



RIVAL IN THE REE SPACE

COMMERCE RESOURCES AT EYE LEVEL WITH THE ONLY TWO MAJOR REE MINERS IN THE WESTERN WORLD

2022 is on its way to mark the historic year when some critical REEs (Rare Earth Elements) have slipped into a supply deficit, first and foremost neodymium (Nd) and praseodymium (Pr). Both these highly sought-after metals are needed to produce permanent magnets for electric vehicle motors and wind turbines, to name a few. With demand expected to grow strongly, the NdPr supply deficit will be expanding to dramatic levels, reaching a shortfall in 2030 equal to 3 times the projected NdPr oxide output of the Mountain Pass REE Mine in California. As new large REE mines are needed to have a meaningful impact in reducing the supply deficit, the Ashram REE & Fluorspar Deposit in Quebec should come into mind as it matches up with some decisive characteristics in comparison to the only 2 major REE miners in the western world today: MP Materials Corp. from the United States and Lynas Rare Earths Ltd. with operations from Australia and Malaysia. **"O Canada, we stand on guard for thee!"**

With Commerce Resources Corp. having sent the first batch of mixed rare earth carbonate (REC) concentrate samples to global processors means that they are now in the process of figuring out:

- 1) If the mixed REC concentrate can be processed profitably into separated REE oxides with >99% purity, and
- 2) If the REC can be used to blend with REC concentrates from their other feedstock sources.

Based on the strong NdPr oxide distributions of these first mixed REC samples, it is already clear today that the Ashram REE & Fluorspar Deposit in Quebec compares very favourably to other active REE mines, including those in China. What makes Commerce Resources so attractive is the lookout to produce some 25,000 t of REO equivalent annually, which puts the company in the same neighbourhood as MP Materials and Lynas, both of which are building large separation plants in Texas.

Company Details



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ISIN: CA2006977045

Shares Issued & Outstanding: 91,654,630



Chart Canada (TSX.V)

Canada Symbol (TSX.V): [CCE](#)

Current Price: \$0.155 CAD (08/18/2022)

Market Capitalization: \$14 Million CAD

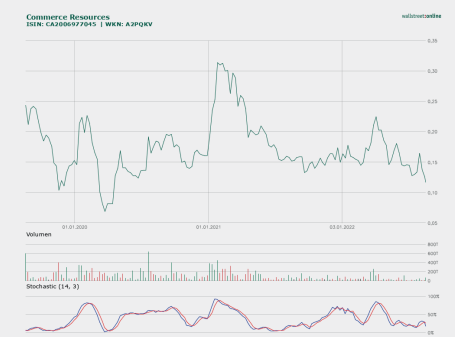


Chart Germany (Tradegate)

German Symbol / WKN: [D7H0 / A2PQKV](#)

Current Price: €0.117 EUR (08/18/2022)

Market Capitalization: €11 Million EUR

All \$-figures in CAD unless otherwise stated



Today, there are just two major REE miners in the western world, currently with similar market valuations:

MP Materials Corp. (NYSE: MP; market capitalization: \$6.4 billion USD)

and

Lynas Rare Earths Ltd. (AEX: LYC; market capitalization: \$8.8 billion AUD, or ~\$6.1 billion USD at current FX rate)

For the last quarter (ending June 30, 2022), **Lynas Rare Earths Ltd.** recently [announced](#) sales revenue of \$294.5 million AUD (~\$207 million USD at current FX rate), whereas **MP Materials Corp.** recently [announced](#) revenue of \$143 million USD for its second quarter of 2022.

Although composition and form of concentrate differ between both companies, the data still shows that there is a **very high profit margin** between selling a mineral concentrate (MP Materials) versus selling intermediate rare earth products such as NdPr oxide (Lynas).

The ore produced at Mount Weld is concentrated on-site into a mineral concentrate and is then shipped to the Lynas Advanced Materials Plant (LAMP) in Malaysia for processing into NdPr oxide plus several other ancillary products.

MP Materials must sell all of its mineral concentrate to processors in China, who separate it into individual REOs, as the company does not have a separation facility yet (expected to be operational in Texas in late 2022).

According to [MP Materials](#): "Since restarting operations, MP Materials has overcome the operational challenges faced by the site's previous owner and scaled production at Mountain Pass dramatically. In 2020, MP Materials produced more than 38,500mt of rare earths in concentrate [i.e. 38,500 t of REO equivalent in mineral concentrate form], representing more than 15% of global consumption and an all-time high



MP Materials Reports Second Quarter 2022 Results

08/04/2022

Sales and Production Volumes of 10,000 and 10,300 Metric Tons of REO, Respectively

Revenue Up 96% Year-over-Year to \$143.6M

Net Income Increased 170% Year-over-Year to \$73.3M

Adjusted EBITDA Increased 137% Year-over-Year to \$110.0M

Diluted EPS Grew 153% Year-over-Year to \$0.38

Adjusted Diluted EPS Grew 139% Year-over-Year to \$0.43

LAS VEGAS-- August 4, 2022 -- MP Materials Corp. (NYSE: MP) ("MP Materials" or the "Company"), today announced financial results for the three months ended June 30, 2022.

"The MP team delivered another quarter of solid execution and strong financial performance. We benefited from higher pricing and tightly managed costs while adding talent to the team," said MP Materials Chairman and CEO, James H. Litinsky. "We continue to progress toward completing Stage II construction, targeted for year end, and our initial Stage III magnetics facility in Texas is rapidly taking shape."

Second Quarter 2022 Financial and Operational Highlights

(unaudited)	For the three months ended June 30,		2022 vs. 2021	
	2022	2021	Amount Change	% Change
Financial Measures: (in thousands, except per share data)				
Revenue ⁽¹⁾	\$ 143,562	\$ 73,118	\$ 70,444	96 %
Net income	\$ 73,269	\$ 27,166	\$ 46,103	170 %
Adjusted EBITDA ⁽²⁾	\$ 109,952	\$ 46,447	\$ 63,505	137 %
Adjusted Net Income ⁽²⁾	\$ 81,941	\$ 33,440	\$ 48,501	145 %
Diluted EPS	\$ 0.38	\$ 0.15	\$ 0.23	153 %
Adjusted Diluted EPS ⁽²⁾	\$ 0.43	\$ 0.18	\$ 0.25	139 %
Key Performance Indicators: (in whole units or dollars)				
REO production volume (MTs)	10,300	10,305	(5)	— %
REO sales volume (MTs)	10,000	9,877	123	1 %
Realized price per REO MT ⁽²⁾	\$ 13,918	\$ 7,343	\$ 6,575	90 %
Production cost per REO MT ⁽²⁾	\$ 1,750	\$ 1,538	\$ 212	14 %

(1) The vast majority of our revenue pertains to product sales of our rare earth concentrate.

(2) See "Use of Non-GAAP Financial Measures" below for the definitions of Adjusted EBITDA, Adjusted Net Income, Adjusted Diluted EPS and Total Value Realized and Production Costs, which are used in the calculations of realized price per REO MT and production cost per REO MT. In addition, see tables below for reconciliations of non-GAAP financial measures to their most directly comparable GAAP financial measures.

Source: MP Materials Corp.'s [news-release](#) on August 4, 2022.



QUARTERLY REPORT FOR THE PERIOD ENDED 30 JUNE 2022

18 July 2022

HIGHLIGHTS

- Quarterly Sales Revenue: A\$294.5m
- Sales receipts: A\$351m
- Closing cash and short term deposits: A\$965.6m
- Total REO production: 3,650 REOT
 - NdPr production: 1,579 REOT
- Lynas 2025 growth project highlights:
 - Lynas awarded US\$120m follow on contract by the US DoD to construct a Heavy Rare Earths facility in the USA
 - Progress on the construction of the Kalgoorlie Rare Earths Processing Facility continues to accelerate
 - All five kiln sections have been lifted into position and assembled
 - Cash Outflow on Capital projects increased to \$73.6m during the quarter

Source: Lynas Rare Earths Ltd.'s [news-release](#) on July 18, 2022.

"MP Materials helps fuel the electrification of global infrastructure. We are the largest producer of rare earth materials in the Western Hemisphere, through our state-of-the-art, zero-discharge operations in Mountain Pass, California. We currently deliver approximately 15% of global rare earth supply with a long term focus on Neodymium-Praseodymium (NdPr), a crucial input to the powering of electric vehicles, wind turbines, drones, robots and many other advanced technologies." (Source: [MP Materials](#))

"During the period, rare earth prices were sustained at recent high levels, especially the NdPr price which remained between 70% and 80% higher than at the same time last year. NdPr production of 1,579 tonnes and total REO production of 3,650 tonnes was achieved during the quarter. This was lower than in the third quarter due to ongoing and unpredictable water supply interruptions from our local supplier in Malaysia." (Source: [Lynas Rare Earths](#))



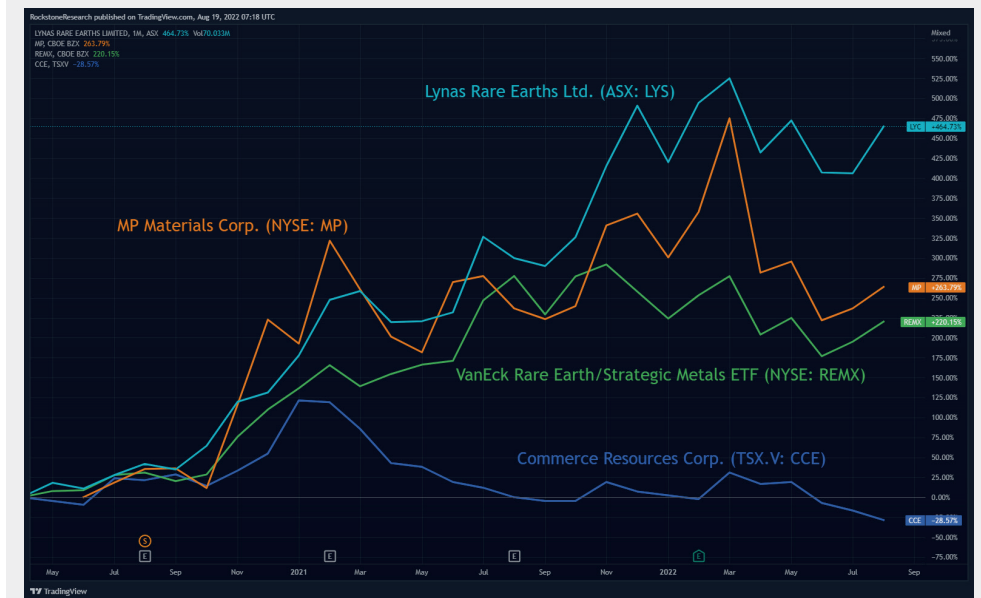
in the 60-year history of Mountain Pass. The mixed rare earth [mineral concentrate] we produce today is an intermediate product that requires further processing in Asia. Following completion of our Stage II optimization project, expected in 2022, MP Materials will re-commission the integrated processing facilities at Mountain Pass. Concurrently, the MP Materials Stage III team is working to restore the capacity to manufacture rare earth metals and permanent magnets in the United States.”

Despite a high strip-ratio of 6:1 (waste-to-ore), MP Materials’ production costs (\$1,750 USD/REOt) are just a fraction (an eighth) of the average realized sales price (\$13,918 USD/REOt). This shows that there is also a **high profit margin** to be made by just mining and selling a mineral concentrate, as being showcased by MP Materials since restarting operations at Mountain Pass in 2017.

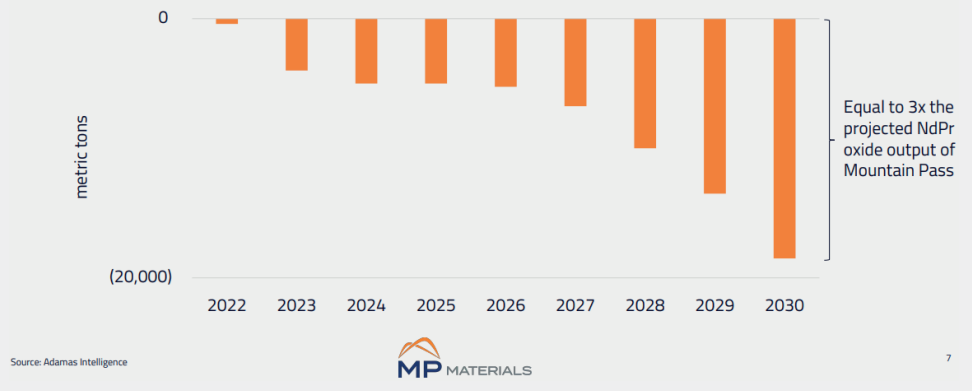
In a potential mining scenario, Commerce could either sell a **monazite mineral concentrate** to processors of such material (e.g. EFR, China, Saskatchewan Research Council), or a **mixed rare earth carbonate** to facilities like Silmet, Lynas’ LAMP, China, or MP Materials’ pending facility in Texas, or Commerce Resources could do **partial separations and sell NdPr oxide** to metallization facilities (e.g. LCM, etc.). The point being, Ashram has the right mineralogy and a preferred NdPr distribution that makes all these options potentially viable.

To whom could Commerce sell its mixed rare earth carbonate concentrate? To any processor in the world, because this concentrate form is the most readily usable feedstock to the vast majority of separation facilities globally. Also, the high NdPr distribution of the Ashram mixed REC samples produced to date (21-24%) make Ashram feedstock very attractive compared to its peers, including those companies in active operation.

While MP Materials’ [Mountain Pass Deposit](#) in California (USA) has a long history of REE mining (1952-2002, 2012-2015; 2017-today), Lynas’ [Mt Weld](#)



Significant NdPr supply deficits expected as demand grows



[Deposit](#) is the only new major REE mine coming online in the western world in the last 20 years (mining at Mt Weld began in 2011). And to be clear, the global market for the REEs has more than doubled in the last decade, and Lynas’ production is less than a third of this increased new demand.

According to Lynas: “The Mt Weld Central Lanthanide Deposit (CLD) is one of the highest grade rare earth deposits in the world. Mt Weld also hosts the undeveloped Duncan (rare earth), Crown (niobium, tantalum, titanium, rare earths, zirconium) and Swan (phosphate) deposits. Lynas processes the CLD ore at the Mt Weld Concentration Plant to produce a rare earth [mineral] concentrate that is sent for further processing at Lynas

Malaysia’s Advanced Material Plant near Kuantan, Malaysia.”

With a total of **4.6 million t of contained REO**, Lynas currently has almost twice as much REEs in the ground as MP Materials with **~2.5 million t of contained REO**. With **~74 million t** in combined reserves and resources (at grades between **5.4%** and **8.4% TREO**), Lynas currently sits on a larger tonnage deposit than MP Materials with **~41 million t @ ~6% TREO**. In terms of contained REO, the Ashram Deposit is currently (2012) roughly in line with Lynas and has about 80% more REEs in the ground as MP Materials.

Both MP Materials’ and Lynas’ deposits are classified as very high-grade as most REE deposits globally host average grades between 0.1% and 4% TREO.



The [Ashram Deposit](#) hosts a Measured Resource of 1.6 million tonnes (Mt) at 1.77% rare earth oxide (REO) and 3.8% F, an Indicated Resource of 27.7 Mt at 1.90% REO and 2.9% F, and an Inferred Resource of 219.8 Mt at 1.88% REO and 2.2% F, at a cut-off grade of 1.25% REO. Mineral resources are not mineral reserves as they do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources will be converted into Mineral Reserves.

Mt Weld Reserves (Proved & Probable; June 2019):

19 million t @ 8.4% TREO
(containing ~1.6 million t REO)

Mt Weld Resources (Measured, Indicated, Inferred); June 2019):

55.2 million t @ 5.4% TREO
(containing ~3 million t REO)

Niobium Rich Rare Metals Project (Crown Deposit):

37.7 million t @ 1.07% Nb₂O₅

Mountain Pass Reserves (Proven & Probable; September 2021):

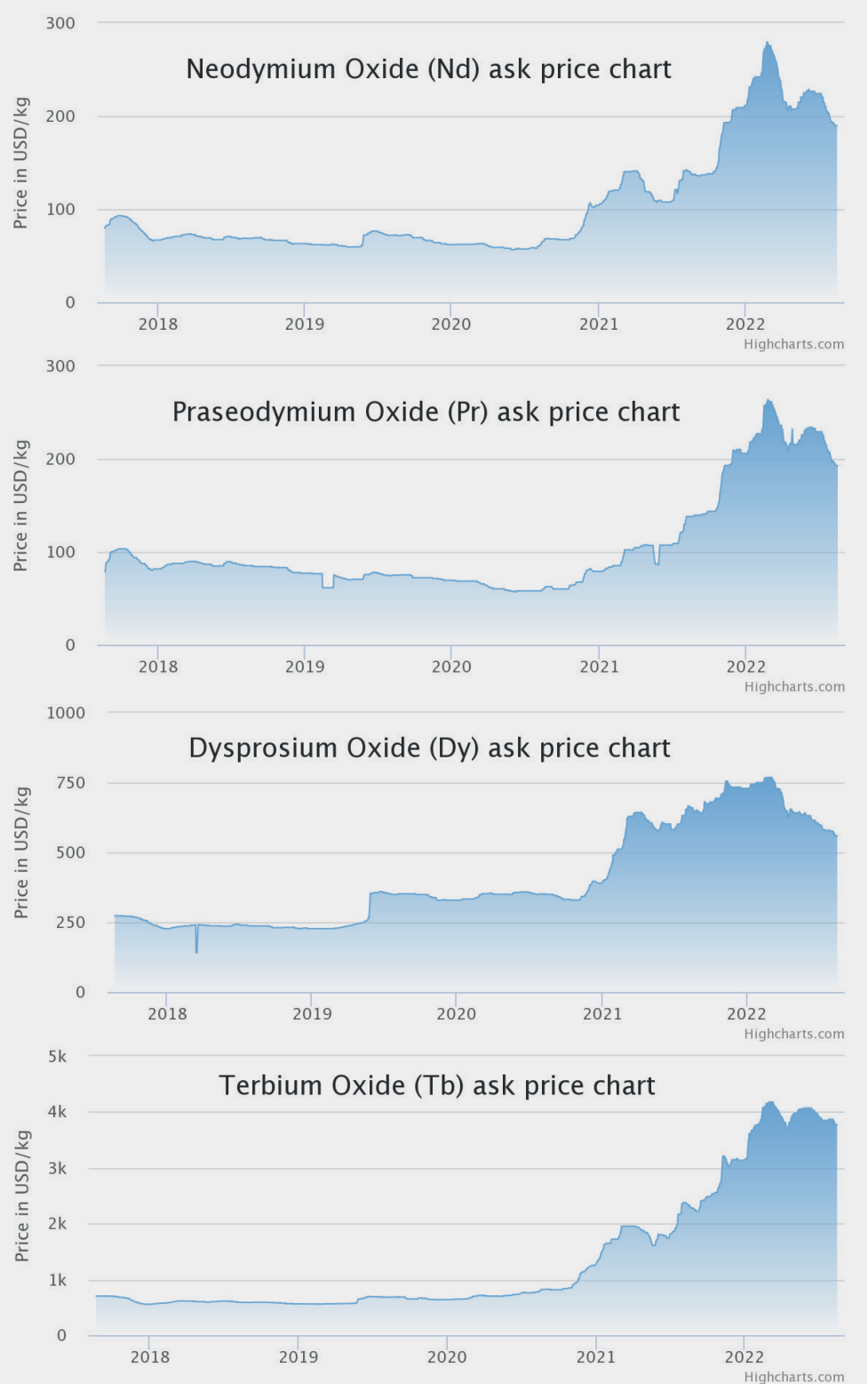
30.5 million t @ 6.36% TREO
(containing ~2 million t REO)

Mountain Pass Resources (September 2021):

Indicated: 1.4 million t @ 2.82% TREO
Inferred: 9.1 million t @ 5.1% TREO

The open pit that forms the basis of [Mountain Pass'](#) reserves and the LoM (life of mine) production schedule is approximately 3,100 ft from east to west [**width: 945 m**] and 3,800 ft from north to south [**length: 1148 m**] with a maximum depth of 1,400 ft [**depth: 427 m**]. Total mining is estimated at 216 million st (short tons) comprised of 30.4 million st of ore and 186 million st of waste, resulting in a strip ratio of 6.1 (waste-to-ore).

Last week (August 12, 2022), Commerce Resources [announced](#) that the first two step-out holes of its 2022-drilling program have extended the mineralized footprint at the Ashram REE & Fluorspar Deposit in Quebec by an additional ~100 m to the southeast. Assays are pending, but based on the



Ryan Castilloux of Adamas Intelligence [said](#) he expects the current strong pricing environment for magnet rare earths to stay. "Notwithstanding the market's typical ebbs and flows led by seasonality and other short-lived transient factors," he added... Castilloux said the full extent of demand growth continues to be suppressed by auto industry microchip bottlenecks... "On the flip side, however, demand growth from the EV sector has continued to perform well, albeit it is also being tempered by cell and component shortages." Overall, Adamas Intelligence is expecting global neodymium magnet demand to increase by 10 percent this year. The firm expects the so-called magnet rare earths to collectively see the strongest demand growth in H2...



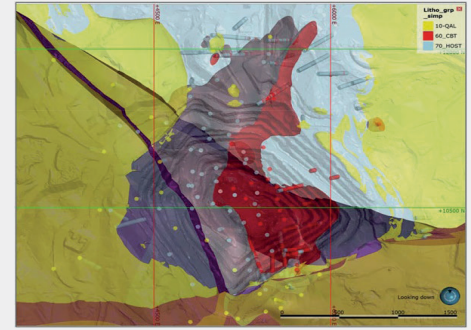
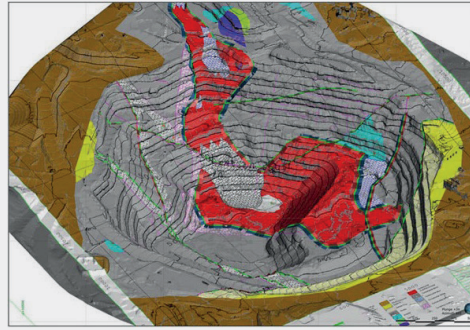
geological core logging of these two holes, the Ashram Deposit now has a mineralized footprint that now extends at least **700 m along strike** (remains open), **300 m in width**, and **600 m to depth** (remains open).

“This further solidifies the monazite dominant Ashram Deposit as one of the largest rare earth element deposit’s globally,” the company noted in its news-release and added the following:

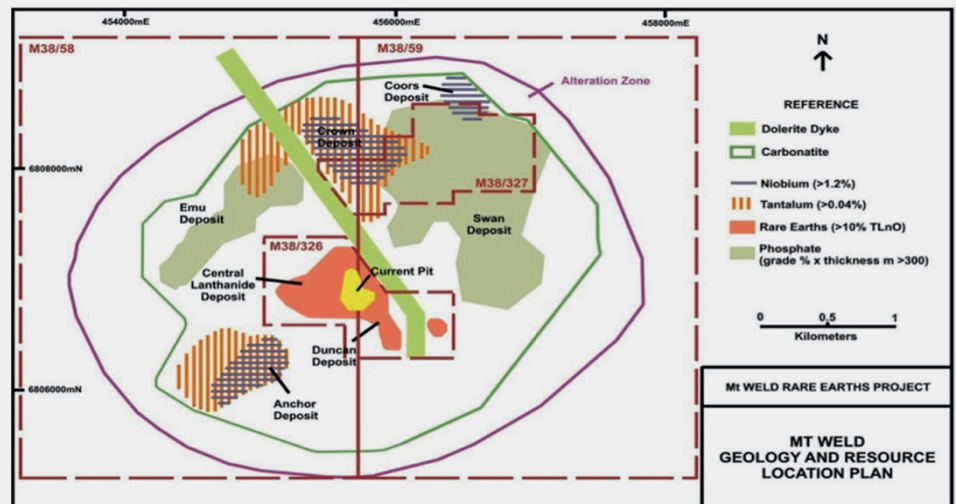
“Apart from one additional drill hole planned at the south end of the deposit to further improve confidence in the geological model, the remainder of the drill holes (~3-4 holes totalling ~1,100 m) will be focused on infill drilling with the objective of increasing resource confidence from the inferred/indicated categories to the indicated/measured categories in areas where the neodymium-praseodymium (“NdPr”) contents are highest.”

“Depending on the location within the deposit, the NdPr distribution – i.e. % of Nd+Pr oxide of the total rare earth oxide (“REO”) – typically varies from 21-24+% with monazite being the dominant carrier of the rare earth elements (“REEs”). The drill hole plan has been developed by the Company’s primary Prefeasibility Study consultant (BBA Inc.) and is targeting infill of a larger pit shell (~+50%) compared to what was considered in the Project’s 2012 Preliminary Economic Assessment. This larger pit shell is anticipated to underpin an initial mineral reserve estimate upon completion of the Prefeasibility Study for the Project.”

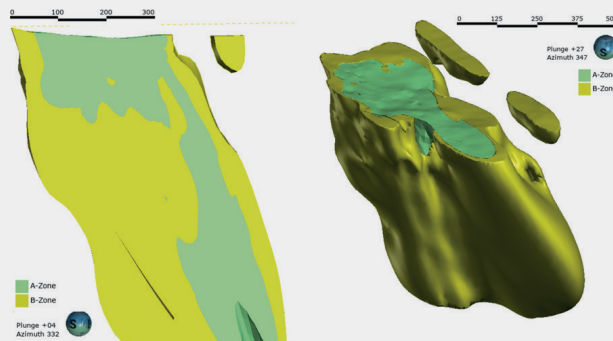
According to Commerce Resources: “The Ashram Deposit hosts a well-balanced rare earth distribution anchored in the magnet feed rare earths (Nd, Pr, Tb, and Dy) which have the strongest market fundamentals over the near, mid, and long-term. In addition, within the overall resource, there exists a zone of more intense NdPr enrichment, termed the ‘**MHREO Zone**’. This mineralized zone contains an REE distribution of approximately



“At Mountain Pass, the ultrapotassic rocks occur in seven larger stocks and as hundreds of small dikes... The principal economic mineral at the Project is bastnaesite, a rare earth fluorocarbonate with the generalized chemical formula LnCO_3F ... Bastnaesite mineralization at the Project is entirely restricted to carbonatite rocks and its nearby breccia... Mineralization occurs entirely within the Sulfide Queen carbonatite [highlighted in red above] within the Project area... The Sulfide Queen carbonatite, which hosts the mineralization at the Project is referred to as a stock but is a roughly tabular, sill-like body that strikes approximately north and dips to the west at about 40°... The largest single body is a composite shonkinite-syenite-granite stock approximately 6,400 ft [1,951 m] in length and 2,100 ft [640 m] wide (Olson et al, 1954)... The currently defined zone of rare earth mineralization exhibits a **strike length of approximately 2,750 ft [838 m] in a north-northwest direction and extends for approximately 3,000 ft [914 m] **downdip** from surface. The true thickness of the >2.0% TREO zone ranges between 15 to 250 ft [4.6 to 76 m].”** (Source: [MP Materials Corp.](#), 2021)



At Mt Weld, the highest concentration of rare earths is found in the Central Lanthanide (CLD) Deposit and is currently an open pit to a depth of 51 m. The carbonatite, which is approximately 3 km in diameter, also hosts a number of other deposits including the undeveloped Duncan, Crown and Swan deposits. (Source: [Lynas](#))



Cross-section (left) and oblique view (right) of the Ashram Rare Earth & Fluorspar Deposit’s principal mineralized zones. To be updated following completion of the 2022 drill program. (Source: [Commerce Resources Corp.](#), 2022)



REO:TREO (Wt %)	Ashram Main	Ashram (MHREO)	Lynas (CLD)	Lynas (Duncan)	Mountain Pass	Price USD/kg REO	Ashram		Ashram MHREO		Lynas (CLD)		Lynas (Duncan)		Mountain Pass	
							\$ value per Kg mixed REO	% value per Kg in mixed REO	\$ value per Kg mixed REO	% value per Kg in mixed REO	\$ value per Kg mixed REO	% value per Kg in mixed REO	\$ value per Kg mixed REO	% value per Kg in mixed REO	\$ value per Kg mixed REO	% value per Kg in mixed REO
La ₂ O ₃	26,11	21,75	23,88	24,86	33,20	\$ 1,11	\$ 0,29	1%	\$ 0,24	1%	\$ 0,27	1%	\$ 0,28	1%	\$ 0,37	2%
CeO ₂	46,58	43,50	47,54	39,37	49,10	\$ 1,19	\$ 0,55	2%	\$ 0,52	1%	\$ 0,57	2%	\$ 0,47	1%	\$ 0,58	3%
Pr ₆ O ₁₁	4,82	4,97	5,16	4,75	4,30	\$ 116,00	\$ 5,59	18%	\$ 5,76	15%	\$ 5,99	19%	\$ 5,51	14%	\$ 4,99	23%
Nd ₂ O ₃	16,57	18,56	18,13	17,89	12,00	\$ 116,00	\$ 19,22	64%	\$ 21,53	57%	\$ 21,03	67%	\$ 20,75	53%	\$ 13,92	65%
Sm ₂ O ₃	2,03	2,94	2,44	2,83	0,80	\$ 2,70	\$ 0,05	0%	\$ 0,08	0%	\$ 0,07	0%	\$ 0,08	0%	\$ 0,02	0%
Eu ₂ O ₃	0,46	0,76	0,53	0,77	0,10	\$ 29,00	\$ 0,13	0%	\$ 0,22	1%	\$ 0,15	0%	\$ 0,22	1%	\$ 0,03	0%
Gd ₂ O ₃	1,10	1,90	1,09	1,99	0,20	\$ 54,89	\$ 0,60	2%	\$ 1,04	3%	\$ 0,60	2%	\$ 1,09	3%	\$ 0,11	1%
Tb ₂ O ₃	0,10	0,22	0,09	0,26	0,06	\$ 2,030,00	\$ 2,05	7%	\$ 4,49	12%	\$ 1,83	6%	\$ 5,28	13%	\$ 1,22	6%
Dy ₂ O ₃	0,40	0,94	0,25	1,27	0,05	\$ 337,00	\$ 1,35	4%	\$ 3,17	8%	\$ 0,84	3%	\$ 4,28	11%	\$ 0,17	1%
Ho ₂ O ₃	0,05	0,13	0,03	0,19	0,02	\$ 137,00	\$ 0,07	0%	\$ 0,18	0%	\$ 0,04	0%	\$ 0,26	1%	\$ 0,03	0%
Er ₂ O ₃	0,12	0,27	0,06	0,41	0,02	\$ 46,50	\$ 0,05	0%	\$ 0,13	0%	\$ 0,03	0%	\$ 0,19	0%	\$ 0,01	0%
Tm ₂ O ₃	0,01	0,03	0,01	0,04	0,02		\$ -	0%	\$ -	0%	\$ -	0%	\$ -	0%	\$ -	0%
Yb ₂ O ₃	0,07	0,16	0,03	0,18	0,02	\$ 15,00	\$ 0,01	0%	\$ 0,02	0%	\$ 0,00	0%	\$ 0,03	0%	\$ 0,00	0%
Lu ₂ O ₃	0,01	0,02	0,00	0,02	0,01	\$ 829,00	\$ 0,09	0%	\$ 0,16	0%	\$ -	0%	\$ 0,17	0%	\$ 0,08	0%
Y ₂ O ₃	1,58	3,85	0,76	5,17	0,10	\$ 10,90	\$ 0,17	1%	\$ 0,42	1%	\$ 0,08	0%	\$ 0,56	1%	\$ 0,01	0%
Total (%)	100	100	100	100	100		\$ 30,25	100%	\$ 37,96	100%	\$ 31,49	100%	\$ 39,16	100%	\$ 21,54	100%
LREO (La-Nd)	94	89	95	87	99											
MREO (Sm-Gd)	4	6	4	6	1											
HREO (Tb-Lu)+Y ₂ O ₃	2	6	1	8	0											
Magnet Feed (NdPrTbDy)	21,89	24,69	23,63	24,17	16,41		\$ 28,21	93%	\$ 34,95	92%	\$ 29,69	94%	\$ 35,82	91%	\$ 20,29	94%

USD Prices from Balinfo Rare Earth Weekly (August 11, 2022)

Basket Price Comparison between Lynas' Mt Weld Deposits, MP Materials' Mountain Pass Deposit and Commerce Resources' Ashram Deposit, showing that the 4 REEs used as Magnet Feed (NdPrTbDy) account for **more than 90% of the value** of all the REEs and that Ashram MHREO hosts **the highest Magnet Feed distribution with 24.69%** (Mountain Pass: 16%; CLD: 23.63%).

24% combined NdPr (19% Nd, 5% Pr) with significant Dy (0.9%) and Tb (0.2%). This type of magnet feed enrichment is unique to Ashram and extends from surface comprising a significant amount of the deposit's total resource."

In the rare earth industry, a mixed rare earth carbonate ("REC") concentrate is typically viewed as the initial marketable product in the REE value chain. A mixed REC is readily saleable as it is the most common feedstock to REE solvent-extraction facilities globally, which refine and separate the individual REEs into marketable products (oxides with >99% purity) to be disseminated throughout downstream value chains.

The REEs currently in highest demand are used as "Magnet Feed" (i.e. for the manufacturing of magnets): Neodymium (Nd) and Praseodymium (Pr), Terbium (Tb) and Dysprosium (Dy).

Investors looking at a REE exploration, development or mining project focus on how these Magnet Feed REEs are distributed within the deposit.

The left part of above table shows that a REE deposit typically hosts the 15 rare earth elements (REEs) at different "distributions":

The more Nd (in relation to other REEs) the better!

With 18.56% Nd distribution, "Ashram MHREO" (the higher grade part of the deposit which could be mined before enlarging the open-pit to include the "Ashram Main" zone) has a higher Nd distribution than Mountain Pass (12%) and Lynas (CLD: 18.13%, Duncan: 17.89%).

Material from Ashram MHREO is also superior to both Lynas and MP Materials in terms of the percentage of the 4 REEs used in magnet manufacturing – **Magnet Feed (NdPrTbDy)**: Commerce Resources has up to 24.69% of these, whereas MP Materials has just over 16% and Lynas up to 24.17%.

The right part of the table shows the USD-value of each deposit's REE distribution at current market prices (August 11, 2022):

The "Basket Price" comparison of Magnet Feed REEs shows that rock from Ashram MHREO currently has a 72% higher value (**\$34.95 USD per kg of mixed REO**) than Mountain Pass (**\$20.29 USD/kg**) and a 18% higher value than Lynas' currently mined CLD Deposit (**\$29.69 USD/kg**), with only Lynas' undeveloped Duncan Deposit fetching a slightly (2.5%) higher value (**\$35.82 USD/kg**).

92% of the REO value in Ashram MHREO comes from the 4 Magnet Feed REEs (Pr, Nd, Tb and Dy). Roughly 2/3rd (72%) of this value comes from Nd (57%) and Pr (15%).

However, this is "just" the basket price, a theoretical value of all the REEs within the rock, not accounting for any processing and assuming 100% recovery of each. In reality, only 4 of these REEs carry the bulk of the value in an REE deposit – Nd, Pr, Nd, and Pr, termed the Magnet Feed REEs.

On July 15, 2022, Commerce Resources [announced](#) to have completed "its first shipment of a mixed rare earth carbonate ("mixed REC") concentrate sample to a major global producer of rare earth elements ("REEs") for evaluation. The sample (gram quantities) meets typical market specifications and was produced as part of the Company's ongoing scale-up to larger kilogram quantities."

The company was "pleased to report the new sample has a neodymium (Nd) plus praseodymium (Pr) distribution – i.e. % of Nd+Pr oxide of the total rare earth oxide ("REO") – of 24.2%, which is significantly higher than that reported by several major global producers, and that of the previous samples produced (21.6% and 22.4% NdPr)." The company added that this "strong NdPr distributions that characterize these Ashram samples rank among the highest in the world for non-cerium depleted mixed REC concentrate and exceeds that of several major global producers. These samples were produced with the Company's conventional flowsheet



developed at Hazen Research, CO, in which several process operations have been demonstrated at a continuous pilot-scale level. The Company is now undergoing a process scale-up to kilogram quantities of mixed REC concentrate to deliver to additional third-party processors per their request.”

Most recently on July 22, Commerce Resources [announced](#) to have delivered “an initial shipment of 2 kg of Ashram Deposit whole rock crushed material to an emerging rare earth element (“REE”) processor per their request. This follows on the heels of the recently delivered sample of mixed rare earth carbonate (“mixed REC”) concentrate to satisfy the request of a major global producer... The 2 kg sample of Ashram Deposit whole rock crushed material will be used by the REE processor to assess processing at their internal laboratories and is expected to be followed in the near-term by an additional 200 kg shipment of crushed whole rock. The processor has also expressed interest in receiving a sample of mixed REC concentrate,” and added:

“The Company continues to receive a marked increase in industry interest regarding providing samples for third party evaluation following the announcement that it had produced on-spec mixed REC from Ashram Deposit material (see news release dated March 23, 2022). This interest includes samples of unprocessed whole rock, high-grade monazite concentrate (>40% REO), and high NdPr mixed REC concentrate produced from the Ashram Rare Earth and Fluorspar Deposit. The Company is working diligently to provide samples to satisfy all third-party requests and is well advanced in its Ashram Project component studies which will culminate in a Prefeasibility Study on the Ashram Project targeted for the first half of 2023.”

Moreover, Commerce Resources’ Ashram is not only one of the largest REE deposits in the world but also one of the largest fluorspar deposits. The company aims to include this valuable and critical mineral (fluorspar) as a by-product in its Pre-Feasibility

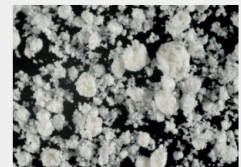
Milestone – Marketable Mixed REC Produced

- **March 2022** – 1.22 g of marketable mixed REC produced
21.6% NdPr
 57.5% REO
 2.9 ppm Th, 0.2 ppm U
- **April 2022** – 55¹ g of marketable mixed REC produced.
22.4% NdPr
 $\text{REE}_2(\text{CO}_3)_3(\text{H}_2\text{O})_8$
 50.9% REO
 <0.5 ppm Th, <0.1 ppm U
- **July 15, 2022** – Ships First Mixed REC Sample – **24.2% NdPr** – to Major Rare Earth Producer
- **July 22, 2022** – Delivers 2 kg’s Ashram Whole Rock Material Per Industry Request to US based processor

Marketable Mixed Rare Earth Carbonate Produced



22.4% NdPr



COMMERCE 1. Attribution noted on with consent to characterization of REE concentrate

Global REO Producers and the Ashram Deposit

Deposit / Mine	State of Activity	Region	Deposit Type	Primary Rare Earth Mineralogy	Deposit Grade ⁵ (REO)	Mineral Concentrate Grade ⁵ & Recovery ²	Comments
Bayan Obo ¹	Production		Carbonatite ⁴	Monazite, Bastnaesite	1-6%	Two concentrates 55-65% REO & 36% REO @ 60% combined recovery	Dominates global production, primary iron mine with REO by-product
Mount Weld ² Lynas	Production		Carbonatite (laterite)	Monazite (secondary)	7-11%	40% REO @ 70% recovery	Significant technical challenges
Mountain Pass MP Materials	Production		Carbonatite	Bastnaesite	6-9%	60 to 65% at high recovery	Once primary REO producer globally
Sichuan ³	Production		Carbonatite	Bastnaesite	2-3%	60-70% REO @ >80% recovery	Second largest producing region globally
Weishan	Production		Carbonatite	Bastnaesite	1-3%	Two concentrates 60% REO & 35% REO @ 80% combined recovery	Head grade is falling, lower quality material, inconsistent producer
Ashram	Development		Carbonatite	Monazite, Bastnaesite	2%	40-50% @ >75% recovery	Unique enrichment in Pr, Nd, Dy, Tb
Karnasurt, (Lovozero)	Production (minor)		Granitoid	Loparite	0.9%	30% REO @ 70% recovery	Unique to Russia, REE by-product of Nb-Ta-Ti
Placer	Production (minor)		Placer (heavy sands)	Monazite, Xenotime	<0.2%	50-60% REO @ >80% recovery	Source of HREO, REO co-product with Ti-Zr...
Clay	Production		Clay	n/a (ion-absorbed)	0.05-0.2%	n/a	Primary source of HREO

COMMERCE RESOURCES CORP.

1. Includes Baotou Region
 2. Central Lanthanide Deposit
 3. Includes Maoniuping and surrounding region
 4. Remains a matter of debate
 5. Approximate

Data Sources: Zhang & Edwards 2012, Jordan et al 2013, Gupta & Krishnamurthy 2005, 2015, corporate disclosure, & industry personal communications

“For nearly 50 years, carbonatites have been **the primary source** of niobium and rare earth elements (REEs), in particular the light REEs, including La, Ce, Pr, and Nd. Carbonatites are a relatively rare type of igneous rock composed of greater than 50 vol % primary carbonate minerals, primarily calcite and/or dolomite, and contain **the highest concentrations of REEs** of any igneous rocks. Although there are more than 500 known carbonatites in the world, currently only four are being mined for REEs: the Bayan Obo, Maoniuping, and Dalucao deposits in China, and the Mountain Pass deposit in California, United States. The carbonatite-derived laterite deposit at Mount Weld in Western Australia is also a REE producer. In addition to REEs, carbonatite-related deposits are **the primary source of Nb [niobium]**, with the Araxá deposit, a carbonatite-derived laterite in Minas Gerais state, Brazil, being the dominant producer. Other commodities produced from carbonatite-related deposits include **phosphates, iron, fluorite, copper, vanadium, titanium, uranium, and calcite.**” ([Source](#)).

Study (ongoing), whereas neither MP Materials nor Lynas currently produces any by-products apart from REEs (though Lynas sits on large

undeveloped niobium, tantalum and phosphate deposits; similar to Commerce Resources with its niobium-project-optioner Saville Resources Corp.).



PREVIOUS COVERAGE

[Report #35](#): “Major Step Forward: Commerce Resources succeeds in producing marketable mixed rare earth carbonate sample”

[Report #34](#): “All Roads Lead To Ashram, Eventually”

[Report #33](#): “Research & Advisory Firm looks into the Ashram REE & Fluorspar Project from Commerce Resources”

[Report #32](#): “Already Big Ashram Gets Bigger And Bigger”

[Report #31](#): “Make Acid Grade Again: Fluorspar – The Sweet Spot for Quebec’s Steel and Aluminium Industries”

[Report #30](#): “Lean and Mean: A Fighting Machine”

[Report #29](#): “Commerce Resources: Like A Phoenix From The Ashes”

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[Report #24](#): “Commerce and Ucore Rare Metals: The Beginning of a Beautiful Friendship?”

[Report #23](#): “Edging China out of Rare Earth Dominance via Quebec’s Ashram Rare Earth Deposit”

[Report #22](#): “Security of REE Supply and an Unstoppable Paradigm Shift in the Western World”

[Report #21](#): “Commerce well positioned for robust REE demand growth”

[Report #20](#): “Commerce records highest niobium mineralized sample to date”

[Report #19](#): “Carbonatites: The Cornerstones of the Rare Earth Space”

[Report #18](#): “REE Boom 2.0 in the making?”

[Report #17](#): “Quebec Government starts working with Commerce”

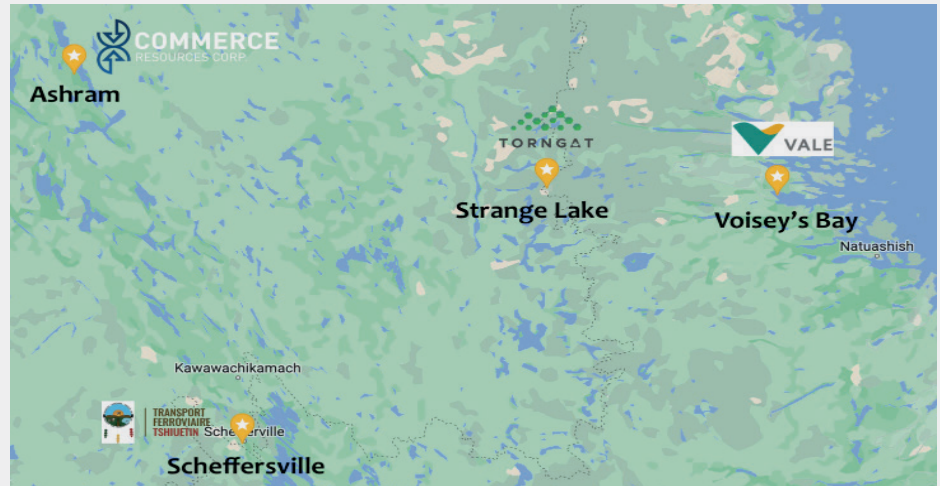
[Report #16](#): “Glencore to trade with Commerce Resources”

[Report #15](#): “First Come First Serve”

[Report #14](#): “Q&A Session About My Most Recent Article”

[Report #13](#): “Shedding Light onto the Rare Earth Playing Field”

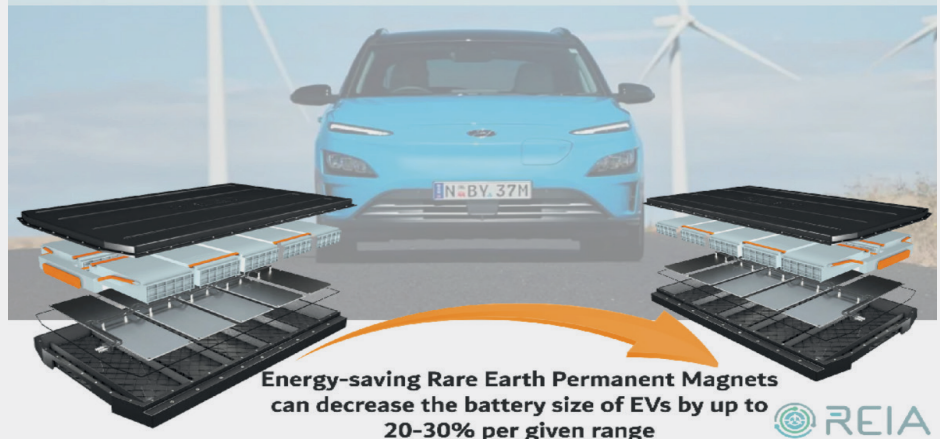
[Report #12](#): “Key Milestone Achieved from Ashram’s Pilot Plant Operations”



“It makes no sense for America to extol our own environmental enlightenment while outsourcing the vast majority of our mining to places without environmental protections, yet that’s what we’ve been doing for decades, and we’re still doing it today. Something has to change. **“We can keep talking till the cows come home,”** said Althaus. **“It’s time for action.”**” (Source: [Forbes](#), May 2022).

WHY RARE EARTH PERMANENT MAGNET’S MPTOR?

Permanent magnets are the most power-dens type of traction motor both in kW/kg and in kW/cm³



“Electric car sales doubled in 2021 to a new record of 6.6 million, as per the International Energy Agency. And while EVs accounted for less than 8 percent of global sales last year, and just under 10 percent in Q1 2022, projections from consultant AlixPartners show they could reach 33 percent globally by 2028 and 54 percent by 2035.” ([Source](#))

[Report #11](#): “Rumble in the REE Jungle: Molycorp vs. Commerce”

[Report #10](#): “Interview with Smith and Grove while the Graveyard of REE Projects Gets Crowded”

[Report #9](#): “The REE Basket Price Deception & the Clarity of OPEX”

[Report #8](#): “A Fundamental Economic Factor in the Rare Earth Space: ACID”

[Report #7](#): “The Rare Earth Mine-to-Market Strategy & the Underlying Motives”

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[Report #1](#): “The Knock-Out Criteria for REE Deposits: Cutting the Wheat from the Chaff”



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All statements in this report, other than statements of historical fact should be considered forward-looking statements. Much of this report is comprised of statements of projection. **Statements in this report that are forward looking include** that Commerce, or any other company or market will perform as expected; that exploration has or will discover a mineable deposit; that 2022 is on its way to mark the historic year when some critical REEs (Rare Earth Elements) have slipped into a supply deficit; that with demand expected to grow strongly, the NdPr supply deficit will be expanding to dramatic levels, reaching a shortfall in 2030 equal to 3 times the projected NdPr oxide output of the Mountain Pass REE Mine in California; that as new large REE mines are needed to have a meaningful impact in reducing the supply deficit, the Ashram REE & Fluorspar Deposit in Quebec should come into mind as it matches up with some decisive characteristics in comparison to the only 2 major REE miners in the western world today; that based on the strong NdPr oxide distributions of these first mixed REC samples, it is already clear today that the Ashram REE & Fluorspar Deposit in Quebec compares very favourably to other active REE mines, including those in China; that the lookout to produce some 25,000 t of REO equivalent annually, which puts the company in the same neighbourhood as MP Materials and

Lynas, makes Commerce Resources so attractive; that the current strong pricing environment for magnet rare earths is expected to stay; that Adamas Intelligence is expecting global neodymium magnet demand to increase by 10 percent this year, and that the firm expects the so-called magnet rare earths to collectively see the strongest demand growth in H2; that following completion of MP Materials' Stage II optimization project, expected in 2022, MP Materials will re-commission the integrated processing facilities at Mountain Pass; that in a potential mining scenario, Commerce could either sell a monazite mineral concentrate to processors of such material (e.g. EFR, China, Saskatchewan Research Council), or a mixed rare earth carbonate to facilities like Silmet, Lynas' LAMP, China, or MP Materials' pending facility in Texas, or Commerce Resources could do partial separations and sell NdPr oxide to metallization facilities (e.g. LCM, etc.); that the point being, Ashram has the right mineralogy and a preferred NdPr distribution that makes all these options potentially viable; that in terms of contained REO, the Ashram Deposit is currently (2012) roughly in line with Lynas and has about 80% more REEs in the ground as MP Materials; that Commerce's remainder of the drill holes (~3-4 holes totalling ~1,100 m) will be focused on infill drilling with the objective of increasing resource confidence from the inferred/indicated categories to the indicated/measured categories in areas where the neodymium-praseodymium ("NdPr") contents are highest; that Commerce's larger pit shell is anticipated to underpin an initial mineral reserve estimate upon completion of the Prefeasibility Study for the Project; that the magnet feed rare earths have the strongest market fundamentals over the near, mid, and long-term; that Commerce is now undergoing a process scale-up to kilogram quantities of mixed REC concentrate to deliver to additional third-party processors per their request; that Commerce is working diligently to provide samples to satisfy all third-party requests and is well advanced in its Ashram Project component studies which will culminate in a Prefeasibility

Study on the Ashram Project targeted for the first half of 2023; that Commerce aims to include this valuable and critical mineral (fluorspar) as a by-product in its Pre-Feasibility Study (ongoing); that while EVs accounted for less than 8 percent of global sales last year, and just under 10 percent in Q1 2022, projections from consultant AlixPartners show they could reach 33 percent globally by 2028 and 54 percent by 2035; that there are similarities to commercially viable projects or monazite- and carbonate-related deposits; that REE prices will continue to appreciate; that demand for electrified transportation is set to surge over the next decade; that a supply gap will be emerging over the next few years and as such new REE projects are needed to meet future demand; that a dramatically widening supply shortfall is anticipated in the REE market. **Such statements involve known and unknown risks, uncertainties and other factors that may cause actual results or events to differ materially from those anticipated in these forward-looking statements. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Risks and uncertainties include:** The receipt of all necessary approvals for commercial mining; the ability to find sufficient mineralization to mine; uncertainty of future production, uncertain capital expenditures and other costs; financing and additional capital requirements for exploration, development and construction of a mine may not be available at reasonable cost or at all; mineral grades and quantities on the projects may not be as high as expected; samples found to date and historical drilling may not be indicative of any further potential on the properties; that mineralization encountered with drilling will be uneconomic; that the targeted prospects can not be reached; substitute minerals may be found to work effectively in place of fluorspar for many industries; the receipt in a timely fashion of further permitting; legislative, political, social or economic developments in the jurisdictions in which Saville and



Commerce carry on business may hinder progress; there may be no agreement with neighbors, partners or government on developing infrastructure; operating or technical difficulties or cost increases in connection with mining or development activities; the ability to keep key employees and operations financed; what appear at first to be similarities with operating mines and projects may not be substantially similar; share prices of these companies may fall as a result of many factors, including those listed here and others listed in the companies' and other mining exploration company disclosure; and the resource prices available when the resource is mined may not be sufficient to mine economically. **Accordingly, readers should not place undue reliance on forward-looking information.**

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