



Juniors, Metals, and Projects: The Good, The Bad, and The Butt-Ugly A Primer for the Lay Investor

A Monday Morning Musing from Mickey the Mercenary Geologist

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I get all kinds of requests generated by my website, mostly via email, some in person, some via phone. Most are from people I don't know and they usually solicit information. Most of those inquiries I welcome and am glad to offer opinions freely, such as espousing my views on investment philosophy, libertarianism, macroeconomics, commodity markets, or business ideology. As you know, the many topics which I write about are posted for *free* on my website and picked up by many other sites on the internet.

Other types of information require compensation. You pay for it one way (in fiat currency) or the other (quid pro quo). Examples include my views on a specific stock, a geological analysis of data, a financial evaluation, or a business consultation.

An opinion on a specific stock is not free; you will have to pay me to write an evaluation, unless it comes thru an off-the-cuff conversation such as: "What do you like? What do I like?"; you know, tit-for-tat sort of stuff. These types of conversations are generally with people in the business that I have known for years and whose opinions I value and trust.

My formal evaluations for individual investors are done at a *deeply* discounted rate. But my opinions are still not cheap. You are paying for my 7 years of geological education and 30 years of on-the-job experience evaluating projects and companies. I have a dedicated cadre of subscribers who use this service on a regular basis and several have become my friends. Even though I don't make a lot of money, I welcome evaluations on behalf of my subscribers and hope that my opinions prove useful.

However, there is one thing I don't do, will not do, and cannot legally do: Tell you to buy or sell a stock. If you ask, all I can say is no since I am not qualified to recommend stocks or give investment advice. DYODD, Dude says [Otto](#). I could not agree more. Read my disclaimer at the end.

Now that I've upchucked that rant which has been stuck in my gullet for awhile, let's go on to a new free topic to make you a more successful investor.

This is the third of my on-going series: “A Primer for the Lay Investor” and addresses the following subjects:

- Which commodities should a junior resource company explore for? *The Good*.
- Which commodities generally should be avoided by a junior resource company? *The Bad*.
- Which commodities should a junior resource company avoid at all cost? *The Butt-Ugly*.

Since the majority of junior resource companies explore for and/or mine metals, I will restrict today’s discussion to the metallic elements of the periodic chart. This is not to denigrate energy fluids or solids (except to say that no Venture Exchange junior should explore for geothermal energy), industrial minerals, or agricultural minerals. Those commodities are another musing for another time.

And I truly wish it were that simple: *The Good, The Bad, and The Butt-Ugly*. But it’s not.

I’m just your basic dumb field geologist, a prospector-mapper in camo gear, a fairly simple soul with simple needs and a simple lifestyle, and so I prefer to take the simple approach. Simple is good; complicated is...well... friggging complicated. When working as a geologist making a map, I avoid a complex solution unless field data forces me to make the story more complicated. Here’s a simple way to say it: I am a lumper, not a splitter.

But I must add a complication to the simplistic three tier treatment of metal commodities for investment: The geological environment and setting. As investors, we need to know the type of deposit to look for and its geological, geographical, physical, and chemical characteristics: The lithology (rock types), the structure, the alteration, the mineralization, and the metallurgy (recovery process) set in four dimensional space and time ([The Fourth Dimension, May 5, 2008](#)).

For example: An open-pit heap leach gold deposit in Mexico’s Sonoran desert is an attractive target for a junior; a deep underground gold deposit in the Witwatersrand of South Africa is not. The reasons some deposit types are good prospective targets for juniors and others are not will become apparent below.

Now that the groundwork is laid, I will offer opinions on commodities and deposit types that junior resource explorers or miners should (*The Good*), should very seldom (*The Bad*), and absolutely should not (*The Butt-Ugly*) select for flagship projects.

I need to ask your indulgence, too. Be aware that these are simply **Mickey the Mercenary Geologist’s Rules of Thumb** and there are exceptions to every rule of the opposing digit variety. I can give you at least one company that contradicts my “Rule of Thumb” for all of the *Bad* and even a couple of the *Butt-Ugly* examples listed below.

The Good:

Gold ± silver deposits that are configured for open pit mining, heap leach extraction, carbon-in-pulp recovery, and direct shipping of dore bars to a precious metals refinery: These deposits can be developed in temperate climates in many places in the world, do not require significant stand-alone infrastructure, and have low operating costs and capital expenditures. There are many successful junior companies that have, are, or will successfully sell out to a larger mining company or generate cash flow, payback capital, and reward shareholders handsomely as small to mid-tier gold producers.

Copper oxide deposits that allow open pit mining, heap leach extraction, solvent extraction and electrowining (SX/EW), and direct shipping of copper cathode plates to a rod or wire plant: These

deposits are analogous to the gold deposits described above in mining, processing, and economic valuation. Copper oxide mines require relatively low capital expenditures, are environmentally benign, can be quickly permitted, and are easily reclaimed. Since sulfuric acid comprises the highest percentage of cash costs, a secure source of it is crucial. Therefore, geographical preference is within a region close to an existing copper smelter, sulfur mine, or sour gas field. Although many copper oxide miners are not profitable at \$1.50/lb copper, they are robustly economic at \$2.50 or \$3.00/lb. Copper demand and price is currently depressed, but juniors developing projects for copper cathode production in two-four years are well-positioned to succeed and reward shareholders.

Uranium deposits that are amenable to open pit mining and heap leach extraction or in-situ leach mining (ISL), ion exchange recovery, and precipitation into yellowcake: Deposits located in current or past-producing districts with infrastructure and permitting processes in place allow successful development within a reasonable mid-term period. Conventional open pit and ISL projects in the western United States have low cash operating costs and capital requirements within the financing ability of many well-run junior companies. In the coming years there will be a consolidation of juniors, majors, sovereign companies, and sovereign wealth funds into consortiums to develop major uranium projects. Domestic USA uranium production currently supplies less than 10% of yearly consumption and that shortfall will be exacerbated by cessation of Russian imports in 2013. Worldwide projections show a supply deficit of U3O8 for the next 10 years.

The Bad:

Polymetallic (combined base and precious metals) deposits of any kind: These would include my least favorite, the volcanogenic or sedimentary-exhalative massive sulfide deposits, and also nickel-cobalt-chrome-PGE deposits and lead-zinc-silver veins and replacements: All of these generally require extensive surface drilling followed by underground sampling, drilling, and development, underground mining, expensive infrastructure with grinding mills producing multiple flotation concentrates, and shipment to smelters, often to two or perhaps three plants across the world for pyrometallurgical recovery of the various metals. Mining, milling, and recovery costs are relatively high and profit margins slim. Capital expenditures are beyond the means of junior companies.

Porphyry copper + molybdenum, gold, and/or silver deposits: These projects are very large and require ten or more years to explore, permit, and develop an economic ore body. That is longer than the lifespan of most juniors. In addition, the capital required for development is much beyond the capability of any microcap to small cap junior or mid-tier mining company. Today an economic copper porphyry deposit requires \$2-3 billion or more to develop. The sole business model that can be successful for a junior explorer is sale to one of the few major copper mining conglomerates in the world. Those potential suitors are growing larger and fewer as mergers, acquisitions, and hostile takeovers continue in the global mining industry and their deposit size thresholds continue to grow, too.

Iron oxide deposits of any geological type anywhere on the planet: Because of the bulk material character, immense size of the deposits, and large, centralized processing facilities required to compete economically in the world, they require too much capital expenditure for a junior with limited access to debt and equity financing to succeed. Again the only successful “out” is if a sovereign-backed company or major comes in with a buyout offer. Much like the copper business, there are fewer large iron ore producers in the world today than ten years ago with world production dominated by three multi-national mining conglomerates.

The Butt-Ugly:

Molybdenum porphyries: Molybdenum is the most fickle metal on the face of the Earth. Price is controlled by supply as a by-product from giant porphyry copper mines (60%) and recycled scrap steel (30%) and worldwide demand for alloy steel, resulting in historically volatile price ranges. Ten percent or so is supplied by primary producers; that amount is the “swing” and this production is highly dependent on world economic health and cyclical supply and demand of the steel industry. China is the largest primary producer and the United States is second with four major, high grade western mines. Three months ago it was projected to be five US producers with one of the best orebodies in the world (Climax) re-opening in 2010. But in a three week span, the molybdenum price fell from \$33/lb to \$11/lb and development was suspended indefinitely by Freeport McMoran Inc. This is not a commodity where a junior can successfully develop a competitive deposit or get taken out by a major.

Unconventional deposits: This is a scientific euphemism for “not economic now and will not be economic in the foreseeable future”. “Unconventional” is a term coined by USGS Ph.D. geologists in the 1970’s to describe their pet research projects on metal occurrences in unusual geological environments and deposit types not considered exploitable because of grade or metallurgy. Examples include:

- The gargantuan Duluth Gabbro copper-nickel-PGE deposit of northeast Minnesota which has been known and explored for over 50 years or the similar Marathon deposit of northwest Ontario. Both are low grade, metallurgically complex, and would require billions of dollars in capital expenditures to develop;
- Vanadium-titanium deposits of northern Quebec which cannot compete economically with vanadium produced as a by-product from uranium mines, steel smelter slag, and petroleum residues and titanium which is strip mined in heavy minerals sands near tidewater;
- Rhyolite-hosted uranium deposits which are too small, low grade, and/or spotty to have produced a significant “hard rock uranium” mine anywhere in the world.

Specialty or rare metals: These metals include lithium, beryllium, cobalt, gallium, germanium, niobium, indium, tantalum, tungsten, and rare earth elements, among others. They have limited uses, small, tightly controlled, often monopolistic markets, and sensitive supply and demand curves with the world’s entire yearly consumption often supplied by one exceptional deposit, one company, or one country, or as by-products from other mining operations and processors. Junior explorers generally cannot compete in these extremely competitive markets. Examples include:

- Tungsten which is used mainly in carbide and composite metal alloys. Producing North American mines in California, Nevada, and British Columbia were undercut and closed when flooded by cheap Chinese production imported into North America in the mid to late 1980’s. China currently supplies 85% of yearly mine output;
- Beryllium which is used in metal, oxide, and copper alloy forms in aerospace, defense, and high tech applications. Over 85% of world production comes from unique rhyolite-hosted deposits mined at Spor Mountain, Utah by a single company.
- Niobium is used in nickel, cobalt and steel super alloys and for electrical components in the steel and aerospace industries. Tantalum is used mostly in capacitors for computer and communication devices. These metals always occur together in nature. World production of niobium is dominated by Brazil in carbonatite deposits (95%) and most tantalum (55%) is produced from pegmatites in Australia and the aforementioned deposits in Brazil (22%). The only North American production is from a small pegmatite mine in Manitoba.

When evaluating a junior resource stock for investment, it always comes around to three key criteria: [Share structure, people, and projects.](#)

By applying commodity and deposit type likes and dislikes to vet a company's flagship project, I can quickly eliminate more than half of the junior issuers on the Venture Stock Exchange from further consideration. With 1750 junior companies, that's the idea as an analyst, eliminate the many *No*'s ASAP and focus on the few possible *Yea*'s.

I cannot emphasize enough that these are simply Rules of Thumb or guidelines if you will, the deposit types presented are merely examples, the list is nowhere comprehensive, and there are exceptions for many of the commodities and deposit types listed above.

For instance: I cover a rare earth element company that is one of my favorite juniors because it has a unique, potentially world class deposit that may be able to compete with Chinese producers; I own shares in a bauxite explorer, ground usually tread by major multi-metal mining conglomerates; and I own shares in a company with an advanced copper-gold-silver porphyry project. The latter two were bought during the commodities bull market and I probably would not choose to take down those private placements today even at the lower prices where they currently trade. But they remain good, long-term takeover plays and I have not sold a share of either since they became free-trading.

A critical part of an investor's due diligence in considering a junior for investment should be an assessment its flagship property. It should contain a permissive commodity in a deposit type that is appropriate for the technical and financial capabilities of a junior resource company.

It is my hope that these guidelines presented in the third installment of my series, *A Primer for the Lay Investor*, will help you become a more astute and better investor.

Now let's go make some money.

Ciao for now,

Mickey Fulp
Mercenary Geologist



The [Mercenary Geologist Michael S. "Mickey" Fulp](#) is a Certified Professional Geologist with a B.Sc. Earth Sciences with honor from the University of Tulsa, and M.Sc. Geology from the University of New Mexico. Mickey has 30 years experience as an exploration geologist searching for economic deposits of base and precious metals, industrial minerals, uranium, coal, oil and gas, and water in North and South America, Europe, and Asia.

Mickey has worked for junior explorers, major mining companies, private companies, and investors as a consulting economic geologist for the past 22 years, specializing in geological mapping, property evaluation, and business development. In addition to Mickey's professional credentials and experience,

he is high-altitude proficient, and is bilingual in English and Spanish. From 2003 to 2006, he made four outcrop ore discoveries in Peru, Nevada, Chile, and British Columbia.

Mickey is well-known throughout the mining and exploration community due to his ongoing work as an analyst, newsletter writer, and speaker.

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