

# Renewed prospects for Canadian garnet



Locally the South Beach has grades of over 75% garnet. Courtesy Freeport.

IN 1997, Freeport Resources Inc. evaluated the heavy mineral sand content of the Hutton beaches in Labrador, Canada. The beaches, red in colour, were found to contain unusually high concentrations of almandine (or almandite) garnet. The beach sands, in some places averaging over 60% garnet have been estimated to contain a garnet resource of just over 1.3m tonnes. Now, after a five year hiatus, the first phase of sampling is complete and the project is well positioned to begin commercial production in the next few years.

## Political challenges

The land on which the Hutton beaches are located have been part of much political debate for the past 30 years. Over this time, the local Labrador Inuit population have been negotiating with the Canadian government to claim land that is traditionally theirs. The Hutton beaches are located in the last area to be ratified by a Land Claim Agreement. As part of the agreement, Freeport will negotiate Impact and Benefit Arrangements with the Labrador Inuit Association.

More recently, the company has been in negotiations with the government and other interested parties concerning the boundaries of a proposed park reserve. In September this year, through the continuous efforts of Jim Thistle, lawyer of Freeport, a successful outcome was announced, whereby the boundaries were changed to exclude the Hutton beaches. Phase one sampling at the

Hutton beaches was consequently resumed this summer allowing further investigations into the garnet resource.

Due to the sensitive nature of the land, the mining proposal is designed to minimise the impact on the land. The project will be run like a small sand and gravel operation over two to four weeks of the year, using portable equipment that can be removed after the season has ended. Due to the high concentrations of the garnet, mining will only occur over an area of a few acres. Remediation will be mostly unnecessary, as owing to the dynamic nature of the beach system, the sediment influx from offshore is expected to quickly replace the sand taken. To reduce the impact further, a study has been completed in order to identify measures to avoid disturbance of sediment transport paths.

## Incredible concentration

Garnet is well distributed throughout the 2-3m thick sands of both the North and South beaches, which represent an area of approximately 500,000m<sup>2</sup> onshore. Originating from the sea floor, the garnet was concentrated by the persistent effects of the wind and waves, which selectively washed and blew away the vast majority of lighter minerals.

At South Beach, garnet concentrations average about 60%, a grade that is considerably higher than other deposits. The sediments at the North Beach are grey in appearance, and preliminary

sampling has shown that the sand averages 25% garnet. The actual grade is, however, still to be determined as sampling in 2004 has indicated that grades may be significantly higher.

## Positive outlook

Garnet is a very hard mineral, and as such is used extensively in two main abrasive applications, waterjet cutting and abrasive blast cleaning (sandblasting). A third, less important application is to improve the efficiency of high-density sand filters. The use of garnet as a sandblasting agent is currently growing annually in the US at about 5%. This figure looks set to increase, as the most widely used mineral, silica, is being discouraged due to associated health risks.

The most promising market is in the rapidly expanding waterjet cutting industry. It is here that Freeport sees the largest potential, as their garnet is of the required physical characteristics and sizes. It is also located relatively close to the growing markets in the US and Europe. In particular, Brenda Clark, president of Freeport commented that the company saw potential for growth outside of major industrial applications, for example in the aesthetic design and architectural sectors. Garnet used in this application can also command a higher price- from C\$675-1,500/tonne depending on the packaging and the amount purchased. This figure is well above the estimated production costs of C\$165/tonne.

It has been estimated that Freeport will extract about

10,000-16,000 tpa, approximately one sixth of the current demand for garnet in the US. As a result, the sale of the Hutton garnet, which is initially going to be marketed in North America, would not just be filling the gap created by growth, but would also be in direct competition with other North American suppliers as well as suppliers from India, China and Australia.

However, Hutton garnet has many advantages over conventional supplies. Firstly, preliminary tests have indicated that the garnet needs very little processing, and so is relatively cheap to produce. Secondly, the alluvial style of the deposit allows for the production capacity to be varied depending on demand. Thirdly, the location of the deposit along the Newfoundland-Labrador coastline is ideal for distribution to North America. Most importantly, however, Hutton garnet has a distinct advantage over supplies from overseas which are increasingly being subjected to high freight and shipping rates.

## Phase two and beyond

The next phase of investigation will occur either at the end of this season or early next summer, and will concentrate on taking bulk samples of 50 to 500 tonnes to fully establish how the material is to be processed. Additional environmental and archaeological investigations also need to be completed before the project commences. Once this has been finalised, Freeport sees no obstacles to starting commercial production. 