



ARAFURA RESOURCES LTD (ASX : ARU)

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PREMIUM QUALITY, FERTILISER GRADE PHOSPHORIC ACID IS COMMERCIAL & TECHNICALLY FEASIBLE FROM NOLANS

A PHOSPHATE HOSTED RARE EARTHS – URANIUM DEPOSIT

Test work on phosphate rich mineralisation from Arafura Resources' Nolans deposit conducted by Bateman Litwin in Israel has demonstrated that it is technically possible to produce commercial fertiliser grade and premium quality phosphoric acid.

Arafura previously reported hydrochloric leaching of Nolans mineralisation to separate the insoluble rare earth rich stream from a soluble phosphate rich stream. This current test work extends the flow sheet for the recovery of phosphoric acid from this soluble stream.

Preliminary estimates from Bateman indicate phosphate recoveries of about 80% with capital costs of US\$55 million and operating costs of US\$131 per tonne of contained phosphate pentoxide (P₂O₅) and are ± 40% accuracy. Technical details are appended.

On the basis that Arafura target 10,000 tonnes of rare earths production, the volume of phosphoric acid as a co-product is about 60,000 tonnes per annum. The company is looking at the opportunity for increasing these output rates for these products given the positive results and the rapidly growing demand for rare earths.

At present the average price for merchant grade phosphoric acid is about US\$400 per tonne of contained P₂O₅ free of transport charges.

Arafura has commenced further optimization of the testwork for the pilot plant planned for later this year.

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Alistair Stephens, Managing Director of Arafura Resources Ltd states: “The successful development of phosphoric acid production as a co-product from the Nolans rare earths project further enhances the value of this long life project. The availability of premium fertiliser grade phosphoric acid (PPA) also has significant opportunities as Australia is a net importer of PPA. This project could replace some of these imports.”

In addition to the outcomes of phosphoric acid production, initial indications are that the production of commercial grade and quality calcium chloride (a residue from the phosphoric acid production) is technically and commercially viable.

The test work has also extracted the majority of uranium into a single stream that allows the company to focus on the extraction of uranium, a significant by-product of the project.

“Uranium has to be extracted from the main process to make commercially saleable products of rare earths, phosphoric acid and calcium chloride. This optimises the commercial viability of the project with the potential to produce about 200 tonnes per annum of uranium as by-product. Nolans certainly appears to be unique deposit as nothing like this has been reported or found in the world” Managing Director Alistair Stephens said.

These test results are a significant component of the overall process for the extraction of rare earths, phosphoric acid, calcium chloride and uranium. In the short term the company will continue to focus on rare earth recovery and further optimisation of phosphoric acid process. Additional works for the production of calcium chloride and uranium will continue as part of the larger program this year.

For further information call

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TECHNICAL ASPECTS

Selected extracts from the Bateman report: “ **The Extraction of Phosphoric Acid from the Hydrochloric Acid Leach of Nolans Bore by Solvent Extraction-Laboratory Tests and Preliminary Process Development**”.

- The results obtained in the laboratory have shown that it is possible to extract and produce a fertiliser grade phosphoric acid from the Nolans Bore hydrochloric acid leach solution by extraction with an organic solvent.
- Initial testing using typical industry reagents and solvents, used for either P₂O₅ or rare earth and uranium extraction, demonstrated that Tri-Butyl Phosphate (TBP) provided the best extraction differential between the phosphate and rare earths in the leach solution
- A fertiliser grade phosphoric acid can be produced commercially from the leach solution after pre-neutralizations (with approximately >80% recovery). The product is projected to have the following analyses:

P₂O₅	Ca	La	Ce	F	Fe	Al	Mg	Si
%	%	%	%	%	%	%	%	%
48	0.007	0.002	0.002	0.05	0.35	0.04	0.05	0.01

- The technical specification (in the table above) is better than the average quality for fertiliser grade phosphoric acid.
- The P₂O₅ extraction process is based on the use of “Bateman Pulsed Column Technology” for the extraction and stripping stages in the solvent extraction process.
- The testwork focused on the extraction and concentration section of the process designed around two production lines each producing 30,000 tonnes per year P₂O₅ as 50% fertilizer grade acid.

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- Operating costs are estimated at US \$131 per ton of contained P₂O₅.
- The capital cost of the plant is accurate within ±40% and has been estimated at US \$55 million.
- Additional laboratory process development work must be carried out to fully develop the process and confirm the reproducibility, viability and feasibility of the proposed conceptual process. This additional process development work must be carried out before the operation of the pilot plant.

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