

30 SEPTEMBER 2016 QUARTERLY REPORT HIGHLIGHTS

Honeymoon Uranium Project, South Australia

- 4 previously unsampled sonic core holes identified and chemical assays confirm PFN measured grades
 - Assay average 15% higher than PFN grades used for resource calculation
 - High grade intercepts including 1.4m @ 2360 ppm U₃O₈, 1.1m @ 1290 ppm U₃O₈ and 1.0m @ 1066 ppm U₃O₈
- Positive expansion study completed based on results from past operations has indicated strong potential for a highly economic expanded operation
 - Low capital outlay required – US\$7 million for plant re-start plus US\$57 million for the expansion to 2Mlbs / annum
 - Steady-state operating costs are approximately US\$24/lb U₃O₈ equivalent
- Expansion study results have provided the necessary confidence for the Company to proceed to the pre-feasibility study stage with a decision to mine expected by end 2017
- Pre-feasibility study (PFS) has commenced with GR Engineering Services Limited (ASX: GNG) appointed as lead consultant
 - ANSTO, a world leader in uranium technology, to undertake leaching and uranium recovery test work
 - Experienced team to undertake wellfield design and development strategy
 - Hybrid ELUEX process identified via the expansion study to be further defined as part of PFS
- Drill program to commence mid-November

Corporate

- \$500,000 (before costs) raised via a Placement to Chairman, Mark Hohnen, following shareholder approval

HONEYMOON URANIUM PROJECT

During the quarter, Boss Resources (ASX: BOE) announced the results of the sampling of four sonic core holes identified as unsampled during a systematic analysis of historical data and amalgamation of databases (ASX: 13 September 2016). The four holes, one within the main Honeymoon Resource region and three within the East Kalkaroo region, were drilled by the previous owners but never laboratory analysed. Chemical assays conducted by Boss have positively confirmed the grades previously provided by PFN measurement.

The sampling has enabled a detailed comparison to be made of the downhole PFN pU_3O_8 grades to the laboratory analysis (ICPMS). On average, the laboratory analysis of the core samples were 15% higher than the relevant PFN grades (506ppm U_3O_8 vs 441ppm pU_3O_8). Although there is not enough data to definitely define a trend over the whole resource region, it is noted that sampling of sonic core from the Gould's Dam Deposit also indicated a strong positive disequilibrium when comparing PFN and gamma eU_3O_8 grade data to chemical grade data (ASX: 8 April 2016). The observed effect is most significant when high grades (>1500 ppm U_3O_8) are observed. For full details see ASX announcement dated 13 September 2016.

Expansion Study Results

In May 2016, the Company announced that a detailed technical review of the Honeymoon Uranium Project was underway. The review was designed to identify optimisation and cost reduction opportunities that will form the basis of the planned redesign and start-up of the processing plant.

The Company has received the results of the study undertaken by GR Engineering Services Ltd ("**GRES**"; ASX: GNG) with Australian Nuclear Science and Technology Organisation ("**ANSTO**") undertaking preliminary test work on selected resins and organics for the proposed ion exchange and solvent extraction circuits (ASX: 28 September 2016).

The Board considers the results of this Study as positive and justifying the project moving to the pre-feasibility study ("**PFS**") stage. This Study has identified and detailed the opportunity to restart the existing plant (0.88Mlbs/annum) for minimal cost and to operate this during the construction of the expansion. This will generate early cash flow and ramp-up production from the wellfields more effectively.

The Mineral Resource Estimate ("**Resource**") used for the Study totals 57.8mlbs of contained U_3O_8 equivalent for the Honeymoon Project (see Table 1) and was reported in accordance with the JORC Code (2012). The current mining inventory indicates that based on an assumed production profile staged to ramp-up to a final production of 3.6Mlbs U_3O_8 equivalent / annum the following assumptions can be made:

- for the first 3 years of production all of the material can be sourced from the Measure & Indicated Resources;
- for Years 4 and 5, 80 percent of production can be sourced from Measured & Indicated Resources;
- for the Gould's Dam expansion all of the material for the first 4 years can be sourced from the Measured & Indicated Resources; and
- Overall 50% of the production for the first 9 years can be sourced from the Measure & Indicated Resources

Table 1 – Global Honeymoon Mineral Resource (June 2016)				
Reported above a preferred 250ppm eU ₃ O ₈ lower cut-off				
Classification	Tonnage (Mt)	Grade (ppm eU₃O₈)	Contained U₃O₈ (Million Kilograms)	Contained U₃O₈ (Million Pounds)
Measured	1.7	1720	3.0	6.5
Indicated	5.9	810	4.8	10.6
Inferred	32.5	569	18.5	40.7
Total	40.1	654	26.2	57.8

Note: Figures have been rounded. Total adjusted to account for historical production of ~335 tonnes U₃O₈.

The Study carefully considered the issues that had affected the performance of the plant with the previous owners and included solutions in the design criteria, process routes and cost estimates to solve these problems. The key issue during the previous operating period was the inability to maintain the required uranium tenor in the feed to the plant. The design specification called for a feed tenor of 75mg/l U₃O₈, whilst on a continuous basis an average tenor of only 53mg/l U₃O₈ was achieved (30% reduction). As the plant is volumetrically constrained this means a 30% lower production. This Study assumed a feed grade of only 45mg/l U₃O₈ (15% lower than that achieved during operations) and designed the expansion to meet the required production at these lower tenors.

The base case investigated at a high level for the Project considered an initial 2Mlb/annum operation ramping up to 3.6Mlbs/annum (potentially in the fifth year of operation). The cost estimates for this base case indicate an initial capital expenditure of ~US\$7 million would be required for the restart of the existing plant with a further expenditure of US\$57 million to achieve a 2Mlbs/annum throughput. In addition US\$85 million would be required to bring Gould’s Dam online and ramp-up to 3.6Mlbs/annum. The steady state operating costs determined for each of these design throughputs are shown in Table 2 below. The estimates were prepared to an accuracy of +50% to -30% (Q32016) and are based on first principles as well as information derived from the original Honeymoon design and operation.

Table 2 – Expansion Study Steady State Operating Cost Estimates		
	2.0Mlb / annum Operation	3.6Mlb / annum Operation
Operating Costs		
Wellfield	\$0.10	\$0.10
Plant	\$16.40	\$15.30
Marketing, Shipping & Royalties	\$4.50	\$4.50
General Sustaining Capex	\$0.50	\$0.50
Wellfield Development	\$2.60	\$2.60
Total (US\$/lb U₃O₈)	\$24.10	\$23.00

* Note: figures have been rounded; exchange rate of A\$1.00 = US\$0.75 was used

The Project area offers substantial potential to expand the current Mineral Resource inventory. The intention of the next phase of the Project is to carrying out an infill drilling program for the area associated with the Jason's deposit and to continue with the exploration program. Success with this program would delay any expansion at Gould's Dam and thereby push out any capital expenditure to later in any proposed schedule.

In addition, the technical studies in the next work phase will confirm the selection of a preferred processing technology, optimise the production profile, review wellfield design and development scenarios, deliver a series of targeted studies to validate a number of assumptions made in the Expansion Study and determine a mineable resource that could be converted to an Ore Reserve.

For full details of the results of the Expansion Study, see ASX announcement dated 28 September 2016.

Pre-Feasibility Study

Based on the successful results of the Expansion Study, the Pre-feasibility Study ("PFS") will consider opportunities for further optimisation of the process route and associated costs as well as including an in-fill drilling program to further delineate the Jason's Deposit (ASX: 26 October 2016). The information generated in the PFS will form the basis for the license and permit applications for the increased production at Honeymoon and the mining licence for Jason's.

The results of the Expansion Study confirmed Boss's initial assessment that the original plant production rate was too low for a sustainably profitable uranium mine and, as such, a larger processing plant facility based on the use of resin technology could achieve the lower operating costs required for Honeymoon to be highly economic. In addition, the Eluex flowsheet developed during the Expansion Study provided more flexibility and 'robustness' to manage the issues previously experienced by Uranium One. Boss has based the scope of the PFS on further development of the Eluex process.

Work to be completed as part of the PFS includes:

- Metallurgical test work to support the 'go-forward' case
- Resource drilling at the Jason's Deposit
- Upgraded Mineral Resource Estimates
- Engineering to define the pre-works required to start-up the existing plant (Stage 1)
- Engineering to define the expansion requirements for a 2Mlb/annum operation at Honeymoon (Stage 2)
- Engineering to define the expansion requirements for a ~3.6Mlb/annum operation at Honeymoon inclusive of Gould's Dam (Stage 3)
- Wellfield design and development strategy to support the various stages
- Environmental baseline studies and hydrogeological work to support the permitting and licensing process at Honeymoon and Jason's

Boss has selected ANSTO, a world leader in uranium and ion exchange technology, to undertake all the metallurgical test work required to further define and optimise the selected flowsheet. This work will include:

- Leaching test work on drill core samples (batch and continuous column leaches)
- Water quality assessments
- Ion exchange test work
- Solvent extraction test work

Boss is in the process of tendering the drilling contract for the resource work at Jason's. This drilling program will include ~75 mud rotary holes, ~4 sonic core holes for generation of test samples and hydrogeological holes and pumping tests for the environmental work and well design.

Boss has appointed GR Engineering Services as the lead study consultant who will have the responsibility to undertake all engineering work and, in conjunction with the Boss team, to deliver the PFS. Their scope will include:

- Review of historical operating data
- Interpretation of metallurgical test work
- Flowsheet development and process design for each stage
- Capital and operating costs for each stage
- Risk assessment
- Reporting

Through a combination of in-house expertise and the use of selected qualified consultants the Company will:

- Upgrade and estimate Mineral Resources for each deposit
- Develop wellfield designs for each deposit with a mineable resource and a production schedule estimated
- Complete baseline environmental studies and assessments

Based on the PFS outcomes, Boss will be able to provide the information required to obtain the necessary regulatory approvals for the expansion and mining lease at Jason's.

The results from the Study are expected by quarter 2 2017, after which the permit and license applications will be submitted to the necessary regulatory bodies.

BURKINA FASO GOLD ASSETS

On October 13, 2016 Teranga Gold (TSX/ASX:TGZ) completed the acquisition of Gryphon Minerals (ASX:GRY) and assumed Gryphon's 51% interest in the Golden Hill and Gourma Gold Projects located in Burkina Faso (ASX: 4 July 2014 for full terms of the agreement).

Teranga Gold have announced that field work is scheduled to re-commence at Golden Hill and Gourma during November 2016 with greater emphasis on the more advanced and prospective Golden Hill Project (ASX: TGZ: 27 October 2016). Teranga has prioritised ten prospects at Golden Hill for the 2016/2017 field season, which is expected to include ground geophysics, fit-for-purpose ground geochemistry and extensive auger, RAB, RC and diamond drilling with potential for an initial resource estimate.



Teranga has identified six prospects at the Gourma Project on which to continue exploration activities during the first half of the 2017 field season.

FENNOSCANDIAN NI-CU PROJECTS

Due to the Company's focus on the Honeymoon Project during the quarter, no material work was undertaken on the Company's assets in Sweden.

CORPORATE

During the quarter, the Company was to complete a placement of 16,666,667 shares to the Chairman, Mark Hohnen, raising \$500,000 (before costs) following shareholder approval at a meeting held on 16 August 2016 (ASX: 31 August 2016). The funds will be used to progress work programs at the Honeymoon Uranium Project, including the upcoming drill program and PFS, and for general working capital.

For further information please contact:

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Appendix 1

The following information is provided pursuant to Listing Rule 5.3.3 for the quarter ended 30 September 2016:

SCHEDULE OF MINING TENEMENTS

Tenement Name	Location	Licence Number	Interest
Boutouanou	Burkina Faso	2011/11/410	49% (TGZ farming in)
Diabatou	Burkina Faso	2011/11/409	49% (TGZ farming in)
Tyara	Burkina Faso	2011/11-159	49% (TGZ farming in)
Foutouri	Burkina Faso	2011/11-160	49% (TGZ farming in)
Baniri	Burkina Faso	2009/09-060	49% (TGZ farming in)
Intiedougou	Burkina Faso	2009/09-061	49% (TGZ farming in)
Mougue	Burkina Faso	2009/09-062	49% (TGZ farming in)
Kankandi	Burkina Faso	10/142/MCE	49% (TGZ farming in)
Tyabo	Burkina Faso	10/144/MCE	49% (TGZ farming in)
Skogtrask Project	Sweden	Skogtrask nr.3	100%
		Palange nr.1	100%
Nottrask Project	Sweden	Norrtrask nr.9	100%
Lilltrask Project	Sweden	Lilltrask nr1, 2 and 3	100%
Yarramba	South Australia	ELA2014/00228	80% (Right to acquire 100%)
South Eagle	South Australia	EL5215	80% (Right to acquire 100%)
Goulds Dam	South Australia	ELA2014/00240	80% (Right to acquire 100%)
Katchiwilleroo	South Australia	ELA2014/00239	80% (Right to acquire 100%)
Ethiudna	South Australia	EL5043	80% (Right to acquire 100%)
Goulds Dam	South Australia	RL83-90	80% (Right to acquire 100%)
Honeymoon Mine	South Australia	ML6109	80% (Right to acquire 100%)

There were no acquisitions or disposals during the quarter.

Cautionary Statement concerning Expansion Study Results including Inferred Resources

Boss Resources (the "Company") has concluded that it has a reasonable basis for providing the forward looking statements and production targets discussed in this announcement. The detailed assumptions regarding the Resources are outlined in the announcements 'Substantial Increase And Upgrade In Honeymoon Uranium Resource' dated 20 January 2016, 'Boss Increases Honeymoon Uranium Project Resource' dated 8 April 2016, 'Maiden Resource of 5.2Mlb of Jason's Deposit' dated 14 June 2016 and available to view on www.bossresources.com.au.

The announcement dated 28 September 2016 on which this announcement has been based was prepared in accordance with the JORC Code (2012) and the ASX Listing Rules. The Company advises that the Expansion Study results, Production Targets and any Financial Information contained in these announcements are preliminary in nature as the conclusions are in-part based on low-level technical and economic assessments, and are insufficient to support the estimation of Ore Reserves or to provide an assurance of economic development at this stage. The outcomes of the Expansion Study however provide a reasonable basis for the Company to release the results whilst not providing an assurance of economic development at this stage. This is based on the current mining inventory indicating that for the first 3 years of production all of the material can be sourced from the Measured & Indicated Resources. Further to this 80 percent of production from Years 4 and 5 can be sourced from Measured & Indicated Resources and that for the Gould's Dam expansion all of the material for the first 4 years can be sourced from the Measured & Indicated Resources.

The Australian Securities and Investments Commission (ASIC) released Information Sheet 214, which concerns forward-looking statements by mining and resource companies (INFO 214). One of the matters raised is that forward-looking statements should only be made if the entity has reasonable grounds for concluding that funding will become available to the entity as and when required by the project's development or production schedules. Additional funding will be required by Boss Resources to bring the Project into full production stage. The original Honeymoon plant with a design capacity of 0.88Mlbs U₃O₈ is currently on care and maintenance and is capable of being restarted with minimal capital expenditure. Boss has a current market capitalisation of ~A\$50 million and has successfully raised ~A\$8 million over the last 12 months which is in line with the required re-start capital of US\$7 million (A\$9 million) - see Appendix I.

The Board confirms that the results from the Expansion study are positive and that this justifies the Company committing to the next stage of exploration and development by progressing through to the Pre-feasibility Study.

The Company notes that an Inferred Mineral Resource has a lower level of confidence than an Indicated or Measured Mineral Resource and that the JORC Code 2012 advises that for an Inferred Mineral Resource it is reasonable to expect that the majority of the Inferred Resource could be upgraded to an Indicated Mineral Resource with continued exploration. Based upon the advice from relevant Competent Persons, the Company is confident that a significant portion of the Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with further exploration work.

The Company believes it had a reasonable basis for making the forward-look statements in this announcement, including Production Targets and cost information, based on this announcement and including the following:

- *For Mineral Resources, the Company confirms that all material assumptions and technical parameters that underpin the relevant market announcements continue to apply and have not materially changed.*
- *Further extensive resource drilling is planned in each of the subsequent study phases and there is a reasonable expectation, based on historical results, that the majority of the Inferred Mineral Resource can convert to Indicated Mineral Resource*
- *The Boss Resources Board and core technical team have a strong technical skill-set and four members of the team have direct uranium experience in the engineering, geological and environmental fields.*
- *Boss Resources current market capitalization is ~A\$50 million and has successfully raised ~A\$8 million over the last 12 months.*
- *The Boss Resources Board has had previous success in raising capital for mining projects of this nature.*
- *There is strong broker support for the project with two major broking firms indicating an interest in being*

considered to assist with the provision of funding for the project through debt, equity or partnership.

- *The Honeymoon Project is unique in that it includes a modern ISL plant and significant mine infrastructure which is currently on care and maintenance.*
- *The Honeymoon project region has mining, environmental and export approvals (State and Federal) which are currently on-hold and can be easily re-activated when mining resumes.*
- *Mining at Honeymoon is endorsed by the local indigenous communities with Native Title agreements in place and signed with the Adnyamathanha and Kuyani people.*

GR Engineering Services (GRES) have been used to conduct the technical aspects of the study. GRES and their appointed consultants have experience in designing uranium processing plants and in executing projects in Australia.

Competent Person's Statements

The Mineral Resource estimates for the Honeymoon Project were previously announced on 20 January, 8 April and 14 June 2016 and the Exploration target for the Honeymoon Project was discussed in the announcement on 8 December 2015. The relevant reports are available to view on www.bossresources.com.au. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, in the case of estimates of Mineral Resources, Exploration Target or Ore Reserves that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

The information in this report that relates to the Mineral Resources is based on information compiled by Dr. M. Abzalov, who is a Competent Person according to the JORC 2012 Code. Dr. M. Abzalov is a Fellow of Australasian Institute of Mining and Metallurgy. He has sufficient experience in estimation Resources of uranium mineralisation, and have a strong expertise in the all aspects of the data collection, interpretation and geostatistical analysis to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves'. Dr. M. Abzalov is employed as a director of Boss Resources and is also working as independent consultant and Director of MASSA Geoservices (Australia). Dr. M. Abzalov consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

The information in this document that relates to the Honeymoon Mine Project Exploration Target and associated Exploration Data is based on information provided by Mr. Neil Inwood, who is a Fellow of the AUSIMM. Consent is granted only for the purposes of outlining an Exploration Target, no warranty is made on the use of the exploration information and data for other purposes. Mr Inwood is a consulting geologist and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity undertaken to qualify as Competent Persons as defined in the 2012 edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Mr. Inwood has consented to the inclusion of this information in this document in the form and context in which it appears. An entity associated with Mr Inwood has shares in Boss Resources.

Assumptions on the plant design factors and costs as related to the broader Expansion Study are provided by Mr Stewart Watkins. Mr Watkins is an employee of GR Engineering Service Limited and is a Fellow of the AUSIMM. Mr Watkins has sufficient relevant experience to qualify as a competent person as defined in the 2012 edition of the "Australasian Code for Reporting of Mineral Resources and Reserves". Mr Watkins has consented to the inclusion of this information in the document in the form and context in which it appears.