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| Sør-Fron<br>Gausdal | Oppland | | 17171 17172 | Lillehammer |

| Fagområde | Dokument type | Forekomster (forekomst, gruvefelt, undersøkelsesfelt) |
|---|---|---|
| Geofysikk | | Stormyra Andreasberg Jørstad Storgruva Evans Statsråd Stang Nicoline Melgårdseter Søndre Gråhø Grimstjønna |
| Råstoffgruppe | Råstofftype | |
| Malm/metall | Cu Ni | |

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse
Oversikt over de 13 2004-UTEM nettene som ble målt i løpet av vinteren

0965/05

# 2004 Winter Geophysical Program

## Espedalen,
## Oppland county, Norway

P. Tirschmann
Falconbridge Limited

On behalf of
Sulfidmalm A/S

May 26, 2005

## SUMMARY AND CONCLUSIONS

This report gives the details and results of the 2004 winter geophysical program on the Espedalen project which is located approximately 170 km north of Oslo and 50 km north of Lillehammer, Norway. The project is an option and joint venture between Sulfidmalm A/S (Norway), wholly-owned subsidiary of Falconbridge Limited, and Blackstone Ventures Inc. (Canada). Exploration programs are carried out by Falconbridge Limited on behalf of Sulfidmalm.

In order to evaluate the potential for nickel sulphide mineralization in the Espedalen area, a 932 line km helicopter-borne magnetic and frequency domain electromagnetic survey was contracted out to the NGU and flown in the fall of 2003. In late 2003, the airborne EM anomalies were prioritized and a plan was made for a follow-up ground geophysical program.

The 2004 winter ground geophysical program was carried out during the period January 23rd to March 29th, 2004 and consisted of 123 line km of gridding and UTEM surveying. Grids with a line spacing of 200m were established by Falconbridge personnel using a differential global positioning system (DGPS) and bamboo pickets. The UTEM surveying was carried out by Lamontagne Geophysics Limited of Kingston, Canada.

The UTEM survey was successful in detecting and confirming a number of the prospective helicopter EM anomalies on the ground as well as in defining the better conductance targets. A total of twenty-seven anomalies were identified. Of these, fourteen were selected and submitted to Lamontagne Geophysics for detailed modeling. The modeling indicates that conductances range from approximately 100-2000 siemens for individual UTEM plates.

These results will be used to help select targets for drill testing.

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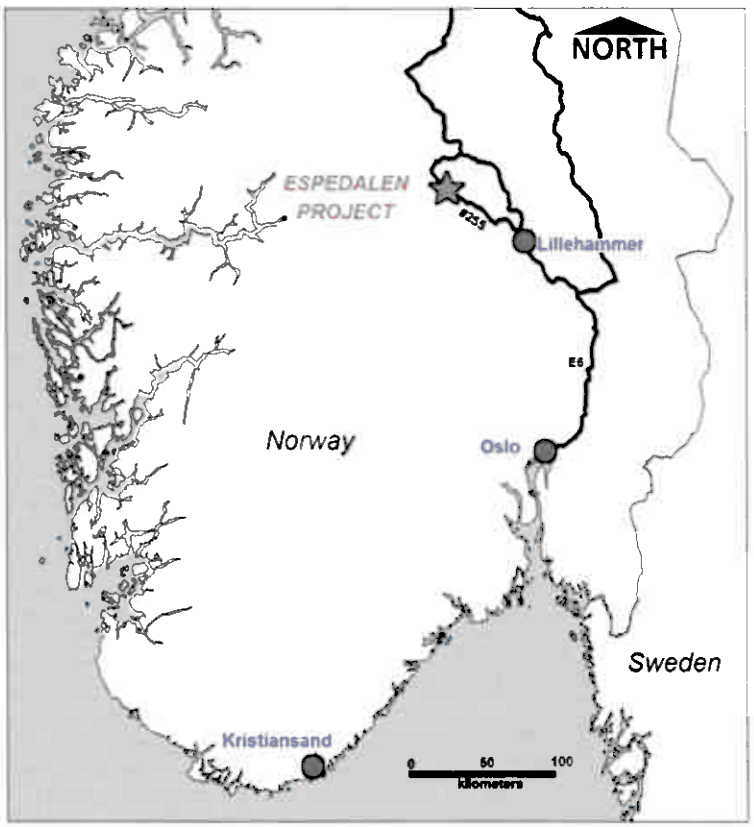
## 1.0 Location, Topography and Access

The Espedalen project area is located 170 km north of Oslo in south central Norway. The project is situated within the kommunes of Gausdal and Sor-Fron in the Oppland fylke and is easily accessible by car along highway #255 approximately 50 km north of Lillehammer (Figure 1).

Topography in the project area is rugged with local relief of up to 700m. Espedalen Lake trends NW-SE across the centre of property and is flanked on both sides by mountain peaks which reach elevations of up to 1445m. The valley floor and lower portions of the mountain slopes are covered by mixed coniferous and deciduous forest which has been locally logged. Tree cover is replaced by grass, moss and shrubs above an elevation of approximately 1100m.

Access to the field area is generally good via a well-developed system of secondary gravel roads as well as hiking and skiing trails. The majority of the ground in the Espedalen valley is held by private landowners with isolated blocks held under a "communal" designation. Blocks of state-held ground occur along the tops of the mountains. Permission to access the field areas with snowmobile is required from both the local kommunes and the landowners.

**Figure 1**
**Espedalen Project – Location**



## 2.0 Property and Ownership

At the time of the work reported herein, the Espedalen "property" consisted of 214 pre-claims or "mutings" covering an area of 62 sq km (Figure 2). The pre-claims are registered to Sulfidmalm A/S (Norway), a wholly owned subsidiary of Falconbridge Nikkleverk (Norway) which is owned by Falconbridge Limited (Canada). Exploration on the project is carried out under an option and joint venture agreement between Sulfidmalm A/S and Blackstone Ventures Inc. (Canada). Work programs are carried out by Falconbridge Limited on behalf of Sulfidmalm.

## 3.0 Geological Setting

Espedalen is a historic nickel mining area which was active during the period 1848-1878. Numerous old nickel workings and showings are hosted within differentiated mafic and ultramafic bodies which have intruded anorthositic country rocks. This magmatic terrain is collectively referred to as the "Espedalen Complex" and forms the basement of the Gråho subnappe within the larger Caledonian Jotun Nappe.

The Espedalen Complex comprises metamorphosed syenites, norites, anorthosites, gabbros, pyroxenites and peridotites ranging in age from 1698-1250 Ma. The nappe was emplaced in its current position during the Caledonide Orogeny but the original position of this unit is thought to have been west of the Norwegian coastline. Reconstructions place this position close to the west coast of Labrador and Voisey's Bay. The similarity in the ages of the rocks supports such a correlation.

Nickel mineralization is hosted in differentiated mafic to ultramafic intrusions consisting of peridotite, pyroxenite and norite. Disseminated to massive nickel mineralization is exposed in a series of old mine workings and showings, mainly concentrated on the NE side of Espedalen Lake. Grab samples have returned nickel values of up to 3.26% and nickel tenors ranging from 1.8% to 8.8%.

The presence of abundant nickel mineralization at surface combined with the paucity of modern exploration was the impetus for renewing exploration activities in this area in late 2002.

## 4.0 Previous Work

The record of work completed prior to the 1960's is incomplete. Table 1 gives a brief summary of the known work carried out by Sulfidmalm and Norsk Hydro between mid-1960 and 1980. During this period, 44 drillholes, totalling approximately 3,500-4,000m were completed including 38 at Megrundstjern, 4 at Jorstad and 2 at Melgard. The best

intersection was obtained at Megrundstjern and contained 1.01% Ni, 0.32% Cu over 29 metres, including 3.18% Ni over 1m. Preliminary metallurgical testing of this material gave concentrate grades of 15.0% Ni and 5.27% Cu with recoveries of 70.3% for Ni and 76.8% for Cu.

In late 2002, Falconbridge geologists visited the area and initiated a new exploration program. In the winter of 2003, a 29.25 line km UTEM survey (University of Toronto Electromagnetic System) was completed on the SW side of Espedalen Lake and yielded two good EM anomalies. Based on these positive results, a 932 line km helicopter-borne magnetic and frequency domain electromagnetic (EM) survey was contracted out to the NGU and flown in the fall of 2003. In late 2003, the airborne EM anomalies were prioritized and a plan was made for a follow-up ground geophysical program.

**Table 1**
**Summary of Work Completed by Sulfidmalm & Norsk Hydro,**
**Mid 1960's -1980**

| Period | Company | Description of Work |
|---|---|---|
| Mid-1960's | Sulfidmalm | • recce prospecting & geophysical surveys<br>• claims acquired<br>• slingram anomalies obtained over Andreasberg & Stangruva<br>• no drilling |
| 1970 | Norsk Hydro | • helicopter mag-EM survey<br>• 4 holes drilled at Jorstad Grid; best result was 0.35% Ni & 0.09% Cu/18.8m |
| 1973 | Sulfidmalm/ Norsk Hydro | • joint venture formed |
| 1974-1978 | Sulfidmalm/ Norsk Hydro | • mag, VLF & Mise a la Masse surveys<br>• 40 holes drilled incl. 2 at Melgard Grid, and 38 at Megrundstjern Grid (3143m)<br>• best result at Melgard was 0.47% Ni, 0.21% Cu & 1.95% S/12.75m<br>• large zone of disseminated mineralization outlined at Megrundstjern; poor correlation between sections; best intersection was 1.01% Ni & 0.32% Cu/29m incl. 3.18% Ni/1m |
| 1979-1980 | Sulfidmalm | • supported a field mapping program by Michael Heim<br>• 1:50,000 compilation map produced from original 1:5,000 mapping |

## 5.0 2004 Winter Ground Geophysics Program

During the period January 23rd to March 29th, 2004, a winter program consisting of 123 line km of gridding and geophysical surveying was carried out. A list of field personnel involved in the program can be found in Appendix A.

### Grid Preparation

Five grids, including one main grid on the NE side of Espedalen Lake and four small satellite grids were established by Falconbridge and Sulfidmalm personnel during the period January 23rd to February 22nd. The gridding team consisted of two operators who surveyed the grids using real-time differential global positioning systems (DGPS), and two local mountain guides familiar with the area terrain. DGPS control was used on both the grids and the geophysical loops in order to provide the location and elevation (x, y & z) accuracy required for detailed geophysical modelling.

The grids consisted of lines spaced 200m apart with stations set at 25m intervals along each line and marked by thin bamboo pickets (Figure 3). All grids were oriented at AZ 050° and established on a set of local grid coordinates consistent with the 2003 UTEM grids (Appendix B). Bamboo pickets were collected upon completion of the surveying in order to return the survey area to its original state.

### UTEM Geophysical Surveying

Lamontagne Geophysics Limited carried out 123 line km of UTEM surveying between February 17th and March 28th, 2004 (Figure 4). (Surveying over a smaller area on the SW side of Espedalen Lake in 2003 confirmed the suitability of the UTEM method for surveying is this steep terrain and particular geological environment). The UTEM crew consisted of two Lamontagne operators and two Falconbridge helpers.

Surveying was conducted using thirteen rectangular to square transmitter loops consisting of narrow gauge copper wire and ranging in size from 400 x 500m to 1400 x 1500m. Loops were numbered sequentially so as to be continuous with the 2003 surveys (Figure 5). Data was collected in both "in-loop" and "out-of-loop" configurations on 200m spaced lines at a station interval of 25m. Line spacing was tightened to 75-100m as required in areas of anomalous conductivity.

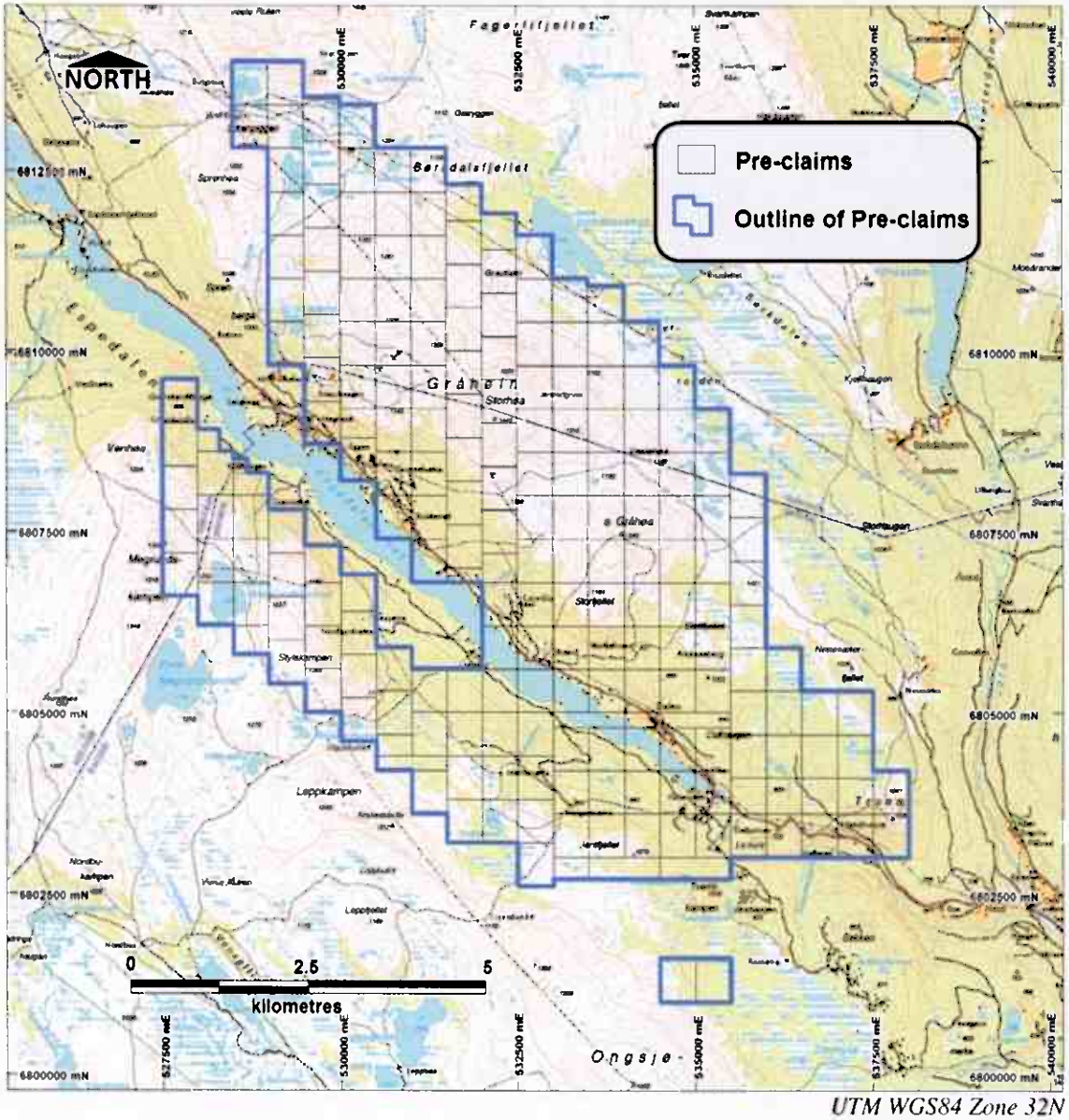
An in-house interpretation by Falconbridge geophysicist A. Watts yielded 27 UTEM anomalies (Figure 6). Good correlation was observed between the results of the UTEM survey and the 2003 helicopter EM survey. However, the UTEM survey provided enhanced depth penetration and conductance discrimination. Approximately half of the anomalies were deemed to represent potential drill targets based on conductance and were submitted to Lamontagne for more detailed modeling.

Modeling was complex and resulted in the interpretation of multiple low to high conductance plates for many of the targets. The better conductance plates (100-2000 siemens) have strike lengths and dip extents of 75-500m and 30-250m, respectively. Although none of the conductors are interpreted to outcrop, depths to top/center are typically shallow at < 100m.

Appendix C consists of a detailed interpretation report by Lamontagne Geophysics on the winter 2004 UTEM surveying. The report contains a description of the survey logistics and methodology, a full listing of the UTEM profiles and the details of the selected UTEM modeling.

Results of the UTEM modeling will be reviewed and used to help select targets for drill testing.

**Figure 2**
**Espedalen Project - Pre-claims**

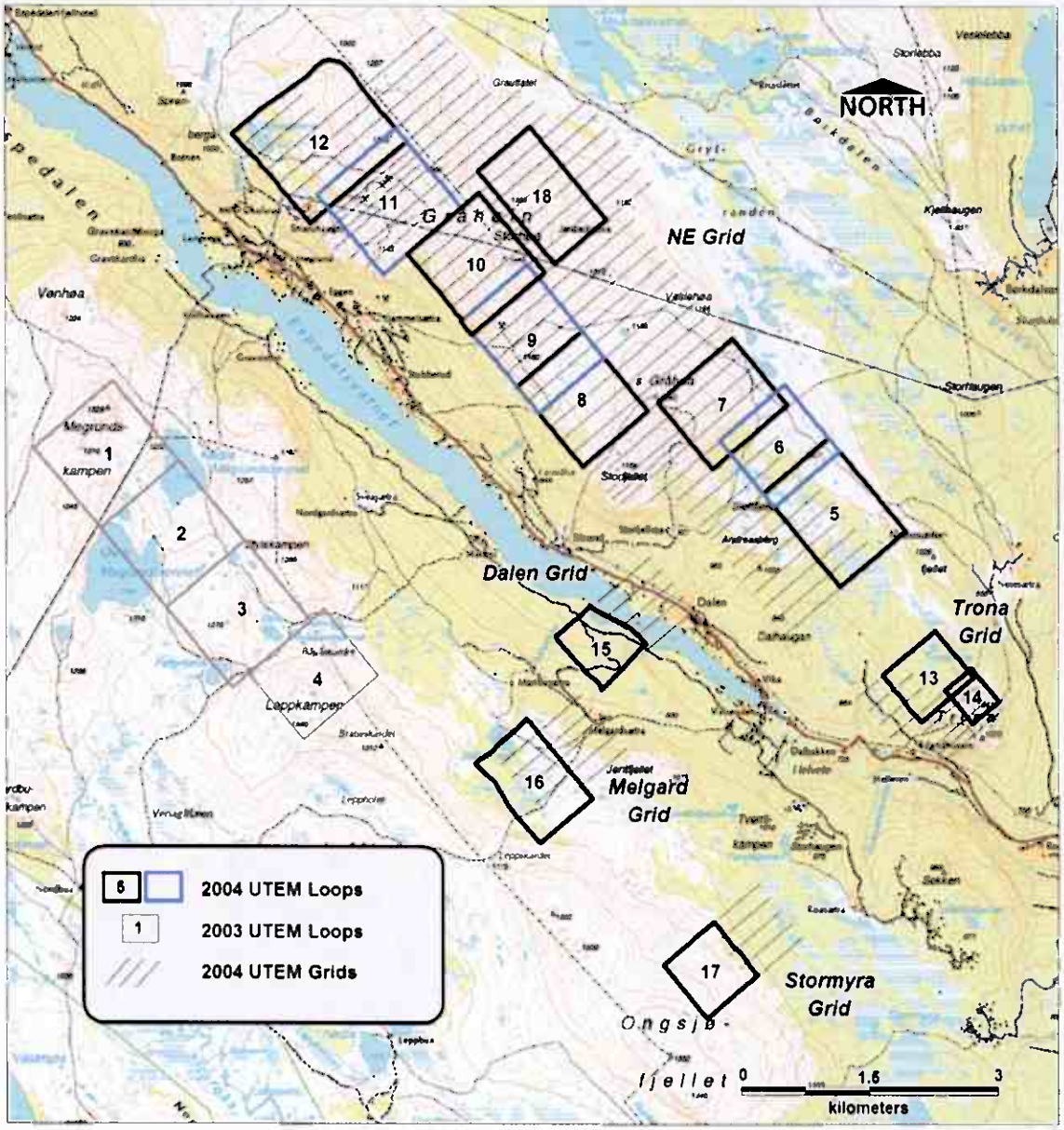



*UTM WGS84 Zone 32N*

**Figure 3**
**Establishment of DGPS-controlled Grid**

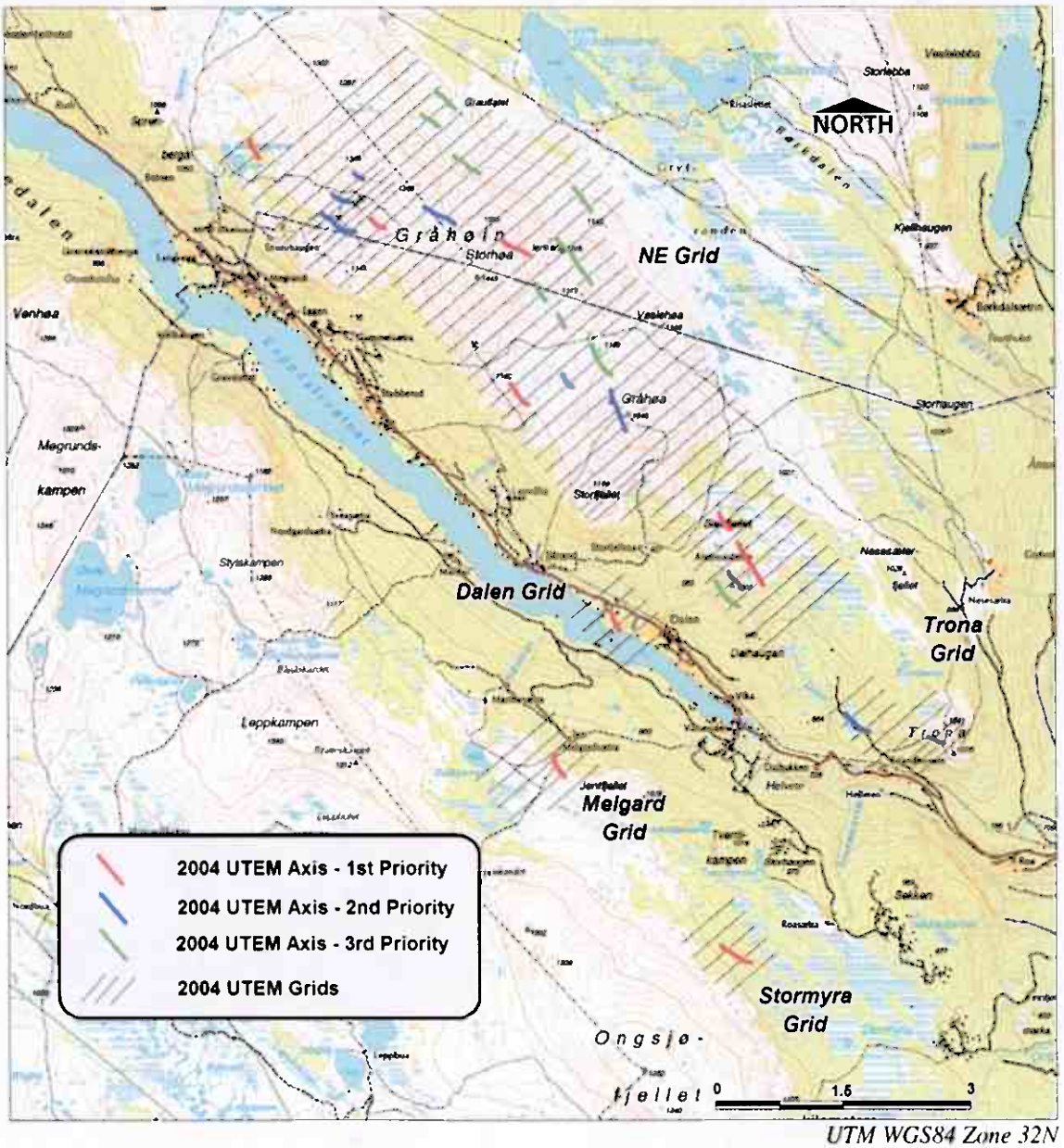
**Figure 4**
**UTEM Surveying on the NE Grid**

**Figure 5**
**Espedalen Project – 2004 UTEM Grids and Loops**




*UTM WGS84 Zone 32N*

**Figure 6**
**Espedalen Project – 2004 UTEM Axes**




*UTM WGS84 Zone 32N*

## APPENDIX A
## LIST OF FIELD PERSONNEL

| | | |
|---|---|---|
| Falconbridge Limited: | Patti Tirschmann | Senior Project Geologist |
| | Jean Laforest | Contract Geologist |
| | Claude Pepin | Contract DGPS Operator |
| Sulfidmalm A/S: | Dag Inge Bakke | Mountain Guide/crew helper |
| | Ole Kristian Lien | Mountain Guide/crew helper |
| | Hans Erik Kveum | Mountain Guide/crew helper |
| Lamontagne Geophysics: | Robert Langridge | Senior Geophysicist/UTEM Operator |
| | Ryan Land | UTEM Operator |

## APPENDIX B
## LOCAL GRID COORDINATE CONVERSION DATA

Common Coordinates Between the local Espedalen grid and UTM WGS84 Zone 32N are as follows:

| | Easting | Northing |
|---|---|---|
| Local Espedalen Grid | 0 | 0 |
| Rotation | 050° | |
| UTM WGS84 Zone 32N | 525500 | 6808100 |

*Note: All the Espedalen grids are in the same coordinate system.*