Kvanefjeld Prospect (Greenland)

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(This article was prepared to complement a gtt-sponsored expedition,"Unpeeling the Banana Coast" (/Journeys/unpeeling-the-banana-coast-greenland.html) in 2012 and is no longer being maintained)

Summary

The Kvanefjeld Mine is a proposed open pit multi-element mine located in southwestern Greenland. Historically, the Kvanefjeld deposit was mined for uranium, but has remained inactive since the early 1980s (http://www.ggg.gl/projects/kvanefjeld-rees-uranium-zinc/history/). Recent assessment drilling has identified (http://www.ggg.gl/docs/ASX-announcements/Kvanefjeld-Prefeasibility-Study-4-May-2012.pdf?utm_source=Kvanefjeld+Prefeasibility+Study+Confirms+a+Long-Life&utm_campaign=Prefeasibility+Study&utm_medium=email) 9.22 million tons of rare earth oxides (REOs), 512 million pounds of uranium oxide, and 1.98 million tons of zinc, making it one of the earth's largest rare earth element (REE) (/Issues/MetalsMining/RareEarths.html) deposits in a world where 95% of REE production comes from China. Continued exploration in

nearby areas within the same igneous complex (http://www.ggg.gl/projects/specialty-metals-kvanefjeld/) has revealed the presence of uranium, zinc, and REE satellite deposits, further advancing the future prospects of the mine. Primary environmental concerns center on the release of radiation from the uranium mining as well as acidification from leaching techniques.

The proposed Kvanefjeld mine site, along Brian & Josh's 'Unpeeling the Banana Coast' expedition (/Journeys/unpeeling-the-banana-coast-greenland.html).

Location and Ownership

The Kvanefjeld deposit is located (https://maps.google.com/maps?q=kvanefjeld+greenland&ie=UTF-8&hl=en) four miles north of the small town of Narsaq (population 1,600) on the Kvanefjeld Plateau between the Nordresermilik and Tunulliarfik fjords. Danish geologists first explored the area in the 1950s, studying the viability of uranium extraction. In the following decades Kvanefjeld was the site of several exploratory drilling programs sponsored by the Danish Atomic Energy Commission, culminating in the construction of an adit into the valley wall in the late 1970s. Exploration continued until 1982, at which time political and economic forces determined that continued exploration would be infeasible due to low market prices for uranium and a new zero-tolerance uranium policy.

Greenland Minerals and Energy Limited (http://www.ggg.gl/), a company headquartered in Australia, acquired the Kvanefjeld deposit in 2007 with partner Westrip Holdings Limited. Greenland Minerals and Energy A/S (http://www.info-kvanefjeld.gl/) operates under Greenland Minerals and Energy Limited with its sole focus operations within Greenland. In 2011 Greenland Minerals and Energy bought out WHL and moved to 100% ownership of the Kvanefjeld deposit.

Mine Plan and Timeline

In May 2012 Greenland Minerals and Energy released its Comprehensive Prefeasibility Study (http://www.ggg.gl/docs/ASX-announcements/Kvanefjeld-Prefeasibility-Study-4-May-2012.pdf?utm_source=Kvanefjeld+Prefeasibility+Study+Confirms+a+Long-Life&utm_campaign=Prefeasibility+Study&utm_medium=email) (3.4 MB) for the Kvanefjeld Project. The report assumes construction will begin in 2014 and active mining in 2016, although this timeline depends on approval of an exploitation license by the Greenlandic government. The lifetime of the mine is estimated to be 33 years, with an expected annual output of 7.2 million tons and a total production of roughly 230 million tons of ore.

An international airport is located approximately 20 miles north of Kvanefjeld in Narsarsuaq, however other necessary infrastructure in the area is nonexistent. To support full scale production GME is planning to construct housing for employees, a hydroelectric facility 37 miles north in Johan Dahl

Land above Narsarsuaq, a deep-water port on Tunulliarfik fjord in the small settlement of Ipiutaq, and a road system extending from the mine site to Narsaq and Ipiutaq. The total cost of the project is forecasted at $1.54 billion, including allowances for both project growth and construction costs. Long term uranium and rare earth element prices project a pre-tax net present value (http://en.wikipedia.org/wiki/Net_present_value) of the Project to be $4.63 billion, and a 3-4 year payback period.

Open pit mining techniques will be used to extract the ore. Atmospheric acid leaching will be used to mobilize and concentrate the REE and uranium. Once the mine is fully operational, GME projects that 14.5 million tons of material will be removed each year, with a waste strip ratio of 1.1 ton of waste for every 1 ton of ore mined. Tailings (/Issues/MetalsMining/MineTailings.html) are expected to be deposited in the already existing Taseq Lake, which will act as the primary storage facility.

Social and Environmental Impacts

Independently contracted companies initiated Social and Environmental Impact Assessment studies in early 2011. Greenland's Bureau of Minerals and Petroleum, along with the Danish National Environmental Research Institute, will review these assessments upon their completion in 2013.

Possible environmental threats identified by GME include waste discharges to water from the open pit, the residue storage facilities, and the processing plant. General waste management

during mine operations, decommission and after closure are of particular concern. Other potential threats include the impact of large-scale pumping of groundwater, acid mine drainage (/Issues/MetalsMining/AcidMineDrainage.html), the introduction of contaminants into the food chain, noise, atmospheric emissions of greenhouses gases as well as dust and radiation, and impacts on biodiversity, especially on rare and threatened species.

Once operational, the Kvanefjeld mine would be the largest project of its kind in Greenland. The mine would directly employ 200 individuals although the number of workers from Greenland has yet to be determined. Foreign third party companies will construct the power, port, and living facilities. Employees are expected to be housed in the port at Ipiutaq as opposed to within the town of Narsaq. The mine's impact on issues like land use, health care, and traditional living conditions is currently a subject of debate among the various stakeholders.

Further Reading

> Greenland Minerals and Energy Ltd page on Kvanefjeld Prospect (http://www.ggg.gl/projects/kvanefjeld-rees-uranium-zinc/)

> Greenland Minerals and Energy prefeasibility study on Kvanefjeld Prospect (2012) (http://www.ggg.gl/docs/ASX-announcements/Kvanefjeld-Prefeasibility-Study-4-May-2012.pdf?

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