

Nolans Acid Bake Pilot Plant Complete

7 August 2018



- **Final Acid Bake pilot plant performs to expectations**
- **Process performance, operating and materials handling data to feed into Nolans Definitive Feasibility Study**

Arafura Resources Limited (ASX: ARU) (Arafura or the Company) is pleased to provide an update on the flowsheet piloting program for its 100 per cent-owned Nolans Neodymium-Praseodymium (NdPr) project in the Northern Territory.

Operation of the Company's Phase 4 Acid Bake pilot plant is now complete following a thorough period of commissioning of all unit operations.

The pilot successfully ran continuously over a four-day period at SGS Australia's metallurgical facility in Perth, during which time approximately 2.6 tonnes of Nolan's material was processed. A representative of Andritz Gouda attended the duration of the pilot, provided technical support, assisted with setting operating parameters and collected valuable process data to feed into the design of the paddle dryer used for the acid bake and cooling stages of the process.

The feedstock for the plant, a NdPr-rich pre-leach residue (PLR) that had been generated from Arafura's Phase 3 Pre-Leach pilot plant (*refer to ASX announcement 25 July 2017*) was processed at a feed rate of between 40 and 50 kilograms per hour. The Company closely monitored several important operational performance parameters over the duration of the pilot, including materials transfer, temperature profiles and residence time across each unit operation of the process.

On this basis, the pilot plant is deemed to have performed to expectations.

"This is a fantastic result and the cumulation of a lot of hard work by Arafura's team over the past 12 months", Arafura's Managing Director Gavin Lockyer said. "Getting the operating parameters, materials of construction and equipment selection refined in this crucial acid bake phase is an important step towards de-risking the project. The acid bake phase is a critical unit of operation in any rare earth plant and getting it wrong has proven costly to projects in the past, causing delays in commissioning, production and additional cost. We would expect the time and effort we have taken here will pay dividends down the track."

This phase of the pilot program uses concentrated sulphuric acid to convert rare earth minerals in pre-leach residue (PLR) to water-soluble rare earth sulphate material. Its purpose is to provide confirmatory data and to refine the operating parameters which were successfully tested at a smaller scale in the latter part of 2017 (*refer to ASX announcement 13 December 2017*). Aside from obtaining



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operational and engineering data, the sulphated material produced from the plant will be used as feedstock for the final phases of piloting scheduled for the August to October period.

“We are satisfied that paddle dryer equipment being tested for heating and cooling stages can now be selected for design and engineering into the Definitive feasibility study which is to be completed in the coming months”, Mr Lockyer said. “Additionally, in advance of final assay results, the material properties of the sulphated material would indicate the baking process performed as expected.”

During the set-up phase of the program Arafura personnel tested different grades and types of materials and in the commissioning phase a variety of operating parameters including acid ratios, residence times and temperatures, were tested. Once the optimal operating parameters were identified, the Company chose to commission the plant for more than 20 hours at a feed rate of 40 kilograms per hour prior to formal operation

A feature of Arafura’s Acid Bake pilot is the adoption of paddle dryer technology for both baking and subsequent cooling of the sulphated material. Paddle dryers are used in a variety of applications and offer substantial operational advantages over rotary kilns. Arafura made successful use of a paddle dryer in previous smaller-scale acid bake trials.

A key objective of Arafura’s flowsheet piloting program is to acquire process performance, materials handling and mechanical engineering design data for the Nolans Definitive Feasibility Study (DFS). The Company remains on track to report the results of the DFS by the end of 2018.

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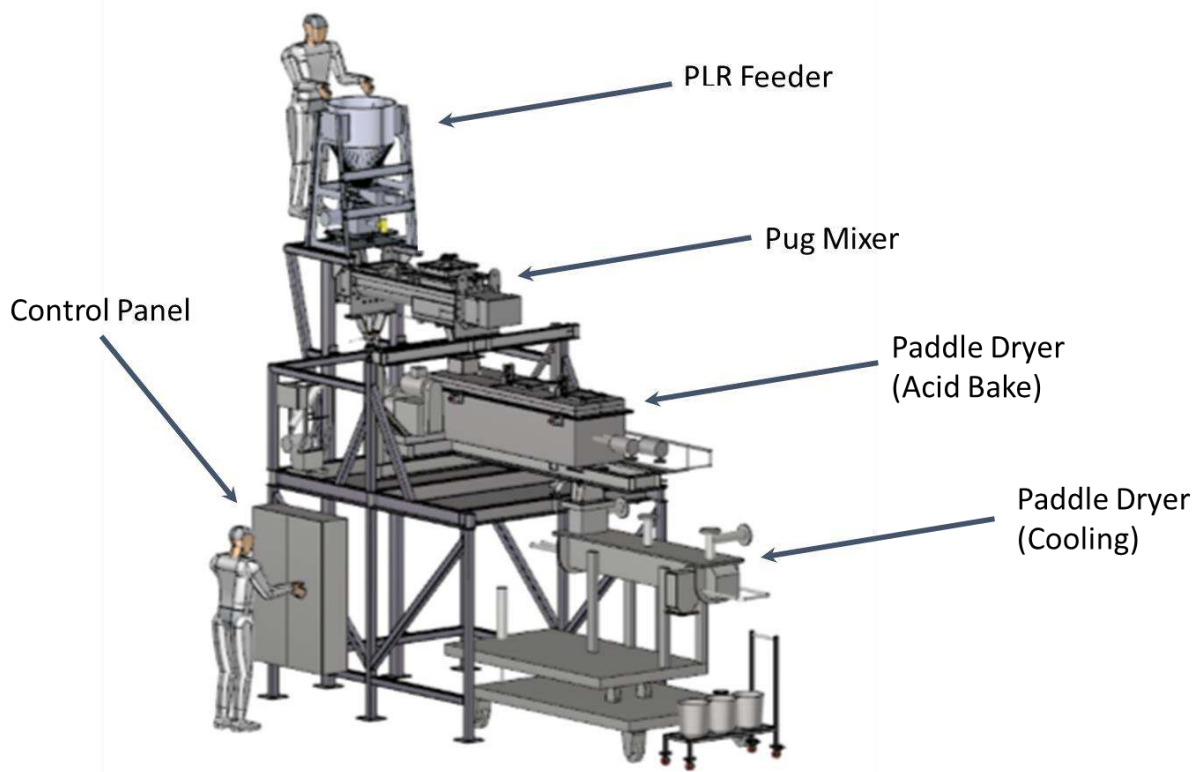
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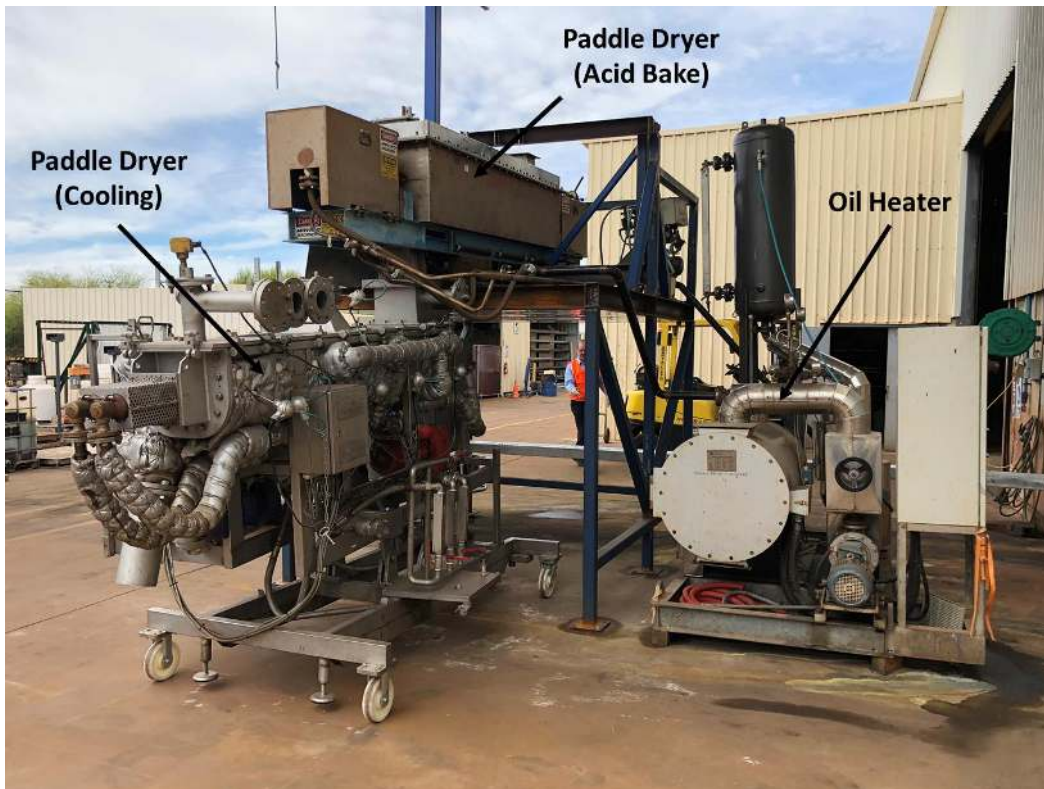
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Figure 1a: Phase 4 Acid Bake Pilot General Arrangement



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Figure 1b: Phase 4 Acid Bake Pilot Plant at SGS Awaiting Installation of PLR Feeder and Pug Mixer



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Figure 2a: Completed Phase 4 Acid Bake Pilot Plant



Figure 2b: Completed Phase 4 Acid Bake Pilot Plant



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Figure 3: Synthetic Testing of Pug Mixer (L) and Paddle Dryer (R) Exhibiting Flow Behaviour Consistent with Nolans Material



Figure 4 Sulphated Nolan's material being cooled in Gouda (L) and discharging (R)

