

GREENLAND

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Geological & exploration briefs

Exciting results from AEM Greenland 1994

*overwhelming geophysical prospects
potential kimberlite targets*

As announced in the latest issue of MINEX the first data from the five-year airborne geophysics project AEM Greenland 1994-1998 were released 1st February 1995. The data, which comprise approximately 17,000 line kilometres of electromagnetic and high sensitivity aeromagnetic data, were acquired in Inglefield Land North-West Greenland by Geoterrex Ltd., Ottawa under a contract with the Geological Survey of Greenland. In addition a photogeological study was commissioned and financed as part of the project to increase the geological knowledge of the area. The AEM 1994-1998 is financed by the Greenland Home Rule Government.

This first survey has geophysically identified and mapped a wide variety of mineral exploration targets. Furthermore a corridor of diatremes were discovered in central Inglefield Land.

GGU has published an Open File Report containing a discussion of some of the main results. The geophysical prospects are exciting, but also overwhelming and will require a dedicated ground follow-up programme,

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including constant re-assessment of the data for maximum success. The report gives a list of 75 mineral exploration targets which is suggested as ground follow-up targets.

Applications for exploration rights in Inglefield Land are expected to be decided upon early April 1995.

some magnetic results

A number of major distinct features stand out in the magnetic anomaly map data even at a scale of 1:1 000 000. The most dominant feature is a wide E-W trending belt of variable magnetic intensity which has been mapped for

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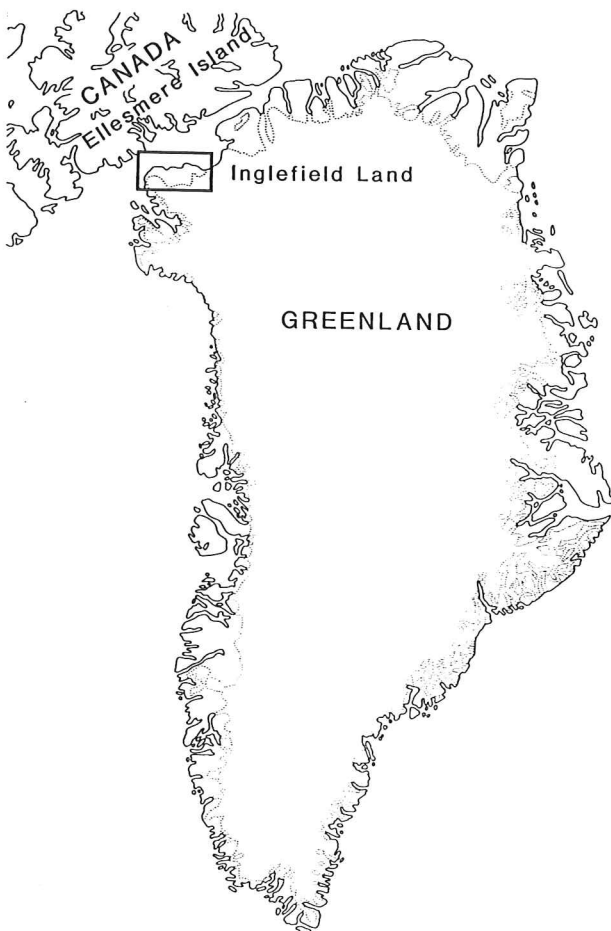
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approximately 100 km with both ends open. This feature correlates well to the mapped Etah Group supracrustals.

Many other previously unknown lithologically units have been identified including a large complex shaped basic unit in an area of extensive drift cover. Furthermore the magnetic data has outlined highly variable linear trends within the crystalline basement complex and many fold features of all scales.

Dykes show up as long narrow positive magnetic features that cut across the older basement trends at various oblique angles. There is no evidence of dyke swarms, but the data indicates that the longest dyke that can readily be observed strikes in an WNW direction across the entire survey area.

The airborne geophysical data reveals some major new fault features which may impact future mineral exploration in the area.



Geology of Inglefield Land

Inglefield Land is part of the Canadian-Greenland shield exposing an E-W trending tract of Proterozoic crystalline rocks that is flanked to the south and north by Archaean blocks - the Thule and Victoria Fjord complexes respectively. It represents the eastern extension of the Thelon magmatic province of Ellesmere Island. The survey area also exposes the overlapping of two younger sedimentary basins. Hence the unmetamorphosed and undeformed strata forming coastal exposures represent platform deposits of both the Proterozoic Thule Basin to the south and the Lower Palaeozoic Franklinian Basin to the north.

The association of highly-deformed gneisses and early Proterozoic supracrustal rocks in which marbles and pelites are prominent, have nurtured geological comparison to the celebrated Maarmorilik region of central West Greenland. Inglefield Land is known for its abundant gossans, the largest of which is about 4 x 1.5 km. Those inspected on the ground contain iron sulphides with traces of Cu and Zn. The gossans are preserved at the Precambrian penepplain and nothing is known about the gossan mineralisation at depth.

some EM results

Long multiple often discontinuous bedrock EM conductors which are conformable to the geology are numerous and coincides very well with the areas of intermediate, but variable banded gneisses. A total of 4600 individual EM anomalies has been detected and the survey has established that there is a definite relationship between the widespread and highly visible gossans in Inglefield Land and these conductors. The new proven relationship between the gossans, gneisses, EM conductors and sulphide mineralization localities suggests that massive sulphides are widespread in Inglefield Land and that the gossans may actually be a distraction. Also a great number of localized EM conductors have been detected in a wide variety of magnetic and geological settings.

(continued next page)

potential kimberlite targets

The photogeological study confirmed an unexpected discovery of a major corridor of diatremes, first indicated by the geophysical data, and later also verified by colour video recorded during the airborne survey. The corridor trends in a WNW direction in central Inglefield Land. At this stage of exploration, these diatremes must be considered potential kimberlite targets until their mineralogy has been confirmed.

data available from GGU

The original digital data and grid files on CD-ROM together with the Geoterrex project report can be ordered from the Geological Survey of Greenland. **Price: DKK 18,000 (excl. VAT).**

Open File Series 95/1: Airborne electromagnetic and magnetic survey of Inglefield Land, North-West Greenland by R.W. Stemp and L. Thorning, 1995, 45 pp., incl. 14 figs. **Price: DKK 215**

Project AEROMAG 1995

a new airborne geophysics project

The Danish Government and the Greenland Home Rule Government are financing a new aeromagnetic survey over South Greenland between the latitudes 60° and 61°30' N, to be carried out during the summer of 1995. The Geological Survey of Greenland is entrusted the management of the project. A call for EU - tender has been sent out and the selection of a contractor for the work is in progress. The full program calls for the acquisition of approximately 84.000 line kilometres; line spacing will be 500 metres and the flight altitude will be draped approximately 300 metres above the ground.

The area is dominated by the Proterozoic Ketillidian fold belt which comprises a variety of rock types: granitoid gneiss and greenschists, unmetamorphosed continental sandstone and volcanics, additional to intrusive rapakivi granites and high metamorphic gneiss in the southern part. South Greenland is moreover characterized by a substantial number of late Proterozoic intrusives with strong alkaline affinity (the Gardar province). GGU has recently been active in the area again, and a summary of existing geoscience data was published in the Thematic Map Series. A better understanding of the area is developing, and the new aeromagnetic data will further facilitate this.



Further reading:

Geological map of Greenland 1: 500 000: Sheet 1, Sydgrønland. Descriptive text by F. Kalsbeek, L. M. Larsen & J. Bondam, 1990, 36 pp. Copenhagen: Grønlands Geologiske Undersøgelse.

Regional compilations of geoscience data from the Kap Farvel - Ivittuut area, South Greenland by L. Thorning, T. Tukiainen & A. Steenfelt, 1994. *Thematic Map Ser. Grønlands geol. Unders.* 94/1, 27 pp., 4 figs, 5 tables, 71 maps with legends (in 2 volumes).

GGU Landsat Image Data Base

a new service for the mining industry

Geological Survey of Greenland (GGU) has recently finished a remote sensing project supported by the Mineral Resources Administration for Greenland (MRA): **Greenland Landsat Image Data Base.**

All existing Landsat TM images from Greenland have been examined and the best images for geological use have been selected. Information concerning some 650 images has been compiled in a database, and the actual data from 44 Landsat TM images covering most of Greenland, exempting the Inland Ice, has been acquired from Satellitbild AB in Sweden, a partner in the project. Each image is stored on one CD-ROM, including all seven bands. Furthermore, based on these images, 44 digital previews with a 'natural look' has been produced by subsampling of the original data and stored on one **Greenland Landsat TM Image Preview CD-ROM**, which can be ordered at GGU. The format is BMP, so the preview images can be studied using any Windows based graphics program.

Similar products based on Landsat MSS images have also been developed. The original images, both TM and MSS, can be studied at GGU and can be purchased at standard prices and rules for the use of Landsat data. The preview CD-ROMS can also be purchased from GGU or from Satellitbild AB at a price of 120 ecu for the TM version and 95 ecu for the MSS version (excl. VAT).

GGU is presently using Landsat data for geological studies in two areas in Greenland: Inglefield Land in North-West Greenland and in North-East Greenland.

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Publication packages

your needs - our challenge

Geological Survey of Greenland (GGU) offers publication package service designed to provide sets of GGU publications to meet individual requests. Interested customers should approach GGU.

Packages can be assembled to cover selected topics as well as regional and specific geology of a particular geological province or target area.