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HALLGARTEN & COMPANY

Special Situations Note

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Solvay S.A.

(BE: SOLB, NYSE: SLVYY)

Strategy: LONG

Key Metrics	
Price (EUROS)	€ 109.60
12-Month Target Price (EUROS)	n/a
Upside to Target	n/a
12mth hi-low	€ 74 - € 111
Market Cap (EUROS bn)	€ 11.66
Shares Outstanding (millions)	105.876
Dividend Yield	2.55%

Monday, January 9, 2023

Solvay

Liberating La Rochelle by Demerger?

- + Jungle drums suggest that Solvay, the Belgian soda ash giant, might be disposed to demerge its Rare Earth activities, based at La Rochelle in France
- + When part of the Rhone Poulenc group, it had been the West's leading innovator in Rare Earths, but has spent the last couple of decades on the sidelines of the REE space
- + The downstream Electronics & Catalysis division was widely recognised for its technological and process know-how with, mainly REE-based, technological applications and innovations
- + Rare Earth prices have resurged in recent years and have largely held firm at levels substantially above the average levels of the last ten years
- + There has been rising concern in the EU over the vulnerability of the trading block to China dominance of specialty metals, in particular, Rare Earths
- + A standalone entity, based on the spinout, would provide a French, and European, champion in the Rare Earths space
- + A frenzy of positioning during 2022 by Hastings Technology, Neo Performance Materials, Wyloo and Solvay might indicate that bigger things are afoot
- ✘ A legacy issue of Thorium, and other radioactive wastes, has severely cramped what kinds of concentrates/ore that La Rochelle can take for processing
- ✘ China still has the whiphand in REE-pricing and can sink prices, suddenly, at will
- ✘ The question left dangling in the air is whether a spin-out, such as proposed, would need to be vertically integrated with REE mining projects to guarantee a flow of inputs

A European Rare Earth Champion in the Making?

Maybe it was prescience, or serendipity, but we spent more column inches talking about Solvay, and its Rare Earth processing facility at La Rochelle in France, over the last year than ever before. Admittedly there was news of a sort when previously there had been a long radio-silence on the activities at what was once the major Rare Earth processing facility in the Western World.

Now the intelligence chatter in the Rare Earth space is suggesting that Solvay is pondering a spin-out of the Rare Earth assets that it inherited when it took over the French chemical giant, Rhodia.

In this **Special Situations** note we ponder the implications of such an action and what form it might take.

Some History - the Rip Van Winkle of Rare Earths

In the beginning there was *Societe de Terres Rares* (STER) and it was good. If one goes back far enough one finds that the company (then folded into French chemicals giant, Rhône-Poulenc) even held a 41 % stake in Baotou Luxi Rhône Rare Earths in a plan to exploit Bayan Obo. That was, of course, in the days

when China was not viewed as the enemy in the Rare Earth world. The rest is history.

So how is it then that the most advanced REE processor in the world in the 1990s should have been overhauled by Silmet, which as an ex-Soviet facility, might best have been described as a pile of scrap metal?

Rhodia was a public company that was founded in January 1998 following the spin-off of the chemicals, fibres, and polymers activities of Rhône-Poulenc when it merged with the German company, Hoechst. On June 25, 1998, Rhône-Poulenc sold 32.7% of its share in Rhodia's capital to the public.

Rhodia became a listed company. Embedded within the spin out was the old Rare Earths division of R-P.

The Electronics & Catalysis division of Rhodia provided performance products for electronics and catalysis markets. Headquartered in France with production and research centres located in key areas in the USA, Japan, China and France, Rhodia Electronics & Catalysis was widely recognised for its technological and process know-how. Their products, mainly REE-based, provided high technological applications and innovations: precursors for electronic ceramics (SUPERAMIC™), high performance polishing powders (CEROX™, OPALINE™), high purity solvents for wafer manufacturing (RHODIASOLV™), medical imaging or luminescence. The mastering of catalysis-related technologies provided applications for environment or automotive emissions control; fuel-borne catalysts for the regeneration of diesel particulate filters (EOLYS™), advanced materials for catalytic converters (ACTALYS™), materials for fuel cells, and chemical catalysis.

Interestingly, in 2006, it was announced that Rhodia's Electronics and Catalysis division had signed to become a cornerstone customer for Mount Weld Rare Earths Project of Lynas (ASX:LYC). Under the deal Lynas was to have access Rhodia's downstream separation plant in China, establishing an integrated supply chain from mine through to separated oxides that were to be marketed under Lynas' RED® brand. At the time it was claims that sales output had been identified for approximately 40% by value of the planned annual production from Mount Weld. Obviously, this deal never came to anything but it interesting to ponder what Lynas's evolution might have been if it had been able to avoid the Malaysian processing path it eventually followed.

In the first quarter of 2011, the Belgian chemicals group Solvay launched a friendly public takeover bid for Rhodia. Solvay is a European-listed large, multi-national chemicals company (net sales €10.1b in 2021), best known for its overwhelming dominance of the soda ash business. In Rare Earths, its downstream separation plant was claimed to be capable of producing ~4k tpa of TREO for traditional end-users such as the catalysts, automotive, polishing and electronics industries.

The Radioactivity Issue

The long-time fly in the ointment for Solvay regaining traction in the REE space has been the historical legacy of radioactive wastes from production at La Rochelle. According to ANDRA, the French agency for waste management, until July 1994, Electronics and Catalysis (later renamed Rhodia Rare Earth Systems)

used very slightly radioactive monazite as an ore, producing radium-bearing waste, which was initially stored at ANDRA's La Manche center until 1991, then in the French atomic energy commission's Cadarache facility. The treatment of the slightly radioactive monazite produced 8,023 tons, according to ANDRA, of slightly radioactive solid residue up until 1994. According to ANDRA, in 2007, this residue contained 2,000 tons of uranium and 2.6 tons of toxic lead.

The plant was subject to ICPE environmental surveillance. A project to launch a recycling plant for the Rare Earths contained in used lightbulbs was being considered earlier in last decade, but this would have been scarcely a gamechanger in the REE space as even a minuscule company such as Rare Earth Salts in the US Midwest had dabbled with that strategy.

The Latest Resurrection

In mid-September 2022 Solvay made a cryptic announcement of plans to expand its Rare Earths operations in La Rochelle “to enter the value chain for Rare Earths permanent magnets in Europe”.

However, by most accounts they were happy to announce this and then reticent to actually flesh out what they intended to do. The announcement thus came out rather half-baked.

As noted earlier. for decades, Solvay’s predecessor firms were technology leaders in Rare Earths separation, recycling, purification, finishing and formulation. Despite its low-profile over the last decade they claim “the plant is already active in the separation and recycling of rare earths for captive use”.

Solvay has now pinned its flag to the mast with an ambition to “create a powerful rare earths hub in Europe in the coming years”. The La Rochelle plant currently serves the automotive emissions control and semiconductors markets.

The unquantified new investment was to expand and upgrade an existing unit, adding the production of separated Rare Earth oxides for permanent magnets to the site. Solvay’s new/old hub will help develop European autonomy for these critical materials and also address the shortage of Rare Earth key elements by playing a role in the recycling of magnets. Unspoken in this is that the EU still does not have any primary production of the Rare Earth minerals and attempts thereat (such as Norra Karr in Sweden0 are at the mercy of localist NIMBY tendencies/activists.

The plant is state of the art, and much bettered positioned geographically than the Silmet facility (in Estonia) of Neo Performance Materials (TSX:NEO). Its also worth noting that Solvay have a REE separation plant in Liyang, Jiangsu, China.

We were bemused by the statement that “Solvay has been continuously reinventing its rare earth business through numerous technology, legislation and market evolutions” when most players in the Rare Earth field didn’t even know of this hidden gem until the announcement. We have long seen it as having the potential to become a French, or EU, champion in REEs, but instead it has been a long-ignored opportunity.

The plant (above) is state of the art and much bettered positioned geographically than Neo Performance Materials' Silmet facility.

We are further intrigued by the statement that “Solvay will pursue alliances with other global champions in this field and has active participation in European consortia to secure partnerships and funding”. This leaves us wondering who such “global champions” might be.

In a recent interview, Michael Finelli, president of Solvay Growth Initiatives stated that Solvay continues to prepare a new REE processing project for EV and wind turbine markets at La Rochelle. This plant is the recipient of "tens of millions of euros" in investment and will supply material to magnet makers for "millions" of EVs.

Weird Mating Dance - Solvay/Hastings/Neo Performance

Preceding Solvay’s rebirth in Rare Earths was a series of events early in the second half of 2022 which came across as one of the most bizarre mating dances in the Rare Earth world. In October 2022, it was announced that Hastings Technology (ASX:HAS) had signed a non-binding MOU with Solvay, covering 2.5k tpa Mixed Rare Earth Carbonate (MREC), to supply the La Rochelle separation facility in France.

It was reported in the Rare Earth Observer that “Solvay's product will be mainly neodymium to be supplied to magnet makers.

That offtake quantity from Hastings (2.5k tpa) may turn out raw material for less than 2,000 t sintered high-working-temperature NdFeB magnets. EU imports 2022 from China …..: almost 21,000 t of rare earth permanent magnets”.

Before last summer, we had written about Hastings’ Yangibana deposit so long ago that we had to fight through a veil of cobwebs to find what we wrote. The company claims that the project remains the key priority for Hastings, “with good progress being made on funding initiatives and other key milestones”. But they would say that wouldn’t they?!

There is more to this than meets the eye.... Firstly, we saw, in high summer, the owner of Hastings taking a big stake in Neo Performance Materials. This new owner turns out to be Twiggy Forrest lurking behind the arras. And yet now we have Hastings signing on with Neo's only Western "competitor"... The plot thickened, particularly in light of Solvay's own mutterings in September of 2022.

Neo Performance – Up for Dissection?

The transaction that set our mind whirring on the Hastings “group” “occurred last August.

Firstly, there was Neo Performance Materials announcement that it was acquiring a REE mining project in Greenland and making all the right noises as if it was going to move that forward (and if anyone can, it would be them).

Then came the shock announcement that Hastings Technology Metals (ASX:HAS) was to acquire a 22.1% strategic shareholding in Neo Performance Materials. The TSX-listed entity is not only **A** leading global Rare Earth processing and advanced permanent magnets producer, but it is **THE** leading global Rare

Earth processing and advanced permanent magnets producer outside China with a string of plants around the world, and most particularly its Silmet plant in Estonia, which is a cornerstone of the monazite sands processing strategy of Energy Fuels (TSX:EFR).

The market cap of Neo, of the eve of this announcement was CAD$605mn. The acquisition by Hastings was at an agreed price of CAD$15.00 per Neo share, representing a total consideration of CAD$135mn. Bargain basement, indeed, in our view.

According to the release the acquisition is intended to be funded by an AUD$150 million strategic investment in Hastings by Wyloo Metals, through the issuance of secured, redeemable, exchangeable notes.

Interestingly, the stake was not a *de novo* investment by Hastings, but rather the purchase of a stake from an affiliate of Oaktree Capital Management, L.P.. Those with long memories will recall that this stake dates back to the ancient history of when Molycorp went spectacularly bust just under ten years ago and Neo was reconstituted bigger and better out of the ruins. The stake being vended by Oaktree consisted of 8,974,127 common shares in Neo, representing a 22.1% shareholding.

The proposed acquisition provided Hastings (and Wyloo) with a strategic stake in Neo and exposure to the global downstream processing of Rare Earth materials into magnets.

The acquisition of the Neo stake and, in particular, the Wyloo investment, were subject to shareholder approval (50% voting threshold). All this begged the question as to whether the Canada (or indirectly the US) would allow the crown-jewel (indeed the Queen on the REE chessboard) to pass into the hands of Wyloo Metals. Wyloo appeared to be Australian to the core, but Hastings has often been seen as a bit of shape-shifter as to whether it is a catspaw of Peking or an Overseas Chinese plaything.

Cashed Up and Ready to Go….

The Hastings move on Neo came hot on the heels of it completing an AUD$101mn equity capital raising at AUD$4.40 via a two-tranche placement (and SPP) to investors. Tranche 1 of the placement raised $67mn and Tranche 2 raised the balance, $33mn (and AUD$1mn SPP), with proceeds to be used to advance the "development" of the Yangibana Rare Earths Project.

The CapEx and Funding It

In mid-2020 the company announced that its total CapEx for Yangibana had been revised to AUD$449m from AUD$517mn, this being due to an AUD$68mn, or 13%, reduction based on the relocation of the Hydrometallurgical Plant. Even at these levels, the amount of funding is still eye-watering, and one might wonder whether this project is actually needed at this juncture.

However, as is the way of the world in Rare Earths, in February of 2022, the company announced revised economics for Yangibana and the direct capital cost for all production and infrastructure was revised to $354 million. The indirect capital cost, including owner's costs, project management costs (including

growth allowances) was $228mn, resulting in a total capital cost blowout to AUD$582mn pre-contingency. The company claimed to have conservatively allotted an additional 13% of contingency for a total capital cost of AUD$658mn. Ergo, more than $200mn higher than in 2020.

To fund this, Hasting has secured an AUD$140mn loan facility from Northern Australia Infrastructure Facility (NAIF) in February 2022. This forms part of a planned AUD$300-400mn debt package (including UFK and Finnvera) planned for the project. Apparently, the NAIF portion could potentially be increased to ~$200mn. Thus, even more equity will need to be raised.

At Yangibana, the majority of the REEs are hosted by the phosphate mineral monazite, the mineral containing low levels of Thorium and Uranium and their decay progeny.

Results, summarised in the table that follows, indicate that uranium concentrations are relatively consistent across mineralised areas of the Yangibana project, while thorium concentrations show a greater variability.

Yangibana Resource

Category	Tonnes	TREO %	Nd2O3+Pr6O11 %
Measured	4,727,000	1.17	0.42
Indicated	8,652,000	1.24	0.41
	13,379,000		
Inferred	8,294,000	1.09	0.36
Total	21,673,000	1.17	0.39

There is a clear association of Thorium to the mineralisation. How this fits in with the Solvay deal remains to be seen. In any case, the plot thickened in the midstream of the Rare Earths space outside China.

Yangibana to the Rescue of the EU's Flailing Circular Economy?

We noted in our September monthly that the EU still does not have any primary production of the Rare Earth minerals, but if the solution to this is Yangibana then things start to make more sense. However, it also implies that:

- Yangibana will be financed
- it will reach production within an acceptable timeframe

- there will not be a surge of other projects that get ahead of Hastings

Issues to Ponder

Are Solvay going to be twiddling their thumbs while Waiting for Godot?

We are intrigued by the statement that "Solvay will pursue alliances with other global champions in this field and has active participation in European consortia to secure partnerships and funding". Does Hastings count as a "global champion"?

And why an investment by Twiggy Forrest in Neo Performance, if Hastings are going off almost straight away and taking business to Solvay?

We suspect the plant at La Rochelle is fundamentally better (i.e. more modern) than Silmet and definitely is better positioned logistically but Silmet is part of a real REE supply chain and has now added the flow of product from Energy Fuels (NYSE: UUUU, TSX: EFR) to the mix, while La Rochelle still has a ban on processing more material with a radioactive component.

Ways this Plays Out

So, we have a wide cast of characters here and it is not clear who is leading whom and where….

Solvay, if it decides to push the button on a demerger of its Rare Earths processing and products division, will liberate the REE business to control its own destiny. A distribution in specie is a fairly easy process to effect and the new company would come out of the gate with a replication of Solvay's blue-chip share register. The business is not in need of any more capital than Solvay could put in as a parting gift, so a conventional money-raising IPO would not be required.

Hastings is potentially the largest supplier (if Yangibana gets going) to La Rochelle, but that is years out, contains the still unresolved radioactivity factor and flies in the face of the strategic stake that Hastings took in Neo Performance (with Wyloo lubricating the deal). Could Neo merge with the spin-out from Solvay? Would that even be allowed?

What does Wyloo want? Maybe observers are looking for meaning where there is none, particularly when the interloping party is known to know little or nothing about the REE space. Maybe its just a case of too much money burning a hole in Twiggy's pocket?

Might the spun-out entity stay aloof from REE mining? Might it vertically integrate with some other project and let the Hastings deal fall by the wayside? It's worth repeating that there is no compunction for its to go with Hastings, particularly as Hastings cannot show any product to speak of.

State of Play

The picture for the Rare Earths utilized in EVs (Neodymium, Praseodymium and Dysprosium) remains strong. Even if EV take-up slackens off (from the projections, rather than the current actual demand)

due to global recession (and maybe softening of Western government hard targets on ICE phaseouts), it still implies deficits in these three REEs from 2026 onward as global demand (driven by EVs/renewables) outstrips supply.

Risks

The whole Rare Earth industry finds itself in a different world, with some constants from the previous "boom", but also quite a few things have changed. However, it is worth enumerating some of the risks that may be faced:

- A return to weak Rare Earth prices
- The REE market is still controlled largely by China
- Failure of demand to match rising production (i.e. build it and no-one comes)
- Excessive number of competing projects could crowd the scene and investors' attention in the event that REE prices remain robust

Rare Earth prices are not likely to go lower than the levels they have been at in recent years, even the Chinese are not running a charity anymore. Prices have been ebullient for the last two years but there is no rationale for them to even vaguely test the highs of 2011-12. The Chinese have learnt their lesson from last boom and that lesson is that the best way to maintain control and discipline market players is by aggressive predatory pricing. Even now there is talk swirling of the Chinese pondering ramping down (!) LREE prices.

Despite all the hullabaloo, there is not a lot of money for major REE capex pipedreams out there, especially those without access to the Government push and market pull that comes with being in the USA or those needing to wrangle an NRC permit or its equivalent in other developed countries. The MP Materials SPAC came with $500mn embedded, which got the company off to the races. Energy Fuels (TSX:EFR) entered the Rare Earth space on an experimental basis and have operated that silo on the smell of an oily rag. The rest of the fakers and wannabes are promoting the hell out of the concept but not actually spending anything.

With the EV "revolution" finally gaining traction outside of China the potential for greater demand for REE magnets from that quarter is enhanced. We see no reason for REE demand to slacken and indeed there is the potential for it to finally start to meet some of the bullish projections of 10 years ago.

Finally, there is the issue of competing projects. The Canadian projects have a few contenders to be real, but most of the promoters there remind us of Mark Twain's definition of miners, except that most don't even have a hole to stand at the top of. Projects farther away (and we don't mean Greenland or Angola) stand some prospect (particularly if located on the territory of US allies, i.e. Australia, see Lynas) of being seen as being "as good as onshore".

Conclusion

Poignant (there is a good French word for you) was the page near the front of a recent Solvay presentation in which they quoted Mark Twain's comment, "Reports of our death are much exaggerated", but we can't help thinking that these are "*les mots justes*" considering the company's resuscitation.

The idea of setting the orphan REE division of Solvay free is a good one, yet long overdue. We suppose the wheels grind slowly in the corporate boardrooms of Belgium. As they say "if you love them, set them free….".

How could one not want to see a second major player in the Rare Earth processing space? The industry is currently somewhat of a dumbbell shaped object. At one end there are a plethora of wannabe producers (though few actual producers), while in the middle there is Silmet, and on the user-end a swarm of real consumers of Rare Earth oxides.

A resurgence of the La Rochelle facility as an effective competitor, or even just a player, in the midstream of the Rare Earth industry would reinstate capacity that has been effectively sidelined for way too long. This would remove the danger of Silmet being the sole choice, as currently, into the distant future. It would also remove the need for wannabe producers having to factor in expensive on-processing in their own plans.

Solvay has now made clear its ambition to "create a powerful rare earths hub in Europe in the coming years". This ignores, maybe rightly, the existence of Neo Performance's Silmet plant, which though in Estonia, is still in the EU.

It's the next steps that provide the intrigue in this story. The Solvay REE division has been a blushing virgin hiding her light under a bushel for too long. It's time for her to start touting her wares (and pulling her weight) in rebalancing the Rare Earth world away from its long Sinocentrism. In the process it would drag the EU's clichéd "Circular Economy" buzzwords out of the realm of *kumbaya* onto the battlefield for resource (and processing) independence in the critical metals space.

As for the nature of the beast that is created by a demerger, as they say, the devil will be in the details. Thus we are instituting a **LONG** rating on Solvay, solely to get access to any spin-off should it transpire, and we are not setting any 12-month target price.


BE:SOLB Daily
2/03/23
115
110
105
100
95
90
85
80
75
70
Volume
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800
600
400
200
0
Thousands
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
23
Feb

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