February 10, 2012

An Update on Our Latest Gold Miner Plus, How to Profit from Vanadium

Portfolio Updates -- MGP, CJG, REO, RMC, AVC

Dear *Energy & Scarcity* Reader:

This week has gone by like a blur. I've been in Pittsburgh, and not on the road. Still, it's been all-day marathon sessions on the telephone, getting updates from as far away as Hong Kong, Brazil and South Africa.

For now, I'll just kick into a string of portfolio updates.

Our Newest Gold Miner

I hope you saw the newest ESI investment recommendation, which hit the wires on Monday. Its Canadian-based gold miner **Mega Precious Metals (MGP:TSX-V).**

My write-up focused on the "closeology" of Mega's mining claims in Red Lake, Ontario, which are adjacent to the Goldcorp mineral claims and mines. That is, the same mineral trends that have made Goldcorp into a gold mining giant extend across the property line into the acreage controlled by Mega.

I had a long discussion with Mega's management this week about how the latest drilling season went. It's all very positive.

Also, I have to explain that after I wrote my ESI article on Mega and submitted it to Matt down in Baltimore -- but before it was published on Monday -- Mega released additional results on another property in eastern Manitoba called Monument Bay. I chose not to hold the Mega article and figured I'd just tell you about Monument

Bay in a future ESI update.

I'm still digesting the Monument Bay data, but things look great there as well. The gold mineralization is part of an ancient, Precambrian shear zone within a classic greenstone belt. The numbers are impressive, in terms of grams of gold per tonne (a metric ton). Right off the bat, I'd say that we're dealing with something north of 1.5 million ounces of gold resource. As the drilling progresses, we could likely see one or two multiples of that.

Thus, with Mega, we've got a developing play right next to the Goldcorp acreage, based on closeology. Plus, we've got a fast-evolving gold play several hundred miles north, in the wilds of Manitoba, and it's turning into a world-class deposit.

The management team at Mega is experienced in the gold mining biz. They know how to make things happen. They're doing their job now, building out the play and establishing a solid resource. As things evolve, they know how to build mines, too.

But if somebody else comes along and wants to buy the whole show? Hey, the Mega management guys know how to make a deal. One way or the other, I believe that Mega will benefit your ESI portfolio.

Elsewhere in Manitoba

Speaking of Manitoba, any day now I'm expecting a revised 43-101 out of **Carlisle Goldfields (CGJ: TSX).** This updated report will be based on the drilling from last season. You may recall that I visited the Lynn Lake site in August.

Timing is important on this one. There's a major conference in Toronto, starting on March 5, from the Prospectors & Developers Association of Canada. It's among the largest mining conferences in the world, attracting a cast of tens of thousands. PDAC is where a lot of deals get done.

From what I've been told, Carlisle management wants to get its new resource numbers out on the street before PDAC. Let's just say that it'll give people something to discuss when they're in Toronto.

Carlisle shares have traded down lately. In my view, they're a bargain. The revised resource numbers will show a significant increase in gold and silver ounces. I suspect that we'll see a lot of interest in Carlisle from the PDAC crowd. Don't chase the stock, but build a position.

Good News From Serbia

Eastern Europe is having one of its worst winters in many decades, and the Balkans are buried in ice and snow. But this week we had some heartwarming news from

Serbia-based **Reservoir Capital (REO: TSX-V).**

Reservoir received a formal confirmation from the Serbian Ministry of Infrastructure and Energy that its two hydro projects (Brodarevo-1 and Brodarevo-2) have been included in a "Bilateral Agreement on Renewable Energy" with the Italian government. I knew that this was in the works, but nothing's official until its official. So now, it's official.

Under the terms of the agreement, all renewable energy produced in the Serbian hydro projects -- and exported to Italy -- will have a guaranteed production price of 155 euros per megawatt hour for the 15-year term of the agreement.

Basically, this puts a government-blessed economic value on the hydro projects. We're not waving our arms anymore. There's no speculation. The price is 155 euros, and that's the number (with inflation escalators). Translated into U.S. dollars, it's over 20 cents per kilowatt hour -- for the basic power.

It's a remarkably good price for Reservoir.

This government-sanctioned price makes it possible to do a cash flow analysis for the value of the Reservoir hydro projects. Depending on how much electricity makes it down the wires and across the Adriatic Sea to Italy, my back-of-the-envelope calculation is that the 155 euro guarantee translates into a valuation of over $2 per share for Reservoir. And that's being very conservative.

The bottom line is that, at 60-cents each, Reservoir shares are undervalued. There's a nice upside here, but don't chase things into the clouds. We still have to let the business plan develop.

Speaking of business developments, I'm still awaiting news on the mineral efforts of the Reservoir spinout, **Reservoir Minerals Corp (RMC: TSX-V).** I suspect it'll be worth the wait.

In general, bad news doesn't improve with age. If the drilling effort near the copper trend in eastern Serbia at Bor was bad, I think we'd know about it by now. But I've been to Bor -- several times, in fact. The cores and samples I've seen are outstanding.

Thus I believe that the people at Reservoir's partner, Freeport-McMoRan Copper & Gold, have found things that are quite impressive. It's just a question of time before the results hit the wires.

It's the same thing with Reservoir's partner in gold redevelopment, at the King Alexander mine complex in Serbia. Orogen Mining has been digging out the old shafts and pits. They've found more than they anticipated.

I've been down into the King Alexander mine. I like the structural control. I'm impressed by the vein structure. If this mineral district turns out as good as I think it is, the upside for Reservoir Minerals could be very sweet. We just have to let things happen over time.

The Electric Metal

I've had a couple of great discussions with management at **American Vanadium Corp. (AVC: TSX-V).** This is one of those "mining" plays that's turning into a "technology" play as well. It's not just a story of selling vanadium to steel makers, but instead it's one of using vanadium for energy storage. But first, let me back up.

In my spare time this week (spare time?), I was reading up on the history of naval armor. Back in the 1880s, a metallurgist in New Jersey figured out how to use vanadium to harden steel -- for use in the oil industry, of all things. Not long afterward, metallurgists in Britain, Germany, Sweden and the U.S. began to use the same process to harden the steel on naval ships.

By the 1890s, "vanadium steel" was all the rage for building an entire new class of vessels called "line-of-battle ships," as they were first named.

Basically, the armored steel was so hard that shells couldn't penetrate and would just explode outside the armored section of the hull. It's quite a story of how a seemingly modest technological step led to strategic changes in international politics and military correlations.

Back then, before anyone understood atomic structures, nobody could figure out why or how just 1% or 2% of vanadium could increase the strength of steel by 40% or 50%, let alone contribute to the super-hardened nature of the metal.

The short answer has to do with the electron structure of vanadium. In the outer electron shells of the vanadium atom, you can measure a valence of between +2 to +5. You can actually see this with vanadium in solution.

Oxidation States of Vanadium:
From Left +2 (Lilac), +3 (Green), +4 (Blue) and +5 (Yellow).

Another way of saying it is that vanadium tends to be "electron poor" -- it gives up its electrons relatively easily, which is why you have the four positive valence states. Meanwhile, the vanadium ion tends to be relatively large.

So think in terms of a big, husky vanadium ion that's very attractive to electrons, due to the tendency for all those positive valences. When you add it to a mix of iron, vanadium forms stable nitrides and carbides, resulting in a significant increase in the strength of the steel.

Now let's get back to where we're going with American Vanadium. Those same four valences (+2 through +5) also make for excellent energy storage media. That is, you can take vanadium ions in different oxidation states and store chemical potential energy.

Here's a very general diagram of a vanadium flow battery:

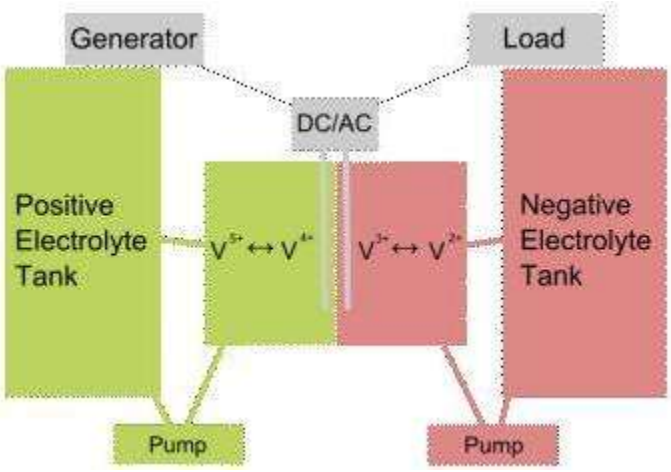

Diagram of a Vanadium Flow Battery

Notice how all four valences of the vanadium ion (+2 through +5) have a role. Basically, a vanadium redox battery consists of an assembly of power cells. You've got two electrolytes, separated by a proton exchange membrane -- for which you can use graphite, of all things! (Recall **Focus Metals, FMS: TSX-V.)**

Both electrolytes in the battery are based on vanadium. The electrolyte in the positive half-cells contains VO2+ and VO2+ ions. The electrolyte in the negative half-cells contains V3+ and V2+ ions. The electronic differential between the electrolytes is what generates electric power.

Essentially, you "charge" the battery with electricity, which creates ionic differentials. The two different vanadium fluids remain in large storage tanks. A set of pumps move the fluids and circulate them through the cells, enabling discharge.

The need to store and circulate large amounts of liquid electrolytes is cumbersome. It restricts the use of vanadium flow batteries to relatively large, fixed installations. But so what? If you're a utility company and you want to store power for peak usage, you don't care about mobility. You want scale and reliability.

Thus, the advantage of the vanadium redox battery is that it offers almost unlimited storage capacity simply by using larger and larger tanks. Plus, you can leave the system completely discharged for long periods with no ill effects. You just recharge the battery by replacing the electrolyte -- which works if there's no power source available to charge the system. And if you accidentally mix the electrolytes, there's no damage to the battery.

The bottom line is that vanadium batteries are PERFECT for utility scale storage, especially for so-called "renewable" power. OK, so a lot of the renewable power sector is a government-funded, subsidized scam -- see Solyndra, et al. Still, there's

a future for renewables, and eventually, it'll come around.

Vanadium batteries are a key enabling technology to make renewables work. With the right kinds of storage, renewable power systems can become much more cost efficient. It might not change the world as much as the vanadium armored steel of battleships did a century ago. Then again, you never know.

I expect great things from American Vanadium. I suspect that this company will blaze a trail in the vanadium battery sector -- and there's nobody else out there that's doing what American Vanadium is about to accomplish.

That's all for now. Have a good weekend. And remember, Feb. 14 is Valentine's Day. If you forget that, all the gold at Red Lake might not matter.

Best wishes...

Byron W. King

Special Offer: Get More Energy & Scarcity Investor for $500 less

Subscriber Information: