Metal mining innovator pioneers development of multibillion dollar supermine

May 31, 2010: By Judy Monchuk, Senior Editor, Troy Media

CALGARY, AB, May. 31, 2010/ Troy Media/ — A sleeping giant of metals could be the foundation for a new mega industry in northern Alberta, a supermine with potential to generate billions of dollars in wealth for generations to come.

Toronto-based DNI Metals (TSX-V:DNI), a junior mining exploration and development company, believes massive black shale formations brimming with a cocktail of base and precious metals hold promise to produce the mine of the future. Unlike deposits locked far beneath the ground, these rock formations are spread over huge tracts of land. DNI's geologists believe the Birch Mountains, near Fort McMurray, AB, might contain as much as 20 billion to 24 billion tonnes of mineralized shale.

"This stuff is sitting on the surface, like a huge blanket spread over 2,500 km," said Denis Clement, chairman of the DNI board.

Geologists have known about the polymetallic black shales for years, but the metal concentrations were considered too low to make recovery profitable. Locked within the shale are nickel, cobalt, copper, zinc, uranium, gold and silver. Also fused in the rock are molybdenum, lithium and vanadium, used in metal plating and building rechargeable batteries for the auto industry.

Sustainable mining technology changes economic formula

DNI believes that new sustainable mining technology has changed that economic formula, making it possible to seriously consider the metals bearing black shales as prospective mineral opportunities with potential to generate billions of dollars in revenue over the next few decades.

The novel process of biological heapleaching, a kind of mineral compost that leaches out minerals and metals, was developed as a sustainable way to exploit Europe's metal assets. By 2008, Talvivaara Mining Co . put "bio-heapleaching" into full production in Finland as a low-cost producer to extract nickel, cobalt, copper, manganese and zinc out of low-grade ore deposits that competitors view as uneconomic.

"We're proposing to transplant that mindset and apply it in Alberta," said geologist Shahe Sabag, DNI's president and CEO, who has been captivated by the black shale formations for two decades. The land held by DNI has six parcels, each of which could host a deposit with the potential to be mined for 50 to 100 years. "You are looking at a material future, long-term source to metals that needs to be tested and developed," he says.

Key to economic success

Having a wide swath of minerals and metals to mine can make the operation much more resilient to price swings in the marketplace. "The fact that you're dealing with six different metals can hedge against (boom and bust) cycles," says Sabag. "It's not oil."

It's the potential of wringing multiple deposits from the black shale that DNI believes is the key to economic success. Talvivaara recently announced it was adding uranium to the list of extractable metals from its Finnish mine, saying it has the resource to meet almost all the needs of Finland's nuclear power industry. Any success Talvivaara achieves by expanding its booty of metals and minerals boosts DNI's contention that mining black shale using biological heaps can be an economic gold mine.

"Who knows how many of these things are extractable?" said Clement. "As they keep adding elements, the economics keep getting better and better."

Other companies are examining the low-cost process, including Australian nickel producer Western Area (TSX:WSA), which is about to try bio-heapleaching in its mine east of Perth, Continental Precious Minerals (TSX: CZQ) in the Swedish alum shale, and Canadian mining giant Teck Resources Limited (TSX:TCK.A and TSX:TCK.B and NYSE:TCK) at its Quebrada Blanca copper mine in Chile.

David Cotterell, an analyst with BMO Capital Markets in London, keeps a close eye on Talvivaara's fortunes. Cotterell said the Talvivaara mine has suffered "teething issues" as its operations ramp up toward full production.

"It's been a bumpy ride, but we expect to see more at the end of 2010," said Cotterell. Still, "if this thing works, Talvivaara will be one of the lower-cost nickel producers in the world."

And that means major profit potential.

Largest reservoir of heavy crude oil

DNI's black shale formations are located in the Birch Mountains, adjacent to the Athabasca oilsands that hold the world's largest reservoir of heavy crude oil. Development of that resource has created infrastructure that could be easily used by a mine and leaching operation.

It's an area accustomed to economic booms. Tens of billions of dollars have been spent on massive developments to access crude oil and the tar-like oil sands bitumen. Billions more have been spent on pipelines to ship the resource. These megaprojects have made Alberta the economic engine of Canada in recent years. Energy royalties have made the province rich, accounting for one-third of government revenues.

It's too early to say how many jobs a mine and biological heapleaching operation could produce. But the local economy could benefit from a sustainable industry that makes the regional and provincial economies less vulnerable to the wild expansion and contraction swings that come with volatile oil prices.

"An idea like this, tapping into natural resources and harnessing technology in a way that could be economically viable, sounds very promising," said Todd Hirsch, senior economist at ATB Financial, a Crown corporation and Alberta's largest financial institution. Hirsch has long called for economic diversification in the province, but says the Fort McMurray region is particularly at risk if anything happens to the energy industry.

"What's the region going to do when hydrocarbons and the oilsands aren't the lifeblood?" he said. "What's going to power the economy?"

Mineral royalties could also make a substantial contribution to the provincial treasury.

The Alberta Chamber of Resources is studying what metal mining could contribute to the overall Alberta economy. That research is part of the chamber's larger task force on resource development set for release in July 2010.

Clement, who has spent almost two decades in resource exploration, describes the potential of the black shale as massive. Having the resource located in Alberta, a politically stable jurisdiction with a business-friendly government, bodes well for black shale mining.

"As we apply current technology, you could develop something that could supply metals for a long, long time," says Clement. "Someone looking out 20 or 30 years for a supply of materials would have to take this seriously."

DNI Metals Chairman Denis Clement

DNI's Sabag says black shale mining today is at the same stage of development as oilsands were 40 years ago. But captains of industry and politics of the day saw the economic potential that has turned the oilsands into the engine that drives much of the economy in Canada and North America.

The ecological advantage of bio-heapleaching

Using bio-heapleaching processes provides the ecological advantage that builds on the economic potential to make metal mining a long-term option in northern Alberta. Even government stands to benefit significantly from perpetual mineral royalties generated during the life of a multi-billion dollar mining operation.

Nations such as China are scouring the globe seeking major resource stores to supply their economic advances. Yet Clement says it's hard to get major industrial developers to sit up and take notice of a junior mining company valued at under $10 million.

"People are having a hard time getting their heads around a project with this much potential from a junior miner," said Clement. "The magnitude and scale of this project could be huge. And we want to present the potential of this unique opportunity to the world."

DNI recently released studies that show significant metals recovery from black shale samples using laboratory leaching. Other sustainability and economic studies are underway, with results expected this year and next.

"We have to apply this technology to prove there are high enough quantities of recoverable metals and prove the economics," adds Clement. "We are not going to recreate the wheel. Our goal is to apply proven technology in Alberta. It's also a project that could have many green returns."

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