

### **Rodinia Breakup and a New Undercover Neoproterozoic Magmatic Cu-Ni-PGE Province at Cape York, Australia**

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Breakup of Laurentia from the North Australian Craton (NAC) in the early Neoproterozoic produced focused mafic-ultramafic complexes, dykes, chonoliths, and one large layered complex in an S-shaped faulted zone near the northeastern margin of the NAC at Cape York, Australia. Evidence is based on interpretation of aeromagnetic and gravity imagery, other regional occurrences of deformed mafic-ultramafic rocks, and anomalous soil geochemistry (ALS ionic leach). Since most of the complexes are under 50-300 m of Laura Basin cover (Middle Jurassic-Early Cretaceous), alluvial Pt, Pd, and Au are recorded in drainages and appear to be reworked from basal conglomerates of the Laura Basin. There are two possible primary sources: the first related to the Neoproterozoic mafic-ultramafic intrusives and feeders, and the second to small mafic-ultramafic intrusive bodies, possibly related to Permian flood basaltic andesites in an aulacogen formed between the major Palmerville and Yintjingga faults (Norilsk-type Ni-Cu-PGE deposit scenario).

Rhumb Resources has defined eight target areas with significant potential for Cu-Ni-PGE-Au-Ag-Co-REE in their nine tenures. Limited partial-leach soil data over magnetic target zones have defined several significant anomalous areas, with the St George-Fairlight North zone defined over 6.4 km x 1 km within an intrusive complex. A Voisey's Bay-style model best fits the data, with an interpreted chonolithic feeder and a large intrusion hosting the Cu-Ni-Pd-Co-Au-Ag-REE anomalies. To the northwest at Dead Horse, several feeder dykes/sills are evident, where 2 km of one dyke also has similar anomalism. A Jinchuan-type mineralisation scenario is suggested here. Reconstructions suggest the major Chinese Jinchuan Ni-Cu deposit (830 Ma) may have formed in reasonable proximity to the NAC. Ground geophysics and drilling are planned.

The interpreted large layered complex has dimensions of 36 km x 14 km, being similar in size to the Stillwater Complex in the US. It has potential for PGE reefs and contact Ni-Cu-PGE deposits.