ASX: ABX

ALCORE Bath Pilot Batch Reactor Update

Analytical results received for multiple samples from the third run of the bath pilot batch reactor consistently showed approximately 70% fluorine recovery

Large bath feed particle size observed to be the primary reason for the lower-than-expected recovery rate

New equipment allowing for bath feed particle size to be controlled and optimised has since been commissioned. This is anticipated to improve fluoride recovery

Fourth test run with controlled particle size range of bath feed conducted in late January

Figure 1: Ball mill (left) and ultrasonic vibrating screen (right), which enable ALCORE to prepare bath with a narrower range of particle sizes.

ABx Group (ASX: ABX) ("ABx" or "the Company") is pleased to announce that its 83%-owned subsidiary, ALCORE, has received analytical results from independent assessments of several powder samples from a third test run of its bath pilot batch reactor (the reactor).

The reactor is operating at the ALCORE Technology Centre on the NSW Central Coast, and has been designed to recover fluorine from 'excess bath' (an aluminium smelter waste) to produce hydrogen fluoride.

At commercial scale, a proportion of the hydrogen fluoride will be further processed via an existing commercial process to produce aluminium fluoride – a high-value chemical essential for aluminium smelting that is currently fully imported.

The new reactor is approximately ten times larger than the Company's previous laboratory scale reactor.

Since the reactor was commissioned in October 2023[1], ALCORE has conducted a number of test runs, each involving approximately 10 kg total of bath and sulfuric acid. Several powder samples from the third test run were sent to an external laboratory to measure the fluorine recovery.[2] These results have now been received, with samples consistently showing approximately 70% fluorine recovery.

It was observed that the fluorine recovery, which was less than forecast based on visual observations[3], was primarily as a result of large particles of bath - a known reason for a loss of fluorine recovery as larger particles will react much slower in the reactor.

ALCORE anticipated this issue and had ordered a ball mill and ultrasonic vibrating screen in October 2023, to enable ALCORE to prepare bath with a narrower range of particle sizes (Figure 1).

The as-received bath from aluminium smelters used in the first three test runs had a wide distribution of particle sizes.

Rather than waiting for the ball mill and vibrating screen to arrive, the first three runs on the reactor were conducted with as-received bath, acknowledging that this may limit the fluorine recovery.

The results from the third run strongly indicated that some of the larger particles had not fully reacted.

In January, the ball mill and ultrasonic vibrating screen were received by ALCORE and were used to prepare bath feed with narrower ranges of particle size distribution.

ALCORE then conducted a fourth run in late January on the reactor with this newly prepared bath feed, as part of an ongoing campaign to optimise the bath feed particle size for the ALCORE process development. This is expected to increase the fluorine recovery.

Multiple powder samples from the fourth run have since been delivered to the external laboratory, with ALCORE planning further test runs later in February and March.

Overall, the Company remains highly encouraged by its progress. The bath pilot batch reactor is performing as designed, and is allowing the effects of process conditions to be determined. Iterative progress is common in the scale-up of new process technologies and vindicates ALCORE's strategy of steadily increasing reactor throughput.

Commenting on the reactor performance, ABx Group Managing Director and CEO Dr Mark Cooksey said:

"The test runs we have undertaken to date have provided ALCORE with valuable insights into the design of the continuous pilot plant.

As we await results from the fourth test run, my confidence in the ALCORE process to produce hydrogen fluoride has not wavered. With newly commissioned equipment to allow bath feed

[1] See ASX announcement dated 8 November 2023
[2] See ASX announcements dated 13 September, 8 November and 13 December 2023.
[3] See ASX announcement dated 13 December 2023.

particle size to be controlled, I strongly believe that we will achieve a higher recovery of fluorine from upcoming test runs at pilot scale.

We are now awaiting further assay results from the fourth test run which utilised this new equipment, and we are planning further reactor tests over the coming months. I look forward to advising investors of these results as they come to hand."

This announcement is approved for release by the Board of Directors.

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About ABx Group Limited

ABx Group (ABX) is a uniquely positioned, high-tech Australian company delivering materials for a cleaner future.

The two current areas of focus are:

- Creation of an ionic adsorption clay rare earth project in northern Tasmania
- Establishment of a plant to produce hydrogen fluoride and aluminium fluoride from recycled industrial waste, to replace imports (ALCORE)

There is also a legacy business:

- Mining and enhancing bauxite resources for cement, aluminium and fertiliser production

ABx endorses best practices on agricultural land, strives to leave land and environment better than we find it. We only operate where welcomed.

Disclaimer Regarding Forward Looking Statements

This ASX announcement (Announcement) contains various forward-looking statements. All statements other than statements of historical fact are forward-looking statements. Forward-looking statements are inherently subject to uncertainties in that they may be affected by a variety of known and unknown risks, variables and factors which could cause actual values or results, performance, or achievements to differ materially from the expectations described in such forward-looking statements.

ABx does not give any assurance that the anticipated results, performance, or achievements expressed or implied in those forward-looking statements will be achieved.