Search Minerals Announces Positive Preliminary Economic Assessment for the Deep Fox and Foxtrot Rare Earth Element Project With $2.23 Billion NPV(8)

written by Raj Shah | June 7, 2022

- **Net Present Value – $NPV_{(8)}$ of $2.23 B (pre-tax) and $NPV_{(8)}$ of $1.31 B (after-tax)**
- **Internal Rate of Return (IRR) – 55.3% (pre-tax) and 41.5% (after-tax)**
- **Capital Payback Period – 1.5 Years (pre-tax) and 1.8 Years (after-tax)**
- **Initial Capital Costs – $ 422M**
- **Approx. Annual production- 1437t – Magnet Rare Earths Oxides (Nd+Pr:1291t Dy:125t Tb:21t)**

June 7, 2022 (Source) – **Search Minerals Inc. (TSXV: SMY | OTCQB: SHCMF)** ("Search" or the "Company"), is pleased to announce the results of its Preliminary Economic Assessment ("PEA") for the development of its Deep Fox and Foxtrot Rare Earth Element (REE) deposits located in Labrador, Canada and the establishment of a Direct Extraction Hydrometallurgical processing facility on the Island of Newfoundland. The PEA was prepared by SLR Consulting (Canada) Inc. The technical report relating to the PEA will be filed on SEDAR within 45 days of this news release.

Key Financial Metrics (Unless otherwise indicated all values

expressed in CDN$, Exchange rate CDN$1 = US$0.80):

- The project net present value (NPV) of $2.23B (before-tax) and NPV of $1.31B (after-tax), at a 8% discount rate.
- The pre-tax internal rate of return (IRR) is 55.3%, and the after-tax IRR is 41.5%.
- The pre-tax capital payback is 1.5 years and after-tax capital payback is 1.8 years from start of production.
- Initial capital costs: $422M (includes $61M contingency)
- Life of Mine: 26 years. Annual mining production: 720,000t (at 2000tpd)
- Net value: $756/t (net of process recoveries and payability terms)
- Operating cost: $345/t (including third party separation charges)
- The price for Magnet Rare Earth Oxides used: Neodymium oxide- USD$212/kg, Praseodymium oxide USD$201/kg, Dysprosium oxide USD$587/kg and Terbium oxide USD$2,493/kg.

Cautionary Note: The preliminary economic assessment is preliminary in nature and includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them to enable them to be categorized as mineral reserves and there is no certainty that the preliminary economic assessment will be realized. Mineral resources that are not mineral reserves do not have a demonstrated economic viability.

Greg Andrews, President and CEO of Search Minerals states: “This PEA marks the achievement of a significant milestone in Search’s pursuit of establishing a secure and reliable REE mining and process industry in the province of Newfoundland and Labrador. The strong economic case supports the development of mining and primary production of the Deep Fox and Foxtrot deposits in

Labrador and further refining of concentrate into REE mixed oxides and carbonates on the Island of Newfoundland.”

Andrews added: “We believe Search is well positioned to attract strategic partners and investment as we move forward with the next steps of development including completing a bankable feasibly study and initiating the approvals process for this project. Our goal is to be in production by 2025. The existence of other highly prospective targets within our District provides flexibility to ramp up future development to respond to increasing market demands for our permanent magnet material.”

Mineral Resource Estimate

Search has completed an updated Mineral Resource estimate on Deep Fox and Foxtrot. (*April 11, 2022 – Search Minerals Announces Increased Deep Fox and Foxtrot Mineral Resource Estimates*).

Summary of Mineral Resources as of December 31, 2021
Search Minerals Inc. – Deep Fox and Foxtrot Project

Classification	Tonnage (000 t)	Pr (ppm)	Nd (ppm)	Tb (ppm)	Dy (ppm)
Open Pit					
Indicated	8,483	381	1,422	32	187
Inferred	1,441	329	1,231	30	179
Underground					
Indicated	6,611	368	1,376	31	182
Inferred	4,862	380	1,427	33	191
Total Indicated	15,094	375	1,402	32	185
Total Inferred	6,303	369	1,382	32	188

Notes:

1. CIM definitions were followed for Mineral Resources.
2. Open Pit Mineral Resources were reported inside a resource shell at a pit discard NSR cut-off value of C$260/t. Underground Mineral Resources were constrained with mineralization wireframes below the resource shell and validated using underground mining solids based on an NSR cut-off value of C$335/t. Both cut-off values account for all processing, G&A, refining, and transportation charges.
3. NSR values were assigned to blocks using metal prices, metallurgical recoveries, payables (as shown in their respective sections of this report) for each individual element.
4. A minimum mining width of 2.0 m was used for both open pit and underground.
5. Bulk density varies from 2.71 t/m^3 to 2.92 t/m^3.
6. Revenue attributable to Pr, Nd, Dy, and Tb represent approximately 92% of the total revenue.
7. The estimate is of Mineral Resources only and because these do not constitute Mineral Reserves, they do not have demonstrated economic viability.
8. Totals may not add or multiply accurately due to rounding.

Mining operation

Mining will be carried out using open pit and underground methods at a rate of 2,000 tpd starting at Deep Fox and followed by Foxtrot. Deep Fox will be mined over an 11 year period (7 years open pit and 4 years underground) and Foxtrot will be mined over a 16 year period (7 years open pit and 9 years underground) for a total mine life of 26 years (Foxtrot open pit and Deep Fox underground will both be mined in year 11).

A total of 18.137 million tonnes (Mt) of mineral will be mined

at average grades of 1,416 ppm Nd, 379 ppm Pr, 188 ppm Dy, and 32 ppm Tb.

The open pit mines are planned to be mined using conventional truck and shovel operations.

The underground mines are planned to be mined with conventional longhole mining methods.

Primary Production Plant

Mineralized material from the Deep Fox and Foxtrot deposits will be processed through a grinding and magnetic separation primary processing operation. The operation will take place in a facility constructed near the deposits in Labrador.

Primary processing will produce a REE concentrate, by-product iron concentrate, and dry stackable tailings.

The REE concentrate will be stockpiled in Labrador and seasonally transported to a secondary hydrometallurgical processing plant on the Island of Newfoundland for further processing.

Hydrometallurgical Processing Plant

The hydrometallurgical Direct Extraction Process facility will be sited on the Island of Newfoundland and will produce a mixed carbonate precipitate as the final purified mixed rare earth product.

Rare Earth Separation Processing

Operating costs for the separation of the mixed rare earth product to final saleable individual rare earth oxides are based on a tolling fee for REE separation by a third party.

Ongoing laboratory and pilot plant test work are being conducted

to optimize separation processing with the goal of decreasing separation operating costs. Search will complete an engineering study to determine the feasibility of building a separation facility on the Island of Newfoundland.

Environment, Social and Governance

Search has increased its internal capacity and is enhancing its corporate policies, procedures and practices to ensure compliance with industry Corporate Social Responsibility (CSR) best practices.

Improvements to the process flow sheet have resulted in design changes which reduce both the footprint of the operations and the potential adverse effects of processing.

Search has initiated environmental baseline studies over both deposit areas and continues to expand its baseline data set. Discussions with the NunatuKavut Community Council ("NCC") department of Environment and Natural Resources have identified opportunities to collaborate on further regional study initiatives. It is anticipated that joint environmental studies, Traditional Knowledge studies and monitoring programs will be undertaken during the 2022 field season and carry on throughout the life of the project.

All exploration permits are in place. Search continues to work directly with the St. Lewis Town Council, Port Hope Simpson Town Council and the Mary's Harbour Town Council to ensure that residents are informed of activities and that their concerns are addressed in a timely manner.

Search entered into a Mining Exploration Activities Agreement with the NCC on August 27, 2012 which remains in good standing. Additional social uplift initiatives include providing scholarships to local students, donating to community projects,

and working with the NCC to provide local employment opportunities.

Search is also collaborating with government agencies to seek opportunities to provide renewable energy alternatives in the communities where we work.

After-Tax Cash Flow, Capital and Operating Costs Summary

After-Tax Cash Flow Summary
Deep Fox and Foxtrot

Parameter	Units	Value
Design Feed to Mill Rate	ktpa	720
Feed to Mill, Total	Mt	18.1
LOM	years	26
Revenue, after fees	$M	13,719
Total Operating Costs	$M	6,250
Total Initial Capital	$M	422
Sustaining Capital	$M	312
Reclamation and Closure	$M	20
Total Capital Cost	$M	753
Undiscounted Net Cash Flow, pre-tax	$M	6,716
Payback Period	years	1.5
NPV 5%	$M	3,243
NPV 8%	$M	2,231
NPV 10%	$M	1,776
NPV 12%	$M	1,434
IRR	%	55.3%
Project Taxes	$M	2,620
Undiscounted Net Cash Flow, after-tax	$M	4,097

Payback Period	years	1.8
NPV 5%	$M	1,942
NPV 8%	$M	1,314
NPV 10%	$M	1.032
NPV 12%	$M	820
IRR	%	41.5%

Overall Capital Cost Summary
Deep Fox and Foxtrot Project

Area	Capital Cost ($M)
Open Pit Mining	4.8
Primary Production Plant	108.5
Hydrometallurgical Processing Plant	131.7
Total Directs	**245.0**
Indirects/Owners	115.6
Contingency	61.2
Total Initial Capital	**421.8**
Open Pit Sustaining Capital	5.7
UG Sustaining Capital (starting year 7)	134.2
UG Development Capital (starting year 7)	44.3
Process and Infrastructure Sustaining Capital	127.4
Reclamation and Closure	20.0
Total Capital Cost	**753.4**

LOM Operating Costs
Deep Fox and Foxtrot Project

Area	Unit	Cost
OP Mining (Mineralization)	$/t mined	6.50
OP Mining (Waste)	$/t mined	5.00
UG Mining	$/t mined	63.69
Mining (overall)	$/t processed	61.75
Additional Haulage to Plant (Foxtrot Only)	$/t processed	2.00
Primary Production Plant	$/t processed	38.90
G&A (Primary Production Plant)	$/t processed	10.97
Transport to Hydrometallurgical Processing Plant	$/t processed	5.07
Hydrometallurgical Processing	$/t processed	90.60
G&A (Hydrometallurgical Processing Plant)	$/t processed	2.74
Separation Charges	$/t processed	148.27
Separation Charges	$/kg TREO	13.72
Total Operating Costs	**$/t processed**	**344.59**

Pre-Tax Sensitivity Analyses

Pre-Tax Sensitivity Analyses
Deep Fox and Foxtrot

Parameter Variables	Units	-20%	-10%	Base	10%	20%
TREE Head Grade	%	0.69%	0.78%	0.87%	0.95%	1.04%
Net Value ($/t)	$/t	605	681	756	832	908
Exchange Rate	US$/C$	0.64	0.72	0.80	0.88	0.96
Operating Cost ($M)	$M	5,000	5,625	6,250	6875	7,500
Capital Cost ($M)	$M	603	678	753	829	904
NPV at 8%	**$M**	**-20%**	**-10%**	**Base**	**10%**	**20%**
TREE Head Grade	$M	1,437	1,834	2,231	2,627	3,024

Net Value ($/t)	$M	1,245	1,738	2,231	2,723	3,216
Exchange Rate	$M	3,463	2,778	2,231	1,782	1,409
Operating Cost ($M)	$M	2,672	2,451	2,231	2,010	1,789
Capital Cost ($M)	$M	2,328	2,279	2,231	2,182	2,133

Qualified Person:

Ian Weir, P.Eng., SLR Technical Manager – Mining, is a "qualified person" (as defined by NI 43-101) and has supervised the preparation of and approved all scientific and technical information herein and has conducted appropriate verification on the underlying data. Tudorel Ciuculescu, M. Sc., P. Geo. is a "qualified person" (as defined by NI 43-101) and has reviewed and verified all scientific and technical information herein relating to the Mineral Resource estimates.

About Search Minerals Inc.

Led by a proven management team and board of directors, Search is focused on finding and developing Critical Rare Earths Elements (CREE), Zirconium (Zr) and Hafnium (Hf) resources within the emerging Port Hope Simpson – St. Lewis CREE District of southeast Labrador. The Company controls a belt 63 km long and 2 km wide and is road accessible, on tidewater, and located within 3 local communities. Search has completed a preliminary economic assessment report for **FOXTROT**, and a resource estimate for **DEEP FOX**. Search is also working on three exploration prospects along the belt which include: **FOX MEADOW, SILVER FOX** and **AWESOME FOX**.

Search has continued to optimize our patented Direct Extraction Process technology with support from the Department of Industry, Energy and Technology, Government of Newfoundland and Labrador, and from the Atlantic Canada Opportunity Agency. We have completed two pilot plant operations and produced highly

purified mixed rare earth carbonate concentrate and mixed rare earth concentrate for separation and refining. We also recognize the continued support by the Government of Newfoundland and Labrador for its Junior Exploration Program.

Search Minerals was selected to participate in the Government of Canada Accelerated Growth Service ("AGS") initiative, which supports high growth companies. AGS, as a 'one-stop shop' model, provides Search with coordinated access to Government of Canada resources as Search continues to move quickly to production and contribute to the establishment of a stable and secure rare earth element North American and European supply chain.

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Cautionary Statement Regarding "Forward-Looking" Statements:

This news release contains "forward-looking information" and "forward-looking statements" within the meaning of applicable Canadian securities laws. Such forward-looking statements include, without limitation: statements with respect to the timing of a technical report summarizing the results of the PEA, the development, operational and economic results of the PEA, including cash flows, capital expenditures, development costs, recovery rates, operating costs, estimation of mineral resources

and anticipated advancement of the Company's exploration, production and processing plans. These statements are based on information currently available to the Company and the Company provides no assurance that actual results will meet management's expectations. In certain cases, forward-looking information may be identified by such terms as "anticipates", "believes", "could", "estimates", "expects", "may", "shall", "will", or "would".

Forward-looking information contained in this news release is based on certain factors and assumptions regarding, among other things, the estimation of Mineral Resources, the realization of resource estimates, change in market prices, the availability of necessary financing, the timing and amount of future exploration and development expenditures, the progress of exploration and development activities, the receipt of necessary regulatory approvals, and assumptions with respect to environmental risks, title disputes or claims, and other similar matters. While the Company considers these assumptions to be reasonable based on information currently available to it, they may prove to be incorrect.

Although the Company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance and actual results or developments may differ materially from those in the forward-looking statements. Factors that could cause actual results to differ materially from those in forward-looking statements include: changes in project parameters as plans continue to be refined, changes in relationships with local communities, changes in market conditions, unsuccessful exploration results, unanticipated costs and expenses, inaccurate resource estimates, changes in the price of minerals, unexpected changes in the regulatory environment, environmental hazards, unanticipated changes in key management personnel and

general economic conditions. In addition, mining exploration and development is an inherently risky business. Accordingly, actual events may differ materially from those projected in the forward-looking statements. This list is not exhaustive of the factors that may affect any of the Company's forward-looking statements. Reference should be made to the Company's public filings available under its profile on www.sedar.com for further risk factors.

These and other factors should be considered carefully and readers should not place undue reliance on the Company's forward-looking statements. The Company does not undertake to update any forward-looking statement that may be made from time to time by the Company or on its behalf, except in accordance with applicable securities laws.