

Heavy Rare Earth Update: The Molycorp "Announcement," UCU and HRE

Posted By [Byron King](#) On October 5, 2011 @ 4:27 pm In [Alert](#) | [No Comments](#)

At about midnight the other day, I received an urgent message from a contact in Canada. This trusted friend said, "Molycorp is going to make a big announcement. They're going to say that they have heavy rare earths at a site near Mountain Pass, Calif."

"Heavy" Rare Earths?

First, let's do the preflight briefing. Let's define our terms. Long-time ESI readers may have seen this before. But for the newer ESI subscribers, I'll go over the basics real fast. Let's start with the periodic table of elements and highlight the rare earths (RE).

Periodic Table of the Elements

1	2											13	14	15	16	17	18																				
1	H											B	C	N	O	F	Ne																				
3	Li	4	Be											5	6	7	8	9	10																		
11	Na	12	Mg											13	14	15	16	17	18																		
19	K	20	Ca	21	Sc	22	Ti	23	V	24	Cr	25	Mn	26	Fe	27	Co	28	Ni	29	Cu	30	Zn	31	Ga	32	Ge	33	As	34	Se	35	Br	36	Kr		
37	Rb	38	Sr	39	Y	40	Zr	41	Nb	42	Mo	43	Tc	44	Ru	45	Rh	46	Pd	47	Ag	48	Cd	49	In	50	Sn	51	Sb	52	Te	53	I	54	Xe		
55	Cs	56	Ba	57	La	58	Ce	59	Pr	60	Nd	61	Pm	62	Sm	63	Eu	64	Gd	65	Tb	66	Dy	67	Ho	68	Er	69	Tm	70	Yb	71	Lu				
87	Fr	88	Ra	**	7	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132			
				LANTHANIDE SERIES																	ACTINIDE SERIES																
				La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu																	Ac Th Pa U Np Pu Am Cm Bk Cf Fm Md No Lr																

Of all the substances known to mankind, there are 17 RE elements. They belong to a group that's labeled the "lanthanide family" in the periodic table, beginning with lanthanum (atomic no. 57, on the left side of the lower circle, above).

The lanthanides progress through an element called lutetium (atomic no. 71, on the right of the lower circle). The RE collection also includes scandium (atomic no. 21) and yttrium (atomic no. 39) — both in the small circle above. This has to do with their similar chemical properties.

Light and Heavy Rare Earths

The general scientific consensus is that there are two categories of RE — light REs (LREs) and heavy REs (HREs). The distinction is based on atomic weight. You can see the symbols and basic atomic data as you move right across the circled line periodic table.

Light Rare Earths include lanthanum, cerium, praseodymium, neodymium, promethium and samarium (atomic nos. 57-62).

Heavy Rare Earths include europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium and lutetium (atomic nos. 63-71).

Billions of years ago, these elements formed in the cores of supernova stars when the stars went

critical and exploded — just like you've doubtless seen on some Star Trek episodes. The heat phenomena and magnetic forces within the supernovae were pretty much beyond comprehension. The motion of some of these supernova-driven particles approached the speed of light.

The bottom line is that RE elements have exotic electron structures, which is what makes them useful to us earthlings.

Out in the world of industry, where the RE elements actually get used, the fact is that the LREs are far more abundant than HREs. For example, industry uses LREs like lanthanum in the oil refining business, and cerium in the glass-polishing business. As RE elements go, these LRE elements are relatively available, and they cost less to produce or buy.

The HREs, though, are far less abundant — it goes back to those supernova stars. For our purposes, HRE are very expensive to produce or buy. Still, despite the price, these HRE elements have astounding optical, electrical and magnetic properties that make them quite useful for things like electronics and much more.

Indeed, the world's research labs are just scratching the surface for applications for HRE. It's safe to say that looking ahead, HREs are where the really big money will be made.

OK, chemistry class is over. Now let's discuss Molycorp and two other RE companies that are solid plays in the ESI portfolio. What's going on?

Looking Back at Molycorp

As long-time readers know, Molycorp was in our ESI rare earths (RE) portfolio for a while last year. Molycorp controls a major RE site in the U.S. at Mountain Pass, which is southwest of Las Vegas in the high California desert.

The mine and mill at Mountain Pass date from the 1950s, but have been closed for over 10 years. A new Molycorp management team has been working to rebuild the facilities and restart the mine in California. I've written about Molycorp over the past year.

Again, just to catch up if you're new to ESI, Molycorp shares shot up last year. That is, Molycorp went from being an intriguing RE development story — the kind I like to follow here in ESI — to a high-visibility stock market darling and momentum play. Heck, even Jim Cramer plugged the company on his TV show.

Thus, for ESI readers, we sold out for a very handsome gain after a couple of months. I wanted to book the quick momentum gain. I figured that we'd sell out and then allow the actual developments on the ground to catch up.

Looking back, I'm not sorry that we sold when we did. Through most of 2011, Molycorp shares traded in the \$50-70 range. Last week, Molycorp shares took a hard tumble to the \$30 range, after a severe downgrade by JP Morgan.

The "Heavy" Announcement

At any rate, further to the message from my Canadian contact the other night, Molycorp let loose the news that it has a "heavy" RE (HRE) play near Mountain Pass. On Monday, Oct. 3, Keith Bradsher of *The New York Times*

published an article entitled ["Molycorp Set to Announce a Rare Earth Discovery."](#) [1]

In the NY Times article, Molycorp CEO Mark Smith is quoted as saying that the new ore prospect is near Mountain Pass, and that Molycorp "might be able to begin producing heavy rare earths in a little over a year from now."

Clearly, Molycorp wanted to make a splash. Clearly, Molycorp planted an important HRE story with the NY Times. In turn, Molycorp shares traded up to about \$32 each on the initial news. But shares quickly pulled back to a \$30 support level. Today Molycorp shares are trading down. Why?

Frankly, the claim of a new HRE deposit is surprising. And the claim that it'll yield HRE output in a year or so is astonishing. Molycorp hasn't previously provided information about significant HRE

plays near its property. There's been no news about any major exploration effort, let alone any drilling program looking for HRE. Nor are we privy to any past news about engineering and metallurgical work to develop any HRE play.

"Heavy" RE Development Is Hard Work!

Let's compare these new Molycorp claims with another ESI company, **Ucore Rare Metals (UCU: TSX-V)**, which is also focusing on HRE elements.

Ucore is working in [a known mining district](#) ^[2] in Alaska, also dating (coincidentally) back to the 1950s. The U.S. Geological Survey and the old U.S. Bureau of Mines performed extensive, published work in the area in the 1980s and 1990s.

Still, Ucore had to work up the basics of the geology, the structures, the RE and HRE mineralogy and an outline of the ore body. So over the past two years, Ucore has spent millions of dollars, drilled hundreds of holes and generally focused a serious level of brainpower on its acreage in Alaska.

In other words, you don't just "do" HRE. We're talking about elements that formed in supernova activity, in "chemically peculiar" stars, to be precise. With HRE, nothing happens by accident or even serendipity, let alone by press release.

HRE requires an upfront commitment to explore, drill, test, process and build. HRE requires significant capital investment, countless hours of scientific and engineering effort and buckets of managerial midnight oil.

Now, after more than two years, Ucore has the basics of an engineering and metallurgical report out of the well-regarded Hazen Lab of Denver. Even then, however, we're still rather near the beginning of a long-term program for Ucore to turn its rocks in Alaska into a downstream product. Ucore still has to validate the Hazen Lab work and then team up with eventual midstream and end-users.

All of this gets to a point that I keep making about RE in general, which is that *there's an entire value chain at work here*.

That is, by comparison, if you mine gold, there are thousands of players out there who will buy the ore, or the semi-refined "dore" from you, let alone the refined gold bars.

But if you're in the RE biz and you're focused on HRE? There are only a few dozen non-Chinese players out there with whom to work — and we know who they are.

Then There's That "Processing" Stuff...

Now let's look into the claim that Molycorp might process HRE within a year. All I can say is, oh, really?

Think it through. The "one year" claim would mean that Molycorp has an ore body (see above with respect to Ucore) and that Molycorp has staff or consultants who've cracked the code on its structure, dimensions, geochemistry and mineralogy. It would mean that Molycorp has drilled a lot of holes and pulled out bulk samples. It means that there's a mine plan laid out.

A "one year" time frame means that Molycorp has taken bulk samples and performed the chemistry, metallurgy and engineering work that's necessary to build an entire process chain. That "one year" claim means that the Molycorp team know how they'll separate ore, grind it, dissolve the material into solution and then transform the valuable components into higher-value midstage, if not end-stage, products.

This kind of news, and the "one year" timeline, would also mean that Molycorp has technical partners and customers lined up. That's because, to make the HRE cycle work, you've got to build an entire team. You need an array of technical collaborators.

When it comes to these collaborators, you can't just pull deals out of a hat. You've got to stitch these teams together. I've watched potential deals come and go, and I know how this all works.

Thus it's perplexing that Molycorp is talking about having a new ore body near Mountain Pass and that it might be in production in about a year. As I said, oh, really? There's just been no buildup to this.

Compare With Stans

Another basis for comparing the Molycorp claim is what I know about **Stans Energy (HRE: TSX-V)**. If you have even a casual acquaintance with ESI, then you know how much effort I've put into understanding what Stans is doing, to include visiting its projects in Russia and Central Asia earlier this year.

Stans controls an ore body in Kyrgyzstan (it's so big that it's more correctly called an "ore field") dating back to the days of the former Soviet Union. It helps that Stans owns an entire football field full of incomparable processing equipment from former Soviet facilities, which I semi-seriously call "[Area 51](#)".^[3]

This particular Stans project, in Kyrgyzstan, has chemical and engineering roots dating back 60 years, to the heyday of the USSR. The mine and facilities have a successful history of producing HRE in Soviet times.

The ramrod for past Soviet success in HRE was a Russian national lab that's still around. Out of a characteristic Soviet sense of secrecy, it used to be called "Laboratory 10," but now it's called the Russian Leading Institute for Chemical Technology (VNIHT).

VNIHT is a vast institute in Moscow — the size of a small college campus — founded by former dictator Joseph Stalin. For many decades, the old Laboratory 10 was the premier institute in the USSR for research into nuclear materials, including RE-bearing ores. At one time, it had over 7,000 employees, most with Ph.D.s and master's degrees in technical subjects.

Today, VNIHT is an arm of Rosatom, the Russian atomic energy agency. VNIHT has well over 700 technical employees in its offices, and is still focused on the mission of supporting Russia's nuclear industry — civilian and military. There's a large VNIHT team focused on RE metallurgy as well, and a cadre that directly supports Stans.

Here's What You Need to Know

The takeaway point is that the chemistry, metallurgy and engineering for building out a new RE/HRE capability requires a small army of highly skilled technical people. It requires capital investment, exotic equipment, a large number of skilled people at every level and a great deal of managerial skill and competency.

It doesn't stop there, though. After you've got the ore body and the upstream technical skills and equipment, you still need midstream and downstream partners. That is, at the end of the day, you want to turn rocks into ore and turn the ore into a product that you can refine into something that somebody will buy!

As the Mogambo Guru would say, "This HRE stuff is all hard work." Yes it is, from beginning to end. Doing an HRE project requires many great people, all working together. It takes team building with world-class partners and customers. It's hard to hide from the world, and nothing comes easy.

Where's the Beef?

All of this takes us back to what's going on with Molycorp and its HRE announcement. Initially, Molycorp shares traded up on the initial news, but now are trading down. For all of Molycorp's efforts to be strategic and release its "HRE" news to the NY Times, the market isn't buying it.

In my view, there's just too much that's missing from this Molycorp story. The best I can say is that the precipitous Molycorp announcement makes hardworking Ucore and Stans shine by comparison — if you know what you're looking at.

That's all for now. Thanks for reading ESI.

Best wishes...

Byron W. King

P.S. As you can see, there's plenty to know and understand about the RE space. If you really want to learn more, I recommend that you attend a "Rare Earths Boot Camp" in Toronto on Oct. 31 and Nov. 1.

Neither Agora Financial nor I have any affiliation with or financial interest in this program. I'm mentioning it because I believe strongly that it'll help you learn more! I sure want to learn more, so I'll be there too, taking notes and asking questions.

This two-day program will present a world-class group of scholars and researchers who can explain the RE space to you and make you a much better investor. If you can attend, it's worth the effort. [Click here for more.](#) ^[4]

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URLs in this post:

[1] "Molycorp Set to Announce a Rare Earth Discovery.":

http://www.nytimes.com/2011/10/04/business/molycorp-to-announce-rare-earth-deposit-at-california-site.html?_r=2

[2] a known mining district:

<http://energyandscarcityinvestor.agorafinancial.com/2011/08/12/ucore-rare-metals-and-bokan-mountain/>

[3] "Area 51".:

<http://energyandscarcityinvestor.agorafinancial.com/2011/04/29/kyrgyzstan-and-area-51/>

[4] Click here for more.: **<http://www.techmetalsresearch.com/events/rebc201/>**