

Frasers underground gold mine 'unsung success'

14 September 2009 - The Frasers underground mine at Macraes gold mine in east Otago is an unsung success story in the New Zealand mining scene, two of the people involved with the mine, Cam Wylie and Anthony Jones, told the AusIMM minerals conference in Queenstown.

They said it was a unique operation in world terms, considering the ground conditions, low resource grade and a novel stoping method.

Cam Wylie is the principal of Resource Development Consultants Ltd and Anthony Jones is the underground geotechnical engineer for the mine owners OceanaGold.

They said the rockmass at Frasers underground is highly heterogeneous and anisotropic due to the presence of pervasive foliation, numerous shears and fault zones. The ground could be described as greasy in places, due to the presence of graphite associated with the higher grade ore.

Gold mineralisation is best developed in the upper hanging wall zone.

Contractors Byrnegut Mining began portal access into the underground mine into the Panel 1 and Panel 2 sections from a portal in Frasers openpit mine in March 2006 cutting a 5 m by 6 m decline.

The mine is laid out around the decline access (which has a gradient of around 1 in 7) with stoping panels separated by regional pillars for stability.

A retreat long hole open stoping (RLHOS) mining method is used with 15 m wide stopes separated by yielding pillars.

The stoping panels are set up by developing ore drives, 4.5 m by 4.5 m off the main decline. These drives are then drilled out with a longhole production drill rig to create a nominal 15 m by 15 m stope, though this varies with thickness of ore.

Ore and waste rock is moved using conventional and remote controlled front end loaders and articulated trucks for haulage up the access to a ROM pad located in the Frasers openpit area.

The geotechnical approach was based on continuous improvement, application of basic principles and observation supported by selective monitoring.

OceanaGold reported in its June quarter that Frasers underground produced a record 223,000 tonnes of ore with higher grades on better stoping conditions.

Sources: OceanaGold and Lindsay Clark

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