

Pre-Feasibility Study on phosphate-to-uranium technology

## Demonstration Plant and PFS show robustness of PhosEnergy Process

### Highlights

- **Low operating costs:** Cash operating cost in the low US\$20's puts PhosEnergy Process in lowest quartile for global uranium production
- **Clear pathway to production:** advanced relationships with phosphate fertiliser facilities in the US: ongoing process refinements underway
- **Outstanding leverage to improving uranium price:** uranium prices are on the move, up nearly 40 per cent this year, providing additional impetus to the PhosEnergy development

PhosEnergy has made significant progress since our last Newsletter in May 2014, in which we reported on the progress on operations of the PhosEnergy Demonstration Plant at a fertilizer production plant in the US. The key developments since then have included testing of additional process improvements and the application of these results to an independent Pre-Feasibility Study (PFS) on the PhosEnergy Process.

The PFS has now been completed by a global engineering and professional services consultancy, with the Study confirming the robust operating cost of the PhosEnergy Process.

The Study estimates the cash operating cost of uranium production at a plant located at the site of a 0.44Mtpa P<sub>2</sub>O<sub>5</sub> phosphate facility capable of producing approximately **400,000 pounds of uranium per annum** to be in the low US\$20's.

In the Company's opinion, this puts the PhosEnergy Process in the bottom quartile for operating costs of all uranium production worldwide and at a considerable cost advantage over most of the new uranium projects likely to come online over the next 5 to 10 years.

The subject of the PFS was a relatively small facility when compared with the scale of phosphoric acid facilities worldwide and as such the capital intensity is relatively high. PhosEnergy believes there will be substantial operating and capital cost advantages to be realised by applying the Process to larger facilities. In the longer term, we estimate that there is the potential to produce up to 6Mlbs of uranium per annum from phosphoric acid facilities in the USA. This represents a very attractive growth opportunity for PhosEnergy.

### **The Process**

The PhosEnergy Process is a technology for the extraction of uranium from phosphate streams produced in the production of phosphate-based fertilisers. PhosEnergy is jointly commercialising the process with our partner, global uranium company Cameco Corporation, via a Colorado company called Urtek LLC, which is owned 73 per cent by Cameco and 27 percent by PhosEnergy.

### **Cash Operating Cost Estimate**

The estimated cash operating cost including toll milling, product transport and marketing but excluding corporate and downstream phosphate processing costs is estimated in the low US\$20's per pound of  $U_3O_8$  including contingency.

Estimated cash operating costs were derived using a methodology consistent with achieving an accuracy of +50%/-30% and an AACE Class IV estimate. The PFS estimated operating costs to produce an intermediate product which can be toll-milled through any one of a number of facilities in the United States, for which quotes have been received.

There are further opportunities to reduce operating costs by refining reagent usage and power consumption as the development progresses.

### **Capital Cost Estimate**

The capital cost estimate was derived from Process Flow Diagrams (PFDs), site plans, General Arrangements (GAs) and a detailed mechanical equipment list. A conceptual site layout of the PhosEnergy Processing plant as designed is shown below in Figure 1:



**Figure 1 – PhosEnergy Processing Plant Site Layout**

Several opportunities for further optimising equipment, structural and civil capital components are under review and will be incorporated into subsequent studies.

### **Next Steps**

Following completion of the PFS, PhosEnergy will review the results together with our partner Cameco Corporation and our fertilizer producer partner and make a decision as to whether to progress to a Definitive Feasibility Study (DFS).

PhosEnergy Chairman Tony Kiernan said the completion of the Pre-Feasibility Study marked another key milestone in the development and commercialisation of the PhosEnergy Process.

“We now have further independent verification that we have a technically robust and commercially viable technology for the extraction of uranium from phosphate streams produced in the production of phosphate-based fertilisers,” Mr Kiernan said.

“This is a tremendously exciting opportunity, particularly against the backdrop of an improving uranium market. The PFS has demonstrated low operating costs, expected to be in the bottom quartile for uranium production globally, clearly highlighting the commercial opportunity in front of us.

“We will now work through these results and, together with Cameco and our phosphate industry partner, consider moving to a Definitive Feasibility Study.”