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HALLGARTEN & COMPANY

Sector Strategy

Christopher Ecclestone
cecclestone@hallgartenco.com

The REE Lifecycle:
The Sisyphean Challenge of Production

Company	Ticker	Currency	Price	Mkt Cap $ mn	Stage	Call
Medallion Resources	MDL.v	CAD	0.20	9.8	Industrial - Feasibility	Long
Great Western Minerals	GWG.v	CAD	0.11	46.1	Past Producer Reactivating	Long
Texas Rare Earths	TRER	USD	0.41	15.2	Feasibility	Long
Alkane	ALK.ax	AUD	0.43	160.2	Pilot Plant	Neutral
Tasman Metals	TSM.v	CAD	1.18	71.9	Merging with Flinders	Long
Matamec	MAT.v	CAD	0.09	10.8	Feasibility	Neutral
UCore	UCU.v	CAD	0.28	48.3	Feasibility	Long
Avalon Rare Metals	AVL.to	CAD	0.60	65.9	Exploration	Avoid

The REE Lifecycle

The Sisyphean Task of Production

+ The REE gloom seems to be lifting
+ Two producers have managed to start churning out product in the light rare earths which undermines Chinese dominance in some metals
+ Reality has pushed juniors to focus on only the best mineralisation types and to tweak their business plans and goals to the new reality
+ The price outlook two years out for all but the most common REEs is sound
+ Tensions between Japan and China over disputed islands may yet be the touchpaper to set REEs and other specialty metals alight
× Torpid economic recovery is not helping in improving sentiment
× The Chinese are currently sitting on the REE prices to try and thin out the ranks of Western wannabe miners that will undermine their dominance

The Post-Apocalypse World

Rare Earths have been more like scorched earth in recent years. The sub-sector has been a true Bonfire of the Vanities with scores (if not hundreds - if some tallies can be believed) of companies going to their doom. However, like any apocalyptic event, there follows in its wake signs of green shoots.

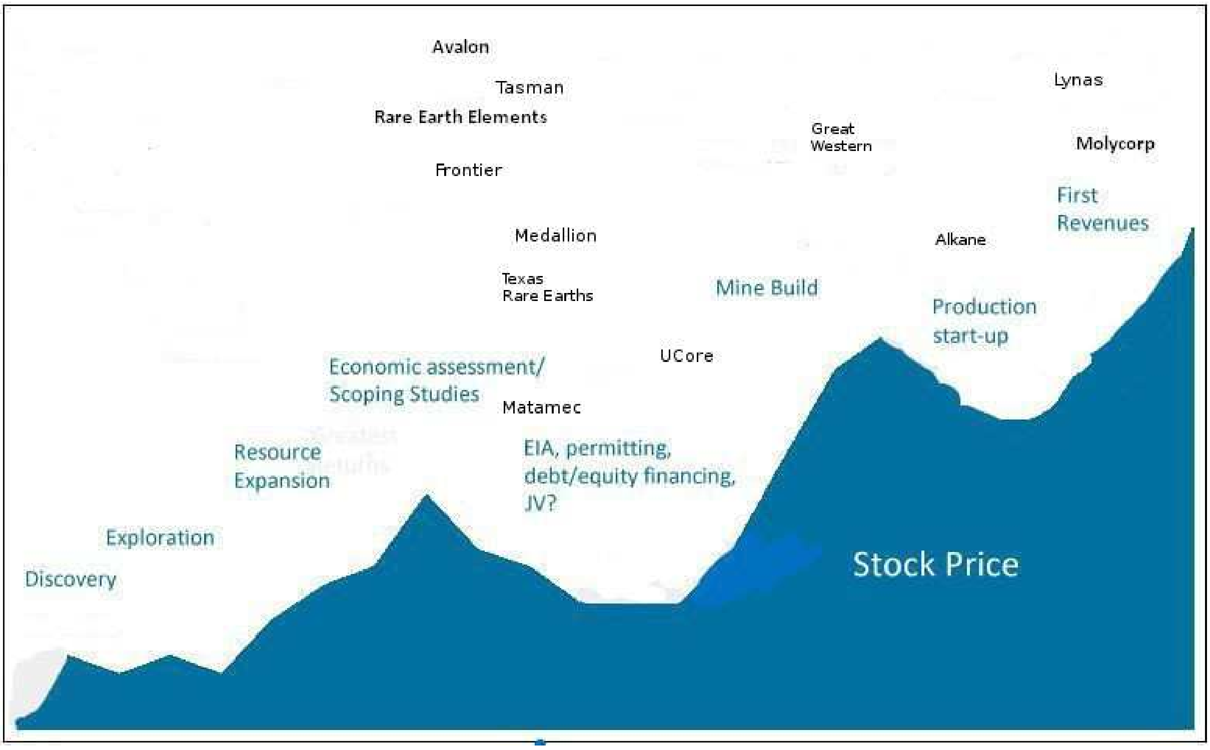
We have been witnessing more REE survivors heading over to Europe to escape the icy glares that they generally get in North American markets where those burnt in the meltdown are way more numerous. London missed the whole REE showboat and thus did not lose meaningful money at the gaming tables.

The passage of time has made clearer which companies shall be the survivors and which the victims. There are still though some of the "household names" of the REE space though who have money in the kitty and hope to fight another day despite their projects being essentially dead in the water. This makes sorting the wheat from the chaff all the more important as the space awakes from its dormancy. It is all too easy to go for the larger market cap survivors who may not have any more chance of moving forward than they did the first time around.

If never a truer word was spoken on this space it was when Jack Lifton brought into vogue the term "right-sizing". He is on record as having written, "The right sized mines with proven metallurgies and the best mix of critical rare earths will enter the market on schedule. ………… for an ideal producer, (these) are the lowest costs, the best mix of critical rare earths, and the right size - a size small enough to be able to supply the market and remain profitable even with reduced production". What he said then has even more poignancy now.

The behemoth properties with gargantuan capex budgets have gone the way of the brontosaurus. Only **Lynas** and **Molycorp** have got away with the creation of mega-mines/complexes and they have paid the price in valuation for such ambitions. The mantra now is "small is beautiful". Those with bloated capex and NOT advanced into production are destined to, as the Bard put it, spend "all the voyage of their life bound in shallows and in miseries".

Thus we felt motivated to dust off our old REE lifecycle chart and move the horses around to reflect where they are in the race these days.



Frankly the once populated left of this diagram does not interest us and those wannabes that used to rhapsodize about their eudialytes, bastnasites and andesites can now go whistle. Investors are not interested, for the simple reason that if even half of the names listed above make it to production then there will be NO NEED for any juniors to follow in their wake for a decade or two. It would be too cruel of us to name names on which of the above will be horses that fall on the final straight and need to be put down, but after our previous reference to bloated capex it doesn't take much for REE mavens to work out which ones they are.

Where they stand….

The rest though are interesting because time has created a dispersal of focus. What was once largely an exercise in *Where's Wally,* with hundreds (maybe) of lookalike companies with lookalike deposits pleading for attention, has become a far smaller group differentiated by strategy, location, mineralisation style and backers/supporters. A good example is **Medallion** (MDL.v) which had a ho-hum REE deposit and ultimately morphed into a more industrial concept with the focus on extracting the REE component in mineral sands from a refinery that will be located in a cheap energy location of Oman in the Gulf States. To effect this industrial strategy it signed MOUs in June 2013 with Oman-based Takamul

Investment Company an offshoot of the Stet oil entity) and Jordan-based Arab Mining, with the partners investigating the viability of financing, constructing and operating a monazite-based, rare-earth production project in the industrial city of Duqm, Oman. From there it can draw on the substantial mineral sands mines, with Monazite, dotted around the Indian Ocean.

Texas Rare Earths (TRER) sent a bloated first-pass PEA to the shredder and downscaled its project into a REE/Fluorspar (and eventually Beryllium) project with a much smaller capex. This was the quintessential example of right-sizing coming into play. We guess it should not be a surprise considering that Jack Lifton is an advisor to the company. It is also notable that Round Top already has underground infrastructure as it was formerly a Beryllium mine.

Alkane Resources (ALK.ax) has always been more of a mélange of minerals at its Dubbo project and never strayed from promoting it primarily as a Zirconium mine, with REE and other mineralisations (primarily Ferro-Niobium) as icing on the cake. This strategy has managed to put it ahead of all the other wannabe producers and next over the hurdle into the production space. It has had a Demonstration Pilot Plant running since 2008 which provides some comfort but also raises the issue as to why it has been so tentative about moving to proper production.

Tasman Metals (TSM.v) has taken the opportunity of the relative strength of Graphite to merge with another company in its corporate grouping (**Flinders Resources** - FDR.v– one of our Model Mining Portfolio constituents) to corral all the cash into one place and run with two projects at once in the same country. This is an admirable facing of reality. Eventually the cashflow from graphite start-up (which is near to production) will get the REE project onto its feet. We wonder whether it might not make sense to get a Stockholm listing once revenues kick in and lessen the sole focus on TSXV-type investors.

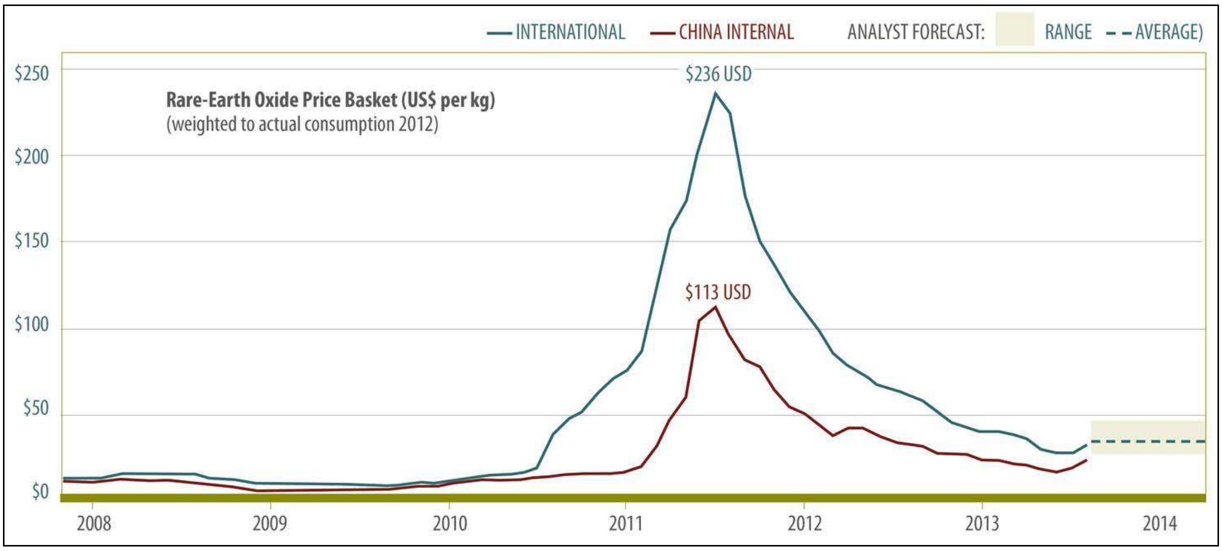
UCore Rare Metals (UCU.v) has always led with a highly political strategy which is paying off. In this respect it is following in the footsteps of **Molycorp** and enhancing upon that approach. First get the politicians on side then the other parts fall into place. UCU have been masters of this with respect to the local politicians in Alaska where both Senators are behind the project as well as the State government. With the state being the only US state to have had the foresight to create a Norwegian-style future prosperity fund with oil/gas royalties the state has the wherewithal to pick champions for cultivation as examples of what can be achieved by those who set up in the state. With national priorities coalescing with local interests, UCU has created itself a *Coalition of the Willing*. We expect it to turn out better than the last one of those!

Then there is **Great Western Minerals** (GWG.v/OTCQX: GWMGF) that has always separated from the pack by its involvement in the manufacture and supply of rare earth element-based metals and alloys through its Less Common Metals subsidiary in the UK. It is also the holder of the low cost, high-grade Steenkampskraal mine which had been a thorium/REE mine for several decades after WW2.

This project was however supposed to one of the first off the block (and indeed was) and with relatively low capex (now mooted to be $171mn, but $125mn the previous time we looked at it) we cannot grasp how it is still flapping around at the feasibility level rather than actually trucking out product. Admittedly management is changed and we are not acquainted with the new crowd. At least the old team was able to enunciate a cogent story justifying a bootstrapped start-up strategy. We certainly hope the new crowd hasn't slipped into *consultantaphilia* which involves vast monies going for reports as an excuse for not actually moving things forward. This mine is NOT rocket-science.

Matamec Explorations (MAT.v) probably won't like us saying it but they only made their spot on the lifecycle chart through having managed to bag Toyota Tsusho as a partner. This has carried them through to feasibility on the Kipawa deposit, a phase that most mere mortals in the space have NOT achieved. Now they are the lab rat for proving that eudialyte deposits might actually amount to something. We are watching intently.

The price surge and then plunge is even better documented by the chart below:



Source: Metal Pages/IMCOA

Prices certainly haven't helped and as the table below shows the current spot prices are almost all trading at below the long-term average price. Our outlook for 2016 is included.

Price Deck	Toyota 2016	Spot Jul-13	Av. Long-Term	Hallgarten 2016
Lanthanum	10.00	6.75	8.14	6.00
Cerium	5.00	6.75	5.81	6.00
Praesodymium	75.00	78.50	71.93	90.00
Neodymium	75.00	53.50	74.64	92.00
Samarium	9.00	9.00	9.33	11.00
Europium	500.00	825.00	956.41	760.00
Gadolinium	30.00	46.50	30.64	30.00
Terbium	1600.00	705.00	1213.14	1250.00
Dysprosium	750.00	475.00	684.35	830.00
Yttrium	20.00	18.50	29.25	32.00

Source: Medallion Resources/Hallgarten

We remain bullish though on virtually all the Rare Earths, except the ubiquitous Lanthanum and Cerium. These two really spoil the mix and the onset of production from Molycorp and Lynas, which are both biased to these two elements, has made the price appreciation prospects for them look grim and put the lid on any and all projects that are overly weighted towards these “mass-market” metals.

The Raft of the Medusa

One would think that players in the space would be happy to have merely survived and be counted amongst the hardy few. However, some of the denizens of the REE corner of the universe are behaving like the passengers on the *Raft of the Medusa*. Back in the good old days, when there was money flowing for all, the attitude was “live and let live” and nary was a snide remark cast in anyone’s direction. In recent times very public slanging matches have broken out with some of the more fractious feeling they might get some advantage from doing down other REE wannabes. That some of the mud-slingers also count as marginal at best (or don’t even figure on our lifecycle chart) makes us wonder if the logic isn’t that “if we push someone off into the shark infested waters then there is more space for us”. Frankly we wish that these companies would eschew Dylan Thomas’s recommendation and instead “go gentle into that good night”.

Conclusion

The storm of the last two years has winnowed the wheat from the chaff (largely) in the REE space. The two bulk producers managed to get into production after a titanic struggle and have been rewarded for their perseverance with relatively lowly market caps. The more serious in the juniors have spent the dark days of 2012 and 2013 conserving cash, moving production studies forward and tweaking their business models and industrial/processing aspirations. Pure explorers can be discarded at this point. While our Lifecycle chart shows the current “most likely to” candidates for production (and survival) we would not discount that a company not featured might revise their model, attract a major partner and jump back into contention. However the likeliness of dark horses dashing to the front of the pack, fades with time.

The nadir of the sector is now past. Financing will not be easy to get but super-focused projects should get the most traction with those investors wanting to take a strategic position in a sector that is more beaten down than most. The most foolish thing to do at this point would be to bet on a large market cap name thinking that this signifies some sort of superior survivability. The devil is in the details and stakes should only be taken in those names that can cogently show a path to affordable (and profitable) production.

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60 Madison Ave, 6th Floor, New York, NY, 10010