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### New life for nickel mine in Timmins

*Canadian Arrow Mines profits from old Alexo*

**By George Werniuk**

Driving east from downtown Timmins through Schumacher and South Porcupine, one can't help but notice the tailings mounds that have accumulated over the years from gold mining. There is a lot of mining history in this area. The Timmins camp was originally and still is a prolific gold producer. Continuing along Highway 101, Falconbridge Ltd.'s Kidd Metallurgical complex is a testament to the base metal contribution to the region's economy.

The eastbound trip took the author last September to another site that has been a bit player in Timmins' history.

The Alexo nickel deposit 45 km northeast of Timmins is 100%-owned by Canadian Arrow Mines Ltd. The Alexo property straddles Dundonald and Clergue townships. Access to the property is excellent along paved highways except for the last kilometre, or so, when we turned off Highway 67 to get to the open pits.

Nickel mineralization discovered here by Alexo Kelso in 1907 was put into production between 1913 and 1919, and again from 1943 to 1944. Like black flies in the spring, explorers kept probing the claims.

Outokumpu had the most success between 1996 and 1997. It carried out extensive geophysical surveys, mapping, whole rock analysis, soil geochemical surveys and 10,859 m of diamond drilling in 49 holes. The work resulted in the discovery of the Kelex nickel-copper zone to the southeast of the old Alexo mine.

Hucamp picked up where the Finns left off, completing 2,802 m of drilling in 29 diamond drillholes from February to April 2001. A *mise à la masse* (down-hole geophysics) survey completed between two drillholes suggested continuity of the sulphide mineralization between the holes.

Canadian Arrow acquired the property in early 2004 and extracted a 10,000-tonne bulk sample for metallurgical testing from the Alexo Mine zone. The ore was being mined under an advanced exploration permit, but at the same time Canadian Arrow commissioned a consulting firm to complete the required permitting for full mine production.

### **Geology**

The rocks in Dundonald and Clergue townships are part of the Kidd-Munro assemblage--an east-southeast-striking sequence that extends from Kidd Township in the west to the Grenville Orogen in Quebec, ranging in age from 2.717 to 2.711 billion years.

The Alexo property covers the northeast arm of a large Z-shaped fold in the assemblage. The Kelex and Alexo zones are at approximately the same stratigraphic interval where komatiitic flows (mafic lava) overlie a sequence of felsic pyroclastic rocks, basalt and komatiitic basalt interdigitated with thin layers of graphitic argillite. The volcanic rocks strike northeast and dip steeply north. Spinifex-textured flow tops indicate that the sequence faces north at Alexo.

Sulphide concentrations at the Alexo mine are in footwall embayments of a komatiitic peridotite/dunite unit overlying andesite. The sulphide minerals are in massive and semi-massive lenses that range in thickness from a few centimetres to greater than 12 m, with an aureole of net-textured and disseminated sulphides that extends laterally and vertically for several tens of metres. The massive ore consists of approximately 15-20% pentlandite and 80-85% pyrrhotite, with trace chalcopyrite. The nickel content of the sulphides ranges from 7-10% in 100% sulphide.

The embayments at Alexo are thought to be thermal erosion channels similar to those described at Kambalda, Western Australia, where sulphides tend to be confined to footwall embayments and have wide variations in thickness and grade over short distances.

## **Mining**

Canadian Arrow vice-president Paul Davis took the author from the company's Timmins office to the Alexo mine, where I met a smiling David Larche, president and CEO of Canadian Arrow. It was obvious right from the start that Larche is a hands-on guy. He was bounding with energy and enthusiasm as he pointed things out and guided me into the Alexo pit.

The first ore was trucked 320 km to Falconbridge's Strathcona mill in Sudbury in April 2004. Exploration drilling continued, to determine the extent of the mineralization and test geophysical targets along the Kelex West zone. The bulk sample from the Alexo pit was completed in July.

In August, Canadian Arrow received permission to take another 10,000-tonne sample, this time from the Kelex West and Central West nickel zones. The second sample was still being collected in late 2004. As the extraction progresses, drilling is outlining the extent of the mineralized zones, and testing geophysical targets. A PEM-Squid (pulse electromagnetic/super-conducting quantum interference device) geophysical survey was completed on the property in the late autumn. The results are being analyzed for new exploration targets.

About five truckloads of ore make the nine-hour round trip daily to Sudbury. Each truck hauls about 46 tonnes at a total transport cost of \$21.50 per tonne.

To get at the ore, overburden is stripped using an Hitachi 450 backhoe with a 4-yd<sup>3</sup> bucket and an Hitachi 350 backhoe with a 2.5-yd<sup>3</sup> bucket. Overburden cover varies from about 16 m in depth on the Kelex West Central zone to 50 m elsewhere. The overburden is stockpiled for future reclamation work. Either an automatic, or manual, Gardner Denver air track drill is used to free the ore. Blasting patterns vary, but a 50-hole pattern will typically require about 1,000 feet of drilling. Ore and waste rock is removed using two Volvo articulated rock trucks (35- and 25-tonne capacities) and a fixed-axle 35-tonne Caterpillar rock truck. Occasionally, one other Volvo machine and an additional fixed-axle rock truck are employed.

The work is being carried out by Larchex Inc., a mining and excavation company owned by David Larche. (The contract for this work was put out to public tender and Larchex had the lowest bid.) The life of the contract is based on the excavation time for the Kelex Zone.

Canadian Arrow receives a 70% advance down payment about six weeks after the grade of the ore is agreed upon by the shipper and receiver. Only once has an umpire been required to resolve a disagreement. The payment is based upon recoveries and grade. The remainder of the payment is received as the ore is processed.

As of mid-December, the life was three to four months for the Alexo pit and four to five months for the Kelex pit.

Buoyed by the financial and technical success of the first bulk sample, Canadian Arrow decided to go into full production. A certified closure plan was submitted to the government in September and approval is awaited. The plan is to complete mining the open pits to their economic limits and then continue mining from underground using contract miners.

Canadian Arrow continues to explore for more ore near this neat little mining operation. It has plans to follow up on anomalies outlined by the PEM-Squid survey on the property, and it will test the extension of the mineralized zone at depth for future underground mining.

The company is proving that, given the right circumstances, even past producers can be made productive again.