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Reguibat calcrete uranium project, Mauritania: Beneficiation upgrades and rapid leaching

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The Reguibat Project is a major greenfields calcrete uranium discovery in Mauritania with 49 Mlbs in current resources. The mineralisation is amenable to exceptional levels of pre-concentration, and will require relatively small leaching capability. Leach grades will be in the 0.2-0.5% U3O8 range.

The area of the deposit is flat lying, and is largely devoid of vegetation. The only people in the region are a small number of nomadic herdsmen.

Resources
The initial JORC compliant resource has been estimated at 49Mlbs U3O8 at average grade of 334ppm.

Subsequent to the resource estimation Aura has completed a successful drilling programme in 2012, but these results are not yet in the current resource. Aura also anticipates additional resources in open extensions to the existing resources, and permits that have yet to be drilled.

Mining
Mining at Reguibat will be straightforward. In the case of the Reguibat Project most of the mineralisation occurs in a single sheet within four metres of the surface. The material is soft and can be readily dug by scrapers. The project will have a strip ratio of less than 0.5.

Beneficiation
Aura's beneficiation upgrade test results for its Reguibat Project have provided exceptional results. 89% of the mass can be rejected while retaining 86% of the uranium. The average concentration of the fine-grained product was 2,476ppm U3O8. This represents an upgrade factor of 7, achievable using simple beneficiation processes. The high product grade compares with the resource grade of 334ppm U3O8.

Test work completed to date has given concentrate grades of up to 0.34% U3O8.

The presence of the uranium mineral, carnotite, in the fine fractions, and the difference in grain size between carnotite and the host rock minerals, explains the positive results to date. There is also potential that this difference may result in even higher grade products by refinement of the size fractioning, and dry cycloning separation may be feasible.

Uranium extraction
The beneficiated Reguibat material was leached independently at ANSTO Minerals using atmospheric alkaline leaching typical of industry conditions. The first leach tests provided excellent results, with 94% uranium extraction within 4 hours, and moderate reagent consumption given high feed grade of material.

The generation of finer size fractions may see a further improvement of the leach results.

Typically calcrete uranium projects require 24-36 hours for >90% uranium extraction.

Implications of beneficiation results on a future mining project
The generation of this high grade product, and the rapid and effective leaching of the uranium from concentrate, now opens up substantial opportunities for a small footprint mining project. The Project flow sheet requires conventional and simple technologies, and it is anticipated that the reduced plant size would have a significant impact on project economics. Both conventional beneficiation procedures and rapid leaching infer a relatively small leaching capacity requirement, and consequently lower capital and operating costs.

Author: Dr BEESON, Robert (Aura Energy Ltd)

Co-authors: Mr CLIFFORD, Neil (Aura Energy Ltd); Dr GOODALL, Will (Aura Energy Ltd)

Presenter: Dr BEESON, Robert (Aura Energy Ltd)

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