

10:25 09 Apr 2019

Today's Market View - Anglo to use technology to raise productivity in Chile by 30 pct

SP Angel - Morning View -Tuesday 09 04 19

Anglo to use technology to raise productivity in Chile by 30%

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Anglo American (LON:AAL) - Anglo claim tech overhaul could raise productivity at its Chilean copper mines by 30% in next three years

Transense Technologies (LON:TRT) - Anglo to use technology to raise productivity in Chile by 30%

Altus Strategies* (LON:ALS) - Drilling programme for the Tabakorole Gold Project, Southern Mali

Anglo American (LON:AAL) - De Beers diamond sales

Bluebird Merchant Ventures* (LON:BMV) - Progress report on Gubong permit application

IronRidge Resources* (LON:IRR) - Board change

Rio Tinto (LON:RIO) - approves \$463m expansion at Richards Bay at Zulti South

Savannah Resources* (LON:SAV) - Mina do Barroso lithium Mineral Resource increase

121 Mining Investment Conference London 20-21st May

- 30% Bigger than last year. >400 investors registered to date. >500 expected to register. >100 companies expected to present.

Anglo American (LON:AAL) 2215, Mkt cap £29bn - Anglo claim tech overhaul could raise productivity at its Chilean copper mines by 30% in next three years

Transense Technologies (LON:TRT) 61p, Mkt Cap £10m

- Anglo American, copper chief, Hennie Faul, reckons the company can raise productivity by 30% at its Chilean copper mines in the next three years (Reuters).
- Anglo is re-tooling the El Soldado mine in Chile this year as a test site for the technology for real-time operational trials of new products and ideas.
- Technologies may then move to Anglo's larger mines in Chile at Los Bronces and Collahuasi.
- For example, coarse particle recovery and dry stacking can halve water use and reduce waste, in a country where water is seen as an important resource.
- Anglo is also looking at spending another \$3.2bn at Collahuasi in jv with Glencore to extend the life of the mine

and is also looking to expand Los Bronces.

- Management also claim the business is busy exploring in Chile, Brazil, Ecuador, Australia, Finland and Zambia.

Conclusion: The major miners occasionally refer to the benefits of new technology driving cost efficiency in their mines with the clearest example in the automation of trains and dump trucks in the iron ore mines of the Pilbara, Australia.

Transense Technologies is a UK technology company working with mining companies in the monitoring of tire temperature and pressures and axil torque with its iTrack technology to keep mines moving.

Data center: We are also working with a specialist mining datacenter which does real-time monitoring of all aspects of mineral processing and mining to achieve significant production gains and cost benefits. The company also works in joint venture with a motor manufacturer to monitor the performance of its electric motors to improve motor performance related productivity.

Vanadium - ferro vanadium prices stabilise at \$48-52/kgV in Western Europe

- Ferro vanadium prices fall 6.6% in China to \$54-58.5/kgV

Dow Jones Industrials

-0.32%

at

26,341

Nikkei 225

+0.19%

at

21,803

HK Hang Seng

+0.15%

at

30,122

Shanghai Composite

-0.16%

at

3,240

FTSE 350 Mining

+0.23%

at

21,082

AIM Basic Resources

+1.00%

at

2,185

Economics

IMF is due to update its economic growth forecasts today.

- Previously, IMF MD Christine Lagarde argued that the world is in a 'precarious' position and the OECD's latest composite leading indicator suggests there's been a easing momentum in most major economies, including the US, the UK, Canada, and the Euro zone.
- January estimates guided for a marginal slowdown in this year and next with the economy estimated to expand at 3.5% in 2019 and 3.6% in 2020, 0.2pp and 0.1pp down on last October's projections and 3.7% recorded in 2018.

China - Auto demand continued to decline with sales down for a 10th consecutive month in March.

- Auto sales are reported to have dropped 12%yoy coming in at 1.78m units, according to China Passenger Car Association.
- This follows on a 13.8%yoy drop in February.

UK - PM is due to meet Angela Merkel and Emmanuel Macron today ahead of an emergency EU summit in Brussels on Wednesday while lawmakers will hold a debate on her proposal to delay Brexit date to June 30 from April 12.

- While negotiations with an opposition leader Jeremy Corbyn are ongoing little progress has been achieved.
- The Telegraph reported Labour and the government were still discussing both a customs union and the idea of holding a confirmatory referendum on any deal they agree.
- Both offers run strongly against many hard line Brexiteers in May's party.
- On a separate note, British consumers cut back their spending in March marking the first yoy monthly decline since April 2018, according to the British Retail Consortium.
- Total sales (mostly covering high-street retailers and supermarkets) declined 0.5%yoy in March following a 0.5%yoy gain in the previous month,
- "Brexit continues to feed the uncertainty among consumers," BRC said. "While jewellery, beauty products and clothing purchases were all up to indulge on Mother's Day, shoppers were generally cautious not to overspend, particularly on larger items."

Kazakhstan - An interim president, Kassym-Jomart Tokayev, called a snap presidential election today.

- The vote has been set for June 9.
- Tokayev assumed the head of state role following the surprise resignation of Nursultan Nazarbayev last month who had run the republic for nearly three decades.
- Although, Nazarbayev, retains significant control as the official "national leader", chair of its security council and head of the ruling Nur Otan party.
- Tokayev, a former Senate speaker, has not confirmed if he will be participating in elections.
- Dariga Nazarbayeva, daughter of the former president, has been recently unanimously elected as the new speaker of the upper chamber following Tokayev's accession to the presidency.

Currencies

US\$1.1268/eur vs 1.1229/eur yesterday Yen 111.32/\$ vs 111.46/\$ SAr 14.069/\$ vs 14.127/\$ \$1.308/gbp vs \$1.305/gbp 0.715/aud vs 0.710/aud CNY 6.715/\$ vs 6.719/\$

Commodity News

Precious metals:

Gold US\$1,299/oz vs US\$1,297/oz yesterday

Gold ETFs 71.9moz vs US\$71.9moz yesterday

Platinum US\$902/oz vs US\$909/oz yesterday

Palladium US\$1,385/oz vs US\$1,366/oz yesterday

Silver US\$15.24/oz vs US\$15.16/oz yesterday

Base metals:

Copper US\$ 6,520/t vs US\$6,455/t yesterday

Aluminium US\$ 1,875/t vs US\$1,893/t yesterday

Nickel US\$ 13,245/t vs US\$13,205/t yesterday

Zinc US\$ 2,880/t vs US\$2,913/t yesterday

- Zinc prices tumbled on concerns that metal smelters may raise supply amid a surge in treatment charges, causing London benchmark zinc to fall -0.8% and the most active zinc contract on the Shanghai Futures Exchange to fall -1.6% to 22,710 yuan (\$3,382.53)/t.
- Market participants are concerned that supplies of finished zinc will surge after smelters and miners agreed to a sharp rise in the latest treatment and refining charges. For Chinese smelters, those charges have climbed to about 6,350 yuan (\$945.83)/t for domestic concentrate from 3,500 yuan at the start of 2018.
- Rising margins will only drive smelters to maximise their utilisation rates. In response, on-Warrant LME zinc inventories abruptly surged 6% to 46,725t after touching record lows in later March, according to daily LME data.

Lead US\$ 2,005/t vs US\$1,997/t yesterday

Tin US\$ 20,905/t vs US\$20,880/t yesterday

Energy:

Oil US\$71.0/bbl vs US\$70.6/bbl yesterday

Natural Gas US\$2.719/mmbtu vs US\$2.678/mmbtu yesterday

Uranium US\$25.85/lb vs US\$25.75/lb yesterday

Bulk:

Iron ore 62% Fe spot (cfr Tianjin) US\$93.1/t vs US\$91.5/t

Chinese steel rebar 25mm US\$636.4/t vs US\$628.1/t

Thermal coal (1st year forward cif ARA) US\$74.2/t vs US\$74.0/t

Coking coal futures Dalian Exchange US\$187.4/t vs US\$187.3/t

Other:

Cobalt LME 3m US\$32,000/t vs US\$32,000/t

NdPr Rare Earth Oxide (China) US\$41,397/t vs US\$41,378/t

- Under pressure from the Malaysian government, Lynas Corp is considering initial ore processing in Australia to fulfill new, tougher requirements to have its processing licence renewed. Malaysian prime minister Mahathir Mohamad said Lynas could continue to operate in the country as long as raw materials coming to Malaysia were 'cleaned'.
- Lynas represents one of the world's main suppliers of rare earths outside of China, and is being squeezed to process materials closer to the Mt Weld mine. The Company add "we see value in operating alternative cracking and leaching processing close to our resource".
- Lynas have recently rejected a A\$1.5bn takeover offer by Wesfarmers, who are considering building new processing facilities as part of expansion plans and to reduce risks from potential regulatory changes in Malaysia.
- In December, Malaysia ordered Lynas to remove 450,000t of low-level radioactive waste stockpiled by Sept. 2, when the company's licence is up for renewal.
- To gain greater clarity around licence renewal, Wesfarmers have engaged with the Malaysian government to present its credential as a potential acquirer of Lynas.
- Uncertainty surrounding limited and major ex-China rare earth production serves as a prime example for the necessity for sustained investment across the sector, supporting advanced stage exploration projects such as Mkango Resources to bring diversified production to growing technology markets.

Lithium carbonate 99% (China) US\$9,605/t vs US\$9,675/t

Ferro Vanadium 80% FOB (China) US\$53.0/kg vs US\$54.5/kg

Antimony Trioxide 99.5% EU (China) US\$6.5/kg vs US\$6.5/kg

Tungsten APT European US\$270-282/mtu vs US\$271-282/mtu

Battery News

Miners turning to electric diggers

- Komatsu Ltd. has developed its first battery-powered digger, a 4.7t mini excavator, offering fully charged operations of 2-6 hours.
- Komatsu's "zero-emission" electric digger mirrors a push by global automakers to produce vehicles that meet stricter emissions standards.
- Miners are also seeking to transform their operations, replacing diesel-fuelled equipment from drills to 40t haul trucks with quieter, more efficient and less-polluting electric-powered alternatives.
- Members of the International Council on Mining and Metals have previously agreed to make vehicles used at above-ground operations greenhouse gas emission-free by 2040.

Engineers develop concept for hybrid heavy-duty trucks

- Heavy-duty trucks are dominated by diesel engines. Researchers at MIT have devised a new way of powering these trucks that could drastically curb pollution, increase efficiency, and reduce or even eliminate their net greenhouse gas emissions.
- The concept involves using a plug-in hybrid engine system, in which the truck would be primarily powered by batteries, but with a spark ignition engine (instead of a diesel engine).
- That engine, which would allow the trucks to conveniently travel the same distances as today's conventional diesel trucks, would be a flex-fuel model that could run on pure gasoline, pure alcohol, or blends of these fuels.
- While the ultimate goal would be to power trucks entirely with batteries, the researchers say, this flex-fuel hybrid option could provide a way for such trucks to gain early entry into the marketplace by overcoming concerns about limited range, cost, or the need for excessive battery weight to achieve longer range.

Shell invests in natural climate solutions, new EV chargers for emissions reduction plan

- Royal Dutch Shell is continuing its recent climate-forward push as the company announced plans to invest in natural climate solutions and reforestation programs, along with a group of new renewable energy-powered EV chargers in the Netherlands.
- Shell said it will invest \$300m in natural ecosystems as part of the gas and oil giant's evolving strategy on climate change and addressing CO2 emissions. Shell has established a three-year target, starting this year, to reduce its net carbon footprint by 2-3%.
- Shell plans to offset CO2 emissions from its business with carbon credits, which it purchases from "a global portfolio of nature-based projects." The company notes that "each carbon credit is subject to a third-party verification process and represents the avoidance or removal of 1 tonne of CO2."
- Shell is also "investing in 200 new rapid electric vehicle charge-points, powered by renewable energy, on its forecourts in the Netherlands." This is in addition to the company's ongoing effort with IONITY to install 500 "ultra-fast" chargers on its forecourts across Europe, and Shell's recent acquisition of EV fast charging installer Greenlots.

Company News

Altus Strategies* (LON:ALS) 3.9p, Mkt Cap £6.9m - Drilling programme for the Tabakorole Gold Project, Southern Mali

- The team identified a series of drill targets at the wholly owned 100km² Tabakorole gold project in southern Mali, located 100km southwest of the Morila gold deposit.
- Tabakorole hosts an estimated historical surface resource at the FT prospect of 7.9mt at 0.94g/t for 240koz in the Indicated category and 10.6mt at 1.03g/t for 350koz in the Inferred.
- The Company reports a number of areas that returned high grade intersections in the past including 18m at 6.05g/t from 12m and 24m at 2.53g/t from 48m have not been followed up on by previous operators which offer a chance to discover new ounces proximal to the current historical resource area.
- Additionally, the review of historic data including airborne magnetic information established the presence of the untested FT South, a 2.5km long area running broadly parallel to the FT prospect 600m to the north.
- Proposed programme includes:
 - Phase 1 focusing on FT prospect and extensions, FT South and FT East with 2,500m of RC and DD drilling as well as 3,000m of AC drilling to extend and improve historic resource and define additional resource targets from adjacent prospects (\$500k budget).
 - Phase 2a focusing on additional resource drilling with 5,000m (RC and DD) over 40-50holes between 150 and 250m depth (\$1m budget).
- A detailed presentation on the project is available at http://altus-strategies.com/site/assets/files/4258/altus_tabakorole_project_review_-_q2_2019.pdf.
- Indiana Resources, an ASX listed explorer, is said to continue with its due diligence regarding a potential JV over Lakanfla and Tabakorole gold projects with the deadline for the decision having been recently extended to 6 May 2019.

Conclusion: The team laid out a plan of follow up drilling testing areas where historic work returned high grade and wide intersections as well as a series of new targets located in close proximity to the historic Tabakorole resource area based on a review of geophysical surveys.

*SP Angel acts as Nomad and Broker to Altus Strategies plc

Anglo American (LON:AAL) 2015 pence, Mkt Cap £26.63bn - De Beers diamond sales

- Anglo American reports that that De Beers achieved provisional sales of US\$575m for its 3rd diamond sale of 2019. After adjusting the provisionally reported value of the second sale of the year to the actual US\$596m achieved we estimate that this brings diamond sales for the year to date to US\$1,571m, approximately 11% lower than the equivalent position in 2018.
- Although the sales to date are still lagging those at the same point in the sales cycle in 2018, they appear to be closing the almost 20% shortfall reported at the second sale of 2019.
- Third cycle sales of US\$575m are US\$51m (approximately 10%) higher than the US\$524m achieved in the third sale of 2018 and US\$79m (16%) above the previous sale in 2019 which achieved US\$496m.
- Commenting on the results, De Beers' CEO, Bruce Cleaver, said that "As we move into the second quarter of the year, we saw a continuation of stable demand for our rough diamonds during the third cycle of 2019."

Conclusion: De Beers diamond sales appear to be recovering after a slower than usual start to 2019.

Bluebird Merchant Ventures* (LON:BMV) 2.35p, Mkt Cap £5.4m - Progress report on Gubong permit application

(Bluebird is earning into a 50:50 JV with Southern Gold Ltd at Gubong and Kochang)

- Bluebird Merchant Ventures has provided further details on the progress of its application to resume mining at the historic Gubong gold mine in South Korea.
- Although the company reports a positive response to the application submitted on 22nd January, the Provincial Government has requested additional clarification and information on the application for a "permit to develop" Gubong.
- The company says that it is confident that it will be able to submit the required information before the required

deadline of 17th April.

- Commenting on the efficiency of the South Korean mine permitting process, CEO, Colin Patterson, said that "I have never seen such a quick response by a government department to an application to develop a mine."
- Mr. Patterson described how the planned re-opening of the Gubong mine, formerly the country's second largest gold mine prior to closure in 1971 "when gold prices were US\$40 per ounce" and of the Kochang gold/silver mine, had been "achieved with an expenditure of less than £1.5 million and this has brought us very close to the point of constructing a producing goldmine. Such rapid progress would be difficult to achieve with an exploration project, both in terms of expenditure and the time required to achieve production".
- He went on to say "When we produce gold in South Korea it will be of national significance as we will be reopening the first gold mine in South Korea in two decades."
- The company points out that the "timing for the outcomes of government processes can be difficult to predict. However, the Company remains confident that both applications will be successful".

Conclusion: Bluebird Merchant Ventures is optimistic that the permitting to re-open the Gubong gold mine is progressing well and is submitting additional information to the authorities to support the application.

*SP Angel act as broker to Bluebird Merchant Ventures

IronRidge Resources* (LON:IRR) 18.3p, Mkt Cap £56.5m - Board change

- IronRidge announce the retirement and replacement of Mr. Bastiaan Van Aswegen with the appointment of Mr. Kieran Daly as Non-Executive Director to the Board.
- Kieran formally joins the Board as part of the Company's strategic alliance with mining company Assore Limited, which has a 31.27% shareholding in IronRidge. Mr. Daly brings extensive resources industry experience in strategy, corporate development marketing and operations.
- His key roles included leading and developing Anglo Coal's marketing efforts in Asia, and to steel industry customers globally, as well as being Global Head of Strategy for Anglo Coal immediately prior to leaving Anglo in 2007.

*SP Angel act as nomad and broker to IronRidge Resources

Rio Tinto (LON:RIO) 4729p, Mkt cap £80bn - approves \$463m expansion at Richards Bay at Zulti South

- Rio Tinto have approved the expansion of its operations at Richards Bay.
- The \$463m expansion is to maintain sales of high-margin zircon and rutile and to supply sufficient ore to support TiO₂ sales.
- The project delivers an IRR of 24% to Rio Tinto for its 74% share of the business.

Savannah Resources* (LON:SAV) 5.7p, Mkt Cap £49.8m - Mina do Barroso lithium Mineral Resource increase

- Ongoing exploration drilling at the hard-rock Mina do Barroso lithium project has yielded a significant 17% increase in the overall JORC 2012 Compliant Measured, Indicated and Inferred Resource, which now stands at 23.5Mt @ 1.02% Li₂O for 241,000t contained Li₂O. The latest resource is the fourth increase achieved in less than 14 months.
- The update represents a 28% increase in Measured and Indicated Resource to 13.3Mt @ 1.0% Li₂O, encompassing 58% of the total Mineral Resource.
- Reverse Circulation ("RC") and diamond drilling has focused on both improving the Mineral Resource Estimate category of the existing Mining Inventory, as well as targeting areas in and close to the potential open pit mining areas.
- Grandao:
 - 100% of the Mining Inventory within the stage one Grandao pit defined in the June 2018 Scoping Study

- being converted to either Measured or Indicated category.
- The Grandao deposit comprises two main pegmatite intrusions with additional minor parallel lenses. Confirmed spodumene-dominant lithium grade zonation occurs within the pegmatites, with weakly mineralised zones evident at the margins of the dykes.
- The Grandao Mineral Resource Estimate is based on results from 92 RC drill holes, 31 diamond holes and 25 RC holes with diamond tails completed by Savannah between 2017 and 2019.
- Pinheiro:
 - The Pinheiro Deposit comprises a cluster or swarm of pegmatite bodies striking broadly NS and dipping steeply to the east, defined over a strike of 250m with an average thickness of 10-20m.
 - The Pinheiro Mineral Resource Estimate is based on results from 10 RC drill holes and 2 diamond holes completed by Savannah in 2018 and both modelled pegmatite zones remain open either along strike or down dip.
 - At Mina do Barroso, lithium mineralisation occurs predominantly in the form of spodumene-bearing pegmatites, which are hosted in metapelitic and mica schists, and occasionally carbonate schists of upper Ordovician to lower Devonian age.
- NOA:
 - The NOA Deposit is hosted in steep dipping NW trending tabular pegmatite which has a true width of 5-10m thick. The deposit outcrops over a strike length of 420m.
 - The estimate is based on results from 22 RC and two diamond drill holes all completed by Savannah in 2017 and 2018.
 - Approximately 80% of the mining inventory defined in the scoping study for the NOA open pit is now in an Indicated Mineral Resource category, while the deposit remains open along strike and at depth.
- Savannah have defined a Mineral Resource Estimate from four deposits in the Mina do Barroso project area, remaining open and untested by drilling either down dip or along strike.
- To quantify the potential of the Project beyond the currently defined Mineral Resource Estimates, an Exploration Target for the Grandao and Reservatorio Deposits of 9-15Mt at 1.0% to 1.2% Li₂O. This gives a project target of 32-38Mt at 1.0-1.2% Li₂O incorporating the existing Mineral Resource Estimate.
- In addition, there are numerous other outcropping pegmatite dykes that require drill testing to determine if they are also lithium bearing, offering significant exploration upside.
- Detailed test work by Savannah has also demonstrated a large proportion of the assayed iron is unfairly due to contamination from the abrasion of steel sample preparation equipment.
- 208 duplicate samples were submitted for analysis using ceramic sample preparation equipment, with a 41% fall in Fe-content.
- The amount of contamination increased with lithium content, so a regression formula was developed to factor the Fe grade based on the lithium grade, and applied to the resource statement to better estimate the true iron content.

Conclusion: SP Angel are pleased to see sustained and rapid exploration work has yielded the fourth successive resource increase, which cements the Mina do Barroso project as a crucial source of European lithium. We look forward to understanding the true scale of the project area with subsequent exploration programmes, and the impact on project economics.

*SP Angel acts as Nomad to Savannah Resources

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