



Honeymoon Uranium Project, South Australia

Boss ramps up exploration with trial of new seismic survey technique

Results due next month and drilling scheduled to start in coming quarter

Highlights

- Boss is accelerating development of its exploration strategy with a staged approach that has significantly expanded the global JORC resource at Honeymoon from 16.57Mlbs to 71.67Mlbs (~433% increase) since project acquisition in December 2015¹
- New, innovative method of seismic acquisition – low cost, low impact and quicker than drilling
- Planned survey lines designed to cover two potential high-grade zones identified in the 2020 scout exploration drill campaign
- The expanded global JORC resource, extensive permits and highly promising exploration upside signify substantial scope to increase Honeymoon’s production profile beyond the EFS forecasts
- “We have a two-pronged strategy for creating shareholder value. This involves preparations for the start of production and cashflow, which will make Boss Australia’s next uranium producer, and growing the uranium inventory.” – Boss MD Duncan Craib

Boss Energy Limited (ASX: BOE; OTCQB: BQSSF) is pleased to announce that it is preparing to start a seismic reflection program as part of its strategy to grow the inventory at its Honeymoon Uranium Project in South Australia.

The program is designed to identify likely uranium-bearing sediments within the known mineralised palaeochannels ahead of a drilling campaign scheduled to start in the coming quarter.

Although ubiquitous in oil exploration, seismic surveying is relatively novel in the exploration of shallow mineral deposits. Boss recognised the potential advantages offered by seismic methods in 2019 and began the incorporation of these techniques into its exploration programs.

Utilising the seismic datasets, in conjunction with all existing geoscientific information, Boss will be able to confidently reduce the number of drill holes required to locate additional resources within its pre-defined Exploration Target areas². This allows the streamlining of ground-based workflows and thereby preserve exploration funds.

¹ Refer to ASX: BOE announcement dated 25 February 2019. Refer Appendix 1 for Honeymoon JORC 2012 Resource.

² Refer to ASX: BOE announcement dated 25 March 2019. Refer Appendix 1 for further information on Exploration Target.

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Boss Managing Director Duncan Craib said: *“We have a two-pronged strategy for creating shareholder value. This involves preparations for the start of production and cashflow, which will make Boss Australia’s next uranium producer, and to grow the uranium inventory through exploration.*

“We are well on track to bring Honeymoon into production, as the outstanding results of our recent Enhanced Feasibility Study showed.

“The impending seismic reflection program, followed by drilling, is aimed at creating value by growing the mineral resource inventory for Honeymoon, where we believe there is substantial exploration upside.

“Passive seismic helped to refine the palaeovalley geometry. The modern seismic reflection system will now add to that by enhancing the detail of likely permeable horizons within the palaeovalley fill.

“The combined arsenal of the two seismic systems has the potential to create significant value for shareholders, as they allow better targeting of exploration drilling, which opens the door to increasing both Life of Mine and production rates, in turn growing the project’s NPV and free cashflow”.

The Company’s focus on exploration is aimed at increasing Honeymoon’s production profile and extending its mine life. The strategy is thus two-fold:

1. Targeting the greenfields exploration targets to further advance current identified zones of potential high-grade mineralisation; and
2. Upgrading the satellite JORC resources of the Jason’s and Gould’s Dam Deposits.

Seismic reflection surveying

Boss is actively pursuing innovative geophysical techniques for incorporation into its exploration strategy for the Honeymoon Uranium Project. Following extensive research on available methods, passive seismic and reflection seismic techniques are being pursued by the company to map individual host sediment strata for potential discovery of additional economic uranium deposits. Further objectives include the definition of geological structures and the interplay of structures on potential mineral and groundwater resources, as indicated by historical drilling around Honeymoon.

Passive seismic had never been trialled in South Australia until it was introduced by Boss at Honeymoon in 2019. Following successful orientation surveys, Tromino-based passive seismic was rolled out across selected target areas to refine mapping of the Yarramba and Billeroo Palaeovalley systems. This technique has since been used to full advantage to map the base of the Project’s palaeovalleys and confirm the current exploration model of narrow palaeochannels within the broader palaeovalley system. The model also showed that the position of the uranium mineralisation, within those narrower channels, is highly influenced by the shape of the underlying basement surface.

These regional surveys have now been completed. Based on this knowledge, and the added combination of the 2020 drill results, the Company is now further refining its drill targets by using seismic reflection which will give greater detail of the Eyre Formation sediments (host to mineralisation) and any internal structures that could a) break permeable layers and b) create mineral trap sites for uranium accumulation.

Seismic reflection surveying is the final geophysical activity prior to drilling commencement. The surveying method works by sending sound energy into the ground and listening for echoes from the rock units below. At Honeymoon, the sand layers hosting mineralisation, and their surrounding channel walls, will reflect the sound energy back to the surface where high-tech microphones record the responses.

Those responses are then processed to enhance the signal and produce a visual representation of host formation, similar to medical imaging using an ultrasound.

An orientation survey will initially be conducted to confirm suitability of the seismic reflection for the shallow nature of Honeymoon's uranium. Once proven, the technique will be rolled out to the highest priority exploration areas, as identified from all previous work programs. Achieving the desired outcomes of the survey will assist in further refining existing drill-ready targets, as well as allowing a more project-wide development of the existing 3D geological models.

The seismic acquisition crew are currently mobilising to Honeymoon for the initial orientation survey (**Figure 1**). Processed results are expected by the end of September 2021.

Completion of the geophysical surveys will be followed by heritage clearances and exploration drilling, scheduled for Q4, 2021.

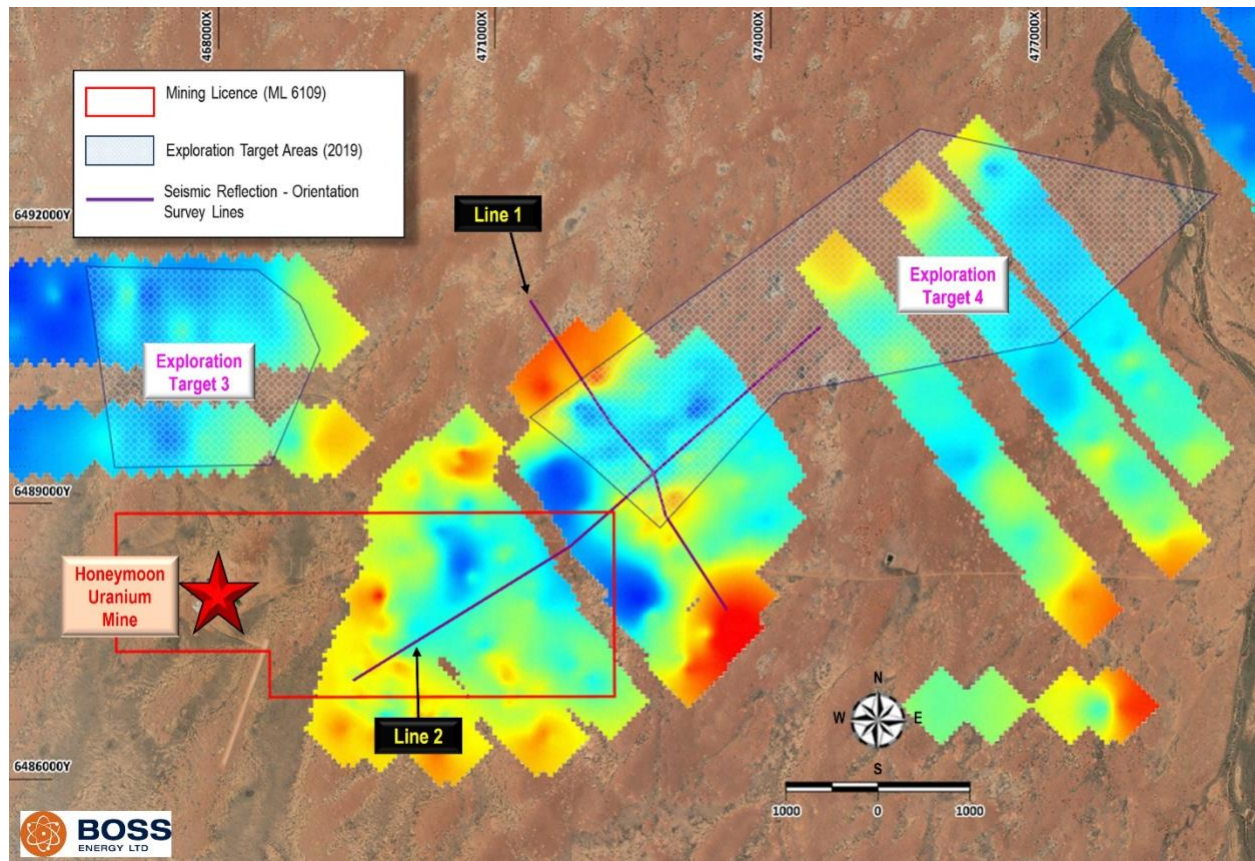


Figure 1: Planned orientation survey area for the Modern Seismic Reflection. Overlain on the 2019³ passive seismic basement model grid (cold colours representing the palaeovalley).

³ Refer to ASX: BOE announcement dated 14 August 2019.

ADI Grant

The Company's long-term exploration plan had always included using new innovative methods for regional investigations. However, additional funding support became available to the Company from the South Australian State Government, with the successful award of the \$275,000 exploration grant via the Accelerated Discovery Initiative (**ADI**). This funding will be used to support the planned 2021 exploration field season, with continued introduction of innovative exploration alternatives for palaeovalley definition, smarter drill target generation, and the eventual growth of existing uranium JORC mineral resources (currently totalling 71.6Mlbs U₃O₈)⁴. The ADI forms part of the Growth State Agenda that aims to accelerate mineral discoveries through innovative exploration and research projects in regional and frontier terrains throughout South Australia.

The Company looks forward to sharing the results as these programs progress.

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

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⁴ Refer to ASX: BOE announcement dated 25 February 2019. Refer Appendix 1 for Honeymoon JORC 2012 Resource.

APPENDIX 1 - Honeymoon Project Mineral Resource (lower cut-off of 250 ppm U₃O₈)

The global Honeymoon Mineral Resource stands at **71.6 Mlb (52.4Mt)** with an average grade of **620ppm U₃O₈**, using a cut-off grade of **250ppm**, as summarised in **Table 1**.

In addition to the global Mineral Resource, the Honeymoon Uranium Project also has an Exploration Target range of **28 Mt to 133 Mt of mineralisation at a grade of 340 ppm to 1,080 ppm U₃O₈** for a contained **58 Mlbs to 190 Mlbs U₃O₈ (26,300 to 86,160 tonnes of contained U₃O₈)**, using a cut-off of **250ppm**. Note the potential quantity and grade of the Exploration Target range is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain whether future exploration will result in the definition of a Mineral Resource.

Table 1: Summary of upgraded Mineral Resource for the global Honeymoon Uranium Project

Resource Classification	Tonnage (Million Tonnes)	Average Grade (ppm U ₃ O ₈)	Contained Metal (Kt, U ₃ O ₈)	Contained Metal (Mlb, U ₃ O ₈)
Jason's (March 2017)				
Inferred	6.2	790	4.9	10.7
Gould's Dam (April 2016)				
Indicated	4.4	650	2.9	6.3
Inferred	17.7	480	8.5	18.7
Honeymoon Restart Area (January 2019)				
Measured	3.1	1,100	3.4	7.6
Indicated	14	610	8.7	19
Inferred	7.0	590	4.1	9.1
GLOBAL HONEYMOON URANIUM PROJECT				
Measured	3.1	1,100	3.4	7.6
Indicated	18.4	630	12.0	25.5
Inferred	30.9	570	18.0	38.5
Total	52.4	620	32.5	71.6

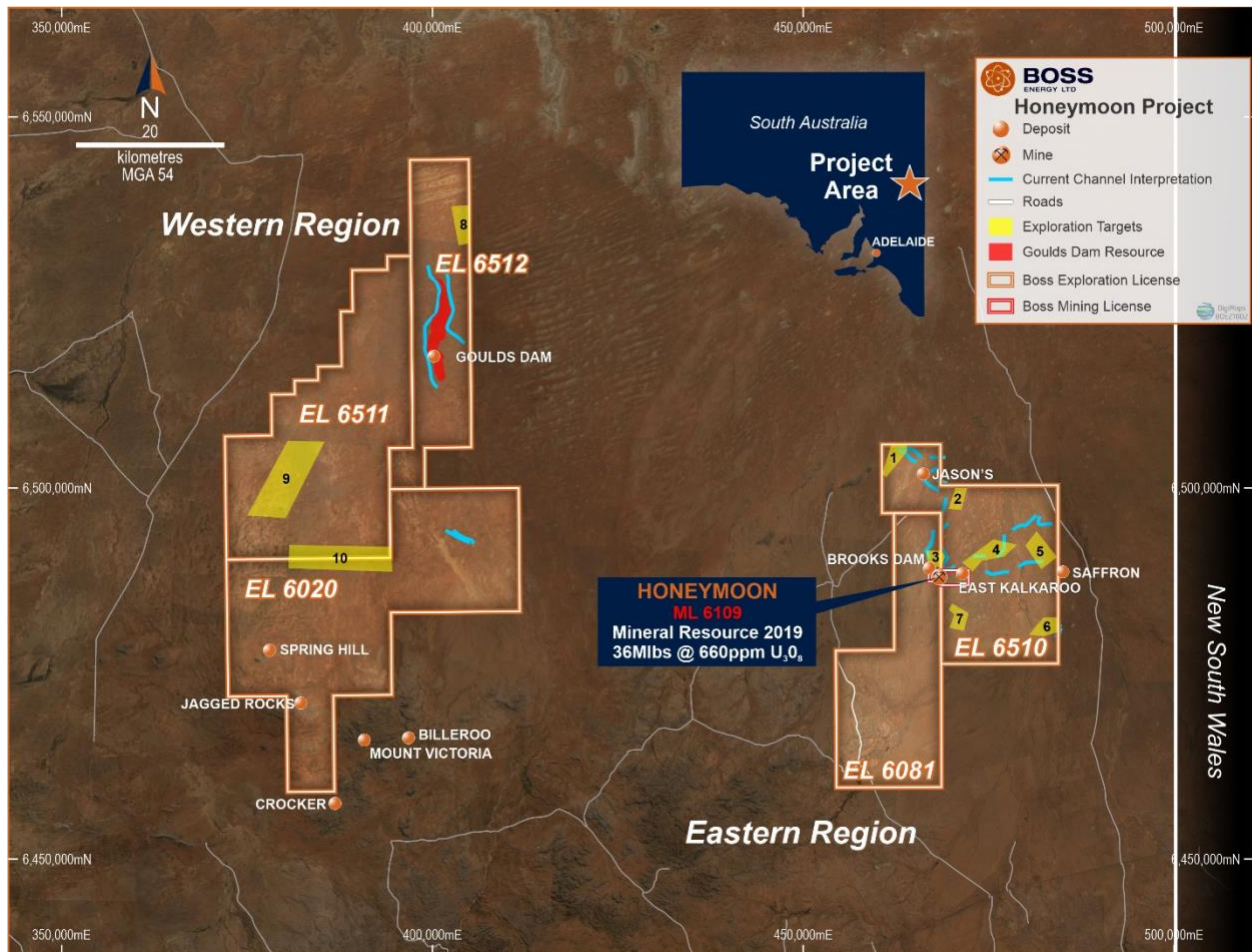


Figure 2: Honeymoon Uranium Project Tenements and Exploration Target Areas.

Reference to previous ASX announcements

The mineral resource estimates in this announcement were reported by the Company in accordance with listing rule 5.8 on 25 February 2019. The Company confirms it is not aware of any new information or data that materially affects the information included in the previous announcement and that all material assumptions and technical parameters underpinning the estimates in the previous announcement continue to apply and have not materially changed.

The exploration target and historical exploration results referred to in this announcement were reported by the Company in accordance with listing rule 5.7 on 25 March 2019 and 14 August 2019, respectively. The Company confirms it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the previous announcements continue to apply and have not materially changed. The exploration target does not include areas of the existing Mineral Resource and the potential quantity and grade reported are conceptual only in nature. Insufficient exploration has been conducted to estimate a Mineral Resource and it is uncertain whether future exploration will lead to the estimation of a Mineral Resource in the defined areas.

Forward-Looking Statements

This announcement includes forward-looking statements. These forward-looking statements are based on the Company's expectations and beliefs concerning future events. Forward-looking statements are necessarily subject to risks, uncertainties, and other factors, many of which are outside the control of Boss Energy, which could cause actual results to differ materially from such statements. Boss Energy makes no undertaking to subsequently update or revise the forward-looking statements made in this announcement, to reflect the circumstances or events after the date of this announcement.