

AVZ Minerals Ltd

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AVZ Minerals rapidly dewateres Roche Dure open pit as phase-one DFS test work at Manono Lithium-Tin Project is completed

AVZ Minerals Ltd (ASX:AVZ) has completed the comprehensive phase-one metallurgical test work program at its Manono Lithium and Tin Project, increasing confidence in the Democratic Republic of Congo-based project.

Confirmatory tests are now underway after phase-one work, which focused on characterisation and recovery of lithia, tested conventional laboratory heavy liquid separation (HLS) techniques and both laboratory-scale and industrial-scale dense medium separation (DMS).

Better understanding of ore characteristics

The test work confirmed finer crush material produced better lithia grades and recoveries while sighter scale-up tests using an industrial-size DMS pilot plant also confirmed confidence in laboratory-scale equipment and procedures.

High pressure grinding roll (HPGR) tests performed on a 300-kilogram sample of Roche Dure ore to complement comminution test work showed it has similar comminution characteristics and rock strengths to other well-known lithium pegmatite ores.

DFS work gaining momentum

The company has also commissioned the newly purchased Sykes dewatering pump at its Roche Dure open pit.

Roche Dure's dewatering is part of its definitive feasibility study field program, which is gaining momentum with accelerated dewatering, geotechnical and hydrogeological consultants being engaged and pit floor drilling being considered and tendered.

Opportunity to improve performance in phase-two

AVZ managing director Nigel Ferguson said the company was seeing encouraging results from the metallurgical test work undertaken so far.

He said: "In the DMS100 test, a 5.56-millimetre crush produced a lithium oxide recovery of 59% at a spodumene concentrate (SC) grade of 6.1%, while at a finer 3.35 millimetre crush the results were even better, delivering a lithium recovery of 66% at a SC grade of 5.8%.

"Lithia recoveries were approximately 2% lower in the DMS250 test work at a 5.8% grade and 4% lower recovery at 6% grade.

"Lithium oxide at 5.8% shows 60% recovery and 6.1% grade with 55% recovery.

Price: 0.042

Market Cap: \$96.77 m

1 Year Share Price Graph



Share Information

Code: AVZ
Listing: ASX
52 week High: 0.096
52 week Low: 0.037

Sector: Rare earths & specialist minerals

Website: www.avonleaminerals.com

Company Synopsis:

AVZ Minerals Ltd (ASX:AVZ) is listed on the Australian Securities Exchange.

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"This suggests there is an opportunity to improve DMS250 performance by optimising test parameters in the phase-two confirmatory program based on equipment performance."

Deleterious elements successfully reduced

In order to scale the HLS results, DMS100 testing focused on both crush sizes and testing was performed with and without the mica removal reflux classification process, to ascertain the impact on product grade and recovery.

Roche Dure ore is considered sufficiently low in mica to conceivably present as a problem mineral in the final product specification.

However, the reflux classification process proved successful in reducing both mica volumes and iron grades well below acceptable levels in the final concentrate.

Further optimisation of recovery process

Ferguson added: "There will be an opportunity to recover a tin rich stream from the lithia concentrate stream with simple gravity separation techniques employed.

"Additional lithia recovery optimisation may be gained through an opportunity to feed a coarser product to the HPGR or pre-screening prior to crushing by HPGR.

"To optimise DMS lithia recovery when targeting a coarser 5.56-millimetre DMS feedstock, a two-size fraction DMS circuit may be beneficial.

"This will be tested in phase-two along with examining 0.3-millimetre DMS cut-off size instead of 0.5 millimetres.

"Further optimisation of the larger DMS250 industrial scale test will be completed in the next round of work.

"We have not investigated, as yet, any further downstream treatment to increase purity of grade such as optical sorting, magnetic separation or other methodologies."

Roche Dure pit dewatering

The five-tonne Allight Sykes CP300 high-volume dewatering pump was commissioned at Roche Dure in early September.

The pump had almost immediate results on the reduction of Roche Dure's water level.

Combined with a pontoon-based spindle pump, the Sykes pump can be manoeuvred over deeper 'holes' in the pit floor to ensure there are no flooded pit floor depressions that will come to light as the water level drops further.

Pit potentially emptied quicker than anticipated

Ferguson said the arrival of the Sykes discharge pump combined with the smaller spindle pump had demonstrated an acceleration of the dewatering rates at Roche Dure.

He continued: "With both pumps combined we were able to draw down the greatest surface area at the top of the water-filled pit by 0.75 metres in 55 hours.

"As bathymetric work indicates, the pit is a maximum of approximately 25 metres deep - we anticipate the pit may be emptied quicker than the 3 months initially anticipated.

"Planning has therefore been finalised to drill a sufficient number of tonnes of the pit floor to 'bank' the project.

"This is estimated at 25 million tonnes of inferred resource within the pit floor being brought to a measured resource category."

Phase-two test work to assist appraising final mine design

Johannesburg-based geotechnical company Middindi Consulting has been awarded the phase-two geotechnical contract and will collect DFS-level information to assist in wall angle appraisal for the final mine design.

Field studies will require mapping of hanging-wall overburden, along with specialist mapping of pegmatitic outcrops exposed near the current pit edges, as well as in the soon to be exposed pit walls.

Drilling of specialised orientated drillholes for statistical analyses of discontinuities, and collection of samples for rock strength tests, will be carried out in the last quarter of 2019.

Potential sites for the processing plant and tailings facilities to support a minimum 20-year mine life have begun appraisal, with encouraging initial reconnaissance results.

This work will continue into the last quarter of this year and is being undertaken by GRES Engineering, which will optimise the facilities' location under the guidance of AVZ.

Next steps

Along with metallurgical optimisation, the phase-two program aims to:

Verify phase-one process flowsheet and design parameters;

Optimise the industrial size DMS250 operation to maximise recovery;

Examine ore variability and its effects on economic performance;

Generate representative spodumene concentrates for marketing assessment and valueadding test programs;

Perform all necessary engineering and vendor testing; and

Provide typical spodumene concentrates for further lithium carbonate and lithium hydroxide feasibility studies.

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