

GREENLAND

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Exploration rush reaches Greenland

*Inglefield Land in focus
Voisey Bay echo*

In the world's leading mining nations, and in other countries where mineral exploration and mining form a fundamental part of the economy, rushes to peg ground are often part of the cultural heritage. In these countries commercial competition for common ground is part of everyday life.

Without wishing to hint at any comparison to major gold rushes of the last century or even to the recent land-claiming in the Canadian North West Territories in connection with diamondiferous kimberlites, it is certainly a novelty for Greenland to experience a spate of commercial interest directed to one specific region. But this has been the case with respect to Greenland's northern exposures of Precambrian shield in Inglefield Land.

Following the release of electromagnetic and magnetic data in February (see 'Inglefield Land'), a number of companies filed applications for exploration permits. Three companies, all with previous Greenland exploration experience, finished up with exploration licences; RTZ Mining and Exploration Ltd., Platinova A/S and Nunaoil A/S. With massive sulphides and kimberlites as the main targets, this exploration activity will get underway in June (see '1995 Commercial exploration and drilling').

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The geophysical data that sparked this flurry of activity are the result of the opening season of project 'AEM Greenland 1994-98', 5-years of airborne geophysics initiated by the Greenland Home Rule Government and managed by the Geological Survey of Greenland (GGU). Announcing the project in February 1994 (MINEX News no. 4) we wrote "The principle objectives of this initiative are to stimulate mining exploration activity in the short term and to provide data that will be of lasting value in the geological interpretation and modelling of selected regions". With the

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high quality of the data acquired from Inglefield Land and the immediate commercial response to it, the objectives of the first year programme have been accomplished.

The area chosen for the 2nd year AEM is in the Maniitsoq/Sukkertoppen region of central West Greenland (see MINEX News no. 6, February 1995). It is noteworthy that the major nickel, copper and cobalt discovery at Voisey Bay in Labrador has already had a spin-off effect in Greenland. Thus Cominco Ltd. has announced participation in the 1995 AEM survey as well as acquisition of exploration rights. According to the President of Cominco, David Thompson, the rights in Greenland were acquired "immediately after the Voisey Bay discovery" since "geologically,

the two - Labrador and Greenland - were originally connected to each other" (Globe and Mail, April 28th 1995). Since then, other areas having similar geological conditions to Voisey Bay, have attracted attention.

Greenland, as the eastern part of North America, shows good correlation between the major rock divisions of its western coast with those of neighbouring Canada. The marked increase of interest in western Greenland sparked by the Voisey Bay discovery is a clear reminder of the fundamental importance of regional mapping and dating programmes. It is only through such regional studies that the present correlation between the different segments of Greenland and Canada - known today in broad terms - can be refined.

Geological & exploration briefs

1995 Commercial exploration and drilling

momentum continues

The momentum of commercial mineral exploration in Greenland during the last few years continues in 1995. As last year, this activity stretches from near Nanortalik in the south (60°N) to Peary Land in the far north (83°N). The work will take place in various Archaean to Early Proterozoic provinces that make up the Precambrian shield of western Greenland while in the north both the shield and the overlying Proterozoic to lower Palaeozoic platform strata are in focus.

At the time of writing the main exploration programmes are to be carried out by four companies: Cominco, Nunaoil, Platinova and RTZ. The latter three companies will be operating in several regions, and their planned operations involve drilling. One area in which all three companies have an interest is Inglefield Land - the focus of the exploration rush mentioned in the leader article of this MINEX.

Cominco

As also referred to in the leader, Cominco will be taking part in the AEM geophysical project to be flown by Geoterrex Ltd. in the Maniitsoq region. The survey will cover the so-called 'norite belt' that is composed of Archaean basic intrusions within an amphibolite facies complex. Ground crews will investigate the sulphide potential of specific targets, some of which are known to show nickel anomalies.

Nunaoil

Apart from Inglefield Land where massive sulphides and kimberlites are the main targets (see leader), Nunaoil will be operating in five regions. Three drilling programmes are planned. In the south at Kirkespirdalen, near Nanortalik, drilling of a gold prospect within

RTZ's other activity is the Archaean supracrustal rocks of Isukasia, where the target is hematite in the BIF sequence. The main supracrustal belt strikes under the Greenland ice sheet. Geophysical data suggest

that BIF forms extensive areas under the ice. The one month's drilling programme, involving 4 holes and about 2000 m of core, is designed to test the presence of hematite within the BIF *beneath* the ice.

Inglefield Land

Survey field work & data

In addition to the commercial activity in Inglefield Land noted elsewhere in this MINEX, GGU will carry out geological and geochemical investigations during July and August financed by the Greenland Home Rule Government.

The main aim of the study is to assess the mineral potential of the region and to provide a sound basis for a pending regional mapping programme. The field work will concentrate on: 1) explanation of the geophysical anomalies mapped by the 1994 AEM survey, 2) investigation and explanation of the widespread circular structures seen in both shield and platform rocks, and 3) geological reconnaissance of the entire region including a geochemical sampling programme of stream-sediment and water.

The geological anomalies to be checked suggest massive sulphide mineralisation of SEDEX or BIF type, with an associated potential for precious metals.

At the time of writing the circular-shaped structures that have stimulated so much interest in Inglefield Land, have only been defined photographically. Their general appearance, size, shape, variable relief and relation to host rocks provide a tantalising comparison to kimberlite pipes. It is noteworthy that prior to the discovery of these structures in Inglefield Land, northern Greenland had been branded as a prospective kimberlite exploration target. The presence of Cretaceous diamondiferous kimberlite diatremes that cut the shield and Palaeozoic platform of Somerset Island in the Canadian Arctic, have previously generated interest in the Greenland part of the Innuitian region.

data available from GGU

The results of the AEM electromagnetic and magnetic 1994 survey over Inglefield Land are available from GGU in two forms: as original digital data or in condensed and summarised form in an Open File Report. Also cited below are two geological accounts of Inglefield Land; one is the result of a recent photogeological study carried out within the AEM project, the other is a regional interpretation of the geology of the Precambrian shield and its relationship to Canada.

- The original data and grid files on CD-ROM, as well as the report of Geoterrex Ltd. - the company carrying out the geophysical survey - can be ordered from the Geological Survey of Greenland.

Price: DKK 18 000 (excl. VAT).

- Airborne electromagnetic and magnetic survey of Inglefield Land, North-West Greenland. Results from project AEM Greenland 1994 by R. W. Stemp and L. Thorning. *Open File Series Grønlands geol. Unders.* 95/1, 45 pp, incl. 14 figs. **Price: DKK 215.**

- Photogeological interpretation of Inglefield Land, North-West Greenland by H. J. Benggaard. *Open File Series Grønlands geol. Unders.* 95/4, 21 pp, incl geol. map. **Price: DKK 550.**

- Etah meta-igneous complex and the Wulff structure: Proterozoic magmatism and deformation in Inglefield Land, North-West Greenland by P. R. Dawes. *Rapp. Grønlands geol. Unders.* 139, 24 pp, 1988. **Price: DKK 20.**

Regulatory & licensing information

Exploration licences in Inglefield Land

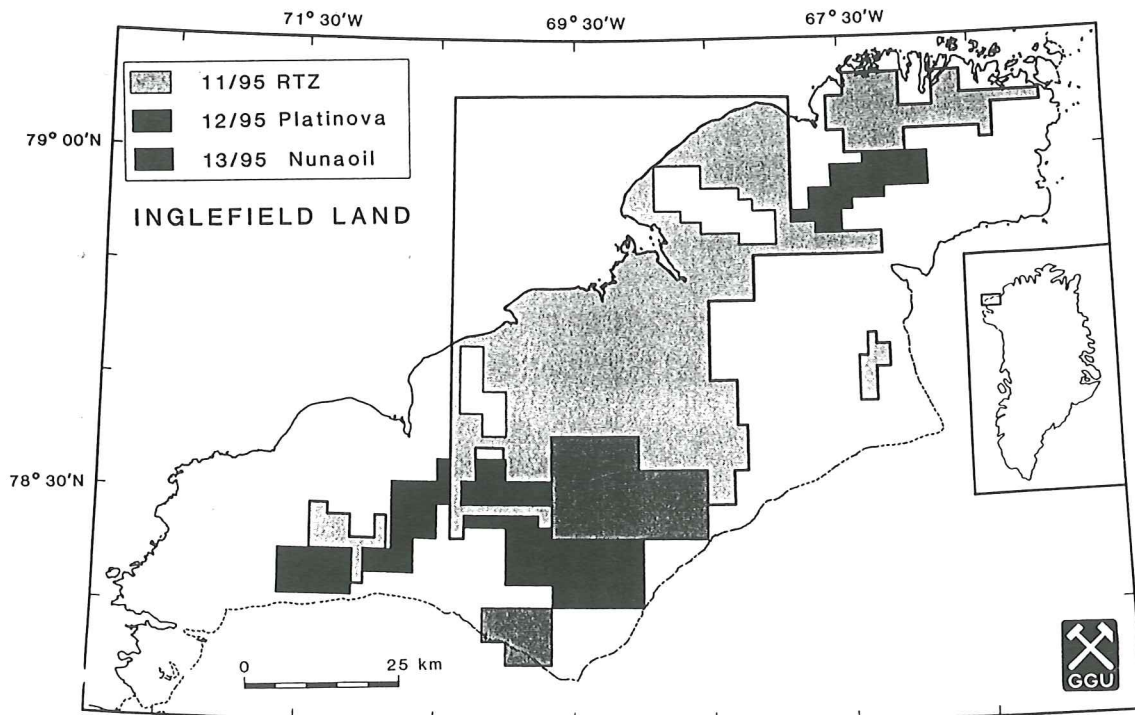
Three exploration licences covering part of Inglefield Land in North-West Greenland are in the process of being granted. The three licensees are RTZ Mining and Exploration Limited for an area of 2097 km², Platinova A/S for an area of 450 km² and Nunaoil A/S for an area of 684 km².

The granting of these licenses is based on the release of the data from the AEM Greenland project on February 1, 1995. This survey identified a variety of mineral exploration targets including a large number of possible diatremes in central Inglefield Land, most of these in a corridor shaped area.

Not least due to the area's diamond potential a number of applications were

submitted to MRA regarding rather large areas in Inglefield Land during the first weeks of February 1995. The areas were overlapping to a large degree.

According to the Mineral Resources Act for Greenland applications are decided upon by the Danish/Greenland Authorities in a discretionary manner. Thus the authorities are not bound by specified criteria in their processing of or decision on the applications. This system is explained in the Mineral Resources Act and in MRA's Principles and Procedures for the granting of Prospecting Licences and Exploration Licences for Minerals in Greenland.



(continued next page)

As part of the processing of the applications MRA requested the applicants to forward additional information about their technical and financial capabilities and experiences with respect to diamond exploration and production and about their willingness to accept terms (in addition to the Standard Terms of November 25, 1992) regarding the diamond potential, primarily a diamond royalty.

Based on the applications and the responses to MRA's request for additional information agreement has been reached between the authorities and the above 3 companies on the allocation of the exploration licence areas in Inglefield Land indicated on the map.

All 3 licences are based on the Standard

Terms with the addition of a 5 % diamond royalty based on net revenue. This addition of a royalty on diamond production is based on article 16 of the Mineral Resources Act and section 1408 of the Standard Terms. These stipulations allow for a royalty provision as an additional financial term provided this is specified prior to the granting of the exploration licence, which is the situation in the Inglefield Land case with furthermore a large number of specific exploration targets being identified by means of data provided by the authorities.

The first field work in Inglefield Land is planned to start in June 1995.

First exploitation licence for minerals being granted under the 1991 Mineral Resources Act

An exploitation licence for minerals is in the process of being granted to the Greenland company Ujarak Minerals Aps located in Nuuk. The production will be directed at deposits of olivine sand located at Itilliup Qeqertaa north of Maniitsoq in West Greenland. The licence area covers a total of 5 km² both offshore and onshore (see map). The licence period is 30 years from 1995 to 2024.

The exploitation licence is the first to be granted in Greenland for many years. It is the first exploitation licence being granted under the 1991 Mineral Resources Act which was substantially revised compared to the earlier act. The terms of the exploitation licence are consistent with the Standard Terms for Exploration Licences. The licence text will be available from MRA late June.

Ujarak Minerals plans to start production in 1995 by extracting approximately 600 t olivine sand using a sandpumper. Production is expected to be at a limited scale and at present it is not planned to construct any mining facilities on site. The olivine sand is at present planned to be used mainly for industrial purposes in Greenland substituting imported olivine sand.

