

GREENLAND

Oil & Minerals

**Do's and don'ts
for arctic pioneers**

**Battle for rare
earths intensifies**

**Insider tips
from top CEOs**

Hotel Hans Egede 4-star hotel in the heart of Nuuk

- 140 refurbished hotel rooms
- 15 well-equipped hotel apartments
- Large breakfast buffet
- Modern and flexible conference rooms



The **key** to business life in the land of **opportunities**

The Employers' Association of Greenland covers 85% of the country's business life – across the boundaries of industries, ownership structures, geographical locations and company sizes. We thus represent national and international companies of all types – from small, personally-owned businesses to small and medium-sized enterprises, all the way to our largest, globally operating companies.

In addition to our role as an advisor and sparring partner in the areas of law, economics, industrial policy and the labour market, we are also an organisation that takes initiatives and exerts influence: both politically, economically, educationally and socially. Our activities include organising courses, conferences and international visits to strengthen the business community of Greenland and equip it to meet the demands of the future.

Greenland is the land of opportunities, and the Employers' Association of Greenland is the key to the country's business life.

The book "Focus on Business in Greenland" presents 100 skills of Greenlandic companies in relation to oil and gas extraction, mineral prospecting and mining. It thereby documents the dynamics that are making more and more Greenlandic enterprises the strong and natural partners of international operators.



Employers' Association of Greenland

www.ga.gl | Tlf. +299 32 15 00 | Fax nr. +299 32 43 40 | ga@ga.gl



Coverphoto by Shell

A Shell scientist in a laboratory analyses oil samples in glass flasks. The energy giant is planning exploration drillings in Greenland and thereby opening a new frontier in one of the world's last undiscovered oil and gas provinces. According to The U.S. Geological Survey reserves of 31 billion barrels of oil equivalent are yet to be tapped off the west coast, while another 17 billion are estimated to sit under the seabed off the island's east coast. Shell was awarded two license blocks to explore for oil on Greenland's west coast in 2010 as part of a consortium. Another licensing round is due to take place in 2012 and 2013, although these are for Greenland's east coast, which has a rougher climate. In an interview, that sets out the priorities for the year ahead, published on the Shell's website Chief Executive Peter Voser acknowledged that the Arctic environment was a particularly sensitive one, but said he believed Shell could safely conduct operations.

»With energy demand rising, all resources must be developed to help meet it -- including the Arctic,« said Voser.

Read more on pages 14 and 24.



Ressource news from the worlds largest island

Do you want to know the latest about petroleum or mining in Greenland and the other Arctic Countries?

Then visit the website <http://sermitsiaq.ag/oil-and-minerals>

Selected highlights from this issue

Rare earths trigger tradewars	4
Family gathering on drillsite	6
Speeddating for excec	8
Ruby dicatorship has facing competetion.....	16
Angel Minings stairway to heaven	18
Artic Oil is a pension.....	19
Mineral memos	20
Oil Companies head north	24

Oil drops – notes about the hunt for hydrocarbon	26
Logistics and lacks of beds biggest challenges, miners says.....	30
Billions boured into iron mine	34
Mining companies get hand from rock hounds.....	40
New Port approved for Nuuk.....	44
A treasure chest for zinc and iron.....	46
Tanbreez opening mine nears.....	50
Angel Mining looking to turn Greenlands gold into lead.....	52



Published by Sermitsiaq.AG

Sipisag avannerleq 10 · Postbox 39 · 3900 Nuuk
Phone +299 383940 · mail administration@sermitsiaq.ag
www.sermitsiaq.ag
CVR: 387083 GER & SE: 12341954

Editor in chief: Poul Krarup, krarup@sermitsiaq.ag

Editor: Mads Nyvold, nyvold@sermitsiaq.ag

Graphics design: Linda Lyberth Rachlitz, linda@sermitsiaq.ag

Sales / advertising: Peter S. Rasmussen, peter@sermitsiaq.ag

Translation: Copenhagen Post

Print: Lynge Olsen reklame & kommunikation A/S



Clockwise, from top centre: praseodymium, cerium, lanthanum, neodymium, samarium and gadolinium

PEGGY GREEB, US DEPARTMENT OF AGRICULTURE

Rare earths trigger trade war

Automobile manufacturers and wind turbine factories hunger for metals that are found practically only in China and Greenland

Whether it's in the form of components to windmills, mobile phones, monitors, hybrid cars or missiles, the substances known as rare earths are pretty pervasive in modern society.

The best known rare earth is neodymium, which can be converted into the strongest known permanent magnets, and which play an important role in wind turbine generators.

Researchers and commercial producers

expect that even more of these elements will be needed in the future. Currently, China has a near monopoly on their supply, prompting an increasing number of countries and companies to turn their attention toward Greenland. One example was at the latest gathering of EGU, Europe's largest geoscience conference.

"There is no doubt that it will have a major effect on the global market, if Greenland's mines are opened for extraction," said Per Kalvig, a geologist and senior researcher at GEUS, the Geological Survey of Denmark and Greenland.

Risk of radiation

The group of elements is indeed considered rare, though they do exist in many places. But the concentration and the way in which they are formed determines whether it's worthwhile to extract them.

Four areas in Greenland seem particularly suitable for extraction because of the large deposits in the area: they are Kvanefjeld, Kringlerne, Safartog and Karrat. The Australia-based company Greenland Minerals and Energy (GME) has already drilled at Kvanefjeld near the settlement of Narsaq. The company believes that Kvanefjeld could become one of the world's largest mines to extract specific raw materials.

Extracting rare earths doesn't in itself cause environmental problems, but at Kvanefjeld it's impossible to extract them without also encountering uranium. That's controversial in Greenland, which has legally adopted a zero-tolerance policy toward extracting uranium for fear of what a large dose of radiation would cause.

Rare earths are essential in green tech and modern electronics such as computers, wind turbines and electric cars.

Facts

Rare earths consist of elements in the periodical table from number 57 (lanthanum) to number 71 (lutetium). Thirteen of the elements have magnetic properties, but of most interest to manufacturers is neodymium. Together with iron and boron, it makes the strongest permanent magnets. Neodymium is useful because, even in small quantities, it makes very strong permanent magnets. Vestas and Siemens use neodymium in generators for wind turbine blades.

These magnets combine the high magnetic strength of iron with the rare earth's ability to maintain the direction of magnetization, described Neils Hessel Andersen, a rare earths research specialist with the Technical University of Denmark.



PHOTO: APPLE

The debate over extraction extends far beyond Greenland's borders, since the raw materials have fueled something of a trade war.

Chinese monopoly

Former Chinese Prime Minister Deng Xiaoping once said that, while Arabs have oil, the Chinese have rare earths. That's still the case. China currently sits on 97 percent of the world's extracted rare earth resources. That near monopoly allows China to adjust prices at will.

Meanwhile, geological research of where in Europe raw materials can be extracted has been under-prioritised for years, said Patrice Christmann, head of the department of mineral resources at BRGM, the largest public institution in that field in France.

The deposits in Greenland could help Europe out of the crisis. "Greenland has some of the best deposits of rare earths in the world," said Christmann.

According to an estimate, 43,000 tonnes of rare earths could be retrieved from Kvanefjeld every year for over 25 years, reports GME. But the raw materials can only be extracted from Kvanefjeld if all studies get the green light and the legislature removes the zero tolerance policy.

Radioactive dust

The Danish consulting firm Orbicon will conduct a risk assessment of drilling at Kvanefjeld and analyze waste from mining activities in order to see whether heavy metals or radioactive materials are leaking into the environment.

"We need to investigate whether mining waste can end up in drinking water and whether radioactive dust can escape from the mine and into Narsaq," explained Flemming Pagh Jensen, a biologist at Orbicon and the head of the study.

The environmental assessments will also include any possible impact on Narsaq residents. Some were worried about more fluoride in the rivers, but radioactive dust appears to be one of the biggest concerns, judging from public meetings, said Jensen.

The dust must be taken seriously, said Gert Asmund, a professor at the Danish National Environmental Research Institute at Aarhus University.

"Kvanefjeld had previously been viewed as a pure uranium mine because of its relatively high occurrence," he said. "Whether the mine first and foremost develops uranium or rare earths will



Videnskab.dk

This article was created in co-operation with ScienceNordic.com and Videnskab.dk. The two websites cover scientific research in Scandinavia and in Greenland.

Greenland Minerals and Energy is one of several companies hoping to extract rare earths from Greenland

surely depend on the price of individual commodities once the mine is up and running. It's important then that Orbicon's studies are carried out with such thoroughness that the dust hazard can be predicted in advance and reduced to a level where residents of Narsaq won't be exposed to risk."

By Maj Bach Madsen, journalist

Facts

There are several precautions that mines can take to reduce the risk of releasing radioactive dust. Crushing plants can be placed in closed rooms, and the ventilation air in the confined space can be filtered. Water can also be poured on the rock while it is crushed, or the company can be prohibited from crushing at the mine on days when the wind blows in the direction of Narsaq.

Source: Gert Asmund.

Together with a friend Angerla visited his father, who works at a drillsite.



DORTHE OLSEN

Family gathering on drillsite

Son visits dad during search of rare earths

Angerla Frederick's father, Hanseeraq Frederiksen, works as a platformconstructor at the Kvanefjeld in Narsaq in Southgreenland. Here Greenland Minerals and Energy are working on a project with rare earths and uranium. There are six and a half kilometers from the town Narsaq to the camp 700 meters above sealevel, and Angerla Frederiksen has do without his father for long periods.

But then it's good that you are football

player and easily can run up to the camp.

»I miss my father every day and has little contact with him. I run up here a few times to be a little with him,« says Angerla Frederiksen.

It took Angerla Frederiksen and his friend, Martin Sikensen, about one hour to reach the camp. They are 15 and 16 years old and plays soccer in the club N-85.

»Sadly we did not make it to the final rounds of the Greenlandic championship this year, but we will try again next year. We must train more, and these trips

are part of the workout, »says Angerla Frederiksen.

His father, Hanseeraq Frederiksen, is in camp a month and subsequently keep free a week, when he goes down to the town of Narsaq.

Sermitsiaq.AG visited the camp during a research-trip with focus on rare earths. You can read more about it in an upcoming issue of Greenland Oil and Minerals.

By Dorthe Olsen, journalist Sermitsiaq



57° 03' 50 N, 10° 03' 20 E



Port of Aalborg

Europe's one and only base port for Greenland...

Port of Aalborg - the base port for Royal Arctic Line and their weekly departure to and from Greenland. A modern and flexible port with facilities for handling all kinds of cargo. From heavy and complex project cargoes to containerized cargo. Port of Aalborg is connected to the international container network with feeder and connects Greenland to the whole world.



Port of Aalborg Ltd. · Tel. +45 99 30 15 00
info@aalborghavn.dk · www.portofaalborg.com




GREENLAND
MINERALS AND ENERGY A/S

CREATING GREEN INDUSTRY FOR THE FUTURE.



TTDORNEQ2011



Peter Voser, Shell's CEO, was represented by the Greenlandic manager, Hesham Hendy, when the company was scouting for bids from Greenlandic subcontractors in Nuuk.

Facts

Global focus on Greenland

More than 50 representatives from Greenlandic companies are present at the world's leading conference for mineral exploration

Greenlandic enterprises are anticipating great business opportunities in the coming years. Just like Greenlandic society, Greenlandic business life is changing in step with the increasing focus on the Arctic.

But as Greenland's economy is small, there are no great opportunities to invest in the major projects which will probably be established in the coming years. It is therefore important to attract interest from outside. New industries are due to be established in Greenland, which will also help to broaden the skills base which is a prerequisite for the general development of Greenlandic society.

For more information about business life in Greenland, e.g. business structure, working conditions and future prospects – the Greenland Business Delegation will be holding a Greenland Business Afternoon Session on 6 March at the PDAC convention in Toronto. This event will also examine some of the minerals prospecting projects now taking place in Greenland.

During the PDAC convention, you can also meet the Greenland Business Delegation at the Greenland Business Pavilion – booth #1612 at the Trade Show.

Speed-dating for execs

Multinational companies were eager to make contacts with Greenlandic businessmen at resource conference

Joining Forces, Greenland's largest resource conference measured by the number of participants, was an enormous success. Held over two days last year in Nuuk, 270 participants from 12 different countries discussed the future of oil and mineral exploration in the Arctic - almost non-stop.

Self-employed Greenlandic businessmen attended alongside representatives from giants such as Husky and Shell, who were scouting for promising local subcontractors.

Staggeringly frank

In the case of Shell, the meetings were especially exciting for the local firms who were given the opportunity to sit and speak to businesses with twice as many employees as the Greenlandic population.

The Bureau of Minerals and Petroleum, the Confederation of Greenlandic Employers and the Sermersooq local authority organised the conference together and they had an underlying agenda – ensuring natural resource exploitation benefits Greenland and that as much of the workforce is as Greenlandic as possible.

"I am convinced that our companies will grow large with all the projects and that they can exploit their potential within the resource industry both in and out of Greenland. But it requires that they come up with new ideas and cooperate," Nuuk mayor Asii Chamnitz Narup said.

The informal atmosphere during the conference meant that many mining and oil companies were considerably more frank than normal, offering insights into their future plans in Greenland.

By Mads Nyvold, journalist Sermitsiaq

Company profile

Grønlands Revisionskontor A/S was founded in 2005 in connection with the takeover of the Greenland branch of PricewaterhouseCoopers. Today, Grønlands Revisionskontor A/S is a member of Revisorgruppen Danmark, while remaining PwC's preferred partner in Greenland. We serve a wide range of Greenland's businesses within the fishing, manufacturing, trade, service and mineral prospecting sectors. With 25 years of experience in the country, Grønlands Revisionskontor A/S possesses a thorough knowledge of trade and tax conditions in Greenland.

Responsible partners:

Knud Østergaard, state authorised public accountant
Per Laugesen, state authorised public accountant

Brief description of competencies and services

- Auditing
- Taxation
- Financial advice
- Book-keeping
- Company administration services

Contact information

Grønlands Revisionskontor A/S
State authorised public accountants
Imaneq 18, Postbox 319
3900 Nuuk

Tel. +299 323 133
info@revisor.gl
info@grk.gl

www.revisor.gl
www.grk.gl



*Your insurance partner
in Greenland*

- 20 very dedicated and skilled employees
- High insight and experience in insurance solutions for the mineral and mining industry
- Specialized in insurance solutions in regards to establishing business in Greenland
- Customized insurance solutions based on the customers needs
- Business consultancy is based in Nuuk and we are represented with offices in the four largest cities in Greenland
- We consult in Greenlandic, English, German and Danish



Trust us to be
your **local, total supplier** of Food/Provisions
and Catering products **all over Greenland**

*We supply goods to Ships, and the Mining & Oil industry. Hotels, Restaurants,
Crèches, Kindergardens, Canteens, Retirement homes, Discotheques a.o.*

KK also offer our customers access to a wide selection of

- Kitchenware
- Furniture
- Serviettes/Tablecloths
- Disposable Packaging
- Bedclothes
- Clothing
- Office Equipment
- Cleaning Articles / Machines

KK - YOUR LOCAL SUPPLY PARTNER

Phone +299 328611 | info@kkengros.gl | www.kkengros.gl

KK
ENGROS

KK Engros is based in Nuuk, where we employ 15 people, divided between the main warehouse and the Cash & Carry store.
With local presence since 1982, KK Engros has been sending goods all over Greenland, from warehouses in both Denmark and Nuuk.



ALCOA, ICELAND

Large companies misrepresent local connection

An aluminium giant and an oil company falsely claimed that the world's largest Inuit NGO was their partner

The international organisation, Inuit Circumpolar Council (ICC), has a popularity issue.

Aluminium producer Alcoa wants it to take part in negotiations about the possible construction of a smelter in a small Greenlandic town.

London Mining wants to establish an iron mine in Isukasia, near Nuuk, and wants the ICC on the company's advisory committee.

And Cairn Energy, which is attempting to find oil in Greenland's waters, has attempted to solicit the organisation as a consultation partner before the drilling season begins.

But in each case, the Inuit rights organisation has dismissed the approaches from the large companies. And, in the cases of Alcoa and Cairn, the ICC has even asked the companies to correct their information, so they did not appear to either be in dialogue or collaborating.

ICC international chairman Aqqaluk Lynge underlines that the organisation deliberately keeps large companies who operate in Greenland at arm's length.

Keeping their distance

It has, in a few cases, participated in meetings with the companies to answer questions, Lynge adds that this does not make the ICC a partner on behalf of Greenland's residents.

"When it comes to large industrial projects, we do not want to become the alibi for foreign companies or an excuse when the Self-rule Authority holds inadequate and insufficient consultation processes," Lynge said.

"You should not trust the companies when they say they have come to Greenland for our sake and that they want to involve the local communities. They come for themselves. And this is where we ought to be more publicly critical," he stressed.

Costing Resources

Lynge added that the ICC uses a large part of its own resources for the consul-

tation processes.

"It creates an incredible pressure on our limited resources when we also have to participate in the Arctic Council's six work groups and the large assignments for the UN and Human Rights Council in Geneva.

"For the sake of the future, the public authorities have to ensure that civil society has a real opportunity to be involved. Right now they are not," Lynge pointed out.

The organisation is pushing the Self-rule Authority to make economic demands on the companies operating in the region. If they can secure funds, then civil rights groups and organisations will be able to hire independent experts during the consultation processes in order to ensure balance in the decision-making processes.

This already happens in Canada and Alaska where the method has improved the influence of small Inuit societies.

By Mads Dollerup-Scheibel, journalist Sermitsiaq

New Company profile on www.businesscatalog.gl

KITAA Architects – architecture firm
Branches in Nuuk, Sisimiut, Ilulissat and Qaqortoq

KITAA Arkitekter has over 50 years experience in Greenland, primarily with design and construction. The Company has an extensive local network and knowledge with a global outlook. KITAA Arkitekter has a long history of working with local and international private and public companies: Government of Greenland and municipals, Air Greenland, the Government of Denmark, The Republic of Singapore and US Air Force. The Practice has been architectural advisor for US Air Force's bases in Greenland.

KITAA Arkitekter has been involved in a wide range of disciplines, from urban planning, construction projects and designing to project management and supervision.

- Planning and development
- Design and Interior design
- Project management and supervising
- Prefab construction
- Energy saving, Sustainability and Quality Assurance



KITAA Arkitekter
www.kitaa.gl

KITAA arkitekter – Qaqortoq
Storesøvej B-782
Postbox 440
3920 Qaqortoq
Tel: (+299) 641431
Fax: (+299) 641432
Qaqortoq@kitaa-arkitekter.gl

KITAA arkitekter – Sisimiut
Kunuuteralap Aqq. 1
Postbox 229
3911 Sisimiut
Tel: (+299) 863008
Fax: (+299) 863009
sisimiut@kitaa-arkitekter.gl

KITAA arkitekter – Nuuk
Kissarneqqortuunnguaq 7
Postbox 908
3900 Nuuk
Tel: (+299) 311737
Fax: (+299) 311738
nuuk@kitaa-arkitekter.gl

KITAA arkitekter – Ilulissat
Qupaloraarsuk 56
Postbox 1006
3952 Ilulissat
Tel: (+299) 942090
Fax: (+299) 942091
ilulissat@kitaa-arkitekter.gl

Wichmann Arkitekter
– Copenhagen
Nørrebrogade 26, 5. Sal
2200 Copenhagen N
Tlf: +45 35356500
Fax: +45 35356511
jw@wichmann-arkitekter.dk



MINERAL EXPLORATION DEVELOPMENT IN GREENLAND

CONTRACT EXPLORATION & GEOLOGICAL CONSULTANCY

- Grass-roots Exploration
- Sampling Programs and QA/QC
- Design & Management of Drill Campaigns
- Supervision of Geophysical Surveys
- Project & Camp Management

HANDS-ON EXPERIENCE

- Three decades of in-house experience from the Arctic
- Knowledge from all geological terranes of Greenland
- Gold, PGE, REE, Nickel-Copper, Iron, Tungsten-Antimony and Titanium-Vanadium

LOGISTICS

- Fostering contact with authorities (license applications and permits for prospecting, drilling, communications etc.)
- Preparation of Equipment and Packing Inventory
- Mobilisation of Crew and Equipment by Land, Sea and Air
- Health & Safety, Emergency Procedures and Field Manuals

*"HIGH-QUALITY, INNOVATIVE
AND COST-EFFECTIVE SOLUTIONS"*

21st NORTH ❖ Kullinggade 31 ❖ DK-5700 Svendborg ❖ Denmark
info@21stnorth.com ❖ www.21stnorth.com ❖ Tel: [+45] 21 184 183



Retraction: Article about oil contingency plan

Main points in the article

»Greenland lagging behind on oil contingency plan« contained errors and falsities

Edition no.2 of Greenland Oil & Minerals contained an article largely referring to a report published by the Canadian think-tank; Pembina Institute.

The article with the header »Greenland lagging behind on oil contingency plan« did however not try to verify the claims from the report nor present these to a counterparty.

The article claims that the Government of Greenland does not require an explosive prevention system and that the Government of Greenland has no specific requirements for well control systems. Furthermore the article claims that the Government of Greenland has no requirements for dynamic positioning systems. These claims are incorrect.

The Government of Greenland has like Norwegian authorities chosen to require several independent systems that can activate the shut-down valves in an oil well.

Blowout preventers tested

The Government of Greenland requires blowout preventers (BOP's) to be installed in all oil wells. As an extra security measure the Government of Greenland requires that the operator has remote control systems that can shut down the well in case of a blow-out, even though the connection between the drilling rig and the well has been lost.

Greenland requires that the BOP's mechanical ventilation system is tested every 14 days and its electrical control system every 7 days. The director of the Bureau of Minerals and Petroleum, Jørn Skov Nielsen, has told the Greenlandic newspaper Sermitsiaq that all of the tests that were carried out in connection with Cairn Energy's exploration drills in Baffin Bay performed satisfactorily. Moreover, all spare parts, washers and other parts were inspected and approved in each case before drilling was permitted.

The Government of Greenland also requires that the operator has to have a dynamic positioning with redundancy capabilities (DP3) installed.

Possibility to intervene

In the article it is written that the Pembina Institute report indicates that Greenland does not have a plan for how the operator and the authorities are to coordinate their emergency response to an oil spill. The article indicates that Greenland only has limited opportunity to intervene if the operator does not adequately respond to an oil spill. These indications are incorrect.

Emergency plans have to be submitted to the Government of Greenland as part of the application material requested for an exploration drilling application. The emergency plans have to describe incidents like ice management, oil spill, blowouts, man over board, illness etc. Emergency plans have to be approved by the Government of Greenland prior to

commencing a drilling campaign.

The Government of Greenland requires joint desk top exercises as well as real life exercises between the Greenlandic authorities and the operator to be performed before a drilling programme commences, as well as during the drilling campaign. Furthermore, exercises have to be performed prior to commencing each well for the purpose of testing if the plans and communication lines are working.

In accordance with the Mineral Resources Act, section 80 a Contingency Committee has been established. The role of the Contingency Committee is to coordinate the Greenlandic authorities' response in case of a hydrocarbon related emergency in Greenland. The Contingency Committee includes all parties of relevance; police, health services, Greenland Command (The Danish Navy), DCE (former NERI) etc..

When a drilling campaign is applied for the operator is requested to assign a company representative to the Contingency Committee in order to prepare for a joint response. In 2010 and 2011 several exercises were carried out between Cairn Energy and the Greenlandic authorities.

In case of an emergency the Contingency Committee and the operator's Emergency Response Group will coordinate their response and work together.

In the Pembina Institute report it is not evaluated if an Environmental Impact As-

Tests show that shear rams are capable of cutting through drill pipes if there is a potentially disastrous issue with the well pressure.

One of the exercises carried out between the Greenlandic authorities and the operator, which has to be performed before a drilling programme commences.

essment (EIA) is required for oil activities in the regulatory regimes.

Important approval

However, the EIA is an important document regarding oil spill contingency plan, which the article unfortunately does not mention.

The Mineral Resources Act, section 73, requires that an EIA is to be submitted when activities applied for are expected to have an impact on the environment. The EIAs for the drilling campaigns 2010 and 2011 are publicly available on the website www.nanoq.gl/rd. Furthermore, EIAs for other activities are publicised for public consultation at the webpage of the Greenland Government for 6-8 weeks.

After the public consultation period the applicant is requested to evaluate the EIA based on the comments and submit a revised EIA if necessary. EIA's then have to be approved by the Government of Greenland before approval for exploration drilling can be granted. If an EIA is not approved by the Government of Greenland, no approval can be granted. EIAs are hence an essential part of the decision process for the Government of Greenland and the final version of the EIA as well as the comments from the public consultation are made public along with the approval letter.

EIA guidelines can be found at www.bmp.gl and are divided into guidelines for exploration drilling, stratigraphic drilling and seismic surveys. EIA guidelines for mineral activities are published at the same website.

We apologize for the errors and falsities in the article.

Poul Krarup, editor in chief



Shell will explore the Greenland's oil potential as part of a consortium.



Royal flush was a flop

Despite thinking it held a good hand, Cairn Energy has so far failed to hit upon Greenland's black gold

Mike Watts, deputy chief executive of oil company Cairn Energy, had reason to be optimistic back in 2010. The company had just received promising data about its drilling areas off Greenland's western coast.

"If we played poker, and we were dealt two types of gas and oil, we would have had a Royal flush, and that's what we found in Greenland," he said at that time.

The company had just finished its first season in Greenland. The results surpassed the company's greatest expectations – after the first two exploration boreholes, traces of gas and oil had already been discovered.

While the quantities discovered were

too small to justify commercial exploitation, they were sufficiently encouraging to lead Watts to pull out the gambler analogy, suggesting that it was likely they would make a profit.

When Cairn began its Greenlandic activities, the company predicted that there was a ten percent chance of making a commercially viable discovery. By the start of the 2010 drilling season, Cairn increased the odds to between 10 and 20 percent.

But all eight of Cairn's boreholes have since been dry.

Drilling the wells cost over \$573 million and has caused the company's stock to dive.

Shell is standing in the wings

At the time of going to print in February, Cairn had just completed a farmout with Statoil. The Norwegian company has agreed to acquire a 30.625% interest in

the Pitu licence off north-west Greenland, partly in exchange for paying a share of the costs on the licence.

The deal covers only the most northerly block out of the 11 huge licences off Greenland in which Cairn Energy has an interest.

In the wings, other oil companies are readying themselves. This year, Canadian company Husky will begin preparations for exploration drilling in Baffin Bay in 2013.

Shell too is readying itself and has formed a consortium with seven other companies including Maersk, Statoil and Gaz de France. The company is conducting seismic investigations this year, after which it will decide on when to conduct exploration drills. According to Shell's Greenland manager, Hesham Hendy, these will probably take place in 2015.

By Mads Nyvold, journalist Sermitsiaq

ARCTIC BASE SUPPLY



Your strongest partner in
support and logistics for
oil and gas exploration
in Greenland

info@abs.gl Tel. +299 34 91 00 www.abs.gl

LOCAL SERVICE NATIONWIDE





Greenlanders protest against commercial ruby exploration licenses, but they are a better alternative than rubies from Burma, says True North Gems.

Ruby dictatorship has facing competition

Greenland's gemstone could represent an ethically responsible alternative to Burma's 'blood rubies'

Would you buy a ring with a red 'blood ruby' for your loved one?

It's likely that the gemstone you purchased was carved out of the ground in the Mogok valley or the Hmong Hsu region in Myanmar. For several decades the Asian dictatorship has been the world's leading supplier of rubies. The profits support the military junta, which kills and suppresses critics of the regime.

But Greenland could spoil the junta's cash crop and solve people's guilty conscience when they buy rubies, according to Nick Houghton, managing director of the Canadian company True North Gems.

"Greenland can fill the void in place of Burma," Houghton said during the Joining Forces mining conference in Nuuk. "Greenland could be the only

place in the world that produces rubies according to ethical and environmental standards."

More expensive than diamonds

True North Gems has exploration rights for a 110-square-kilometre region at Fiskensæset. The company has done 65 test drills in the area, and 45 of them yielded rubies as well as sapphires. The first 100 kilos of ore samples that True North Gems mined in 2007 yielded rubies worth an estimated

According to Houghton rubies are judged using the same criteria as diamonds and can be more sought-after. True North Gems promotes in its marketing material the more peaceful conditions under which Greenland's rubies could be produced.

"It would be unique," said Houghton. "The ruby project would put Greenland on the map like never before, and that would make you proud."

Houghton would make all steps in the

process transparent. He said that the mining sector suffers in many circles from a bad reputation, which is often underserved.

Bad reputation

He refused to comment, however, on the controversy surrounding True North Gems' exploration rights. A protest group led by amateur rock collector Niels Eske Madsen, accused Greenland's government in 2008 of creating an Arctic apartheid in the gemstone field by giving True North Gems the sole rights to explore the area around Fiskensæset.

Madsen's argument is that, as a Greenlander, he has a grandfathered right to gather minerals in the area, and that by granting the license to True North Gems and forbidding local collectors from searching for and making money on their discoveries, the government is favouring mining in that region.

By Mads Nyvold, journalist Sermitsiaq

YOUR LOCAL OIL, ENERGY & MINING PARTNER IN GREENLAND

Blue Water Greenland is a part of international freight forwarding company Blue Water Shipping, - the most versatile and largest freight forwarding company in Greenland.

We are offering all types of transport and logistics solutions, customs clearance, agency, base facilities, offshore container rental and warehousing.

BLUE WATER SHIPPING

Blue Water Greenland A/S

Nuuk +299 325410

Sisimiut +299 866365

Ilulissat +299 942 210

www.bws.dk



Company presentation

O.S. Electronic ApS was founded in 1982. The main focus was then to service the electronic equipment on modern fishing trawlers, which was a fast expanding market in Greenland.

Today O.S. Electronics is the main dealer in Greenland for major ship electronic suppliers in the world, such as Furuno, Sperry Marine, Kelvin Hughes and others. Our market has gradually expanded on land as well, supplying easy and affordable communication to customers such as the local fire department and transport companies amongst others.

Currently we are also the only supplier of equipment from CLS and Faria Watchdog in Greenland, which are

the only VMS type approved systems in Greenland at the moment.

Some of our latest projects include installing and servicing V-sat systems from Orbit V-sat AL-7103 and Furuno radar 2x17 for M/tr Lomur, installation of complete bridge system for M/tr Natarnaq and M/tr Akamalik while docked in Vigo Spain and installation of Nera Satellite telephone system on M/tr Paamiut on site in Iceland.

We hope you will find our company of interest, matching your needs, and stand readily available to service you in the near future.

O.S. Electronic ApS

Aalisartut Akqutaat 3 / Fabriksvej 3 · Postboks 134 · 3900 Nuuk · Greenland
service@os.gl · info@os.gl · ib@os-electronic.gl · <http://www.os.gl>
Phone: +299 323536 · Mobile: +299 553553 · Fax: +299 322779

O.S. electronic Sisimiut

Kapornip Akq.30 · Postboks 1031 · 3911 Sisimiut
sisimiut@os.gl · Phone: +299 86 33 15 · Fax: +299 86 33 15

DNV Certifikat no: MNBGL260-001-2008 · DMA Autor. no: 200702317

We know how it's done

With decades of experience acquired from Arctic operations, Air Greenland is your reliable and dynamic partner for exploration. We belong in Greenland, we know all about Greenland, and we will give your exploration a lift. To us, it is routine to work in remote regions with a sketchy infrastructure and a challenging climate.

You just have to ask.



Air Greenland Charter
P.O. Box 1012
3900 Nuuk, Greenland
email: GLCharter@airgreenland.gl
Phone: +299 343434
Fax: +299 320898

air greenland



Marmorilik mine's entrance: abandon all fear ye who enter here.

EMJ

Angel Mining's stairway to heaven

Lead and zinc miner chose alternative route to avoid using unnecessary resources on transport

Ask Nick Hall about mining in Greenland and his answer is both humorous and serious: "It requires extra demands," Hall, the managing director the UK-based Black Angel Mining, said with a smile on his face in a tightly packed auditorium during the Joining Forces mining conference in Nuuk.

Black Angel Mining works partly in the Nalunaq gold mine and partly with lead and zinc extraction at Maarmorilik at the base of the Qaumarujuk Fjord in the Uummannaq region on the central coast of western Greenland.

The company's gold production is underway, and Black Angel hopes to begin its lead and zinc production in the second half of 2013. The goal is to reach 30,000 tonnes of zinc and 8,000 tonnes of lead annually. In order to achieve this, the com-

pany has been forced to adopt alternative means.

Hall showed photos of the mine, which is located in the middle of a vertical sheet of bedrock. To avoid wasting resources on transportation, Black Angel Mining has contracted the construction company EMJ to build a cable car that will run between the bedrock and the camp. The cable car is expected to be ready in October and will include a heliport on top. But a hurdle still remains at the bedrock: the road down to the mineshaft still needs to be built.

Angel's solution is the aptly named "stairway to heaven": a 100-meter-long, zigzagging staircase that is enough to cure the worst fear of heights for anyone who dares ascend it.

"We've built a staircase with planks from the wooden boxes the cable car was shipped in, so you could say it's eco-friendly," Hall said with a grin.

By Mads Nyvold, journalist Sermitsiaq

Arctic oil is a pension

Denmark's largest energy company has a long-term strategy for Greenland

Whether it was Scotland, Canada, Norway, the Netherlands, Korea, or even Greenland itself, oil hunters from all over the world were present in Greenland's capital for the resource conference Joining Forces. But the country with the closest bond to Greenland was conspicuous by its absence. Denmark was only represented by Maersk Oil and the head of its newly opened office in Nuuk, John Spelling. He had recently taken on the role after leaving his job as head of the minerals depart-

ment at the Bureau of Minerals and Petroleum in January. Dong, Denmark's largest energy company, decided entirely against attending the conference, despite owning a licence to drill in Baffin Bay. While Dong could probably spend billions of kroner in an exploration phase, it has instead opted for a more long-term strategy about where it intends to harvest its efforts when the North Sea oil runs out. "It [the licence field in Greenland] is our pension," managing director Anders Eldrup told the Ritzau news bureau.

By Mads Nyvold, journalist Sermitsaq

Danish energy company Dong is hesitant to begin exploring in Greenland.



DONG

airgreenland.gl

We know where to look

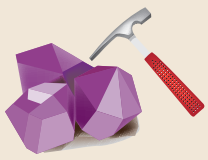
With more than 50 years of expertise, we aim to provide a high level of service and this means that every single job is specifically tailored to suit the customer's requirements. Our personnel are specially trained and our versatile and flexible fleet, consisting of 35 fixed-wing aircraft and helicopters, is ideal for tasks in the Arctic climate.

You just have to ask.



Air Greenland Charter
P.O. Box 1012
3900 Nuuk, Greenland
email: GLCharter@airgreenland.gl
Phone: +299 343434
Fax: +299 320898

air greenland 



Mineral memos

Support for aluminum smelter

The percentage of the Greenlandic population that supports construction of an aluminum smelter in Maniitsoq has risen in the past year, according to a HS Analyse/Greenland Development poll.

The poll is a repeat of similar studies

that have been conducted each of the last four years. Support for the project was high in 2007-09 before falling to nearly half of the population last year. The most recent poll showed that 65 percent of those surveyed would support construction of an aluminum smelter,

whereas support the year before was 53 percent.

HS Analyse surveyed a representative sample of the population by conducting over 1,000 telephone interviews.



Gov't relaxes mining regulations

The government will allow the Australia-based mining company Greenland Minerals and Energy (GME) to explore for uranium and other minerals containing

Potentially radioactive substances "above general background radiation level" at Kvanefjeld, which may be one of the largest multi-element deposits in the world.

According to Berthelsen, "the exploration permit made clear that Greenland Minerals and Energy has no right to be granted a licence to exploit radioactive elements."

The relaxing of regulations does not violate Greenland's long-standing zero-tolerance policy toward radioactive elements but Berthelsen said the move assesses whether the policy should be maintained or changed.



No to special arrangements

Greenland is courted because of a massive quantity of rare earths present in the mountains. The metals can be used in wind turbines and mobile phones.

Both China, U.S. and EU are interested in entering into agreements with Greenland in the area according to the minister for industry and mineral resources in Greenland, Ove Karl Berthelsen, But the greenlandic government will like to cooperate openly in this area, and thus will not bind to any particular partner.

"We are very honored because of the attention. But we will not tie us to anyone in advance, thus risking to cheat ourselves. This is a product, like everyone else and it can be bought if the price is right. And the process is best done in a transparent manner, highlights Ove Karl Berthelsen.

"The process takes place today under the provisions of the Mineral Resources Act, where everyone has the opportunity to apply. And those rules should continue", he points out.

On the other hand Ove Karl Berthelsen emphasizes a closer scientific cooperation between China and Greenland.

"We are very interested in gaining more knowledge about how, for example, drift ice may affect the offshore industry, and how the marine environment is affected by oil activities. It is in this context, I imagine a closer collaboration on scientific studies between Greenland and China," says the politician.

Ties with China

The minister for industry and mineral resources in Greenland, Ove Karl Berthelsen, has held meetings in China with Wang Min, vice land and resources minister, and held meetings with other Chinese authorities who are interested in the Arctic region.

"First and foremost, we wanted to establish outlets for possible future mining projects, such as iron from Isukasia, zinc and lead from the Citronenfjord and rare earths, on the enormous Chinese market," said Berthelsen.

"With such large-scale projects we can definitely use Chinese labor in the construction phase. That's why it's important for Greenland to make a connection with the Chinese government. We were in China to plant the seeds for future projects, and our trip surpassed all expectations."

In Beijing, Berthelsen met with the vice premier, Li Keqiang – another sign that the Chinese taking these trade opportunities seriously.



LEIFF JOSEFSEN



LEIFF JOSEFSEN

Mineral expert publishes new book

A new edition of Bjarne Ljungdahl's mineral guide for the Ivittuut cryolite quarry as well as the area around Kangilinnugit is now published.

The first edition of Ljungdahl's guide was published in 2004 and encompassed only 48 pages. But this bound edition is 146 pages long, considerably more thorough, and includes a wealth of new information about this dynamic region that has attracted miners for 140 years.

The new book will make it possible to identify nearly all rocks in the region.

Ljungdahl was chairman of the Greenland Stone Club and he initiated the creation of the Ivittuut Mining and Mineral Museum.



AVANNA RESOURCES

Mining companies line up to drill

Five mining companies are hammering stakes into the ground, setting up their base camps and preparing to begin production in Greenland by 2012. Those companies are hoping to get the go-ahead for either a construction phase or an exploration.

One of them is the Canadian firm True North Gems, which is hoping by the end of 2012 to begin a small-scale ruby mining operation in the license area southwest of Qeqertarsuaat.

True North Gems expects to hire approximately 50 employees. About 20 jobs will be created in Nuuk where a processing and sorting facility will open.



H.J.HANSEN RECYCLING INDUSTRY

RECYCLING IS REMINING

WE COLLECT, PROCESS AND TRADE SCRAP WITH A SUSTAINABLE FOCUS

H.J.Hansen is your partner in recycling – we help you in matters of environmentally friendly handling of ferrous and non-ferrous scrap. We also provide qualified environmental guidance, documentation and correct disposal of residual products.

- | Ferrous scrap
- | Non-ferrous scrap
- | Electronic waste

With a safe and reliable container and delivery service, we ensure the right solution for your business. Contact us for further information.



H.J.HANSEN

H.J.Hansen Recycling Industry Ltd. A/S | Vulkanvej 13 | 9220 Aalborg Ø | Phone: +45 96 32 12 12 | fh@hjhanesen.dk | www.hjhanesen.dk



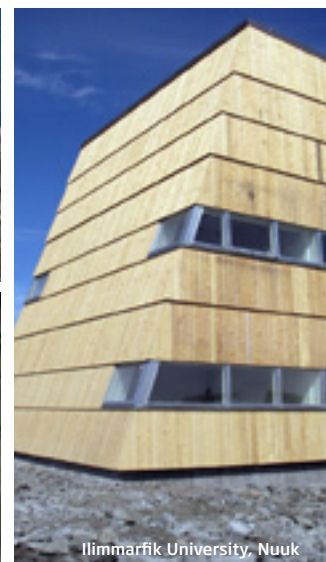
Tasiilaq Hydro Power Plant



Paamiut Airport



Ilulissat Hydro Electric Power Plant



Ilmarfik University, Nuuk

WE KNOW THE ARCTIC

www.pihl-as.com

Building and civil engineering works in the Arctic requires a great deal of experience, knowledge and know-how.

Pihl is among the Top 225 International Contractors carrying out building and civil engineering works worldwide.

We have built a large number of hydro-electric power plants, runways, harbors, public buildings and housing in the North Atlantic area since the 1950s. Our services are based on a wide experience within the design, planning and execution of many different types of projects.

pihl
The Joy of Creating



THE POWER TO EXCEL IN COLD CLIMATES

Energy, transportation and mining activities in the Arctic involves considerable operation and environmental challenges. And with the world watching, there is zero tolerance for mishaps.

DNV has more than a century of experience in marine and offshore operations in the Arctic and nearly 30 years as the only classification society present in Greenland. In addition, we have experience within the mining sector. Through a wide range of services, we can help you operate responsibly with confidence.

Ship & offshore classification • Risk management • Damage inspection • Tonnage measurement • Inspection & verification • Consultancy • Certification of management systems • Mining certification

The hunt for oil and natural gas in Baffin Bay has been launched and Maersk Oil from Denmark is taking part.



Oil companies head north

Seven oil companies will again this summer work together to conduct preliminary studies in Baffin Bay

Baffin Bay will again this summer be the site of studies to determine where the seven oil companies granted licenses off the coast of Upernavik in 2010 aim their drills.

After last year's seismic studies were carried out, this year will see the seven companies conduct shallow coring – drills to determine the makeup of the seabed before any wells are drilled.

No timeline has been set, but the companies involved said they would also use this summer's drilling season to carry out their own feasibility studies.

The licenses were awarded to Conoco Phillips, Shell, Statoil, GDF Sues, Cairn Energy, Maersk, DONG and Nunaoil on Dec. 2, 2010, and cover an area of nearly 71,000 square km off Greenland's west coast.

Bidding for 14 blocks

A total of 14 blocks were opened up for bidding at that time, but the most intense interest focused on a handful on the eastern edge of the licensing area. Some 17 applications from 12 companies competing for the right to drill in the seven blocks.

The reason, according to Hans Kristian Olsen, the head of Greenland's nationally owned Nunaoil, is that it is believed

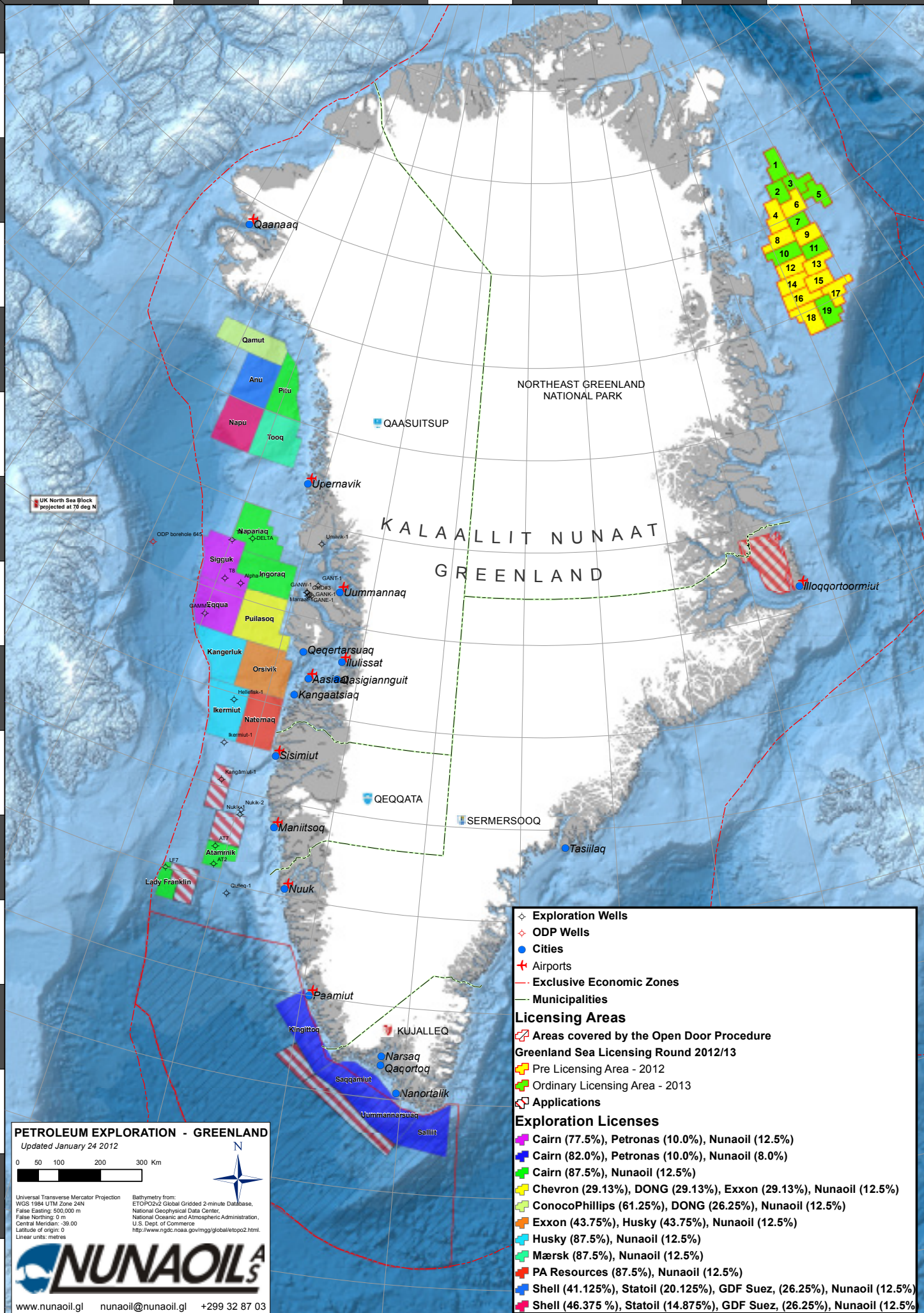
that the likelihood of making a find is believed to be greatest in the eastern-most blocks.

The most promising

Cairn and Statoil, which control the most promising of the blocks, have announced they will use this year to review seismic data obtained last year.

The two companies must conduct their first drill during phase two of the ten-year license period, and said the results of this summer's study would determine whether they would do so before phase one ended in 2014.

By Kurt Kristensen, journalist Sermitsiaq





Oildrops – notes about the hunt for hydrocarbon

Free licenses a costly investment

Last year Greenland's government turned down two applications by Arctic Energy and Minerals Ltd. to explore and use oil and natural gas in large offshore areas near southwest Greenland.

The Oxford, England-based company's

application was refused because it didn't satisfy operation demands. Arctic Energy lacked technical expertise, economic prowess and experience with safety, health and the environment in the Arctic.

Arctic Energy's experience is just the latest example of an oil company finding

that landing a free license in Greenland can be costly. Companies are required to undertake a comprehensive exploration program that costs billions of kroner during the first 10-year period.

Cairn failure doesn't dissuade Statoil

The Norwegian state-owned oil company Statoil will continue to search for oil off the coast of Greenland despite Cairn's failure the last two years.

Statoil CEO Helge Lund told Bloomb-

erg News that the company will continue to use its existing exploration permits in Greenland. Statoil will even consider bidding on new fields at the end of 2012.

"As we get to know the Arctic better and develop better drilling techniques,

we'll also be better suited to explore the region. We are still preparing drills off the coast of Greenland, and we'll learn as much as we can from Cairn's experiences over the past two years," said Lund.



Contingency plan causes silence

The environmental organization Avataq in Greenland and Inuit Circumpolar Council (ICC) have yet to take a position on Cairn Energy's oil spill contingency plan.

The two organizations had otherwise criticized Greenland's government for months for keeping the plan secret.

When the plan was published in August last year, Avataq and the ICC reported that they would mull over its content and then issue comments. But that hasn't happened yet.

Greenpeace, who was also highly critical of the move to keep the plan secret, in an analysis finds, that the emergency preparedness plan lacked important details and was in general overly optimistic.

Greenpeace criticized Cairn for using five degrees as the average surface seawater temperature, even though that is the maximum temperature according to the emergency preparedness plan.

In the event of a spill, Cairn Energy would use a chemical solvent to dissolve large amounts of oil near the coastline, but Greenpeace pointed out that American scientists have reservations about that method since it breaks up the spill into smaller components. Greenpeace also questioned Cairn Energy's plan to transport ice contaminated with oil to a heated warehouse where the company would seek to recover the oil.

Suspects oil in Greenland Sea

Just 550 kilometers northeast of Iceland and 500 kilometers east of Greenland, Norway suspects there may be oil. Samples taken from the ocean floor near Jan Mayen Island show surprising material results, according to Sissel Eriksen, head of exploration for the Norwegian Petroleum Directorate.

The samples, up to 260 million years old, were created when the Norwegian Sea and the Greenland Sea were formed.

"That means we have stones that could contain materials that form oil and gas. So we've met two important prerequisites for potential oil deposits," Eriksen said to TU.no.

The same type of rock that has been found near Jan Mayen is also found near Greenland.



30% of the planet's undiscovered reserves

With current oil reserves coping with increased pressure from emerging markets in China and India, the Arctic and its seas are seen as being of crucial importance.

US oil giant Exxon Mobil, which in August signed a multi-billion dollar deal with Rosneft to explore the Russian Arctic, described the area as »among the most promising and least explored regions for oil«.

Experts have known the region

is rich in oil and gas reserves, but it didn't realise how much potential until 2009. In new findings that year, the US Geological Survey estimated the Arctic may be home to 30% of the planet's undiscovered natural gas reserves and 13% of its undiscovered oil.



Oil giants were duped

Company representatives from Shell, BP, ConocoPhillips, Statoil and NunaOil came to Copenhagen in Denmark at the end of 2011. The Greenland Bureau of Mineral and Petroleum had invited them for a meeting about a new licensing round for the Kanumas area off the coast of Northeast Greenland scheduled to take place in 2012 and 2013.

When the representatives arrived to the site of the meeting, Greenpeace activists greeted them with a red carpet drenched in oil, hand-banners, and a huge floating banner that read "Protect the Arctic: No License to Drill". Inside the building the representatives were welcomed and informed, that the meeting was unfortunately moved to another floor due to the annoying Greenpeace activists. Here they politely listened to a presentation about the risks of drilling in the arctic. But this presentation was actually a pr-stunt set up by Greenpeace

"After half an hour, they didn't have a clue about what was going on", tells Jon Burgwald a Polar campaigner for Greenpeace Nordic.

After the last slide the environmental organisation informed about their false identity. The representatives hereafter left the room and found their way to the correct meeting, which then began.

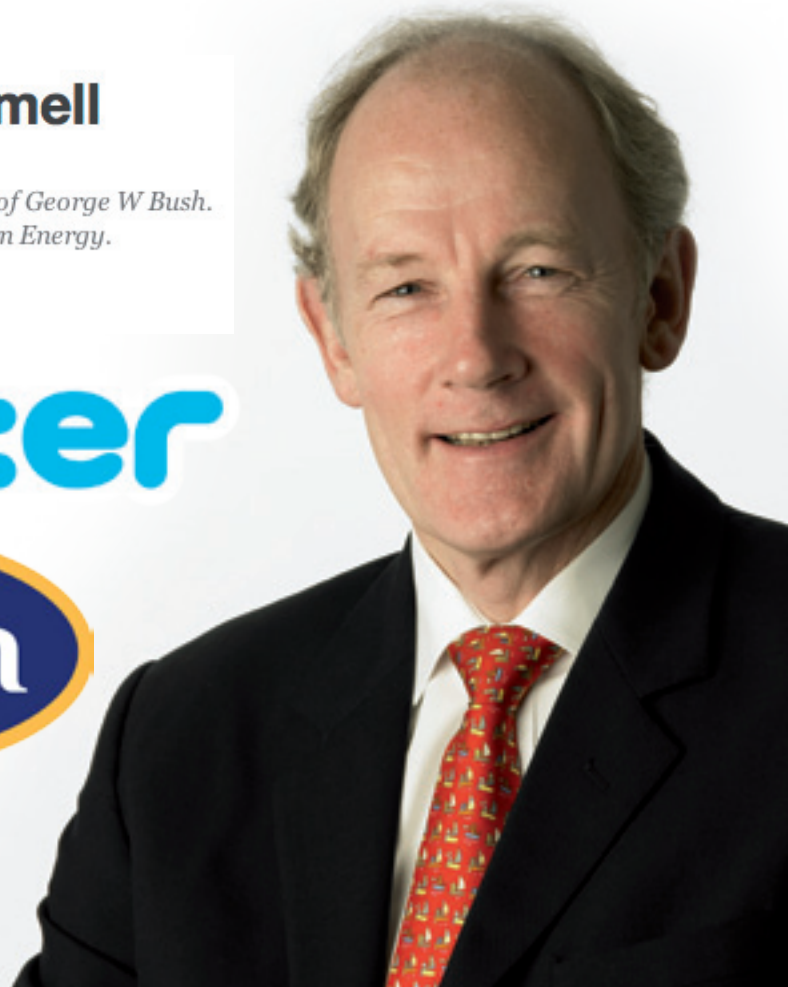


Bill Gamble Gammell

@CairnGlobalPR The Arctic

School pal of Tony Blair and old chum of George W Bush.
Oil hunter. Arctic Cowboy. CEO of Cairn Energy.
<http://facebook.com/bill.gammell>

twitter



Oil exec ridiculed on internet

Journalists were fooled by fake internet profile of Cairn's Bill Gammell

Bill Gammell is chatting away on the popular social networking sites, Twitter and Facebook.

The posts deal with his private life and role as top boss for Cairn, the Scottish oil company which owns the majority of oil exploration licenses in Greenlandic waters.

"School pal of Tony Blair and old chum of George W Bush. Oil hunter. Arctic Cowboy," is how he introduces himself on his Twitter profile, which is adorned with Cairn's logos and photos of oil rigs.

"Marxist hippies who hung off my arctic rig are getting taste of justice this afternoon. Penal servitude, your honour!" he announced on September 16, referring to a group of Greenpeace demonstrators that had been arrested.

A similarly irreverent tone is present in some of his other tweets.

"Boycotting The Sun. Spat my porridge out earlier when I read it describe Cairn

as the »one-time stock market darling".

"Cairn shares down 9%! This has totally screwed my backswing. Putting's gone to pot too. Sod it. I'm off to the 19th hole. Garcon, un whisky«

Defending the spoofs

While impersonating another person on the internet might be illegal, Cairn has decided not to ask Twitter or Facebook to close the fake profiles.

"We are checking both sites regularly. But we also recognise the need to protect free expression and we have to accept that social media is naturally satirical and can distort the truth," Cairn communication department explains.

Over 200 people follow Gammell's fake Twitter profile. The majority are journalists including the oil editor for the world's largest news agency, Thomson Reuters.

The British arm of Greenpeace is responsible for setting up Gammell's fake profiles, but as far as Sermitsiaq can tell, this information is not displayed anywhere.

"As long as it is obvious, as it is in this

case, that the profile is a spoof, I see no problem with it," Jon Burgwald, from Greenpeace Nordic said.

Abandoning the fake profile

Journalist and editor Erik Holm follows Gammell's Twitter profile and does not agree with Greenpeace's position.

"I saw Bill Gammell's harsh statements last September and didn't really think about it again. I didn't realise until now that the profile was fake," Holm said.

Holm works for the Danish trade journal Engineering Weekly, one of the media organisations outside of Greenland which actively covers the ongoing oil hunt in its waters.

"I'm completely new to Twitter and subscribe to keep track of Cairn Energy and its work in Greenland but I didn't check Gammell's profile. I'm going to stop following it, that's for sure," Holm added.

By Mads Nyvold, journalist Sermitsiaq



cutting through complexity

Doing business in Greenland?

From our office in Greenland, KPMG offers you locally-based advisory services and access to our extensive international network. We can provide you with a broad perspective in a complex world of changing legislation, and help you identify the prime challenges and key opportunities for your business.

Our advisory services in Greenland include:

- Auditing, accounting and bookkeeping
- Tax advice with specialist knowledge of the oil, gas and mining industries
- Advisory services regarding management consulting, corporate finance, secondment, relocation of employees, etc.

For more information, please visit us at kpmg.gl



In 2010 the mining industry invested around 3 billion kroner in Greenland. Last year those investments approached 4 billion, according to the Bureau of Minerals and Petroleum. On picture Ole Ramlau Hansen from Greenland Minerals and Energy and Flemming Knudsen from Hudson Resources.



LEIFF JOSEFSEN

Logistics and lack of beds, biggest challenges, miners say

Large mining companies address challenges they'll face working in Greenland

Foreign mining companies have built runways, lifted tonnes of drill samples out of the ground and analysed kilometres worth of sediments. And if their projects become reality, the world's largest island will change forever.

The most prominent and active mining companies knocking on Greenland's door are London Mining, Hudson Resources, Avannaa Resources, Angel Mining, Greenland Minerals and Energy, Ironbark Zinc, Nunaminerals, Rimball (Tanbreez) and True North Gems.

At the Joining Forces mining conference in Nuuk, they sat together to discuss their experiences searching Greenland's underground for riches. Among their concerns was the Greenland capital's hotel capacity.

"Right now there are only 200 of us at the conference and everything is booked solid," said Xiaogang Hu, managing director of London Mining, which expects to mine for iron at Isua and extract 10 million tonnes of iron ore over 21 years beginning in 2015. "During the con-

struction phase we'll have 2,000 people here. This is an entirely new scale for Nuuk. The city needs many more restaurants and hotels in order to facilitate the mining industry."

Airline strike affects gold potential

Nicolas Hall, the head of UK-based Angel Mining, which operates the Nalunaq gold mine, emphasised that the company lacks trained manpower and had to endure a harsh winter. The company was also plagued by an Air Greenland strike. These disruptions meant that Angel Mining wasn't able to produce gold until May – three months later than expected.

"A small problem in Greenland can take a long time to fix," Hall pointed out. "We're constantly looking for suppliers who can improvise and make us more competitive." For Jonathan Downes, managing director of Australia-based Ironbark Zinc, which is exploring for lead and zinc in the Citronenfjord in northeast Greenland, logistics was the most pressing challenge.

"Everything has to be flown in, and we work in a small window of only eight months," said Downes.

Downes' next point – the cultural

differences between a socialist government and the capitalist world in mining and finances – had the other executives chuckling.

"The mining world is a global one," he said. "It moves to wherever profits are the greatest. We currently don't have an operation here. The challenge is to tell investors that they can make more money from us than they can from other investments elsewhere in the world, even though expenses and salaries are generally higher in Greenland."

Criticising prices

Nick Rose, of Copenhagen-based Avannaa Resources, which is looking for gold, diamonds and rare earths, complained about the prices of local subcontractors, especially when the company accepted bids for the jobs.

"We have noticed that there aren't enough Greenlandic companies," said Rose. "We would otherwise like to hire them, but it should be on competitive terms."

Hall, from Angel Mining, agreed.

"There isn't much competition. Pricing in Greenland is generally higher than what we would pay in a competitive market. The price level will eventually

change, but we have to work to speed up that timeframe because we are active all over the world."

Tired of whining

At that point, geologist Greg Barnes, offered his views on price levels.

"Quite frankly, people like us will always say that prices are too high, regardless of where in the world we are working," said Barnes, the owner of Australia-based mining company Rimball, which has exploration licenses for the Kringlerne between Qaqortoq and Narsaq together with a Greenlandic subsidiary.

"We have to go elsewhere if the price of mining here is too high. We're free to do that, but we're already here."

During the conference, many mining companies complained about problems attracting and retaining local workers.

Ole Ramlau-Hansen, head of Greenland Minerals and Energy, emphasised that it was important to bear in mind that maintaining a local workforce often requires having local supervisors.

"It costs money to train those managers, but it costs money to make money," Ramlau-Hansen added. "Based on my years of experience in Greenland, I can say that this rule definitely applies here."

Ability to improvise

Hu, of London Mining, said: "Greenland needs to prepare its people for the future, ensure transparency and a willingness to harness its strengths."

Barnes, of Rimball, disagreed with that assessment: "As far as I can tell, it's the other way around. Mining companies have to get used to the Greenlandic mentality," said Barnes, who announced that he was very tired of listening to grumbling over the holes in Greenland's workforce."

"I have seen many companies come here and shut down after two years because they don't understand the philosophy. That lack of understanding of Greenland is enormous. People talk only about Eskimos and polar bears."

"During my 20 years here I've repeatedly been surprised by their ability to improvise and by what they can fix. They could probably fix an atomic bomb if they were asked to. What's most important is that they were born and raised here. They know how we should deal with storms, Foehn winds and all those challenges."

By Mads Nyvold, journalist Sermitsiaq

Avannaa Resources wants more Greenlandic companies bidding on assignments on more competitive terms.



AVANNAA RESOURCES



Oil, gas, minerals and other business opportunities.

Greenland has it all.

Including a law firm that knows what you need and how to deal with it.

Nuna Law Firm is the leading law firm in Greenland. We have had our offices in Nuuk for more than 40 years and possess an extensive experience within all the special conditions in Greenland.

NUNA

ADVOKATER
NUNA EQQARTUUSISSUSERISUT
NUNA LAW FIRM

Qullilerfik 2, 6. sal. 3900 Nuuk • Tel. (+299) 32 13 70 • email@nuna-law.gl • www.nuna-law.gl



Exploring Greenland?

We specialize in managerial, organizational and strategic development.

We develop and train team leaders and professionals in

- Leadership
- Communication skills
- Social and cultural interaction.

We have extensive experience in planning and facilitating

- Conferences
- Seminars
- Workshops and events.

With 20 years of hands on experience in the exploration industry, we have the network and the insider knowledge to assist companies in navigating within the cultural, social, economic and political complexities associated with developing and operating projects.



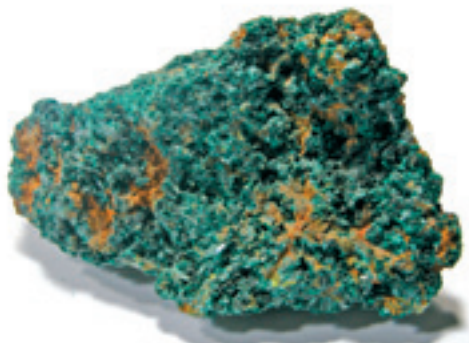
www.kompetencekompagniet.gl

Phone: +299 383838

E-mail: info@komkom.gl

Insurance Greenland - more than 30 years of experience in Greenland

**Do you need
marine, mining or other
on-shore insurances?**



Call:

Illit Forsikringit Agentur A/S

Postboks 1129 • 3900 Nuuk

+299 32 54 55

illit@illit.gl • www.illitforsikringit.gl



Your local expert

- full consultancy services
to the oil and minerals
industry

We are an international but locally based consultancy with offices in Nuuk. With more than 10 years of Greenlandic experience, we provide consultancy services within:

- Applications and permissions
- Environmental engineering and EIA
- Design and planning of buildings and infrastructure

If you need a professional consultancy with wide expert knowledge as well as local knowledge

- we are the obvious choice.



Orbicon Grønland
Jens Kreutzmannip Aqq. 14
Nuuk

www.orbicon.gl
pmje@orbicon.gl



Local advisor with a world of expertise.

In Greenland, we have three offices, making us the largest accounting and advisory services firm there. We provide a wide range of audit and advisory services to all sectors and companies – both to existing and emerging businesses in Greenland and the North Atlantic area.

Please contact Claus Bech at +299 34 38 25 or cbech@deloitte.dk.

Member of Deloitte Touche Tohmatsu Limited

Deloitte.



Royal Arctic Line Greenland's national shipping line

From one end of the world to the other – Royal Arctic Line has ships and equipment designed for difficult and ice filled conditions.

We also offer:

- Own facilities, locations and personnel in 13 Greenlandic harbours
- Many years of experience with navigating and operating in Arctic waters
- Experience, knowledge and equipment when supplying areas without infrastructure

ROYAL  **ARCTIC**



Billions poured into Isukasia iron mine

London Mining prepares to launch Greenland's largest mining project

If all goes according to plan, 2012 will see the opening of a new iron mine at Isukasia, some 150 kilometres northeast of Nuuk. Behind the large-scale project is London Mining Ltd, which has been looking at the possibility of opening a mine since 2004. The project includes the development of an open pit mine, a reprocessing plant, a pipeline to transport processed iron ore to port, shipping facilities and all other necessary infrastructure.

The construction of an iron mine at Isukasia will also be an important signal for the rest of the mining industry, and the new activity could also trigger job

training programmes, according to the industry and mineral resources minister, Ove Karl Berthelsen.

"I think it's important that we show it's feasible to open a mine of this scale in Greenland," he said.

"I also think the project will have a spill-over effect that will make it easier for other projects to start up," Berthelsen added. "The London Mining facility will help create a demand for training and skilled workers, who would be able to work on other projects. It could be that the project encourages companies to employ an extra apprentice or to invest and expand their businesses because the project offers extra security in the form of more permanent orders."

Planning for the mine is far enough

along that the company is about to prepare an Environmental Impact Assessment and a Social Sustainability Assessment, as well as a final cost-benefit analysis.

30 years lifespan

The company expected to have the material completed in January, after which it was to be submitted as part of an application for use permit, which the Bureau of Minerals and Petroleum (BMP) expects to receive later this year. London Mining is counting on starting the planning phase in the second half of this year and start construction at the beginning of 2015. According to Jørn Skov Nielsen, the head of the BMP, the project's total lifespan is estimated at between 17 and

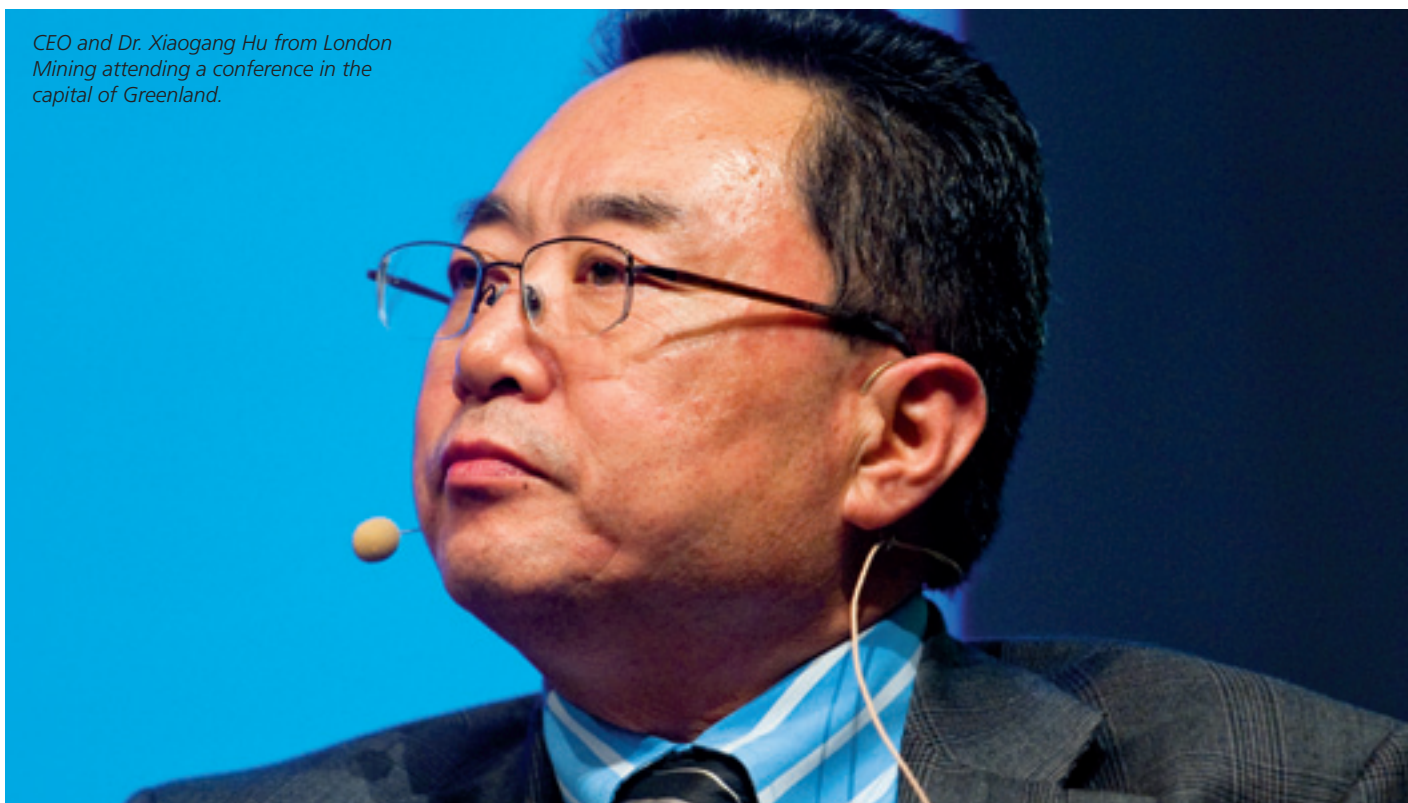


London Mining Ltd. has been studying iron ore deposits at Isukasia for seven years. This is the company's field camp.

LONDON MINING



CEO and Dr. Xiaogang Hu from London Mining attending a conference in the capital of Greenland.



LEIF JOSEFSEN

18 years. The planning phase is expected to last nearly three years, while the production phase is estimated at 15 years. But that could be extended considerably, depending on the results of on-going and future studies in the area.

The planned annual production rate is 15 million tonnes of iron ore concentrate, containing approximately 70 percent iron. The natural occurrence of the mineral is 34 percent iron.

Over the course of the 15 years, 490 million tonnes of iron ore is expected to be broken – equivalent to 166.6 million tonnes of iron.

However, it is known that the mine's iron ore reserves exceed one billion tons. And its lifespan is expected to be up to 30 years. London Mining intends to continue its current exploration activities during the construction and production phases in order to map the actual reserves.

London Mining expects to employ more than 1,500 during the planning phase and 700 throughout the mine's 15-year lifespan. Just like the Alcoa aluminium project further north in Maniitsoq, one of the outstanding questions is whether the workers will receive salaries equal to those received by Greenlandic workers.

Largest mine

The planning phase for the iron mining project is provisionally budgeted to cost 11 billion kroner and if implemented the mine will become the largest in Greenland to date, based on preliminary estimates.

As part of the preparation of the cost-effectiveness study, which is expected to be completed within the next few months, London Mining is working to reduce the estimated construction and operating costs further.

The company plans to transport iron ore in the form of slurry 100km from the mine to port using a pipeline. Once there, the water will be drained and processed in accordance with environmental regulations.

Production at the iron mine will be conducted first by crushing the broken iron ore in a nearby plant. A magnetic separation and a flotation process will then concentrate the ore. The concentrate will be shipped year-round for further processing abroad.

In addition to the mine, housing must also be built, as well as an airport in the area between the mine and the port, and the establishment of port facilities on the Qugsuk Fjord.

By Christian Schultz-Lorentzen, journalist AG

A public information meeting in the capital of Greenland about the ironmine-project.



LEIF JOSEFSEN

Opposition challenges gov't on Isukasia wages, royalties

Iron mine's annual payroll calculated at kr 300m, but MP wants to know how much Greenland will get back in taxes

Concern that Greenland will not be adequately compensated for its mineral wealth has led opposition leader Aleqa Hammond (Siumut) to call on the government to explain payroll and tax calculations for London Mining's planned iron mine at Isukasia.

"What size royalty does the government expect Greenland to receive from extracted minerals?" Hammond wrote in a press release.

According to figures published by the

newspaper AG, London Mining's annual payroll for workers at the Isukasia facility will add up to 300 million kroner.

Calling on parliament

Siumut is calling on parliament to convene for an extraordinary session to discuss the issue of royalties and mining.

"Companies have a major interest in Greenland's raw materials," the party wrote in a press release. "That's good, but it doesn't mean we should accept getting nothing in return."

The party said it was also dissatisfied that mining companies would not have to purchase carbon dioxide emissions quotas.

"Parliament," the party wrote in its press release, "needs to act to ensure that our laws protect our people."

Want royalties

During an extra session, Siumut legislators said they would seek to force the government to present changes to mining laws.

"We need to work together before time runs out and mining companies are given permission to mine, yet are obliged to pay nothing in royalties," the party wrote.

By Hanne Broberg, journalist Sermitsiaq.AG



Arctic Experience Combined

Roads, harbours, runways, camps and buildings. Even on the most remote sites, we make your infrastructure work.

Three of Greenland's most experienced contractors, MT Højgaard, EMJ-Atcon and Permagreen, have joined forces to deliver the best professional results in consultancy, equipment, civil engineering and construction of infrastructure for the oil and mining industry.

www.mth.com/mining

www.emj.gl

www.permagreen.gl



EMJ-ATCON
GREENLAND

 **MTHøjgaard**



gms
greenland mining services a/s

Your gateway to exploration-
and mining services in Greenland

Greenland Mining Services A/S (GMS) is a Greenlandic Contracting Company with offices in Nuuk, the capital of Greenland and Qaqortoq in South Greenland. The Company is specialized in the minerals industry and offers a wide range of professional services to domestic and foreign companies working in Greenland. The Company provides turn-key solutions as well as specific services within traditional contracting, construction, diamond drilling, rock blasting, marine operations, diving, camp solutions, catering, consulting, logistics and various other tasks. The Company's staff and workforce count almost 100 people, all with heavy experience in arctic operations and our specialty is to find solutions to difficult projects at isolated places with difficult logistics. Our fleet of major equipment includes a diving / tug boat, 3 landing crafts and 5 barges with up to 800 tons capacity, 50 pcs of contracting equipment including excavators, wheel loaders, drill rigs, trucks, dumpers etc. and we will always be able to make the right piece of equipment available to meet our customer's requirement.

For further information on our services please contact Mr. Arent Hellmann at:

Greenland Mining Services A/S
P.O. Box 821, 3900 Nuuk, Greenland
E-mail: info@gms.gl, Telephone: +299 327913, Facsimile: +299 327914, www.gms.gl



THE LOGISTICAL CHOICE

A strong partner for remote location operations

POLOG offers air, sea and land based solutions worldwide for projects and operations in challenging areas.

POLOG are consultative and executive remote location specialists with comprehensive experience, particular in the Polar Regions.



Your professional partner for remote area operations
WWW.POLOG.GL

Brøndum Grønland A/S

Large capacity within complex technical installations and operation

Brøndum Grønland A/S – established in 1982 – is today a modern well established company and among the leading technical contractors in Greenland. **Brøndum Grønland A/S** is established nationwide with departments in a number of larger cities on the West Coast of Greenland. **Brøndum Grønland A/S** realise approximately 80 mill DKK and employ 80 people.

Brøndum Grønland A/S offer all solutions within the area of plumbing, central heating, ventilation, sprinkler installations, sheet metal work, alternative energy, industrial installations, smiths work – black and stainless steel and service installations.

We wish to maintain a high service level in **Brøndum Grønland A/S**, and the positioning of our departments in Greenland proves this.

All departments are cable of performing any task within the company's scope.

References:

Nuuk Center, installation of plumbing, ventilation, cooling, sprinkler and district heating

District heating for housing in the SANA area, Nuuk

Interruptible electrical heating in Sisimiut

New powerplant in Maniitsoq, Greenland



Brøndum Grønland A/S
Postboks 72
3900 Nuuk
Vagn Frederiksen
Tlf/fax: 324146/324048
brondum@greenet.gl

Brøndum Grønland A/S
Postboks 149
3911 Sisimiut
Lars Løvendahl
Tlf/fax: 864717/864712
broendum@greenet.gl

Brøndum Grønland A/S
Postboks 660
3952 Ilulissat
Aalipaaraq Vetterlein
Tlf/fax: 942454
broendum.ilulissat@greenet.gl

Brøndum Grønland A/S
Postboks 199
3910 Kangerlussuaq
Lars Løvendahl
Tlf/fax 841055
broendum@greenet.gl



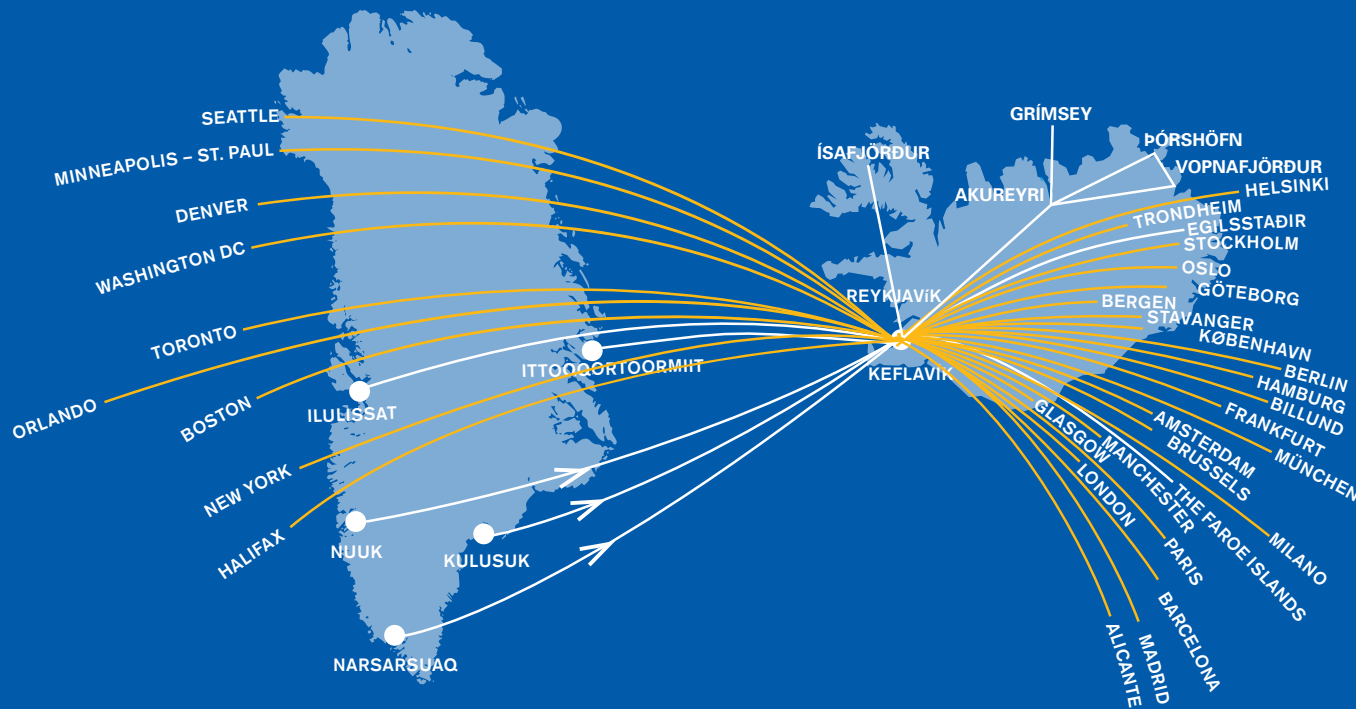
AIR ICELAND

www.airiceland.is

Bringing Greenland closer to the world!

Great connections from Europe and North-America via Iceland

Air Iceland flies directly to Nuuk, Narsarsuaq, Kulusuk, Ilulissat and Ittoqqortoormiit. We bring Greenland closer to every Icelandair destination: e.g. New York, Copenhagen or Paris.



Narsarsuaq

1.Jun.-18.Jun.

Tuesdays and Saturdays

19.Jun.-15.Sept.

Tuesdays, Thursdays
and Saturdays

2.Jul.-31.Aug.

Mondays and Fridays

Nuuk

Until June 6th

Mondays and Thursdays

7.Jun.-17.Sept.

Mondays, Wednesdays,
Thursdays and Fridays

18.Sept.-18.Oct.

Mondays and Thursdays

Ilulissat

31.May.-22.Sept.

Tuesdays, Thursdays
and Saturdays

1.Jul.-31.Aug.

Mondays, Wednesdays
and Fridays

Kulusuk

All year

Wednesdays
and Saturdays

2.Apr.-28.May

Mondays

4.Jun.-8.Sept.

Every day except Sundays

Ittoqqortoormiit

All year

Wednesdays
and Saturdays

Book your ticket online: airiceland.is



Mining companies get hand from rock hounds

Geologists can't turn over every stone, but are helped by eager amateurs

Geologist Ole Christiansen, the managing director of Greenland mineral exploration company NunaMinerals, can easily imagine that the annual amateur mineral hunt in Greenland, Ujarassiorit, could lead to a commercial find, and ultimately a mine.

"We'll follow the competition closely in order to assess how this year's findings compare with our own knowledge of those areas, or whether there are new discoveries that we should consider," said Christiansen.

Greenland is the world's largest island, but even though the number of exploration permits has set records in

recent years, it would be impossible for geologists to navigate all the fjords and mountains. The Ujarassiorit competition, which features amateur rock hounds, could lead to a breakthrough.

During last year's competition, 531 samples were gathered, and a committee of judges consisting of geologists from the Bureau of Minerals and Petroleum (BMP) and the Geological Survey of Denmark and Greenland (GEUS) sent the 126 most interesting samples to be analysed at the Actlabs laboratory in Nuuk.

Common knowledge

The winner of the last mineral hunt also won the competition four years ago with a sample that contained copper, nickel, cobalt, palladium and platinum. He found the sample in an area where

NunaMinerals previously enjoyed exploration rights. The company was also looking for copper, nickel and platinum, but gave up the rights because the deposits didn't appear large enough for commercial use.

Coupled with the company's findings, the Ujarassiorit mineral hunt could lead to better knowledge of the location and size of those deposits, which in turn could lead to a reassessment of the entire project.

"In any case, the annual Ujarassiorit winners can either substantiate the knowledge that my company already has or they can lead mining companies in new directions," said Christiansen.

By Kurt Kristensen, journalist Sermitsiaq

William Umerineq hunts narwhals and expensive stones.

Hunter spots winning stone

When William Umerineq isn't hunting narwhals, he's hunting minerals

William Umerineq is a hunter from the south-eastern coastal village of Kuummiut. An experienced rock hound, he won last year's Greenland-wide amateur geologists Ujarassiorit mineral hunt.

Umerineq made \$9,371 on a stone

that included graphite, granite and gneiss, with high gold values and iron sulphide, which he found in the Sermilik Fjord.

"I am a hunter with a 17-foot dinghy," said Umerineq. "When I'm out hunting narwhals with my older brother, and we don't see any any, we go back to the land and look for stones while we wait

for them to come."

Umerineq, 45, has six children. He'll spend the money on necessities and gifts for his family, but also for himself.

"I need new equipment for my boat, and I also need a new rifle," he said.

By Dorthe Olsen, journalist Sermitsiaq

Industry and Mineral Resources Minister Ove Karl Berthelsen admires the winning stones in this year's mineral hunt.



LEIFF JOSEFSEN



A STRONG PARTNER
FOR SHIP & CAMP SUPPLY - THE OIL & MINING INDUSTRY
IN THE NORTHERN ATLANTIC



Scan the code to read
more about our delivery
to Camp Citronen.



If approved by the government an aluminium smelter in Greenland will by far be the largest business project on land.

ALCOA

Minerals minister sells shares to eliminate possible conflict of interest

Ove Karl Berthelsen ends ties with shipping company that stands to gain from proposed aluminum smelter

If Alcoa's plans to build an aluminum smelter near Maniitsoq, things will be looking good for shipping company Kamma.

At a price tag of 22 billion kroner, the smelter is not only far and away the biggest investment currently planned for Greenland, it's also the largest private investment in all of the Kingdom of Denmark. And if it becomes a reality, the smelter is going to need shippers – like the Maniitsoq-based Kamma.

That business will be welcome news for the company's owners, which until recently included the industry and miner-

als minister, Ove Karl Berthelsen.

In december, Berthelsen announced he was selling his share of the company he bought in 2008 together with the town's former mayor, Søren Lyberth.

Involved in negotiations

As minister, however, Berthelsen is involved in negotiations with Alcoa about the smelter and said he was selling the share in order to avoid any potential conflicts of interest.

"I'm selling the share now because I don't want to be concerned that someone might be out there saying that I'm serving my own interests here," Berthelsen said. "I've decided that I just don't want to deal with that."

When he bought the share, Berthelsen was a local councilor, and in order to

avoid conflicts of interest at that time chose to invest in a company in a neighboring municipality.

Retained share

After being elected to parliament in 2009, he gave up his seat on the company's board, but retained his share. Criticism of Berthelsen's possible conflict of interest emerged last April. After initially dismissing those charges, Berthelsen last month told the media that he had made his decision given that the negotiations had nearly come to completion.

Parliament is due to vote later this year on whether the Self-rule Authority will lend its support to construction of the facility.

By Mads Nyvold, journalist Sermitsiaq

We were founded in 1967.
We are traded at OMX Copenhagen Stock Exchange.
We are present in five major Greenlandic cities.



Doing business in Greenland ?

The BANK of Greenland is the largest and oldest bank in Greenland. Our strong financial performances go years back. We have years of experience and great expertise in servicing Greenland's industry and commerce.

We offer highly competent financial advice – in our home-language as well as English. We have our ears on the ground in Greenland's business life – no matter geography or sector.

We have up front knowledge of the new business opportunities, including the industries of mining and raw materials.

We strive towards fast service and flexible solutions – at competitive prices.

Therefore, we are sure that we can help you in almost any banking matter, if you are interested in doing business in Greenland...

Call or write us for a non-committal talk.

Sincerely,
The Business Department

The BANK of Greenland
Tlf. +299 70 1234
www.banken.gl



Reliable partners in business projects
Large or small scale consortiums · Consultancy assignments
Construction · Catering · IT/Communication
Environmental Technology · Logistic · Transport · Energy · Crew
Anywhere!



Arctic Business Network – established in 2006 and represented in Greenland, Denmark and in Brussel. Business in the Arctic has developed rapidly since 1972, where members of the network had their first challenges. Counting various branches worldwide, the effective network today comprises more than 8.000 employees divided between 60 members.

-The first choice in Arctic business



Arctic Business Network · Secretariat **Greenland**
Aqqusinersuaq 8/901 · Postboks 317 · GL-3900 Nuuk

Tlf. +299 31 39 18 · gl@arcticbusinessnetwork.com
www.arcticbusinessnetwork.com



Arctic Business Network · Secretariat **Denmark**
Niels Jernes Vej 10 · DK-9220 Aalborg Øst

Tlf. +45 22 23 80 00 · dk@arcticbusinessnetwork.com
www.arcticbusinessnetwork.com

**Engaging the
Natural Resources
of Greenland**

- from vision to reality



New port approved for Nuuk

40 million kroner has been allocated to build a larger container facility for the capital

Building a new port in Nuuk has been at the top of the priority list for the Sermersooq municipal council since last year's municipal realignment. That wish will now become reality.

There is broad consensus that Nuuk's port is too small and there is too little storage space, which creates bottlenecks for freight traffic throughout western Greenland.

Nuuk port's problems make freight more expensive, not only for the city's residents but for the entire country. To solve that bottleneck, Sermersooq has allocated 40 million kroner for a new port.

Last spring the government appointed Transportation Commission also concluded that construction on a new and much larger container shipping facility in Nuuk should begin as soon as possible.

New joint venture

In addition to the local government, the national government, Royal Arctic Line and the Port of Aalborg, Denmark, have all agreed to create a jointly owned company

"We all agree that the port in Nuuk is too small," said Sermersooq Mayor Asii Chemnitz Narup. "Now we will do something about it. Establishing a company to operate the port is a brand new way to organize and run a port in Greenland."

"We need to accustom ourselves to

running a port from a commercial standpoint, like a company that can fend for itself economically."

Building a new port in Nuuk will also require new traffic infrastructure investments, since the road system to and from the facility needs to be expanded. The related infrastructure improvements are a job that is expected to be resolved jointly.

Sermersooq has called on the incoming port operator to establish a council in Nuuk so that stakeholders can follow its development and to serve as a point of contact for the community.

The port is scheduled to be operational in 2014, according to Sermersooq authorities.

Source: Sermitsiaq.AG



A new and bigger port has been on the wishlist for a long time for the companies involved in business in the capital of Greenland.

– your agent for all of Greenland



Royal Arctic Logistics provide solutions within port operations, forwarding and transportation

- Port agency
- Stevedoring
- Crew change
- Visa applications
- Accommodation
- Provision and Catering
- Service and supplies
- Air freight
- Sea freight
- Ware housing
- Customs documentation

Royal Arctic Logistics is based in Aalborg, Denmark, and located in the 13 largest ports in Greenland, with our Greenlandic main office in Nuuk



In certain places it's possible to see the zinc and iron ore.

IRONBARK



What else could you call the work camp than Citronen Camp?

IRONBARK

A treasure chest of zinc and lead

Ironbark Zinc Limited expects to hire 300 full-time workers for a mining project in northeastern Greenland

The gray, lunar landscape appears harsh and barren. But it's not worthless. Coveted riches are hiding in the Citronen Fjord, a tiny inhospitable arm of the 175-kilometer-long Frederick E. Hyde Fjord in the northern part of Peary Land in northeastern Greenland.

The region contains enormous amounts of zinc and lead, which Australia-based Ironbark Zinc Limited expects to begin extracting as early as 2013, as soon as the mining company satisfies the requirements of the Mining Act. The first loads of zinc and lead concentrate could be shipped out in the summer of 2014.

According to Jørn Skov Nielsen, the head of Greenland's Bureau of Minerals and Petroleum, Ironbark will need about 300 full-time employees to operate the mine. And if the company, as an-

nounced, operates on a schedule that has individuals working for six weeks and then on leave for three weeks, the mining camp would house approximately 250 at a given time.

At least 20 years

The zinc deposit at the Citronen Fjord lies, for the most part, underground. In some places it is possible to see the zinc and iron ore. Zinc deposits are followed by concentrations of lead, copper and cadmium.

Zinc and lead deposits at the Citronen Fjord were discovered in 1993, so relatively few years ago. In the next five years, approximately 34 kilometres of core samples were drilled, and it was estimated that the area contained more than 20 million tonnes of ore, including seven percent zinc and one percent lead. The project was discontinued in the late 1990s, however, but resumed later by Ironbark Zinc Limited.

As of today, 60 kilometres worth of

drill wells have been completed in the area, prompting geologists to significantly upgrade their earlier expectations for zinc and lead deposits. In April the deposits were estimated at 101.7 million tonnes of ore, containing 4.2 million tonnes of zinc and 0.6 million tonnes of lead, respectively. That number is not expected to fall, since test drills were also conducted as late as this year.

"It is difficult to predict the mine's lifespan," said Nielsen. "But with the current understanding of the deposit's size and knowledge of the applicable technology, the company expects the mine to have a lifespan of approximately 20 years."

The Citronen Fjord is far from the only region in distant northeastern Greenland that contains zinc and lead. The fjord is part of the Franklinian Basin, which is also known as the Arctic sediment basin. This geological formation covers an area, running east to west, that stretches over 2,500 kilometres from Canada's Arctic



Ironbark Zinc Limited's work camp in Citronen Fjord.

IRONBARK

islands, all the way to northern Greenland, where the Franklinian Basin runs for 1,000 kilometres and stretches to a maximum width of 200 kilometres. The formation shows numerous signs along its length of zinc and lead minerals.

The existing map of zinc and lead deposits in the Citronen Fjord includes three zones, which the company has named the Esrum Zone, the Beach Zone and the Discovery Zone. All the way to the west of the Discovery zone, rock formations of coloured rock known as gossans have been observed. The rocks are formed from sulfur bacteria, which when it comes in contact with oxygen, converts iron and sulphur into ochre and sulphuric acid.

Standard methods

Ironbark Zinc previously set targets of about three million tonnes of ore per year. That equals an annual production of approximately 300,000 tonnes of zinc and lead concentrate. If it succeeds in achieving these production goals, the mine is expected to be in business for well over 20 years. But the mine may remain active for even longer, if new

deposits are found in the area.

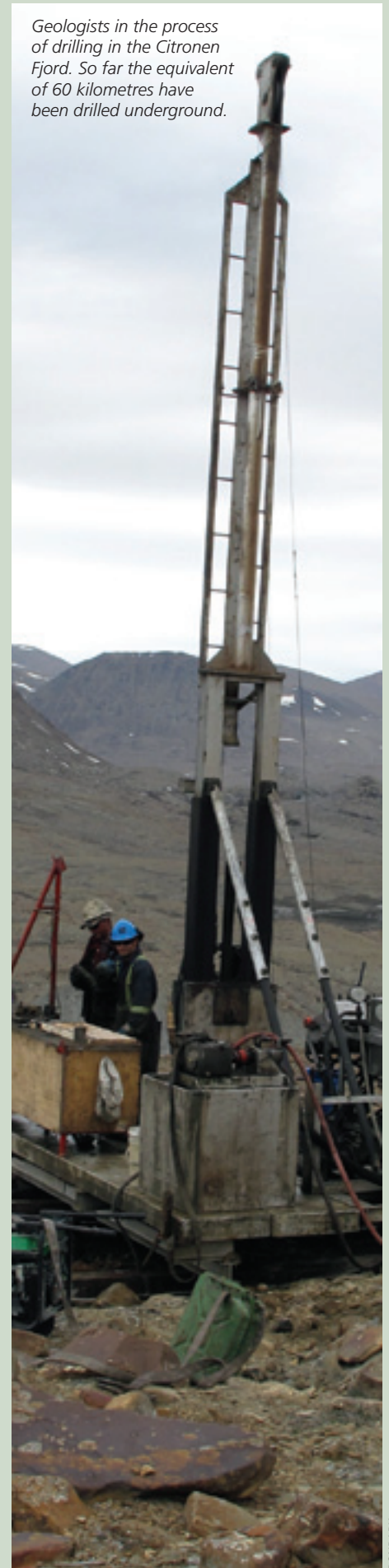
"The mining company has announced that it will use standard methods and techniques, as with other modern zinc and lead mines around the world," said Nielsen. "There's talk of a combination of an open mine and an underground mine because certain parts of the ore zone are close to the surface, while other parts are at depths of between 100 and 400 metres."

Following the mining work, the material will be crushed in a two-step process. The crushing will reduce the ore's size into particles measuring less than 38mm. The crushed material will then be further concentrated using a process known as dense media separation. The concentrated material will be filtered even further in a larger grinder.

The zinc and lead concentrate will be improved through a physical process that separates the concentrate from the overall material. The residual material will contain no zinc or lead.

By Christian Schultz-Lorentzen, journalist AG

Geologists in the process of drilling in the Citronen Fjord. So far the equivalent of 60 kilometres have been drilled underground.



IRONBARK

Den totale løsning

Vi udfører opgaver på hele Grønlands vestkyst

- Levering af mat. fra eget stenbrud
- Genvinding og miljøbehandling af jern og skrot
- Rådgivning og tilbudsgivning
- Jord og beton
- Sprængningsarbejde
- Tømrer, snedker og gulvbelægning
- Murearbejde

KONTAKT OS OG FÅ DEN TOTALE LØSNING
TLF: +299 86 52 10
MAIL: BJE@GREENNET.GL
HJEMMES: WWW.BJE.GL



Kangerlussuaq
afdeling
Postboks 9
3910 Kangerlussuaq

Pukuffik 18
Postboks 1870
3900 Nuuk

Taseq Amitsoq B-1187
Postboks 306
3911 Sisimiut

SEPMITSIAQ AG 12



Greenland 2012

We are offering our service in Greenland with a new very cost effective Bell 407GX helicopters which boosts more power for better performance. **Max: 6 passenger / 1200 kg's in sling operation.**

In most cases, prices are based on favorable contracts for larger projects. Projects carried out according to international regulations (JAR-OPS) for helicopter services.

Price criteria can change with regard to variations of projects.

Please contact us for further information and get a quote.



Bell 407GX model 2012 - www.helicoptergreenland.com
Helicopter Service of Iceland, Postboks 585, Solbakken 6, 3900 Nuuk
Contact: tel: +354 561 6100 fax: +354 561 6122 - helicopter@helicopter.is

STOP

Look no further
- LET US TAKE YOU THERE

Norlandair, based in Akureyri-Iceland, specializes in aviation service in the challenging Arctic environment of Greenland and Svalbard.



Twin Otters are perfect for operating in the most demanding of circumstances. They can be equipped with skis and larger size flotation tires. Other aircraft we provide: Beech Kingair 200, Dash 7/8, Fokker 50. Norlandair offers complete logistic services, please contact us for further information: Tel: + 354 414 6960 // frissi@norlandair.is // www.norlandair.is



See you at PDAC 2012!



Arctic engineers begin southern leg of studies

Technical University of Denmark welcomes Greenland students

Arctic engineering students began the final leg of their studies last week as they arrived at Denmark's premier engineering school – the Technical University of Denmark (DTU).

After three semesters in at the construction and engineering school in Sisimiut, the students will be in Copenhagen for two semesters, before wrapping up with a final internship.

According to Michael Faber, who heads the Arctic technology program at DTU, as well as the Sismiut program, the collaboration provides unique opportunities for both schools to tailor programs to student needs.

Source: sermitsiaq.ag/oil-and-minerals

Solutions for demanding environments

- Power Systems
- Control Systems
- Surveillance Systems



www.systemteknik.dk



Growth Knowledge Enthusiasm

To-do:

- ☒ Expand Sisimiut harbour in 2012 – 2013 to handle future capacity
- ☒ Intensify development of the aluminium project in Maniitsoq
- ☐ Build road from Sisimiut to the international airport in Kangerlussuaq
- ☒ Create a natural platform for business growth and development



QEQQATA
MUNICIPALITY



QEQQATA
BUSINESS COUNCIL



GREENLAND SCHOOL
OF MINERALS AND
PETROLEUM, PART OF
TECHNICAL COLLEGE
OF GREENLAND



www.qeqqata.gl

A drilling rig at work in Kringlerne.



TANBREEZ MINING GREENLAND

Tanbreez mine opening nears

A new rare earths mine could come on line in southern Greenland later this year

Australia-based Tanbreez Mining Greenland has spent years researching whether it is possible to extract rare earths from the rock formation Kringlerne between the settlements of Narsaq and Qaqortoq.

The project could take a big step forward in 2012, if Tanbreez submit an application to secure mining approval as planned. If it gets the green light, the mining company hopes to take the first steps toward building a mine by the end of this year.

The mine will hire 100, and according to the company, the amount of ore available could keep the mine in operation for many generations.

Besides the positions created by the

mine itself, it is also expected to indirectly employ people to service the facility and its employees.

Hans Kristian Schønswandt, Tanbreez's managing director, said the majority of the workforce is expected to be hired locally. Only a small portion with specialised skills will be brought in from outside.

Schønswandt previously headed Greenland's Bureau of Minerals and Petroleum and is an expert when it comes to the country's geology.

More mines

Besides the rare earths, the mine will produce zirconium and niobium. These elements occur in the same mineral, Eudialyte. In addition to a Eudialyte concentrate, the mine will produce a Feldspar concentrate. With a projected

production of half a million tonnes, the mine is expected to yield 100,000 tonnes of Eudialyte concentrate and 200,000 tonnes of Feldspar concentrate each year. Reserves in Kringlerne are expected to be in the neighbourhood of over four billion tonnes. As long as there are buyers the mine could be active for many years to come.

Rare earths are an important component in the strongest permanent magnets that are produced, according to Schønswandt. Such magnets are used in a variety of high-tech products, such as electric motors in hybrid cars, as well as in different forms of electronic equipment.

Rare earths are also used in rechargeable batteries and catalytic converters and by the oil industry to increase the efficiency of oil. And they are used in



Tanbreez Mining Greenland expects to be able to produce 100,000 tonnes of Eudialyte concentrate a year.



Hans Kristian Schönwandt, managing director of Tanbreez Mining Greenland: Mining in Kringlerne will take place as it would in a normal quarry.

LEIFF JOSEFSEN

optical lenses and computer screens.

Kringlerne isn't the only possible rare earth mine planned for southern Greenland. Greenland Minerals and Energy, another Australia-based company, plans to invest more than 12 billion kroner into an equivalent production at Kvanefjeldet in Narsaq.

Too much uranium

Kvanefjeldet currently has levels of uranium and thorium far greater than what are considered background values. Kvanefjeldet also has fluoride content that is very mobile.

According to Greenland Minerals and Energy, the company expects to handle any environmental and health problems that may arise in a responsible manner. But any plans to operate a mine there would require the legislature to eliminate its zero tolerance for extracting radioactive minerals.

As soon as Tanbreez Mining Greenland obtains the necessary extraction permit, the company plans to establish a mining and processing plant on the southern coast of the Kangerluarsuk Fjord.

Extraction there would occur as a normal quarry. Ore will be crushed, sieved

and then separated into a Eudialyte concentrate and a Feldspar concentrate with the help of a magnet separator.

Chemicals will not be used in connection with the production of concentrates.

Schönwandt currently has two important matters on his agenda: to complete the company's application to extract minerals in Kringlerne and to expand the circle of buyers for the mine's products.

He said it was still too early to discuss whether the company would issue shares if its application is approved.

By Christian Schultz-Lorentzen, journalist AG

The desert-like landscape that forms the surface of Kringlerne.



TANBREEZ MINING GREENLAND

sermitsiaq•AG

www.sermitsiaq.AG

GREENLAND

Visit our **Oil & Minerals**
website at:
<http://sermitsiaq.ag/oil-and-minerals>



Facts about the production in Kirkespirdalen 2011

Month	kilo	troy ounces
May	0,9	30
June	1,3	41
July	6,0	192
August	12,3	394
September	21,8	701
October	10,4	335
November	21,6	693
December	29,2	938
=====		
Total	103,4	3.323
=====		

On 27 May 2011 sine the Angel Mining takeover the first gold was cast.

POUL ERIK PEDERSEN

Angel looking to turn Greenland's gold into lead

Increasing profitability at the gold mine in Kirkespirdalen is crucial to miner's plans to reopen lead and zinc facility at Maarmorilik

The Nalunaq mine in southern Greenland's Kirkespirdalen began the year on a golden note: on Jan. 9, it cast its first gold ingots, weighing in at a total 517.8 troy oz. (16.1kg), record for the mine.

The bars are only 90 percent pure when they are shipped from Greenland to a lab in Switzerland, which removes the traces of silver, copper iron and other impurities. When the process is done, the gold is 99.99 percent pure and ready for the market.

While the bars aren't the first produced from Greenlandic gold, they are among the first produced in Greenland. Unlike Crew Mining, the first company to operate in Kirkespirdalen and which shipped gold ore abroad for refining, Angel Mining creates the ingots on site, in what it calls the world's only underground cyanide-based refinery.

Production increase

According to the company, placing the refinery in Greenland's bedrock helps keep the poisonous cyanide gas from harming the environment.

The gold that went into the January shipment was a record for Angel's mine in Greenland, according to Nicholas Hall, the company's managing director.

The mine is staffed by a crew of 75 at

any given time, but because crews work on a six weeks on-three weeks off schedule, it employs twice as many. About half come from Greenland, while most of the others come from Ireland or other countries that have seen their own mines close in recent years.

And while January's total was well below the mine's target of between 1,500 and 2,000 troy oz. a month, the Christmas holiday and a severe winter storm held production down, the company admits.

Production, according to Hall, however is on the increase, and the company expects to reach its goal within the next few months.

Larger project

Despite the growing success underground, London-listed Angel says it is disappointed its fortunes have rebounded only marginally after a slump that began in late 2010.

Share prices did tick up slightly in early January in connection with the shipment, but more importantly, Halls said, was that the mine had begun to earn money.

Earning money in Kirkespirdalen is important for Angel, not only for its bottom line, but also because any profits there will be used to fund the reopening of the Black Angel lead and zinc mine in Maarmorilik, on the central coast of western Greenland, an effort expected to cost \$80 million.

"Black Angel is going to be a much

larger project than the Nulunaq mine," Hall said.

Angel has also secured funding from Cyrus Capital Partners to restart the Black Angel Mine. Those plans had been on hiatus since 2008, when the global recession drove the price of lead and zinc to below the cost of extracting them.

Angel, at that time known as Angus and Ross, instead began looking elsewhere in Greenland for mining opportunities. In 2009, it took over Crew's operations in Kirkespirdalen for \$1.5 million.

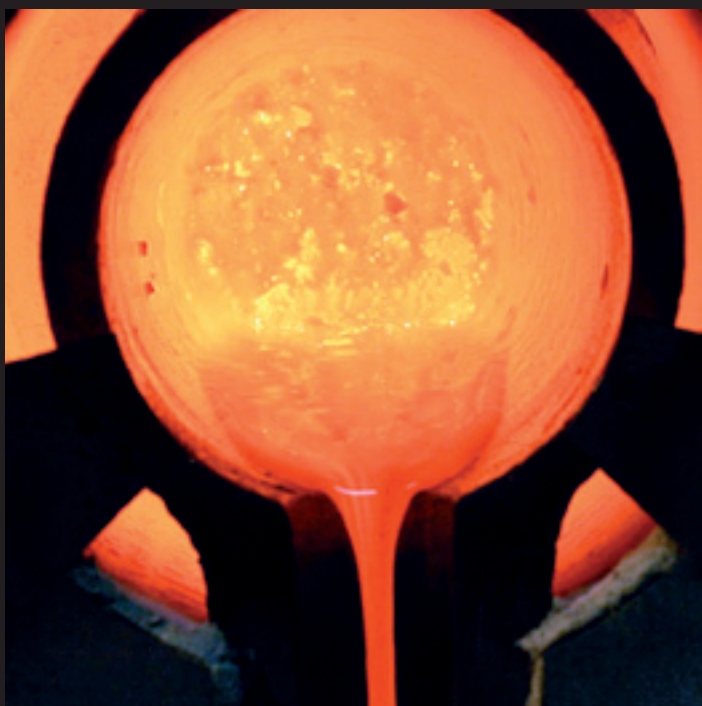
Refined on site

Between 2004 and 2008, Crew had mined 308,000 troy oz. of gold, but profitability remained elusive. The first problem was that gold in Kirkespirdalen is clumped in certain areas, rather than even distributed. And, for each metric ton of ore, the company was only able to extract 14 grams of gold. Making the mine even less profitable was Crew's practice of shipping ore abroad for refining.

Today, the gold is refined on site, and Hall hopes that other gold miners in southern Greenland, such as Greenland's Nunaminerals, will do business with Angel's facility.

In 2009, Angus and Ross changed its name to Angel Mining to reflect its faith in the mine at Maarmorilik.

By Kurt Kristensen, journalist Sermitsiaq



ANGEL MINING

The gold is cast in Kirkespirdalen and sent on to Switzerland for its final refining.

Potential gold miners seeking greener pastures

Angel Mining resorts to different strategy to build local expertise

For thousands of years, gold has attracted humans like no other material, but in Kirkespirdalen, near Nanortalik, in extreme southern Greenland, that attraction has faded for some.

The hunt for gold in the Nalunaq mine hasn't caught on with local young people who were seen as its potential workforce. All too often, they think that 'the grass is greener on the other side'.

That dilemma has forced Angel Mining managing director Nicolas Hall to reconsider his views on how the company should attract and retain new employees. He was previously convinced that it would be rewarding to let young people experience all aspects of the work as a way to build their appetite for mining.

"In many cases it has had the opposite effect of attracting untrained people early in their careers," Hall told the Joining Forces raw materials conference in Nuuk. "They get overwhelmed or scared away. There are too many challenges, and their experiences or goals are perhaps met too quickly."

Angel Mining reopened the Nalunaq mine in 2011 and created its first 930 gram ingot on May 17 last year. The

mine employs 80 workers, 45 of whom are Greenlanders.

"Young people are attracted by a stable industry that feeds their desire to become engineers or train for a metallurgy job," said Hall. "That's when we should try to get them."

Sexy industry

Greenland-based NunaMinerals, which is partly owned by Greenland's self-rule authority, has had the opposite experience. More young people were in the field during the last exploration season to search for rare earth elements.

"One of them wanted to study psychology following the summer vacation," said Dan Baang, the company's finance director, said. "Now he's determined to study geology."

Baang doesn't hide that, from his perspective, the shift in academic focus is good, because the industry suffers from a lack of local geologists.

"We need the mining industry to become more sexy, and we need to change the attitude of young people," said Baang. "The problem is actually a global one, but it hurts us more when Greenland's educational system follows the cue of the educational system in Denmark, a country with no mining experience."

Hurry up and dig

Angel Mining's Hall also highlighted the major challenges ahead to dedicate people to a different type of work and lifestyle.

He pointed out that miners typically work in intervals. They are underground for three to six weeks and then home with their families.

"When we're off, there's a tendency for some to work hard every single day, even though we recommend resting at least one day a week," Hall explained. "Then they work themselves to death. The next time they go on leave, problems suddenly arise with a girlfriend or sleep deprivation at home."

Because of this the company has had to go out and hire new workers and spend more money on training. The process is more costly than it appears on the surface.

"Our mining captain has worked all over the world," Hall pointed out. "He demonstrated the other day that it really only takes two weeks to teach someone to operate a drilling rig – you ignite and burst. But only after five years are you competent."

By Mads Nyvold, journalist Sermitsiaq

ALL TYPES OF LIQUID PETROLEUM PRODUCTS



Polaroil

OIL SUPPLY COMPANY FOR ALL OF GREENLAND

We also supply oil to the mining and oil industries

OUR MISSION

We are Greenland's biggest oil supply company.

We buy, transport, store, distribute and sell liquid fuels adapted to consumers and the environment all year round and throughout Greenland.

PART OF KNI A/S

Polaroil is a part of KNI A/S.

KNI A/S is owned by Greenland's self-rule government.

OUR PLACE OF OPERATION

We operate throughout Greenland.

We have oil stocks in every city, town and settlement.

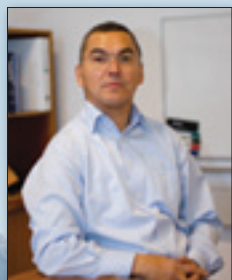
Furthermore, we have chartered two coastal tankers to enable us to sea bunker and supply mines in otherwise inaccessible locations.

CONTACTS

Peter Grønvold Samuelsen
Energy Manager
pgs@kni.gl

Tage Lindegaard
Technical manager
tal@kni.gl

Jens Bonfils
Logistics manager
jbf@kni.gl



Peter Grønvold Samuelsen
Energy Manager

"Greenland cannot demand that foreign mining and oil companies choose Greenlandic business partners and suppliers over foreign ones if we do not possess the necessary competencies and a certain measure of financial strength. Polaroil has therefore launched a type of transformation process to become the preferred bunker/fuel supplier to the mining and oil industries."

"We are looking at everything from security of supply, professionalism, CSR, HSE, ISO, competency development to competitive deliveries."

Energy Manager at Polaroil.

Polaroil

P.O.BOX 3030 · 3911 SISIMIUT · GREENLAND
PHONE.: +299 86 24 44 · FAX: +299 86 62 63



KNI

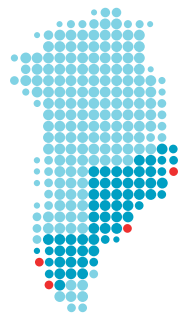


The region with the
best experienced
companies

our
business

Photo: Angu Motzfeldt

"GO LOCAL
WHEN YOU NEED EXPERTS IN
HARSH ARCTIC ENVIRONMENT"



Martin Ben Shalmi
Chairman, Sermersooq Business Council

WWW.BUSINESS.GL - INFO@BUSINESS.GL