

# GREENLAND

## MINEX News

GREENLAND MINERAL EXPLORATION NEWSLETTER

Greenland MINEX News No. 1

June 1992

### New information service

*free of charge, order now*

This is the first issue of a new information service for the mining industry prepared by the Mineral Resources Administration for Greenland (MRA) and the Geological Survey of Greenland (GGU).

In the aftermath of the new mineral resource legislation introduced in July 1991, and the number of companies now showing interest in explorative and geological questions, the need for a newsletter has increased. GREENLAND MINEX News provides a wide range of exploration-relevant information from pure geological data and assessments to licensing and regulatory material. Geological emphasis will be placed on new studies either in progress or at the planning stage, and on data now available to industry, either in the form of published reports, bulletins and maps or as unpublished material in GGU's data base and archives.

In short, GREENLAND MINEX News intends to provide a quick up-date of geological and legislative information, sent free to all interested parties. It is planned as an at least biannual newsletter to be issued as new developments take place or as relevant geological information becomes available.

This first issue of the newsletter has been sent out to all companies and individuals known to have an interest in the mineral

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exploration of Greenland.

Future issues will only be distributed on request. Thus all companies and persons wishing to receive GREENLAND MINEX News on a regular basis must return to GGU the questionnaire that accompanies this first issue.

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## Greenland Handbook

Another part of the general information service to the commercial sector is the publication (in December 1991) of a comprehensive handbook "Greenland – A Handbook for Investors in the Mining and Petroleum Industries".

This 200-page illustrated book has been prepared by Mining Journal Research Services, U.K.

It provides mining and oil companies with a wide range of information about Greenland, its mineral resource potential and on administrative and legal matters. The Handbook is available from MRA free of charge to oil and mining companies.

## Improvements

As might be expected, this first GREENLAND MINEX News is something of a trial issue. Although the newsletter is not an open forum with a "readers column", we are interested in receiving comments and criticism, and we specifically seek suggestions for improvements.

Intended to serve a range of customers from mining consortiums to small companies and

individual prospectors, some readers may have particular wishes in the type of material that could be included in future issues. Please contact the Geological Survey of Greenland, att. GREENLAND MINEX News with your comments.

## Future issues

- General mineral potential of Greenland
- GREENMIN Greenland Mineralisation Data Bank
- Past mining enterprises
- GGU's publication and data service
- New licences

## Geological & exploration briefs

### Greenland diamonds ?

The fever created by the recent Lac de Gras diamondiferous kimberlite discovery in the North-West Territories has been felt in Copenhagen and Greenland. This discovery, 300 km north-east of Yellowknife, is one of the largest ever exploration plays in Canada. The result of the North American diamond fever is seen in the marked interest shown by commercial companies in Greenland occurrences.

Diamondiferous kimberlites are restricted to the world's ancient stable cratons, and favourably, Greenland exposes such blocks both on the west and east coasts. The West Greenland block in particular has been mapped in detail and kimberlites, lamproites and related rocks have been recorded. Regarding this potential, no exclusive exploration licences have been granted.

#### *Nearly 500 occurrences outlined*

All information related to potentially diamondiferous rocks in West Greenland has been compiled into a report that describes and gives exact locations of nearly 500 occurrences. The report – GGU Open File Series 91/2 – is based on data from many sources including both GGU and released company material. Much of the information has not been previously published. The occurrences are concentrated between latitudes 60° and 72°N and include four main swarms of kimberlite, a swarm of lamproite and seven swarms of ultramafic or strongly potassic lamprophyre. The field relations, petrography and geochemistry of each swarm are outlined. Ages of the intrusions range from Aphebian (c. 1800

Ma) to Mesozoic (120 Ma).

Microdiamonds have been found in kimberlite swarms at both the northern and southern margins of the Archaean craton. However, a swarm in the central part of the craton and thus probably having originated at the deepest level of the mantle, is considered to have the best diamond potential.

The West Greenland kimberlites and associated rocks constitute a major province stretching north–south for around 1300 km. In the field the rocks are elusive, occurring as thin dykes, sheets and small stocks, often covered by surficial deposits. Although they tend to occur in swarms, systematic distribution patterns are still unclear, and some entire intrusion sets may still await discovery.

#### **Further reading**

Occurrences of kimberlite, lamproite and ultramafic lamprophyre in Greenland by L.M. Larsen 1991. *Open File Ser. Grønlands geol. Unders.* 91/2, 36 pp, with appendix, figs, tables, maps. Available from GGU. Price: DKK 65.00.

A lamproite stock with ellipsoidal phlogopite nodules at Oqaitsúnguit, Disko Bugt, central West Greenland by L. Skjernaa, 1992. *Rapp. Grønlands geol. Unders.* 154, 33-47.

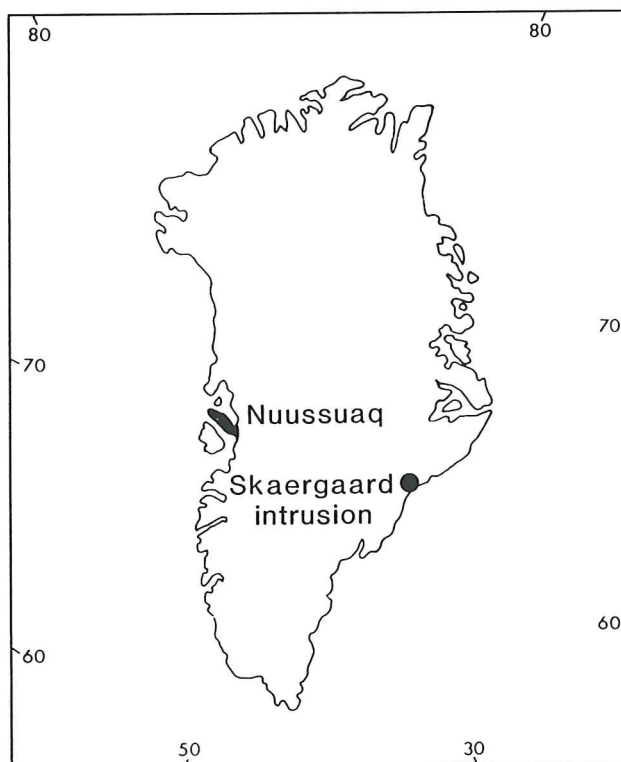
## New gold exploration target

Greenland has yet to enter the list of gold-producing countries. While waiting for the first commercially viable venture to emerge, considerable attention is concentrated on the outcome of the drilling and feasibility studies carried out by Platinova A/S on the Tertiary Skaergaard intrusion of East Greenland. Meanwhile exploration is continuing on other gold prospects, including the more traditional gold bearers, the Precambrian greenstone belts.

One of these belts hosts a new gold mineralisation discovered by GGU last summer during regional geological and geochemical mapping on Nuussuaq peninsula in the Disko Bugt area of central West Greenland (70°N). This mineralisation is described in a preliminary report – GGU Open File Series 92/3. The account is based on a quick field reconnaissance in 1991, and it contains a complete set of the chemical analyses of the chip samples collected across the gold-bearing strata.

The mineralisation occurs in Archaean(?) supracrustal rocks that form a c. 30 × 5 km belt within the surrounding high-grade gneiss complex. Two regional lithological units make up the supracrustal belt: a lower mafic to ultramafic sequence and an upper section of predominantly clastic rocks. The gold-bearing strata occur in the transition zone between the volcanic and sedimentary units; more specifically within rusty-weathering, finely-laminated metachert 3–4 m thick.

The metachert contains disseminated sulphides, mainly pyrrhotite and pyrite, with minor arsenopyrite and chalcopyrite, and with grains of native gold up to 20 microns in size. Some gold occurs included in arsenopyrite, other grains are unrelated to sulphide minerals. Analyses of chip samples collected across the metachert at five locations over a



strike length of 1.6 km show a range between 0.4 ppm and 1.8 ppm Au with an average of 1 ppm.

The stratigraphic position of the gold-bearing metachert makes it a strong candidate for having an exhalative origin, being deposited from sea-floor discharge during mafic-ultramafic volcanism. This potential for sedimentary, exhalative-derived gold deposits, constitutes a new exploration target in the supracrustal rocks of the Disko Bugt region.

### Further reading

Gold mineralisation in Precambrian supracrustal rocks on southern Nuussuaq, central West Greenland: 1991 results by B. Thomassen & T. Tukiainen, 1992. *Open File Ser. Grønlands geol. Unders.* 92/3, 31 pp, incl. tables, maps. Available from GGU. Price: DKK 55.00.

## SUPRASYD 1992

### *reappraisal of a mobile belt*

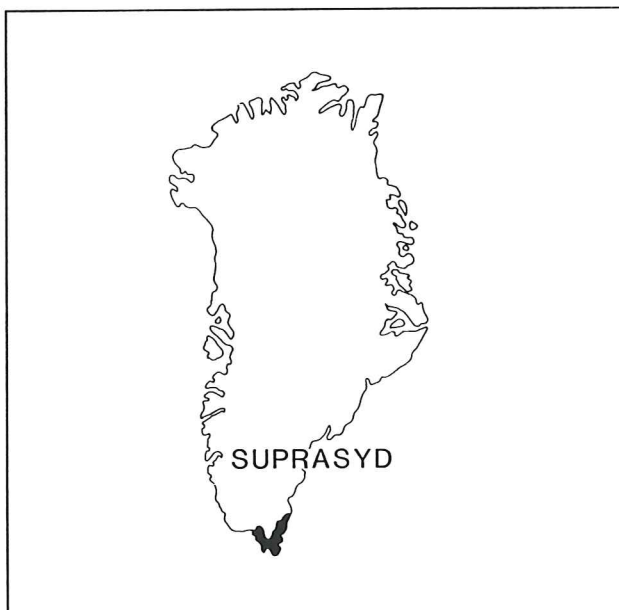
The Proterozoic Ketilidian mobile belt of southern Greenland, with its wide variety of infracrustal and supracrustal rocks, and younger intrusive complexes, has long been associated with mineral exploration and mining. Three of Greenland's earliest mines involving copper, gold, silver and graphite, are found within the belt. Recent geochemical surveys have determined a number of anomalous areas, particularly with respect to gold.

In the late 50s and 60s, south-western Greenland was the focus of an intensive mapping activity by GGU covering the southern margin of the Archaean block (c. 3800–2600 Ma), the adjoining Ketilidian mobile belt to the south (2500–1600 Ma), and the Gardar alkaline igneous province (1300–1000 Ma) that forms an east-west zone across the belt. Much of this region was mapped at 1:20 000 scale with the publication of geological map sheets at 1:100 000 and 1:500 000 and special topic maps at scales between 1:50 000 and 1:20 000. Terrane models based on this mapping have been advocated; the latest published in 1991. In contrast the eastern part of the mobile belt stretching onto the south-east coast has only been cursorily investigated.

In summer 1992 GGU's project SUPRASYD, designed to run over several field seasons, is aimed at providing an economic assessment of the mobile belt. The initial task is a reconnaissance of the relatively unknown eastern terrain that is known to contain a variety of supracrustal sequences (of possible different ages) in which acid volcanics and volcanoclastic sediments are important components. These strata, and the appreciable thicknesses of gneissic lithologies derived from them, are favourable hosts for massive sulphides, and mineralisation has been reported. Determining the geological setting

and economic potential of these rocks, as well as their relationship to the previously mapped western part of the mobile belt, are the major questions to be clarified by the 1992 field work.

Project SUPRASYD is part of GGU's long-term metallogenetic programme aimed at the assessment of Greenland's supracrustal belts and their mineralisations, primary environments and tectonic regimes.



#### Further reading

Geological setting of Precambrian supracrustal belts: a fundamental part of mineral resource evaluation of Greenland by P.R. Dawes & H.K. Schönwandt, 1992. *Rapp. Grønlands geol. Unders.* **155**, 13-23.

Gold content of regional stream sediment samples from South Greenland by A. Steinfeldt, 1990. *Open File Ser. Grønlands geol. Unders.* **90/5**, 12 pp., 3 maps. Available from GGU. Price: DKK 180.00.

Early Proterozoic collision tectonics, and rapakivi granites as intrusions in an extensional thrust-thickened crust: the Ketilidian orogen, South Greenland by B.F. Windley, 1991. *Tectonophysics* **195**, 1-10.

## Mineral exploration excursion

*summer trip to Greenland*

A chance to visit Greenland to see something of its mineral exploration potential is provided by an excursion from 15th to 20th July, 1992. This trip to the beautiful fjord country of central East Greenland, is aimed at offering an introduction to the geology and mineralisation of the region around 72°N centered on the old mining site of Mesters Vig.

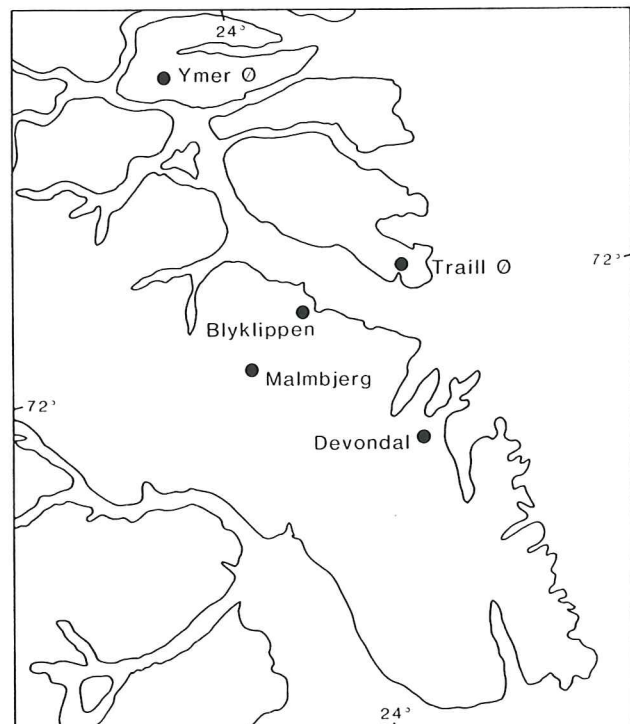
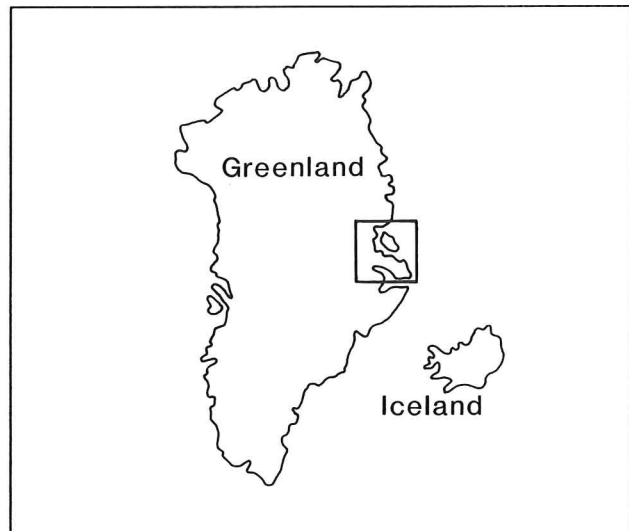
The starting point will be Iceland with further transport by Twin Otter aircraft and helicopter. The number of participants (8) is governed by the capacity of the helicopter. The excursion, open to all mining companies and individuals, has been handled on a first-come, first-served basis. At time of writing the excursion is fully booked.

The geological programme will cover both exploited deposits and new prospects, and will include visits to:

- Tertiary porphyry-Mo deposit at Malmbjerg and other prospects on Trail Ø.
- Permian Pb-Zn-Cu-Ba localities, including the now abandoned Blyklippen deposit.
- Triassic Cu-Ag mineralisation at Devondal.
- Caledonian Au-Sb-W prospects on Ymer Ø.

The field programme is organised and led by GGU, with the visit to Ymer Ø under the guidance of Nunaoil A/S.

The excursion is specifically designed for representatives of mining companies, aimed at helping in their evaluation of the mineral exploration possibilities of Greenland.



## 1992 exploration

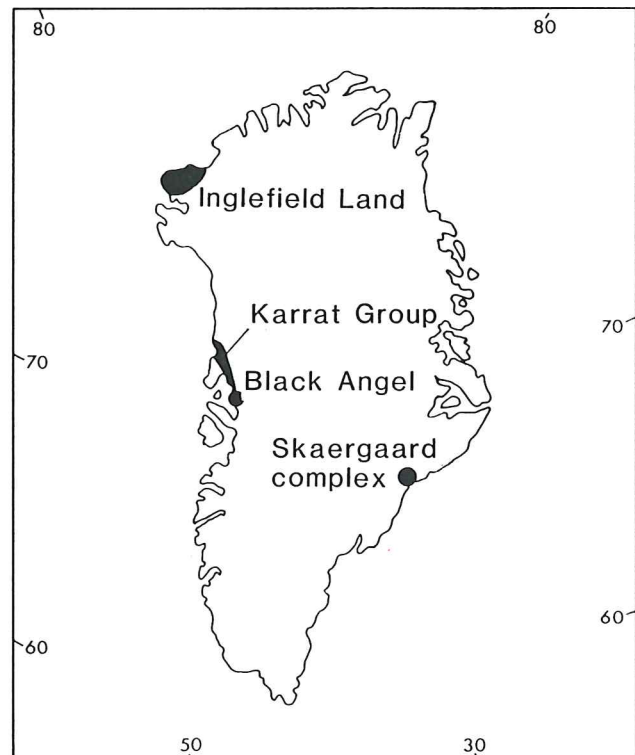
*a push to the world's top*

In 1992 exploration by mining companies will be carried out on all sides of Greenland. Thus, as well as work in the more traditional regions of the west and east coasts, new programmes are scheduled to be initiated as far north as 83°N on the shores of the Arctic Ocean. The activity last year in Inglefield Land (latitudes 78° to 79°N by RTZ Mining and Exploration Ltd.) and the proposed work in the region east of the Robeson Channel this summer (by Platinova A/S and Nanisivik Mines Ltd.) mark a determination to extend the search for minerals to the world's northern limits.

Much of the mining and exploration activity in Greenland during the past decade has been concentrated in the Precambrian terrane that composes about three quarters of the exposed land surface. In 1992 the search for metals in the Archaean and reworked Archaean basement of West and South-West Greenland continues as well as in the early Proterozoic Karrat Group in North-West Greenland. As host to the exhausted Black Angel lead-zinc mine, this sedimentary-volcanic group, has also proven gold potential and new exploration programmes are being launched. It is noteworthy that the Karrat Group represents the largest single Precambrian supracrustal mass in western Greenland, forming large exposures between 71° and 75°N. Exploration is also continuing in the late Proterozoic complexes, notably in the alkaline Gardar Province of South Greenland.

In the last few years Greenland's Phanerozoic rocks have come under increased scrutiny by mining companies; an example being the exploration and drilling carried out for gold and platinum group metals in Tertiary gabbro intrusions of East Greenland, notably the Skaergaard complex.

Two new exploration targets in Phanerozoic rocks concern the large sedimentary basins that flank Greenland's eastern and northern sides. In central East Greenland, the focus of attention is the base metal mineralisation hosted in Upper Palaeozoic carbonates (Irish type). In North Greenland, both parts of the geological couplet that makes up the region – a southern carbonate platform and a northern clastic trough – are targets for exploration. This Lower Palaeozoic basin has potential for both Mississippi Valley type lead-zinc in the platform and shelf carbonates, and Sedex type mineralisation in the platform margin and trough facies.



*Regulatory & licensing information*

**New licences**

*in several geological provinces*

Twenty new exploration licences regarding minerals have been granted for the 5-year period 1992-96.

All licences contain exclusive rights to explore for all mineral resources except hydrocarbons and radioactive elements.

Also a number of new prospecting licences (non-exclusive) have been granted, mainly to the same companies as mentioned here.

**Licences to:**

02/91: Falconbridge Limited & Platinova A/S  
03/91: Falconbridge Limited & Platinova A/S  
04/91: Falconbridge Limited & Platinova A/S

05/91: Pasminco Australia Limited & Nunaoil A/S

01/92: Nunaoil A/S  
02/92: Nunaoil A/S  
03/92: Nunaoil A/S  
04/92: Nunaoil A/S  
05/92: Nunaoil A/S  
06/92: Nunaoil A/S

07/92: Coffs Harbour Rutile N.L. & Nunaoil A/S

08/92: Platinova A/S  
09/92: Platinova A/S

10/92: Highwood Resources Ltd., Platinova A/S & Calkas A/S

11/92: Municipality of Ivittuut

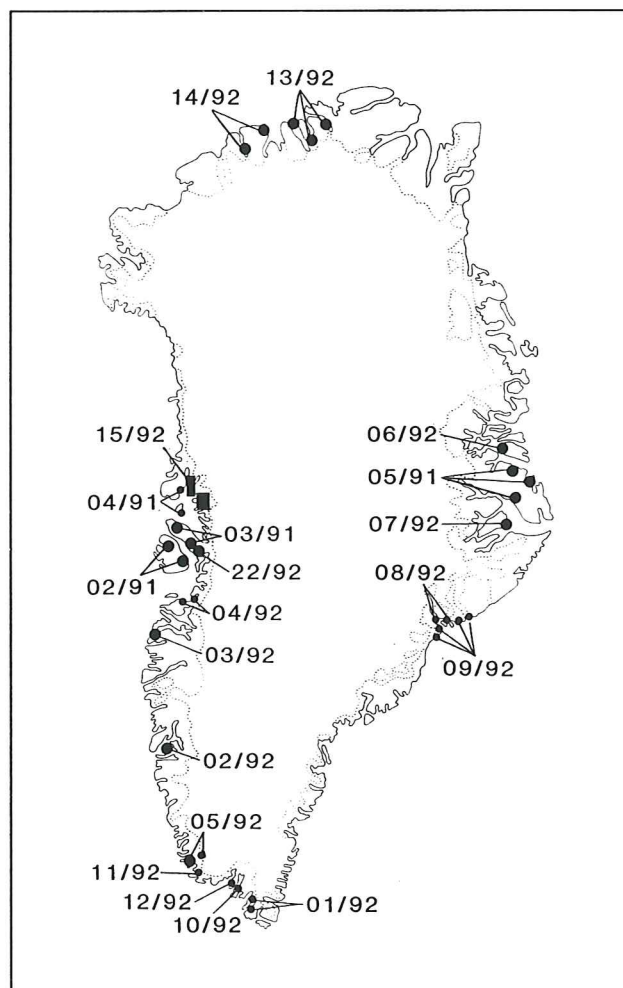
12/92: Mineral Development International A/S

13/92: Platinova A/S & Nanisivik Mines Ltd.

14/92: Platinova A/S & Nanisivik Mines Ltd.

15/92: RTZ Mining and Exploration Limited

22/92: Platinova A/S





## Favourable taxation rules

The tax rules for licensees under the Mineral Resources Act were changed in 1991 by the Greenland Assembly (Landsting).

In spring several particularly favourable rules regarding mineral resources activities were adopted.

- A licensee may carry forward a deficit indefinitely to a later year.
- Depreciation may be carried out as quickly as the licensee wishes.
- Provisions regarding an approved closure (abandonment) plan may be deducted from the licensee's taxable income.

In autumn a corporate tax was introduced; the tax rate is 35 %. The special rules regarding mineral resources activities are unchanged.

Further information regarding taxation issues is available from MRA or from:

The Greenland Home Rule  
Inland Revenue Department  
P.O. Box 229  
DK-3900 Nuuk  
Telephone: +299 22333  
Telefax: +299 22042

## Rules for prospecting and exploration

General rules for prospecting and exploration for minerals were issued by MRA in January 1992. The rules are available from MRA in a small handy version in both Danish and English.

### Contents:

- General rules for field work
- Rules for driving vehicles
- Rules for diamond drilling

- Rules for import, transport, storage and use of explosive materials
- Rules for activities in the Jameson Land area, East Greenland (71°N)
- Rules for reporting to MRA

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