

To: Ammonite Client
Las Vegas, NV

From: David Abbott

Re: Initial Review of XYZ Titanium Corporation's Cerro Rojo Project, Chile

I've gone through Thomas Pritchard's 2008 *Preliminary Assessment of the Cerro Rojo Rutile Project*. While this assessment is formatted as a Canadian National Instrument 43-101 report, I don't believe it has ever been formally filed with a Canadian stock exchange for review because the project's latitude and longitude are not on the cover page, which is a requirement of NI 43-101F1, the form for NI 43-101 reports. Pritchard also uses the term "ore deposits" in the report even though now "ore reserves" have been identified. This usage is common among mining geologists who have never had to be careful about their terminology but is unacceptable in NI 43-101 reports lacking estimated ore reserves.

Summary Thoughts

1. Don't invest more than one can afford to lose. There are many unanswered questions for the Cerro Rojo project and more exploration, testing, etc. is required to answer these questions. The ultimate results may well be that the Cerro Rojo project cannot be profitably exploited, at least in the short and medium term.
2. Because this is apparently a unique type of titanium mineralization, some samples for marketing purposes are needed, say a couple of tonnes of processed material. Just because you have the potential to produce TiO_2 doesn't mean that you'll have a market. Different users have differing physical and chemical specifications and trace element content may be an important factor in the ability to market. Running material through test plants to produce product for market testing is advised before major expenditures on building a mine and plant are undertaken. This marketing step should probably be undertaken before a great deal of additional exploration is done. If there is no market, the deposits, not matter how high-grade, cannot be profitably exploited.
3. This will be an expensive operation because:
 - a. Hard rock deposits require drilling and blasting, which are not required by beach placer deposits.
 - b. Hard rock deposits requiring crushing and grinding to liberate the rutile, the most expensive steps in processing. Beach placers do not require these steps and expenses.
 - c. The need to desalinate seawater and pump it through a pipeline to the project for processing and other production uses. Seawater is corrosive and pipeline construction and pumping adds significantly to the capital and operating costs.

Because of the expense, the Cerro Rojo may be a relatively high cost producer and therefore most likely to be adversely affected by periods of lower pricing and reduced demands.

4. The Aba deposit, and others, should be drilled and potential pits outlined prior to siting the processing plant.
5. Pritchard's report is entitled "Preliminary Assessment" for a reason. A great deal is unknown, this is particularly true of the capital and operating cost estimates. Preliminary spreadsheets should err towards over estimating costs and underestimating revenues. Until the market and project economics are worked out, it is not known whether the Cerro Rojo deposit would be economic to develop.

Recommended Next Step: Ammonite cannot comment on the geology of the Cerro Rojo project, as no geological maps or cross sections are contained in the NI 43-101 report. It is recommended that the maps and drill and assay data be examined at the offices of Cerro Rojo or at Pritchard's office. This would entail a 2 or 3 day visit with Pritchard plus analysis and travel (to Spokane?) time.

Client's Specific Questions

The client asked a number of specific questions about this report. Those questions and my responses follow.

What are the professional qualifications and reputation of the report author Tom Pritchard, PhD? Can you track him down?

According to the Wyoming Board of Professional Geologists' web site roster, Thomas Alva Pritchard, WY PG-2054, operates under the name "GeoQuest Limitada" at E 4812 22th Ave, Spokane, WA 99223, tel. 504-565-2240, Pritchard@comcast.net. This information conforms with Pritchard's "Certificate of Author" in the Preliminary Assessment report.

I've looked up Pritchard in the membership directories of the Society for Mining, Exploration and Metallurgy (SME), and the Northwest Mining Association (NWMA), professional organizations to which Pritchard, as a mining geologist, might reasonably be expected to belong. He does not. Pritchard did join the Society of Economic Geologists in 2009, which is a very recent date considering that Pritchard received his first geology degree in 1969. These facts suggest that Pritchard is not a joiner and, therefore would not have as wide a circle of professional friends as someone who is joiner.

Had a chat with one of my industrial minerals buddies. He knew of Pritchard when both were working for US Borax but doesn't really have any firm opinions about him.

Why was the deposit not developed by Phelps Dodge?

I don't know and can only speculate. The project may have been too small, the market for TiO₂, particularly from a hard rock rutile mine may have been poor, etc. Many properties that are eventually successfully mined have a history of being looked at and dropped by major mining firms.

How do the TiO₂ assays for this deposit compare with other commercial bedrock titanium mines globally?

I don't know. This is not the sort of data that's readily available. The more important question is how the cost of product compares with the product's sale price.

What are the economics of a bedrock vs placer deposit for ilmenite/rutile?

Hard rock deposits require blasting to break up the deposit for loading into trucks for transport to the processing plant. Beach placers do not require blasting and thus avoid the costs for blasthole drills, drill bits, drill steel, drill crews, and explosives.

Hard rock deposits require crushing and grinding to liberate the ilmenite or rutile (as at Cerro Rojo) for separation from the surrounding mineral matrix. A lot of energy is required for crushing and grinding (collectively comminution) and energy is a significant operating cost, as are the crushing and grinding media (balls, rods, etc.). There are also associated capital costs for the equipment. Beach placers require no comminution because the ilmenite and/or rutile has already been separated from the enclosing minerals.

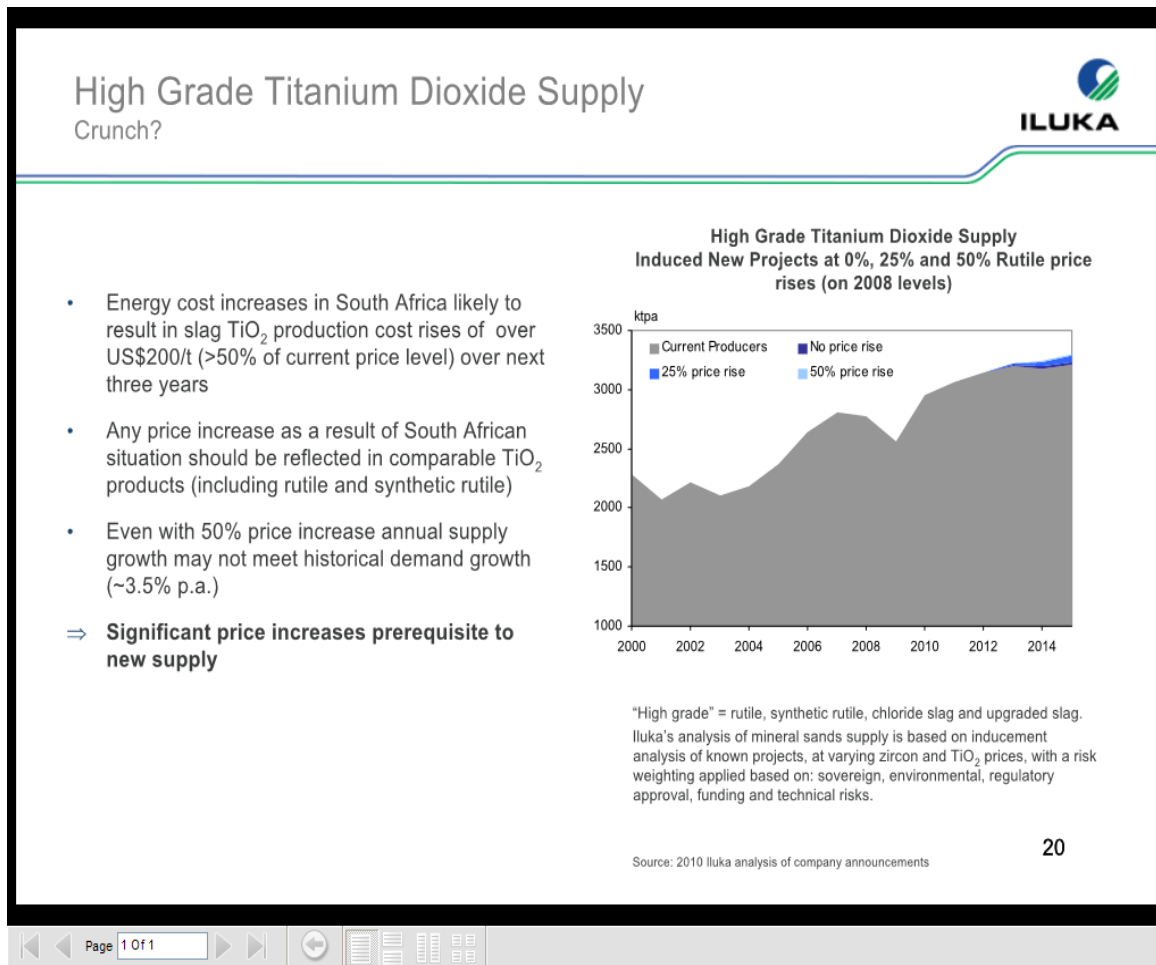
As noted in the preliminary assessment, different processes are required for processing ilmenite and rutile. Rutile requires chloride processing.

Only one of four prospects actually drilled. How good are the other three prospects?

The four prospects, from NE to SW are: La Cantera, Las Carolinas, Chascones, and Eli. The La Cantera and Carolinas deposits were the first to be identified and drilled. The inference from the fact that the focus of exploration has been on the Carolinas deposit is that it has the highest grades and that early results from the Cantera deposit didn't warrant similar exploration efforts. The Eli deposit was the most recently identified of the four deposits and has the most extensive outcrop area. The outcrop areas of the Cantera and Chascones deposits are smaller than the area of the Carolinas deposit. The size of the Eli deposit and the other initial results have prompted the recommendation that it be drilled in the near future to determine whether it will indeed be as an attractive deposit as the Carolinas deposit.

How have TiO₂ commodity prices varied 2004-2010?

The following graph is from the Rochester_Market for TiO₂ Ores Q4 2010_10 20 10.doc by David Rochester, a titanium marketing consultant for XYZ.



You'll notice that the titanium summary from the June 2010 *Mining Engineering* didn't give any specific prices. This is because no one wants to disclose the specific prices for particular products. The industrial minerals business is extremely tight lipped about such information, even within differing groups within the same larger company because different company units produce competing products. The prices also vary depending on the use for and the specifications required of a particular TiO₂ source. As noted in the *Mining Engineering* article, sales/purchase contracts tend to be medium term. The existence of such contracts has two effects. First, reported spot prices do not reflect the bulk of the market, and second, actual prices do not have the variations of the spot market. But clearly, the paint and plastics businesses are critical factors that are dependent on the housing market in particular.

Where is a geological map? Cross sections? Not included in report. Where are the mining claims in relation to the mapped prospects? Not included in report.

Geologic maps and cross sections are not in the report and generally would be included, at least to some degree. It depends on the nature of the property being reported on. But for a property undergoing exploration like the Cerro Rojo project, an outline map of the exploration and exploitation licenses, the general geology, and some cross sections would be expected.

Are there other titanium mines active in Chile? Nearby? Same type deposit?

Don't know.

Where are the drill core assay reports? Not included in report.

Whether the drill logs and assays are attached as appendices to an NI 43-101 report depends in part on how much drilling has been done. Cross sections can summarize a lot of data. One would expect correlation charts that demonstrate the reliability of the duplicate assays, or at least reports of the R^2 correlation coefficient.

The report (numbered page 17, pdf page 21) states that two distinct populations of TiO_2 are present. I would expect presentation of a histogram of assays showing this distribution.

Location is in the Atacama Desert. Water to be piped 30 km from a desalinization plant on the coast. How does this impact production costs?

The requirement to desalinate and pipe in water adds a significant capital and operating cost to the project. Pritchard estimates desalination costs at US\$2.4 million per year (pdf page 127). While unclear, this may be only an operating cost and does not include that capital expense of constructing the desalination plant and the pumping and pipeline required to move the desalinated water from the coast to the plant site. Desalination and pumping through the pipeline add a significant capital and operating costs to the projects, costs not required by most mines.

Environmental issues?

Pritchard reports that initial environmental and social impact studies have been completed and that no major impediments to Ti exploitation have been identified.

Will topography be an issue for mine development? It looks to be fairly hilly.

Depending on the specific location of a deposit relative to topography and the required pit outline, topography can be a significant plus or a significant minus on a project's economics.