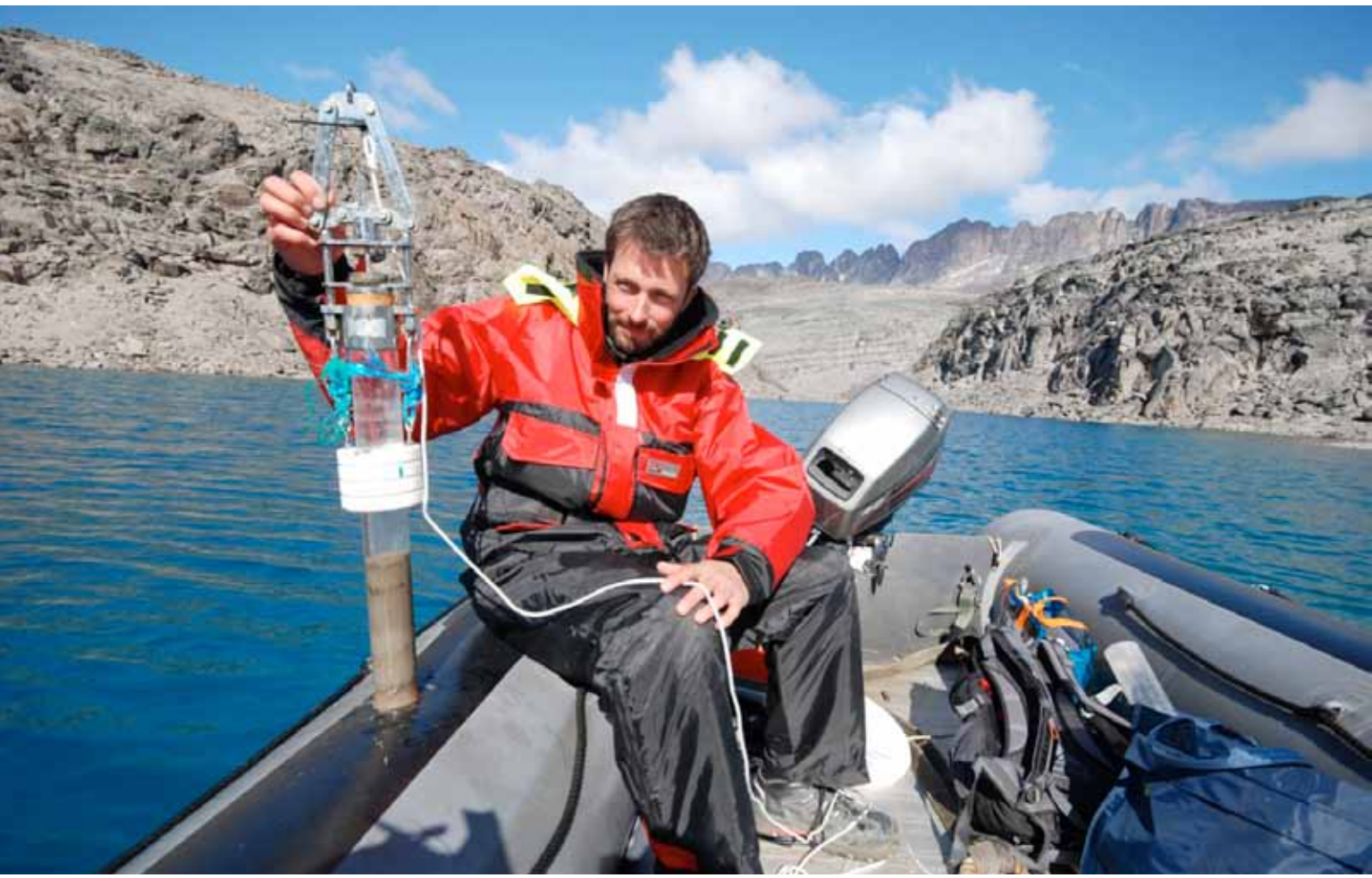
TANBREEZ

mining for greener technologies

TANBREEZ

THE MINER WITH THE MOSTEST



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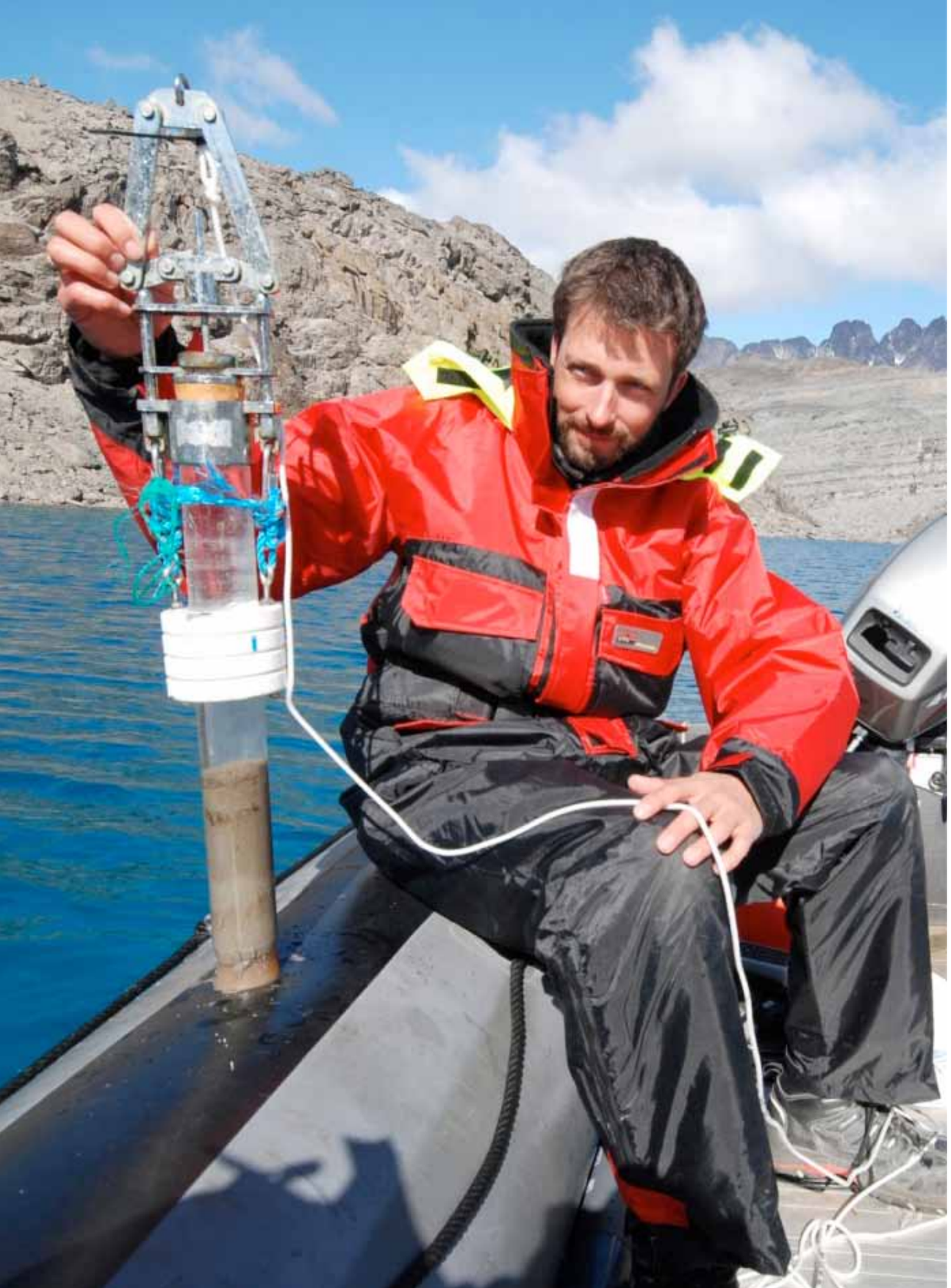

TANBREEZ

THE MINER WITH THE MOSTEST

The Tanbreez project in Greenland has the potential to disrupt the world market in a group of minerals that's making a political as well as a financial impact

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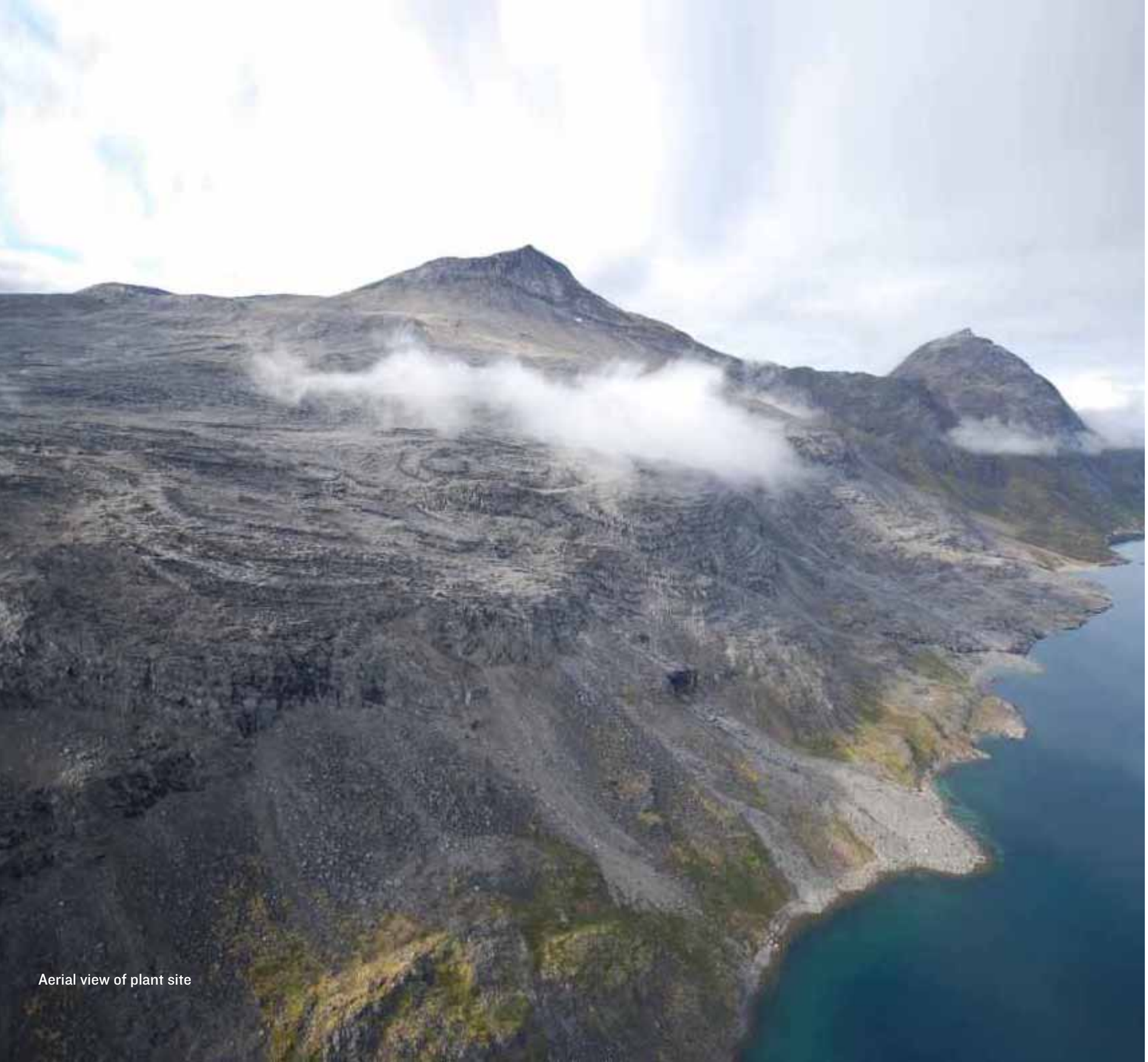


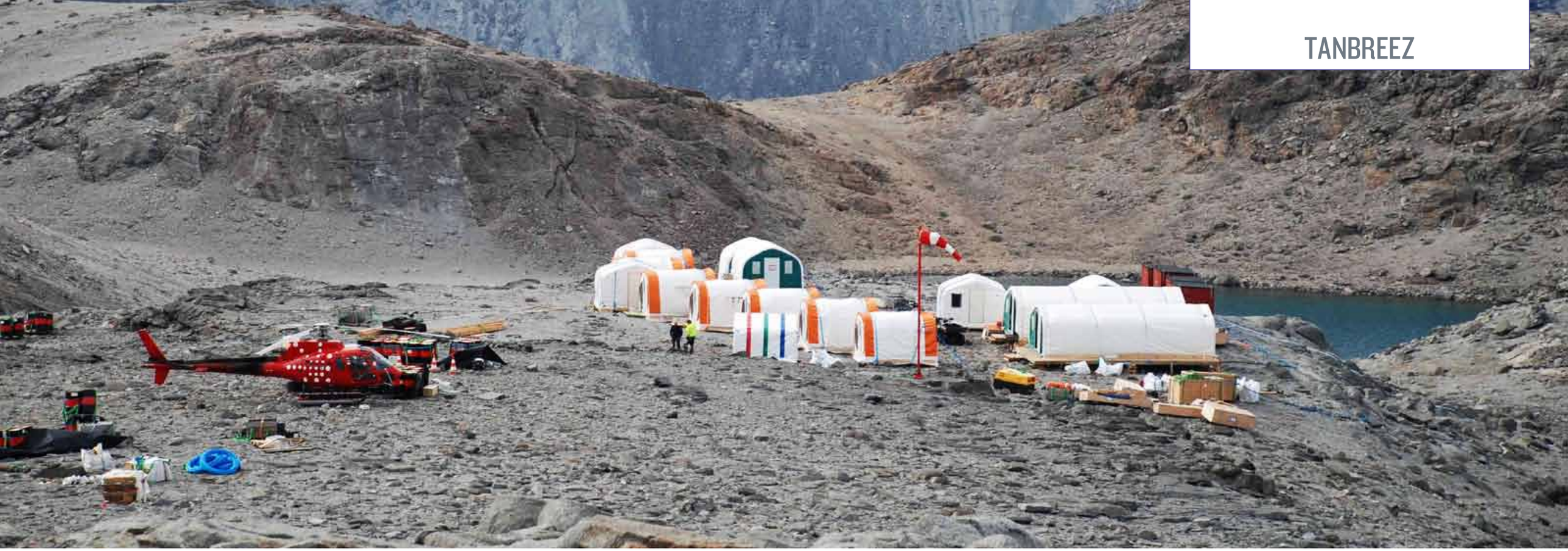
Aerial view of plant site

TANBREEZ

Tanbreez, though this does need explaining to the uninitiated, does just what it says on the tin. The name is a contraction of two close associates on the periodic table Tantalum (TA) and Niobium (Nb), their cousins the rare earth elements (REE), while the final Z stands for their elusive though incorruptible uncle Zirconium. All of these are sought after as new uses are found for them in, among other things, electronics, alloys, mobile devices, car exhausts and green power generation applications.

Currently China holds a near-monopoly over world REE supplies and controls around 95 percent of mined production and refining. But these elements are vital in both civilian and military technologies. By restricting exports and driving up prices China can effectively force companies to manufacture devices that need to incorporate rare earths in its own factories. But Greenland has 58 percent of the world's REE outside of China and 65 percent of the 'heavy' rare earths, which are in shorter supply.

Tanbreez, a private company in the blessed position of being able to fund its project without recourse to stock markets, is sitting on what is probably the world's largest resource of these minerals outside of China itself. It is a very exciting project, explains the company's founder and CEO Greg Barnes. He is a geologist who has studied Greenland's minerals for many years and has been involved with both London Mining, which is planning to exploit large iron ore deposits in southern Greenland, and Greenland Minerals which



The camp in June 2010 and an Air Greenland chartered helicopter

holds a licence to the north of the Tanbreez property containing a variety of minerals but principally uranium.

Greg's enthusiasm for Greenland is very infectious, if understandably partisan. He believes the country's resources have been woefully and inexplicably overlooked over the years and he has little sympathy for the few Canadian exploration companies that have started projects in the past and then let them fizzle out. It has taken the Australians to galvanise the scene, he says, including his own Perth based company Rimbal, which since 2001 has pioneered exploration on the current Kringlerne deposit. Three Australian companies, Tanbreez, Greenland Minerals and Ironbark, which has zinc interests in northern and eastern Greenland, own the projects most likely to come into early production, he points out.

> "TANBREEZ IS MUCH MORE ACCESSIBLE THAN A LOT OF THE COMPARABLE PROJECTS IN CANADA"

58%

Greenland's share of REE resources outside China

Rimbal's processing tests resulted in high values of zirconium, niobium, lithium, yttrium, rubidium, beryllium, strontium and a variety of rare earth metals distributed over several locations in the decade from 2001, he says. Up to 2012, Tanbreez spent more than $40 million on developing the asset and then submitted a definitive feasibility study to the Greenlandic government, which must have been impressed to receive the 19-volume submission weighing in at 33 kilogrammes.

The study carried out by Danish engineers MT Højgaard (MTH) is based on the annual treatment of 500,000 tonnes of ore to produce 100,000 tonnes of eudialyte concentrate and 200,000 tonnes of feldspar. MTH's plant design allows for future treatment rates of up to 1.5 million tonnes per annum. The open pit mining project will include roads, a processing plant, accommodation for the workforce, a tailings deposit and a port facility, which will include a helipad. Though he can get to the project from his base in Perth Western Australia within a day, the last part of the journey has to be accomplished by helicopter.

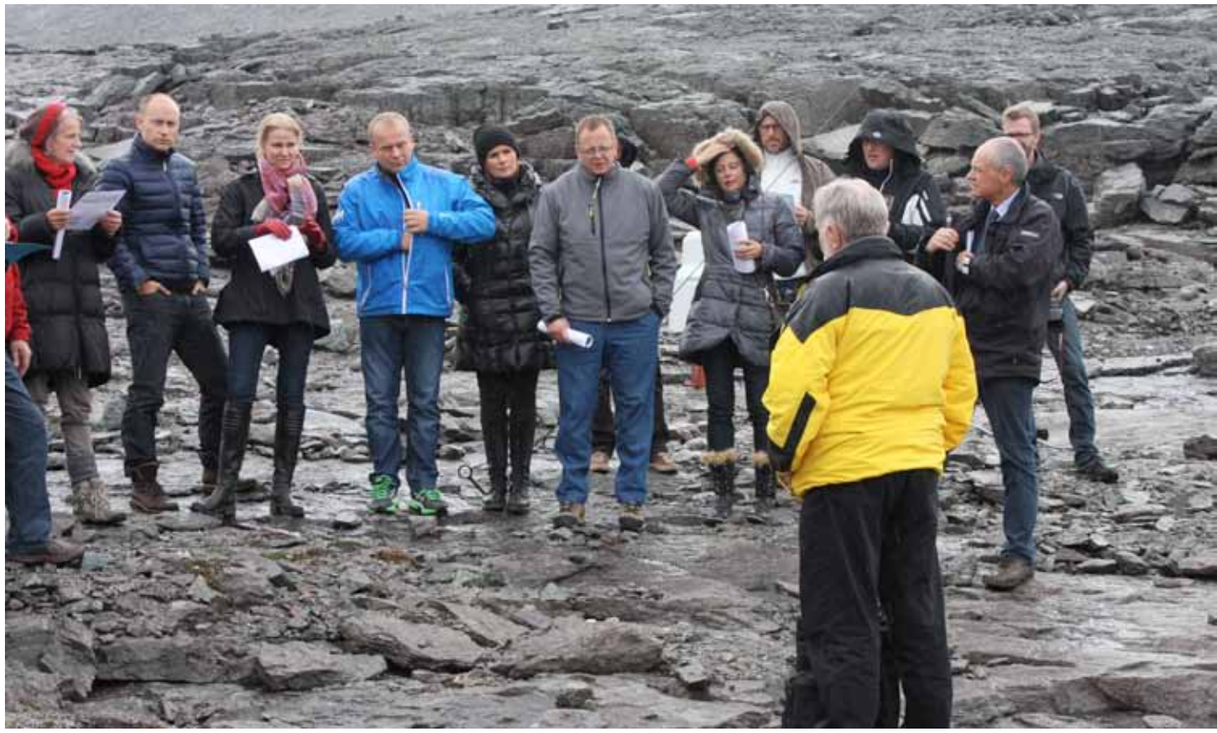
Now Barnes and his team, which includes his right-hand man Hank Schønwandt a former Deputy Minister in the Greenlandic Ministry for Industry and Minerals, are ready to start construction of a mine on its licence lining the southern half of the Ilimaussaq peninsula in south-west Greenland. There are, at a conservative estimate, 4.3 billion tonnes of ore contained within the licence area, so the mine life can be calculated in generations rather than the more usual decades. Little wonder then that last year he hosted a visit to the site by no fewer than three prime ministers. Work can begin as soon as the Bureau of Minerals and Petroleum (BMP) approves the application for an exploitation licence.

The minerals of interest are principally contained in a red coloured ore called eudialyte, associated with white feldspar and black arfvedsonite, a mineral found in few other places on earth. Feldspar and arfvedsonite are commercial but low cost minerals, Eudialyte is another matter. The Greek prefix eu- always signals something nice – in this case the name means easy to dissolve. That's a key attribute of the ore he is planning to mine, says Barnes: "If you have to use powerful acids to extract the chemicals you want, your capex goes through the roof. But we will need only weak acids which means we can process the ore very cheaply." In fact, he says, the process is almost chemical-free, consisting of a crushing plant followed by a magnetic separator that works because the minerals have different levels of magnetic attraction. Thus the proposed processing plant will produce concentrates of feldspar and eudialyte for shipment to destinations around the world.

As is the case throughout Greenland, there is not much in the way of infrastructure at Ilimaussaq, though Tanbreez will not have to invest too much in the way of providing what it needs. "In fact it is much more accessible than a lot of the comparable projects in Canada," he claims. "A hydro-electric line runs close to the ore body so we will be able to get all the power we need. All the labour we are likely to want is available locally and there is no lack of water." Access by sea will be straightforward, as the fjord that runs beside the outcrop is steeply shelved and deep, and though the lack of roads may be a problem

> "GREENLAND AND WESTERN AUSTRALIA ARE APPROXIMATELY THE SAME SIZE AND WITH VERY SIMILAR GEOLOGY"

Prime Ministers visit the Tanbreez site 2012



Greg Barnes briefing the Prime Ministers on the site 2012

Main ore body
looking from the west

the project is after all only 25 kilometres from Greenland's major southern international airport at Narsarsuaq and about the same distance from the town of Qaqortoq.

In general, mining companies are obliged to factor in the cost of roads, harbours and services to their projects in Greenland, so in many ways the south is the place to be. "We are on what they call the banana coast," jokes Greg Barnes, "the warmest part of the country right in the south. We are on a natural harbour, and it is ice-free all the year round." This, he says, is thanks to the effect of the Gulf Stream. Another big bonus, certainly over any Canadian operations – and Canada is only 150 miles from north western Greenland at its closest point – is the lack of mosquitoes in this part of the country.

The exploitation licence should come through in the next few months. Once that happens, Tanbreez can move ahead to construction, which could be completed in 2014, with first production the following year. "Greenland and Western Australia are approximately the same size and with very similar geology," Greg Barnes points out, "yet Western Australia's mining industry earns in excess of $100 billion and Greenland's mining industry earns virtually nothing at present." Where Australia is placed to supply China, it could be argued Greenland is just as well placed to supply Europe and America, so watch this rather large space. BE

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