been inferred from regional mapping, but extensive Quaternary soils or Phanerozoic cover have inhibited thorough appraisal by previous explorers.

Recent napping by the NTGS has substantially revised the lithostratigraphy of the Tennant Creek Block, subdividing the Warramunga Group into an older Warramunga Formation and a younger Flynn Subgroup. As details of the subdivision were still in print at time of writing, the older usage is continued for the purposes of this report.

The basis of target identification was the analysis of reprocessed public domain aeromagnetic data, both regional and detailed, which was compiled by the Company. Digitising and computer reprocessing of this data has enabled the preparation of visually enhanced aeromagnetic imagery, the analysis of which has yielded a number of previously unrecognised structural and magnetic anomalies.

A total of ten target areas were selected within EL 8246 from the similarity of their magnetic signatures to structural and magnetic features of known Tennant Creek ore deposits.

Four of the ten targets (T7, T8, T9 & T10) were recovered by detailed ground magnetic surveys during the year, the remainder will be completed during the 1995 field season.

Target 7 has similarities to the Noble's Nob structural situation at Tennant Creek. Target 8 has a discrete anomaly with a dipole-type signature. Targets 9 and 10 both have large positive anomalies associated with them that warrant further investigation.

5.0 ABORIGINAL SITES

Details of EL 8246 were forwarded to the Aboriginal Areas Protection Authority (AAPA) in Alice Springs with a request for advice on the location of any aboriginal sacred sites. A letter from the AAPA advised there were no registered sacred sites within the area with the proviso that unknown sites may be present, and suggested applying for an Authority Certificate.

As expenditure commitments on EL 8246 required some field work to go ahead during the season, advice was sought from the local pastoralist who proved well-informed on these matters. He advised that the only site which had come to his attention from the local Aboriginal population was within granite hills around Jimmy Creek, in the northwest corner of EL 8246. He also advised that it was prudent to safeguard certain natural features such as large bloodwood trees that may be of significance to specific individuals. These were therefore carefully avoided in the course of field work during the year.

6.0 REGIONAL GEOLOGICAL SETTING

The tenement area lies along the eastern margin of the Tennant Creek Inlier, an intensely folded, early Proterozoic intra-cratonic basin succession of mainly sedimentary and minor felsic volcanic rocks, intruded by younger granitoids. The inlier forms a NNW-trending belt some 700 km in length which is centered on the town of Tennant Creek. Three distinct sedimentary sub-provinces form the inlier, the oldest being the Tennant Creek Block in the centre of the belt, overlain by younger rocks of the Davenport Province to the south, and the Tomkinson Creek Province to the north.

EL 8246 lies in the northeast corner of the BONNEY WELL sheet, an area enclosing the boundary between the southern extension of the Tennant Creek Block, and the northwestern part of the overlying Davenport Province. Flat-lying Phanerozoic sediments of the Georgina Basin lap onto the Proterozoic from the east.

The oldest rocks are poorly exposed, but have been assigned to the Warramunga Group of greywackes, silt-stones and felsic volcanics of the Tennant Creek Block. Warramunga sedimentation occurred in proximal to distal fan settings, the detritus derived from rapid erosion of mixed volcanic facies probably uplifted in isostatic response to down-warping of a pull-apart basin into which the sediments were deposited. The deposition took place at about 1870 Ma, with tight folding at about 1810 Ma.

Warramunga Group rocks are unconformably overlain by Hatches Creek Group sediments and volcanics, and are intruded by granites and porphyries. Hatches Creek Group rocks form the Davenport and Murchison Ranges to the south and west which stand out in relief above flat, soil-covered peneplain underlain by Warramunga rocks.

Papers presented at the 1994 Annual Conference of the AusIMM in Darwin indicated that recent (1989-1992) mapping by the NTGS has substantially revised the lithostratigraphy of the Tennant Creek Block. The Warramunga Group is no longer recognized as a single unit, having been subdivided into an older, intensely deformed Warramunga Formation, overlain by a less deformed succession named the Flynn Subgroup. The ore bodies around Tennant Creek are associated with the older unit. Updated geological maps showing the distribution of the new unite were not available at time of writing.

The significance of this revision to the exploration potential of EL8246 cannot be determined at this time. For the purposes of this report the older usage of Warramunga Group is continued, on an assumption that the local rocks may be a Warramunga window through Flynn Subgroup.

7.0 EXPLORATION MODEL: TENNANT CREEK-STYLE Au-Cu-Bi MINERALISATION

The basis for acquisition of EL 8246 and other exploration tenements in the area by North Star Resources N.L. was the combined presence of Warramunga Group rocks under cover and associated magnetic stratigraphy delineated from detailed and regional aeromagnetic surveys. These comprised digital and contour compilations covering the BONNEY WELL and FREW RIVER sheets. Rocks of the Warramunga Group are the chief hosts to economic mineralisation in the Tennant Creek region, most of the known oebodies being associated with magnetic stratigraphy, and magnetic dipole signatures related to structural intersections and axial folding.

During 1982-83 the area was held under EL 2884 by Key Resources Pty Ltd. Reports lodged with DOME (Items CR 82/374 and CR 83/330) consist of a prospectus-style, extremely thorough and detailed review of all geological and exploration data for the area, including conceptual summaries of potential ore deposit types and general recommendations for exploration. No field work was done in follow-up to this except for 16 stream sediment samples from Mosquito Creek and Kurundi Creek taken by BHP under a joint venture agreement. The samples were analysed for kimberlite indicators with negative results, and as geochemical assays for a suite of elements were likewise unremarkable, the tenement was relinquished.

The Open File reports indicate that most of previous exploration in the area was office-bound, consisting of acquisition and interpretation of aeromagnetic data, and compilation of geological reviews from published and other sources. Except for the limited field follow-up reported in 1972 there has been no systematic testing of magnetic targets on the ground. In part this was due to field follow-up being directed largely towards radiometric anomalies, but also due to a tendency for geo-interpreters to discount numerous aeromagnetic features as not being of the Tennant Creek ironstone lode type. This view is easily countered by the example of the Noble's Nob deposit whose magnetic response has been described as a broad magnetic feature suggestive of bedrock effect. In fact Noble's Nob has strong structural controls based on the intersection of marked NE and E trends at the western end of a long EW magnetic stratigraphic unit. This structural approach to target selection has not been extensively used by previous explorers.

10.0 AIRBORNE MAGNETIC DATA

EL 8246 is one of several Exploration Licenses taken up by North Star Resources N.L. over peripheral zones of the Tennant Creek Inlier where Warramunga Group rocks were recognised, but extensive soil cover has inhibited a thorough appraisal by earlier explorers. The areas were selected following studies of aeromagnetic maps for the Tennant Creek region compiled by the Company from public domain aeromagnetic surveys and AGSO digital and contour magnetic tapes.

The final interpretation shown on Plate 1 was derived from two different aeromagnetic data sets comprising firstly all AGSO aeromagnetic contours which have been digitised and presented at 1:100,000 scale (Plate 2). Secondly, all the available Open File detailed aeromagnetic contours have been reduced and located accurately at 1:100,000 scale (Plate 3). In addition, the AGSO data has been reprocessed, and second derivatives have been applied to the data, resolving the broader anomalies in greater detail.

11.0 AIRBORNE MAGNETIC INTERPRETATION

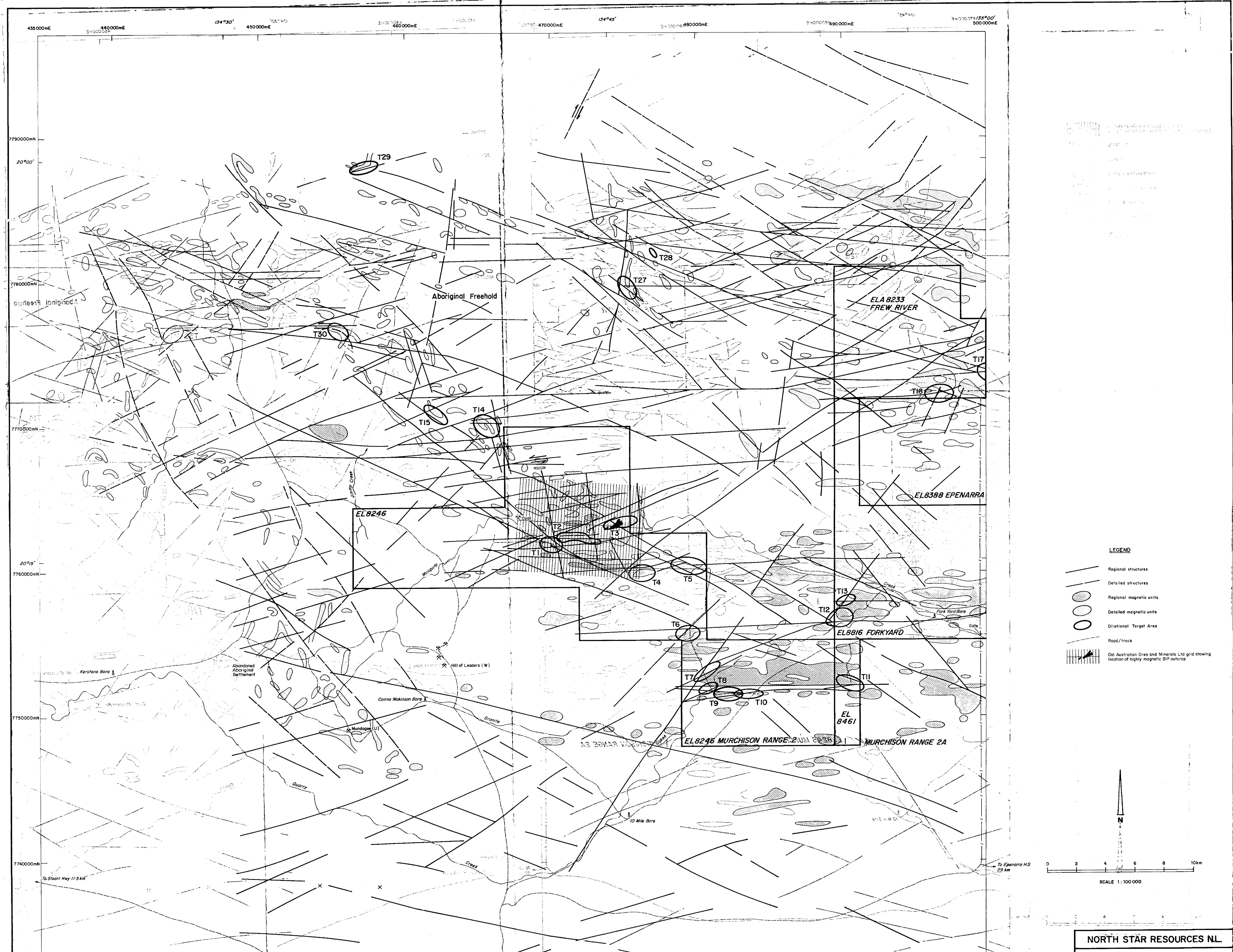
Exploration success has historically been achieved in the Tennant Creek field by drilling soil covered bullseye magnetic anomalies within the Warramunga Group. The main magnetic ore bodies discovered to date include:

Name	Gold Production (Ounces)	Ore Tonnage (Million tonnes)	Gold Grade (g/t Au)	Copper (%)
Warrego	1,154,000	4.70	7.60	2.10
Gecko	81,000	3.30	0.09	4.30
White Devil	667,000	1.40	15.00	-
TC8	45,700	0.08	17.60	-
Juno	790,000	0.45	57.50	0.30
Peko	214,000	3.10	2.10	3.80

Interpretation of the aeromagnetic data sets for EL 8246 led to ten target areas being selected on the basis of their structural and magnetic similarities to the pipe-like magnetic dipole signatures exhibited by Tennant Creek ore bodies. These targets, numbered T1 to T10 inclusive are shown on Plate 1.

15.0 EXPENDITURE SUMMARY: 1993 - 1994 SEASON

Personnel costs:	5,490
Geophysical field work	6,390
Geophysical processing and compilation	6,750
Magnetometer & equipment hire	3,330
Gridding and access	3,600
Accommodation and meals	2,475
Vehicle and travel costs	1,737
Drafting, reporting	2,322
Office overheads 15%	5,354
Total expenditure 1994 - 1995:	$41,048



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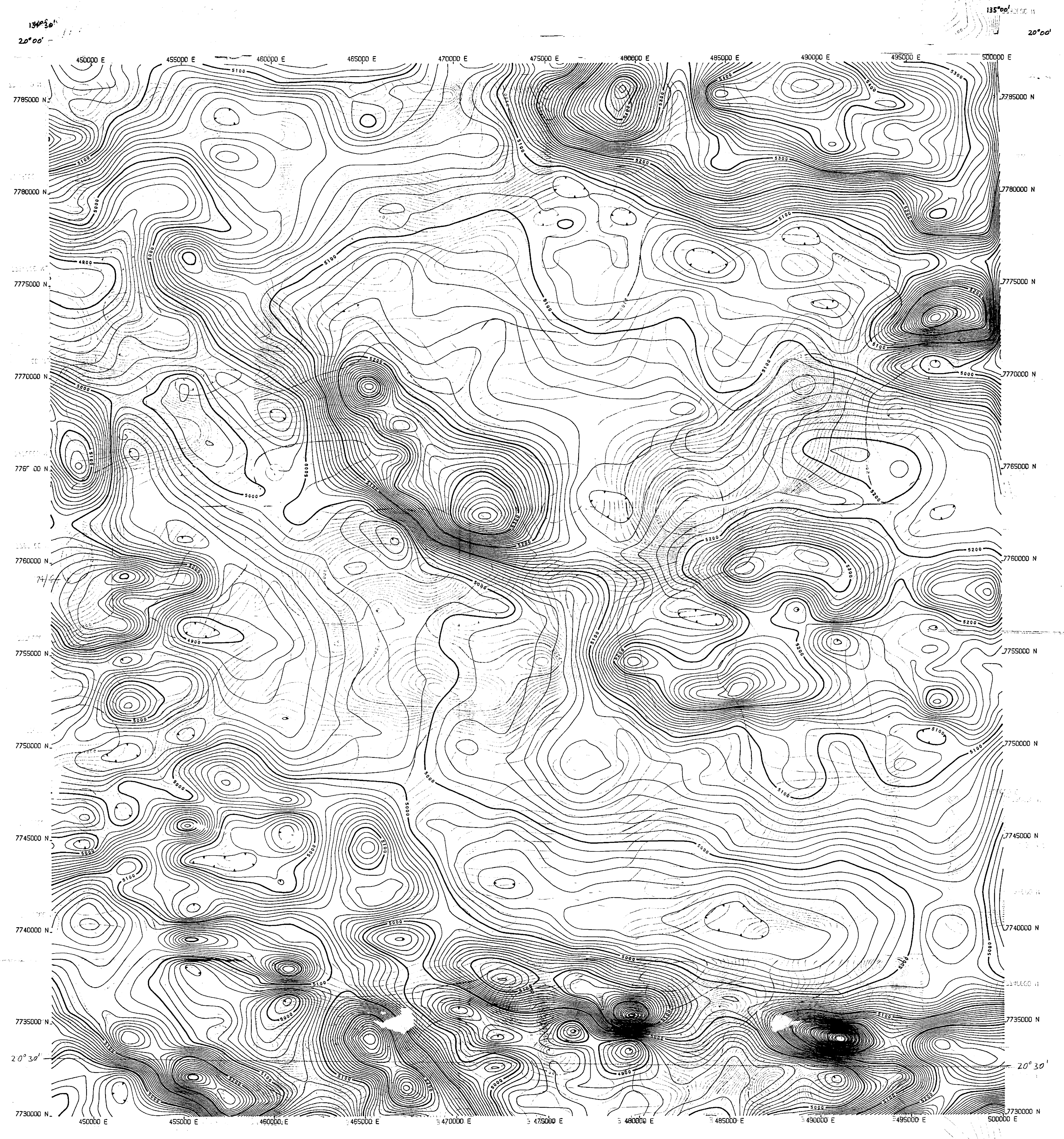
TENNANT CREEK REGION

AEROMAGNETIC INTERPRETATION

MURCHISON RANGE 2 (EL 8246) FREW RIVER (ELA 8233)
EPENARRA (EL 8388), MURCHISON RANGE 2a (EL8461)
FORKYARD (EL8816)

OORADIGEE SHEET

Geologist: G SAKALIDIS	Date:	PLATE 1



Scale 1:100000
1000 0 1000 2000 3000 4000 5000
(metres)

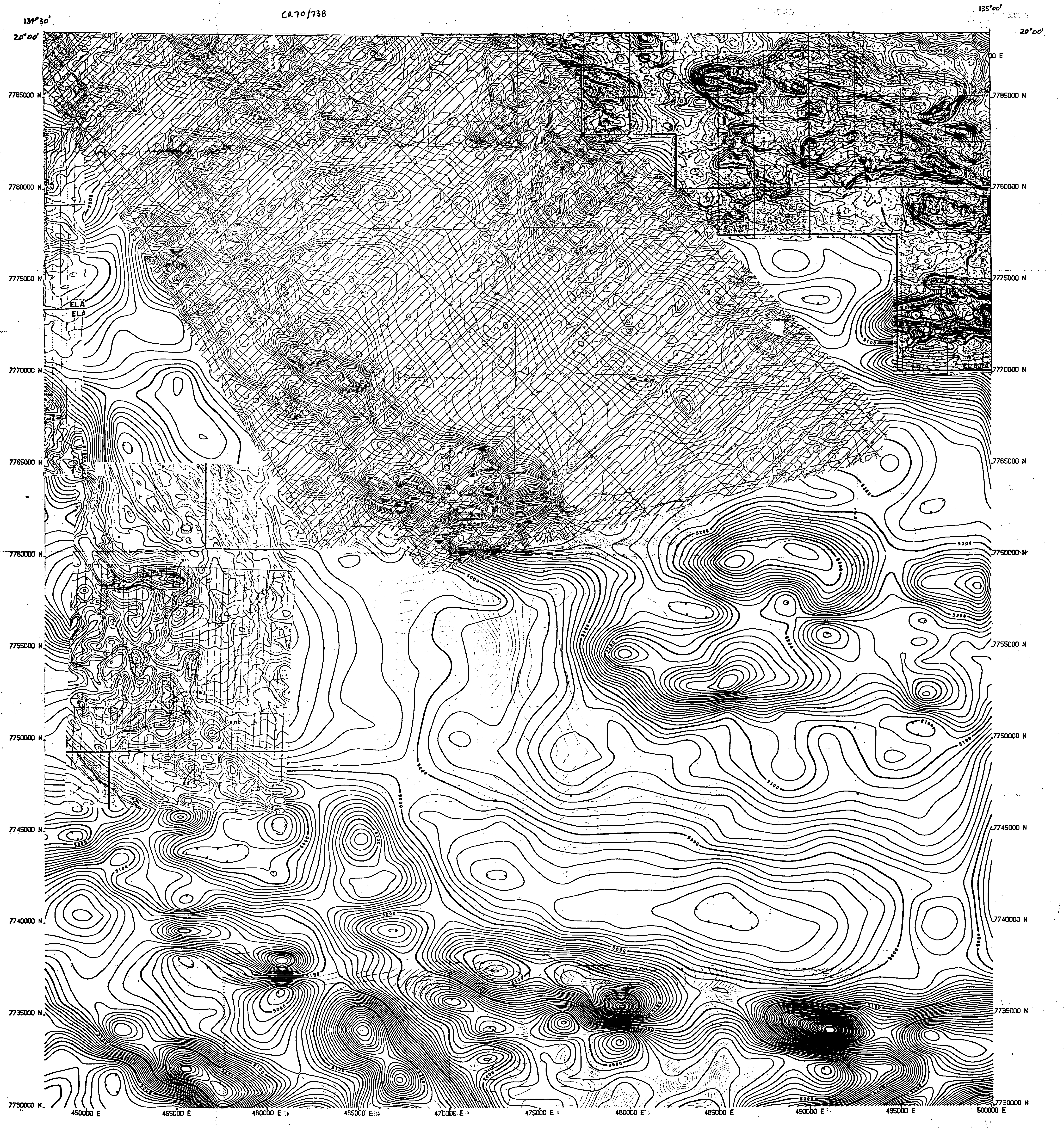
OORADIDGEE 1:100,000 SHEET

BMR AEROMAGNETICS

CONTOUR INTERVAL 10nT Plate2

MAGDATA CONSULTANTS

CR95/244



CR95/244

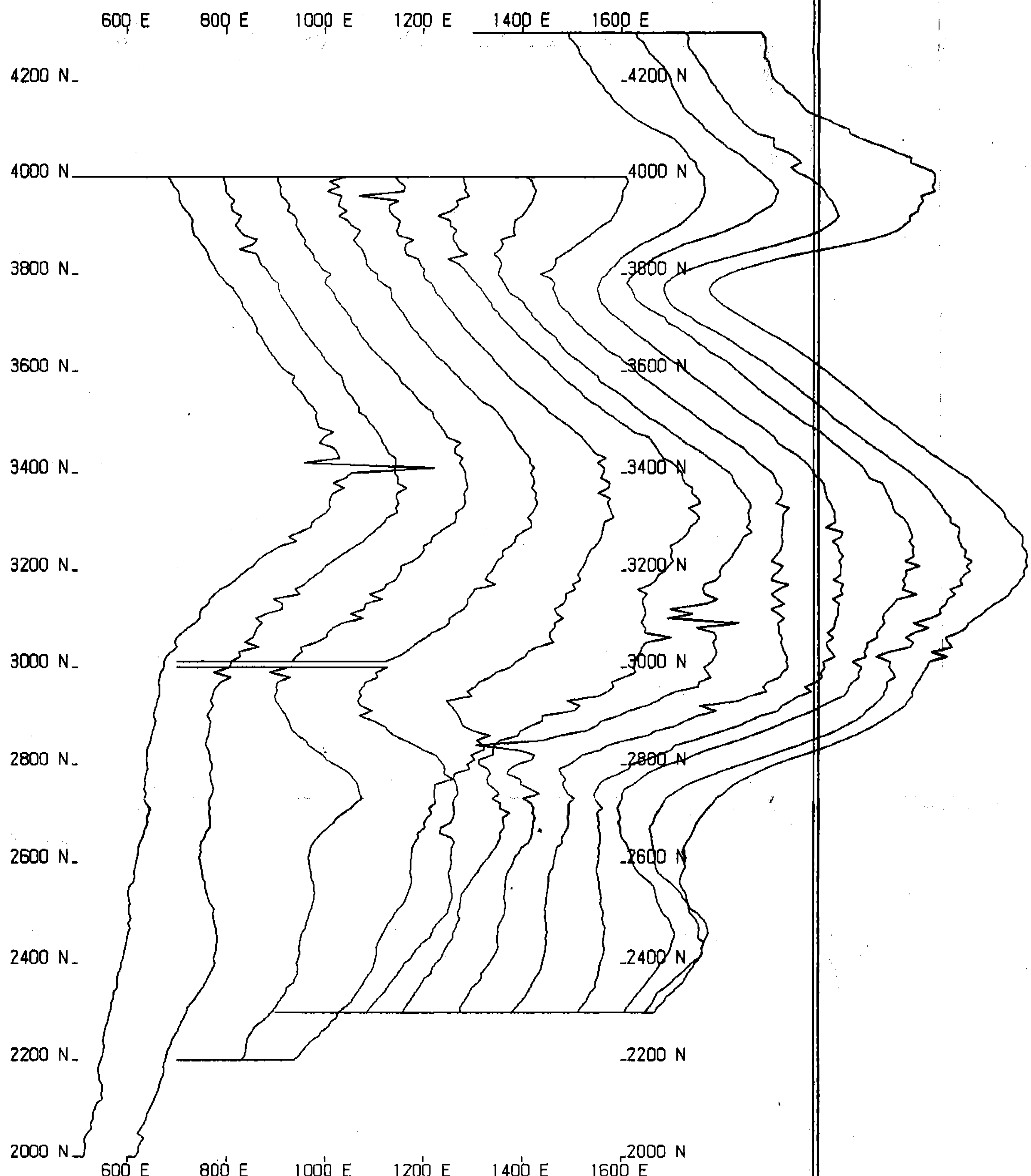
OORADIDGEE 1:100,000 SHEET

BMR AEROMAGNETICS

CONTOUR INTERVAL 10nT Plate 3

MAGDATA CONSULTANTS

Scale 1:100000



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MURCHISON RANGE2 T7,T8

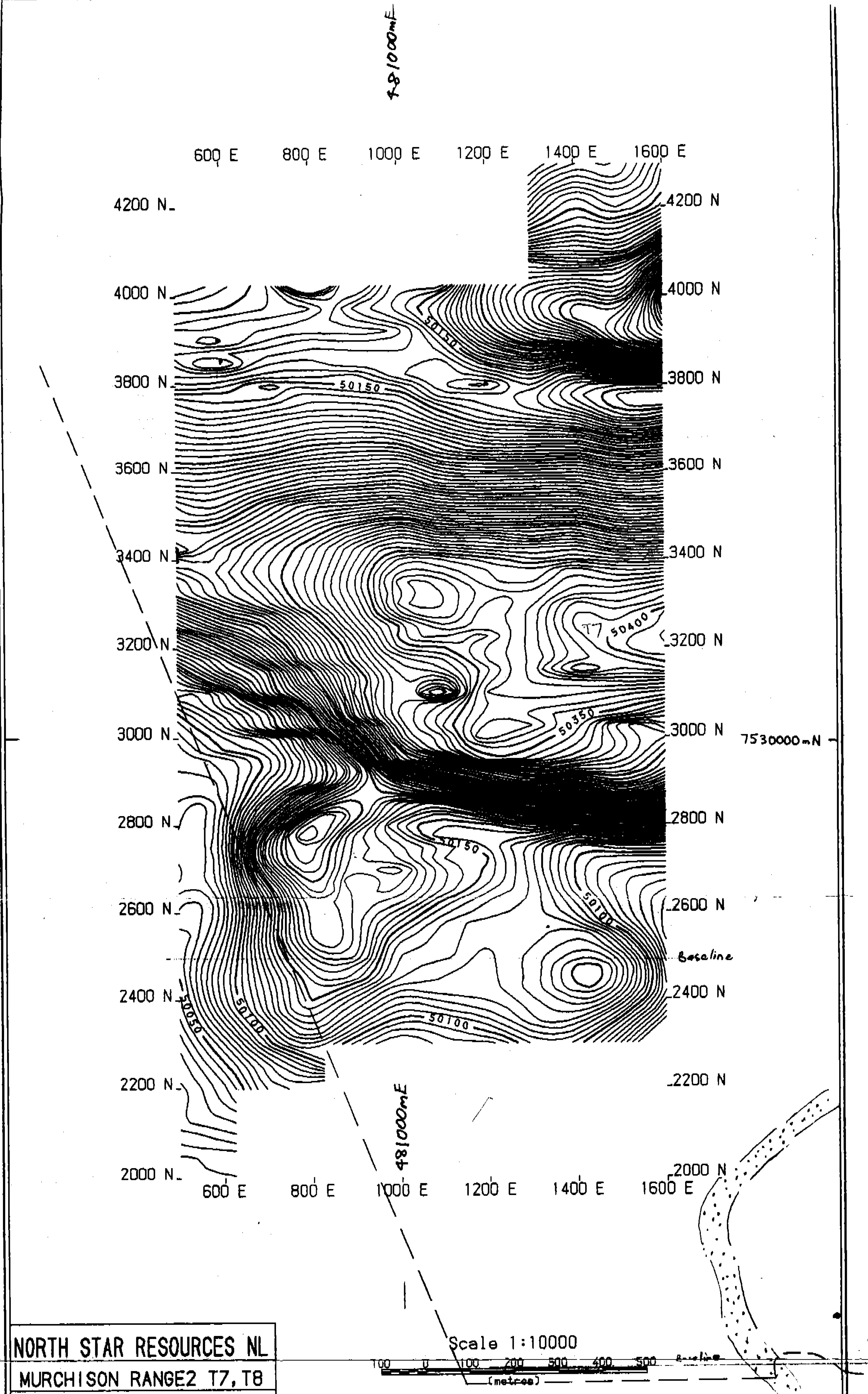
GROUND MAGNETIC PROFILES
LINE SPACING 100M STATION SPACING 10M
BASE LEVEL 50000nT VERTICAL SCALE 50nT/cm

MAGDATA CONSULTANTS

Scale 1:10000

100 0 100 200 300 400 500
(metres)

PLATE 4A



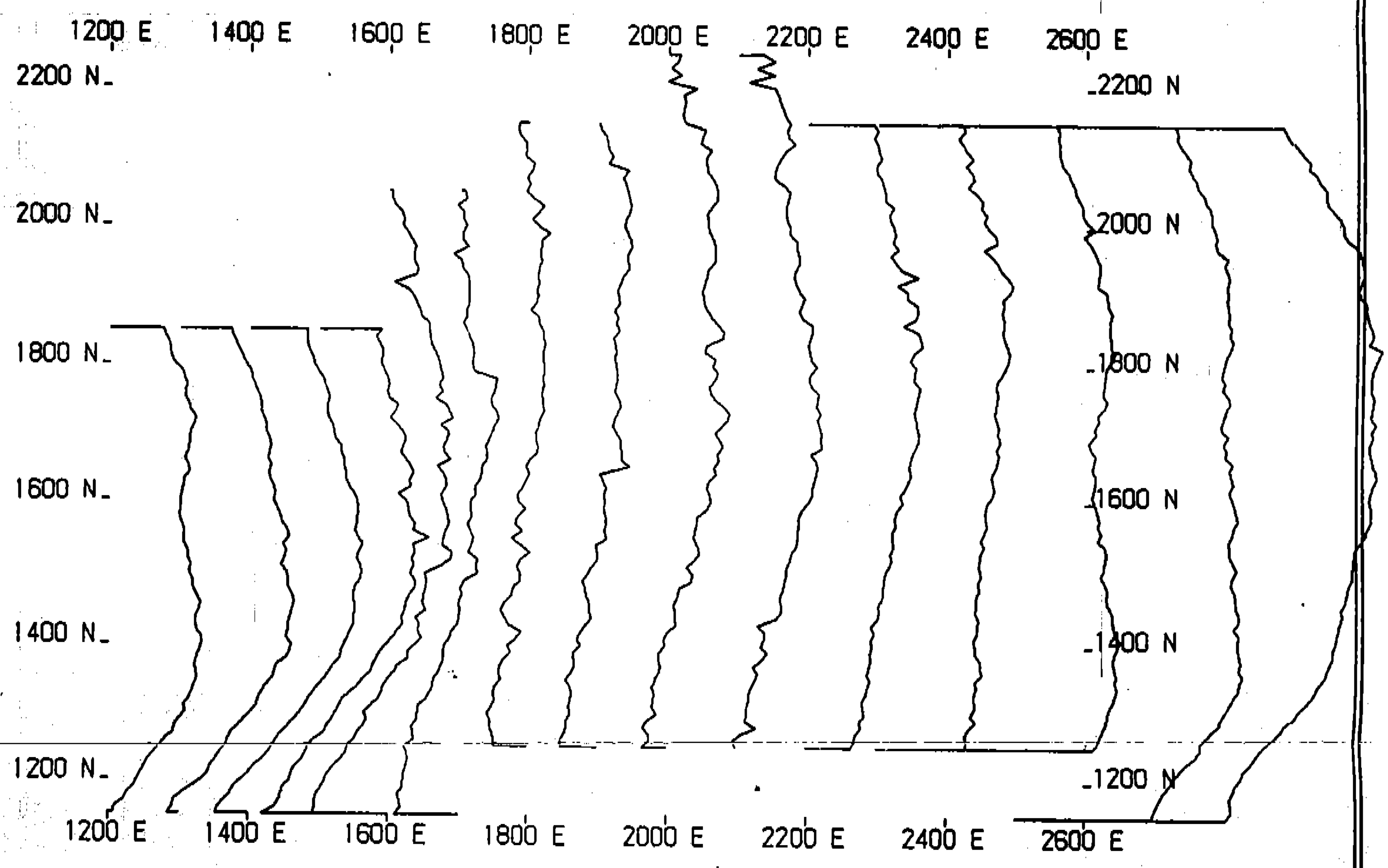
NORTH STAR RESOURCES NL

MURCHISON RANGE2 T7, T8

GROUND MAGNETIC CONTOURS
LINE SPACING 100M STATION SPACING 10M
CONTOUR INTERVAL 5nT

MAGDATA CONSULTANTS

PLATE 4B



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MURCHISON RANGE2 T9

GROUND MAGNETIC PROFILES
LINE SPACING 100M STATION SPACING 10M
BASE LEVEL 50000nT VERTICAL SCALE 50nT/cm

MAGDATA CONSULTANTS

Scale 1:10000

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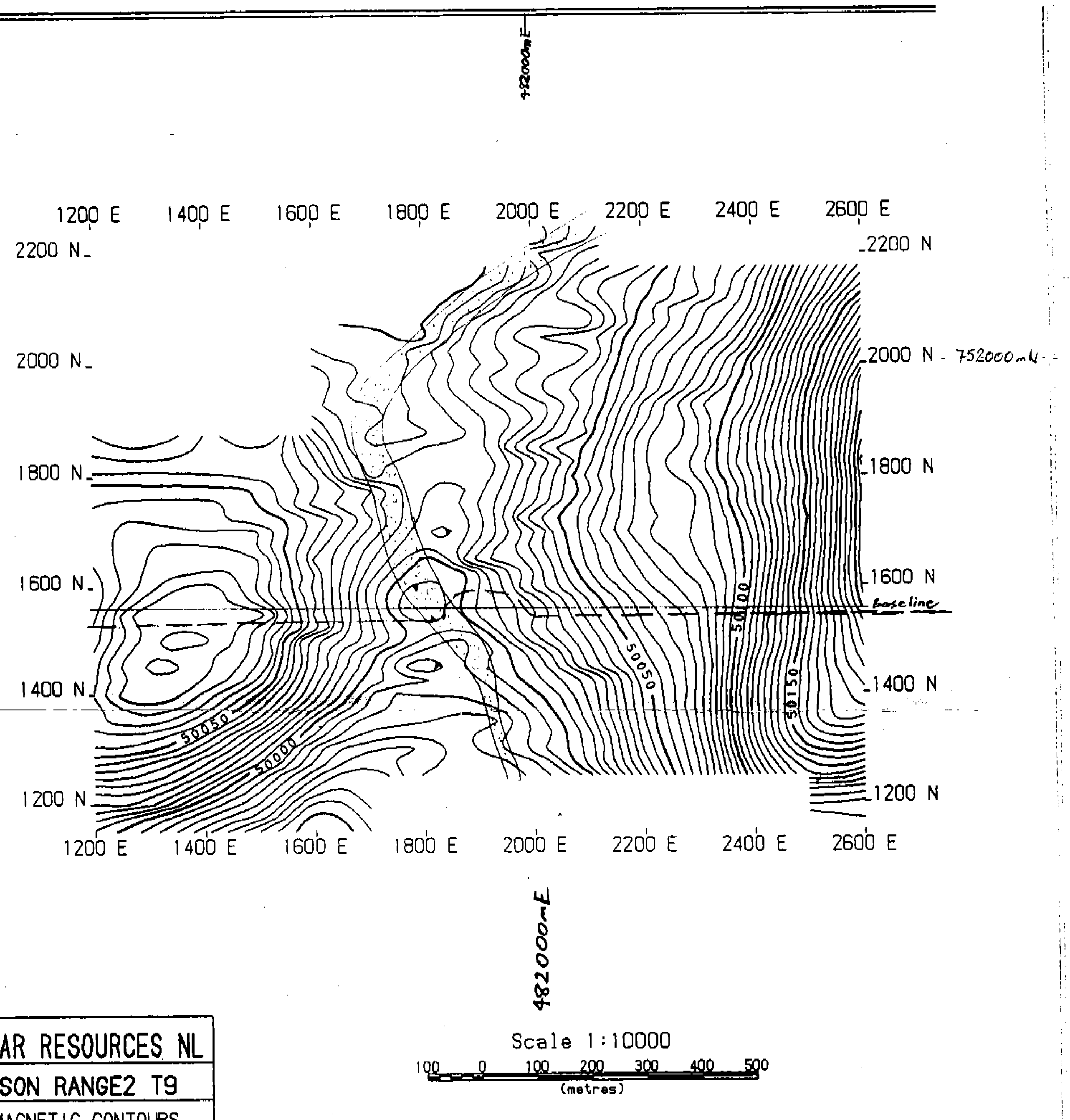
(metres)

PLATE 5A



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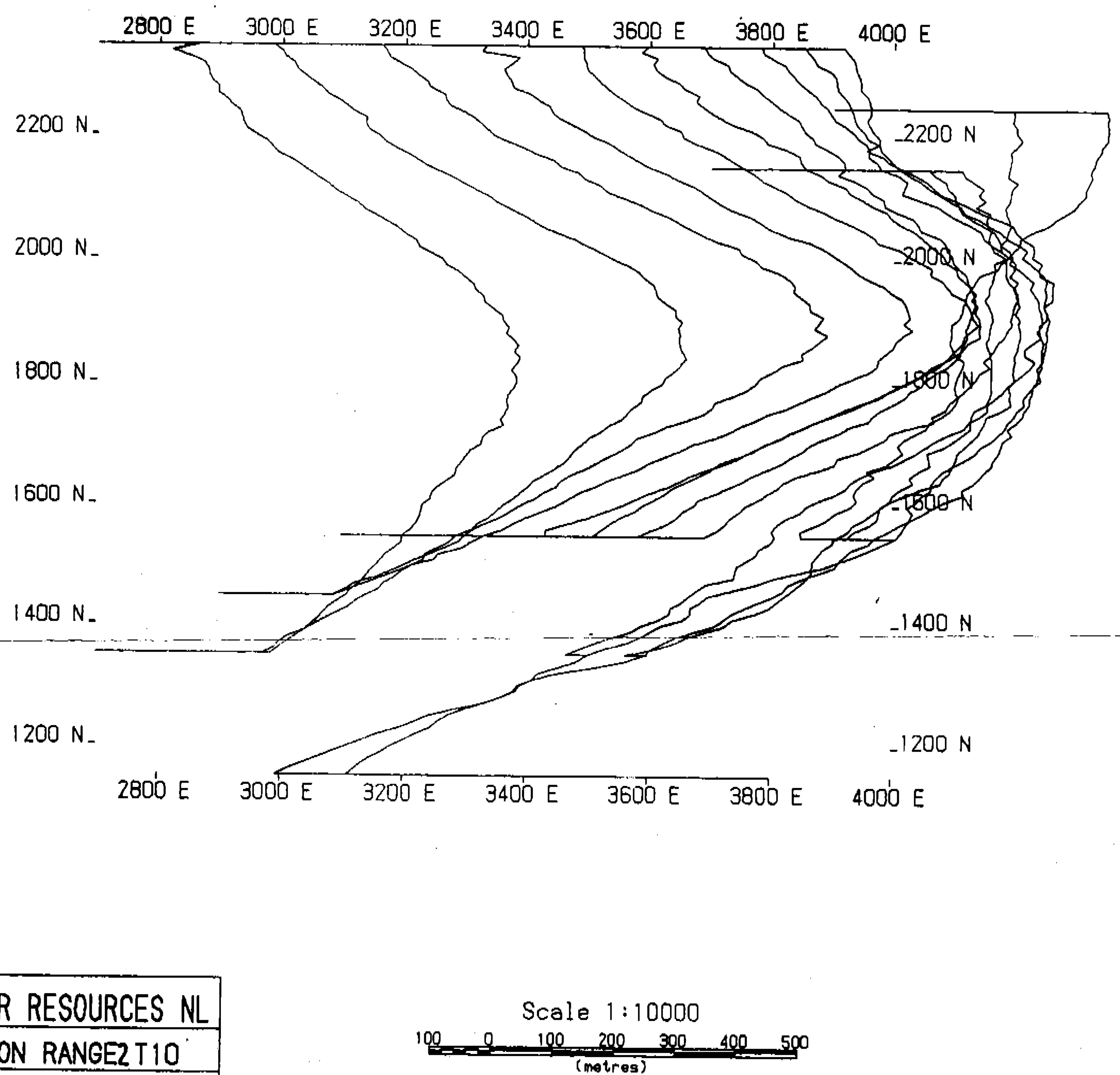
MURCHISON RANGE2 T9

GROUND MAGNETIC CONTOURS
LINE SPACING 100M STATION SPACING 10M
CONTOUR INTERVAL 5nT

MAGDATA CONSULTANTS

PLATE 5B



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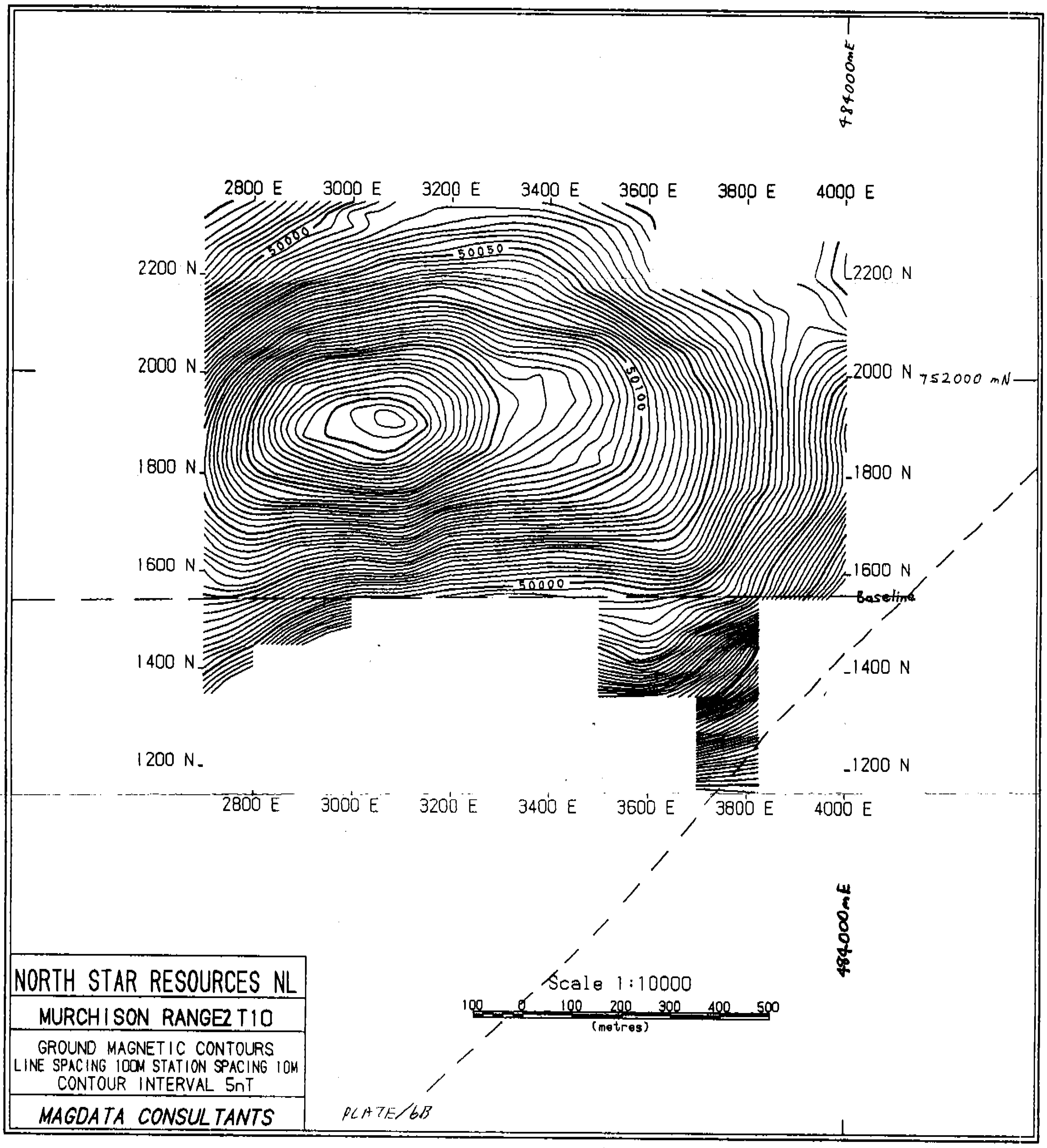
MURCHISON RANGE2 T10

GROUND MAGNETIC PROFILES
LINE SPACING 100M STATION SPACING 10M
BASE LEVEL 49900nT VERTICAL SCALE 30nT/CM

MAGDATA CONSULTANTS

PLATE 6A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3400 E
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3800 E
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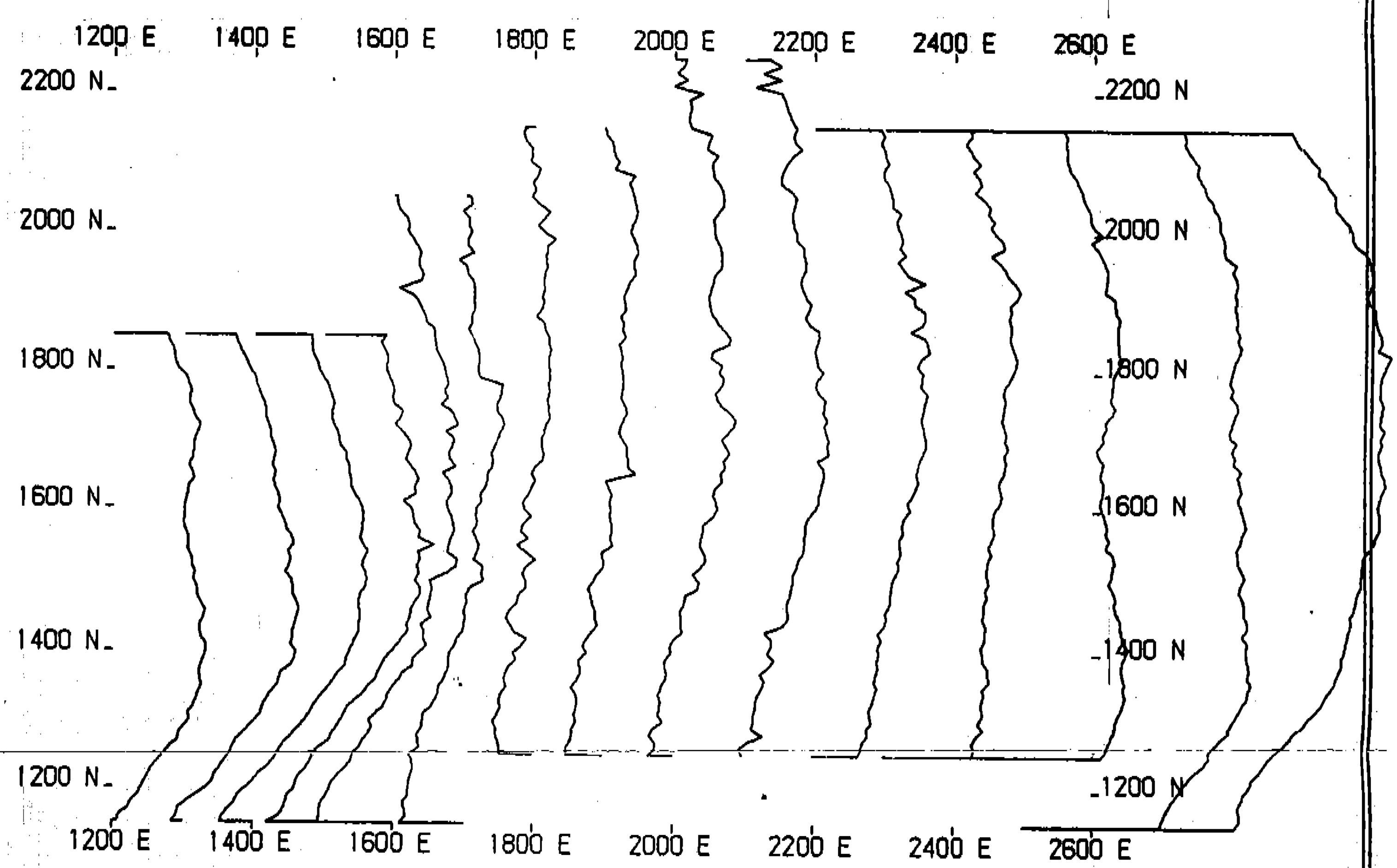
50000
50050
50100
2200 N
2000 N
1800 N
1600 N
1400 N
1200 N
752000 mN
Baseline
484000mE
Scale 1:10000
100 0 100 200 300 400 500
(metres)
NORTH STAR RESOURCES NL
MURCHISON RANGE2 T10
GROUND MAGNETIC CONTOURS
LINE SPACING 100M STATION SPACING 10M
CONTOUR INTERVAL 5nT
MAGDATA CONSULTANTS
PLATE/6B



Scale 1:10000

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(metres)

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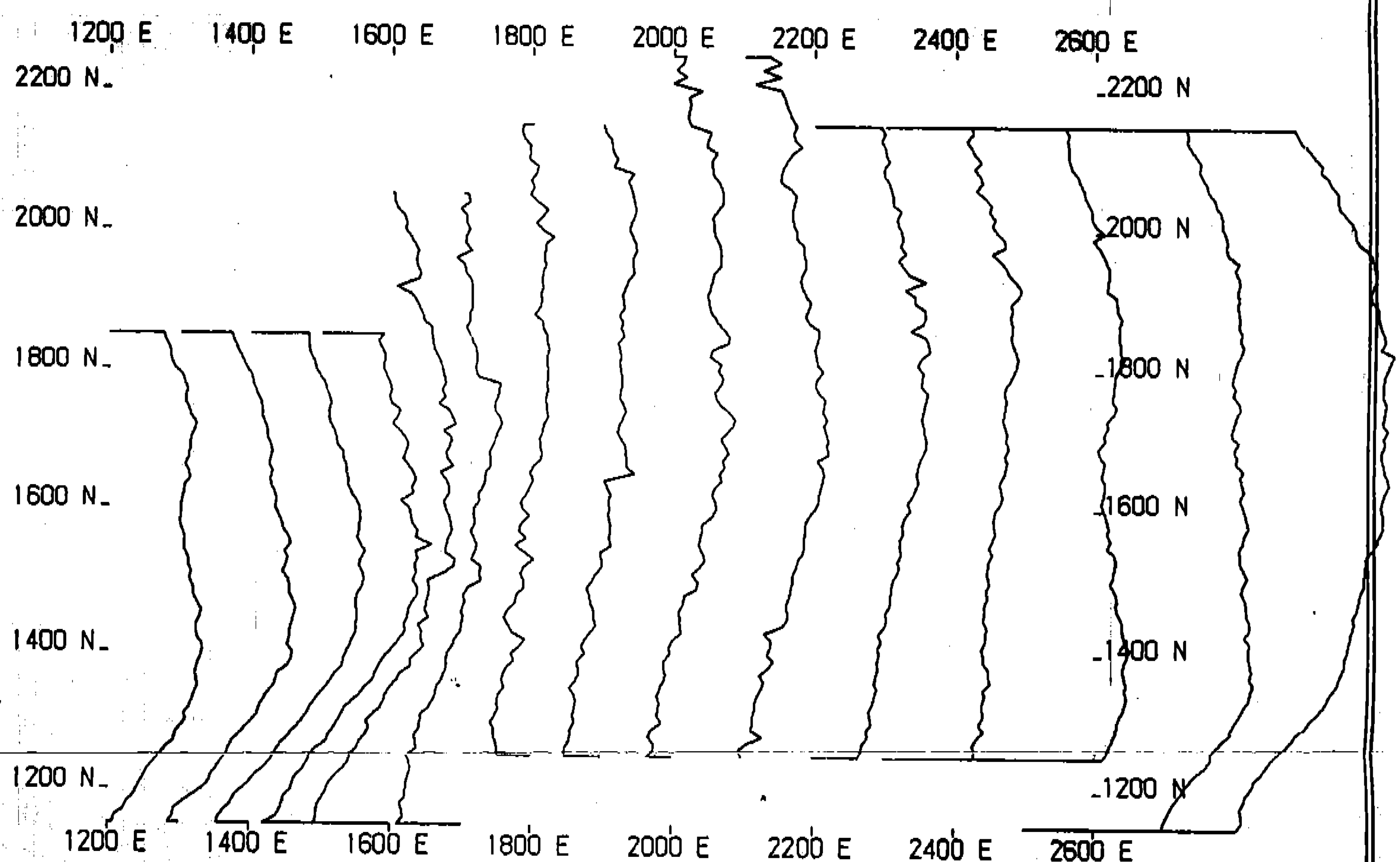
MURCHISON RANGE2 T9

GROUND MAGNETIC PROFILES
LINE SPACING 100M STATION SPACING 10M
BASE LEVEL 50000nT VERTICAL SCALE 50nT/cm

MAGDATA CONSULTANTS

PLATE 5A



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(metres)

NORTH STAR RESOURCES NL

MURCHISON RANGE2 T9

GROUND MAGNETIC PROFILES
LINE SPACING 100M STATION SPACING 10M
BASE LEVEL 50000nT VERTICAL SCALE 50nT/cm

MAGDATA CONSULTANTS

PLATE 5A