Bergvesenet

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Tittel

Interpretations of the magnetic data from Ballangen, Norway . For Outokumpu Nikkel og Olivin, 1996

Forfatter	Dato	År	Bedrift (Oppdragsgiver og/eller oppdragstaker)
Ahokas, Turo	14.03	1996	av GX Consulting

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Ballangen	Nordland		1331 1	Narvik

Fagområde	Dokument type	Forekomster (forekomst, gruvefelt, undersøkelsesfelt)
Geofysikk		Bruvannsfeltet Råna

Råstoffgruppe	Råstofftype
Malm/metall	Cu, Ni

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse

Rapporten tolker det magnetiske totalfeltet fra målingene beskrevet 05.01.1996 (se BV 7195).
De mest markerte magnetiske sonene er antagelig skifersoner med et innhold av po. Enkelte mindre anomalier nær den vestre ende av intrusjonen, kan være 1) svakt magnetiske kropper nær overflaten eller 2) dypere linser kanskje knyttet til mineraliseringer. Må se disse i sammenhebg med tolkningen av HLEM målingene, før eventuelle boringer.

INTERPRETATIONS OF THE MAGNETIC DATA FROM BALLANGEN, NORWAY FOR OUTOKUMPU NIKKEL OG OLIVIN, 1996

Turo Ahokas, GX Consulting

14.03.1996

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LIST OF FIGURES:

1. Introduction

This survey area is a western extension of the earlier measured area around the known ore deposit. In this area the S - N direction of the earlier survey was not suitable due to almost S - N trending anomalous zones. Now the survey was carried out in W - E direction with a 50 m line separation to get better data of this area. Also horizontal loop EM survey was carried out here and the results of that survey are discussed in a separate report by Aimo Hattula, Outokumpu Metals & Resources Oy.

The magnetic map of this new survey area is presented in Figure 1. According to this map there exist several narrow SSW - NNE trending magnetized zones and around the known ore deposit there exist some smaller anomalies, which may be parts of some long magnetized zones or parts of the intrusion (including some ore lenses).

In some parts of the survey area there exist sharp magnetic lows caused by iron junk, railways, power lines, etc., but the magnetic values of these areas were omitted during the interpretations.

2. Magnetic interpretations

In the interpretations of the earlier survey data rocks with weak or moderate susceptibilities were detected. The ore lenses seemed to have the highest susceptibility values. In this new area some rocks with high susceptibilities were detected but they may be mostly pyrrhotite bearing schists.

All measured profiles were interpreted of this new area using 3D models and a schematic interpretation map was created according to the results. This map is presented in Figure 2 showing the ground surface projections of the interpreted magnetized bodies.

In the NW corner of the survey area there exist some rock types with very low susceptibilities and this part of the area was not modelled very exactly.

According to the interpretations the susceptibility of a long narrow magnetized zone almost in the middle of the area is quite high and it seems to be cut into several pieces by some faults (in NW - SE or/and SW - NE direction). This

magnetized zone is also conductive and it is probably a pyrrhotite bearing schist, but it may include also some other rock types (or mineralizations).

The magnetized bodies with quite high susceptibility values in the SE part of the area may be either parts of pyrrhotite bearing schists but it is also possible that there exist some mineralized pieces of the intrusion. Possibly the HLEM interpretations can give more information of these bodies.

Figure 3 shows an interpretation of the profile 500N showing also that the highly magnetized body around the co-ordinate 2000E cannot be very deep seated and it should be therefore easy to find out whether it is a schist or a mineralization.

On the line 850N in Figure 4 the magnetized bodies between the co-ordinates 1800E and 2000E are very narrow and very near the ground surface (outcrops?) but because they don't cause clear HLEM anomalies their dimensions may be very small or they are not conductive at all.

To the southwest of the known intrusion there exist several weak magnetic anomalies, especially between the profiles 1000N and 1100N, and they can be interpreted either by weakly magnetized bodies near the ground surface or by deeper seated bodies with higher susceptibilities (see Figures 5 and 6). In Figure 6 the body plotted by dotted line shows one possible location of a magnetized body causing the smooth and weak anomaly just above it. Possibly the HLEM interpretations can give more information of this area and tell which one of those two possibilities is the right one.

Figure 7 shows how difficult it is to interpret the western end of the intrusion exactly because there exist several magnetized bodies very close to the intrusion (pyrrhotite bearing schists?). Probably the western end of the intrusion is near the co-ordinate 2200E.

To the north or northwest of the intrusion there may exist smaller intrusions (and possibly some weak mineralizations) but this area is very difficult to interpret due to many disturbing cultural effects.

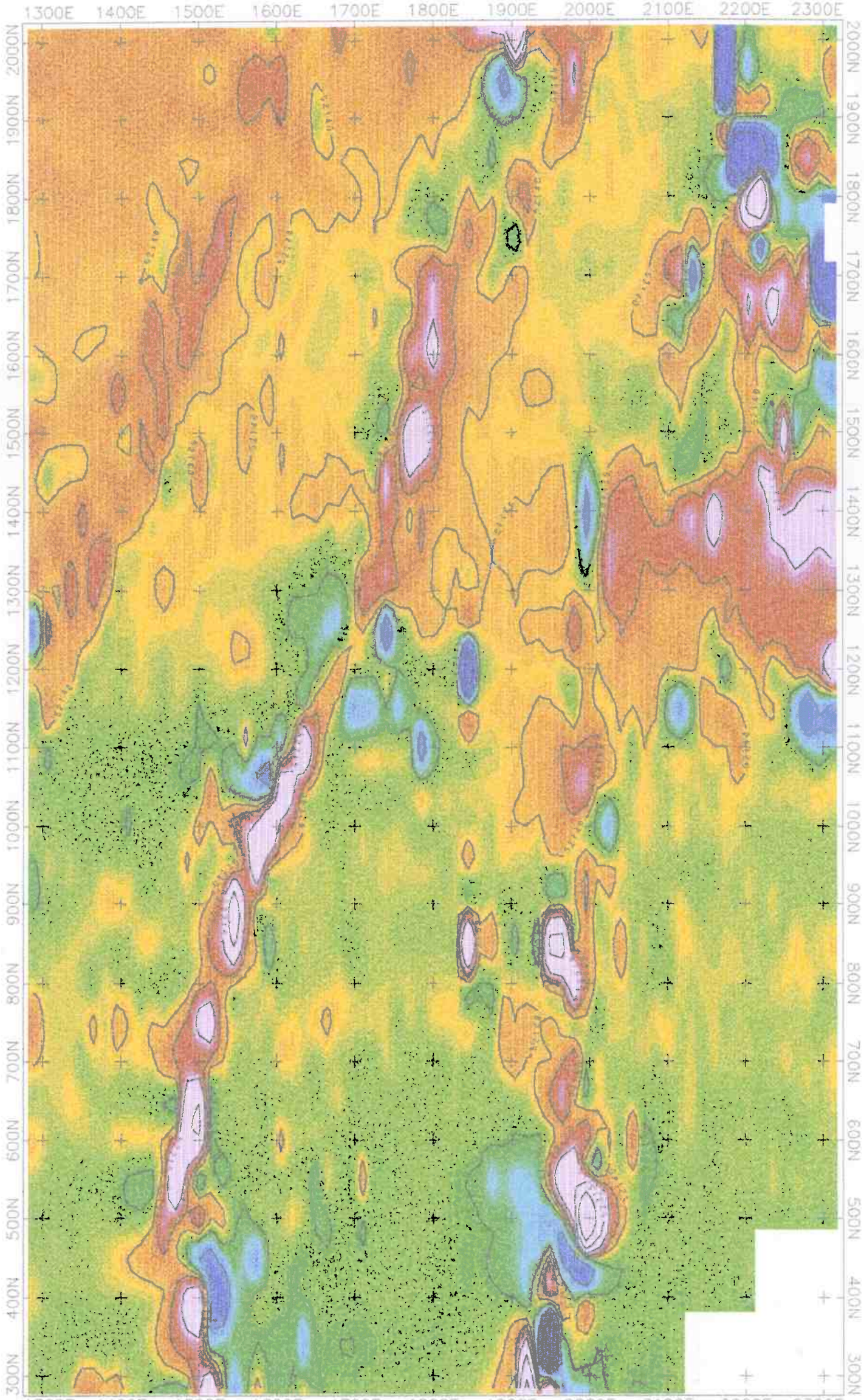
3. Conclusions and recommendations

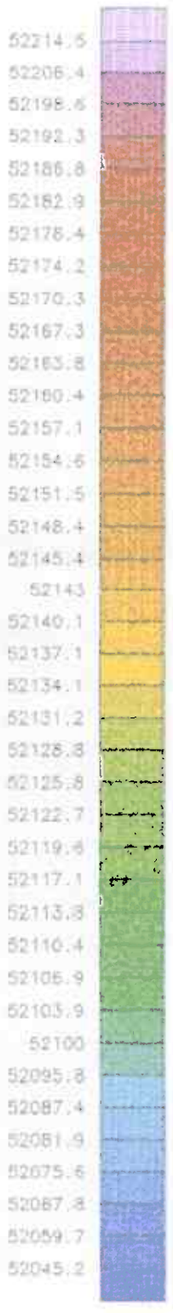
According to the magnetic interpretations there exist several magnetized zones in the survey area. Partly these zones are quite highly magnetized, just like the mineralized parts of the known intrusion.

Some of the magnetized zones are probably pyrrhotite bearing schists, especially the long and narrow ones, but among them there may exist also some small intrusions or even mineralizations.

Because the magnetic anomalies near the western end of the known intrusion and to the southwest of it are quite smooth, there are two possibilities to interpret them: 1. by weakly magnetized bodies near the ground surface or 2. by deeper seated bodies with higher susceptibilities. The latter possibility means that these anomalies are due to smaller intrusions and/or there exist mineralizations (see Figure 6 as an example).

Possibly the HLEM interpretations can help in classifying different zones and show those parts of these zones, where it is possible to have also mineralizations. Therefore these magnetic interpretations shown here should be examined carefully together with the HLEM interpretations and after that drill the most promising targets to find out whether the magnetized zones are "only" pyrrhotite bearing schists or interesting prospecting targets.





Contours: 51965, 52065, 52115, 52140, 52165, 52215, 52315, 52515

Scale 1:5000

50 0 50 100 150 200 250 300

(meters)

Outokumpu Metals & Resources Oy
Ballangen, Norway Magnetic Map
Total field
Figure No **1**

Ballangen / Magnetic profile 500N

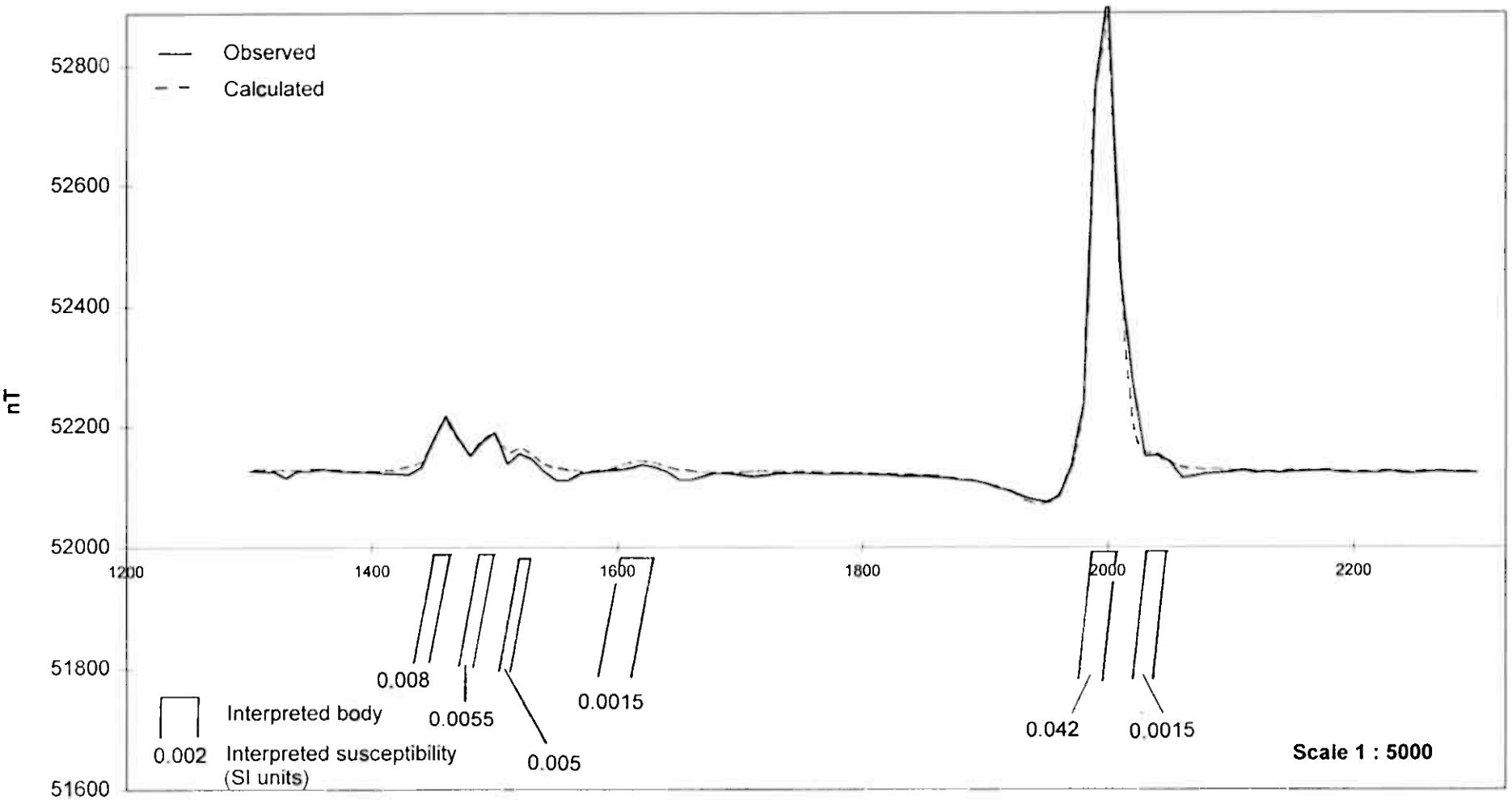


Fig. 3

Ballangen / Magnetic profile 850N

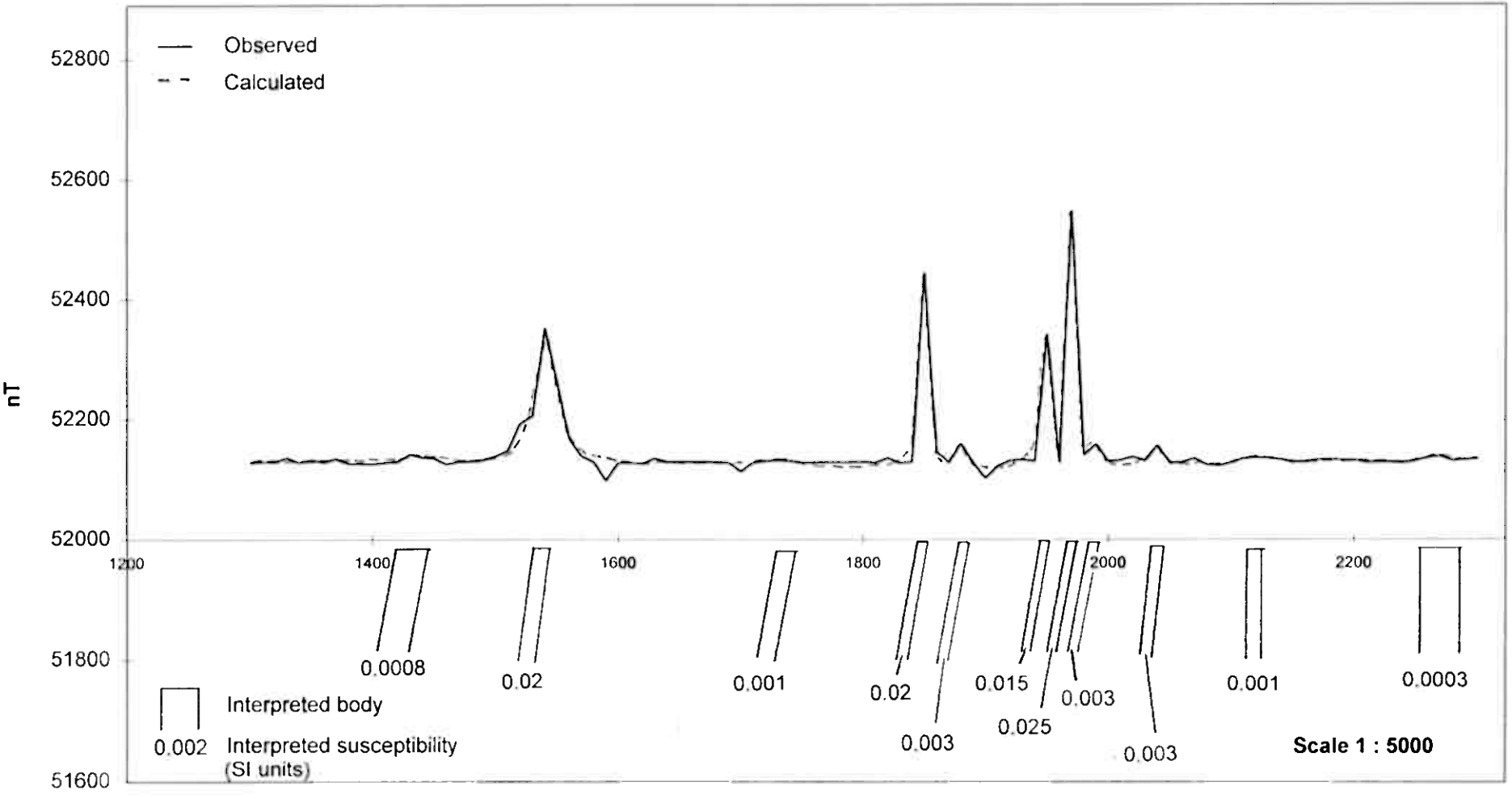


Fig. 4

Ballangen / Magnetic profile 1000N

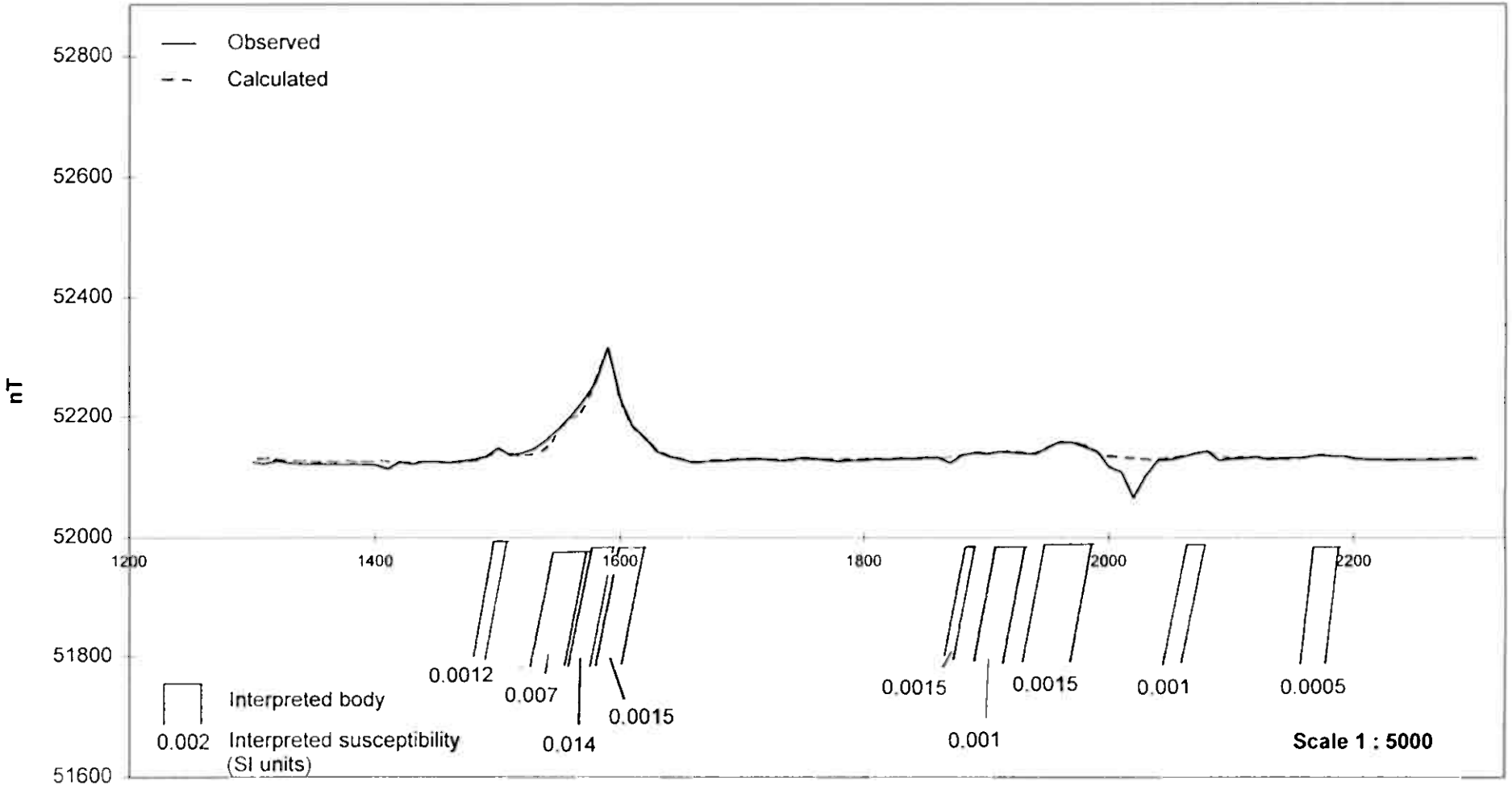


Fig. 5

Ballangen / Magnetic profile 1100N

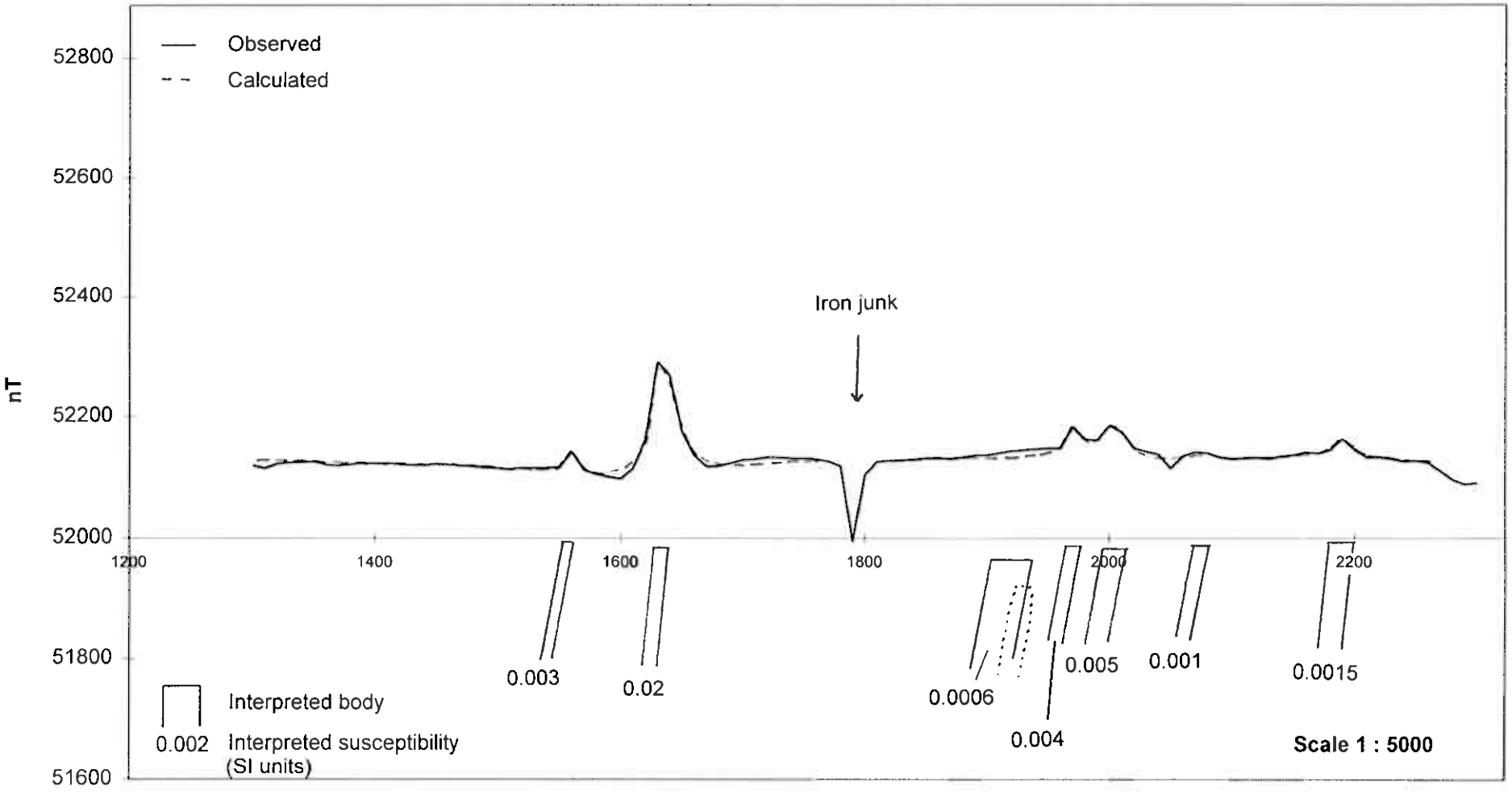


Fig. 6

Ballangen / Magnetic profile 1350N

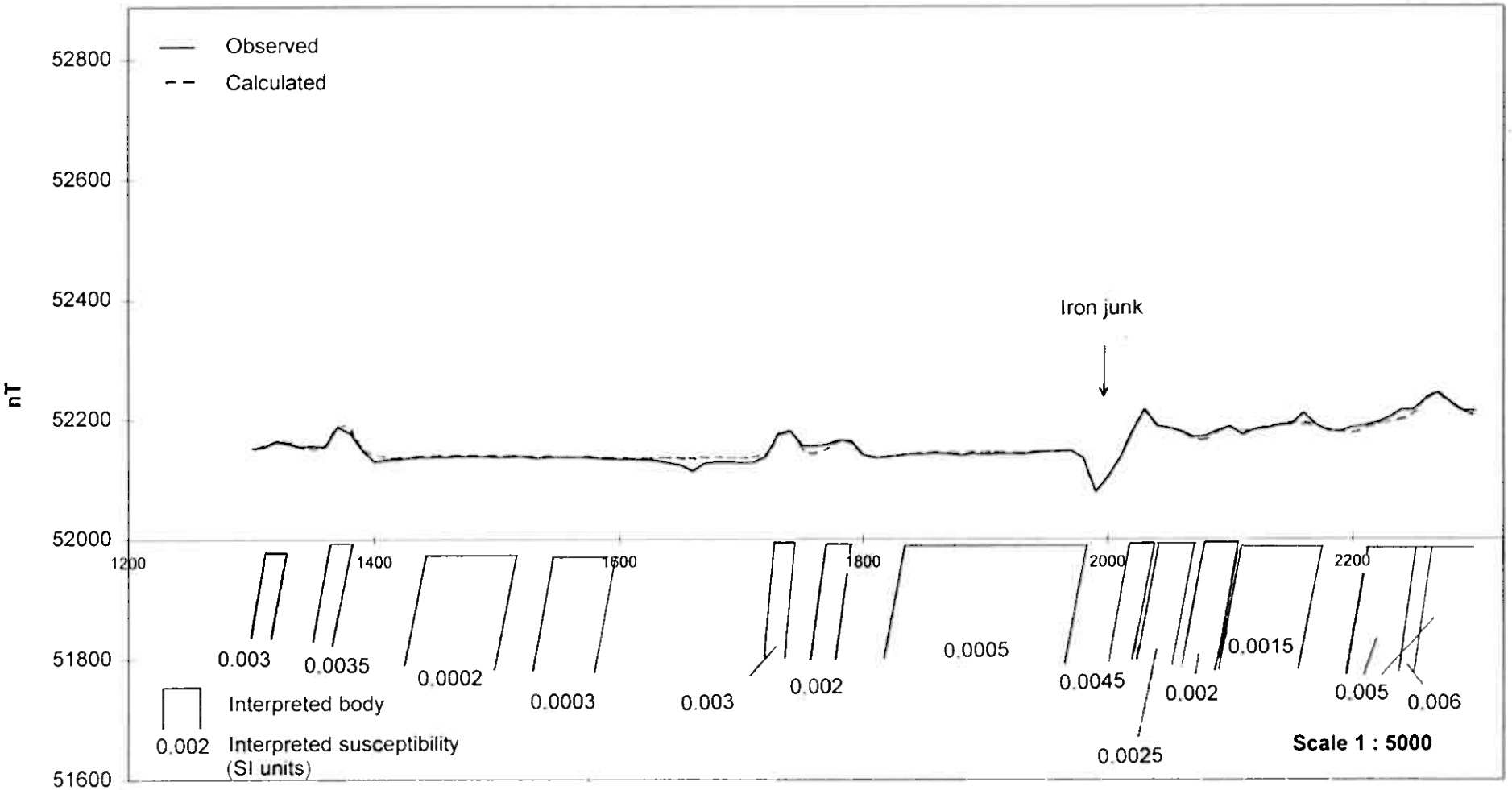


Fig. 7