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June 2024 Quarterly Report

Production ramp-up proceeding to plan with technology proven at commercial scale

Honeymoon on track to meet FY25 production target of 850,000lbs of U_3O_8 as set out in Feasibility Study; Construction of second and third NIMCIX production columns on schedule

Highlights

Honeymoon Uranium Project, South Australia

Operations

- **Successful commissioning, with Boss proving its lixiviant chemistry and ion exchange technology at commercial scale**
- **57,364lbs of uranium produced during the June quarter**
- **Ramp-up to steady-state production proceeding to plan, with key production metrics meeting Feasibility Study forecasts**
- **Construction of NIMCIX columns 2 and 3 proceeding to plan and on target for commissioning in Q3 and Q4, 2024 respectively**
- **Preliminary updates on costs to be provided once NIMCIX columns 2 and 3 are commissioned**
- **Boss expects production of at least 850,000lbs of U_3O_8 in FY25; This is in line with Feasibility Study forecasts**

Geology

- **Strong drilling intercepts confirm production potential of Gould's Dam at Honeymoon**
- **A further 96 mud rotary holes were drilled for 12,911m, with uranium mineralisation highlights including (PFN results, ppm pU_3O_8):**
  - **4.00m @ 2,925ppm pU_3O_8** **GT 11,700** (WRM0151 from 122.75m)
  - **4.25m @ 2,230ppm pU_3O_8** **GT 9,478** (WRM0109 from 120.75m)
  - **3.25m @ 1,406ppm pU_3O_8** **GT 4,570** (WRM0128 from 123.75m)
  - **5.25m @ 800ppm pU_3O_8** **GT 4,200** (WRM0099 from 117.00m)
  - **2.25m @ 1,717ppm pU_3O_8** **GT 3,863** (WRM0159 from 121.75m)
  - **1.25m @ 2,877ppm pU_3O_8** **GT 3,596** (WRM0114 from 124.50m)
  - **1.75m @ 1,990ppm pU_3O_8** **GT 3,483** (WRM0142 from 120.25m)

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Alta Mesa, South Texas (Boss 30%)

- **Successful production start-up announced 13 June 2024**
- **Alta Mesa expected to reach full operational capacity of 1.5Mlbs a year by 2026. Boss' share of Alta Mesa production is 30 per cent (450,000lbs a year at nameplate capacity)**
- **Alta Mesa has potential for further resource growth and additional drying capacity of 500,000lbs a year**

Corporate

- **As at 30 June 2024, Boss held liquid assets of A$272.5M; Boss has no debt**
- **Well positioned to benefit from rising uranium prices with most of Honeymoon Life of Mine (LOM) production and all of Alta Mesa production uncontracted**
- **Boss continues to strengthen its senior management team in line with the Company's growing status as a global uranium producer; Highly experienced uranium exploration geologist Dr. Andy Wilde was appointed Chief Geologist**

Boss Energy Limited (ASX: BOE; OTCQX: BQSSF) is pleased to report on the June 2024 quarter, during which the Company achieved a number of milestones including first production at Honeymoon and at its 30 per cent-owned Alta Mesa Project in South Texas.

Boss Managing Director Duncan Craib said:

"*Putting cake in the can with our first production at Honeymoon was a significant milestone for Boss which proved that our lixiviant chemistry and ion exchange technology works at commercial scale.*

"*The production ramp up at Honeymoon, including the key production metrics, is progressing in line with our Feasibility Study forecasts and therefore we are on track to produce at least 850,000 pounds of U_3O_8 in FY25.*

"This strong outlook is also supported by the progress being made in the construction of the second and third NIMCIX columns which are scheduled to start operating, in line with the production ramp-up timetable, by Q3 and Q4, 2024 respectively.

"With both Honeymoon and Alta Mesa producing, Boss has become the only multi-asset uranium producer on the ASX."

Executive Appointments

During the quarter, Boss appointed Dr. Andy Wilde as Chief Geologist.

Dr Wilde is a geologist with over 35 years industry experience, including 7 years as chief geologist for uranium mining and exploration company Paladin Energy Ltd (ASX: PDN) during the previous uranium bull cycle. In this role he was responsible for leading technical aspects of uranium exploration and project assessment in Namibia, Malawi, Canada and Australia among others. More recently, he played an important role in the discovery of Deep Yellow's Barking Gecko and Iguana uranium deposits in Namibia (ASX: DYL), following which he provided the technical basis for the ASX listing of 92 Energy Ltd (ASX: 92E) and was pivotal in the discovery of that company's GMZ uranium deposit in Saskatchewan, Canada. For the past few years, he has run a successful consultancy, advising many companies on uranium and rare earth exploration.

Dr Wilde holds a Bachelor of Science degree with first class honours from the University College of Wales Aberystwyth and a PhD dealing with unconformity-type uranium deposits from Monash University in Melbourne. He is a Fellow and Registered Professional Geoscientist (Mineral Exploration) of the Australian Institute of Geoscientists and a Fellow of the Geological Society of Australia. He is also a graduate of the Australian Institute of Company Directors.

Strong Balance Sheet

As at 30 June 2024, Boss has no debt and $272.5M of liquid assets (being cash, liquid investments and physical uranium). The uranium inventory was valued at A$166.8M, including 200,000lbs uranium loaned to enCore Energy Corp. ("enCore") (NASDAQ: EU) (TSXV: EU), which is repayable in cash or in kind in December 2024.

Unrestricted cash and cash equivalents stood at $67.1 million (which excludes a fully cash-backed environmental bond of $13.5M) and listed investments (including the Company's investment in enCore) were valued at $38.6M. Cash balances are being managed with a term deposit program to take advantage of the higher interest rate environment.

Honeymoon Production Results for the June 2024 Quarter

On 22 April 2024 the Company was pleased to announce a major milestone in producing the first drum of uranium at its 100 per cent-owned Honeymoon Uranium Project in South Australia.

First production was slightly later than expected given additional time required to commission and tune the new horizontal electrical kiln (calciner) to allow the Drying and Packaging area to ramp up to the required throughput. The Company installed one of the first fully electric calciners in Australia as part of its strategy to reduce its carbon footprint.

Honeymoon is producing in-line with feasibility study expectations and schedules.

Table 1: *Operational physicals for the June 2024 Quarter*

Process	Unit	Actual Observed
Wellfields online		1
Wells online		16
IX Columns operational		1
IX Flow (total)[1]	(m^3)	327,066
PLS to IX tenor (weighted average)[2]	(U_3O_8 mg/l)	80
IX Recovery (weighted average)[2]	(%)	99.653
IX Production (total)[1]	(lbs)	57,364
U_3O_8 Drummed (total)	(lbs)	28,844

Notes: (1) Conversions: There are 1,000 litres per m^3 and 0.0000022 lbs per mg. (2) The weighted average is calculated based on total flow for the quarter.

It is important to note that tenors being achieved from initial wellfields are not indicative of the average LOM grades that were set out in the Feasibility Study[1].

Given the time taken to ramp-up wellfields in ISR projects, preliminary cost updates will be provided once columns 2 and 3 are commissioned.

Since acquiring Honeymoon in December 2015, Boss has invested significant time and capital in making technical improvements to the project. Boss has now been able to prove the scale-up of its lixiviant chemistry and Ion Exchange technology to commercial scale which gives the Company confidence that it will meet its FY25 production target of 850,000 lbs of U_3O_8 as set out in Feasibility Study.

[1] *Refer to ASX: BOE announcement dated 21 June 2021.*

Honeymoon Construction Activities

Construction of NIMCIX columns 2 and 3 are on track for completion in the September and December quarters respectively.

Figure 1: *Construction of NIMCIX columns 2 and 3 nearing completion*

Boss Sales

To date, Boss has entered into two binding sales agreement to sell 1.8Mlbs of U_3O_8 to major European and US power utilities over eight years from 2024 to 2032. Boss remains strategically under-contracted with most of Honeymoon LOM production and all of Alta Mesa production uncontracted.

Boss' contracting strategy is to monitor the markets and layer in contracts, predominantly market-related, to optimise future pricing and, in the near term, to ensure profitability and cash flow as production ramps up.

Geology – Uranium

On 26 June 2024, Boss announced its latest high-grade drill results on the Gould's Dam satellite deposit. These results support the Company's strategy to increase the nameplate production rate and mine life at Honeymoon.

In light of these strong results, work has commenced on accelerating the development of Gould's Dam, which is an important satellite project to the nearby Honeymoon Mine.

The current delineation program provides important data which will be used in wellfield planning and other advanced pre-development activity.

It will also enable Boss to complete detailed geological and mineralisation models which will support the ongoing development work and preparation for an ISR Mining Lease proposal for Gould's Dam.

This will lead into the next phase of mine plan development, including pump testing of the mineralised aquifer within the Gould's Dam Indicated resource (utilising monitoring wells installed during the 2023 drilling campaign) and core sample test work. This will provide important baseline hydrogeological and metallurgical characteristics of the mineralised aquifers.

The latest drilling is targeting three key areas within the inferred resource envelope at Gould's Dam – comprising Sunrise, Billeroo and Beulah. Gould's Dam is located ~80km northwest of the Honeymoon Mine and currently contains a JORC-compliant resource of 25Mlbs of indicated and inferred U_30_8.

A total of 96 mud rotary holes have been drilled to date for 12,911m, with uranium mineralisation highlights including (PFN results, ppm pU3O8):

- **4.00m @ 2,925ppm pU_3O_8** **GT 11,700** (WRM0151 from 122.75m)
- **4.25m @ 2,230ppm pU_3O_8** **GT 9,478** (WRM0109 from 120.75m)
- **3.25m @ 1,406ppm pU_3O_8** **GT 4,570** (WRM0128 from 123.75m)
- **5.25m @ 800ppm pU_3O_8** **GT 4,200** (WRM0099 from 117.00m)
- **2.25m @ 1,717ppm pU_3O_8** **GT 3,863** (WRM0159 from 121.75m)
- **1.25m @ 2,877ppm pU_3O_8** **GT 3,596** (WRM0114 from 124.50m)
- **1.75m @ 1,990ppm pU_3O_8** **GT 3,483** (WRM0142 from 120.25m)
- **3.75m @ 773ppm pU_3O_8** **GT 2,899** (WRM0130 from 123.75m)
- **1.50m @ 1,855ppm pU_3O_8** **GT 2,783** (WRM0121 from 120.25m)
- **4.50m @ 545ppm pU_3O_8** **GT 2,453** (WRM0140 from 103.25m)
- **4.75m @ 506ppm pU_3O_8** **GT 2,404** (WRM0157 from 122.50m)
- **4.75m @ 484ppm pU_3O_8** **GT 2,299** (WRM0143 from 123.00m)
  - ***plus* 1.75m @ 1,294ppm pU_3O_8** **GT 2,265** (WRM0143 from 128.50m)
- **3.00m @ 756ppm pU_3O_8** **GT 2,268** (WRM0084 from 118.50m)

The results highlight the potential for Gould's Dam to help lift Honeymoon's production rate from the current nameplate capacity of 2.45Mlbs a year to the Export Permit limit of 3.3Mlbs a year and/or extend the mine's useful life.

Boss' exploration strategy has already been highly successful, increasing the JORC Resource at Honeymoon from 16.57Mlbs to 71.67Mlbs (~4.3x increase) since project acquisition in December 2015[2].

Geology – base metals

On 15 May 2024, Boss announced that First Quantum Minerals' (TSE:FM) (First Quantum) maiden diamond drilling program on Honeymoon's tenements in South Australia had successfully intersected basement-hosted base metal mineralisation below the Yarramba Palaeovalley which holds the uranium.

Figure 2: *Stratiform and vein-hosted chalcopyrite mineralisation in metasiltstones at Atlas target*

First results received from a copper exploration program conducted by First Quantum under its farm-in agreement with Boss at Honeymoon; Assays include:

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

- 23CURDD002: 16m @ 0.27% Cu and 0.1g/t Au, from 288m, and;
- 23CURDD006: 47m @ 0.19% Cu from 404m, with a number of narrower zones of 5-6m containing up to 0.5% Cu and 0.12g/t Au.

The Boss-First Quantum agreement gives First Quantum the right to earn a 51 per cent interest in Honeymoon's base metal endowment by spending $6m on exploration and a further 24 per cent interest by sole-funding all base metals expenditure up to a Decision to Mine.

The agreement enables Boss to remain fully-focused on its core business of uranium exploration, development and production while having exposure at no cost to the significant potential of a base metals exploration program led by a global major.

Following receipt of these results, First Quantum elected to continue to fund further exploration under a joint venture agreement. Under the agreement, First Quantum has the right but not the obligation to spend $6M on exploration within 5 years, and maintain a minimum annual expenditure on the JV Project of $500,000 per year.

Alta Mesa

Boss became the only multi-asset uranium producer on the ASX with the commencement of production during the quarter at its 30 per cent-owned Alta Mesa In-Situ Recovery ("ISR") Central Processing Uranium Plant and Wellfields ("Alta Mesa Project") in South Texas.

On 14 June 2024, Boss advised that Alta Mesa's uranium production is forecast to ramp up to a steady-state rate of 1,500,000lbs a year by 2026 with additional drying capacity of 500,000lbs a year. Boss owns the sale and marketing rights over its pro-rata share (450,000lbs at nameplate capacity).

The Alta Mesa Project, which consists of over 200,000 acres plus the central processing plant and wellfields, is managed by experienced uranium producer, and 70% partner, enCore.

This key milestone came just eight weeks after the start of production at Honeymoon.

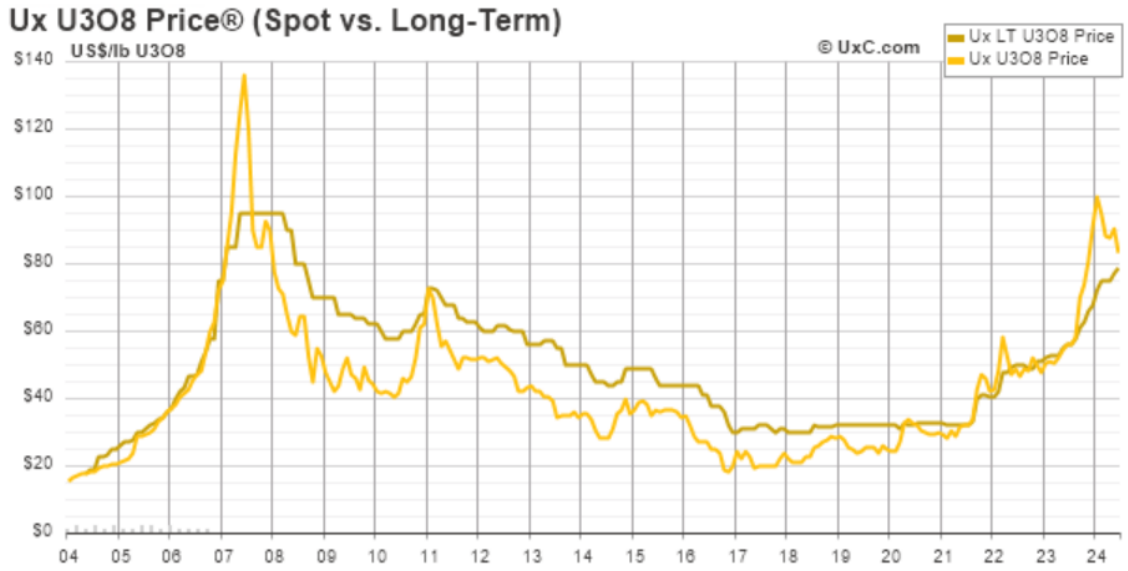
Please refer to enCore's announcement dated 13 June 2024 for further information.[3]

Boss acquired its 30 per cent interest in the Alta Mesa Project in February 2024 from enCore and its wholly owned subsidiary, enCore Energy U.S. Corp., a highly credentialed United States uranium developer and operator, for US$60 million cash (see ASX release dated 27 February 2024).

[3] enCore Energy Corp. announcement titled 'enCore Energy Commences Uranium Production at its Second South Texas Project' dated 13 June 2024 https://www.sedarplus.ca/csa-party/records/document.html?id=b5b37208e04209072f3a850b53c88385cc67adc9220730b1094ad5024299b241

Uranium Market Analysis

The spot price in the second quarter remained volatile, peaking at ~ $93/lb and falling to a low of ~$83/lb towards the end of June. This was more reflective of speculators selling to limit losses from purchases above $100/lb than of the long-term supply and demand fundamentals, which remain strong. Since 2022, the long-term price indicator has continued to rise and in the six months since the end of December 2023 the term price has risen by around $12/lb to a level which has not been seen in the market since 2008. Supply and demand fundamentals are strengthening and so is the rate of rise of the term price.



Demand for uranium is set to increase in the near term as reactors are restarted, lifetimes are extended and plans for new reactors gain momentum. Data centre demand continues to grow and is driving the early deployment of Small Modular Reactors.

June also saw the Department of Energy issue a Request for Proposals (RFP) seeking offers for delivery of low-enriched uranium. The intention behind the RFP is to purchase low enriched uranium from domestic sources to encourage the development of new domestic enrichment capacity and reduce dependence on Russian sources.

At the World Nuclear Fuel Market conference in Atlanta in June, the need for more capacity to meet Western nuclear fuel demand was highlighted. The passage of the Russian import ban and deadline from Tenex for waivers placed utilities and suppliers in a wait-and-see mode for most of June as parties prepared applications for waivers. The decision to grant or withhold waivers will have an impact on the timing of new RFPs in the US.

The supply side is seen as more vulnerable than demand, with Russia and China increasing their positions in Kazakhstan and supply chain issues exacerbated by sanctions on Russia and geopolitical tensions increasing. Western utility access to uranium supply is becoming more constrained and western utilities are favouring North American and Australian supply sources. The Honeymoon mine has started production and is preparing for the first shipment of uranium from the mine. Boss is well positioned to meet the growing demand for uranium from geopolitically stable and secure sources.

Appendix 5B disclosures

In line with its obligations under ASX Listing Rule 5.3.5, Boss notes that the only payments to related parties of the Company, as disclosed in the Appendix 5B (Quarterly Cashflow Report) for the period ended 30 June 2024, consist of executive director and chief financial officer salaries and wages (including superannuation) and payment of non-executive director fees.

During the quarter ended 30 June 2024, the Company spent approximately $24.1M on project and exploration activities relating to its Honeymoon and Alta Mesa Projects. These activities included:

- Technical studies costs
- Construction equipment
- Wellfield drilling and development costs
- Engineering and construction expenses
- Mineral exploration and evaluation costs

In addition to these activities the Company continued to incur costs relating to the ongoing maintenance activities required at Honeymoon. The expenditure represents direct costs associated with these activities as well as capitalised wages which can be directly attributable to Honeymoon.

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

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Reference to previous ASX announcements

In relation to the results of the Enhanced Feasibility Study announced on 21 June 2021, 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.

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.

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.

Appendix One:

Schedule of Mining Tenements

The following information is provided pursuant to Listing Rule 5.3.3 for the quarter ended 30 June 2024.

Tenement Name	Location	Licence Number	Interest
Yarramba	South Australia	EL6510	100%
South Eagle	South Australia	EL6081	100%
Gould's Dam	South Australia	EL6512	100%
Katchiwilleroo	South Australia	EL6511	100%
Ethiudna	South Australia	EL6020	100%
Gould's Dam	South Australia	RL83-85	100%
Honeymoon Mine	South Australia	ML6109	100%
Prairie Dam	South Australia	EL6962	75%
Chalker Dam	South Australia	EL6963	75%
Oakvale	South Australia	EL6964	75%
Gairloch	South Australia	EL6965	75%
Venus Bay	South Australia	EL6992	100%
Darke Peak	South Australia	ELA2024_00018	100%
Rudall	South Australia	EL6999	100%

There were no mining tenement acquisitions or divestments during the quarter.

EL6512, 6511, 6020, 6510 and 6081 are subject to an earn-in agreement with First Quantum Minerals in respect to the base and precious metal rights. Refer ASX release dated 10 February 2022 for further information.

Honeymoon Project Mineral Resource

Honeymoon's Mineral Resource (lower cut-off of 250 ppm U_3O_8)

Classification	Tonnage (Million Tonnes)	Average Grade (ppm U_3O_8)	Contained Metal (Mkg, U_3O_8)	Contained Metal (Mlb, U_3O_8)
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**

The global Honeymoon Mineral Resource stands at 71.6 Mlb (52.4Mt) with an average grade of 620ppm U_3O_8, using a cut-off grade of 250ppm.

The current Honeymoon restart feasibility studies utilise only a portion of Honeymoon's JORC resource, excluding 36Mlb of JORC resource outside the HRA, which could expand the mine life, and Boss' defined exploration target could potentially extend the mine life beyond the initial 11 years and increase the production profile. Honeymoon's Federal EPIP Act approvals allow export of more than 3Mlbs/annum U308 equivalent.

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 U_3O_8 for a contained 58Mlbs to 190Mlbs U_3O_8 (26,300 to 86,160 tonnes of contained U_3O_8), using a cut-off of 250ppm[4]. 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.

[4] Refer to ASX: BOE announcement dated 25 March 2019