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FOR DAILY MINING NEWS
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THE
NORTHERN MINER

THE GLOBAL MINING NEWSPAPER

www.northernminer.com
MAY 17-23, 2010 VOL. 96, NO. 13 • SINCE 1915

Barker Minerals searches for BC diamonds

BY GWEN PRESTON

VANCOUVER — Many thought Chuck Fipke and Stu Blusson were crazy when Canada's diamond pioneers tried to convince the world they could find diamond-rich kimberlites in Canada's Far North.

Now **Barker Minerals** (BML-V) finds itself staring down its own set of critics. The Prince George-based company holds a swath of projects in a contiguous land package in east-central and southeast British Columbia, most of which are metal-based claims ranging from volcanogenic massive sulphide showings to porphyry occurrences to sedimentary-exhalative targets.

But one of Barker's properties, the Tasse project, seems to present a lot of indicators for the presence of diamonds. Yes: Barker Minerals is looking for diamonds in south-central B.C.

The Tasse property is about 30 km east of the town of Likely, near Quesnel Lake. Barker believes the area provides diamond potential through a lamproite subduction zone model, which is the genesis of the deposit feeding one of the world's largest diamond mines.

The Argyle mine in the East Kimberley region of Western Australia taps into a diamondiferous lamproite pipe that geologists believe formed because of the interaction between a steadfast Archean craton and an adjacent Proterozoic mobile belt. In the model, the younger mobile belt, an old ocean floor, is subjected to prolonged subduction under the stable craton. If conditions are right, the increased temperatures and pressures from the subduction partially melt a small amount of the metasomized lithospheric mantle and the magma ascends rapidly to the surface as lamproite.

Diamonds do not crystallize from the lamproite magma. Rather, if the ascending magma passes through portions of the mantle that already contain diamonds the gems can become entrained in the lamproite. In other words, the lamproite simply brings diamonds from an older, deeper part of the earth to the surface.

There are to date relatively few lamproites known worldwide, contained within fewer than 20 geological provinces, and only seven known lamproites are diamondiferous. All told, the odds are stacked against Barker Minerals. But the Tasse property has two strong characteristics in Barker's defence: the property hosts lamproites and those lamproites carry abundant eclogitic garnets, including olivine. And olivine lamproites are the only kind of lamproite that carry diamonds.

Olivine is a green phenocryst, or crystal, that is used as a diamond indicator. More generally, eclogitic garnets indicate that the host rock — usually kimberlite or lamproite — ascended from a place within the earth that had the potential to create diamonds.

In a lab report describing the lamproite samples Barker submitted from Tasse, the author wrote, "Microscopic examination of minerals from the xenoliths demonstrates the presence of diamond indicator minerals including bright green chrome diopsides, forsteritic olivines, ilmenites, chromites, yellowish-orange to reddish-purple eclogitic garnets and unidentified clear minerals."

Those unidentified clear minerals appear only in the samples that also contain eclogitic garnets.

Other aspects of the Tasse lamproites give credence to their potential to host diamonds. The rocks have been dated as Proterozoic, which is the right time frame within the subduction zone model, and the major Archean North American craton sits directly to the east, which means the area has the right off-craton location to produce a lamproite pipe.

And the lamproite as expressed on surface has the right shape — an irregular, not quite symmetric crater. Moreover, a recent airborne magnetic survey clearly delineated a group of near-circular anomalies, which is how kimberlite and lamproite pipes appear.

Barker Minerals and its president, Louis Doyle, are not the only ones who believe parts of British Columbia could host diamonds. A 2004 research paper by George Simandi, published in the journal *Lithos*, argues B.C. could host diamonds via the subduction model described above or via another model, known as the Diamondiferous Mantle Root model. Other researchers are also investigating the question, based on several claims of diamond finds in the province.

Argyle is currently the only major lamproite-hosted diamond mine. The lamproite pipe at Argyle hosts roughly 75 million tonnes of ore grading between 6 and 7 carats per tonne. The mine produces more carats per annum — 35,000 carats and above — than any other single primary diamond source; roughly 5% of those are gem-quality stones.

But, given some time, maybe Barker can aim to be the next.