March 2003

NGU
Norges geologiske undersøkelse
Geological Survey of Norway

Data announcement RA-3

Røst Basin Aeromagnetics 2003

NGU is acquring aeromagnetic data in the Røst Basin Area offshore the Lofoten margin. Interpretation of refraction seismic and gravity data has shown that thick sedimentary units exist below the flow basalts in the Røst Basin. The basin represents one of the interesting frontier exploration areas in Norway.

NGU carried out aeromagnetic measurements in the Røst Basin in 1973. The profiles were flown along Decca-lanes at a line spacing of 8-16 km with only a few tie-lines. Inaccuracies in positioning, limited magnetometer sensitivity, poor control of diurnals and wide profile spacing make the 1973 aeromagnetic data-set unsuitable for up-to-date interpretation of both regional anomalies and high frequency, small amplitude anomalies (< 1 nT). Modern instruments and navigation have dramatically improved the quality of aeromagnetic measurements and can be demonstrated to include significantly more geological information than the first generation data. Magnetic data are independent of seismic data, both physically and from a measurement point of view. Although both data types can image the same geological features, integrated interpretation of seismic and potential field data produce a synergy that has been proven wherever seismic and modern potential field data coverages overlap.

High-resolution aeromagnetic measurements can aid in the study of the following geological features:

- **Early Tertiary lava flows and intrusions**
- **Volcanic centres**
- **Circular and semi-circular volcanic collapse structures (cauldrons)**
- **Basement structures and their reactivation along the southeastern basin margin bordering the Utrøst Ridge, especially rotated fault blocks**
- **Oceanic fracture zones (Vesterålen and Jennegga FZ)**
- **Mesozoic transfer zones**
- **Faults in volcanosedimentary units**
- **Tertiary sand channels**

Features like transfer zones, volcanic centres, cauldrons and oceanic fracture zones can be identified on the vintage aeromagnetic data-set. A systematic regional aeromagnetic survey with optimal specifications will, however, provide improved structural information. NGU has aeromagnetic data from the near-shore area of Lofoten-Vesterålen, as well as on- and offshore gravity data from collaborations with other intitutions. We will also utilise gravity data from satellite altimeter missions. NGU has detailed knowledge of the coastal zone through an extensive bedrock mapping programme during the last decades and holds an extensive petrophysical database from the area. The knowledge and data from these projects will be used to aid the interpretation of the new aeromagnetic data.

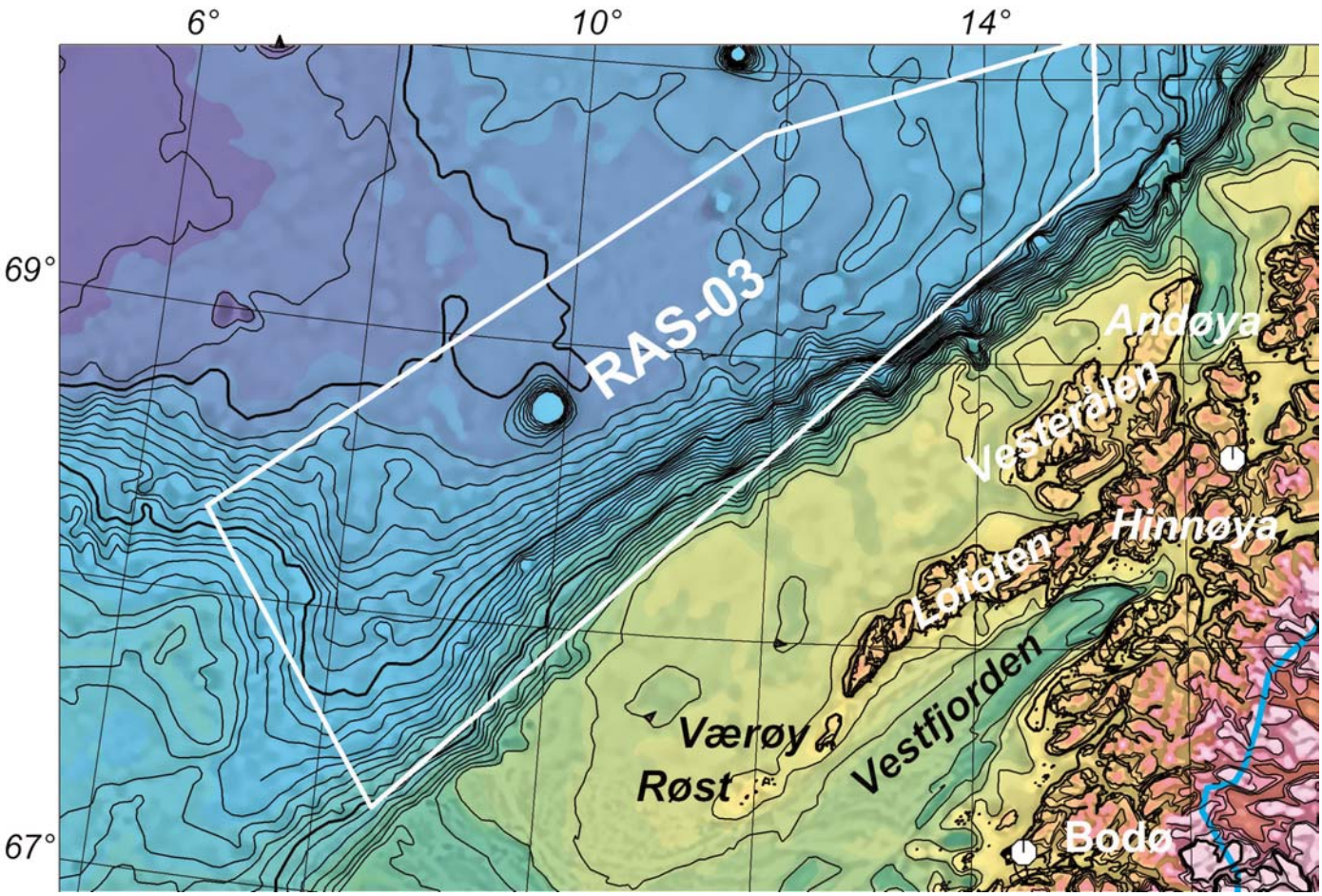
ORDERING

Price for late participants: 1.14 million NOK

Contact person:
Odleiv Olesen
Tel.: 73 90 44 56
E-mail: odleiv.olesen@ngu.no

Geological Survey of Norway
NO-7491 Trondheim
Norway
Tlf.: +47 73 90 40 00
Fax.: + 47 73 92 16 20
www.ngu.no

www.ngu.no



DELIVERABLES

Maps

1. Total field data-sets
2. Analytic signal
3. High pass filtered magnetics (5 and 15 km)
4. Depth to magnetic sources (Euler deconvolution and Naudy's method)
5. Bouguer gravity map from satellite altimetry data
6. High pass filtered Bouguer gravity
7. Combined interpretation along 8 equidistant profiles ModelVision)
8. 3D model (ModelVision)
9. Combined interpretation maps (Oasis Montaj and ArcG15)

Map scales 1:250.000 and 1:500.000

Reports

Processing Report

Interpretation Reports

COSTS

The project is organised as a multi-client project with a fixed price for each early participant. The data acquisition is carried out in May-June 2003.

Maps and digital data will be distributed to the companies as they are produced in August and September. Summary reports including interpretation of the area will be prepared during December 2003 and February 2004.

TECHNICAL SPECIFICATIONS:

Line/tie-line spacing:	2/5km
Sensor elevation:	150m
Area coverage:	40,000km²
Total flying distance:	28,000km
Aeroplane:	Piper Chieftain
Magnetometer:	Scintrex Cesium Vapour MEP410
Noise envelope:	±0.1nT
Sensor:	CS-2 mounted in towed bird
Navigation:	Real time differential GPS
Navigation accuracy:	< 3m
Base of operation:	Svolvær
Base magnetometer:	Scintrex MP-3