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Rapportarkivet

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	NGU 2005.001	Sulfidmalm a.s.	Muting	

Tittel
NGU Report 2005.001 for Sulfidmalm:
Data Aquisition and Processing Helicopter Geophysical Survey. Espedalen oct 2004

Forfatter	Dato År	Bedrift (Oppdragsgiver og/eller oppdragstaker)
Mogaard. John Olav	25.01 2005	Sulfidmalm A/S NGU

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Sør-Fron Gausdal	Oppland		17171 17172	Lillehammer

Fagområde	Dokument type	Forekomster (forekomst, gruvefelt, undersøkelsesfelt)
Geofysikk		
Råstoffgruppe	**Råstofftype**	
Malm/metall	Cu Ni	

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse
Det ble fløyet 466 linjekm. Målingene var en utvidelse av målingene i 2003, med nye 154 linjekm i nord og 312 linjekm i sør.

Vedlagt CD med data:Data Aquisition and Processing Helicopter Geophysical Survey, Espedalen oct 2004 datert 08.03.05

VEDLEGG ....I.... av ....I....

J.nr. ......0644/05......

0644/05

NGU Report 2005.001
for
Sulfidmalm A/S 0644/05

Data Aquisition and Processing -
Helicopter Geophysical Survey,
Espedalen, 2004
Oppland county, Norway

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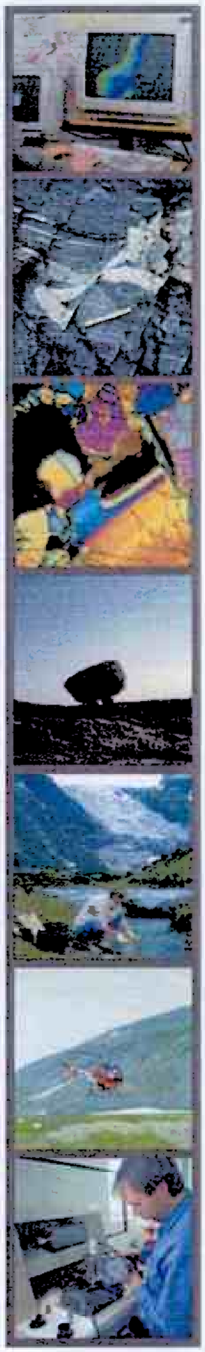
GEOLOGY FOR SOCIETY



NGU Report 2005.001

Data Acquisition and Processing - Helicopter Geophysical Survey, Espedalen, 2004 Oppland county, Norway

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REPORT

Report no.: 2005.001	ISSN 0800-3416	Grading: Confidential until 30.01.2007

Title:

Data Acquisition and Processing - Helicopter Geophysical Survey, Espedalen, 2004, Oppland county, Norway

Authors: John Olav Mogaard		Client: A/S Sulfidmalm	
County: Oppland		Commune: Sør Fron, Gausdal	
Map-sheet name (M=1:250.000) Lillehammer		Map-sheet no. and -name (M=1:50.000) 1717 IV Espedalen, 1717 I Svatsum,	
Deposit name and grid-reference: Strand Espedalen UTM 533000 6805700		Number of pages: 11 Map enclosures:	Price (NOK):
Fieldwork carried out: October 2004	Date of report: 25.01.2005	Project no.: 2990.05	Person responsible: Jan S. Rønning

Summary:

In October 2004, a helicopter geophysical survey was carried out over Espedalen, Oppland county. This survey was an extention in both ends of a survey flown in 2003. The purpose of the surveys was to provide geophysical information for mineral exploration. The data were collected and processed by Geological Survey of Norway (NGU). A total of about 466 line-km of electromagnetic (EM) and magnetic data were acquired using a nominal 100-m line spacing (app. 154 line-km in the north block and app. 312 line-km in the south block). The nominal flying height was 60 m above ground level (AGL), and lines were flown in alternating directions at headings of 050 and 230. Noise levels were within survey specifications.

All initial processing was carried out on a flight-by-flight basis. Magnetic data, consisting of total field measurements collected by a cesium vapor magnetometer, were corrected by removing diurnal variations as recorded at a magnetic base station at Strand fjellstue, Espedalen. EM data were leveled using data from frequent high altitude excursions 300-m AGL. All final processed data were gridded using 25-m cell size. Geophysical maps were produced at a scale of 1:25 000 and are considered as stand alone products.

This report covers aspects of data acquisition and processing.

Keywords: Geofysikk (Geophysics)		Magnetometri (Magnetometry)
Elektromagnetisk måling (Electromagnetic measurements)	Databehandling (Data processing)	Fagrapport (Technical report)

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Map 2005.001-04:	EM stacked profiles 7001 Hz coaxial.
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Map 2005.001-06:	EM stacked profiles 980 Hz coaxial.
Map 2005.001-07:	EM stacked profiles 880 Hz coplanar.
Map 2005.001-08:	EM stacked profiles 34133 Hz coplanar.
Map 2005.001-09:	EM apparent conductivity 6606 Hz coplanar.
Map 2005.001-10:	EM apparent conductivity 7001 Hz coaxial.

1 INTRODUCTION

As a contract work for AS Sulfidmalm, in October, 2004, a helicopter geophysical survey was carried out over parts of Espedalen, Oppland county. This was a follow up of a survey carried out in 2003 (see *NGU Report 2003.093*). The area consists of a northern block of app. 154 line-km (15.2 km^2) and a southern block of app. 312 line-km (30.4 km^2). The area between the two blocks were measured in October 2003 (see Fig.1). Magnetic and electromagnetic (HEM) data were collected. The primary objective of the survey was to provide geophysical information for mineral prospecting in the area.

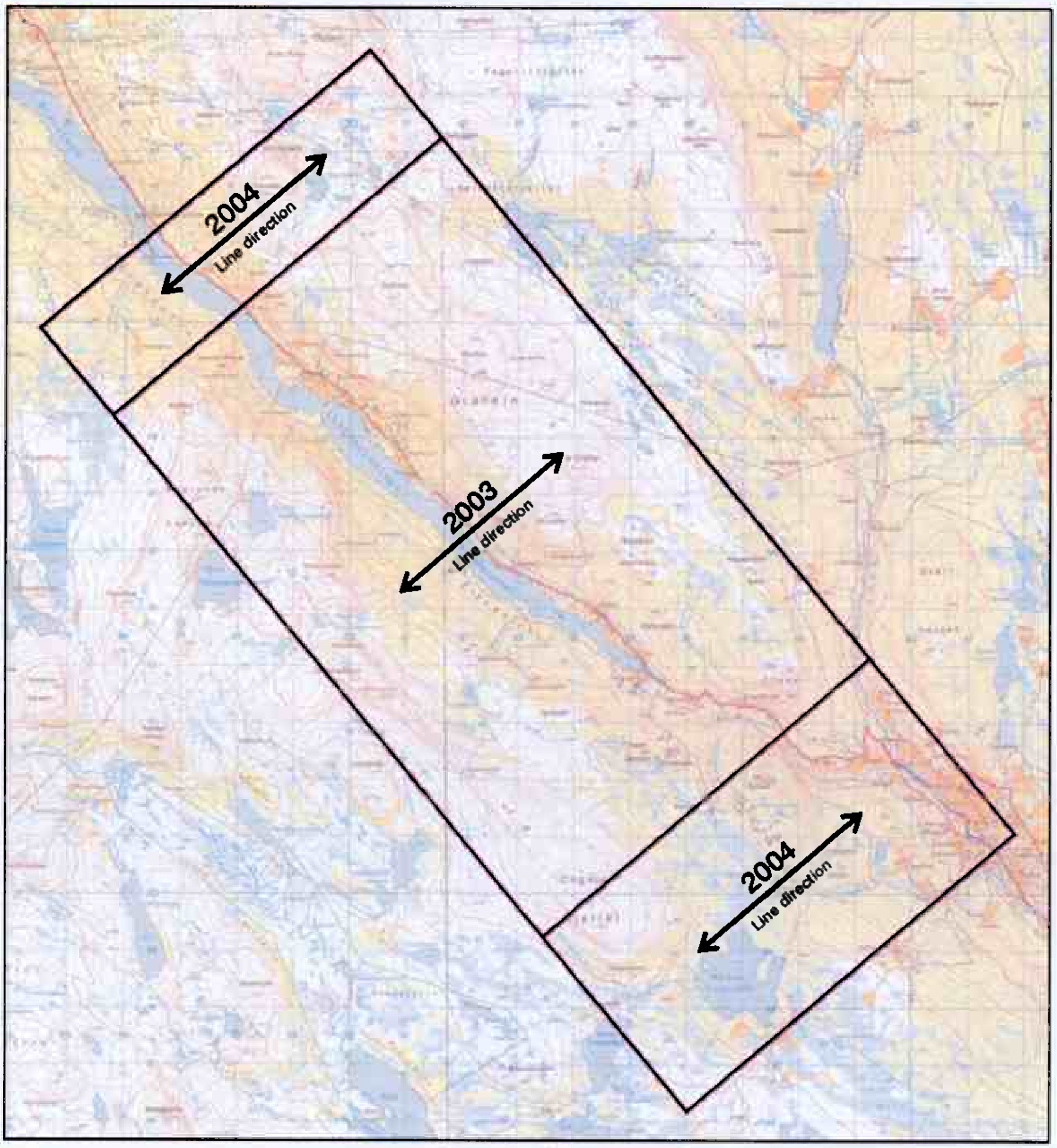

Fig. 1: Outline of the surveyed area (flight direction 050/230°)

2 SURVEY VARIABLES AND CONDITIONS

Several conditions may influence on the quality of the geophysical data.

2.1 Weather conditions

Strong wind can increase the noise level of airborne geophysical data. High winds were not frequent during the survey, but were encountered occasionally.

2.2 Topographic conditions

The resolution of geophysical sensors decreases exponentially with flying height. To achieve the greatest possible resolution, the helicopter should be flown as low as is safely possible.
The topography in the Espedalen area is very steep and it is extremely difficult to keep a constant terrain clearance during flying. The survey were flown using a helicopter strong enough to climb the hills but in spite of this data are strongly effected by altitude differences uphill and downhill. As a consequence of this it was impossible to drape the terrain with the bird 30 +/- 10 meters above ground as specified in the contract.

2.3 Magnetic conditions

Diurnal changes in the earth's magnetic field affect magnetic data. The base station magnetic field never indicated strong magnetic storm conditions during the surveys. Magnetic data quality on all lines used for production is very good.

2.4 EM data conditions

Strong vertical temperature gradients can affect EM leveling because the temperature at the 300-m nulling altitude is different from the temperature when the EM sensors are only 30 m above ground level. In addition to this, measuring at different altitudes may cause drift effects along profiles. Drift effects between nulling points are corrected using standard linear interpolation. EM drift is characterized as low.

The target flying height is 60 meters above ground level. Due to the severe terrain, flying height varied considerably in the present survey. This effected both the magnetic and the electromagnetic datasets.

In general EM signals are low in the area, and this gave severe problems when producing EM conductivity maps, but the quality of the EM data can be characterized as good.

3 DATA ACQUISITION

The survey aircraft was an Aerospatial Ecureuil AS 350 B-2. Flying speed was approximately 100 km per hour (28 meters per second). Flight lines over survey area were in directions 050/230 degrees with a flight line spacing of 100 m. The 5-frequency EM system and the magnetometer were enclosed in a 6-m long 'bird' suspended by cable 30 m beneath the helicopter.

NGU personnel responsible for data acquisition were John Olav Mogaard and Janusz Koziel. Pilot from HELITRANS ASA was Jens Fjelnset.

3.1 Magnetic measurements

A Scintrex CS-2 cesium vapor magnetometer was used. The magnetometer resolution is 0.01 nT. Sampling rate is 10 measurements per second (approximately 3 meter spacing).

A Scintrex ENVI-mag proton precession magnetometer was located at Strand fjellstue, Espedalen, and was used for base station measurements. The base station magnetometer was synchronized with the helicopter-borne magnetometer to ensure proper removal of diurnal magnetic changes from the helicopter magnetic measurements. The magnetic total field at the base station was digitally recorded during flights every third second.

3.2 Electromagnetic system

The EM system used was the 5-frequency Hummingbird system made in Canada by Geotech, Ltd. The Hummingbird records data at a sampling rate of 10 measurements per second. It has two coil orientations—vertical coaxial (VCA) and horizontal coplanar (HCP). The VCA coils operate at 980 Hz and 7001 Hz. The HCP coils operate at 880 Hz, 6606 Hz, and 34133 Hz. The transmitter-receiver separation is 6 m for lower frequencies and 4.2 m for 34133 Hz. The manufacturer specified noise level for each frequency is 1-2 ppm.

3.3 Navigation, altimetry, and data logging

The navigation system used is an Ashtech G12, 12 channel receiver. Position accuracy using this system is better than +/- 5 m.

The navigation console is a PNAV 2001 manufactured by the Picodas Group, Ltd. of Canada. Profile line data are entered into the console and are displayed on a left/right-display on the console. The pilot can see his position with respect to these predefined lines and adjust accordingly.

The helicopter is equipped with a King KRA-430 radar altimeter measuring height above ground level. The altimeter data is recorded digitally and altitude is displayed in front of the pilot. The altimeter is accurate to 5 percent of the true flying height.

The data logging system is an integral part of the Hummingbird electromagnetic system, manufactured by Geotech, Ltd. of Canada. Data is recorded both digitally and analog .

4 PROCESSING

The data were processed at the Geological Survey of Norway in Trondheim using Geosoft processing software (Geosoft Oasis Montaj 6.1, 2004). Data from the 2003 survey were reprocessed together with the 2004 survey data to make continuous maps for the whole area. Obvious inaccuracies in navigation were manually removed from the data. The datum used was WGS84 and the projection was UTM zone 32.

4.1 Standard processing

Total field magnetic data: The data were inspected flight-by-flight and any cultural anomalies were identified and manually removed. A base station correction was applied to each flight using corrections based on the diurnal measurements from the base station magnetometer at Strand fjellstue. The 2004 magnetic data set were adjusted against the 2003 data set to get the same level. Finally a time lag of 0.5 sec (5 points) were applied to the basemag-corrected (levelled) magnetic data.

EM data: EM data were processed on a flight-by-flight basis. Zero levels and drift control for each frequency were obtained by frequent excursions 300m AGL, usually at the end of every second flight line. A nonlinear filter was applied to all EM data to remove data spikes resulting from sferics. Before levelling, all data were mildly low passed using a 45 m filter. Noise levels for all frequencies were within an envelope of 2 ppm. Noise levels over 2 ppm occurred near powerlines. A manually levelling on a line by line basis were done for the two frequencies used for apparent resistivity calculation (also on the data set from 2003). A time lag of 0.5 sec (5 points) were applied to all channels before plotting of maps.

4.2 Map Production

Magnetic maps in scale 1: 25 000, Total magnetic field and first vertical derivative, were produced using a grid cell size of 25 x 25 metres. The problems in keeping a correct flying height in parts of the area, created leveling problems. These were significant on a first version of the contour maps, and were corrected for without ruining the information in the data using median micro-leveling procedures created at the NGU (Mauring & Kihle 2000). In order to do this, a resampling of the magnetic data to 5 times a second was nessessary. The contoured color maps are produced with a shaded relief of the high frequency content. Shading was from the northeast at 50° sun inclination above the horizon. In agreement with the clients representative, magnetic measurements outside the predefined area was kept in the magnetic maps. Flying height and profile separation may be out of specifications and as a result lower data quality. High quality data (original area) is marked with a frame on the magnetic maps.

As a standard, stacked profiles of all EM frequencies in scale 1: 25 000 were produced following standard procedures. EM-data from the 2003 survey were reprocessed (improved leveling) together with data from 2004 before computing apparent resistivity. Based on quadrature data, apparent resistivity was computed for 6606 Hz coplanar and 7001 Hz coaxial using least squares inversion and a homogeneous half space model (Geosoft 1997). In agreement with the clients representative conductivity maps instead of resistivity maps were produced using 6606 Hz coplanar and 7001 Hz coaxial frequencies. Due to low EM signals (high resistivity), negative EM responses due to high susceptibility and problems to keep a constant flying altitude, it was a very difficult to create conductivity maps with a satisfactory layout. Because of this, first a resistivity grid was created which was micro-leveled using median filtering (Mauring & Kihle 2000) before inverting data to conductivity. Grid cell size was 25 x 25 metres.

5 DATA DELIVERIES

In agreement with the clients representative, the following stand alone maps in scale 1: 25 000 are produced and delivered to the client as printed maps:

- **Map 2005.001-01**: Flight path.
- **Map 2005.001-02**: Total magnetic field.
- **Map 2005.001-03**: First vertical derivative of magnetic total field.
- **Map 2003.001-04**: EM stacked profiles 7001 Hz coaxial.
- **Map 2005.001-05**: EM stacked profiles 6606 Hz coplanar.
- **Map 2005.001-06**: EM stacked profiles 980 Hz coaxial.
- **Map 2005.001-07**: EM stacked profiles 880 Hz coplanar.
- **Map 2005.001-08**: EM stacked profiles 34133 Hz coplanar.
- **Map 2005.001-09**: EM apparent conductivity 6606 Hz coplanar.
- **Map 2005.001-10**: EM apparent conductivity 7001 Hz coaxial.

These maps are also delivered on CD in Geosoft packed maps format.

Digital magnetic an electromagnetic data in Geosoft XYZ file formats and grid files of these data are delivered on CD as described in Appendix A.

6 REFERENCES

Geosoft Inc., 2004: OASIS montaj Version 6.1 User Guide, *Geosoft Incorporated, Toronto.*

Geosoft Inc.; 1997: HEM System (Windows®95 & NT™) User Guide, *Geosoft Incorporated*

Mauring, E. & Kihle, O. 2000: Micro-levelling of aeromagnetic data using a moving differential median filter. *NGU Report 2000.053.*

Mogaard, J. O & Rønning, J. S: Data Acquisition and Processing – Helicopter Geophysical Survey, Espedalen, Oppland county, Norway. *NGU Report 2003.093*

Appendix A: Data delivery formats.

Espedalen Geosoft XYZ file formats.
Final Delivery on CD

File: Magnetic_final.XYZ (including tielines T10 and T20)

x_filt	meters	Final processed x (masked to the extended area polygon)
y_filt	meters	Final processed y (masked to the extended area polygon)
recnum		Internal record number, ordinal, per flight; incremented at 0.1 per tenth of a second
UTCtime		Universal time Hours: Minutes: Seconds. Decimal_seconds
mag_levl_lag_adj	nT	Levelled and time-lagged magnetic data (0.5 sec) (adjusted to 2003 level)

File: EM_final.XYZ

x_filt	meters	Final processed x (masked to the area polygon)		
y_filt	meters	Final processed y (masked to the area polygon)		
recnum		Internal record number, ordinal, per flight, incremented at 0.1 per tenth of a second		
UTCtime		Universal time Hours: Minutes: Seconds. Decimal_seconds		
bird_height	meters	Processed radar altimeter data minus 30 meter		
IP1_f_L_lag	ppm	Filtered, leveled and lagged	inphase	7001 Hz Coaxial
Q1_f_L_lag	ppm		quadrature	7001 Hz Coaxial
IP2_f_L_lag	ppm		inphase	6606 Hz Coplanar
Q2_f_L_lag	ppm		quadrature	6606 Hz Coplanar
IP3_f_L_lag	ppm		inphase	980 Hz Coaxial
Q3_f_L_lag	ppm		quadrature	980 Hz Coaxial
IP4_f_L_lag	ppm		inphase	880 Hz Coplanar
Q4_f_L_lag	ppm		quadrature	880 Hz Coplanar
IP5_f_L_lag	ppm		inphase	33133 Hz Coplanar
Q5_f_L_lag	ppm		quadrature	33133 Hz Coplanar
res6606	ohm-m	Apparent resistivity (6606 Hz coplanar)		
res7001	ohm-m	Apparent resistivity (7001 Hz coaxial)		

The following Geosoft grid files are copied to the CD :

mag_levl_lag_adj.grd	Grid generated from mag_levl_lag channel (25 m cell size)
mag_med_final0304.grd	Micro levelled grid (circular median filter) used in map (25 m cell size)
mag_med_final0304_1D.grd	Calculated vertical gradient grid used in map based on the final magnetic grid file .
res6606.grd	Apparent resistivity grid from res6606 channel (25 m cell size)
res7001.grd	Apparent resistivity grid from res7001 channel (25 m cell size)
cond6606filtf.grd	Final conductivity grid file used in map after micro levelling 6606 Hz coplanar freq. (25 m cell size)
cond7001iltf.grd	Final conductivity grid file used in map after micro levelling 7001 Hz coaxial freq. (25 m cell size)

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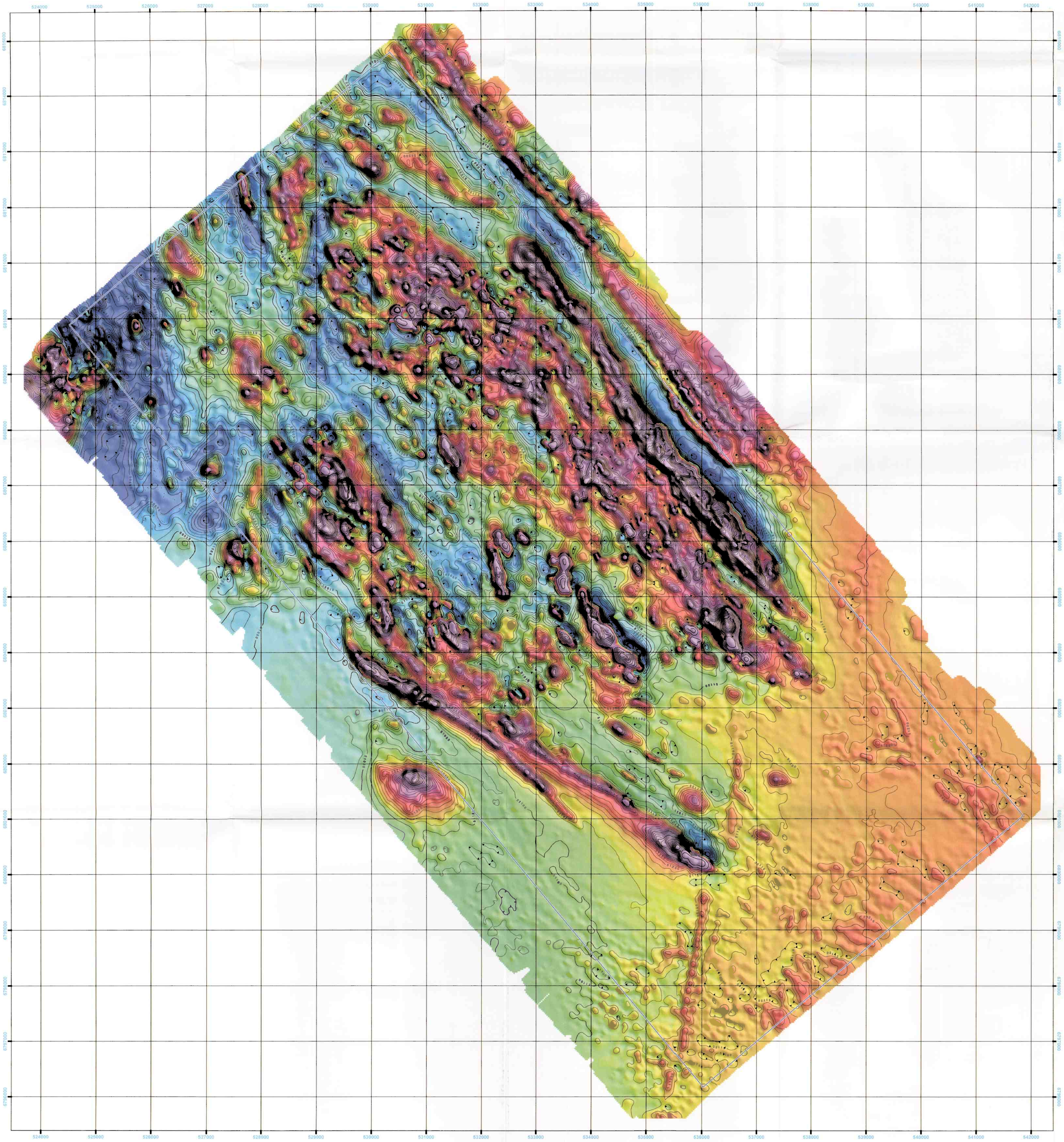
http://www.ngu.no

Trykkerhuset Skipnes, 73 82 63 00



GEODETIC DATUM: WGS84
CONFORM CYLINDERPROJECTION
Numbers in BLUE for UTM coordinates, zone 32N

nT

50852.0	50980.0	51033.3	51082.8	51116.5	51147.0	51170.0	51187.4	51257.8	51428.6

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TOTAL MAGNETIC FIELD

The intensity of the total magnetic field is in nanoTesla

Contourrs given in following intervalls

10nT
50nT
100nT
500nT

Colours - distributed after colourscale

Data are corrected for diurnal variations using a basemagnetometer located at Strand Fjellstue, Espedalen

A high sensitivity cesiummagnetometer sensor is used and nominal sensor elevation is 30 metres

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

TOTAL MAGNETIC FIELD

Colours and contours

Espedalen

Oppland

Drawing: Mogaard,J.O. | Date: DEC 2004 | Obs: JOM/JK

Scale 1:25 000

500 0 500 1000 1500

(metres)

Mapsheet (1:50 000):
1717 IV Espedalen
1717 I Svatsum

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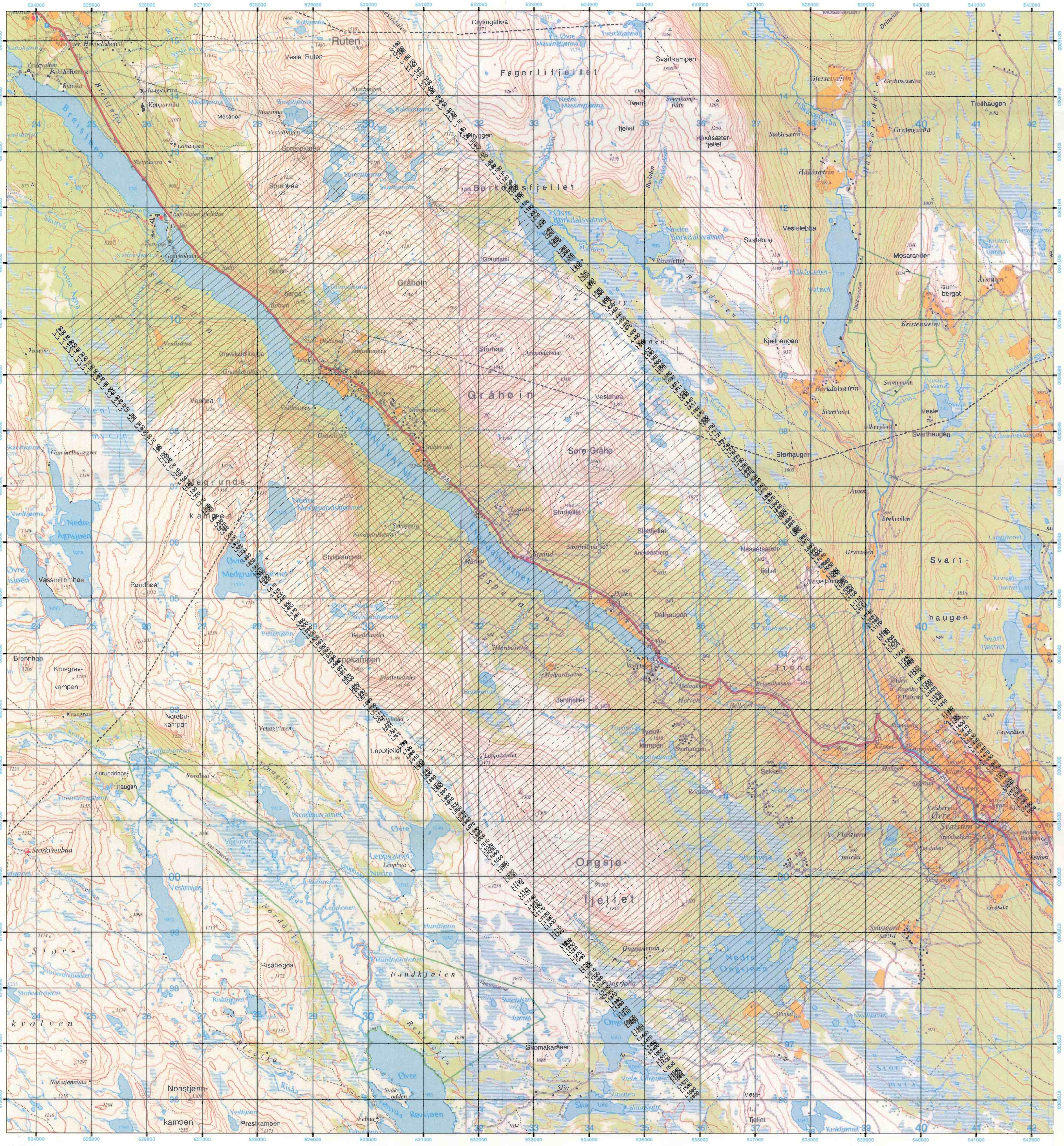
Drawing no: 2005.001-02



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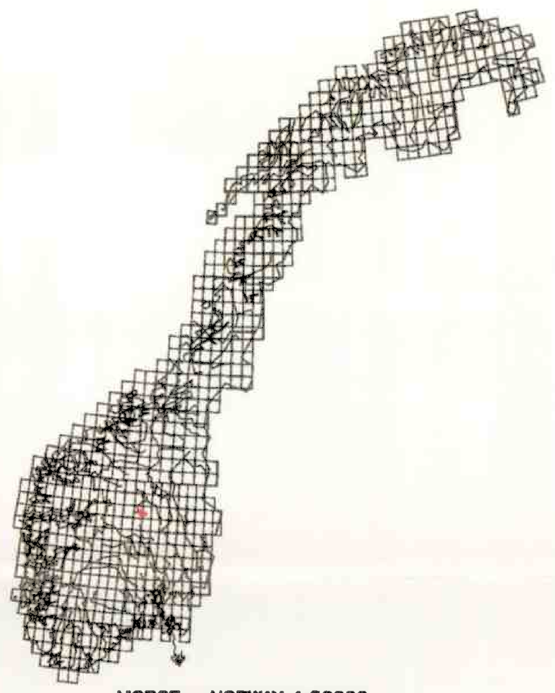

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

FLIGHT PATH

Espedalen

Oppland

Drawing: Mogaard,J.O.	Date: DEC 2004	Obs: JOM/JK
Scale 1:25 000 500 0 500 1000 1500 (metres)		Mapsheet (1:50 000): 1717 IV Espedalen 1717 I Svatsum

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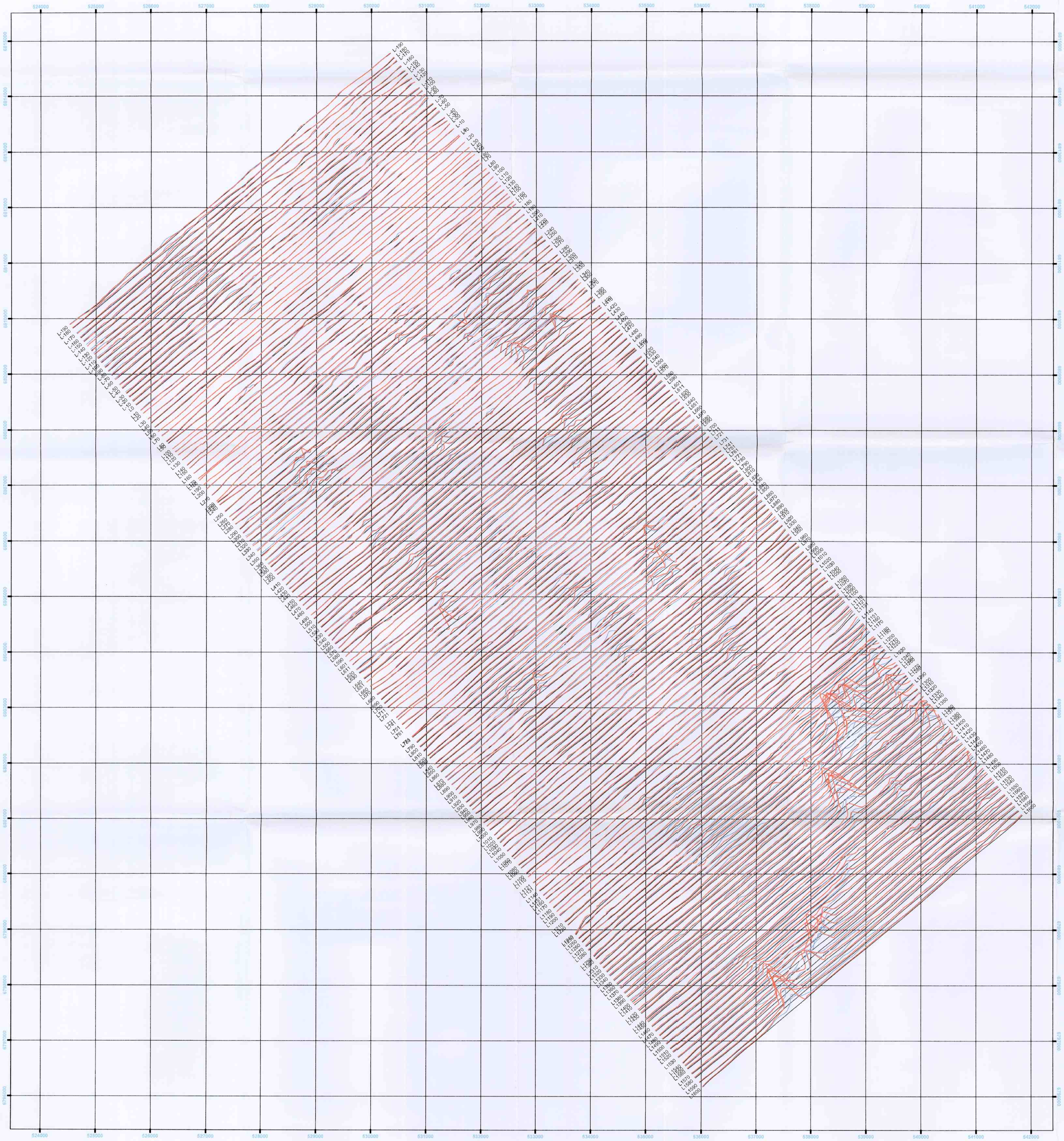
Drawing no: 2005.001-01



GEODETIC DATUM: WGS84
CONFORM CYLINDERPROJECTION
Numbers in BLUE for UTM coordinates, zone 32N

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N

HEM 7001 Hz COAXIAL

Frequency : 7001 Hz (coaxial orientation)
Coil spacing : 6 m

InPhase
Quad.

Inphase : 5 ppm/mm
Quadrature : 5 ppm/mm

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

HEM STACKED PROFILES 7001 Hz COAXIAL

Colours and contours

Espedalen

Oppland

Drawing: Mogaard,J.O.	Date: DEC 2004	Obs: JOM/JK
Scale 1:25 000 500 0 500 1000 1500 (metres)		Mapsheet (1:50 000): 1717 IV Espedalen 1717 I Svatsum

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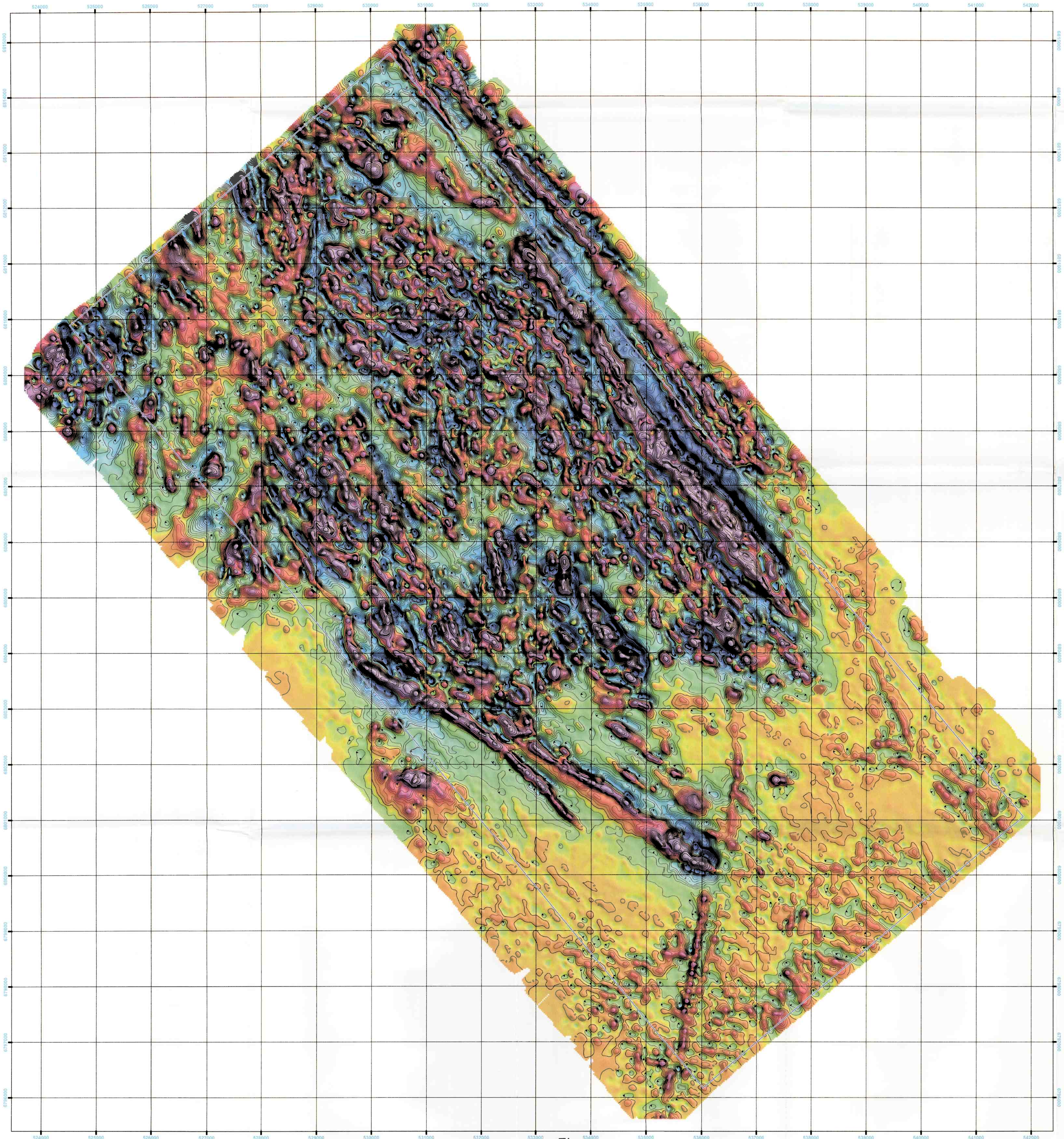
Drawing no: 2005.001-04



nT/m

-1.600 -0.820 -0.522 -0.336 -0.202 -0.113 -0.063 -0.031 -0.001 0.070 0.235 0.598 1.496

GEODETIC DATUM: WGS84
CONFORM CYLINDERPROJECTION
Numbers in BLUE for UTM coordinates, zone 32N

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N

CALCULATED VERTICAL GRADIENT

Vertical Magnetic Gradient (in NanoTeslas per meter).
Calculated from the total field magnetics and upward continuated 25 metres.
Contours given in following intervalls:

0.1nT/m
0.5nT/m
1.0nT/m
2.0nT/m

Colours - distributed after colourscale.

Cesium high sensitivity magnetometer.
Sensor elevation - 30 metres.

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

CALCULATED VERTICAL MAGNETIC GRADIENT

Colours and contours

Espedalen

Oppland

Drawing: *Mogaard,J.O.*	Date: *DEC 2004*	Obs: *JOM/JK*
Scale 1:25 000 500 0 500 1000 1500 (metres)		Mapsheet (1:50 000): *1717 IV Espedalen* *1717 I Svatsum*

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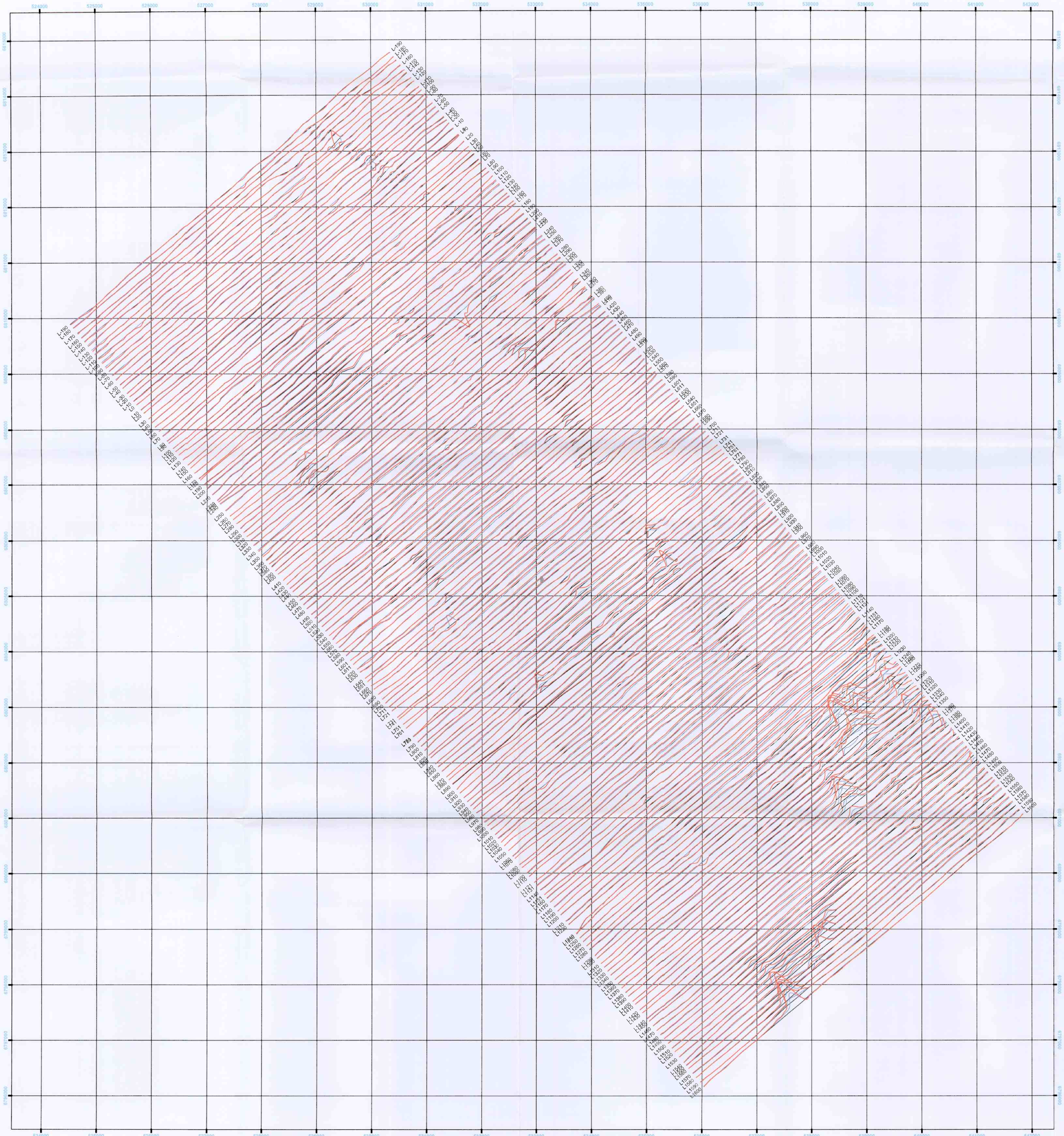

GEODETIC DATUM: WGS84
CONFORM CYLINDERPROJECTION
Numbers in BLUE for UTM coordinates, zone 32N

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HEM 980 Hz COAXIAL

Frequency : 980 Hz (coaxial orientation)
Coil spacing : 6 m

InPhase
Quad

Inphase : 5 ppm/mm
Quadrature : 5 ppm/mm

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

HEM STACKED PROFILES 980 Hz COAXIAL

Colours and contours

Espedalen

Oppland

Drawing: *Mogaard,J.O.*	Date: *DEC 2004*	Obs: *JOM/JK*
Scale 1:25 000 500 0 500 1000 1500 (metres)		Mapsheet (1:50 000): *1717 IV Espedalen* *1717 I Svatsum*

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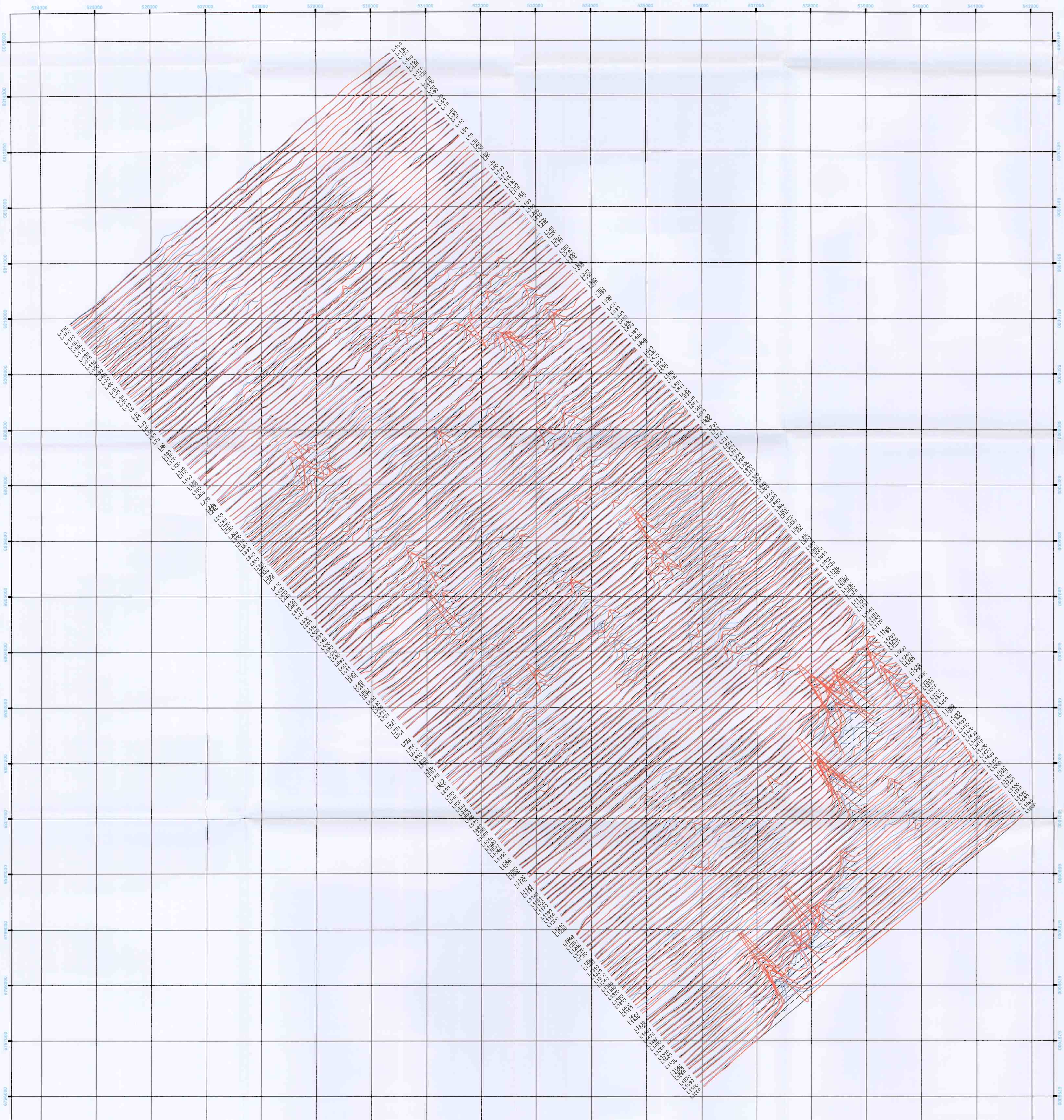
Drawing no:
2005.001-06



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Geology for Society since 1858

-N-

HEM 6606 Hz COPLANAR

Frequency : 6606 Hz (horizontal, coplanar orientation)
Coil spacing : 6 m

InPhase
Quad

Inphase : 10 ppm/mm
Quadrature : 10 ppm/mm

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

HEM STACKED PROFILES 6606 Hz COPLANAR
Colours and contours

Espedalen

Oppland

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Scale 1:25 000 500 0 500 1000 1500 (metres)		Mapsheet (1:50 000): 1717 IV Espedalen 1717 I Svatsum

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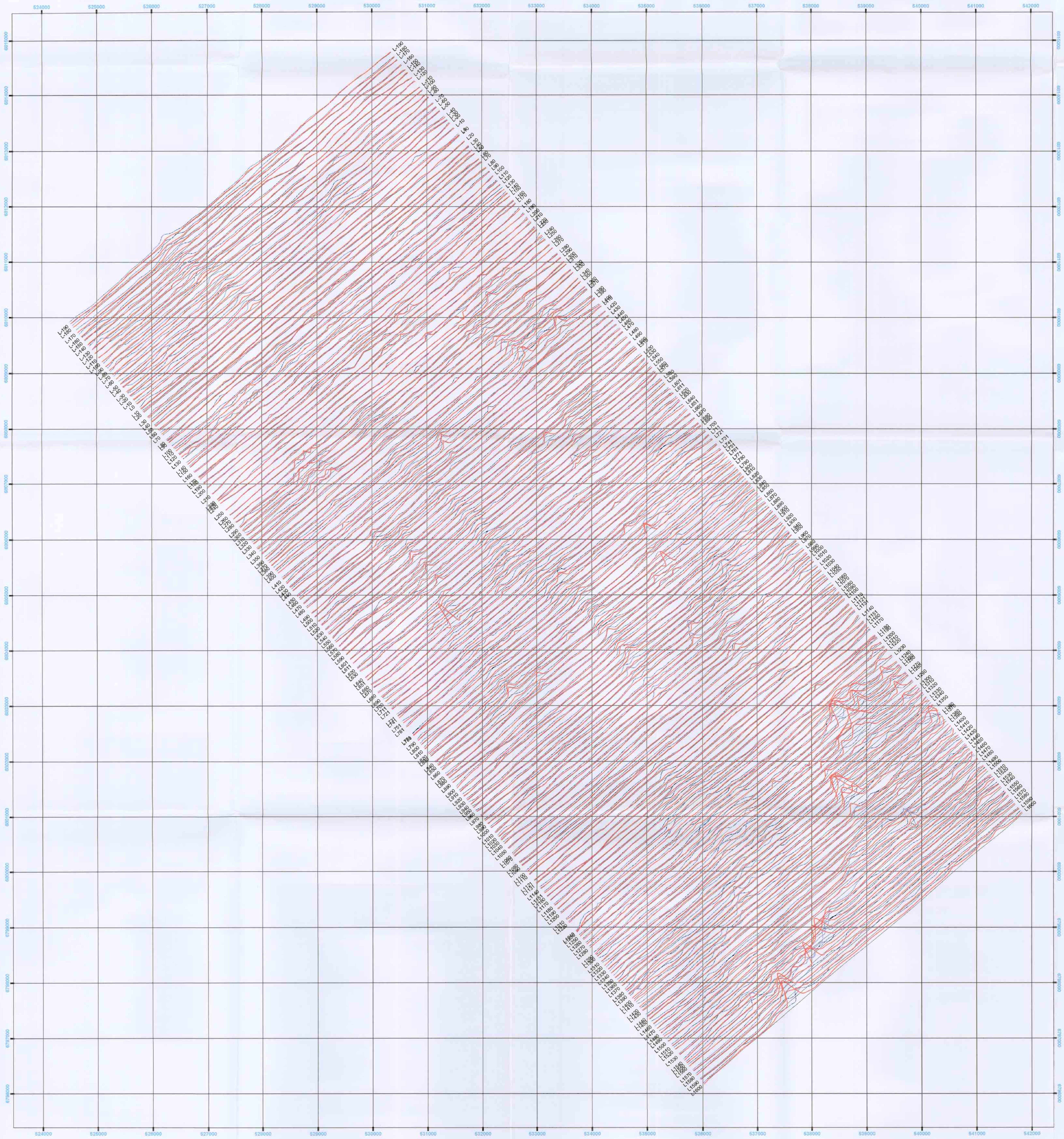
Drawing no:
2005.001-05



GEODETIC DATUM: WGS84
CONFORM CYLINDERPROJECTION
Numbers in BLUE for UTM coordinates, zone 32N

Geology for Society since 1858

N

HEM 34133 Hz COPLANAR

Frequency : 34133 Hz (horizontal, coplanar orientation)
Coil spacing : 4.2 m

InPhase
Quad.

Inphase : 20 ppm/mm
Quadrature : 20 ppm/mm

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

HEM STACKED PROFILES 34133 Hz COPLANAR

Colours and contours

Espedalen

Oppland

Drawing: Mogaard,J.O.	Date: DEC 2004	Obs: JOM/JK
Scale 1:25 000 (500 0 500 1000 1500 (metres))		Mapsheet (1:50 000): 1717 IV Espedalen, 1717 I Svatsum

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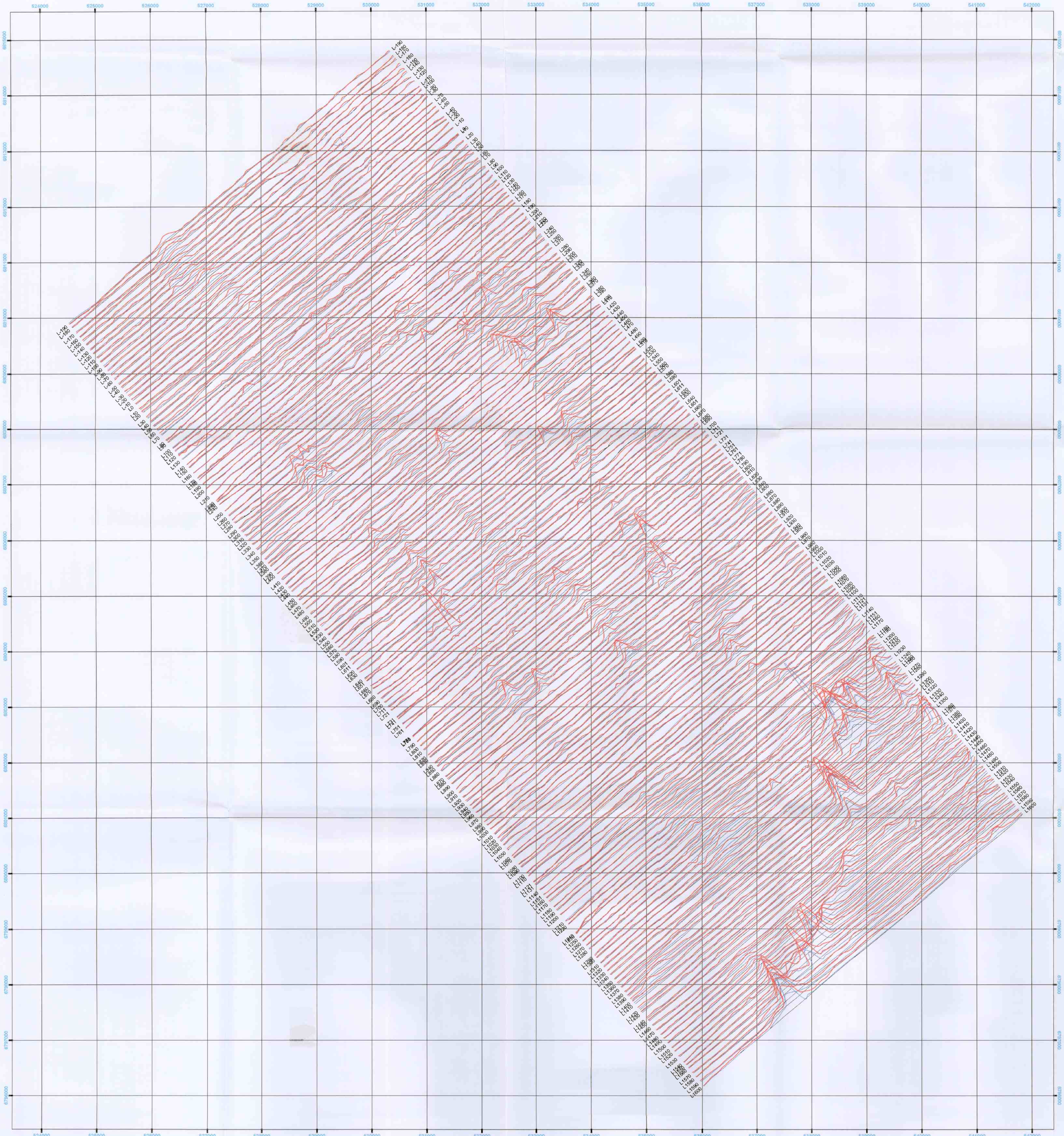
Drawing no: 2005.001-08



GEODETIC DATUM: WGS84
CONFORM CYLINDERPROJECTION
Numbers in BLUE for UTM coordinates, zone 32N

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N

HEM 880 Hz COPLANAR

Frequency : 880 Hz (horizontal, coplanar orientation)
Coil spacing : 6 m

InPhase
Quad.

Inphase : 10 ppm/mm
Quadrature : 10 ppm/mm

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

HEM STACKED PROFILES 880 Hz COPLANAR

Colours and contours

Espedalen

Oppland

Drawing: Mogaard,J.O.	Date: DEC 2004	Obs: JOM/JK
Scale 1:25 000 500 0 500 1000 1500 (metres)		Mapsheet (1:50 000): 1717 IV Espedalen 1717 I Svatsum

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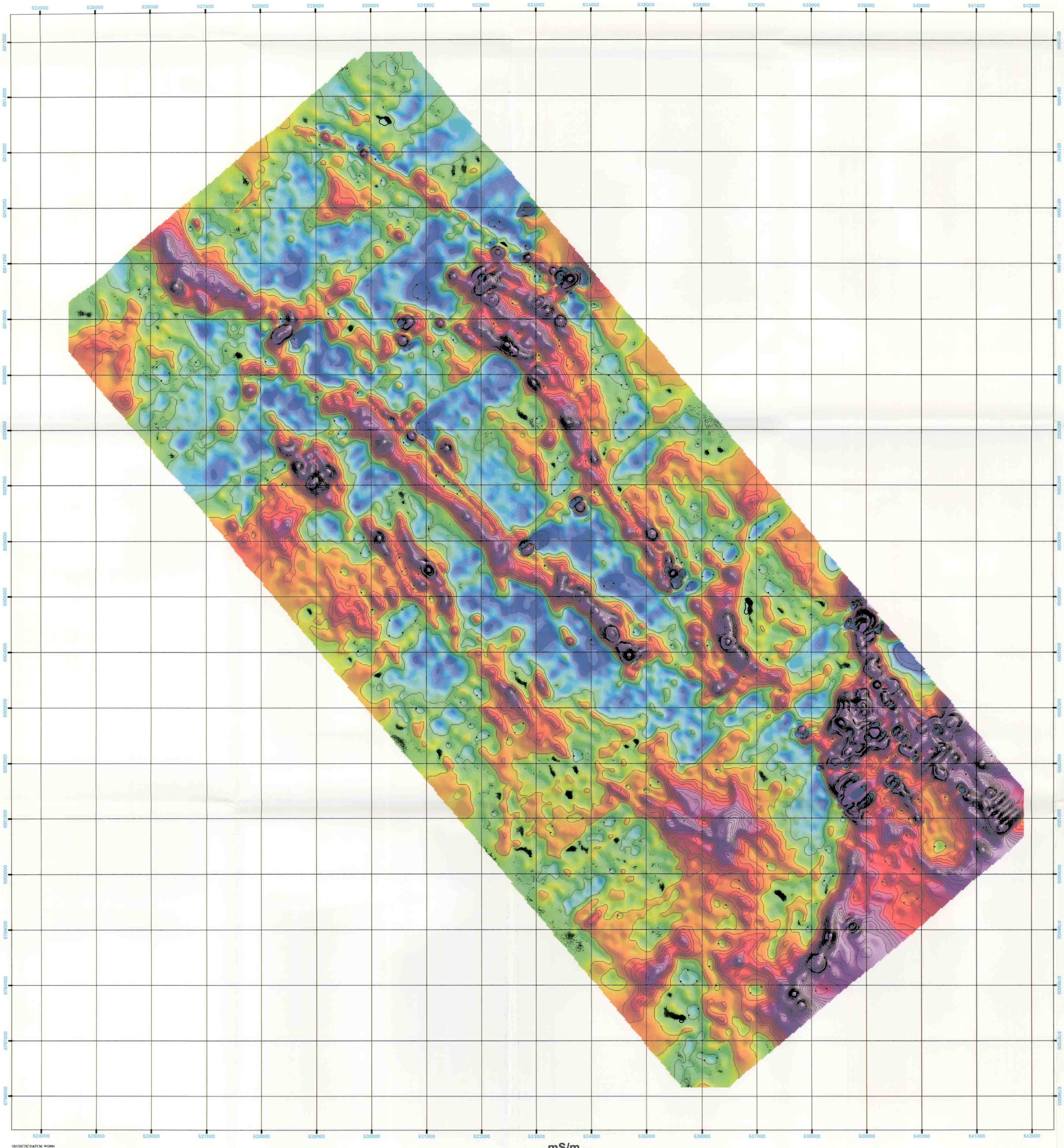
Drawing no:
2005.001-07



GEODETIC DATUM: WGS84
CONFORM CYLINDERPROJECTION
Numbers in BLUE for UTM coordinates, zone 32N

mS/m

0.03824 0.12257 0.19311 0.25392 0.31466 0.38771 0.48662 0.67023 1.09806 2.21001

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APPARENT CONDUCTIVITY

Calculated from 7001 coaxial response.

Contours: given in following intervals (mS/m)

0.2
1.0
2.0
5.0

Colours - distributed after colourscale.

Sensor elevation - 30 meters.

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

EM APPARENT CONDUCTIVITY 7001 Hz Coaxial

Colours and contours

Espedalen

Oppland

Drawing: *Mogaard,J.O.* **Date:** *DEC 2004* **Obs:** *JOM/JK*

Scale 1:25 000

500 0 500 1000 1500

(metres)

Mapsheet (1:50 000):
1717 IV Espedalen
1717 I Svatsum

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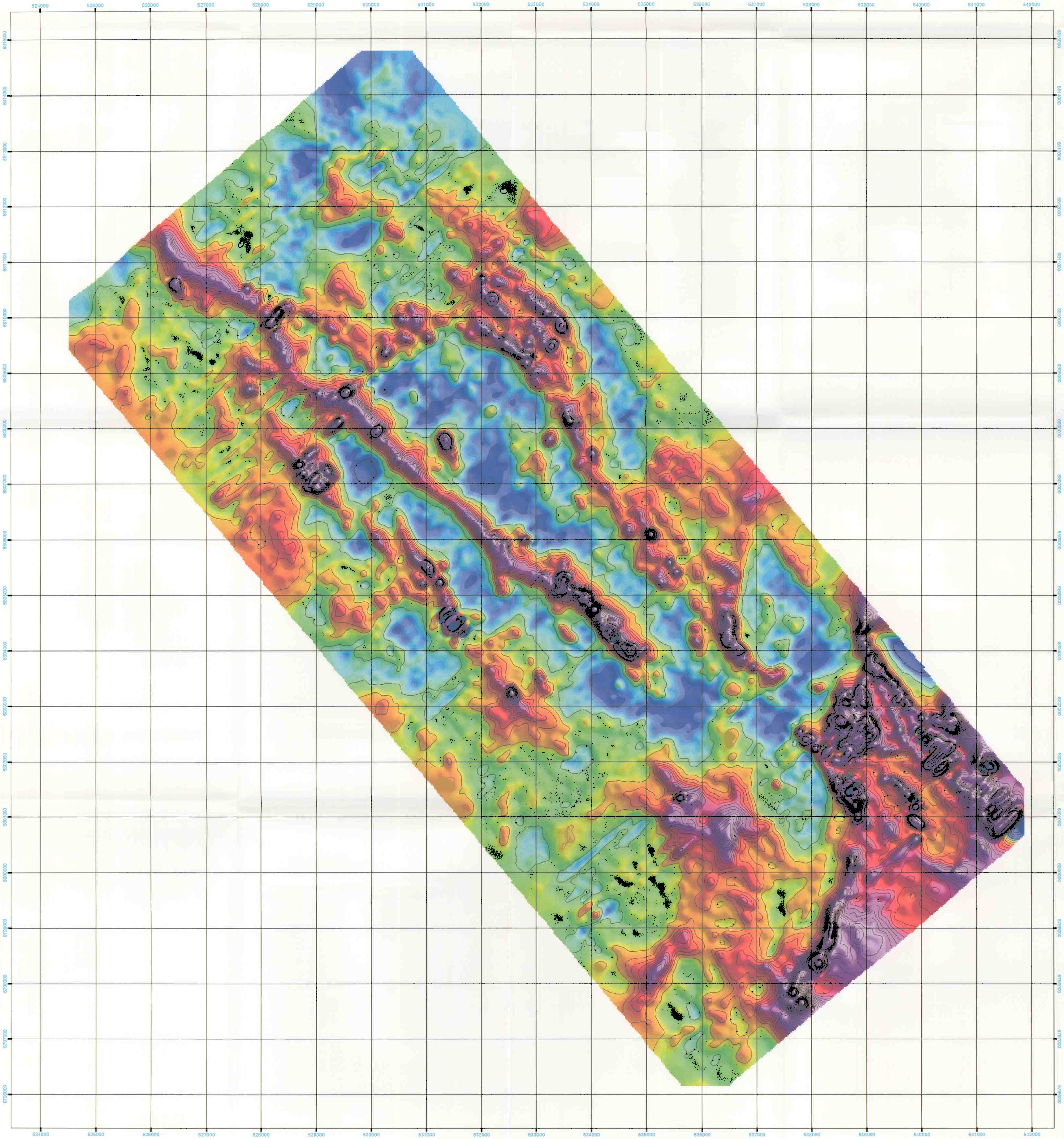
Drawing no:
2005.001-10



GEODETIC DATUM: WGS84
CONFORM CYLINDERPROJECTION
Numbers in BLUE for UTM coordinates, zone 32N

mS/m

0.05908 0.13691 0.19662 0.25385 0.31233 0.38678 0.50508 0.70143 1.09995 2.14339

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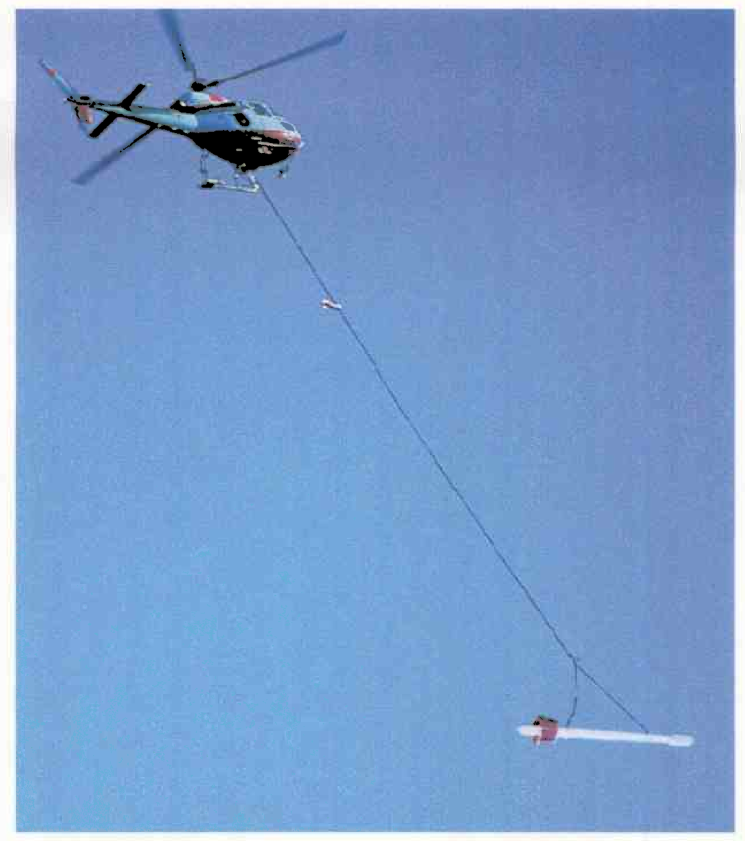

APPARENT CONDUCTIVITY

Calculated from 6606 horizontal coplanar response.

Contours: given in following intervalls (mS/m)

0.2
1.0
2.0
5.0

Colours - distributed after colourscale.

Sensor elevation - 30 meters.

NAVIGATION

The entire area was covered by GPS navigation.

The nominal flying height above ground level in the area is 60 metres.

A/S SULFIDMALM

EM APPARENT CONDUCTIVITY 6606 Hz H.Coplanar

Colours and contours

Espedalen

Oppland

Drawing: *Mogeard,J.O.*	Date: *DEC 2004*	Obs: *JOM/JK*
Scale 1:25 000 500 0 500 1000 1500 (metres)		Mapsheet (1:50 000): *1717 IV Espedalen* *1717 I Svatsum*

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