MINEX
GREENLAND MINERAL EXPLORATION NEWSLETTER

MINEX 44 · October 2013

Change in Mineral Resource Organisation within the Greenland Government Administration

On 1 January 2013, the work areas of the Bureau of Minerals and Petroleum were divided between three governmental authorities:

- The Ministry of Industry and Mineral Resources (MIMR)
- The Mineral Licence and Safety Authority (MLSA)
- The Environment Agency for Mineral Resources Activities (EAMRA)

The organisational changes were made to implement amendments to the Mineral Resources Act adopted by the Government of Greenland in 2012 with the purpose of separating assessments and decisions regarding environmental issues from the mineral resource authority and separating work areas related to inspections and licence approvals from mineral resource strategy and marketing. The main work areas of the three authorities are listed below.

MIMR:

- Marketing (including geological investigations to base the marketing on)
- Mineral resource strategies
- Initiatives on mineral resource legislation
- Industry and labour actions related to mineral resource activities
- Impact Benefit Agreements (IBA)
- Social Impact Assessments (SIA)

MLSA:

- Administration of licences
- Control and inspection
- Approval of field activities

EAMRA:

- Environmental assessments

The Geology Department is placed in the Ministry of Industry and Mineral Resources. The MLSA remains the one-door authority to the Industry.

Greenland's third visit to the China Mining Conference

The Ministry of Industry and Mineral Resources (MIMR) will again this year be exhibiting at the China Mining Conference and Exhibition from 2–5 November 2013 in Tianjin, China. At the MIMR booth #3412, visitors will have a unique opportunity to learn about the Greenland geology as well as the mineral potential for base metals, nickel potential, rare earth elements (REEs) and iron alloys. As the previous years there will be a special Greenland session taking place on 4 November at 2–3.30 pm with participation of the Minister of Industry and Minerals, where you can learn about the Greenland legislation, current exploration successes, future mineral commodities, mining projects as well as hear company presentations.

Status of London Mining's Isua iron-ore project

London Mining Greenland A/S submitted an application for an exploitation licence covering the Isua iron-ore deposit in September 2012. The application was processed by the Bureau of Minerals and Petroleum (BMP) and the public hearing process included a series of public meetings. Negotiations regarding an exploitation licence are at an advanced stage.

The Isua iron-ore project is located 150 km north-east of Nuuk. The project includes an open pit mine, a processing plant, a slurry pipeline, a port, and internal infrastructure. London Mining Greenland A/S expects to employ as many as 3,000 workers in the construction phase and 700–800 in the production phase. The total resource is more than 1.1 billion tonnes of ore. The annual production rate is estimated to 15 Mt of iron-ore concentrate with an iron content of approximately 70%.

The Impact Benefit Agreement (IBA) negotiations between London Mining and the Greenland authorities will begin in October 2013.

Environmental baseline studies at Tanbreez Mining Greenland's Killavaat Alannguat multi-element deposit. Copyright Orbicon A/S

Status of Tanbreez multi-element deposit in South Greenland

In September 2013, Tanbreez Mining Greenland A/S applied for an exploitation licence covering the Killavaat Alannguat multi-element deposit in South Greenland.

The total resource is more than 3 billion tonnes of eudialyte-bearing ore. The annual production rate is estimated to 500,000 tonnes of ore, from which both a eudialyte concentrate and feldspar are to be extracted. From the eudialyte the company plans to extract tantalum, niobium, rare earth elements and zirconium.

The project includes the construction of an open pit mine, a processing plant for magnetic separation, a port and helipad, camp, tailings deposit, and connecting infrastructure. The company expects to employ 35–135 people in the construction phase and approximately 90 during production.

A public hearing process will take place in the autumn of 2013 where relevant documents are laid out to the public, and a series of meetings are planned.

True North Gems Inc. completes public hearing stage of Aappaluttoq Ruby-Sapphire Project

The Canadian-based company True North Gems Inc. has completed the public hearing stage of the Aappaluttoq ruby and sapphire deposit at Qeqertarsuatsiaaat, Central West Greenland. The official public hearing process began on 17 June and was completed on 12 September 2013.

The public hearing is an essential part of the Social Impact Assessment (SIA) requirements to obtain an exploitation licence for the deposit. The public were invited to comment on the exploitation application material both in writing and at public hearing meetings held by the Government of Greenland in Qeqertarsuatsiaat, Paamiut and Nuuk 26–29 August 2013. Two weeks prior to the public hearing meetings, True North Gems Inc. held their own information meetings on the project.

Following the finalisation of the public hearing, True North Gems Inc. will review and address the questions and concerns presented at both the formal public hearings and at the company information meetings. The review process will result in a compilation document illustrating solutions to the concerns raised during consultations. This paper will form part of the foundation for the final SIA, the final Environmental Impact Agreement (EIA) and the upcoming Impact and Benefit Agreement (IBA) discussions.

The Aappaluttoq Project is an open pit mining operation with processing ore to concentrate at the mine site in Aappaluttoq and cleaning, sorting and classification of concentrate in Nuuk. The indicated resource is estimated to 189,100 tons with 313 g/t corundum equalling 59,300 kg corundum (296.5 million carats). The inferred resource is estimated to 77,200 tons with an average content of 283 g/t corundum, corresponding to 21,900 kg corundum (109.5 million carats). The amount of near gem and gem quality corundum is estimated to 31.3% rubies and 40.8% sapphires.

True North Gems Inc. is expected to be granted the exploitation licence in 2014 and construction work is anticipated to commence the same year.

Aeromagnetic survey completed in South-East Greenland

The 'Aeromag 2013' airborne magnetic survey was completed in September 2013. A total of 65,271 line km were flown covering coastal regions in South-East Greenland,

Regional and detailed airborne surveys

Entrance to one of the mine adits in the Nalunaq gold mine, Kirkespirdalen in South Greenland.

stretching from north of Umiiviik (64°45'N) and further northward to Kruuse Fjord (67°30'N). The area was surveyed using 500 m line spacing with flight lines oriented parallel to the coast. Tie lines perpendicular to the flight lines were spaced 5 km apart. The survey was flown at a height above the terrain of *c.* 300 m (draped). The 2013 survey will add new and important data to the existing database of modern aeromagnetic surveys for Greenland. In particular the new survey data will be a valuable contribution to the geological investigations and activities undertaken by GEUS in the mineral assessment programme for the region; later, the data will be available for activities by prospecting companies. The survey was flown by EON Geoscience Inc. on a contract with GEUS. GEUS supervised the survey, performed the quality control and will do the interpretation of the data. The pro-cessed data will be released in connection with the PDAC in Toronto, 2–5 March 2014. The survey was financed by MIMR.

Nalunaq gold mine closes

Arctic Mining Ltd, operator of the Nalunaq gold mine in South Greenland on behalf of Angel Mining (Gold) A/S, has announced that the mine will close. The known resource is running out, and the declining gold prices have made further mining uneconomical.

Gold was first discovered in Kirkespirdalen in 1992 and the Nalunaq mine was inaugurated on 26 August 2004, as the first gold mine in Greenland.

The mine was initially owned by Nalunaq Gold Mine A/S, a subsidiary of Crew Gold Corporation, together with NunaMinerals A/S, and in the first years of operation, the ore was shipped abroad for processing. In 2008 the production was temporarily put on hold.

In 2009 the company Angel Mining (Gold) A/S purchased the mine along with facilities and infrastructure. The company built an underground processing plant, and the first doré was produced on site in May 2011. A considerable part of the production in recent years has been based on pillar mining and cleaning of existing stopes.

The company plans to terminate operations in early October 2013 and expects the mine to be closed down by the end of the year.

Ironbark Feasibility Study confirms Citronen Fjord as a global significant base metal mining project

In April 2013, Ironbark Ltd. completed a feasibility study on their zinc-lead project at Citronen Fjord in North Greenland.

Feasibility study results include:

- Mine life of 14 years
- Resource of 71 Mt @ 5.1% Zn + 0.5% Pb (3.5% Zn cut-off)
- Ore production of 3.3 Mt per year
- Life of mine operating costs of US$3.42 Billion
- Life of Mine Revenue of US$5.65 Billion

The medium grade resource at Citronen Fjord of 71 Mt @ 5.1% Zn + 0.5% Pb (3.5% Zn cut-off) is within a larger resource of 132 Mt @ 4.0% Zn + 0.4% Pb (2.0% Zn cut-off). This gives the project a potential for a long-life mining operation.

The sediment-hosted Citronen Fjord zinc-lead deposit is interpreted as a sedimentary-exhalative (SEDEX) deposit, and mineralisation comprises several distinct sulphide mounds containing a massive and net-textured pyrite-rich mineralisation. It starts from surface, is flat lying and remains open in almost every direction, potentially adding more years to the life of the mine. The mine life of 14 years is defined only by the limits of drillings to date. A total drilling of 313 holes for 67,069 metres has been completed at Citronen Fjord. Several targets within the project area, which have the potential to host further significant zinc and lead mineralisations are yet to be tested.

The Citronen Fjord Project is a relatively simple predominantly underground room and pillar mining operation. In order to take advantage of significantly higher underground ore grades, the underground mining operation is scheduled to take place in years 1 to 11. Following the depletion of underground resources, the open pit ore production will commence during year 11 to maintain the 3.3 Mt pa ore production level. A total production of 35.8 Mt ore with average grades of 5.85% Zn, 0.50% Pb and 16.99% Fe is estimated for a 12-year period.

Ironbark is at present working on an application for an exploitation licence.

Workshop about the tungsten potential in Greenland

A workshop on the assessment of the tungsten potential in Greenland will be held at Geological Survey and Denmark and Greenland (GEUS) from 3–5 December 2013. The workshop is organised by GEUS and MIMR.

The aim of the workshop is to assess the presence of undiscovered tungsten deposits in Greenland in the top 1 km of the Earth's crust. Compiled information about known deposits and examination of different geological provinces are used for assessing the tungsten potential. An expert panel will assess data, literature, former work, maps, etc. and discuss and assess the possibilities of undiscovered tungsten deposits within predefined areas.

For further information please contact Lars Lund Sørensen: lls@geus.dk

Fifth 'Greenland Day' in Perth on 10 December 2013

The Ministry of Industry and Mineral Resources in cooperation with the Centre for Exploration Targeting (CET), the University of Western Australia (UWA) invite you to the next Greenland Day in Perth, which will be held on Tuesday 10 December 2013 at the UWA Club. It is the fifth Greenland Day in a row since 2009.

Greenland Day is designed to provide an opportunity for resource companies and investors to understand more about the exploration and mining opportunities in Greenland. The themes of Greenland Day will include:

- Recent research with focus on the Australia – Greenland relation
- Future mineral target regions in Greenland with focus on critical minerals
- Status of several exploration projects in Greenland.

The conference is expected to attract more than 100 patrons including executives from mining and resources companies, potential partners, brokers, analysts, corporate advisors and Australia media.

For further information please contact Henrik Stendal: hdal@nanoq.gl

Status of mineral licences in Greenland by ultimo September 2013

New licences

As of ultimo September 2013, a total of 19 mineral licences have been granted. 13 of these were exploration licences:

Hudson Resources Ltd. was granted an exploration licence for two areas at Pingasut, West Greenland. The company will focus its exploration on high quality calcium-feldspar.

Kavanaru Oil Exploration Corp. took out an exploration licence for an area at Akuliaruseq, West Greenland. The exploration is targeted on graphite, and the company will also be exploring the nickel and copper potential of the licence area.

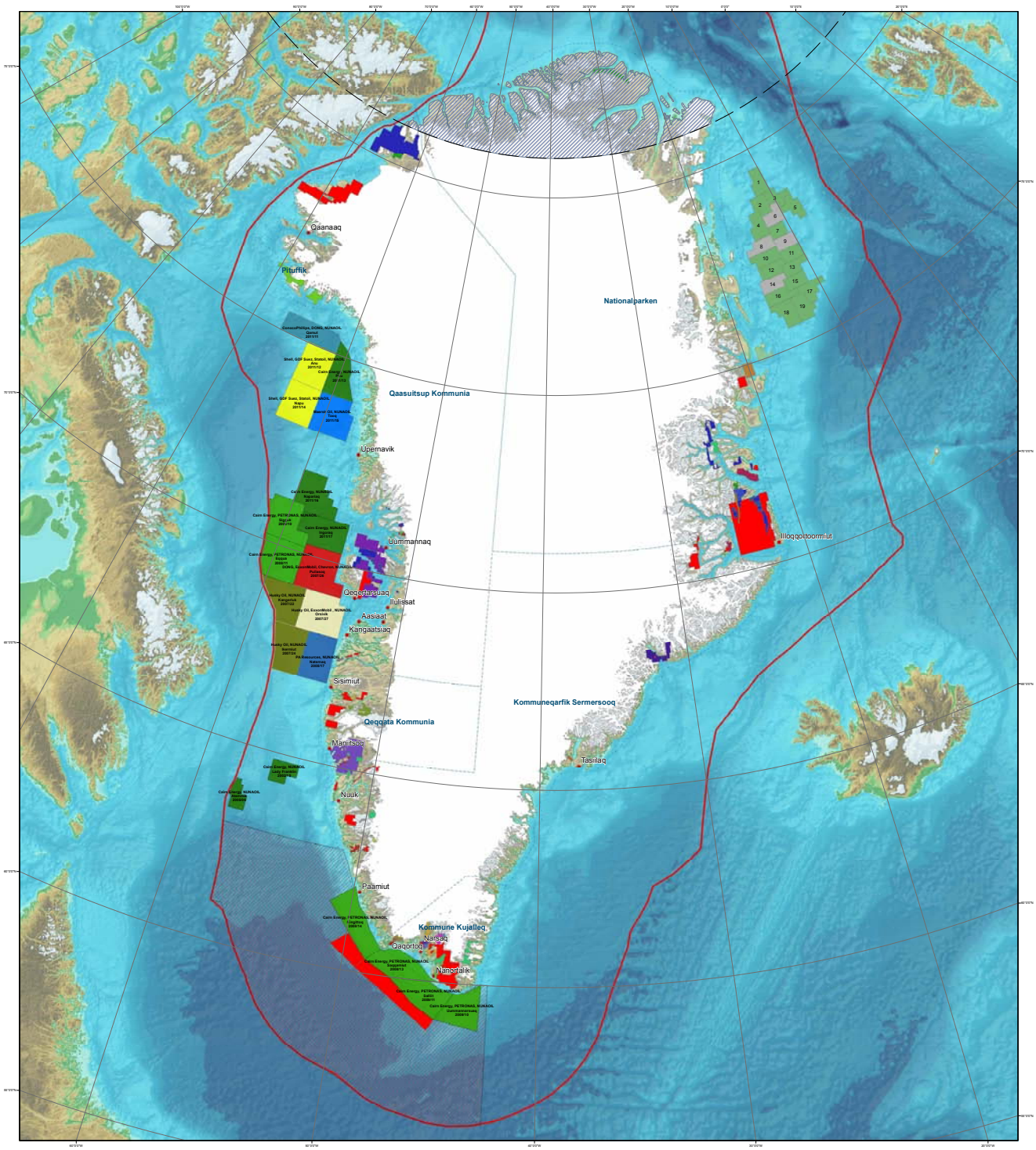
Greenland Minerals and Energy Ltd. was granted an exploration licence for an area at Eqalussuit, West Greenland. The company will explore for graphite.

Obsidian Mining Ltd. got an exploration licence for an area at Amitsoq, West Greenland. The company will explore for graphite.

Coastal Ventures A/S will explore for coal in four areas on the Nuussuaq peninsula and Qeqertarsuaq, West Greenland.

CGRG was granted three exploration licences: the Kap Parry area (East Greenland), the Amikitak area (West Greenland) and the Inoqqat area (West Greenland). Their exploration will focus on Zr-, Nb-, Ta-, REE- and Au-mineralisations.

Jameson Land Resources was granted an exploration licence for an area at Suluppik, East Greenland. The exploration of the area is focused on copper.



Hydrocarbon Exploration Licences owners

- Cairn Energy, NUNAOIL
- Cairn Energy, PETRONAS, NUNAOIL
- ConocoPhillips, DONG, NUNAOIL
- DONG, ExxonMobil, Chevron, NUNAOIL
- Husky Oil, ExxonMobil , NUNAOIL
- Husky Oil, NUNAOIL
- Maersk Oil, NUNAOIL
- PA Resources, NUNAOIL
- Shell, GDF Suez, Statoil, NUNAOIL

Greenland Sea License Round

Round No

- Pre
- Ordinary

Mineral Exploitation Licenses owners

- Angel Mining (Gold)
- Black Angel Mining
- Malmbjerg Molybdenum
- Minelco

Under Renewal owners

- Angel Mining PLC
- Greenland Resources Ltd.
- Nordic Mining Ltd
- Rimbal Pty Ltd
- Tanbreez Mining Greenland
- True North Gems Inc.

Mineral Exploration Licenses owners

- 21st North
- Angel Mining PLC
- Avannaa Exploration Ltd.
- Bedford (No.3) Limited
- CGRG Ltd.
- Coastal Ventures
- Greenland Gold Resources Ltd.
- Greenland Minerals & Energy Ltd.
- Greenland Minerals and Energy
- Greenland Minerals and Energy Ltd.
- Hudson Resources Inc.
- Hunter Minerals Pty Ltd
- Ironbark Zinc Limited
- Kavanaru Oil Exploration Corp.
- London Mining Greenland A/S
- Malmbjerg Molybdenum
- Malmbjerg Molybdenum A/S
- NAMA Coal Ltd.
- NAMA Greenland Ltd.
- Nordic Mining Ltd
- North American Nickel
- Nukajaraq Olsen
- NunaMinerals
- Obsidian Mining Ltd.
- Ole Vittus Lynge
- Palle MÃ¸ller Andersen
- Pinnacle Nominees Pty. Ltd.
- Platina Resources Limited
- Plymouth Minerals Limited
- RAM Resources Ltd.
- Rare Earths Minerals No. 2
- Rimbal Pty Ltd
- Talbot Group Investments Pty Ltd
- West Melville Metals Inc.

Exclusive Licences June 2013

- Under Application
- Opendoor Areas
- Blocked Areas

Bureau of Minerals and Petroleum

Map updated June 2013

Bathymetry and Topography: ETOPO1

WGS 1984 Complex UTM Zone 24N
Universal Transverse Mercator Projection
False Easting: 500000,0
False Northing: 0,0
Central Meridian: -39
Latitude Of Origin: 0,0
Linear Unit: Meter

N W E S

Kilometers
0 125 250 500

Overview map of exclusive mineral and hydrocarbon licences (Updated June 1, 2013).

NunaMinerals A/S was granted an exploration licence in Aunnartoq (Inglefield Land), North Greenland. The company will be exploring for iron.

Avannaa Exploration Ltd. got an exploration licence in Ukaleq at Scoresby Sund (the fjord). The exploration programme target copper, nickel and platinum group elements.

21st North Aps will explore for Mo, Au, Ag, Pb, Zn and Cu at Qialivarpik (Flammefjeld), East Greenland.

Moxie Pictures Inc. was granted an exploration licence for an area at Qajartoriaq in West Greenland. Exploration is focused on rubies and sapphires.

Renewed licences

Tanbreez Mining Greenland A/S has renewed its exploration licence (2006/04) south of Narsaq, South Greenland for exploration of eudialyte-hosted rare-earth elements.

Bedford (No. 3) Limited has renewed its exploration licence (2007/02) in Tasarneq, North Greenland. The company is exploring for Zn, Pb and Ag.

China-Nordic Mining Ltd. has renewed its exploration licence (2007/03) in Carlsberg Fjord, East Greenland and will continue to explore for Zn, Pb and Cu.

Ironbark Zinc Ltd. has been granted three exploration licence renewals. The licences are (2007/31) in Mesters Vig, North-East Greenland, exploring for Zn, Pb and Ag; (2007/32) Citronen Fjord, central North Greenland, exploring for Zn and Pb and (2007/33) in Washington Land, western North Greenland where exploration for Zn, Pb and Ag is being conducted.

Rimbal Pty Ltd. has renewed its exploration licence (2007/45) at Ivittuut, West Greenland. The company is exploring for REE.

NunaMinerals A/S has three exploration licences that have been renewed during 2013. The licences are (2007/51) in Majoqqaq, West Greenland, where the exploration is focused on REE, Ni, Au and diamonds: (2007/53) in Inglefield Land, North Greenland to explore for iron, copper, gold and (2007/59) on Storø north-east of Nuuk, West Greenland, with Au, Zn, Pb, and Wo as primary targets.

Jørn Skov Nielsen, Deputy Minister, Ministry of Industry and Mineral Resources, presents the prize Greenland Prospector & Developer of the Year 2013 to Jonathan Downes, CEO, Ironbark Zinc Ltd.

Ironbark wins Greenland Prospector and Developer of the Year award

As per tradition the Ministry of Industry and Mineral Resources (MIMR) has awarded the Greenland Prospector and Developer of the Year 2013.

The prize is awarded to a person or a company who has done an extraordinary effort in the geological exploration of Greenland. The prize for this year has been awarded at the annual PDAC convention in Toronto, Canada, on 4 March on the MIMR Greenland Day, which was attended by more than 150 people from the minerals industry. This year Ironbark Zinc Ltd. receives the prestigious award Greenland Prospector and Developer of the Year 2013.

The company receives the award for making an important impact in Citronen Fjord in central North Greenland, where they are engaged in a major research project for zinc and lead.

Ironbark Zinc is an Australian company listed on the Australian Stock Exchange. The company aims at building shareholder value through the exploration and development of its projects – while also actively seeking to expand the number of projects controlled by Ironbark Zinc. In other words, Ironbark Zinc possesses extensive technical and managerial experience in the mining sector. Last year the award went to Avannaa Resources Ltd. In 2011 the award was presented to John Ferguson, geologist and the director of Hunter Minerals Pty.

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

Calendar for MIMR marketing

MIMR will be marketing the Greenland mineral resource potential at the following upcoming events:

- **Fennoscandian Exploration and Mining,** 29–31 October 2013, Levi, Finland
- **China Mining Conference and Exhibition,** 2–5 November 2013, Tianjin, China
- **Greenland Day in Perth,** 10 December 2013, Perth, Australia
- **Mineral Exploration Roundup,** 27–30 January 2014, Vancouver, Canada
- **PDAC,** 2–5 March 2014, Toronto, Canada
- **Mines and Money,** 24–28 March 2014, Hong Kong, China

New issue of the series Geology and Ore and Fact Sheets with themes of Greenland exploration

2013, Geology and Ore No. 23
Mineral potential in Greenland, 12 pp.

2013, Fact Sheet No. 29
aFieldWork – An Android App for offline recording of geological localities, 2 pp.

2013, Fact Sheet No. 28
Seamless Geological Map of Greenland – Scale 1:500 000, 2 pp.

GEOLOGICAL SURVEY OF DENMARK AND GREENLAND (GEUS)
Øster Voldgade 10 • DK-1350 Copenhagen K • Denmark
Tel: +45 38 14 20 00 • Fax: +45 38 14 20 50 • e-mail: geus@geus.dk • homepage: www.geus.dk

MINISTRY OF INDUSTRY AND MINERAL RESOURCES (MIMR)
Government of Greenland • P.O. Box 1601 • DK-3900 Nuuk • Greenland
Tel: +299 34 68 00 • Fax: +299 32 43 02 • e-mail: isiin@nanoq.gl • homepage: www.naalakkersuisut.gl
GEO-DATA: www.greenmin.gl

ISSN 1602-2475

Stop press date: 2 October 2013 • Editor: Lars Lund Sørensen, GEUS
Layout: Henrik Klinge Pedersen, GEUS • Printers: Afet Neimi, GEUS