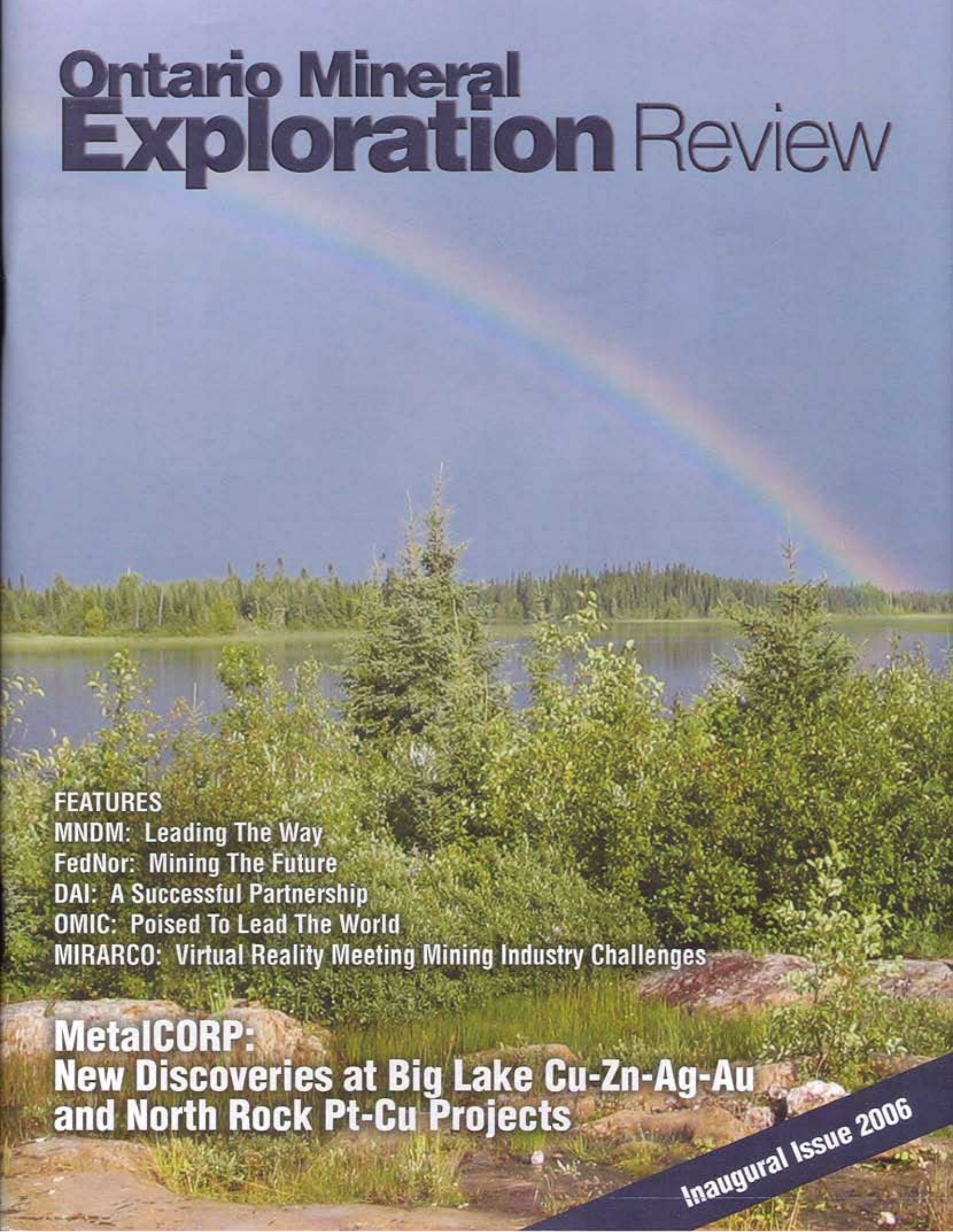
Ontario Mineral Exploration Review



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MIRARCO – **Virtual Reality** *helping to meet mining industry challenges*

By Dawn M. Barker

Use the term "virtual reality" and you'll conjure up visions of teenage gamers playing an action video game, or an enthralled audience in 3-D glasses watching "Jurassic Park." However, MIRARCO, Laurentian University's Mining Innovation, Rehabilitation and Applied Research Corporation is using advances in entertainment and projection technology to provide a safer, more profitable and more understandable picture of the mining industry.

Computer aided drafting (CAD) programs have been employed in the mineral industry for years to increase effectiveness of data integration. MIRARCO's Start-Up Director Andrew Dasys said his company has taken the technology one step further, by coupling 3D modeling with the type of advanced scientific visualization that is being used in a number of other engineering and scientific disciplines. These techniques use the latest in three dimensional modeling and large scale visualization to help assess, illustrate and delineate ore deposits in a manner that can be understood by skilled domain experts while providing a higher level of understanding to potential investors.

"Using 3D models is quite common in the industry; however, mining is not a 3D problem. Fluctuating commodity prices that change the geometry of the ore body, changing the extraction order, uncertainty related to drill hole location and selected mining methods all affect the life and profitability of the mine," stated Dasys.

"This level of complexity cannot be easily modeled and understood using only three dimensions of height, width and depth. Virtual reality (VR) stereoscopic projection is increasing the number of dimensions viewed, and thus the complexity of the information being analyzed."

MIRARCO, using an external reviewer, has assembled a number of case studies from the technology's early adapters. The size of the image, the stereoscopic projection, and the evaluation process create a level of focus within a group of experts that highlights inaccuracies in the data set, and often leads to new interpretations that increase the value of properties.

Having the ability to communicate information to a diverse group of people allows for discussion, teamwork and consensus, thereby improving the accuracy and success of exploration and production.

The international mining industry is facing a number of challenges. Despite the use of new exploration technologies, the per-ton cost of ore discovery is increasing, due to several factors. The Canadian Mining industry is predicting a major lack of human resources in the next decade. Metal demand is at an all time high, being driven by emerging market demands. Last but not least, it is becoming more challenging to exploit existing ore bodies.

To meet these challenges, increasing the effectiveness of data integration and interpretation is becoming even more critical.

Another essential component is improving the engineering process used in the design of an underground mine. A number of international software companies are attempting to deal with some of these issues by increasing the capabilities of their software. The industry has also started developing standards to help transfer data between applications.

"The general population perceives mining exploration as a guy with a mule heading off into the mountains, and of mining as a pick and shovel industry. The reality is that mining is a very high-tech industry, with a high level of challenges still to be faced."

Image of the resource model showing potential pit shell of the Nuinsco Resources Limited, Minago Nickel Deposit, Thompson Nickel Belt, Manitoba (www.nuinsco.com).

Immersive visualization allows engineering, geological and investment relations staff to communicate and make decisions more effectively using an integrated graphical interface, providing a "common language" and very quick knowledge transfer.

While industry is confronting these challenges, Dasys said that the mining industry has to be ready to tackle the dramatic increase in world demand for metal and mineral resources. This demand is being driven by emerging nations – Brazil, Russia, India and China – with a real thirst for metals. As China's economy moves to encompass a new middle class (there are expected to be 300 million new middle-class persons within a decade), demand for automobiles will correspondingly increase. China is currently the third most active new car market in the world, with sales of five million new cars per year. The population of these countries, which represents a third of the entire global population, is striving to meet the same standard of living as the rest of the industrialized world – and yet, one has to wonder if the earth can sustain this level of development.

Mining companies around the globe are working to meet world demand, and to refine techniques to find and exploit metals in the ground.

The use of Virtual Reality technology is one means of getting more value from a data set, but that is only the start.

The Internet has redefined how people communicate and network. Piggybacking on this communication infrastructure, the NAVNet project in northern Ontario, a research and development project supported by the Northern Ontario Heritage Fund Corporation, is linking VR facilities to create a means for geographically-dispersed teams to work together. NAVNet is also helping Ontario-based junior exploration and mining companies differentiate themselves internationally, by providing investor relations sessions using VR. The goal of these sessions is to help investors gain a better understanding of the potential that still remains in Ontario's mining camps.

Dasys and his clients are convinced that modeling and VR are only the first steps in tackling the uncertainties related to mining.

"Mining has to begin to shift its focus when looking at complex data. Much like biotech and human genome projects, the amount of data that exists in mining cannot be reviewed if we continue to focus on 3D as being height, width and depth. A new means of expressing the complex dynamics of ore genesis and ore extraction processes must be developed – and we are seeing how technology, combined with know-how, can truly make a difference, impacting the business of mining and mineral exploration," he said.

"The NAVNet project, with facilities throughout northern Ontario, will help Ontario mining companies and juniors (small and medium enterprises) to differentiate themselves in the international market."

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