



*Greenland Minerals  
and Energy Ltd*

*Tuesday, August 26, 2008*

**Corporate Summary:**

**ASX Code:** GGG

**Issued Capital:** 192M

**Issued Options:** 167M

**Market Cap Fully Diluted:**  
Aug -08 \$A130M

**Cash on Hand** ~AU\$21M

**Fully Diluted Cash** AU\$~56M

**Contact Details:**

**Ground Floor  
33 Colin Street  
WEST PERTH  
Western Australia 6005**

**Tel: +61 8 9226 1100**

**Fax: +61 8 9226 2299**

**Website: [www.ggg.gl](http://www.ggg.gl)**

**Inquiries: [info@ggg.gl](mailto:info@ggg.gl)**

***Kvanefjeld, the company's  
flagship project, is a REE, NaF,  
U deposit hosted within the  
Ilimaussaq intrusion, southern  
Greenland***

**Multi-Element Resource Update**

Company Announcements

Australian Securities Exchange Limited

**Major Increase in REO and NaF Resources  
at Kvanefjeld**

Greenland Minerals and Energy Limited is pleased to announce a major increase in rare earth oxide (REO) and sodium fluoride (NaF) resources at Kvanefjeld, in southern Greenland. The resource upgrade is based on a significant increase in available geochemical assay data from core drilled in 2007, since the company announced an initial resource estimate for Kvanefjeld in May, 2008.

The Inferred Resource estimate is now:

**334 Mt @ 0.03% U<sub>3</sub>O<sub>8</sub>,**

**Inclusive of 215Mt @ 1.21% REO,  
and 201Mt @ 1.11% NaF.**

The estimates contain: **2.59 Mt of REO, 2.21 Mt of NaF,**  
and **100,960 t of U<sub>3</sub>O<sub>8</sub>.**

The increased coverage of geochemical assays has seen the **REO resource increase by 163%**, and the **NaF resource increase by 68%**.

The U<sub>3</sub>O<sub>8</sub> resource remains similar to that announced in May, as the U concentrations of all drill holes had been determined from spectral data. Subtle changes in the U<sub>3</sub>O<sub>8</sub> resource figures reflect slight variations between spectral and geochemical assay data, with the latter used in preference as it becomes available. The Mineral Resource estimate has been prepared by Hellman and Schofield Pty Ltd.

R  
..

*company as it demonstrates that Kvanefjeld is rapidly*

Office: Ground Floor 33 Colin Street West Perth Western Australia 6005

Postal: PO Box 1304 West Leederville WA 6901

Telephone: +61 8 9226 1100 Facsimile: +61 8 9226 2299 Email: [info@ggg.gl](mailto:info@ggg.gl) Website: [www.ggg.gl](http://www.ggg.gl)



growing to become one of the world's largest rare earth element resources, at a time when rare earths are becoming an increasingly valuable and strategic commodity group.”

Whilst Kvanefjeld had previously been recognised as a potential uranium resource by the Danish Atomic Energy Agency, evaluating the potential for Kvanefjeld to be a significant multi-element resource (rare earth elements, sodium fluoride, uranium) has been the primary focus of Greenland Minerals and Energy Ltd since it commenced work in the project in mid-2007.

Further increases in REO and NaF resources are expected to continue as the backlog of assays from the 2007 drill program continues to be processed. The geological model was prepared by Greenland Minerals and Energy Ltd and the resource estimation was prepared by resource consultants Hellman and Schofield Pty Ltd (H&S). The commodities of significance included in this resource statement include rare earth oxides, sodium fluoride, and uranium, which are reported in Table 1 in accordance with the JORC Code and Guidelines. Rare earth oxides include yttrium.

Kvanefjeld inferred multi-element resource estimate update, August 2008.

At U <sub>3</sub> O <sub>8</sub> cutoff grades	tonnes	U <sub>3</sub> O <sub>8</sub> lb/t	U <sub>3</sub> O <sub>8</sub> lb	U <sub>3</sub> O <sub>8</sub> ppm	U <sub>3</sub> O <sub>8</sub> %	tonnes U <sub>3</sub> O <sub>8</sub>
All	350,891,000	0.65	227,300,000	294	0.029	103,000
<b>150</b>	<b>334,289,000</b>	<b>0.67</b>	<b>222,585,000</b>	<b>302</b>	<b>0.030</b>	<b>101,000</b>
200	286,170,000	0.71	203,866,000	323	0.032	92,000
250	233,445,000	0.76	177,686,000	345	0.035	81,000

Rare earth oxide (REO) inferred resource at U<sub>3</sub>O<sub>8</sub> cut-off grades (REO still under-sampled)

At U <sub>3</sub> O <sub>8</sub> cutoff grades	tonnes	REO TOTAL+Y <sub>2</sub> O <sub>3</sub> ppm	REO TOTAL+Y <sub>2</sub> O <sub>3</sub> %
All	228,553,000	11,969	1.20
<b>150</b>	<b>215,112,000</b>	<b>12,100</b>	<b>1.21</b>
200	178,319,000	12,447	1.24
250	145,968,000	12,893	1.29

Sodium fluoride (NaF) inferred resource at U<sub>3</sub>O<sub>8</sub> cut-off grades (NaF still under-sampled)

At U <sub>3</sub> O <sub>8</sub> cutoff grades	tonnes	NaF ppm	NaF%
All	212,745,000	11,223	1.12
<b>150</b>	<b>201,725,000</b>	<b>11,110</b>	<b>1.11</b>
200	168,146,000	10,417	1.04
250	140,934,000	9,837	0.98

**Table 1.** The updated Kvanefjeld multi-element resource estimate, using a 150 ppm U<sub>3</sub>O<sub>8</sub> cut-off grade. Uranium is the only commodity for which there are analyses for all of the 2007 drill holes, so the REO and NaF resources are currently constrained by the U<sub>3</sub>O<sub>8</sub> cut off grade that defines the ore shell. Additional decimal places do not imply an added level of precision. Figures quoted may not sum due to rounding.

All resources are currently in the Inferred Resource category; however, it is anticipated that this will improve with infill drilling during the 2008 exploration season along with advances in the understanding of the local geology.

The geological interpretation by Greenland Minerals and Energy Ltd of drill-hole cross sections was completed and then wireframed utilising Micromine™ software to create a three dimensional geological model.

Mineralisation occurs within the Ilimaussaq intrusion, an alkaline intrusive complex that formed in a rift setting during the Mesoproterozoic. The alkaline magmas were emplaced into basement granites and overlying sedimentary and volcanic rocks. The Ilimaussaq intrusion was generated in four main, successive stages:

1. *Marginal augite syenite*
2. *Alkaline acid magma (quartz-syenite)*
3. *Agpaitic (feldspar bearing) syenites, comprising pulaskite, foyaite, sodalite foyaite. Naujaite (sodalite-nepheline syenite) and kakortokite (eudalyte-nepheline syenite)*
4. *Lujavrite (mafic nepheline-analcime syenite)*

The lujavrite was emplaced in several pulses into earlier phases of the Ilimaussaq intrusion, and overlying country rock. Locally pendants, or xenoliths, are enclosed within the lujavrite, such that in places it resembles an intrusive breccia. Rare earth element, sodium fluoride and uranium mineralisation is largely associated with the lujavrite and immediately adjacent wallrocks, veins of dominantly analcime (sodium aluminium silicate), and pegmatites. Steenstrupine, an unusual phospho-silicate mineral, is the main host to rare earth elements, as well as uranium and thorium. Other minerals hosting rare earth elements and uranium include cerite, vitusite and uranothorite. Sodium fluoride is largely hosted by villaumite.

The resource estimates were undertaken using single pass, 3D ordinary kriging approach with the search aligned parallel to the strike and dip of the mineralisation. H&S's proprietary software, MP3, was used for the estimation. The results were validated against the original data on section and in plan. Variables modelled included rare earth elements + yttrium, F, U<sub>3</sub>O<sub>8</sub>, Be, Na, Nb, Sn, Th, Ti, Zn, Zr, Li, and Ta using Ordinary Kriging with search radii of 70mE by 140mN by 2mRL. The block grades from MP3 were then imported into a Micromine 3D model and trimmed to the existing geological model wireframe.

Rare earth ("REE") mineralisation is closely associated with uranium. Rare earth concentrations are enriched in light REE elements.

Kvanefjeld is unique in that NaF is present and closely associated with the uranium/multi-element mineralisation as the rare transparent, red mineral, villaumite. Chemical assaying and metallurgical investigations have determined that fluorine is present in two forms. About 15% fluorine occurs bound up in the lattice fluoro-silicates while the remainder is present as the water soluble mineral villaumite.

Estimation of NaF has been made by assaying the total fluorine content and subtracting 15% of fluorine. The content of NaF as villaumite is then calculated by adding the amount of Na present; the ratio being  $(F \text{ assay} * 0.85) \times (42/19)\%$ . Results of assays from drilling throughout the deposit have shown that the NaF has been leached from the near surface rocks and is absent from the surface down to depths varying from a few metres to around 60m.

Artificial NaF currently sells for between US\$900 to \$1,300/tonne, and with increased levels of purity, the value increases substantially. It is used in control of dental decay by inclusion in toothpaste and dental rinses, pesticides and in the aluminium industry in production of artificial cryolite. Market investigations have been initiated and are necessary as natural NaF is potentially a new commodity. Initial investigations suggest that the Kvanefjeld NaF product is suitable for the above applications. Metallurgical test work has determined that effectively 100% of the NaF can be leached by cold water from material ground to 75micron. The NaF can then be relatively easily recovered from solution and is available as a saleable product.

Historical metallurgical investigations have been carried out on the mineralisation at Kvanefjeld by the Danish Government, with their last work finishing in the mid 1980's. This work was aimed only at uranium and NaF. Both commodities were successfully recovered. They recovered high levels of NaF by using oleic acid. A number of methods were tested for recovery of uranium. Of these, pressurised carbonate leaching, carried out in the last days of their investigations showed the most promise with recoveries commonly in excess of 80%, and locally above 90%.

The mineralisation at Kvanefjeld is within a rock comprising minerals of sufficient grain size and of such compositional and physical variation as to offer scope for beneficiation. Little of the previous work has been aimed at beneficiation. In addition, the economic minerals and elements present are closely associated and occur within a limited number of specific minerals, and the gangue, or waste mineral assemblage is dominantly feldspars and arfvedsonite that carry little, if any, of the elements of economic interest. Metallurgical investigations have begun by Greenland Minerals & Energy Limited with beneficiation studies playing an important role. Mineralogical studies are underway, and will be utilized to focus the beneficiation testwork. The techniques that will be evaluated for beneficiation purposes include gravity, magnetic, flotation and electrostatic separation.

## **2008 Exploration Program**

The 2008 exploration program at Kvanefjeld is progressing ahead of schedule, with over 13000m drilled to date. The 2008 program is aimed at increasing the overall resource, as well as moving inferred resources into the indicated category. In addition, a number of new multi-element prospects within the Illimaussaq intrusion have been identified, and will be evaluated with drilling in the latter half of the season. Further advances have also been made in understanding the geology of the Kvanefjeld deposit, which is of critical importance to upgrading the resource category. Environmental studies are ongoing, and are contributing toward the environmental baseline study, that should be completed this year. The baseline study forms a critical component of an environmental impact assessment.

## **Qualifying statements**



The information in this report which relates to exploration results, quality of data, geological interpretations, reasonable expectation of potential viability of quoted uranium, rare earth and NaF resources, comments on metallurgy and marketing and appropriateness of cut-off grades is based on information compiled by Jeremy Whybrow who is Exploration Director of the Company and who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Whybrow has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Mr Whybrow consents to the reporting of this information in the form and context in which it appears.

Information in this report that relates to mineral resource estimation reflects information compiled by Mr Robert Spiers and Arnold van der Heyden. Resource estimation was undertaken by Mr Spiers who with Mr van der Heyden are full time employees of Hellman and Schofield Pty Ltd. Mr Spiers is a Member of the Australian Institute of Geoscientists and Mr van der Heyden is a member of the AusIMM. Mr Spiers and Mr van der Heyden have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2004 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Mr Spiers and Mr van der Heyden consent to the reporting of this information in the form and context in which it appears.

The calculated uranium grades, used in the resource estimation in this report, are based on information compiled by David Wilson BSc, MSc, MAusIMM from 3D Exploration Ltd based in Western Australia. These uranium values form the basis of the resource estimates. Mr. Wilson is a full-time employee of 3D Exploration Pty Ltd, a consultant to Greenland Minerals and Energy Limited. Mr. Wilson has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the ‘Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves’. Mr. Wilson consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

All holes were logged with an Auslog spectral gamma tool. The gamma tool was calibrated in Adelaide at the Department of Water, Land and Biodiversity Conservation in calibration pits constructed under the supervision of CSIRO. The gamma tool measures the total gamma ray flux in the drill hole. Readings are typically averaged over 7.5 centimetre intervals and the reading and depth recorded on a portable computer. Approximately 15% of uranium values are by chemical assay and 85% by radiometric determination.

At Kvanefjeld, there is a contribution to the gamma radiation from the decay of thorium. The thorium spectral signature is dominated by a high energy gamma radiation peak and lower energy gamma radiation resulting from the scattering of the high energy gamma rays with the surrounding rocks. This thorium spectrum is measured by the spectral tool and ‘stripped’ from the uranium gamma radiation spectrum. The remaining uranium spectral gamma ray readings are then converted to equivalent  $U_3O_8$  readings by using the calibration factors derived in the Adelaide calibration pits. These factors also take into account differences in hole size and water content. The grade and calibration was calculated by David Wilson.

The gamma radiation used to calculate the equivalent  $U_3O_8$  is predominately from the daughter products in the uranium decay chain. When a deposit is in equilibrium, the measurement of the gamma radiation from the daughter products is representative of the uranium present. It takes approximately 2.4M years for the uranium decay series to reach equilibrium. Thus, it is possible that these daughter products, such as radium, may have moved away from the uranium or not yet have achieved equilibrium if the deposit is younger than 2.4M years. In these cases the measured gamma radiation will over or under estimate the amount of uranium present. The Kvanefjeld deposit is approximately 1,000M years old and is considered to be in radiometric equilibrium. Tests conducted by the Danish Government have confirmed that the deposit is in equilibrium.

**ABOUT GREENLAND MINERALS AND ENERGY LTD.**

Greenland Minerals and Energy (ASX – GGG) is an exploration and development company focussed on unlocking the mineral potential of southern Greenland. The company's flagship project is the Kvanefjeld multi-element deposit (Rare Earth Elements, Sodium Fluoride, Uranium), where the company is building a world class resource through ongoing exploration and an aggressive drilling program. For further information on Greenland Minerals and Energy visit <http://www.ggg.gl> or contact:

Roderick Mcillree, Managing Director  
+61 8 92261100

