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OUTSTANDING RESULTS FROM X-RAY ORE SORTING TRIAL

Breakthrough for the Torrington Tungsten Project

Ore sorting testwork carried out by TOMRA Sorting Solutions - Mining (TOMRA) at their test facility in Sydney on hand selected Torrington tungsten mineralised and unmineralised silexite utilising their X-Ray Transmission (XRT) system has been successfully completed.

Summary of Results

The head grade of the silexite* sample feed was 0.78% WO_3 and following sorting through the plant:

- The mineralised product represents 56% of the sample feed and assayed 1.38% WO_3; and,
- The unmineralised (waste) product represents 44% of the sample and assayed 0.029% WO_3.

What this means is that approximately half of the material going through the sorter is rejected as waste, thus significantly reducing the mass to be processed further while also increasing the grade of the mineralised fraction.

The finely disseminated tungsten mineralisation was very clearly detected by the TOMRA XRT system. From this small scale sorting testwork, it appears that almost all the mineralised samples would be classified as product and the unmineralised samples as waste in a commercial-scale sorting plant.

In these tests, a certain number of 'mineralised' (dense) spots were selected as the cut-off, so one presumes the waste could have even lower tungsten content if tweaked in an operating plant, but there will be an economic cut-off based on percentage of waste discarded vs amount processed and cost thereof.

To verify that significant mass reductions and high recoveries can be achieved from a full scale XRT sorter, a testwork programme will be carried out in 2017 using drill core that is more representative of the mineralised silexite zone and the grade of the deposit.

*Silexite is the quartz-topaz host rock to the tungsten mineralisation at Torrington.

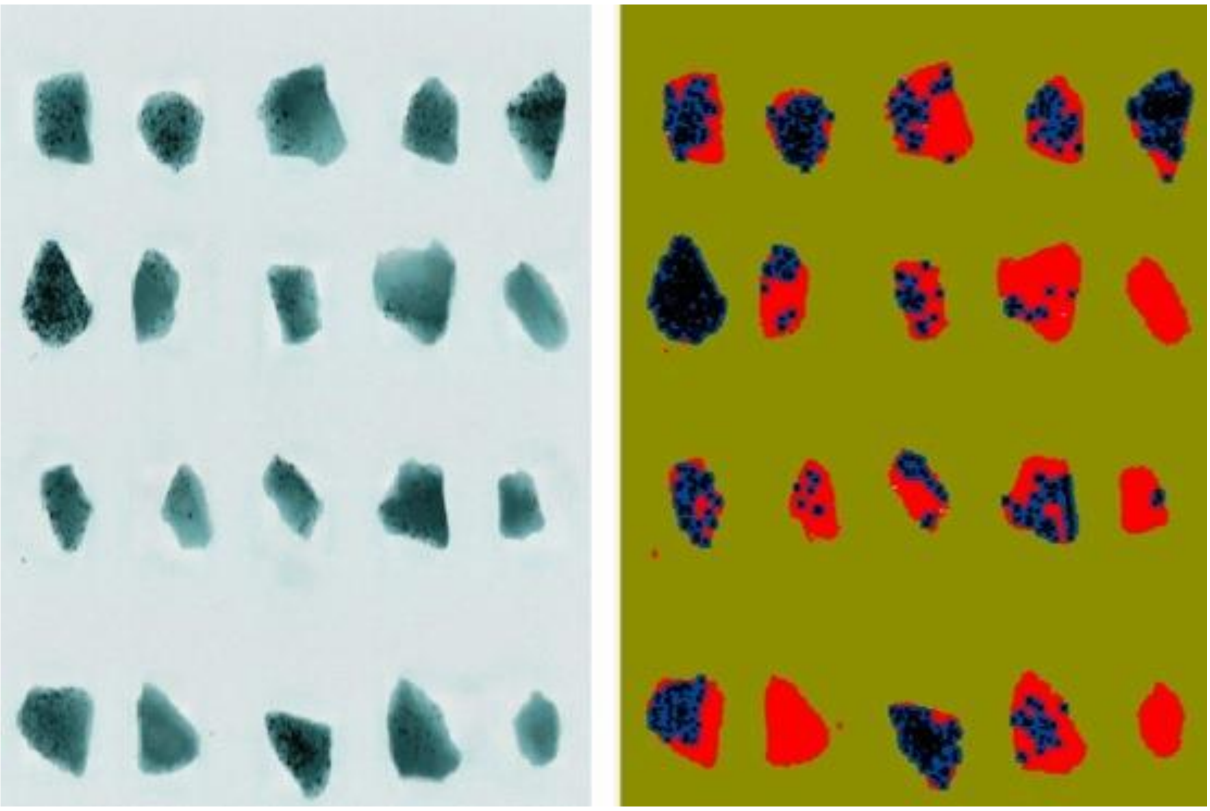
Background and Procedure

As explained in the March Quarterly Report (ASX: 27 April 2016) the initial X-ray ore sorting trials were not successful. However, during September additional representative 10 to 30mm samples of mineralised and unmineralised silexite were dispatched to two other ore sorting companies in order to check the efficiency of their proprietary X-ray technologies. Optical ore-sorting was not seen as a practical process over X-ray technology, as the former requires washed feed material and can only detect mineralisation on the outside of the rock – i.e. unable to identify or 'see' internal mineralisation.

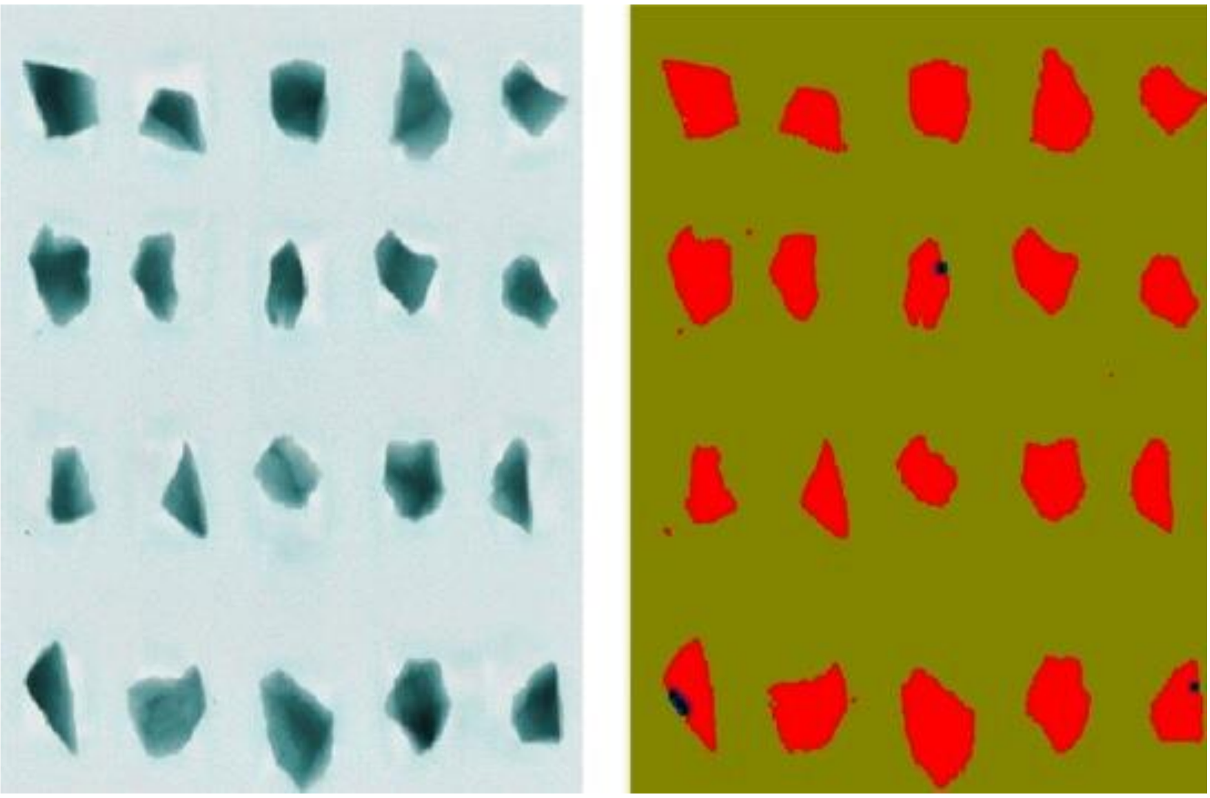
TOMRA was one of the companies that participated in this recent testwork. Results from the other company have not yet been received. TOMRA's task was to confirm that the XRT sensor was capable of detecting the density differences between the visually mineralised and un-mineralised samples. To this effect 20 specimens from each of these sample types were randomly selected and scanned before the testwork began.

The images below show the raw XRT image on the left and the classified image on the right. The blue / black is classified as high density tungsten inclusions and the red as low density waste.

The tungsten is very clearly detected by the XRT system and seen in both the raw and classified images. From this scan, almost all the mineralised samples would be classified as product and the unmineralised samples as waste.



Mineralised samples with visible tungsten inclusions in raw and classified images



Unmineralised samples (no visible tungsten inclusions) in raw and classified images

Demonstration of the Ore Sorting Process

In late September following receipt of the above images, Leon Pretorius visited the TOMRA test facility in Sydney to observe first-hand the reported successful separation of the mineralised and unmineralised silexite after passing through the XRT sorter.

The photograph below shows the resultant products from a run of primary sample material (0.78% WO_3). The mineralised silexite (or product) is on the left and the unmineralised silexite (waste) on the right. The small black specks in the left-hand samples is the finely disseminated tungsten (ferberite) mineralisation.

The mineralised silexite (or product) is on the left and the unmineralised silexite (waste) on the right.

After sorting, the samples were weighed and sent to the ALS Brisbane laboratory for crushing and milling before being split into 3 equal portions and assayed by fusion XRF.

Assay results for the samples are listed below (all values % WO_3):

Mineralised – 1.37, 1.385, 1.375; and,

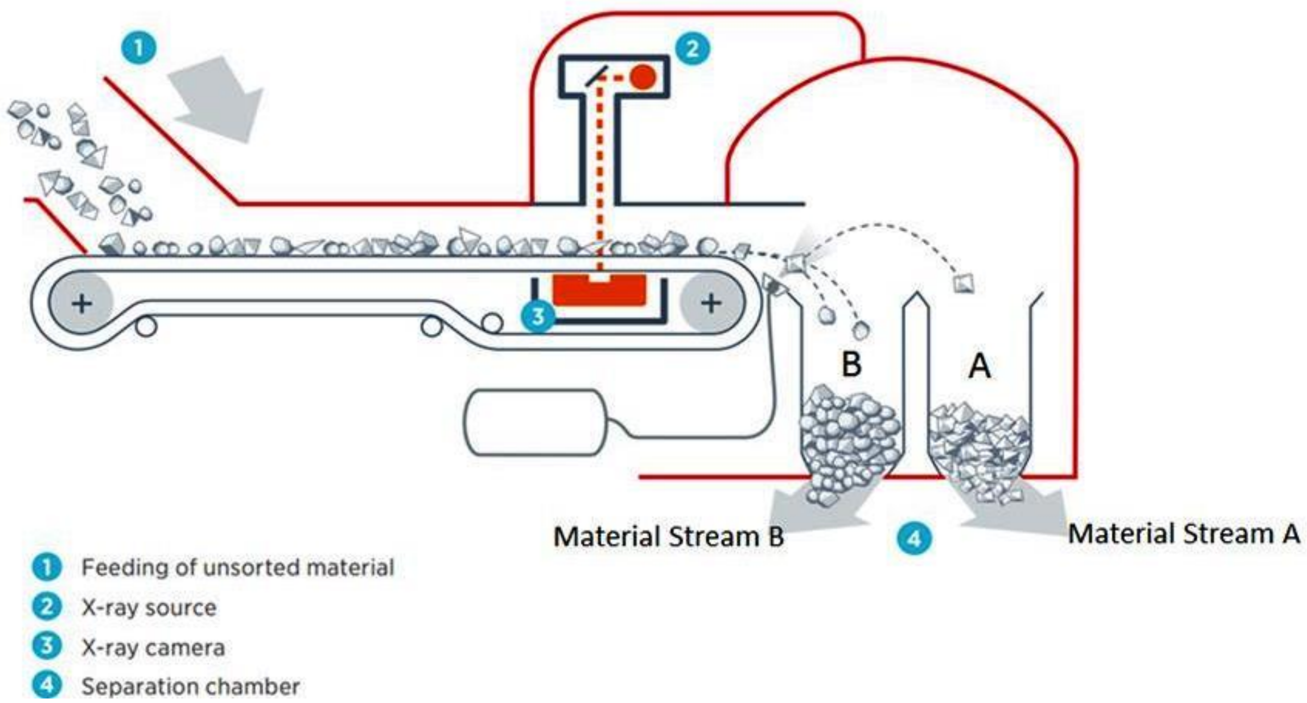
Unmineralised – 0.029, 0.029, 0.028.

These successful visual and analytical results are seen as an outstanding advancement on the processing side of the project with the potential to significantly reduce the ore feed and increase the grade of the feed material. No ore sorting trial has been reported by previous operators at Torrington and its success could radically change the project's economics.

How it Works

The sorter (see Figure Below) uses a broad-band electrical X-ray source that is applied to the material to be sorted while it is moving along a belt. The X-ray sensor system below the belt produces a digital image of the material, using two different energy bands. The X-ray attenuation through the material is different within the two bands and depends on the material thickness and its atomic density. A special transformation of the attenuation image so that the two bands classify each pixel according to the measured atomic density then occurs. Because the X-rays pass through the particles and they are a measure of the attenuation through the entire rock, XRT separation is independent of surface quality of the material and its moisture content. Surface properties such as colour and texture and/or contaminations such as dirt, dust, paint, etc. do not affect the detection process.

The COM (common belt) series of sorting equipment as depicted and used covers the range of applications which require a belt feeding system. The belt principle allows the presentation of a non-uniform feed. The particles can stabilize on the belt before they are scanned by the sensor and the X-ray transmission technology enables materials to be recognised and separated based on their specific atomic density. For interest the throughput (belt) speed is typically in the order of 3 to 3.5m/sec, so the sorter process does not slow down or hamper the plant's performance.



Schematic of a Belt Feed XRT Sorter

A broad-band electrical x-ray source (2) is applied to the material to be sorted while it is moving along the belt. The X-ray sensor system (3) below the material produces a digital image of the material being sorted, using two different energy bands. The X-ray attenuation through the material is different within the two bands and depends on both the material's thickness and density. An image transformation of the density images of the two bands then makes it possible to classify each pixel according to atomic density. Classification proceeds relative to a reference density, to which the system has been calibrated. Depending on the classification the selected particles are either "Ejects", diverted upwards by air jets (Material Stream A on the right in Separation chamber 4) or "Accepts" in the other stream (Material Stream B on the left in Separation chamber 4). It is important to note that "Eject" refers to the material that the system has been configured to blow out of the material stream; this can be either the waste or the product.

Photographs of the commercial-scale TOMRA XRT Ore Sorter in Sydney where the test samples were processed.

For, and on behalf of, the Board of Directors of TopTung Limited,

Dr Leon Pretorius
Executive Chairman
TopTung Limited
18 October 2016

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Competent Person Statement

The information in this announcement that relates to metallurgical testwork for the Torrington Project is being conducted under the supervision of Dr Leon Pretorius. Dr Pretorius is the Executive Chairman of TopTung Ltd and is a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM) (CP) and a Member of the Australian Institute of Geoscientists (MAIG). Dr Pretorius has sufficient experience which is relevant to the type of beneficiation plant under consideration and to the activities being undertaken. This qualifies Dr Pretorius as a “Competent Person” as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012). Dr Pretorius consents to the inclusion in this report of the matters based on the information in the form and context in which it appears. Dr Pretorius holds shares TopTung Ltd.