

Honeymoon Process Optimisation Enhances Mine Economics

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BOSS
RESOURCES LTD

Highlights

- Optimisation of ion exchange process confirms significant cost reductions for Honeymoon Uranium Project, enhancing outstanding mine economics of January 2020 Feasibility Study (FS)
- GR Engineering Services Limited (GRES) estimates cost reductions of:
 - CAPEX saving of 10% or US\$6.3 million (from FS CAPEX estimate US\$63.2 million)
 - OPEX saving of US\$1.22/lb U₃O₈ in Stage 2 (from FS AISC of US\$27.40/lb LOM)
- Cost savings relate to reduced site power demand and transmission line upgrade costs, with additional technical studies relating to potential reagent savings ongoing
- Honeymoon is a fully permitted uranium mine capable of re-starting production in 12 months and positioned to be one of the lowest cost uranium producers globally
- Boss continues to engage with utilities for off-take and commercial discussions continue.

Boss Resources Limited (ASX: BOE) (Boss or the Company) is pleased to announce initial technical evaluations to achieve process improvements and reduce capital and operating expenditure at its Honeymoon Uranium Project in South Australia have returned positive results.

Following its highly successful Feasibility Study in January 2020, the Company embarked on technical optimisation studies which included completion of an identified ion exchange (IX) process detail design and testing, undertaken with the Australian Nuclear Science and Technology Organisation (ANSTO).



Figure 1: Boss's 100%-owned Honeymoon, one of the world's most advanced restart uranium mines

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Boss Resources Managing Director and CEO Duncan Craib said, “Boss continues to work on opportunities to optimise Honeymoon as a first-mover uranium restart operation – this outstanding IX testwork result is one example, with an identified 10% saving in CAPEX amounting to US\$6.3m and an OPEX saving of US\$1.22/lb U₃O₈.

We will continue working towards NPV accretive technical advancements and revising estimates contained within the January 2020 FS, strengthening Honeymoon’s potential to be one of the lowest cost uranium producers globally.”

IX Process Optimisation

The IX process optimisation programme aimed to remove the requirement for solution heating in the elution of uranium from the Ion Exchange (IX) resin. Power input to the elution process necessitated upgrades to the transmission line to service Honeymoon with grid power from Broken Hill, located 80km south-east of the mine.

Boss devised a series of tests in consultation with ANSTO to study the effect of ambient temperature on both the conversion and elution performance.

The conversion work indicated that an ambient temperature process could easily achieve the required conversion performance within the timeframe in the process design. Furthermore, a 45% reduction in reagent concentration in the conversion process had a negligible effect on conversion performance and offered significant reagent savings.

Testwork on the elution process was also most successful. Figure 2, below, shows the elution curves for the two elution tests. While there is a small difference in the eluant requirement to achieve complete elution of the resin, there is sufficient capacity in the elution circuit as designed to achieve this without impacting the downstream processes, while facilitating significant energy savings.

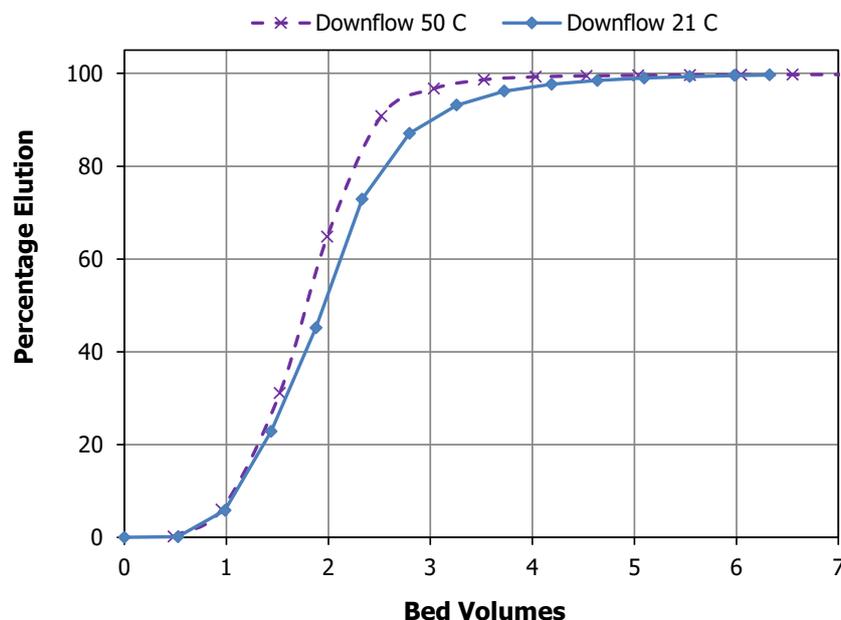


Figure 2 – Elution curves at 50°C and ambient (21°C) temperatures from converted resin.

The remainder of the programme aimed to provide additional information to allow detailed equipment design for IX adsorption and elution processes. As a result of this work, Boss made additional changes to the resin sulphation and regeneration processes which could represent additional cost savings.

Enhancing Mine Economics

Boss commissioned GRES to evaluate the cost implications of the above work on the FS results, initially on a +/- 25% basis.

Initial results confirming significant cost savings are apparent, including a **CAPEX reduction of US\$6.3M** owing to the reduction in heating and insulation requirements for the elution circuit and reagent make up systems, and the reduced transmission line upgrade costs.

GRES has identified that the reduction in electricity costs alone represent an **OPEX saving of US\$2.4M per annum, equating to US\$1.22/lb U₃O₈**. GRES is now undertaking an evaluation of the OPEX implications of these changes in Stage 2 operations over the life of the overall operation considered in the FS.

Boss designed the FS to fast-track production from Honeymoon's existing solvent extraction plant within a 12-month period, following a decision to mine, to capitalise on any improved market fundamentals. It plans to increase production to 2Mlbs/annum U₃O₈ equivalent through the addition of the IX plant which will take approximately 20 months to design, construct and commission.

Next Steps

Following these initial exciting results, the Company plans to incorporate these optimisations into a revised FS level estimate for the Honeymoon restart which will also incorporate other initiatives including the conversion of the current Solvent Extraction infrastructure to a NIMCIX IX system.

The Company expects associated savings to further assist the pursuit of financing and off-take discussions in order to make a decision to proceed to mine, assuming a specified global uranium price has been achieved to satisfy the targeted IRR and NPV return so as to maximise shareholder value.

In parallel with the above activities Boss's exploration team is completing a comprehensive desktop review of the extensive historical exploration database information to define new uranium exploration targets. With financial support from the South Australian government to utilise innovative uranium geophysical exploration techniques, exploration is focussing on expansions to known uranium discoveries to increase Honeymoon's production profile distal to existing JORC Mineral Resources (total 71.6Mlbs U₃O₈)¹, including ongoing review of existing Exploration Targets².

It is envisaged that these new mineralised target areas will form the basis of a study to assess and define Stage 3 production ramp up to produce more than 3Mlb/annum U₃O₈ equivalent. The ramp up program will be contingent on market conditions, permitting and U₃O₈ price. It is noted that Stage 3 did not form part of the original FS but the Company believes that, with improving market conditions, it is prudent to commence the initial planning associated with an increased production capacity commensurate with the uranium resources available to the Company.

¹ Refer to ASX: BOE announcement dated 25 February 2019

² Refer to ASX: BOE announcement dated 25 March 2019

Issue of securities under Employee Securities Incentive Plan

The Company has a discretionary equity-based incentive plan in place in order to preserve cash balances whilst aligning employee incentives with shareholder interests. In recognition of completing the highly successful feasibility study, and positioning Honeymoon as one of the world's most advanced uranium restart projects, the Board has agreed to grant a total of 5.7m shares to employees as an annual bonus for the 2019/ 2020 financial year. The number of shares granted was determined by reference to the 20-day VWAP prior to 30 June 2020.

As a result of that review, the Board has agreed to grant the Managing Director/CEO a total of 2.5 million shares and the Technical Director a total of 1.6m shares as an annual bonus. The issuing of all shares to the Managing Director/CEO and Technical Director is subject to shareholder approval, to be sought at the 2020 AGM.

This ASX announcement was approved and authorised by the Board of Boss Resources Limited.

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Reference to previous ASX announcements

In relation to the results of the Feasibility Study announced 21 January 2020, the Company confirms that all material assumptions underpinning the production target and forecast financial information included in that announcement continue to apply and have not materially changed.

In relation to the Mineral Resource announced on 25 February 2019, the Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the estimates in that market announcement continue to apply and have not materially changed.