

Otago Daily Times

Online Edition | Tuesday, 21 July 2009 |

Otago's graduates searching for gold

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The Yukon crew (from left) helicopter pilot Franje Fransje Vanhoppe, from Whitianga, University of Otago graduate geologist Hanne Paulsen, Prof Dave Craw, a University of Otago economic geologist, Otago graduate geologist and geophysicist Hamish Blakemore and Dr Doug MacKenzie, Otago university senior research fellow at its geology department.

Otago and the Yukon Territory in Canada are well-known for their respective gold rushes of the 1860s and late-1890s, but the similar gold-bearing geology in each region has prompted a Canadian exploration company to utilise a variety of expertise from the University of Otago.

Gold explorer Underworld Resources may be a Toronto-listed company, but its chief executive Adrian Fleming has been living in Dunedin for the past four years, or will have until October this year when he and wife Sue, clinical director of women's health at Dunedin Hospital, move to Vancouver in Canada for about two years.

Underworld initially had some prospects in Otago and in 2008 had committed about \$1 million to a 12-hole test drilling programme at its Golden Progress prospect near Oturehua in Central Otago, and was also drilling near Thames and had other interests near Gisborne and Collingwood in Golden Bay.

However, the test drilling in Oturehua did not find any significant gold intersections and all Underworld's New Zealand permits have since lapsed.

But in the Yukon, 400km south of the Arctic circle, encouraging results from a 2008 ground exploration and drilling programmes for both alluvial and hard-rock gold prompted the company to focus on its Canadian venture, plus continue with low-level ground sampling work at a northern Chilean tenement.

Mr Fleming said of the Yukon tenement he had not seen a prospect "with this kind of merit anywhere in Central Otago".

"I don't know what Macraes looked like before they started drilling but this extensive soil geochemistry, done by Yukon prospector Shawn Ryan, was one of the best-looking properties I've seen in 30 years in the exploration business."

The 169sq km Yukon stake includes the White Gold and Black Fox prospects, about 90km south of Dawson City.

It has only been accessible by river barge and helicopter, but a 17km "pioneer" road has just been completed giving winter access to an airstrip and supplies from the Yukon River.

Dawson City was the epicentre of the frenzied Klondike gold rush which prompted 100,000 fortune seekers to try to get to Dawson City after 1896 and saw more than 12.5 million oz of gold extracted during the following century.

Mr Fleming, whose CV includes being part of the teams which discovered the high-grade gold zone of the Porgera gold mine in Papua New Guinea, Big Bell gold mine in Western Australia and discovery of the multimillion-ounce Gross Rosebel gold mine in Suriname, became interested in the Yukon because of its "compelling geological setting, very much like Central Otago".

There was significant historical alluvial gold production, a significant geochemical gold anomaly in an area 7km long and 3km wide, plus minimal hard rock gold exploration and no previous drilling in the area.

Five people from the University of Otago, ranging from geology department graduates through to a senior research fellow and a professor, have all assisted with the Yukon exploration - Hanne Paulsen, Prof Dave Craw, Hamish Blakemore, Dr Doug MacKenzie and Colin Brodie.

Mr Fleming said the geological, tectonic and erosion history of Central Otago and the Yukon were similar, especially the new Yukon White Gold discovery which also has gently sloping fault zones, "or thrusts in geospeak", which are important in controlling where the gold was deposited.

"The members of Otago University's geology department have spent a lot of time studying Macraes. It made sense to get these knowledgeable people to help understand the geology of this new gold discovery in the Yukon," Mr Fleming said.

Dr MacKenzie, originally from Vancouver, spent a month at White Gold in 2008 assembling a geological map of the property and working out the geological history of the area.

He has just spent six weeks at the Yukon site extending the geological mapping and working out what geological features control the distribution of gold mineralisation, Mr Fleming said.

Prof Craw had previously done work on the Yukon gold occurrences near Dawson City.

Mr Fleming said he had recently spent a few days at White Gold helping Prof Craw "assemble pieces of the geological jigsaw puzzle", plus had done laboratory work on earlier Yukon rock samples sent back to Otago University's geology department.

Geologist Hanne Paulsen, originally from Norway, completed a master of science degree at Otago, and with another Otago graduate, Adam Martin, did the first field work at White Gold in the Yukon in the summer of 2007 after Underworld "optioned" the property in May 2007.

Ms Paulsen worked on the 2008 drilling programme and also this year's, which could run summer and winter, but there is a lack of lake water in the immediate area to do so.

Summer temperatures are up to 30degC, an average -12degC in winter but with lows to -40degC, although permafrost affects only a few north-facing slopes.

Mr Fleming described the situation as "win-win", for Underworld and the geologists, saying for people such as Prof Craw and Dr MacKenzie it exposed them to new areas with similar, as well as different, geology and spread the net of their research activities.

" It also gives them new rocks and geology to teach their students about, and importantly provides topics for publications. I get paid to find gold while academic geologists like Doug and Dave get paid to teach, do research and publish their work," Mr Fleming said.

Beginning in 2008, Underworld completed its first drilling programme of 27 holes.

Its next phase covered a total 4000m of drilling at the White Gold project early in June this year with 15 core drills, in an attempt to expand gold discoveries made during its 2008 drilling programme at Golden Saddle and Arc prospects.

The second phase of drilling began about mid-June and is expected to be completed by the end of this month after a total 12 holes, or 6000m.

Mr Fleming said gold assays from the more significant recent second-phase drilling intercepts "eclipsed" results from the earlier 2008 programme, returning measures of 1.84 grammes of gold per tonne (g/t) over a length of 102.5m, 3.89g/t over 60.5m and 3.39g/t over 104m from three of the holes drilled at the Golden Saddle zone, near another hole which returned 3.1g/t over 50.7m.

Mr Fleming said, following the worldwide demand for resources during boom times, some minerals increased in price 3000%-4000% before the credit crunch took hold.

Underworld was one of the few companies at present bringing in promising results.

He said while exploration investment had dried up for many in the resources sector, Underworld had to date spent \$C6.25 million (\$NZ8.54 million).

It had about \$C17.3 million working capital to hand, and had in recent months been approached by several "mid-cap" (medium-sized) mining companies interested in its test results.



Underworld Resources' camp in the remote White Gold prospect within its Yukon tenements, for up to 40 staff, about 400km south of the Arctic Circle.

Underworld Resources

Underworld Resources floated in March 2007, trading on the mining-friendly TSX Venture Exchange, and at the time raised \$C2.1 million (\$NZ2.9 million) in C50c shares.

Last month, Underworld raised a further \$C16.55 million (\$NZ22.84 million) in brokered and unbrokered private placements, setting itself up with capital for at least two years of exploration work on its Yukon tenements.

There is an expectation a further \$C7 million may be raised by Underworld with the issuing of warrants in the future.

Underworld shares have steadily risen from \$C50c last December to a year high of \$C2.64 last month but have since eased, to trade between \$C1.40 to \$C1.50.

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