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ASX Announcement

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Progress report on metallurgical test work at

NOLANS BORE PROJECT, NORTHERN TERRITORY

Rare Earths, Phosphate and Uranium.

(100% ARAFURA)

Summary

Test work on Arafura's Nolans Bore phosphate hosted rare earth and uranium deposit has returned encouraging results from the initial phase of metallurgical test work at ANSTO (the Australian Nuclear Science and Technology Organisation).

The progress report indicates that the most effective process route for the recovery of commercial grades of products is;

Step 1. A dilute acid digestion (pre-leach) that dissolves 65% of the phosphate rich rock.

Step 2. A stronger acid digest of the remaining 35% rare earth rich solid phase.

Step 3. A hydrochloric digestion to recover rare earth minerals as a rare earth concentrate

Recovery

Initial results indicate recovery of rare earths ranges from 65% to 95% of the feed grade. Further test work is expected to optimise the recovery process.

Introduction

In 2005, Arafura engaged ANSTO (the Australian Nuclear Science and Technology Organisation at Lucas Heights in New South Wales) to explore the potential processing options for Nolans Bore mineralisation, including optimisation of a nitric acid digestion process. The scope of works was to focus on the recovery of rare earths but also included the recovery of uranium and phosphate.

Process Results

The ANSTO results have indicated that a three (3) step process provides the best results for the recovery of rare earths and allows the opportunity to recovery phosphate and uranium.

As background, the Nolans Bore rock contains two dominant minerals. Apatite[1] is a phosphate dominated mineral and cheralite[2] is a rare earth dominated mineral. Apatite dissolves easily in mild acid while cheralite requires harsher acid conditions.

The process is included in Figure 1 on the following page.

Step 1 – Dilute acid "pre-leach"

An initial dilute acid digestion of the feed rock effectively digests all the apatite minerals into solution but not the cheralite. At this stage of the process 65% of the rock mass dissolves into solution. The solution contains 90% of the phosphate, 94% of all calcium, 85% of the fluorine, 40% of the uranium and 35% of the rare earths in the feed material. An acid concentration of 10 to 20% was used[3].

Step 2 – Rare earth treatment

The solid phase contains the cheralite minerals that have the majority of rare earths and uranium, and all the thorium. This solid phase contains 35% of the rock mass and 10% of the phosphate, 6% of the calcium, 15% fluorine, 65% of the rare earths and 60% of the uranium in the feed grade.

Recovery of the rare earths from the solution

Recovery of the rare earths from the solution from Step 1 is generally undertaken by re-precipitation of a rare earth phosphate from solution. High recoveries should be anticipated for this process and will be the subject of further test work programs.

Recovery of rare earths from the solid phase

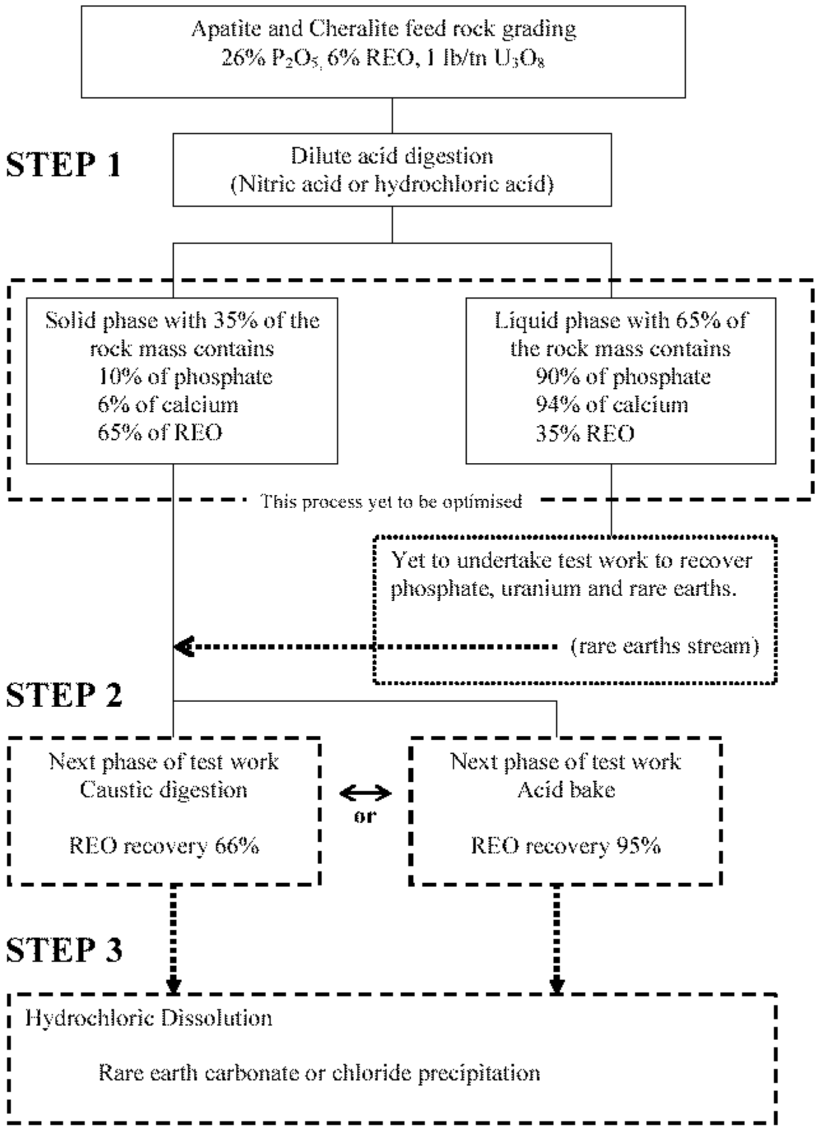
Recovery of rare earths from the solid phase from Step 2 has been assessed using two process routes; caustic and sulphuric acids.

[1] The Nolans Bore rock is strictly a fluorapatite. This is a fluorine, calcium and phosphate rich rock that contains rare earths.
[2] Cheralite is a complex rare earth and thorium rich phosphate mineral
[3] The test work was successful with both hydrochloric and nitric acid. Pure nitric acid is 70% strength that can be diluted to 10% strength.

Caustic Acid
The residue from Step 1 was treated with caustic acid. A rare earth carbonate concentrate was produced with indicative recoveries of 66% of the feed grade. The product contained levels of thorium that were slightly higher than commercially acceptable levels. Test work indicates that a lower level of calcium at this phase improved RE recovery and thorium rejection, and will be the subject of further assessment.

Sulphuric Acid
The residue from Step 1 was treated with a hot sulphuric acid bake. A rare earth sulphate salt (concentrate) was produced with recoveries of 95% of the feed grade. The product contained levels of thorium higher than commercially acceptable but these could be reduced to acceptable levels with further test work.

Figure 1: The Nolans Bore process flowchart.



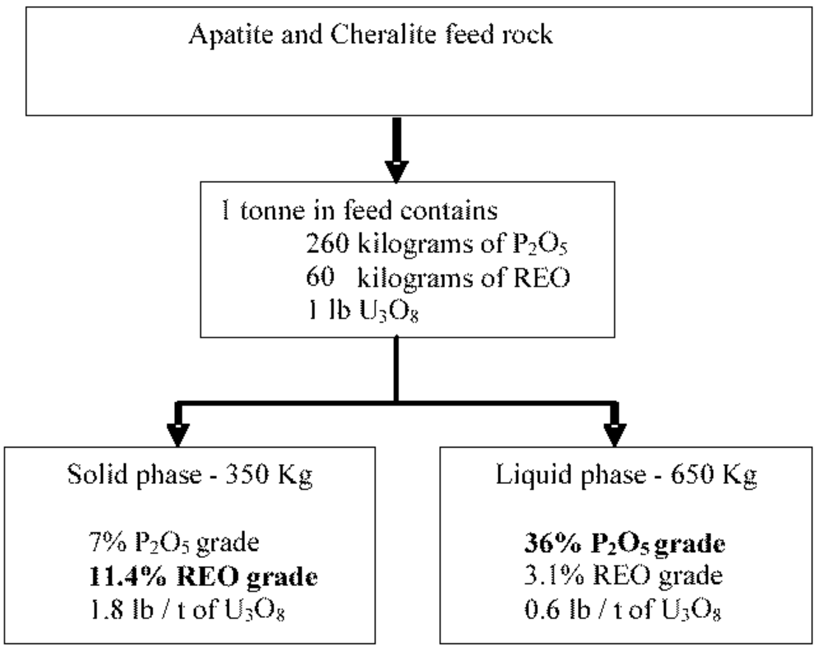
Highlights of the test work.

The test work has shown that a mild nitric or hydrochloric acid pre-leach digest has many benefits to the ultimate processing route. These are:

1. A small grinding circuit with a coarse grind size (lower operating and capital costs)
2. Significantly smaller reagent chemical usage at all stages (lower cost)
3. A smaller rare earth treatment plant with lower capital and treatment costs. For example the Figure 2 below demonstrates the potential options for low cost high grade processing.
4. The ability to produce saleable by-products of phosphate
5. Early stage rare earth production that has few impurities

Figure 2: A simple mass balance of Nolans Bore test work

An example of the mass balance from test work



Commercial products

The test work has indicated that commercial products of rare earth are possible. The successful rejection of thorium remains highly probable through the recovery of calcium in Step 1. Calcium assists with thorium rejection and improves rare earth recovery.

Strategy forward

The scope of stage two of the test work is currently under way. Steve Mackowski will join Arafura in March 2006 and champion the process of further optimisation of the test work. The next stage will focus on:

1. Optimise the acid pre-leach process in Step 1. This will target the optimisation of phosphate recovery into solution. In addition, the improvement of calcium recovery at this stage improves the rejection of thorium and the recovery of rare earths at later stages of processing.
2. Assess the best recovery process (caustic or sulphuric) for rare earths from the solid phase in Step 2.
3. Determine the recovery of phosphate and rare earths from the solution in Step 1.

Summary

These results of the test work are very encouraging. They have identified a metallurgical process that will minimise both capital and operating costs while optimising the recovery of key commodities like rare earths and phosphate. While uranium recovery is yet to be tested, a large piece of the puzzle to unlocking the wealth and value of Nolans Bore has been unfolded. Test work is continuing.

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