Chidliak: Canada's Newest Diamond District

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The 980,000 hectare Chidliak Property (“Chidliak”) is located on the Hall Peninsula of Baffin Island, Nunavut, approximately 120 kilometers northeast of Iqaluit, capital of Nunavut.

The discovery of diamond-bearing kimberlites on the Chidliak Property is the result of applying classic diamond exploration techniques to a prospective area. In 2005, Peregrine Diamonds Ltd. (“Peregrine”) and BHP Billiton jointly funded a regional reconnaissance exploration program over a portion of southern Baffin Island. A reconnaissance till sampling programme was completed and five samples within the boundaries of what is now Chidliak contained probe-confirmed kimberlite indicator minerals (“KIMs”). One of these samples contained 21 KIMs.

In 2006 and 2007, till samples were collected by Peregrine at a tighter density in the area where anomalous samples were collected in 2005. Abundant KIMs were recovered from a number of samples. The mineral chemistry of the prospecting grains showed evidence of sampling within the diamond stability field. Microprobe analysis of over 2,000 lherzolitic pyrope garnets showed that approximately 10 percent of the grains had a high chrome/lows calcium harzburgitic, or “G10” geochemical signature, indicating good potential for the kimberlites which transported these grains to the surface to have diamonds. Diamond inclusion field eclogitic garnets and chromites were also recovered. Clinopyroxene thermobarometry indicated that the area was characterized by a cool geotherm, similar to that of the Slave Province in the Northwest Territories. The abrasion characteristics of many of the KIMs suggested minimal glacial transport and a proximal kimberlite source. Detailed studies of the mineral chemistry, particularly the picroilmenites, suggested that multiple sources, with distinct chemical signatures, were present at Chidliak.

In the summer of 2008, an 11,700 line kilometer airborne geophysical survey was completed over the areas with the greatest concentrations of KIMs. Ground checking of anomalies resulted in the discovery of two kimberlite pipes at surface, CH-1 and CH-2, and a collection of kimberlite boulders interpreted to represent a third kimberlite occurrence, CH-3. All three are interpreted to be kimberlite pipes, with circular geophysical surface expressions estimated at six, three and two hectares respectively.

The CH-1, CH-2 and CH-3 kimberlites returned encouraging diamond results. A 2.28 tonne mini-bulk sample, collected by hand from the surface of the CH-1 kimberlite, yielded 168 diamonds larger than the 0.425 mm sieve size, including 34 commercial-size diamonds larger than 0.85 mm weighing a total of 3.55 carats for a diamond content of 1.56 carats per tonne. The largest stone recovered was a 2.01 carat gem.

In November, 2008, BHP Billiton elected to exercise its earn-in rights at Chidliak. The exploration agreement calls for BHP Billiton to incur a total of $22.3 million in exploration expenditures on the Property to earn a 51% interest.

Because of the encouraging results, a $9.2 million exploration programme that will be fully funded by BHP Billiton has been approved. The approved programme includes the following principal elements: core drilling, the collection of a 50 tonne sample from the CH-1 kimberlite, heavy mineral sampling, ground geophysics and prospecting.
Chidliak is Canada’s newest diamond district; the nearest known kimberlite district is located approximately 700 kilometres to the east in Greenland. This discovery is a classic case of applying well-known diamond exploration principles that have been refined and improved by Canadian diamond explorers in the last two decades. Reconnaissance-scale sampling of glacial sediments led to the identification of an area containing KIMs and follow-up sampling better defined this area. Electron-microprobe and abrasion studies of the KIMs further prioritized the area. Studies of the glacial history and indicator dispersion trains allowed for the design of focused airborne geophysical surveys. Kimberlite-type anomalies were identified from the survey and prospecting resulted in the discovery of three kimberlites. Caustic fusion analyses of the kimberlites have proven them to be significantly diamond-bearing. This work sets the stage for the next phase of work, the evaluation of the economic potential of this new diamond district.