

6. REGIONAL AIRBORNE MAGNETIC SURVEY - REINTERPRETATION OF EL 2372, 6859 AND 7122

6.1 Introduction

An initial interpretation of airborne magnetic data had been made some years ago on the basis of known public domain geological information. Since that time North Flinders has undertaken geological mapping of exposed bedrock on its own behalf and synthesised this information with bottom of hole lithologies recorded across most of EL 6859 and 7122 during regional vacuum/RAB drilled bedrock sampling programs. A geophysical consultant re-assessed his original work in the light of this considerable body of new information.

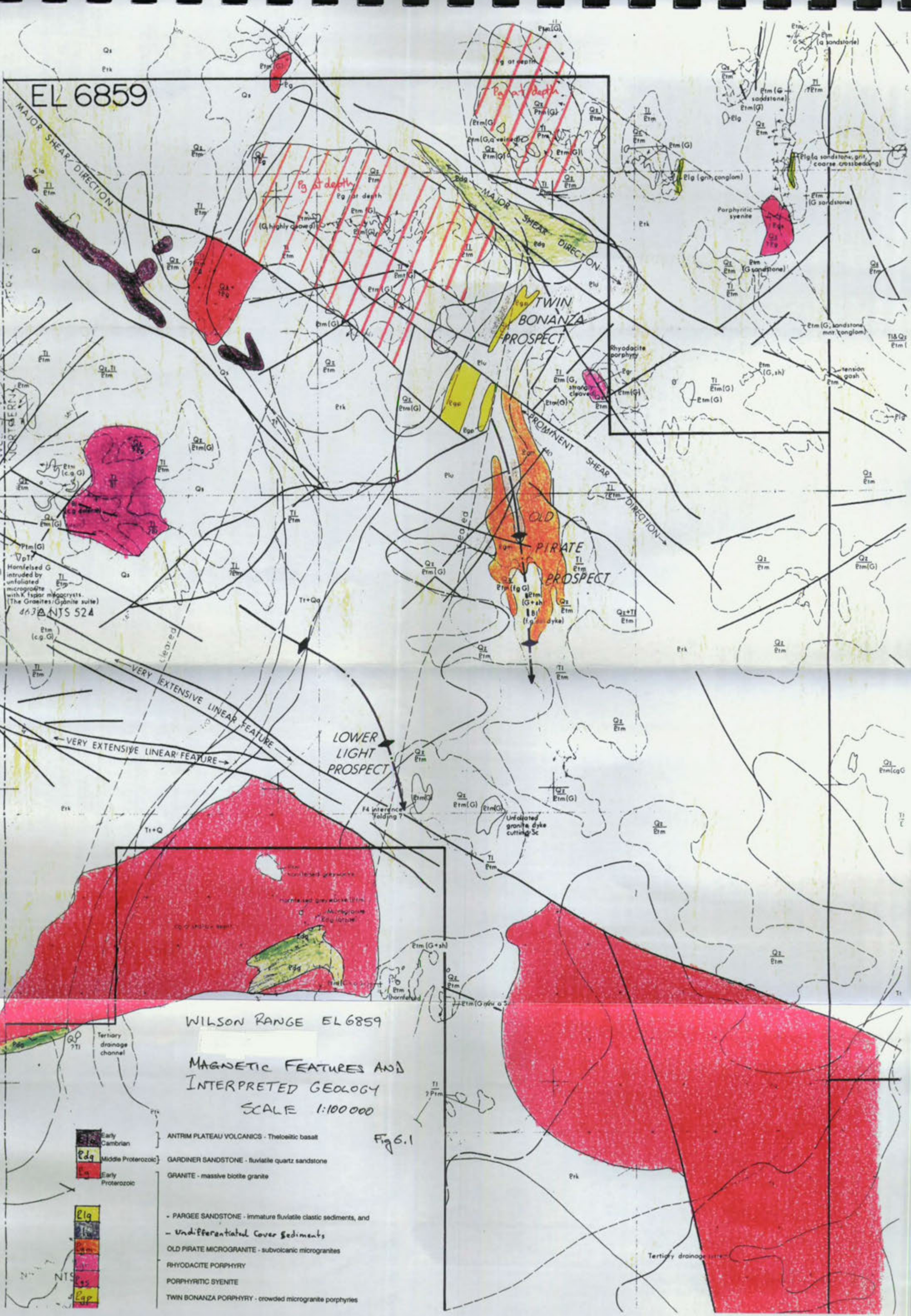
6.2 Work Undertaken

The consultant geophysicist reappraised current airborne magnetic interpretation plans (scale 1:25,000) with the benefit of recent outcrop mapping data and information from regional geochemical sampling programs which established bedrock lithologies under cover.

6.3 Results

The report and a full set of interpretive plans were produced. A significant change to the regional assessment was the addition of several plutons interpreted to occur at depth. These have encouraging implications in their relationship to gold anomalous areas.

EL 6859



WILSON RANGE EL6859

MAGNETIC FEATURES AND INTERPRETED GEOLOGY
SCALE 1:100 000

Fig 6.1

- | | |
|--|---|
| <ul style="list-style-type: none"> Early Cambrian Middle Proterozoic Early Proterozoic | <ul style="list-style-type: none"> ANTRIM PLATEAU VOLCANICS - Tholeiitic basalt GARDINER SANDSTONE - fluvialite quartz sandstone GRANITE - massive biotite granite PARGEE SANDSTONE - immature fluvialite clastic sediments, and undifferentiated cover sediments OLD PIRATE MICROGRANITE - subvolcanic microgranites RHYODACITE PORPHYRY PORPHYRYTIC SYENITE TWIN BONANZA PORPHYRY - crowded microgranite porphyries |
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APPENDIX 1

**GEOPHYSICAL REINTERPRETATION OF
WILSONS RANGE (EL 6859) AND MACFARLANES (EL 7122)
FROM AIRBORNE MAGNETICS DATA**

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13 August 1993

Mr Tony Shreck
North Flinders Exploration
Ivy Camp, The Granites
C/- Hirex Services
12 Kidman Street
ALICE SPRINGS NT 0871

Dear Tony,

Re: Wilsons Range and MacFarlanes Airborne Magnetics

The re-interpretation of the 1:25,000 sheets H9-H12 and I9-I12 is completed and all the interpretation sheets should be at the Ivy Camp. These are the original sheets, although I have a copy here: no copies have been sent to Adelaide.

The addition of geology, even though it was widely spaced information is extremely useful and has led to a more accurate interpretation overall.

The eastern area of anomalous geochemistry, bounded approximately by 7768N to 7778N and 528E to 535E, is an area devoid of any major magnetic character other than a number of inflexions in the contours. I examined one of these features in more detail to see if anything could be gained. The location of the anomaly is shown on the 1:25,000 scale plan. I enlarged the rectangular area by 200% (using a photocopier) and then extracted the residual anomaly. The residual is presented separately at a scale of 1:6,250 (the result of a 4 x enlargement from 1:25,000!) The anomaly is now much clearer and consists of 15nT linear magnetic dipole. The closures shown on the plan are 500m apart (along strike) and probably represent the flight path interval; in other words it is probably more clearly continuous in reality. The distance between the peak and trough across strike is about 300m. I think it is a surface feature and may be caused by residual magnetite from the Antrim Plateau Basalts, or laterite. A few ground magnetometer traverses will soon confirm or contradict this interpretation. But, more importantly, I think the location of this linear anomaly is structurally controlled. This direction, and position, are coincident

with a regional structural lineament. Differential weathering along this part of the linear zone could have formed a topographic depression and a trap for alluvial magnetite. The location of this linear, in association with anomalous gold may be the target for an exploratory drill-hole. Of course, the residual magnetic anomaly could be due to disseminated pyrrhotite, directly associated with pyrite and gold mineralisation, but I prefer the first explanation.

* I suggest a few ground traverses in the N-S direction, even two profiles will be extremely useful. And as a more general exploration procedure I suggest one or two lines of in-loop TEM. The purpose here will be to search directly for sulphide mineralisation associated with gold, and indirectly to determine the geological succession and variation within the upper 100m.

The western area of anomalous geochemistry is bounded by 510E to 519E and 7765N to 7778N. There is more magnetic character here, but the magnetic anomalies do not have the high amplitudes like those at The Granites Mine. The highest amplitude is 130nT for the anomaly at 7774N 514E. It is part of a horizon that I have interpreted to extend further north and south and possible over to the east. As a target area within this stratigraphic (?) unit, I suggest the area bounded by 7771N to 7775N and 513E to 516E. It is here that the horizon has its greatest complexity probably as a result of NW-SE structural zone which crosses the horizon. In some parts of the Tanami, an increase in the magnetic amplitude is a result of tight folding (and possibly a remobilisation of the magnetite).

I have extracted a profile across this feature centred at 77752N 5155E (this is coord 1000 on the Geosoft plot). The dip is close to vertical and I don't think the depth to the top will be much less than 120m. The rock unit may be shallowing to the south-west, ie towards the more complex part and the highest magnetic amplitude. Geophysically, this is the most promising area. Within the rectangular area defined above. I suggest ground magnetometer traverses, at right angles to magnetic strike providing data for more accurate modelling. This will lead to a better definition of magnetic stratigraphy and structure; and hopefully a drill target if there is anomalous geochemistry as well.

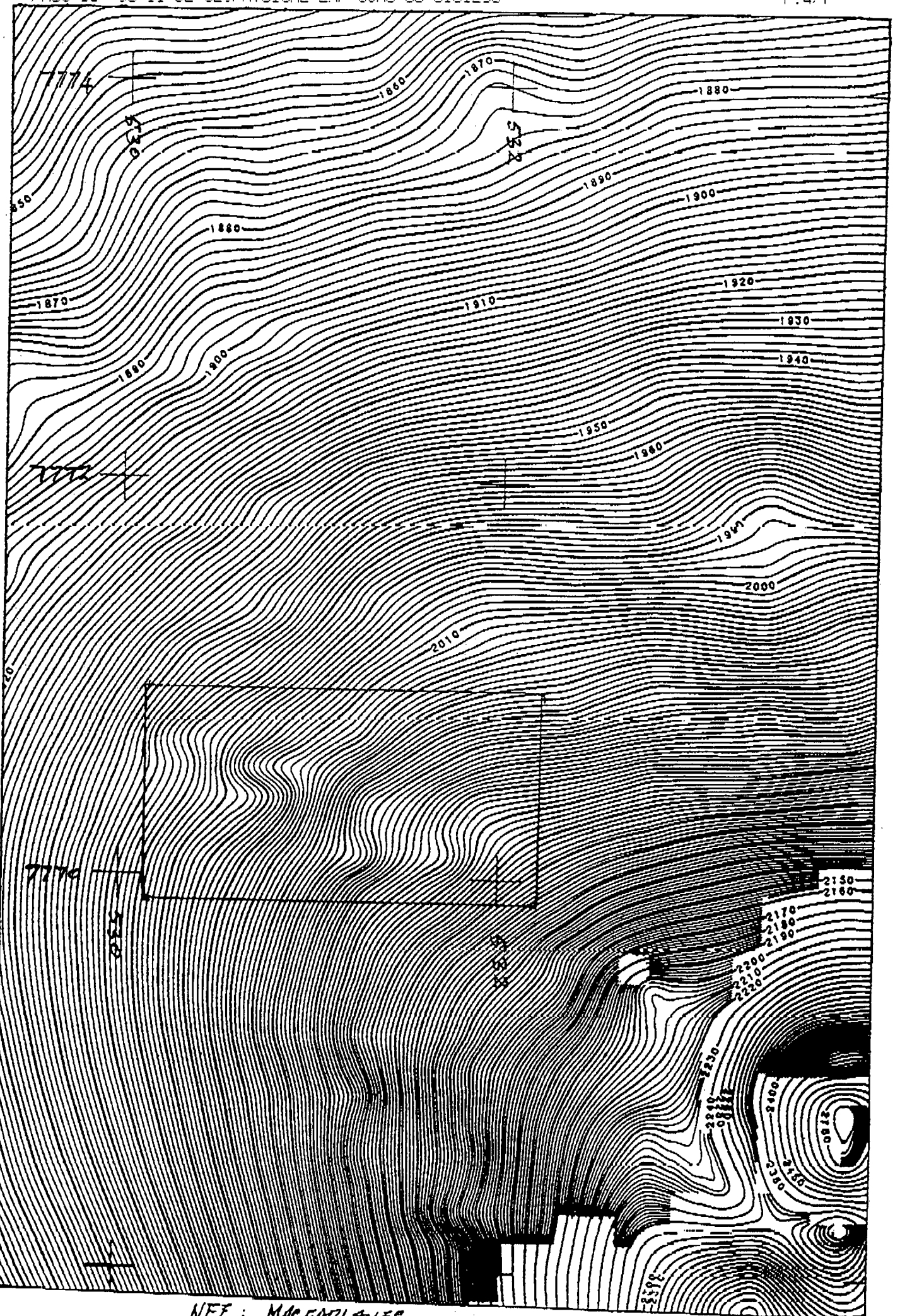
If I can help further, please give me a call, or send a fax.

Regards,

Yours Sincerely

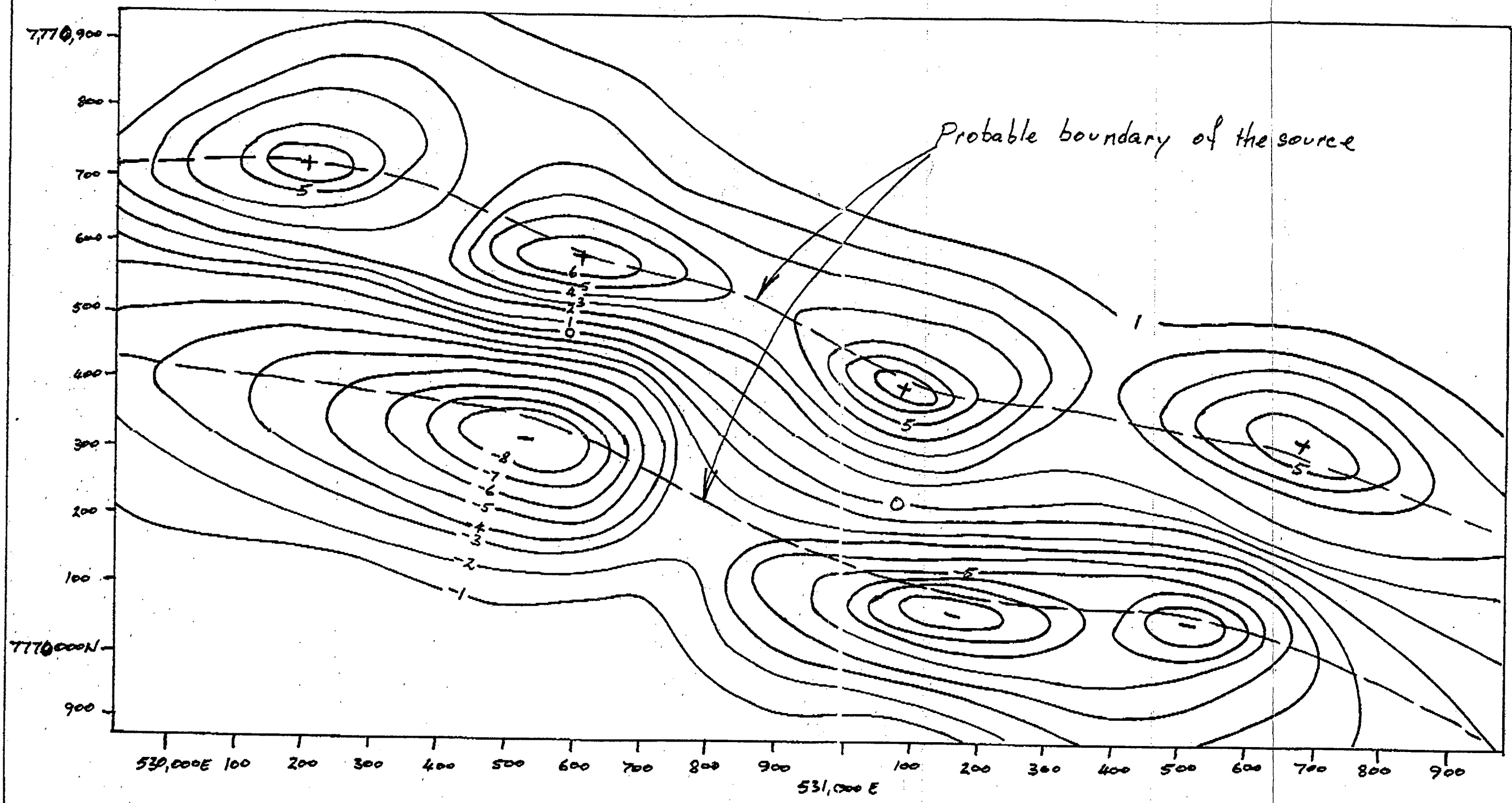


HUGH RUTTER
CONSULTING GEOPHYSICIST



NFE: MACFARLANES

ORIGINAL DATA USED TO PRODUCE A MAGNETIC RESIDUAL



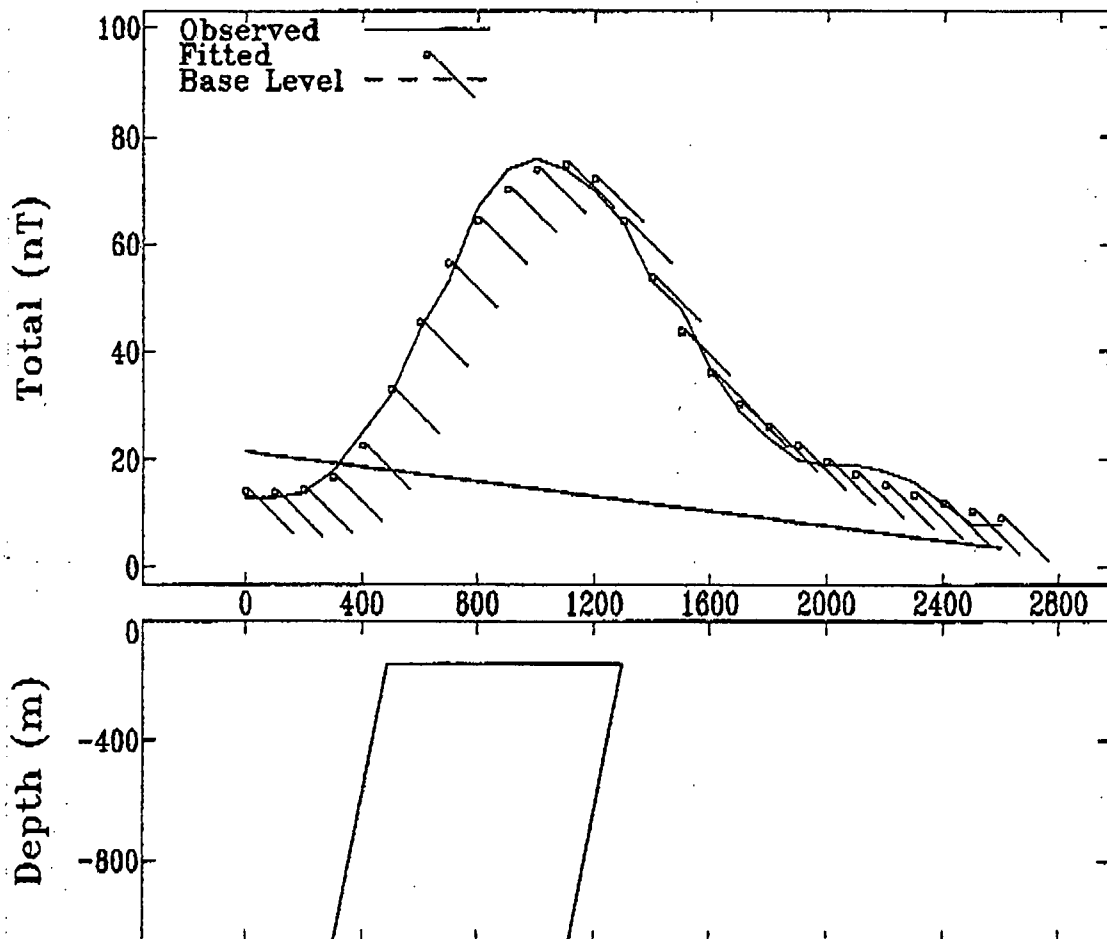
0 100 200 300 400 500 m
1:6,250

Contour interval : 1nT

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|----------------------------|
| NORTH FLINDERS EXPLORATION |
| MACFARLANES E.L. |
| RESIDUAL MAGNETIC ANOMALY |
| Hugh Rutter . August 1993 |

NFE : Wilson's Range

Air-mag. Profile No.1



MODEL PARAMETERS:

| | | |
|----------------|---|---------------------|
| Model Type | | Tabular2 |
| Depth | F | 139 m |
| Half Width | F | 405 m |
| Half Length | X | 1300 m |
| Offset | X | 0 m |
| Dip | F | 101 deg |
| Thickness | F | 21696 m |
| Susceptibility | X | 0.000350 emu |
| Remnance Ratio | X | 0 |
| Remnance Incl | X | 0 deg |
| Remnance Decl | X | 0 deg |
| Main Position | F | 891.7115 m |
| Cross Position | X | 0 m |
| Base Level | F | 15.40908 nT |
| Base Slope | F | -.0068755 nT/m |
| Base Curvature | X | 0 nT/m ² |

(F-fitted, X-fixed, L-limit)

GEOMAGNETIC FIELD:

| | |
|----------------|----------|
| Field Strength | 51500 nT |
| Inclination | -62 deg |
| Declination | 5 deg |

COORDINATES:

| | |
|-----------------|---------|
| Sensor Height | 90 m |
| Strike Perp | 50 deg |
| Line Direction | 45 deg |
| Main Direction | 45 deg |
| Main Offset | |
| Cross Direction | 135 deg |
| Cross Offset | |