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New release of aeromagnetic survey from South-East Greenland

A total of 48,493 line-kilometres of magnetic data are released from the aeromagnetic survey flown in South-East Greenland 2012. The survey was financed by the Government of Greenland and flown by EON Geosciences Inc. Line data, grids and maps with magnetic field anomalies and vertical derivatives are available in digital format. The area is outlined in the map below and was surveyed using 500 m line spacing and flight lines oriented parallel to the coast.

The survey covers the southern part of the North Atlantic craton, which stretches from north of Kangeq (61°45'N) northwards to Umiiviik (64°30'N). The craton is dominated by gneiss with only small supracrustal sequences of up to 1km in width and strikes of several kilometres, including meta-ultramafic intrusions and several late-tectonic alkaline intrusions in the Skjoldungen area.

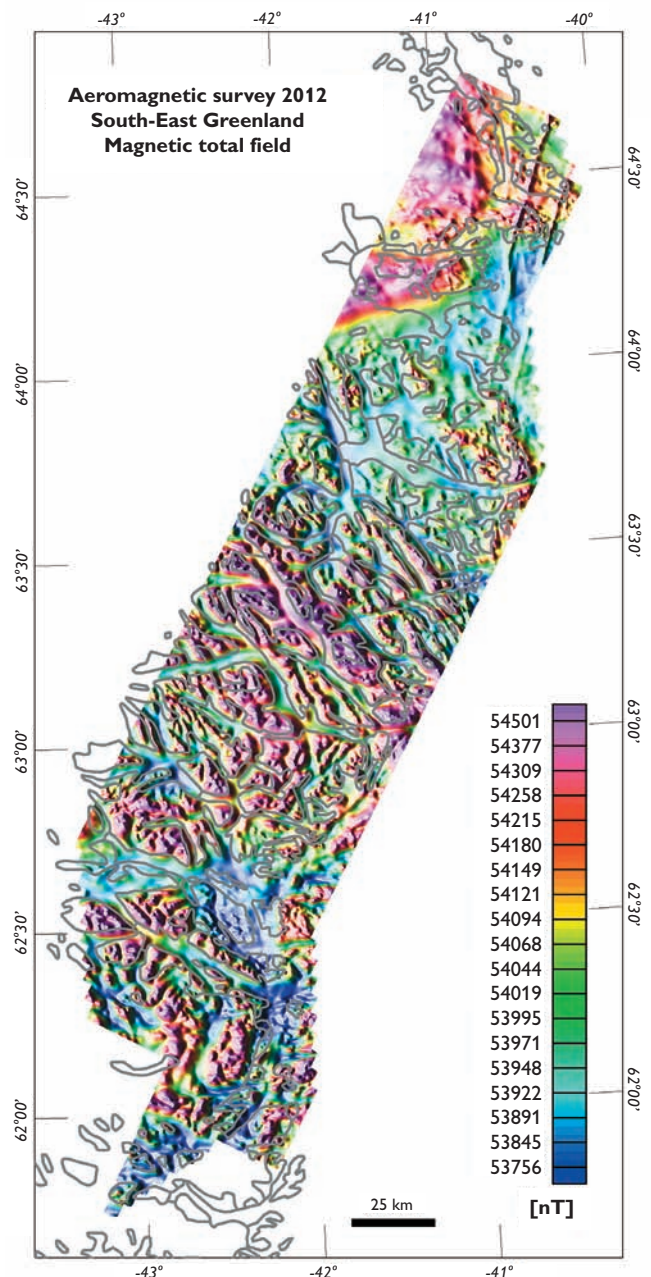
The data and maps can be obtained from BMP. The maps in digital format comprise one set on a scale of 1:250 000 that covers the entire survey area, and 23 maps on a scale of 1:50 000.

London Mining Greenland A/S applies for exploitation licence

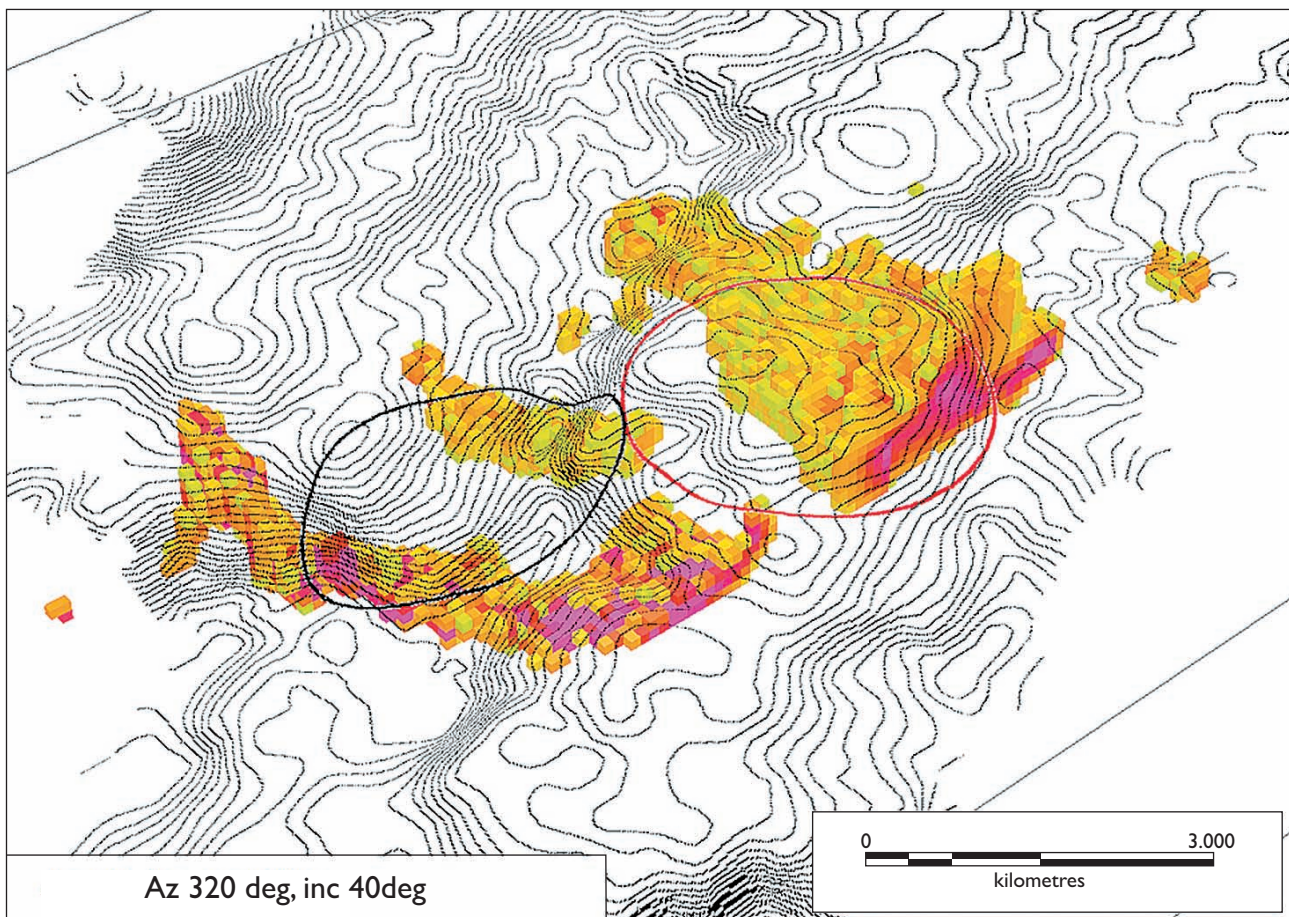
In September 2012, London Mining Greenland A/S applied for an exploitation licence covering the Isua iron-ore deposit, north-east of Nuuk.

The total iron-ore resource is more than 1 billion tonnes. The mineral resources estimation, before the pit optimisation, comprises 380 Mt indicated resources with an average grade of 32.6% Fe and 728 Mt inferred resources with an average grade of 32% Fe (JORC-compliant). The project includes the construction of an open-pit mine, an ore-processing plant, a slurry pipeline, shipping facilities and infrastructure. The annual production rate is estimated to 15 Mt of iron-ore concentrate containing approximately 70% Fe and 2% SiO₂+Al₂O₃. The company expects to employ as many as 3,000 people in the construction phase and about 700 in the production phase.

The application is currently being processed by the BMP.



Magnetic total field data from the regional aeromagnetic survey in 2012 of the southern part of the North Atlantic craton in South-East Greenland.



Map showing two major low-resistivity bodies (at 100 ohm) each 1000–1500 m wide and situated at 600–800 m below surface and coinciding with SGH anomaly with maximum 6.0 rating (red circle) and main chemical anomaly (black). Copyright Avannaa Resources.

Avannaa Exploration Ltd. advances its Karrat Zinc Project for drilling

The Karrat Zinc Project consists of a 112 km² licence situated in an area with proven zinc potential close to the historically very profitable Black Angel Mine (11 Mt @ 12% Zn, 4% Pb and 29 ppm Ag). The exploration targets are large-tonnage zinc ± lead, silver and copper Sedex deposits. Similar geological settings have yielded some of the world's most valuable base-metal occurrences including deposits within the Selwyn Basin, Yukon, and at Rammelsberg, Germany. Avannaa's current programme builds on a large knowledge base indicating that licence 2011/31, which is contained within the 5,000 km² Karrat Group of Proterozoic metasediments, is the most prospective location for a large poly-metallic Sedex system.

During 2011, Avannaa localised a series of very strong geochemical anomalies within a 15 km long northeast–southwest-trending lineament based on MMI (Mobile Metal Ion) and SGH (Soil Gas Hydrocarbon), and bulk chemistry surveys. During 2012, the company has demonstrated that some of the main geochemical anomalies correspond to conductive bodies revealed by an airborne audio frequency magneto-variational (AFMAG) survey using the ZTEM system.

Three drill targets at depths of 500 to 800 metres are singled out as high priority. The work programme in 2013 is designed to constrain the drilling strategy and consists of a high-resolution reflection seismic survey to identify the depth to basement, as well as 3-D inversion of the ZTEM data and structural analysis based on mapping in 2012. Avannaa is looking for a partner to finance the 2014 drill programme, which is aimed at testing the exploration model and locate ore bodies.

New act on building and construction works related to large-scale projects in Greenland

On Friday, 7 December 2012, Inatsisartut (the Parliament of Greenland) passed an act on building and construction work related to large-scale projects.

The aim of the so-called large-scale act is to promote foreign investments in Greenland and to prevent and limit undesirable negative consequences to the national economy and the competitiveness of the business sector as a result of an influx of foreign enterprises to Greenland. Means to establish this will include:

- Establishing a legal framework for international tender of contracts for construction of large scale projects.
- Allowing the use of foreign workers on large scale construction projects.
- Establishing terms for negotiations of wages and conditions between a foreign contractor as an employer and the employers personnel.
- Ensuring that local enterprises and local labour forces are involved in the construction project if practical and commercial possible.
- Ensuring that suitable arrangements are made for all necessary welfare, hygienic and medical requirements and to prevent epidemics.
- Establishing terms on insurance and home travel for large-scale project employees.
- Monitoring large-scale projects.

The Act applies to large-scale projects with a development cost of more than DKK 5 Billion. The Act will be translated into English and published on BMP's website www.bmp.gl.

Amendment of the Mineral Resources Act

Also on 7 December 2012, the Parliament passed an amendment to the Mineral Resources Act. The amendment was a political wish to reorganize some of the tasks related to the administration of mineral resources.

The amendment calls for two new authorities under the Greenland Government. One authority will handle all casework etc. regarding the environment related to activities covered by the Mineral Resources Act and the other authority will handle matters regarded licence administration, safety and inspections.

Other tasks, such as e.g. marketing of mineral resources, legislative initiatives, mineral resources strategies, supervision of Social Impact Assessments (SIA) and Impact Benefit Agreement (IBA) negotiations will be transferred to the Ministry of Industry, Mineral Resources and Labour. A separate geological department will be formed under the Ministry of Industry, Mineral Resources and Labour.

The amendment also makes some minor changes for residents' right to collect minerals without a licence including adjustments of the existing rules for small-scale licences. The amendment came into force on 1 January 2013. The full amendment will be translated into English and published on BMP's website.

BMP-GEUS workshop on the nickel potential in Greenland

On 24 August From 29 November to 1 December 2012, BMP and GEUS conducted a workshop on the quantitative assessment of the nickel potential in Greenland as



Intensive discussions among the panel members at the nickel workshop.

part of the on-going assessment of selected deposit models and commodities in Greenland.

The workshop made use of a standardised process in which 19 panel members (geologists) discussed and assessed the possibility of finding deposits in pre-defined areas ('tracts'). Michael Zientek, USGS and Marco Fiorentini, Centre for Exploration Targeting, University of Western Australia attended the workshop as invited nickel deposit experts.

Data, literature and maps related to the known nickel mineralisations in Greenland and the predefined areas were compiled and made available to the participants before the workshop. The data provided the basis for the overall assessment, and for discussions and estimates. The workshop will be documented in a GEUS survey report mid-2013. The full programme from the workshop can be found at GEUS' website www.geus.dk.

A new assessment workshop is scheduled for November-December 2013. Please contact Senior Geologist, Lars Lund Sørensen, GEUS (lls@geus.dk) for pre-registration, news or updates.

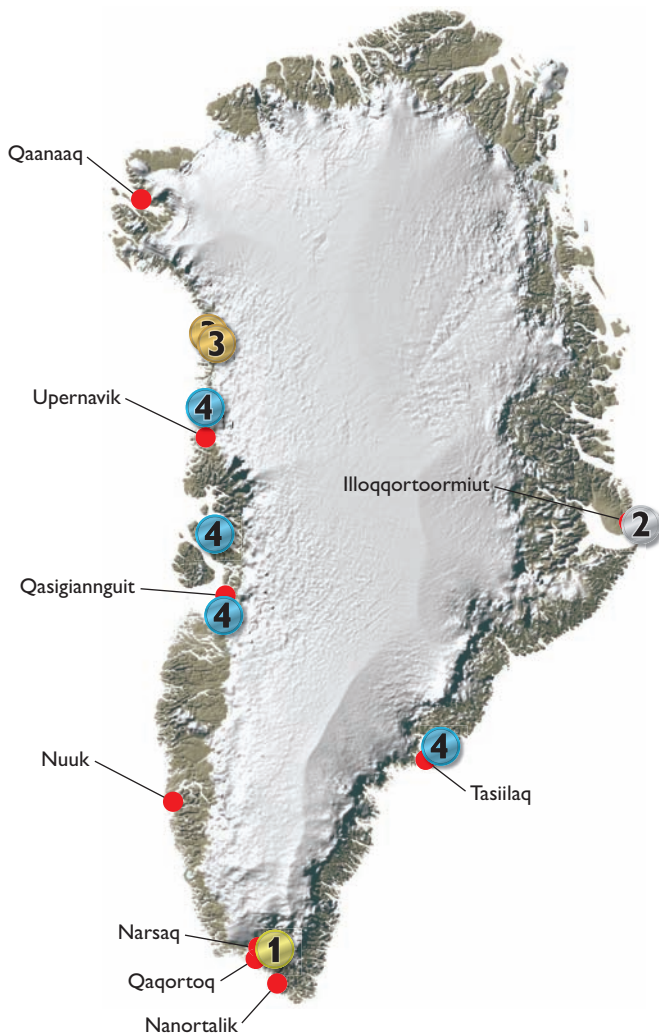
Multi-element sample wins the national mineral hunt competition

Ujarassiorit – the national mineral hunt for residents of Greenland – has ended for 2012, and the winners have received their awards. The submitted samples were investigated by BMP, who selected the most interesting rock samples for chemical analysis. The chemical analyses revealed several samples containing interesting metals such as manganese, gold, iron and vanadium.

1st-prize winner of Ujarassiorit 2012

The winner of the 1st prize of DKK 55,000, tax-free, was Kenneth Kristiansen from Nuuk, who submitted a rock sample from Qassarsuk in South Greenland. The sample is

a multi-element type with high values of multiple elements, including manganese (6%), lanthanum (2650 ppm), phosphorus (4.58%), strontium (5700 ppm), beryllium (104 ppm), and gallium (120 ppm).



The winning localities of the 2012 Mineral Hunt Programme, Ujarassiorit.



The 1st-prize winning sample (left) and sampling locality (right).

2nd prize winner of Ujarassiorit 2012

The 2nd prize of DKK 25,000 tax-free was awarded to Evald Brønlund from Illoqqortoormiut, who submitted a quartz vein with visible gold. The sample is collected in an area near Illoqqortoormiut, where gold has not previously been found.

3rd prize winners of Ujarassiorit 2012

Two 3rd prizes of DKK 10,000 were awarded. The two samples are of similar type, and from the same area near Kullorsuaq. The distance between the localities, which is approximately 15 kilometres, indicates that the mineralisation occurs in a larger area, which makes the samples even more interesting. The samples are rich in sulphides with high values of iron (19 and 28%), vanadium (700 ppm and 500 ppm), copper, nickel and cobalt. They were submitted by Paulus-Isak Danielsen and Juliane Halsøe, both from Kullorsuaq.

4th prize winners of Ujarassiorit 2012

Four 4th prizes of each DKK 5,000 were awarded:

- A sulphide rich sample with copper (6.5%) and nickel (0.68%) mineralisation. The sample was collected in Kulusuk by Robin Nuko from Kulusuk.
- A gneiss covered with a red mineral, not yet identified, and currently undergoing further tests. This unusual sample was found at Eqqorliit, and submitted by Johannes Kristensen, Upernavik.
- A sulphide rich sample with PGE (14 ppb palladium, 23 ppb platinum), nickel (300 ppm) and copper (500 ppm) from Qasigianguit. The sample was submitted by Jakob Petersen, Qasigianguit.
- A basalt with sulphide mineralisation of nickel (650 ppm). The sample was found near Qaarsut, and submitted by Therkild Hansen, Qaarsut.

Ujarassiorit has run for more than 20 years. From every post office, free of charge, residents of Greenland can submit rock samples for further geological examination. More information about Ujarassiorit can be found on:



www.ujarassiorit.gl. For more specific information about sample localities, please contact the BMP.

Ujarassiorit is run and financed by BMP, the Government of Greenland (See also Fact Sheet no. 21, 2009).

Greenland promotion activities in November–December 2012

China Mining Congress & Expo 2012

An official Greenlandic delegation visited China from 31 October to 10 November 2012. The purpose of the trip was attendance at the China Mining Congress & Expo 2012 in Tianjin and meetings in Shanghai with China Communications Construction Company (CCCC) and Shanghai Zhenhua Port Machinery Company (ZPMC) and in Beijing with the Ministry of Land and Resources and Institute of Mineral Resources.

The China Mining exhibition was a great success for Greenland. Greenland had eight booths with the following exhibitors; BMP, Avannaa Resources, London Mining Plc., Tanbreez Mining Greenland A/S, MT Højgaard, Royal Arctic Line A/S, Air Greenland and Greenland Mining Services A/S. The Greenland session with presentations was well attended. The themes were future mineral commodities, mining projects as well as company presentations about their projects and how to operate in Greenland.

'Greenland Day' Perth

It was the fourth year; the Greenland Day conference gave industry members a golden chance to learn how they can benefit from the island's mineral riches. The Greenland Bureau of Minerals and Petroleum (BMP) had in cooperation with the Centre for Exploration Targeting (CET) at the University of Western Australia (UWA) arranged the Greenland Day in Perth. The Greenland Day was held on Tuesday 4 December 2012 at the UWA Club.

The technical presentations were about the latest initiatives in Greenland, a comparison between Greenland and Australian geological history, and some of the current exploration activities in Greenland were presented by senior members of BMP, the Geological Survey of Denmark and Greenland (GEUS) and the CET. Company project presentations included Czech Geological Research Group Ltd., Greenland Minerals and Energy Ltd., Hunter Minerals Pty. Ltd., Ironbark Zinc Ltd., North American Nickel Inc., Tanbreez Mining Greenland A/S and Platina Resources Ltd. The presentations can be found on: <http://www.bmp.gl/events/101-greenland-day-perth/>.

Republic of Korea

In December 2012, Korea Foundation and the Greenlandic Ministry of Education and Research signed a Memorandum of Understanding (MoU), seeking to

strengthen the mutual relations between the two countries and enhance the research and development cooperation and information exchange in relation to mineral resources for the growth of the current generation and for the future generations.

As part of the MoU, BMP arranged a seminar on Mineral and Oil Exploration on the 14 December 2012 at the Shilla Hotel in Seoul. The aim of the mineral seminar was to inform the Korean colleagues in the mineral and oil sector including public as well as private companies about the mineral potential in Greenland. The purpose of the seminar was to enhance the knowledge about the research and development within the resource sector in Greenland for institutions and companies in the Republic of Korea. In the programme both government institutions and private companies gave presentations of the mineral potential in Greenland. The presentations can be found on: <http://www.bmp.gl/events/103-seminar-on-mineral-and-oil-exploration-seoul/>.

Status on mineral licences in Greenland

New Licences

Throughout the year 2012, a total of 23 new mineral licences were granted. Twelve of these were exploration licences:

Rare Earth Minerals No. 2 Aps. was granted three exploration licences in the Narsarsuaq area, South Greenland, on which their exploration will focus on REEs and gold.

East Coast Minerals (Australia) Pty. Ltd. took out an exploration licence for areas near Narsaq, South Greenland. Exploration was focused on REEs. The licence is now relinquished.

West Melville Metals Inc. was granted an exploration licence for an area west of Qassimiut, South-West Greenland. The exploration will be targeted at iron, titanium, nickel and vanadium.

In West Greenland, **North American Nickel Inc.** will be exploring for nickel, copper, PGEs, diamonds and REEs on their newly attained exploration licence south-east of Maniitsoq.

Avannaa Exploration Ltd. got an exploration licence for areas on Nuussuaq and Qeqertarsuaq in the Disko Bay area, West Greenland. Exploration will focus on nickel, copper and PGEs.

Coastal Ventures A/S will explore in the adjoining areas to the exploration licence of Avannaa Exploration Ltd. on Nuussuaq and Qeqertarsuaq in the Disko Bay area, West Greenland, but their target will be coal.

Greenland Minerals and Energy Ltd. will explore for graphite on their exploration licence situated approximately 70 km north of Sisimiut, West Greenland.

In East Greenland, **Platina Resources Ltd.** was granted an exploration licence near Skaergaarden. Their target will be base metals, gold, PGEs and REEs.

21st North was granted an exploration licence near Tasiilaq, East Greenland. The company will mainly explore for PGEs and base metals, such as copper, nickel and cobalt.

Malmbjerg Molybdenum A/S took out an exploration licence next to their exploitation licence at Malmbjerg in East Greenland. While the company's former exploration in the area was focused on molybdenum, Malmbjerg Molybdenum A/S will now extend the exploration to include also copper, gold, nickel, wolfram, lead, zinc, silver and PGEs.

In addition to the exploration licences, six prospecting licences were granted. **Malmbjerg Molybdenum A/S** and **Nordic Mining Inc.** were granted licences in East Greenland and the following companies were granted a

prospecting licence in West Greenland: **Avannaa Exploration Ltd., Hudson Resources Inc., Lone Wolf Documentary Group, Coastal Ventures A/S.**

Three small-scale licences (non-exclusive) and two small-scale licences (exclusive) were granted.

Renewed Licences

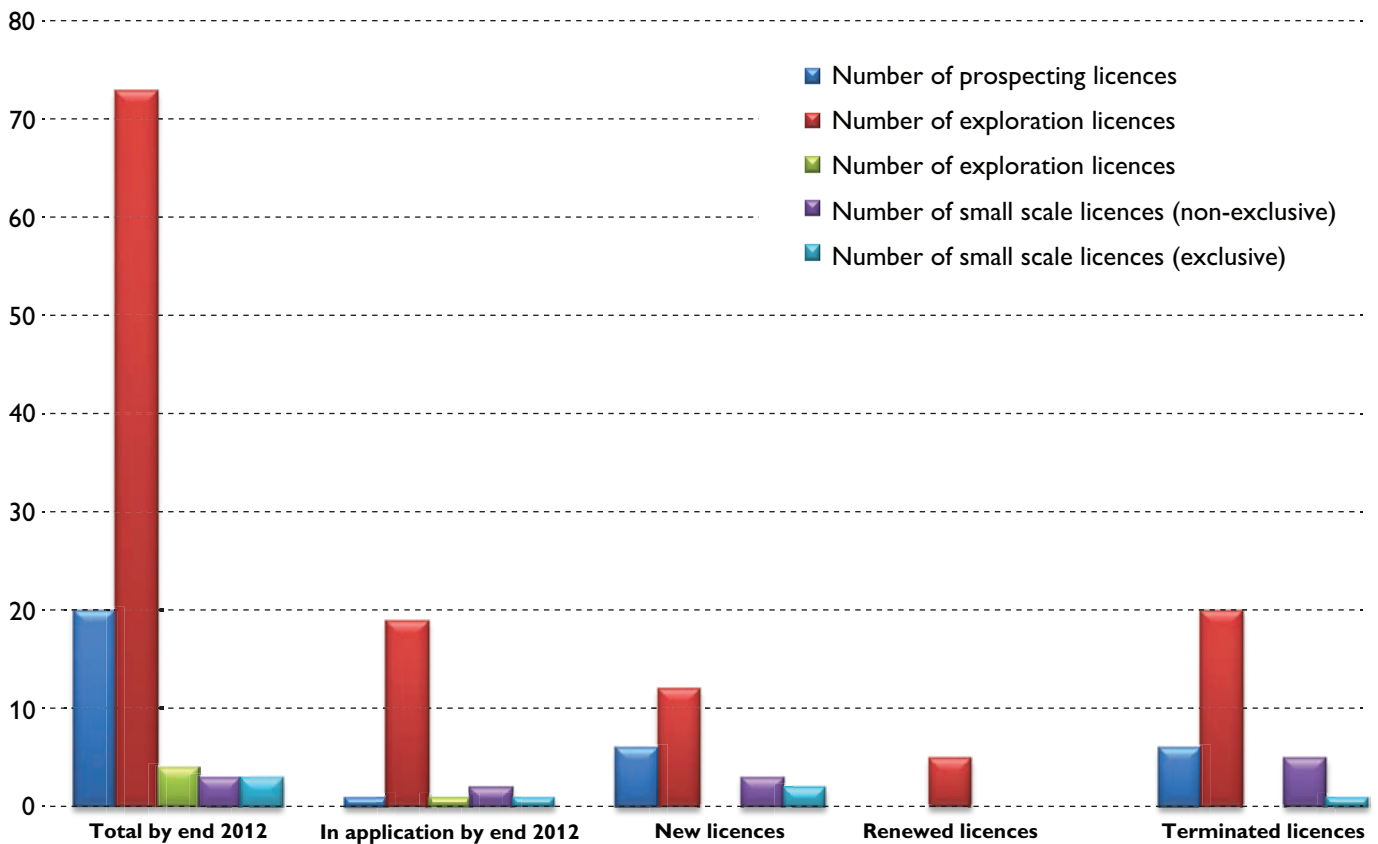
Hudson Resources Inc. has renewed two exploration licences in the Kangerlussuaq area, West Greenland: The Sarfartoq exploration licence (2010/07) with focus on REEs and the Naajat exploration licence (2002/06) focusing on aluminum.

NunaMinerals A/S also renewed two exploration licences: One licence south of Maniitsoq, West Greenland (2007/51), where the exploration is aimed primarily at nickel and secondarily gold and diamonds, and a licence in Inglefield Land north of Qaanaaq, North Greenland (2007/53) with iron, copper and gold as primary targets.

Avannaa Exploration Ltd. renewed their exploration licence north of Ilulissat, West Greenland (2007/52) for continued exploration of diamonds.

2003/09 Green Mining Ltd., Nuussuaq and Qeqertarsuaq in the Disko Bay area, West Greenland. Main focus: Nickel.	2010/01 Greengems ApS, east of Nuuk, West Greenland. Main focus: Corundum
2006/08 Icefire Diamonds A/S, south-east of Maniitsoq, West Greenland. Main focus: Diamonds.	2010/29 NunaMinerals A/S, south of Nuuk, West Greenland. Main focus: Gold
2007/04 Icefire Diamonds A/S, near Maniitsoq, West Greenland. Main focus: Corundum and diamonds.	2010/36 NunaMinerals A/S, near Paamiut, West Greenland. Main focus: Gold
2008/27 Avannaa Exploration Ltd., the Disko Bay area north of Ilulissat, West Greenland. Main focus: Gold, diamonds, REEs and iron.	2010/38 NunaMinerals A/S, north-west of Nuuk, West Greenland. Main focus: Gold
2008/33 Avannaa Exploration Ltd., the Disko Bay area north of Ilulissat, West Greenland. Main focus: Diamonds, nickel and PGEs.	2010/44 NunaMinerals A/S, at Inglefield Land, north of Qaanaaq, North Greenland. Main focus: Iron, copper and gold.
2008/34 Sirius Minerals Ltd., west of Illoqqortoormiut, East Greenland. Main focus: REE	2011/05 Gold Member Pty. Ltd., at Mogens Heinesen Fjord in South-East Greenland. Main focus: REE, gold and base metals.
2008/35 North Star Minerals Ltd., south of Qaanaaq, North Greenland. Main focus: Heavy minerals.	2011/18 NunaMinerals A/S, south of Tasiilaq, East Greenland. Main focus: REEs and diamonds.
2009/12 Greenland Graphite ApS, north of Sisimiut, West Greenland. Main focus: Graphite	2011/19 NunaMinerals A/S, east of Maniitsoq, West Greenland. Main focus: REEs and diamonds.
2009/18 Intex Resources ASA, near Qeqertarsuaq, West Greenland. Main focus: Corundum.	2011/20 NunaMinerals A/S, north of Tasiilaq, East Greenland. Main focus: REEs and diamonds.
2009/22 NunaMinerals A/S, north of Nuuk, West Greenland. Main focus: PGE.	2012/24 East Coast Minerals (Australia) Pty. Ltd., near Narsaq, South Greenland. Main focus: REEs.

Changes in Mineral Licences 2012



Terminated Licences

A total number of 32 licences were terminated in 2012 of which 20 were exploration licences (see table on facing page).

The changes in mineral licences are updated by BMP on the 1st and 16th of every month except July and August on www.bmp.gl.

'Greenland Day' at PDAC

Greenland has experienced a very positive development of mineral licence interests during the last five years, where the number of mineral licences has at least tripled. A large number of the companies involved in the Greenland exploration and exploitation activities are domiciled in North America, Australia and Europe.

On 4 March 2013, the Bureau of Minerals and Petroleum (BMP), the Geological Survey of Denmark and Greenland (GEUS) and several exploration companies will present the latest results from exploration in Greenland at a 'Greenland Day' during the PDAC in Toronto.

The exploration highlights comprise news and new initiatives from the Government, release of aeromagnetic data from South-East Greenland, nickel in Greenland, and highlights from several exploration companies operating in Greenland such as North American Nickel, 21st North, North Atlantic Mining Associates Ltd., Avannaq Exploration Ltd., NunaMinerals A/S and Coastal Ventures A/S.

The Greenland Day session is a public event. Everybody is invited to attend. For logistic purposes, please sign up for the presentations with BMP. For registration and further information or for requests for individual meetings, please contact Katrine Chemnitz Henriksen (kch@nanoq.gl), BMP. A full programme can be viewed on BMP's website: www.bmp.gl.

You are also invited to visit the Greenland booth (#417) at the Trade Show on 3 to 6 March. The exhibition will deal with geological environments, the release of new aeromagnetic data, the zinc, copper and nickel potential and much more. Stop by the booth and meet the experts, who will be ready to tell you about the 'hot' themes of Greenland resources.

Please visit www.geus.dk to get the on-line version of MINEX or to subscribe to the Newsletter.

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Calendar for BMP marketing

BMP will be marketing the Greenland Mineral Resource Potential at the following events in 2013:

- **Mineral Exploration Roundup 2013**
Vancouver
- **PDAC 2013**
Toronto
- **The China Mining Congress & Expo 2013**
Tianjin
- **The Greenland Day 2013**
Perth

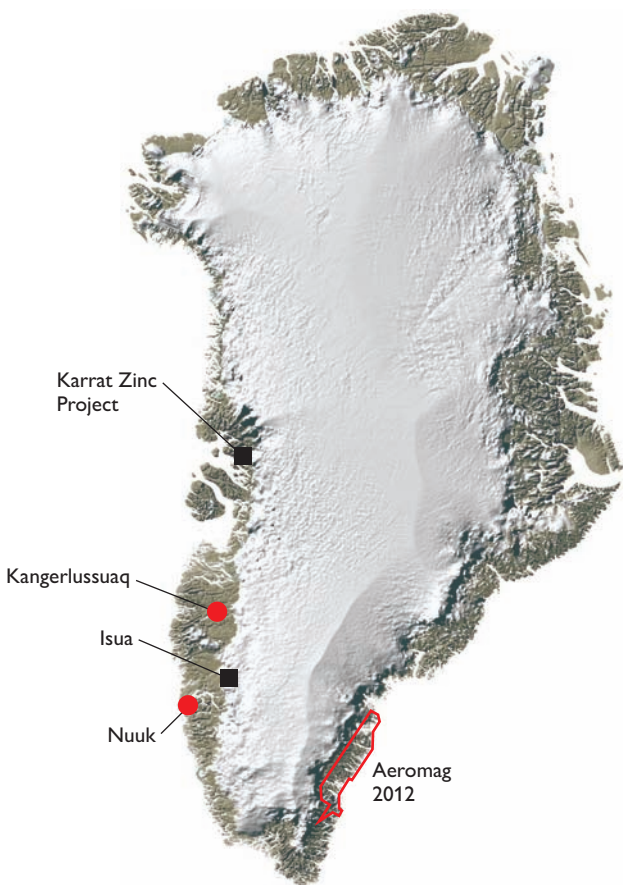
New issue of the series 'Geology & Ore' and 'Fact Sheets' with themes on Greenland exploration and mining

2013, Geology & Ore No. 22

Airborne geophysical data from Greenland, 12 pp.

2013, Fact Sheet No. 27

Airborne geophysical surveys in Greenland, 2 pp.



GEOLGY AND ORE
Exploration and Mining in Greenland

No. 22 - February 2013

Airborne geophysical data from Greenland

EXPLORATION AND MINING IN GREENLAND
FACT SHEET No. 27

Airborne geophysical surveys in Greenland

Geophysical data constitutes a major source of information on Greenland geology and is used in a range of mineral exploration, scientific, and scientific projects. Significant contributions to the existing database with geophysical data come from commercial exploration activities and from Government funded activities.

Detailed electromagnetic and magnetic surveys

In the mid 1980s the Government of Greenland was making the way to facilitate mineral exploration in Greenland. Among other activities, it set up a programme (AGM Greenland 1986-1988) of airborne combined electromagnetic and magnetic surveying over the island. The survey area was chosen on the basis of potential for the discovery of economic mineral deposits, and to demonstrate the general applicability of detailed airborne surveys in the various regions of Greenland.

Electromagnetic surveys have been carried out on behalf of several independent companies. In addition, combined electromagnetic and magnetic methods have been used on large areas of West Greenland. Digital data and maps are stored in the National database and some of these same data are now made available online.

Regional aeromagnetic surveys

Simultaneously with the AGM Greenland 1986-1988 programme the detailed surveying of selected areas, another airborne project, Aeromag, was also set up and carried out the collection of high-quality aeromagnetic data. The Aeromag survey is carried out by using a towed magnetometer along a grid spaced surface above the ground and sea level. Rough topography in many areas places some limitations with respect to coverage of ground level magnetic intensity. Survey lines are now available for the total sea level area of approximately 90% of Greenland from the top of Greenland to Søndre Brønde, covering an area of approximately 200 000 km². Coverage along the east coast started in 2012 and covers the western part of the North Atlantic coast, which includes both parts of Angasut (NE) and further northwest to Umanak (NW). An continuation northwards is planned for 2014.

Hyperspectral surveys

Hyperspectral mapping questionnaire data were acquired for the first time over Greenland during the Aeromag fact sheet survey project. Data are obtained from the Hyperion hyperspectral mapping questionnaire, which collected data from 124 bands across the visible range wavelength range of 400-2500 nm. The coverage was carried out in East Greenland with focus on an approximately 100 km² area of the former lead zinc mine at Isortoq. The region, the hyperspectral 2000-2002 project did not have any mineral resources at that location in the region. The hyperspectral mapping questionnaire data were processed with hydrothermal alteration in the Isortoq area.

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