

# GREENLAND

## MINEX News

GREENLAND MINERAL EXPLORATION NEWSLETTER

Greenland MINEX News No. 5

June 1994

### Commercial exploration and drilling, 1994

*from far south to far north*

This year, as in 1993, mineral exploration will stretch from Greenland's southern tip around Nanortalik (60°N) to the north coast in Peary Land (83°N). At the time of writing the largest field programmes can be credited to companies well-known to Greenland: Cominco, RTZ, Falconbridge, Nunaoil and Platinova. Both Falconbridge and Platinova will be operating drilling programmes. Shorter duration investigations will be made by several other companies.

#### *Cominco & RTZ*

Interesting news is that Cominco with its recently acquired exploration permit at Karrat Isfjord returns to an old realm - the Maarmorilik region of central West Greenland. During the 60's, 70's and early 80's Cominco conducted extensive exploration for lead and zinc in the early Proterozoic supracrustals of this region, and ran the 11.2 million tons 4.1% Pb, 12.6% Zn, Black Angel Mine through its subsidiary Greenex A/S. RTZ Mining and Exploration retains exploration rights to part of the same supracrustals where the company recently made encouraging zinc finds. At present the scope of these companies' field programmes are not known.

• Commercial exploration  
and drilling, 1994 Page 1

**Geological & exploration  
briefs** Page 3

- Project AEM Greenland 1994-98
- Latest Open File reports
- GGU's Report of Activities 1993
- Danish Lithosphere Centre

**Regulatory & licensing  
information** Page 7

- Exploration licences
- New licences
- Amendments of existing  
exploration licences
- Regulations up-date
- Expenses spent under prospecting licences

#### *Falconbridge*

Falconbridge Ltd's fourth season on the Tertiary basalts of West Greenland will test for large tonnage Norilsk type nickel-copper deposits. As well as prospecting, geological mapping and ground geophysical surveying,

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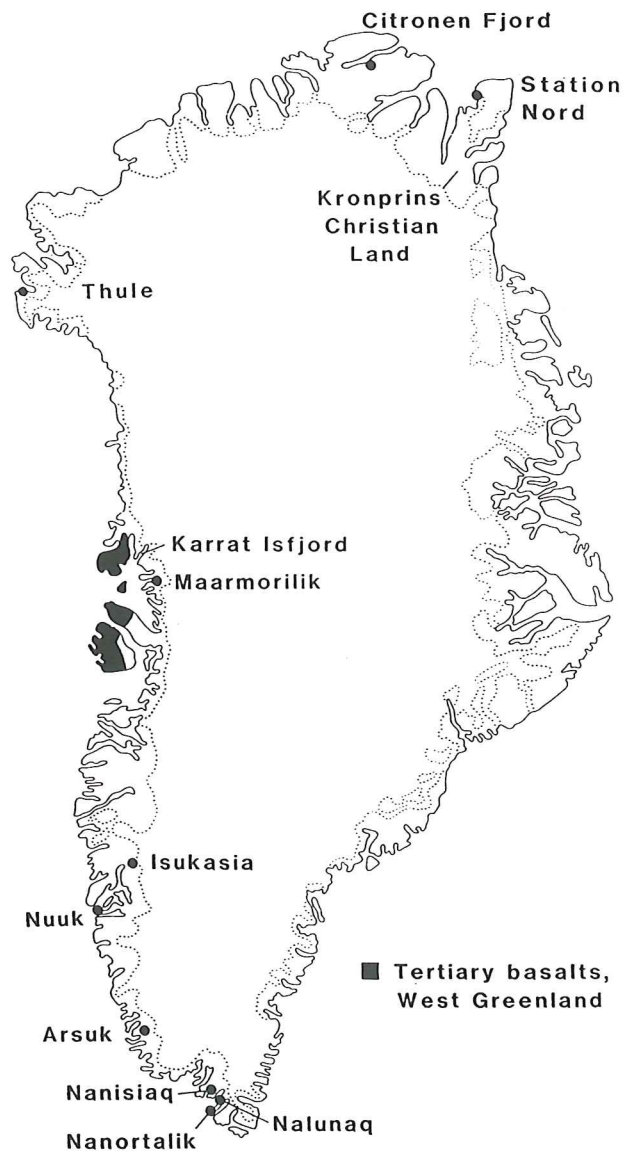
the three month's work will include a major diamond drilling programme with two rigs aimed at 5000 m of core from 10-15 holes. A 30 x 13 m barge with self-contained living quarters will be used as the base camp for the 27 man team.

field work aims at a better understanding of the vein's structural control.

**Platinova**

The main efforts of Platinova A/S will be directed towards the major bedded sulphide deposit at Citronen Fjord, Peary Land that was discovered last spring. Its discovery and geological setting have been featured in the last two issues of MINEX. The deposit is in weakly-deformed, Lower Palaeozoic basinal rocks. The 4-month field programme started in early May and includes a ground geophysical survey and an extensive diamond drilling programme. It is hoped that two rigs will drill 50 holes and some 8000 m of core. Logistics are based on landing a Boeing 727 jet on Station Nord's gravel strip and on the fjord ice off Citronen Fjord. Reconnaissance exploration in the newly-acquired licence in Kronprins Christian Land to the east will be directed from the Citronen Fjord base.

*commercial activities  
from far south to far north*



**Nunaoil**

Nunaoil A/S's activities stretch along the west coast from Nanortalik in the south to the Thule district around 77°N. Much of the activity will be concentrated in the Archaean rocks of the Nuuk region where in May a ground geophysical survey near the Isukasia banded iron formation deposits tested the area's potential for massive sulphides and structurally controlled gold. Field work will continue in July and August around Nuuk and at several other localities in the general region known to have gold potential. In South-West Greenland detailed prospecting will be conducted at the gold prospects of Arsuk, Nanisiaq and Nalunaq. At the latter, a high-grade gold-bearing quartz vein was drill tested last year with ambiguous results; this year's

*Geological & exploration briefs*

**Project AEM Greenland 1994-98**

*starting in North-West Greenland*

As previously announced in MINEX No. 4, February 1994, a five-year airborne geophysics project will start this summer with a survey of Inglefield Land (78°-79°20'N; 65°-73°20'W).

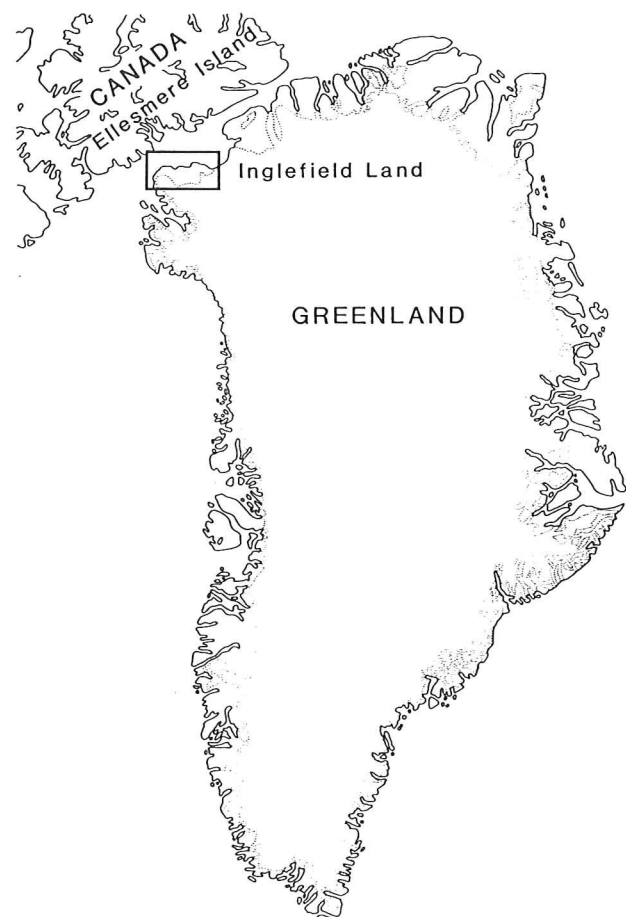
After consultation with the Greenland Home Rule Authority that finances the project, the Geological Survey of Greenland has awarded the survey contract to Geoterrex Ltd of Ottawa, Canada. The selected target, Inglefield Land, is close to 5500 km<sup>2</sup>. With the aid of the company's GEOTEM system, time domain electromagnetics and high sensitivity aeromagnetics will be recorded simultaneously along N-S flight lines at a spacing of 400 metres.

**geology**

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.

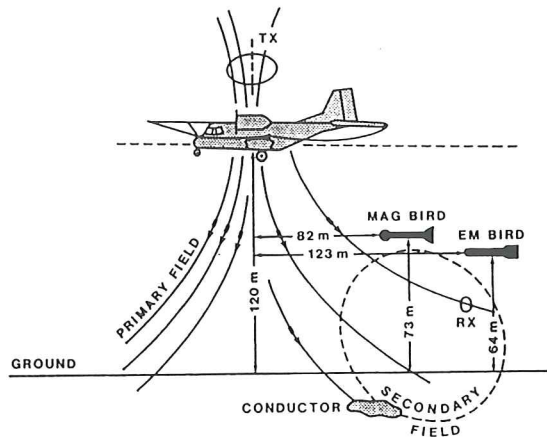
The association of highly-deformed gneisses and early Proterozoic supracrustal rocks in which marbles and pelites are prominent, have nuptured geological comparison to the celebrated Maarmorilik region of central West Greenland. Inglefield Land is known for its abundant gossans, the largest of which 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 peneplain and nothing is known about the depth of the gossans. This important aspect of the mineral potential of the region should be elucidated by the AEM survey.



*(continued next page)*

The GEOTEM system is installed in a CASA C 212-200 twin turbo prop STOL aircraft. The towed bird electromagnetic system includes a high speed digital receiver. The primary field is created by current pulses fed into a low impedance transmitting loop surrounding the aircraft and attached at the nose, wing tips and tail. The survey altitudes of the aircraft and of the magnetic and electromagnetic sensors is illustrated.



Field work will commence around July 1st and compiled data of the survey at a scale of 1:50 000 is planned to be available to interested parties early in 1995.

At present there are no exclusive licences in the survey area.

The contract with Geoterrex includes an option whereby companies having mineral licences in Greenland can have work carried out without being charged for mobilisation to and from Greenland. In such cases a separate contract will be negotiated between Geoterrex and the company in question. Interested companies should contact either Geoterrex or GGU.

#### Further reading

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

## Latest Open File reports

*on reconnaissance geochemical mapping  
ornamental stone resources  
industrial minerals*

The geochemical mapping of West Greenland between Kap Farvel (60°N) and Ummannaq (70°30'N) has now been completed. Results from the last three regions mapped are issued in three reports in the Open File Series (Report 94/1, 94/5 and 94/6). Two other reports released deal with ornamental stone resources (94/2) and industrial mineral occurrences (94/4).

**Open File Series 94/1:** Reconnaissance geochemical mapping of the Paamiut region (60°25' to 62°45'N, 48°00' to 50°00'W), South-West Greenland by A. Steenfelt, E. Dam & A. Petersen, 1994. 16 pp., 45 figs.

Price: DKK 70.00

**Open File Series 94/5:** Reconnaissance geochemical mapping of the Maniitsoq region (65° to 66°N, 51°45' to 53°30'W), southern West Greenland by A. Steenfelt, A. Petersen & E. Dam, 1994. 15 pp., 44 figs.

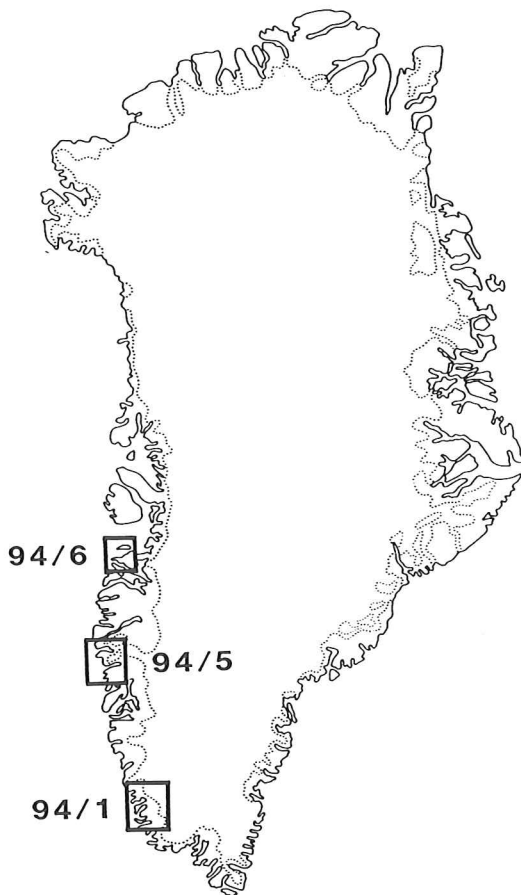
Price: DKK 65.00

**Open File Series 94/6:** Reconnaissance geochemical mapping of the Aasiaat region (68° to 68°45'N, 52°45' to 54°W), West Greenland by A. Steenfelt, A. Petersen & E. Dam, 1994. 10 pp., 38 figs.

Price: DKK 72.00

(continued next page)

Regional sampling of stream sediments and fresh water has been carried out at a density of one sample per 25 km<sup>2</sup>. Analytical results are given for a substantial number of chemical elements including base metals and gold. The obtained values are shown on dot plots for a number of elements, graduated on scale, thus enhancing anomalous grades and their position in the field.



**Open File Series 94/2:** Greenland ornamental stone resources. The 1990/91 ornamental stone project by J. Gothenborg, A.A. Garde & C. Bugnon (edited by P. Erfurt), 1994. 143 pp.  
Price: DKK 1500.00

This report is a richly illustrated English translation of a report written in Danish on the result of a project sponsored by the

Greenland Home Rule Authority. It was carried out in 1990/91 with the aim of collecting representative samples of granitic and syenitic rock types that were potentially suitable for quarrying and for ornamental use. A variety of the collected samples were cut and polished after which they were subjected to visual inspection. The illustrations in the report are colour photographs of the polished surfaces. The specimens are at display at the Geological Survey of Greenland and can be inspected on request.

**Open File Series 94/4:** Industrial mineral occurrences in Greenland - a review by P. Kalvig, 1994. 94 pp.

Price: DKK 80.00

This report was prepared to an exhibition at the 11th "Industrial Minerals" International Congress, Berlin in April. The report presents an overview of a large number of industrial mineral occurrences in Greenland, some of which have been prospected and evaluated in detail. Some of the most interesting industrial minerals are cryolite and pure quartz from the famous Ivittuut cryolite deposit in Southwest Greenland. The large pegmatite body at Ivittuut also seems to have a promising potential of very pure quartz (99.736 % SiO<sub>2</sub>), (Open File Series 91/4). Other minerals of interest are eudialyte and sodalite from a large alkaline intrusion in Southwest Greenland, which appear to hold promising potential for producing zirconia and zeolite respectively. Details are also given on grades and locations of graphite, olivine-rich dunite, sillimanite, anorthosite and a variety of other industrial minerals that have been prospected in Greenland.

#### Further reading

GGU Open File series: a review of reports related to Greenland mineral exploration by H. K. Schönwandt, 1993. *Rapp. Grønlands geol. Unders.* **159**, 22-24.

## GGU's Report of Activities 1993

*selected reprints are available*

The Survey's "Report of Activities" for 1993 is now available from GGU (*Rapp. Grønlands geol. Unders.* 160, 92 pages). The report contains 18 articles dealing with a wide range of topics related to mineral resource evaluation, petroleum geology, geological mapping, glaciology and other research. The report also contains a complete list of GGU publications released in 1993.

Two of the articles of direct relevance for the mineral industry are available in reprint form on request. These concern GREENMIN, GGU's "Database system for the registration of Greenland mineral occurrences" and an overview of "GGU's publication and data service". The latter topic was briefly reviewed in the last number of MINEX (February 1994).

## Danish Lithosphere Centre

*increased research with relevance to Greenland minerals*

It is now widely accepted that there is a demonstrable relationship between ore deposit types and global tectonic processes, and this has led to initial attempts at the classification of ore deposits with reference to plate tectonic scenarios. With this in mind, we announce to MINEX readers the establishment of a new Danish centre for lithosphere research. Danish Lithosphere Centre (DLC) is funded by the Danish National Research Foundation and is affiliated to GGU and the University of Copenhagen, being housed in the same geological building complex in Copenhagen.

DLC will apply advanced and recently developed analytical and crustal imaging techniques to collect and interpret comprehensive sets of geological and geophysical data suitable for detailed elucidation and modelling of lithosphere processes. The work will be concentrated on the North Atlantic and in particular Greenland.

The two themes that will dominate the work programme are both relevant to known Greenland mineralisations. One is the study of plate boundaries and crustal accretion in the Precambrian, as exemplified by the early Proterozoic convergent plate boundaries around the Archaean block of West Greenland, the other concerns Late Phanerozoic continental break-up, hot spots and possible mantle plumes as exemplified by the volcanic rifted margins around Greenland that formed during the Tertiary. Both programmes will start field work this summer.

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## Regulatory & licensing information

### Exploration licences

*status June 1994*

*Exploration licences location map next page*

Licences	Area	Licences	Area
02/91: Falconbridge Greenland A/S	1075 km <sup>2</sup>	01/93: Nunaoil A/S	178 km <sup>2</sup>
03/91: Falconbridge Greenland A/S	1153 km <sup>2</sup>	02/93: Nunaoil A/S	123 km <sup>2</sup>
01/92: Nunaoil A/S	376 km <sup>2</sup>	07/93: Platinova A/S	1929 km <sup>2</sup>
02/92: Nunaoil A/S	83 km <sup>2</sup>	10/93: Quadrant Resources Pty. Ltd.	216 km <sup>2</sup>
03/92: Nunaoil A/S	21 km <sup>2</sup>	12/93: Nunaoil A/S	703 km <sup>2</sup>
05/92: Nunaoil A/S	175 km <sup>2</sup>	13/93: Laurel Point Pty. Ltd.	168 km <sup>2</sup>
08/92: Platinova A/S	29 km <sup>2</sup>	16/93: Cominco Resources International Ltd.	1072 km <sup>2</sup>
09/92: Platinova A/S	85 km <sup>2</sup>	19/93: Platinova A/S	1025 km <sup>2</sup>
10/92: Highwood Resources Ltd.	34 km <sup>2</sup>	07/94: Nunaoil A/S	192 km <sup>2</sup>
11/92: Municipality of Ivittuut	5 km <sup>2</sup>	08/94: Nunaoil A/S	110 km <sup>2</sup>
12/92: Mineral Development International A/S	58 km <sup>2</sup>	09/94: Nunaoil A/S	181 km <sup>2</sup>
13/92: Platinova A/S	616 km <sup>2</sup>	12/94: Cominco Resources International Ltd.	408 km <sup>2</sup>
14/92: Platinova A/S	905 km <sup>2</sup>	13/94: Intension Pty. Ltd.	197 km <sup>2</sup>
15/92: RTZ Mining and Exploration Ltd.	123 km <sup>2</sup>	14/94: RTZ Mining and Exploration Ltd.	123 km <sup>2</sup>
27/92: Nunaoil A/S	368 km <sup>2</sup>		

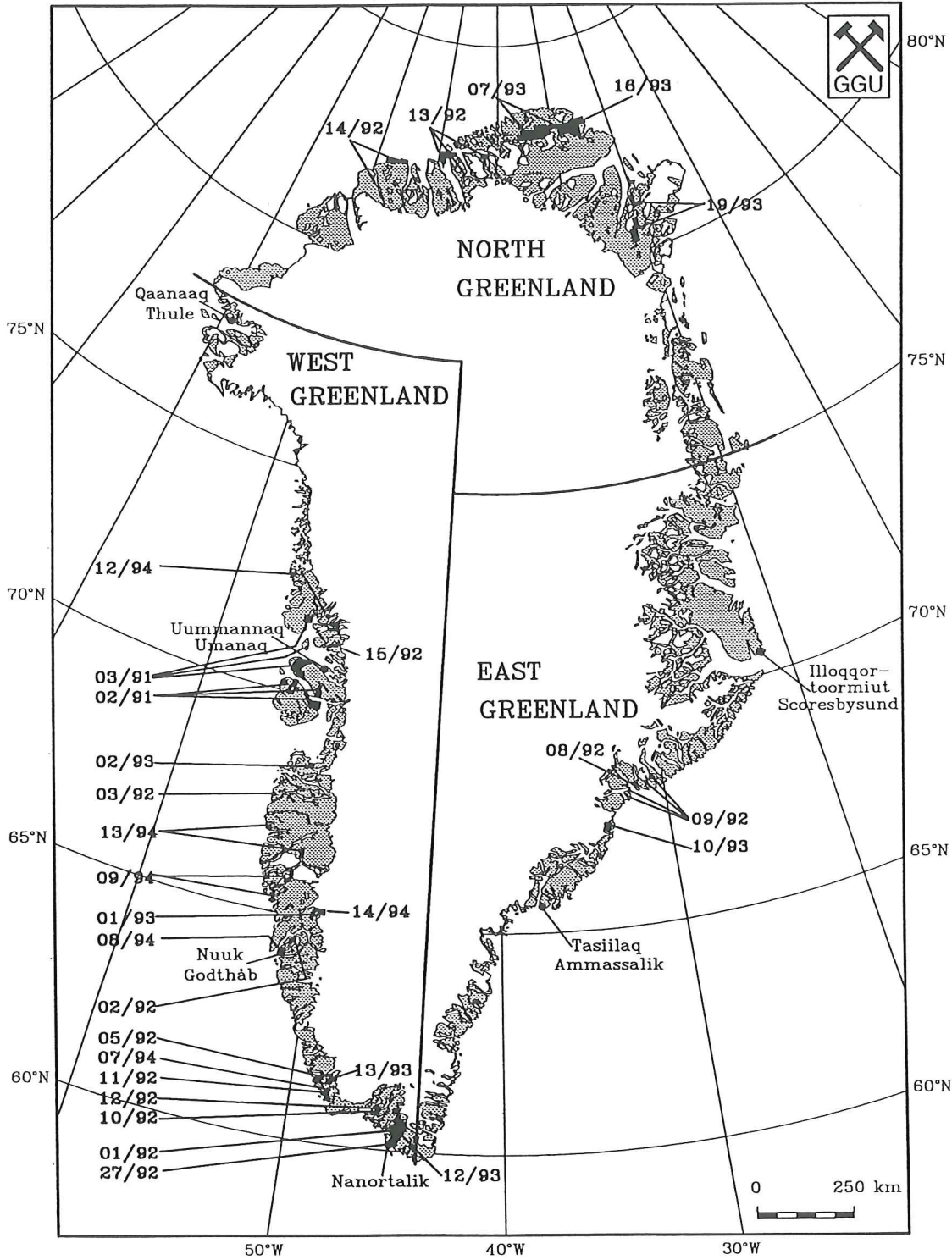
### New licences

In the first five months of 1994 the following exploration licences (exclusive) have been, or are in the process of being granted:

- Licence no. 07/94 to Nunaoil A/S for 2 subareas at Arsuk totalling 192 km<sup>2</sup>.
- Licence no. 08/94 to Nunaoil A/S for an area at Malene near Nuuk totalling 110 km<sup>2</sup>.
- Licence no. 09/94 to Nunaoil A/S for 5 subareas at Maniitsoq totalling 181 km<sup>2</sup>.
- Licence no. 12/94 to Cominco Resources International Ltd. (operator) and Cominco Ltd. for 5 subareas at Karrat Isfjord totalling 408 km<sup>2</sup>.
- Licence no. 13/94 to Intension Pty. Ltd. (Australia) for 2 subareas at Maniitsoq totalling 197 km<sup>2</sup>.
- Licence no. 14/94 to RTZ Mining and Exploration Ltd. for an area at Isukasia totalling 123 km<sup>2</sup>.

A number of prospecting licences (non-exclusive) have also been granted.

**Exploration licences, June 1994**





## Amendments of existing exploration licences

Licence no. 11/93 for areas at Lindenow Fjord in South East Greenland has been relinquished by Quadrant Resources Pty. Ltd.

## Regulations up-date

Minor adjustments have been made in 1994 to the rules for the execution of licensees' field activities. These include two new questionnaires applicable when diamond drilling or the use of explosive are being applied for.

In addition separate rules have been added for exploration activities within the National Park in North and East Greenland and in two other protected areas.

The revised regulations were sent to all current licensees in April.

## Expenses spent under prospecting licences

As of 1992 expenses spent under prospecting licences may within 3 years be used as credit for exploration commitments for exploration licences that cover parts of the prospecting

licence area.

No licensees used this mechanism for 1992 but in 1993 several licensees have submitted their prospecting expenses for approval.