CONTENTS

3 Introduction
4 Political organization
5 Overall strategy
8 Administration of licences
10 ISMA
12 Mineral exploration
18 Petroleum Exploration
23 Water and ice
24 Projects supported by the Government of Greenland
32 Information
34 Staff
36 Publications
43 Exclusive licences as of primo 2002
INTRODUCTION

It is now three years since the Government of Greenland took over the administration of mineral resources in Greenland. All important decisions concerning mineral activities are taken jointly by the Home Rule Government and the Danish Government. Additionally the Bureau of Minerals and Petroleum (BMP) functions as secretariat for the Joint Committee on Mineral Resources in Greenland. The Bureau of Minerals and Petroleum co-operates closely with the Geological Survey of Denmark and Greenland (GEUS), the Danish Energy Agency (DEA), the National Environmental Research Institute (NERI), and Nunaoil A/S in fulfilling the wish of Greenland to develop the mineral and petroleum industry to become one of the leading industries in Greenland. I believe that the Bureau and its collaborators have again carried out their tasks in a most satisfactory way.

Mineral-resource development is affected by global factors. In 2001 the result of the terrorist attacks in the USA affected the price of natural resources. Intensive marketing and nomination rounds, in which selected parts of the subsurface of Greenland were prepared for oil exploration, have contributed to the increase of interest in the petroleum potential of Greenland. The drilling for oil at Fyllas Banke in the summer of 2000 and the important information gained from this has, in particular, intensified the interest in the mineral potential of Greenland. Predictions about the mineral and petroleum industry’s eagerness to invest are, of course, always difficult. But, by adjusting the financial conditions and licensing procedures in the licensing round in 2002, we will endeavour to secure Greenland’s ability to compete within the oil industry.

The year 2001 will be especially remembered for exploration for gold at Nalunaq in South Greenland. Since the 1980s, exploration activity has led to a number of interesting discoveries. Examination of the deposits shows a good gold potential. The results of the geological explorations have proved to be so promising that there are now environmental, geological and technical investigations taking place which can provide a basis for determining whether or not actual mining should commence at Nalunaq.

In July 2001, the Parliamentary law on the exploitation of ice and water with a view to export came into force. As well as securing clean drinking water for the people of Greenland, the ice and water of Greenland will increase potential for profit as well as employment in Greenland. The high quality and cleanliness of Greenland’s ice and water can, in the future, attract many potential investors from within and without Greenland, as well as ensure a global market. In the future, there will be a shortage of fresh water and demand for it will increase. The Government has just given the first licence to a Greenlandic company for the export of ice and water.

The long hoped for wish to explore and exploit the mineral wealth of Greenland is at the same time a wish that these efforts will promote the economic development of Greenland. It is important to stress that a major part of exploration funding must be used to strengthen Greenland’s workforce and service sector. We continue to strive towards achieving an increased proportion in this sector.

This annual report provides a survey of exploration activities in the oil and mineral fields, as well as of the projects and activities of the Bureau of Minerals and Petroleum in cooperation with the Joint Committee, the administration of exploration licences, information, promotion etc.
The political responsibility for mineral resources is shared between Greenland and Denmark. All important decisions concerning mineral resources are made jointly by Greenland and Denmark, and it has been decided that any profits from mineral resources production will be divided between Greenland and Denmark.

The Joint Committee on Mineral Resources in Greenland was set up as a Greenland-Danish political forum where major mineral resources issues are brought up for discussion. The Bureau of Minerals and Petroleum (BMP), under the Greenland Government, administers the mineral resources laws and applications for licences.

The legal basis regarding mineral resources is laid down in the Greenland Home Rule Act and in the Act on Mineral Resources in Greenland.

The Joint Committee on Mineral Resources in Greenland is made up of 5 members from the Greenland Parliament and 5 members from the Danish Parliament. In addition to these, the chairman is appointed for a period of 4 years by the Queen, on the joint recommendation of the Danish and Greenland governments. The task of the Joint Committee is to follow developments in the mineral and petroleum sectors and to make recommendations to the governments of Denmark and Greenland on matters such as the granting of exploration and exploitation licences.

The administration of the mineral and petroleum industry is placed under the Bureau of Minerals and Petroleum, Nuuk, Greenland, under the authority of Jonathan Motzfeldt, the Premier of Greenland.

The members of the Joint Committee as of June 2002 were as follows:

Chairman:
Christian Mejdahl

Greenlandic members:
Johan Lund Olsen
Simon Olsen
Mikael Petersen
Jakob Sivertsen
Mogens Kleist

Danish members:
Helge Mortensen
Jørgen Winther
Aase D. Madsen
Kristen Touborg
Kaj Ikast

Two civil servants from Greenland and two from Denmark are ex officio members of the Joint Committee:
OVERALL STRATEGY

The Greenland and Danish governments agree on a policy of supporting exploration for both minerals and oil and gas. Extensive exploration is the first step towards the establishment of new mines and the production of oil and gas, and thus towards making mineral resources one of the mainstays of the economy.

In order to encourage exploration, the terms offered to companies are adjusted from time to time so that they continue to be regarded as attractive by the industry. Global stagnation in the minerals market experienced during the last few years, along with an on-going structural change in the mineral industry, emphasizes the necessity for a clear, competitive strategy in order to attract investments in mineral exploration in Greenland. Exploration licences are administered according to the so-called “one-door principle”, which is popular with companies because they need only apply to one authority in order to obtain all the necessary permits.

The government finances and carries out projects, which contribute new knowledge regarding the mineral resources potential in new areas, and in this way encourage private companies’ interest in exploration in Greenland. These projects include airborne geophysical surveys, production of digital maps and geochemical mapping of...
selected areas. The results of these projects are made available to private companies as aids to exploration.

A considerable effort goes into marketing Greenland’s mineral resources potential, for example at international trade shows and exhibitions and through BMP’s website, which has been restructured so as to be able to provide complete and up-to-date information to the industry. Companies can get details regarding licences in force directly from the website. The website is available in Greenlandic, Danish and English.

A distinct political requirement for all mineral resources activities is that they must be carried out with respect for the environment. The Arctic environment is very vulnerable, and Greenlandic culture is closely bound up with nature and the environment. Fishing and hunting are the principal industries. Any contamination of the marine environment could seriously damage the good name of Greenland’s fish products on the international market, even though the products themselves are not contaminated. Any damage to the environment and living resources could, therefore, have very serious consequences.

Another aim is that mineral resources development should proceed at a constant rate, so that activities can be integrated positively within the local community.

Thus the development of mineral resources is a means of promoting the development of the Greenland community, and not a goal in itself. The most important consideration, therefore, is that the activities are of maximum benefit to the community. It is important that the terms set ensure that the community has insight into and knowledge of the activities, and also that
Greenland gets a reasonable share of the profits gained from exploitation. The local work force and local service companies should be used wherever possible. The Greenland Parliament has set up a committee to look into the socio-economic consequences of mineral resources production.

As a consequence of the aim of involving local labour, local contractors and local service companies etc., efforts are being made to give these people better qualifications. One initiative in this direction is the prospector courses run by BMP, which train local people to be able to take jobs in exploration activities and in possible future production. Another initiative involves assisting the local service industry to take on as many tasks as possible in a qualified and competitive manner.

In order to promote a wider understanding of, and interest in, mineral resources production and especially in mineral exploration, the mineral-hunt competition “Ujarassiorit” was started in 1989. Interest in Ujarassiorit among the general public is considerable. Although the number of samples sent in fell at one point, the number of interesting samples has increased. In 2001 the number of samples seems to be increasing.

BMP’s information services include participation in information meetings, exhibitions and courses, and the production of written material about mineral resources activities for the general public in Greenland.
Applications for exploration licences are administered following the so-called one-door principle. The Bureau of Minerals and Petroleum is the place of entry for all aspects of licence administration, and companies need, therefore, to apply to only one authority in order to obtain all the necessary permits. In connection with the administration of licences, BMP can call on the expertise of institutions under the Danish Ministry of Environment and Energy, in particular the Geological Survey of Denmark and Greenland (GEUS) and the National Environmental Research Institute (NERI), as well as the Danish Energy Authority.

GEUS gathers, stores, classifies and interprets data and information regarding geological matters and makes this available, for example, in the form of publications. GEUS also contributes to BMP’s promotion of Greenland’s mineral and petroleum resource potential and assists with the administration of field activities.

NERI provides the necessary expertise regarding environmental matters as the basis for the administration of mineral and petroleum activities.

Mineral licences
Application forms can be obtained from BMP directly or via its website, which also contains information regarding application procedures and standard terms for exploration and prospecting licences. Applications are grouped into batches according to the date and time of when the correct application is received by BMP. There are two batches each month, except for the period from July to September, when all applications received are dealt with as a single batch.

BMP’s website contains up-to-date information regarding new, in-force and relinquished licences.

Applications are processed by BMP and are then submitted to the Joint Committee. The Joint Committee’s recommendations are submitted for ratification to the Greenland Cabinet and the Danish Minister for Environment and Energy. The final licence is signed by the Premier of Greenland.

Exploration licences are exclusive with regard to exploration within the licence area and are subject to a number of conditions, which include exploration commitments. An exploration licence is normally granted for 5 years. After this period, it can be extended for a further 5 years and extended again for 3 two-year periods, provided that the terms of the licence have been fulfilled. There are especially favourable terms for exploration licences for North and East Greenland. The licence area must be more than 1,000 km² and the initial licence period is 3 years. When this expires, the licensee is entitled to a renewed exploration licence under normal terms within the same area.

Licensees are obliged to spend a specified sum on exploration within the licence area during each calendar year. The size of such exploration commitments increases year by year.

If a licensee has found and delineated a commercially viable deposit and intends to exploit it, he is entitled to an exploitation licence - provided the terms of the exploration licence have been complied with.

Companies may also apply for prospecting licences. These are granted for 5-year periods and are valid for the whole of East Greenland, North Greenland or West Greenland. A prospecting licence is non-exclusive and no exploration commitments are involved.

Individuals may also apply for one-year prospecting licences, which are valid for the licensee alone. Permanent residents of Greenland can prospect individually without a prospecting licence.

Petroleum licences
For certain areas, licences for explora-
The Government of Greenland has just granted the first exploitation licence on ice and water. Photo: Jakob Lautrup

The Government of Greenland has just granted the first exploitation licence on ice and water. Photo: Jakob Lautrup

The Government of Greenland has just granted the first exploitation licence on ice and water. Photo: Jakob Lautrup

The two licences offshore West Greenland, the Fylla licence (Licence no. 03/97), and Sisimiut-West licence (Licence no. 09/98) were both finally relinquished on 31 December 2001.

BMP’s website contains up-to-date information regarding new, in-force and relinquished licences.

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nunaoil@greennet.gl
www.nunaoil.gl
ISMA

For the first time in the history of Greenland, an International Symposium on mining and exploration in Arctic regions was held from 28-31 May 2001. The Symposium was held in the Greenlandic Cultural Centre (Katuaq) in Nuuk. It was the sixth ISMA symposium to be held since the first one at the University of Alaska in Fairbanks in 1989. ISMA are held every other year and have been held in St. Petersburg, Russia, in Spitsbergen, Svalbard, and in Yellowknife, Canada. At each symposium a new chairperson is elected. This person is then responsible for planning and holding the following symposium.

In Yellowknife, Hans Kristian Olsen, the chief geologist of the Bureau of Minerals and Petroleum, was elected. Therefore the Sixth Symposium was held in Nuuk from 28-31 May 2001.

The Symposium was opened by the Premier of Greenland, Jonathan Motzfeldt. At this year’s Symposium focus was on the environmental impact of exploration and mining in Arctic regions. A number of lectures were held by researchers from the National Environmental Research Institute of Denmark, the Department of Arctic Environment, stressing the consequences on the environment of the mining of lead and zinc in Maarmorlik and Mestervig. Another important topic under discussion was the environmental and social questions involved in the possible opening of a goldmine at Nalunaq in South Greenland.

To make the most of the possibility of exchanging theories and results in an international forum, workshops were arranged in the evening of the second day of the Symposium. The topic of the workshop was the monitoring and processing of ore piles in such a way as to control acid mine drainage in Arctic regions.

In order to get a full understanding of the environmental consequences of a possible goldmine at Nalunaq in South Greenland, the natural content of heavy metal in the area. Based on these measurements it is possible to judge how a future goldmine will affect the environment of the region.
Furthermore there were several papers dealing with technical problems in active mines in permafrost regions. These are, for example, the construction and maintenance of roads, the building of tailings dams and methods of ground control in periods of thaw.

Not only geological topics were under discussion at the Symposium, but also matters dealing with government administration and legislation related to exploration and mining. The Vice President of Nunavut gave a paper dealing with mining taking into consideration the agreement on land rights made between the Inuit population and the Canadian government. There was also a paper on mining legislation in Greenland.

It was planned that the Symposium should end with a 3-day visit to South Greenland for interested participants. Visits had been arranged to the Nalunaq gold project at Kirkespirdalen, 40 km north of Nanortalik and to the Norse Ruins at the settlement of Qassiansuk near Narsarsuaq. Due to bad weather conditions, the participants arrived at Narsarsuaq one day late and therefore did not have time for the visit to the Nalunaq gold project. However, the visit to the Norse Ruins and a sail in the ice-filled fjords was an experience to be remembered. As is the custom, on the last day of the Symposium the ISMA Advisory Committee held a meeting and it was decided that the venue of the next symposium would be at Iqaluit, Nunavut, Canada in 2003. Thereafter the symposium in 2005 will be in the Kola Peninsula, Russia, in 2007 in Norway, and in 2009 in Fairbanks, Alaska.

of metals in the streams flowing through Kirkespirdalen has been monitored for several years. This gives a measurement of the background level
MINERAL EXPLORATION

Status

During the last few years exploration activity world-wide has increased. A number of countries, former Eastern European states and the Soviet Union, as well as the developing countries, have formed their mineral policy in order to attract foreign investors. Many of these countries consider the mining industry to be an important factor in their financial future. Therefore they have initiated active marketing to make known their mineral potential, thus hoping to attract investors. This is made more complicated by the fact that a great deal of the capital used on financing the exploration projects in earlier phases is so-called risk capital. This sort of capital is characterised by its extreme mobility and the fact that what it is invested in is of no relevance. The important factor, on the other hand, is the profit. If the profit is higher in other branches than in the exploration branch, then other branches attract the capital.

Furthermore, the financial stagnation over the past years has limited the number of possibilities for financial support. In 1997, when exploration was at its highest, the amount of money put into exploration world-wide reached the sum of 44 billion DKK. Over the last 2 years the total amount of money put into exploration world-wide has fallen dramatically. This is a consequence of the development of the price of metals. It is estimated that in the year 2000 investments amounted to as little as 21 billion DKK world-wide, which is under half of the amount invested in 1997. This stagnation was caused by a fall in the demand for metals in 1997, made worse by the recession in Asia. These conditions have made it difficult for companies with activities in Greenland to raise the necessary capital. A number of companies have had to relinquish their licences, and in 2001 the number of exploration licences was at its lowest ever since 1992. At the end of 2001, 17 exploration licences were in force involving a total area of 10,291 km². It is interesting to note that the amount of money put into exploration has not, despite financial stagnation, been halved in Greenland as it has in the rest of the world. In 1997 (see Table 1) investments amounted to 104.7 million DKK, whereas by comparison 97.2 million DKK were invested in 2000. In 2001, 6 new licences were granted, involving 5,215 km² and there were 2 applications for extension. It can, therefore, be hoped that, in spite of financial stagnation, Greenland is considered to be an attractive country in which to invest.

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<td>Exploration commitments (mill. DKK)</td>
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<tr>
<td>Exploration expenses (mill. DKK)</td>
<td>104.7</td>
<td>109.0</td>
<td>46.8</td>
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</table>

Map showing the locations of the described mineral projects.

The vast areas, which in 1996 and 1997 were covered by exploration licences, were mainly due to the initial, but nevertheless, important diamond exploration, which took place at the time. The results of this diamond exploration contributed to the fact that the companies, as early as 1998, and later in 1999 could point out areas where they thought the largest diamond potential was. A number of licences were either reduced or relinquished in 1999 and 1998.

Diamond Exploration
Dia Met Minerals Ltd. has since 1997 been looking for diamonds in the area between Nuuk and Sisimiut in West Greenland. In the hunt for diamonds, the company has collected large numbers of stream sediment and till samples and carried out airborne geophysical surveys. As a result of these investigations, the region around Kangerlussuaq has been pinpointed as the most interesting for diamond exploration. In 1999 Dia Met announced in a press release that in the area south west of Kangerlussuaq, 558 kg of kimberlitic rock samples had yielded 493 micro-diamonds (diamonds under 0.5 mm in size) and 5 macrodiamonds.

As a consequence this year’s exploration has been followed with great interest in Greenland. In September 2001 Citation Resources Inc., joint venture partner of Dia Met Minerals Ltd., carried out a drilling programme under Dia Met Mineral Ltd.’s licence south west of Kangerlussuaq in West Greenland. During the summer, drillings took place in 7 localities. The 7 localities were chosen on the basis of the fieldwork of previous years, as well as airborne geophysics and mineralogical analyses of indicator minerals.

In one of the locations it was possible to define a north going structure with the help of geophysical surveys and topographical maps. The structure could be followed for more than 5 km. The company drilled in 2 places in the structure with a distance of 2651 m between drilling positions. In both places a kimberlitic dyke was found with a thickness of approx. 20 m. The company believes that they have hereby delineated what could be the largest kimberlitic dyke in the world. Approximately 175 kg of drill core was extracted from the dyke and was sent to a Canadian laboratory for analysis. The laboratory will test the drill core for micro- and macrodiamond content and the quality of these. The results of these analyses are expected in the beginning of 2002.
Nalunaq - a productive goldmine in 2 years?
In KirkeSpirdalen it seems that Greenland’s first goldmine is closer than ever to becoming a reality.

The gold project Nalunaq A/S is a joint venture between the Greenlandic company, NunaMinerals A/S (18%) and the Canadian company, Crew Development Corporation (82%). Again this year the project has seen extensive exploration and the results seem promising with a view to a future goldmine. The exploration is aimed at isolating the gold bearing veins with the help of diamond drilling and underground work, including adit and raise work.

In KirkeSpirdalen in the year 2001 alone there has been 3,100 m of diamond drilling and 1,900 m of adit and raise work. Since 1998 there have been 15,000 m diamond drillings and 3,750 m underground investigations, of which 2,750 are in the mineralised structure. There are 4 adits to date. They are at levels 300, 350, 400 and 450 metres above sea level. The adit at 350 m above sea level is the longest, with a length of 600 m. The gold is in a 2 m thick quartz vein, which can be followed over a distance of 1,700 m along the mountainside.

Based on this year’s extensive collecting of samples, the average gold content in the ore has been calculated to be 25 g/t. This estimate is based on a mining width of 1.2 m. There have, however, been high-grade samples of up to 5000 g/t. The measured and indicated gold resource is 292,000 ozs (~9 tons gold) with an inferred gold resource of 718,000 ozs (~22 tons gold).

The environmental consequences of the goldmine have also been examined. For several years the natural content of metals in the streams flowing through KirkeSpirdalen has been monitored. This gives a measurement of the background level of heavy metal in the area. Based on these measurements it is possible to judge how a future goldmine will affect the environment of the region. In Saqqa fjord, which lies off KirkeSpirdalen, there have been continuous investigations of the marine, animal and plant-life as well as fjord bed and current conditions.
This information will, along with other environmental and technical investigations, form the basis for deciding how tailings from the gold extraction process can be deposited.

Nalunaq I/S commenced its feasibility study in November this year. It is expected to be finished in June 2002. The feasibility study will be documentation for the authorities and investors that the project is viable. Aspects such as mineral economy, environmental effect, mining techniques, and infrastructure will be taken into consideration in this study. If the feasibility study is approved, the first gold production can be a reality in 2003.
The Australian company, New Millennium Resources, has since 2000 had an exploration licence at the Sarfartoq carbonatite complex, 65 km south of Kangerlussuaq. The results of the analyses from a diamond drilling programme on the deposit in 1998 show an estimated resource of 35,000 tons with 11.3% niobium pentoxide (Nb$_2$O$_5$). Moreover the mineralisation has been estimated to comprise an indicated resource of 100,000 tons with a grade of 4.6% Nb$_2$O$_5$. The estimated resource of 35,000 tons has a conservative in situ value of approx. 39 million (~470 million DKK). These results open up the possibility that by drilling deeper the estimated resource will be increased to 300,000 tons.

New Millennium Resources has developed a new method of extracting niobium from the pyrochlore ore. The method aims to produce a cost-effective, very pure niobium oxide product by using a special catalyst and inexpensive chemicals. By using this new method it is possible to extract more than 90% of the niobium content of the pyrochlore ore.

The company plans to mine, crush and grind the ore at the site, then to transport it via pipes to the fjord. From there it will be shipped out to the old kryolite mine at Ivittuut in South West Greenland.

Since the beginning of 2001, New

Niobium and tantal
The Australian company, New Millennium Resources, has since 2000 had an exploration licence at the Sarfartoq carbonatite complex, 65 km south of Kangerlussuaq. The results of the analyses from a diamond drilling programme on the deposit in 1998 show an estimated resource of 35,000 tons with 11.3% niobium pentoxide (Nb$_2$O$_5$). Moreover the mineralisation has been estimated to comprise an indicated resource of 100,000 tons with a grade of 4.6% Nb$_2$O$_5$. The estimated resource of 35,000 tons has a conservative in situ value of approx. 39 million (~470 million DKK). These results open up the possibility that by drilling deeper the estimated resource will be increased to 300,000 tons. New Millennium Resources has developed a new method of extracting niobium from the pyrochlore ore. The method aims to produce a cost-effective, very pure niobium oxide product by using a special catalyst and inexpensive chemicals. By using this new method it is possible to extract more than 90% of the niobium content of the pyrochlore ore.

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Since the beginning of 2001, New

Niobium has many properties that depend on whether or not the metal is used by itself or as an alloy. The most important use of niobium is in alloys of steel, where niobium gives the steel greater strength and hardness. This type of steel is used in the car industry and for piping. 90% of the niobium, which is on the world market today, is produced in Brazil. Tantalum has many of the same properties as niobium, but has greater thermal conductivity. Tantalum is used in condensers in the electronics industry in, for example, mobile phones and computers.
Millennium Resources has had an exploration licence, which included the old mining area at Ivittuut. The old infrastructure of the mine can be successfully used in the final processing phase, when the niobium is extracted from the pyrochlore.

New Millennium aims at drawing up a feasibility study before the end of 2002, and at starting a production in the latter half of 2003.

The English company Angus & Ross PLC, which since 2000 has had an exploration licence covering the alkaline Motzfeldt Sø complex in South Greenland, has this year conducted an extensive diamond drilling programme in order to map the extent of the tantalum occurrences in the Motzfeldt Sø complex. The positioning of the drill-holes was based on the geophysical survey and the discovery of boulders with high-grade values of tantalum pentoxide (Ta₂O₅) of between 0.10-0.73%. The geophysical surveys showed a number of north-south trending anomalies that could be seen at the top of the complex and along a steep cliff side. 9 holes were drilled with a total length of 1622 m. The analyses of the first drilling programme have so far shown very promising results. At a depth of 50 m the drill went through a 30 m thick zone with 0.031% Ta₂O₅, which indicates that the deposit has an economic prospect. Previous surveys undertaken by GEUS have estimated that in the Motzfeldt Sø complex there is a resource of 50 million tons of ore with a grade of 0.03-0.1% Ta₂O₅.

Angus & Ross PLC did not finish their field season until mid November and, therefore, the results of their analysis from the last drilling cannot be expected until the beginning of 2002.
Petroleum activity in the year 2001 has been marked especially by activity in preparing the coming licence round, which is planned for the first half of 2002. The preparations have mainly been a nomination round, defining the conditions of the licence round, and extensive marketing aimed at the oil industry. Also, as in the 2 previous years, a great deal of seismic data has been acquired, especially near the planned licence area.

The 2 areas with exclusive licences for exploration and exploitation of hydrocarbons, at Fyllas Banke and west of Sisimiut, offshore West Greenland, were both relinquished on 31 December 2001. Thus all the technical data from these 2 former licence areas is now available to the oil companies. This also applies to the results from the exploration well Quilleq-1 drilled in year 2000 offshore West Greenland, in the eastern part of the Fylla licence. Although the Quilleq-1 drilling did not find hydrocarbons, the drilling gave important information, which along with the other recently released information from the two former licences and all the other information in the region, can now be used by the oil companies in connection with new exploration. Extensive sale of data from the licence area to several companies indicates positive interest in the licence round in 2002.

Preparations for the licence round in 2002
In the first half of 2002, BMP is preparing a licence round of the West Greenland offshore region between 63°N and 68°N. During the licence round, which will last for minimum 90 days, the oil companies will be able, in competition with each other, to apply for licences within the licence area. Since the establishment of a new strategy for the future hydrocarbon investigations was made in 1999, it has been the intention to work towards a licence round for West Greenland, where it is hoped that applications will be sent in from the oil companies. One of the aims in this strategy was to create more attractive conditions for exploration in order to increase the interest and desire to invest. This would intensify exploration and, by means of new investigations, increase the possibility of making commercial hydrocarbon discoveries after the licence round. Already

Fig. 1: The marine survey vessel „Zephyr-1”, which has acquired approx. 4,500 km of seismic data offshore South West Greenland in 2001. Photo: TGS-NOPEC

Petroleum EXPLORATION
extensive seismic data has been acquired, especially in the licence round area.

In preparation for the licence round, BMP conducted a so-called nomination round to examine, prior to the licence round, how great an interest the industry has in investing in hydrocarbon exploration in the seas off West Greenland. The aim of a nomination round is also to give the interested oil companies the opportunity of pinpointing the areas they find most interesting with a view to future exploration and which they would like to see included in a licence round. The nomination does not, however, oblige the companies to apply for licences, but helps to illustrate whether or not there is a basis for a licence round. The closing date for nominations was 26 March 2001. A number of international companies showed interest and the result of the nomination round was that the authorities decided to continue with preparation of a licence round.

Even though the exploration drilling of the Qulleq-1 well (well number 6354/4-1) in the year 2000 did not result in the finding of oil or gas, it did, however, give important geological information that is now being used to re-estimate the petroleum potential of the region. This information has, along with the latest seismic surveys, added to a greater understanding of the petroleum-geology of the area, and also facilitated the pinpointing of previously unknown exploration targets.

As a major part of the preparations for the licence round, GEUS, Nunaoil, TGS-Nopec and Fugro Geo-Team have carried out extensive marketing within the petroleum industry. This has been in the form of poster exhibitions and lectures at international conferences, along with many follow-up meetings with oil companies in Europe, Canada and USA, where the new data and ideas have been presented. This has resulted in a considerable rise in interest from the industry which, combined with a reduction in corporate tax in Greenland to 30%, provides a good basis for the licence round.

The general election in Denmark in November 2001 has, however, delayed the decision-making as far as the licence round is concerned, as the Joint Committee cannot meet until the beginning of 2002. According to the Act on Mineral Resources in Greenland, it is the Joint Committee who recommend the conditions etc. of the licence round. They are then finally confirmed by the Greenland Home Rule Government and the Danish Government (the Minister of Economic and Business Affairs). A considerable amount of the work of BMP in the area of hydrocarbons in 2001 has been preparation of model licences and economic conditions ready for the licence round. It is in these licences and conditions that the interests of society with regard to income and environmental issues are secured.

After the political decision about a licence round has been taken, it will be declared to the general public through a press release in Greenland, Denmark and internationally. It is proposed that opening meetings will be held in Copenhagen and in Houston (USA) respectively, and that the oil industry and the Press will be invited. (Please find updated information about the
Map from GEUS with the seismic lines, which were acquired in 2001, the relinquished Fylla and Sisimiut-West licences, and the exploration wells in the area (6354/4-1 is called Qulleq-1).
New seismic investigations offshore West Greenland
In the waters off West Greenland, more than 4,500 km of seismic data was acquired during the summer, carried out by the seismic survey vessels Zephyr-1. The region covered was primarily the western and northern part of the coming licence round area.

In the area near the Greenlandic-Canadian border, 2828 km of seismic data (GreenCan2001 project) has been acquired in a partnership between the Bureau of Minerals and Petroleum and TGS-NOPEC. This new data will be the basis for closer investigation of the previously unknown, deep sedimentary basins, which became known in connection with last year’s seismic investigations. This type of basin gives the opportunity for new exploration targets, different from those otherwise known in West Greenland. This data has, therefore, been the source of great interest within the industry. TGS-NOPEC acquired 904 km seismic data (Green2001), mainly on the boundary to the northern open-door area. This data, (so-called speculative seismic data) is acquired with a view to future sale, mainly to the oil companies that are considering exploration. Until now the area has been sparsely covered but the new seismic data has given important new knowledge. TGS-NOPEC has, after last year’s surveys, more than 10,000 km high quality seismic data from offshore West Greenland. The company plans on continuing acquiring data in the year 2002. Otherwise it is primarily GEUS, Nunaoil and Fugro-Geoteam that have the data from the pending licence round area. The Statoil group acquired 948 km seismic data (FyllaW2001 project) as a part of their remaining exploration commitments in the Fylla licence.

Fylla licence relinquished – seismic data and Qulleq-1 data now available
The Fylla licence was finally relinquished by the Statoil group on 31 December 2001. The Statoil group comprised Statoil (the operator), Phillips Petroleum, DONG A/S (Danish Oil and Natural Gas A/S) and Nunaoil. The relinquishing of the licence means that all the data from the area is now available and the area will be included in the licence round.

<table>
<thead>
<tr>
<th>Collected km seismic data from West Greenland since 1990</th>
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<tbody>
<tr>
<td>90-92</td>
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<tr>
<td>GEUS</td>
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<tr>
<td>Western Geophysical</td>
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<td>Nunaoil</td>
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<td>Fugro-Geoteam</td>
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<td>Phillips</td>
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<td>Statoil</td>
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<td>TGS-NOPEC</td>
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<tr>
<td>Bureau of Minerals and Petroleum</td>
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</tbody>
</table>

*Includes 1267 km of the BMP figure below (from joint venture-survey)

Please note, that it has been possible to update this table with the most recent figures due to a later termination of editing than the Danish and Greenlandic versions.
Sisimiut -West licence relinquished - seismic data available
The Sisimiut -West licence was relinquished on 31 December 2001. Phillips was the operator for the Sisimiut -West licence and the other partners were Statoil, DONG A/S and Nunaoil. The licence group has undertaken a number of technical surveys and collected a good deal of seismic data, which is now available. The area will be included in the coming licence round.

Open-door areas
In areas covered by the so-called open-door procedure companies can, at any time, apply for exploration and exploitation licences, unlike the procedure in the licence round. The only time when applications are not dealt with is in the summer months. In West Greenland the areas included in the open-door procedure are: the seas between 60° N to 63° N and 68° N to 71° N (apart from the areas covered by the Kanumas licence), and the Disko and Nuussuaq regions. In East Greenland Jameson Land is also included in the open-door procedure. In these areas knowledge of the petroleum potential is fairly limited and there is usually poor seismic coverage. In order to increase interest in exploration in these areas, especially favourable conditions have been introduced. As mentioned above, in 2001 TGS-NOPEC has conducted a seismic programme in the coming licence round and partially in the open-door area offshore West Greenland.

Kanumas licence
Kalaallit Nunaat Marine Seismic Programme (Kanumas) project was conducted within an exploration licence from 1989 as a regional seismic survey in the seas offshore North West Greenland and North East Greenland. The Kanumas group is made up of BP, Exxon, Japan National Oil Company (JNOC), Shell, Statoil and Texaco as well as Nunaoil. Nunaoil is the operator and a carried partner, i.e. it does not pay in the exploration phase. After the exploration licence expired in 1995, some of the rights and commitments of the licence still exist. The most important right for the group is a „preferred position“ in the area. This means the right to take part in a special pre-round before an actual licence round, which will take place when there is sufficient interest in these areas. The areas are, however, difficult to access because of the ice conditions, but factors such as improved technique and higher oil prices can make the areas more interesting for the industry. The Bureau of Minerals and Petroleum financed in the summer of 2000 a seismic survey in Baffin Bay in order to gain more knowledge of the exploration possibilities here.

Ice Conditions in the eastern Davis Strait from 63ºN to 68ºN
Ice conditions influence the operational conditions of the oil companies. Therefore, the Bureau of Minerals and Petroleum initiated a survey into the amount of ice and the variations in the ice conditions in the eastern Davis Strait to clarify the operational conditions in the planned licence area. The survey included an evaluation, characterisation, and a comparison of the ice conditions of the year 2000 with the historical data from various sources including satellite data. The work was carried out done by ASIAQ and DMI (the Danish Meteorological Institute). The report is available on BMP’s homepage.
ICE AND WATER

On 1 July 2001 an Act on the exploitation of ice and water for exportation (The Ice and Water Exportation Act) came into force. Just like the law on Mineral Resources (The Act on Mineral Resources in Greenland), the law is a framework law.

The reason for drawing up a framework law is based on the expectation of substantial development within the field of ice and water in the next few years, both technically and commercially. Also substantial social and economic development is expected. As it is not possible to regulate all conditions through a law, it is necessary for on-going adjustments in the interaction between activities in the field of ice and water and Greenlandic society.

The Act is, seen from a legal, political and organisational aspect, very different from the Act on Mineral Resources in Greenland of 1998. The political responsibility for mineral resources is shared between Denmark and Greenland, whereas the export of ice and water is a completely Greenlandic affair. It is, therefore, not a matter that is included in Greenlandic/Danish joint decision making.

The Bureau of Minerals and Petroleum is the co-ordinating authority within the Government of Greenland. The Act is administered according to a one-door principle. This implies that applicants can direct applications to one authority. The Bureau of Minerals and Petroleum obtains the necessary licences from other authorities in connection with dealing with applications. These authorities include: The Ministry of Environment and Nature, the Ministry of Housing and Infrastructure, the Municipal Departments, and Citizens’ Councils. The Government of Greenland then grants the final exploitation licences. In connection with the new law, great interest in this area has arisen from Greenland, Canada and Denmark. At the moment the Government of Greenland has granted one exploitation licence to a Greenlandic company. This company has previously exported ice from Greenland. GEUS, the Geological Survey of Denmark and Greenland, has, in the year 2000, compiled 2 reports: “Preliminary Localization of Greenlandic Glaciers with Ice/Water suitable for Export”, and the second report: “Undersøgelse af bakterielle kimtal i Grønlands inlandsis” (“Investigation of bacterial count in the Greenlandic ice sheet”) – which has not yet been translated into English.

Besides clean drinking water for consumers all over the world, Greenlandic ice and water can improve economic development and rate of employment in Greenland.
In 2001 a geochemical atlas covering a large area in Greenland was published for the first time. It was published on CD ROM and has been based on chemical analysis of systematically collected stream sediment samples from West and South Greenland. The atlas contains a total of 54 maps, a documentation of data and presentation methods in text and 56 figures, and 23 photos illustrating characteristic landscapes and streams in Greenland. There are 45 geochemical maps, a map of radioactivity, 5 maps of kimberlite indicator minerals, a geological map, a map of magnetic conditions, and a map showing names.

For every one of the 43 elements measured in the samples and for the content of organic matter, a map has been made of the regional variation in stream sediment concentration. Variation is illustrated in multi-colours with a colour scale ranging from blue (lowest value) through green and yellow to red (highest value) and the colour variation is based on interpolation between observations in a two-dimensional net structure, a so-called “grid”. The values are calculated by using statistical methods based on the actual concentrations of the elements at each of the unevenly distributed sample locations. Furthermore, the maps of the elements will show the location of the highest observations with the symbol of a black square.

A map has also been made based on the correlated variation of 16 chosen elements, which shows the important geochemical variations within the area covered by the atlas. Another map has been produced to show the variation in the intensity of the natural gamma radiation. Gamma radiation is the most important part of the natural radioactivity that comes from rocks. The map is based on measurements taken at each of the localities where stream sediment has been collected.
GGU and GEUS have collected and analysed stream sediment from Greenland since 1974 as part of the process of prospecting for ore deposits. Initially the samples were collected in connection with other GGU and GEUS activities in various parts of Greenland, but from 1993 the Bureau of Minerals and Petroleum has subsidised this activity in order to complete a systematic coverage of West and South Greenland. This has included collecting samples in the remaining areas and carrying out additional analyses of samples collected earlier. It has been necessary to process the already analysed data in order to ensure comparability between the results gained from various methods of analysis and from the various laboratories that have been used over a long period of time. The final product is a set of data covering analytical values of up to 43 elements in 7122 tests.

An extra process has included almost 3000 stream sediment samples collected from the Archaean Craton in South Greenland with a view to finding diamond bearing kimberlitic dykes. The samples have also been investigated for content of minerals that have been formed under the same high pressure as diamonds, the so-called kimberlite indicator minerals. This activity has been financed by a group of prospecting companies, but it has been agreed that the results could be published as a part of the geochemical atlas. A map has been made for each of the most important indicator minerals showing where the particles of each mineral have been identified, which of these have been chemically analysed, and which of them have a chemical composition that would indicate that they have been formed under high pressure.

The collection of geochemical maps has 3 main uses: ore prospecting, geological map making and evaluation of environmental questions. Exceptionally
high concentration of metals in a stream sample from a particular area will usually indicate that it contains ore deposits. Certain types of mineral occurrences are produced in zones through which metalliferous water flows. These zones will be chemically significant and can, therefore, be seen in the chemical results. In areas where vegetation and screes hinder visual mapping, the geochemical maps can be used to identify certain rock types and to verify the boundaries between chemically differing rock complexes.

An evaluation of man-made pollution in Greenland requires knowledge of the natural chemical variation in the surface environment (mountains, screes and soil). Because stream sediments, just like soil, are products of erosion from the mountains, a geochemical atlas will give documentation of the natural chemical variation.

The geochemical atlas is published in the GEUS report:

Steenfelt, A. 1999:
Compilation of data sets for a geochemical atlas of West and South Greenland based on stream sediment surveys 1977 to 1997.
Danmarks og Grønlands Geologiske Undersøgelse Rapport 1999/41
(price kr. 700)

Steenfelt, A. 2001:
 Calibration of stream sediment data from West and South Greenland - A supplement to GEUS Report 1999/41
(price kr. 250)

Airborne geophysical surveys
Government funded geophysical surveys in Greenland were continued during spring and summer 2001 with a regional aeromagnetic survey north of Uummannaq. The survey added about 70,000 line kilometres of high-quality magnetic measurements to the existing database with modern airborne geophysical data from Greenland. The database includes both regional high-resolution aeromagnetic surveys and detailed surveys with combined electromagnetic and magnetic airborne measurements. A continuous coverage of high-quality magnetic data is now available in West and South Greenland for the area free of permanent ice from Nunap Isua (Kap Fareb) to Upernavik Kujalleq (Søndre Upernavik). The total surveyed area with high-resolution magnetic data is 250,000 km² and corresponds to a total 515,000 line kilometres. The detailed surveys with combined electromagnetic and magnetic measurements were carried out in six separate surveys in selected areas of high mineral potential in project AEM Greenland 1994–1998. A total of 75,000 line kilometres were measured in the AEM Greenland 1994–1998 project.

A primary objective for the government funded airborne geophysical programme is to provide the industry and the geoscientific community with modern data that are valuable in the search for minerals and for the general understanding of the geological evolution of Greenland. Thus, most of the surveys have been onshore. However, the survey in 2001 as well as the survey in 1997 also included significant proportions of offshore data of relevance for the investigation of the ocean-continent boundary. These two surveys are, therefore, of significance also for hydrocarbon exploration. Approximately one third of the area covered in the survey in 2001 is offshore, including parts of an area that is well known for its hydrocarbon potential.

Onshore, the new survey in 2001 covers the supracrustal Palaeoproterozoic Karrat Group that hosts the closed Black Angel lead-zinc mine at Marmorilik located in the south-eastern part of the survey area. Extensive sulphide facies iron formations are present throughout the area. In addition to the base-metal potential, the area holds a potential for precious metals mineralisations in turbidites and shear zones.
Map showing the coverage of modern airborne surveys in Greenland. The survey in 2001 covers the area north of Uummannaq encircled by black lines. The large coherent region shows the data coverage of the aeromagnetic surveys. The smaller separated survey areas show data from the detailed surveys with combined electromagnetic and magnetic data from project AEM Greenland 1994–1998.
The survey in 2001 was flown for the Bureau of Minerals and Petroleum by Sander Geophysics, Ottawa from late May to mid September. The field operation was based at Qaarsut airport. The nominal flight altitude was 300 metres above the terrain and lines were flown in a north-south direction with primary line spacing of 500 metres. Tie lines with a separation of 5000 metres were flown in the orthogonal direction.

The new data with survey report and maps will be released to the public on 1 March 2002 and will then be available for inspection at both BMP in Nuuk and at GEUS in Copenhagen. The data can be purchased from GEUS. Reports with interpretation and documentation of previous airborne surveys are also available from GEUS. A comprehensive summary report with image data included on CD-ROM was published in 2001 at GEUS for the AEM Greenland 1994–1998 project.

Landslide in the Vaigat region
As a consequence of the landslide at Paatuu on 21 November 2000, which flooded Saqqaq, Qeqertaq and Qullissat and could be registered throughout the area, the Bureau of Minerals and Petroleum has financed a survey looking into the causes of the landslide at Vaigat to facilitate an evaluation of risks. The survey, carried out by GEUS, has pinpointed slide areas and accumulated knowledge of slides from Disko in the south to Svartenhuk Halvø in the north. Detailed photo-geological, seismic and field - geological surveys of the area around the new slide have been carried out and completed this year. The results are now available in a report.

Analysis of hydrocarbon forming rocks
The aim of the project is to analyse and describe hydrocarbon-forming rocks (source rocks), which have been deposited particularly in the mid - Cretaceous Period (approx. 100 million year ago). Also to produce regional models and maps of possible extensions of areas between Greenland and Canada. The project will focus on a detailed comparison of oil types and source rocks known in West Greenland and important, known source rocks from basins in the Arctic areas of Canada and Alaska, the east coast areas offshore Canada and USA, as well as central Canada and USA. The first part of the project was completed in 2001 with the obtaining of samples from the Geological Survey of Canada in Halifax and Calgary, Newfoundland Offshore Board in St. John’s and U.S. Geological Survey in Denver. These samples were later analysed by GEUS. The project was started this year and financed by the Bureau of Minerals and Petroleum and GEUS.

Correlation between West Greenland and Eastern Canada
The aim of this project is to undertake a correlation study of microfossils and rocks (with an age of 125-25 million years) in basins off Baffin Island and Labrador, Canada, in the Nuussuaq Basin and the areas around the Ikermiut-1 and Qulleq-1 drillings offshore West Greenland. This is intended to strengthen the regional geological understanding of the basins of the North West Atlantic. The Canadian data is based on information gathered from the 28 exploration wells drilled in the period from 1971 - 1985. The Greenlandic study will be mainly based on data from the Ikermiut-1 well (1977) and the Qulleq-1 well (2000). This data will be compared with earlier geological studies from the Nuussuaq Basin and the area offshore South West Greenland. The intention is to make geological models for the distribution of possible source rocks and rocks that may be oil reservoirs in the region. The study is partially being run in cooperation with the Geological Survey of Canada. The project has started this year and will finish at the end of 2002. The project is financed by the Bureau...
of Minerals and Petroleum, GEUS, Phillips Petroleum and an EFP grant (Energy Research Programme) from the pool of money provided by the Danish State for projects of this kind.

Ujarassiorit 2001
Ujarassiorit is a mineral-hunt competition and has been held for the last 11 years. Everyone who is a resident in Greenland can take part in the mineral-hunt by sending in rock samples found in the countryside for examination by the Bureau of Minerals and Petroleum’s geologists.

The aim of Ujarassiorit is to involve and make use of the Greenlander people’s knowledge of the countryside in connection with the geologists’ hunt for new finds, and also to create greater interest in and knowledge of geology and mineral exploration in Greenland. Another initiative in this direction is the annual prospector course run by BMP.

Rock samples can be sent free of charge from the post offices in any town or village to BMP. There, the samples are described and examined for ore minerals. If a sample contains a high amount of ore minerals, it is sent to a laboratory in Canada for analysis. All the senders receive a reply with a rock and mineral description of the sample and a letter informing them of the chemical composition of the sample, after it has been analysed in Canada.

The Committee consisting of geologists from BMP and GEUS award each year prizes to the sum of DKK 75,000 to the people whose rock samples have provided new information of value to mineral exploration in Greenland. The 1st prize is DKK 25,000; there are two 2nd prizes of DKK 15,000, two 3rd prizes of DKK 5,000, and five 4th prizes of DKK 1,000.

Unfortunately over the last 3 years there has been a noticeable drop in interest in Ujarassiorit. The number of samples sent in has been halved compared with previous years, but, thanks to financial support from Grønlandsbank Trade Fund in the form of a doubling of the 1st and 2nd prizes, there has, this year, been considerable renewed interest in the mineral hunt. In the year 2001, 936 samples were sent in, which is double the amount of last year. Of the 936 samples, 292 were sent to Canada for further chemical examination. The support given by Grønlandsbank has not only increased
the number of rock samples sent in, but has also increased the number of new mineral hunters by approximately 200.

The samples sent in come from West Greenland, from Siorapaluk in the north to Narsaq Kujalleq in the south, as well as the Tasilaq and Ittoqqortoormiit regions in East Greenland. There has been a noticeable increase in participation in the areas where GEUS has carried out geological investigations, i.e. in the areas around Qaanaaq, Uummannaq, Attu-Asiaat, and Tasilaq.

The winners of Ujarassiorit 2002 are as follows:

1st prize of DKK 50,000:
Marius Jerimiassen, Niaqornaarsuk - for a find of gold, copper and cobalt enriched rock sample at the end of Arfersiorfik fjord.

Two 2nd prizes each of DKK 30,000:
Anda Jerimiassen, Attu - for a find of vanadium, titanium and molybdenite enriched rock sample from Nassuttooq.
Karl Bent Ignatiussen, Isortoq - for a find of copper, gold and molybdenite enriched rock sample at Isortoq fjord, East Greenland.

Three 3rd prizes each of DKK 15,000:
Regina Sadorana, Qaanaaq - for a find of copper enriched rock sample at Isortoq.
Mikael Haraldsen, Isortoq - for a find of a phosphor and copper enriched rock sample at Isortoq.
Peter Siegstad, Oqaatsut - for a find of ilmenite enriched rock sample at Paakitsoq.

Ole Abrahamsen, Nuuk - for the find of a gold bearing rock sample at Attu.
Per Bunch Berthelsen, Nuussuaq - for a find of copper enriched rock sample at Ikkattut, Nuuk Fjord.
Karl Marcussen, Attu - for a find of allanite enriched rock sample near Attu.
Jørgen Olesen, Nuussuaq - for a find of copper enriched rock sample at Eqaluit Paarliit, Ameralik fjord.
Regine Kristiansen, Moriusaq - for a find of iron enriched rock sample at Inersussat, Moriusaq.

A report including a petrographic description along with analytical data and locations of the analysed rock samples can be sent on demand from the Bureau of Minerals and Petroleum during the spring.
Prospector Course
This year’s prospector course was held in Ivittuut municipality with accommodation and course rooms in the newly restored houses near the historic Ivigtut cryolite mine.

Again this year the Bureau of Minerals and Petroleum had to choose from many interested applicants from all over Greenland. The participants travelled together from Narsarsuaq to Ivittuut, where for the following 10 days the course varied between theory and practical fieldwork. The Prospector Course funded 16 participants’ travel and accommodation, but not loss of work or allowances. It was valuable that the course was held in an area with varying geology and in an area with many interesting ore indications. Excursions were made to Jernhatten behind Kangilinnguit, to Kuunnaat Mountain near Arsuk and to the area of Arsuk Ø.

The participants managed to find and identify 42 different minerals during the course. The instructors were from the Bureau of Minerals and Petroleum and Greenland’s Stone Club. The participants that represented a broad section of the population were all confirmed outdoor people and all very satisfied with the course. They all went home with the sure expectation that one day they would make an important find. The municipality of Ivittuut was most helpful with the logistics and priced their services very reasonably.

The aim of the Prospector Course is to widen people’s knowledge of minerals, ore minerals, as well as the geological setting of ore deposits, so that the participants can return to their home regions and be more qualified prospectors. They are given an introduction to a number of geological topics so that their interest and understanding of the system of collecting samples will grow. In this way they can themselves make an initial sorting of their finds, before they send them in to Ujarassiorit. Thus the samples will hopefully be more interesting and less costly to deal with.

It has proved to be a good investment to give prospective collectors a prospector course, as many first samples are found by amateur “rock-hounds”. Finally the Bureau of Minerals and Petroleum benefits from their contribution to general education on the mineral potential of Greenland. In recent years the interest of schoolteachers has grown considerably. They seek information on the geology of Greenland for use in teaching the senior classes in their schools.
INFORMATION

If and when the raw materials section becomes one of Greenland’s economic mainstays, this development will affect all parts of the community. There must, therefore, be an open dialogue with the population, and this means that information is very important. Information is also a key factor in relations with the mineral resources industry. A clear and easily understood framework for activities is stressed, and a considerable effort is made to inform the industry and thus promote a good climate for co-operation.

Promotion with respect to the raw materials industry

Greenland’s raw material potential is marketed with respect to the industry both through conferences, meetings and trade shows and through the printed and electronic media.

BMP, in co-operation with the Geological Survey of Denmark and Greenland (GEUS), publishes the Minex and Ghexis newsletters for the mineral and petroleum industries respectively. These are published 2-3 times each year. In connection with the coming licensing rounds offshore West Greenland, Ghexis’ homepage has been developed considerably in order to give access for the industry to all available data and information that is relevant for applications for exploration licences. This information is also available on a CD-ROM that has been distributed to interested companies.

The Bureau of Minerals and Petroleum has signed a new service contract with Greenland Resources A/S. The service contract decides the activities for the coming year with respect to promotion and development within the raw materials sector. These activities must promote and support the wish of the Government of Greenland that exploration and possible production of raw materials will benefit Greenlandic industry and the society of Greenland.

In 2001, BMP took part jointly with GEUS and Greenland Resources A/S in the following trade shows:

Minerals shows and conventions:
British Columbia and Yukon Chamber of Mines:

Prospectors and Developers Association of Canada:

The Mining 2001 Resources Convention:
Melbourne, Australia, November 7-9.

Petroleum shows and conventions: The petroleum potential within Greenland was promoted throughout 2001 in co-operation with GEUS and Nunaol A/S. Marketing took place at the following conferences in the form of exhibitions and lectures. The Bureau of Minerals and Petroleum participated in the first mentioned:

American Association of Petroleum Geologists (AAPG) Annual Convention, Denver, USA, June 3 - 6.

GAC-MAC Annual Meeting, St. John’s, Newfoundland, May 27 - 30.

American Association of Petroleum Geologists (AAPG) International Meeting, St. Petersburg, Russia, July 15 - 18.

BMP’s website - www.bmp.gl

The development of BMP’s homepage was completed in 2000. In May the English version was completed, and at the end of June the Greenlandic and Danish versions followed. All in all, by Greenlandic standards, the homepage is quite extensive. The future plan is that the homepage should be the major method of external communication. This means that the publications and press releases given out by BMP will, in the future, to a greater extent be given only electronically. This annual
report will be an exception and will continue to be printed.

This new strategy was introduced in September 2000 when the List of Licences could for the first time be communicated via the Internet. This List of Licences is updated twice a month, on the first and sixteenth of each month. The Internet database for licences is updated at the same time.

The Danish and Greenlandic versions are, in principle, copies of the English version. There are, however, direct links to the English version in areas where the information is directed at the international oil and mining industry, and for this reason is only to be found in English. A small “Union Jack” in the Greenlandic and Danish versions informs the user of the change in language. Similarly, there are some places in the Greenlandic version where there is a direct link to the Danish version.

In the parts about the participation of the local community, the Danish and Greenlandic versions are naturally more detailed.

In the autumn of 2000, the Greenland Home Rule Government decided to establish one common homepage for the use of all the ministries, instead of each ministry having its own homepage. This project will, in time, affect the Greenlandic and Danish versions of BMP’s homepage, but it has not yet been decided whether or not the English homepage is to be included. Whether or not BMP’s homepage should be located on the same server as Greenland Home Rule’s new homepages is still being deliberated.

This change of location would coincide with the possibility of re-directing the licence database, so that it would be easier to see any updates on the homepage. The homepage will also become more interesting and dynamic in appearance as a result of this relocation.

BMP’s homepage will thus in the coming years undergo continual adjustment in accordance with the activities of BMP.
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ANNUAL REPORTS


NEWSLETTERS AND SUMMARIES


Laws and regulations


GEOLOGY

Geological Survey of Denmark and Greenland / GEUS produce many publications on Greenlandic geology. Catalogue of Greenlandic publications and data is available from GEUS’s website: www.geus.dk


Preliminary localization of Greenlandic glaciers with ice/water suitable for export. C. E. Bagglid, A. Weidick, Ø. B. Olesen. GEUS Rapport 2000/73, 28 pp. and a map.


TAX


ENVIRONMENT

NERI / DMU produces many publications on the Greenland Environment. The list of publications as well as the possibility of ordering information is available from their website: www.neri.dk - it is also possible to download some publications.


ICE CONDITIONS ETC.


Berg Watch 97.
Final Report on a ship-based survey of icebergs in eastern Baffin Bay.
H.J. Høyer, C.A. Becher, R. Zorn, P. Mikkelsen;

Physical Environment of Eastern Davis Strait and Northeastern Labrador Sea. An overview.
Available on: www.bmp.gl and CD-ROM

Berg Watch 97.
Iceberg drift data and satellite imagery in eastern Baffin Bay.

Physical Environment of Eastern Davis Strait and Northeastern Labrador Sea.
H.H. Valeur, C. Hansen, K.Q. Hansen, L. Rasmussen, N. Thingvad,

Physical environment in Eastern Baffin Bay North of 71°N.
H.H. Valeur, C. Hansen, K.Q. Hansen, L. Rasmussen, & N. Thingvad,

Weather, Sea and Ice Conditions in Eastern Baffin Bay, offshore Northwest Greenland.
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Available on: www.bmp.gl

GENERAL INFORMATION ON GREENLAND


Trade and Industry in Greenland.
Greenland Resources, 1998
Series of booklets consisting of:
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The latest statistical releases are now available on Greenland Statistics web site at: www.statgreen.gl

CD-ROM
Geochemical atlas of Greenland - West and South Greenland.
A. Steenfeldt.
GEUS Rapport 2001/46. CD-ROM.

West Greenland 2001 Licensing Round.

Geological Map of Greenland, 1:500 000.

VIDEOS

The Geology of the Nuuk Region - where the first continents collided.

The Library of the Government of Greenland, Bureau of Minerals and Petroleum includes the following:

· Trade journals of the petroleum and mineral industries.
· Publications and maps of the Geological Survey of Denmark and Greenland
· Books on mineral and petroleum resources geology.
· Released industry mineral assessment reports.
· Annual reports from companies exploring in Greenland.
· Results from Ujarassiorit (mineral-hunt programme in Greenland).
· Environmental reports from the National Environmental Research Institute and the Danish Environmental Protection Agency.
· Index of pre-1992 Greenland seismic data available from the Geological Survey of Denmark and Greenland.
· Index of aerial photos from the National Survey and Cadastre in Copenhagen.
· Index and previews of Landsat TM and MSS images.
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