

## New Caledonia – Mineral Sands

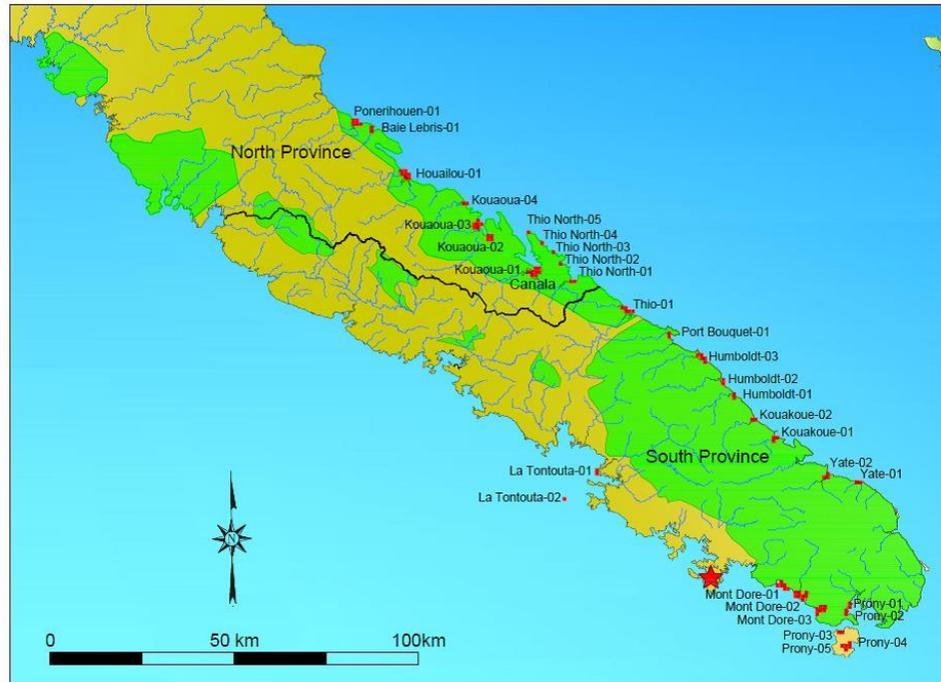
New Caledonia is a 250 mile by 30 mile island in the South Pacific which is the third largest island after New Zealand and Papua New Guinea. The landmass which rises to above 5,000 feet above sea level is comprised of Eocene ultramafic intrusive rocks which host economic oxide nickel and cobalt ore bodies along with elevated chromite. New Caledonia contains approximately 25% of the world's known nickel reserves.



### History

- Geovic's management team prospected for chromite deposits in the mineral-rich sands along the coast of New Caledonia while employed by Union Oil of California ("Unocal") during the 1980's. During Unocal's exploration program a significant mineral sands resource grading in excess of 5% chromite was identified. No NI 43-101 compliant resources were confirmed during this exploration.
- 2009 – Aerial reconnaissance conducted to identify potential targets resulting in the issue of a prospecting permit ("APM") from the New Caledonia Department of Industry, Mines and Energy ("DIMENC"). The APM covered 60 square kilometers in each of the North and South provinces.

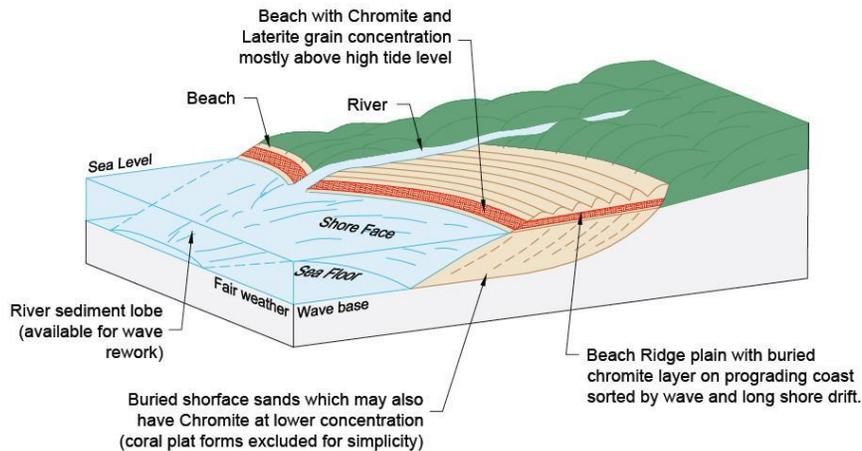
- 2010 – Geovic applied for 19 exploration licenses covering 60 square kilometers in the South Province and 12 exploration licenses covering 40 square kilometers in the North Province.



- 2011 – DIMENC granted exploration licenses over for the 31 applications. Surface sampling conducted on Geovic licenses.
- 2012 to 2013 - Geovic drilled shallow core drilling was conducted on the most favorable targets to obtain samples for metallurgical testing and resource calculations.
- 2013 – Unpublished independent NI 43-101 compliant report completed.

## Project Description

The chromite prospects of interest to Geovic occur in unconsolidated coastal sand deposits, some very remote, where chromite has been separated from ultramafic host rock, concentrated and winnowed with other heavy minerals (“HM”) by river and wave action. This has resulted in well-sorted concentrated deposits occurring as dark bands of HM sand up to one meter thick near the mouths of large river systems and along nearby beaches and back-beach deposits.



## General Process Summary

Mineral sand processing and recovery is very mature and one of the simplest and least costly mineral recovery processes. Recent advances and technical process improvements have improved the ease of mineral separation. Process chemical use is limited and the initial processing is limited primarily to water washing. Once a crude concentrate is produced, nearly 90% of the sand and sediments returned to their original location. The concentrated heavy minerals are then dried by heating prior to using magnetic and electrostatic separation methods before packaging for sale. Roasting and flotation may be used to increase the chromite concentration. Production facilities are typically modular, mobile, and require relatively low capital expenditures.

## Chromite Market

The main use of chromite is in the production of stainless steel and similar specialty steel products which is not possible without the use of chromite. Chrome content in stainless steel ranges from about 13-20%. The total world chromite market consumed approximately 30 million tonnes of chromite per year in 2016 according to the United States Geological Survey (“USGS”). Of this amount 90% of which is dedicated to stainless steel production.

USGS estimates that chromite reserves were 500 million tonnes of chromite and total resources were 12 billion tonnes of chromite in 2016.

According to Roskill, seventy percent (70%) of the world’s chromite is produced in four countries: South Africa (40%), Kazakhstan, Zimbabwe and India. The best quality chromite occurs in Kazakhstan. The

quality of chromite is measured primarily on the contained chromium content and the chromium-to-iron ratio of the oxide spinel mineral.

Potential future producers include Canada (James Bay Ontario deposit); China (remote Tibetan deposits), Turkey, and Zimbabwe (10% of world resource). The principal importers of chromite include China (77%) and Russia (5%). Most of South Africa's exports go to China; Kazakhstan's exports go mainly to China (76%) and Russia (24%); and Turkey's production goes to China (59%) and Russia (21%).