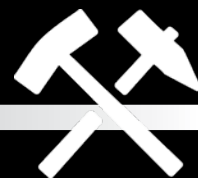


ONTARIO

MINING Review



e-newsletter

ISSUE 1 • 2023



Annual Mining Health and Safety Conference, hosted by Workplace Safety North, returns for 25th year

Superior Exploration innovates ground VLF surveying using Geonics VLF EM-16 instrument and GEM Systems VLF Magnetometer

Women in Mining Canada announce winners of the 2023 Trailblazers Awards Series

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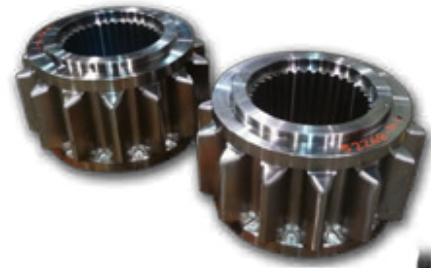
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Message from the editor

**KELSEY
JAMES**

Welcome to Issue 1, 2023 of the *Ontario Mining Review* e-newsletter

We are pleased to present to you this edition, as we have lots of exciting mining content to share.

On page six, Minister of Mines George Pirie shares an update on Ontario's mining industry and how COVID-19 and the war in Ukraine have revealed weaknesses in the global supply chains for natural resources, including critical minerals. Regardless of these setbacks, Minister Pirie is hopeful the competitive business climate will encourage early exploration, mineral development and mine construction.

On page 22, you will learn about Superior Exploration's 20-year work on carrying out ground VLF surveying for mining companies in North America, Chile, Peru, Mexico, Ireland and Portugal. The advantages of this technique are many and include producing raw data profiles with magnetic profiles, elevation and apparent resistivity. VLF surveying is processed using software developed by Superior Exploration and EmTomo of Portugal. It has been successful in discovering several new gold and massive sulphide zones, including the Sandra Breccia in Batchawana.

In 2022, Generation Mining advanced work on the Marathon-Palladium-Copper project, which is located along the Trans-Canada Highway on the northeast shore of Lake Superior. In the 42 months since Generation Mining first acquired interest in the Marathon Project, the company has advanced it towards becoming the next greenfield critical minerals mine in Canada by preparing a feasibility study and 43-101 technical report. The Marathon Project will involve the construction, operation, decommissioning and remediation of three open pits to produce copper concentrate consisting primarily of copper, palladium

and platinum. You can read more about this exciting project on page 16.

These stories are just a small preview of what we have in store for you in Issue 1, 2023 of the *Ontario Mining Review*. We hope you enjoy this issue and help spread the message about our publication. If you haven't done so already, we invite you to share this with your colleagues and friends and sign up at www.ontariominingnews.ca/enewsletter/.

Finally, we wish to thank all the companies who have contributed a story for this issue of the *Ontario Mining Review*. Special thanks go out to the following contributors, including:

- Workplace Safety North;
- Prospector's & Developers Association of Canada;
- Valard Construction;
- Women in Mining Canada;
- Ontario Economic Development;
- Generation Mining Ltd.;
- Tartisan Nickel Corp.;
- Superior Exploration Adventure and Climbing Company Ltd.;
- Standard Machine;
- SPC Nickel Corp.;
- Becker Varis.

We invite all interested companies to share their news and editorial ideas with us. If you would like to contribute a story for future issues of the *Ontario Mining Review*, please contact myself at kelsey@delcommunications.com.

I hope you enjoy this issue!

Kelsey James

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Message from the Ontario Minister of Mines

GEORGE PIRIE

There has never been a more important time for the mining industry in our province.

COVID-19 and the war in Ukraine have exposed weaknesses in the global supply chains for natural resources such as critical minerals. We also have countries that do not share our world class labour, human rights and environmental and health and safety standards, gain a stronghold on the markets for many critical minerals. We must act now because the demand for critical minerals needed in strategic sectors such as electric vehicles, telecommunications, national defence and battery storage is growing exponentially.

This includes realizing the potential of one of the most promising critical minerals deposits in Canada: the Ring of Fire. By working in close partnership with Webequie First Nation and Marten Falls First Nation, environmental assessments are now underway for the two community road projects and the Terms of Reference has been submitted for the Northern Road Link. The Northern Road Link would connect the two community road projects to the Ontario highway network and the mineral deposits in the Ring of Fire in northern Ontario.

Our government is also promoting a competitive business climate that will encourage early exploration, mineral development and mine construction through programs such as the Ontario Junior Exploration Program (OJEP), which helps exploration companies fund early-stage projects and supports grassroots mineral exploration in Ontario.

In November, I was proud to announce the launch of the \$5 million Critical Minerals Innovation Fund (CMIF) to enhance research and development of new technologies. The fund will support Ontario-based innovation that will help build the supply chain for electric vehicles and other technologies by connecting mineral resources in the north with the manufacturing might of the south.

I also recently created the minister's Mining Industry Council. This diverse group of industry representatives, Indigenous partners and senior officials from my ministry will gather regularly to identify opportunities and address challenges in the mining industry.

We are focused on building an integrated supply chain in Ontario from mining through to the manufacturing of electric vehicles. We cannot accomplish this goal without a thriving mining sector, and that is exactly what I will achieve for this government. I've seen firsthand how mining can transform our communities for the better, unlocking good jobs in our rural and remote regions, including in my riding of Timmins, Ont.

We've made great progress, but there is still so much more to do. I can't wait to see what we will accomplish in the months and years ahead.

A handwritten signature in black ink, appearing to read 'G. Pirie'.

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Mining in northern Ontario with two of Canada's largest mining shows

Two large events are planned for 2023 in Ontario's mining sector.

The Canadian Mining Expo (CME), known as the "Big Event," has been held in Timmins, Ont. since 1993 and is hosted by Canadian Trade-Ex, a marketing firm based out of Timmins. This year marks the 30th anniversary for the firm. The CME has been held annually for the past 15 years and, prior to that, was held every second year. It is known as one of North America's only mining expos held in a mining community.

The CME is the first of the two events for 2023. This event will be held at the McIntyre Community Centre from June 6th to 8th. The trade show site is located at the feet of the iconic McIntyre Mine headframe. When one speaks of the Canadian Mining Expo, it is normally in a conversation where other events are also discussed, such as PDAC held annually in Toronto, Mine Expo held in Las Vegas every four years, the CIM annual mining expo and convention held this year in Montreal, or others in Dubai, Africa and Australia.

The CME Big Event provides a unique

hands-on opportunity like no other mining show in Canada because it is held in the heart of northern Ontario and Quebec's mining industry, which is known today as a global mining hotspot.

WHERE THE WORLD COMES TO EXPLORE

The Canadian Mining Expo will have over 400 indoor and outdoor exhibit spaces. One can expect to see the latest innovations in mining and exploration. Delegates from all over the world make this event their number one destination every June. It was for this reason the CME adopted the slogan "Where the World Comes to Explore."

There are many activities to curve one's appetite while attending the event. One of the trade show highlights is the onsite demos where you can see it, touch it and talk to the manufacturing reps on site that build it. New this year will be the Indigenous Partnerships & Critical Minerals Forum. Come meet with and hear the state of mining address by Ontario Minister of Mines, George Pirie. The projects in the pipeline conference is always a well-attended and sold-out conference, as suppliers and service groups

can hear from top chief executive officer and management level representatives talk about some of the world's largest mining projects in the pipeline and how they can play a role in its success.

There are tours and networking events scheduled during the event. The VIP mining social and the gala dinner and awards night are networking events you won't want to miss. There is one thing for sure: Timmins is one of the best when it comes to hosting its guests. The VIP mining social is the largest mining networking event in northern Ontario. VIP guests (600) are invited to enjoy an evening of fun, great food, live entertainment and local beverages. The event is sponsored by industry and is free to the invited guests.

The gala dinner and mining awards night is held as the big kick-off event to the mining expo and, since its inception, has raised over \$160,000 for local non-profit mining organizations. The northern mining awards night, as part of the gala dinner, recognizes individuals and companies for their contributions to the mining industry in northern Ontario. The gala dinner is a great way to network with industry leaders

and dignitaries while at the same time supporting our future mining industry with student bursaries for 2023-24.

The trade show hours are Wednesday, June 7th, 10 a.m. to 5 p.m., and Thursday June 8th, 9 a.m. to 3 p.m.

The grand opening ceremonies are held at 11 a.m. on the grounds north of the McIntyre Arena at the Jackleg Drilling Rocks. Join us as we celebrate Mining Week in Timmins and the opening of Ontario's largest mining show with a lineup of speakers representing the mining industry and our community leaders.

The second event is the Central Canada Resource Expo (CEN CAN Expo) which is held in Thunder Bay, Ont. This is the second annual expo hosted in the city. The inaugural event held in 2022 attracted over 4,000 delegates, 250 displays and indoor and outdoor activities. Thunder Bay is experiencing a boom they have never experienced before in the mining industry. The Ring of Fire and Projects in the Pipeline conferences were held at the Silver City Theatre and attended by sold out crowds. The trade show will feature over 300 exhibits on September 13 and 14 at the Fort William Gardens.


The uniqueness of these trade shows is attributed to the event's activities, which include the involvement of the entire mining community. From miners to key staff members of the mines and from juniors to the explorers of minerals, the events cater to everyone.

Canadian Trade-Ex president Glenn

Dredhart gives credit for success of both events to the communities of Timmins and Thunder Bay, the sponsors, local and regional mines, junior mines, suppliers, service groups and other northern communities, both Indigenous and non-Indigenous.

If you are intending to visit the greatest mining shows in mining territory, please register online

for the Timmins event at www.canadianminingexpo.com or Thunder Bay event at www.cencanexpo.ca

Once registered, your name will be entered into a free draw for one troy ounce of gold (you must be in attendance to win). For more information, call 705-264-2251 or email info@canadiantradex.com. 



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Speakers announced for Mining Health and Safety Conference

Plus, technical sessions and trade show
April 18 to 20 in Sudbury, Ontario

The 25th annual Mining Health and Safety Conference, hosted by Workplace Safety North, will be held from April 18 to 20 in Sudbury, Ont. Themed the 'Evolution of mining safety: Past reflections and future innovations,' this year's conference celebrates over two decades of helping make Ontario mining operations safer.

Each year, about 300 attendees gather to learn and share their knowledge about mining health and safety, as well as network with industry professionals.

"We're so excited to be back in person this year," said Workplace Safety North president and chief executive officer Paul Andre. "The conference typically sells out each year, so once again we'll also livestream the keynote speakers for those who are not able to attend in person.

"This year, the conference features a variety of health and safety keynote speakers, and I'd like to thank our keynote sponsor Redpath Mining. There will also be an industry panel discussing the latest in mine safety and innovations," Andre added.

On Wednesday, April 19, the conference opens with keynote

speakers followed by an industry panel discussing the latest in mine safety and innovations. Attendees will also be able to visit more than 30 vendors at the Information Exchange Trade Show.

On Thursday, April 20, technical sessions are held in the morning and will be followed by an awards luncheon to recognize achievements in mining health and safety. Keynote speaker Michelle Cederberg will wrap up the conference.

For the fifth year running, Workplace Safety North will offer free video livestream of keynote speakers from 8:30 a.m. to 2:30 p.m. on Wednesday, April 19, and from 12:45 to 2:30 p.m. on Thursday, April 20.

FEATURED SPEAKERS

DR. RUMEET BILLAN

Leadership, emotional resilience and mental health expert

Dr. Rumeet Billan helps people to optimize their potential by building resilience and emotional intelligence. She provides strategies on how to manage mental health challenges in the workplace and at home. She's led three major studies on the workplace including the 2022 Workplace Belonging Study, The

Tallest Poppy study on women in the workplace, and the Happiness at Work study in partnership with the Canadian Mental Health Association. Dr. Billan is the chief executive officer of Women of Influence, one of North America's leading organizations offering solutions for workplace gender equality and women's advancement. In this session, Dr. Billan will discuss the science of trust and its importance in solving problems of risk while fostering collaboration and innovation in the workplace.

ROY SLACK

Director of Torex Gold Resources and Cementation Americas

With over 40 years of mine contracting, consulting and business management experience, Roy Slack is an independent board member of Torex Gold Resources and Cementation Americas. He is the founder of Cementation Americas and was president from its inception in 1998 until 2018. From 2019 to 2020, Slack served as president of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM). He has also been active in numerous safety initiatives over the years as a past board member of the Ontario Mine Contractors Safety Association, the Mines Accident



Paul Andre, CEO of Workplace Safety North, opens the 2018 Mining Health and Safety Conference in Sudbury, Ont.

Safety and Health Association and the Workplace Safety North Mining Advisory Committee. He was a member of the inaugural prevention council for workplace safety in the province of Ontario and is past chair and currently on the executive of the CIM Health and Safety Society. In this session, Slack will review the Canadian mining industry's safety journey and examine future opportunities to protect our people.

ALLAN KEHLER

Mental health advocate

Allan Kehler is a mental health advocate, international keynote speaker and best-selling author of four books. He has instructed various mental health-related courses at the college level and spent years working as an addictions counselor and clinical case manager. Having persevered through his own mental health issues and addictions, Kehler speaks from a place of


experience. His moving stories tug on heartstrings, inspire a new perspective and allow people to connect with themselves and others at a deeper level. He uses humour and compassion to create a safe space where people feel seen, heard and supported. In this session, Kehler discusses how to identify barriers that prevent someone from seeking help, and how to support someone who appears to be in distress. He also touches on the importance of sharing your story to create an attitude of resilience.

MICHELLE CEDERBERG

Change, health and productivity expert

For over 17 years, Michelle Cederberg has captivated audiences across North America with her empowering and humorous messages about how to set worthwhile goals, get energized for success and live a bigger life. As a best-selling author, coach and

consultant, Cederberg combines mind and body in a practical way to help people gain clarity, build confidence and get the discipline to create the life and career they want. She holds a masters in kinesiology and a bachelor of arts degree in psychology with a specialization in health and exercise psychology. Cederberg is a certified exercise physiologist, a certified professional co-active life coach and an ORSC-trained team coach. In this session, Cederberg will discuss her story of personal loss involving a workplace incident and the resulting shift of her perspective. She helps audiences regain focus to increase safety and productivity while reducing stress.

Registration for the Mining Health and Safety Conference is now open. For more information, visit www.workplacesafetynorth.ca/subsite/mining-health-and-safety-conference. 



Experience pays (I mean it actually pays)

By Keith Sones, executive vice-president,
Strategy & Business Development for Valard Construction

I was in a small meeting room when the epiphany occurred.

Several years ago, the company I worked for secured a contract to construct a transmission powerline to connect a small hydro-generating station to the power grid. The construction manager and I were reviewing the project plans when a scowl spread across his face; his eyes focused intently on the drawings.

"Well, that's no good," he stated matter of factly.

"What do you mean?" I asked.

"What's no good?"

He pointed to two powerline towers

on the paper. "Those," he said, "this won't work."

I looked up at him, confused. "Why?"

He looked back at me, his owl-like stare drilling into me. He was one of those people that had been in the industry forever. His experiences are legendary. He didn't suffer fools easily, but also believed in sharing his wisdom, so he patiently explained his thinking.

"See how these two towers are situated on the top of a hill? The engineer that designed this line probably thought he was saving the project some money by putting them on these rock bluffs and creating longer spans to get across this small

valley. He could have used three instead and put them here, here and here," he said, pointing at three other locations that weren't on the rocky peaks. "But in his mind, two is cheaper than three."

He paused, looking at me.

"So what's the problem?" I replied.

"Sounds like a good idea."

"I've been up there, and this is the problem," he said. "You can't drive to those locations, so the two structures must be installed using a very expensive helicopter. If he had designed three towers instead and put them lower down, we could drive a truck right to the site. Cheaper, faster, safer. Those two towers are

"Because he hasn't ever built anything," he said. "He's only designed things, so he didn't understand the implications of what he thought was a good idea."

"Sounds like he should have asked you before he designed the powerline," I replied.

going to cost a lot more than using three, and a lot harder to maintain in the future as well."

"Ah, got it." And I did. "So why did he do it that way?" I asked.

"Because he hasn't ever built anything," he said. "He's only designed things, so he didn't understand the implications of what he thought was a good idea."

"Sounds like he should have asked you before he designed the powerline," I replied.

In his mind, this definitely fell

into the "stupid questions and comments" category.

"Ya think?" he said, his words dripping with sarcasm.

At that moment, it became abundantly clear to me: why would anyone do it any other way? I suddenly realized the problem might be much larger than I thought. How many other projects are in the same condition? Over the following number of years, I found out; plenty.

Fortunately, the fix is easy. If you want to design a car, ask the drivers,

mechanics and parts manufacturers for their thoughts before you design it. What works? What doesn't? They know. Are you looking to design a bridge? Make sure the construction folks are in the room when you start drawing. You'll save money and get things done faster and with fewer headaches.

Developing infrastructure is complex and requires a lot of experience and expertise to get it right, but it's a whole lot easier when the right people are in the conversation. 🛠️



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2023 Trailblazer Awards Series winners announced

Women in Mining Canada (WIMC) is pleased to announce its 2023 Trailblazer Awards Series winners. The awards were launched in 2012 with the flagship Trailblazer Award, which recognizes women making an impact on the Canadian mining industry and opening doors for those following in their footsteps. The awards have since expanded to include additional categories to recognize the contributions of students, members of the

Indigenous community and mentors who foster, promote and empower women in the Canadian mining industry.

Including this year's winners, WIMC has recognized 37 women and mentors for their contributions to the Canadian mining industry since launching the awards in 2012. This year, we were excited by the quality of the nominations received and are proud to share and celebrate the 2023 Trailblazer Awards Series winners.



TRAILBLAZER AWARD WINNER: CHAFIKA EDDINE

Eddine is an advocate for responsible and sustainable governance, as well as for gender diversity within the mining industry. Throughout her career, she has created several women-focused programs to open pathways for local suppliers empowering female participation. She is currently the chief sustainability officer for Orla Mining, a fellow member of the Chartered Corporate Governance Institute of Canada and a board member of Solis Minerals. She was also previously a sustainability and corporate governance consultant with mandates in both North and South America. As part of her philanthropic involvement, she co-founded the Global Change for Children Foundation, an organization that funds programs in more than a dozen countries. She has a master's degree in community development from the University of Victoria, a law degree from Brazil and is completing her doctoral program at the Royal Roads University. She was nominated by Stellamaris Tile.



INDIGENOUS TRAILBLAZER AWARD WINNER: FREDA CAMPBELL

Campbell is a member of the Tahltan Nation, Crow Clan and Dejkama family. She has been working in the mining industry, for both proponents and Indigenous Nations, for over 25 years. As director of employment and training for the Tahltan Central Government, she developed OnTrack: Tahltan Essential Skills Database, which makes jobs on the Tahltan territory easier to access. OnTrack also helps demonstrate how the skills Indigenous Peoples develop by practicing traditional activities on the land are applicable for jobs in the mining industry. In her role at Skeena Resources, she has piloted many initiatives, including the Tahltan mentorship program, which helps prepare Tahltan members for management roles in the mining industry. She was nominated by Nalaine Morin.



INDIGENOUS STUDENT TRAILBLAZER AWARD WINNER: EMMA PLANT

Plant is in her final year of studies in geodesy and geomatic engineering at the University of New Brunswick. She is of Ojibwé heritage and is a part of the Pic Mobert First Nations band. During her undergraduate degree, she worked as a surveyor within the mining industry. When she's not working or studying, Plant enjoys playing sports. This has given her the opportunity to help grow and empower women in her community through volunteering at children's camps and coaching women's leagues. After graduation, she plans on working for Natural Resources Canada to gain experience working with First Nations communities, which can later be transferred to the mining industry. As the recipient of the Indigenous Student Trailblazer award, Plant will be awarded a \$5,000 scholarship sponsored by Sprott.



STUDENT TRAILBLAZER AWARD WINNER: KATHRYN CHENG

Cheng is a fourth-year undergraduate student at the University of Toronto pursuing a degree in geology. She is also the chair of the Women in Mining University of Toronto chapter, where she promotes the involvement of young women and visible minorities to join the geosciences industry. She organized a mentorship program to help facilitate students transitioning from university into the industry, and she implemented a diversity, equity and inclusion executive position within her undergraduate earth sciences association. After graduation, she hopes to pursue graduate studies. As the recipient of the 2023 Student Trailblazer Award, Cheng will be awarded a \$5,000 scholarship sponsored by Dundee Precious Metals.



RICK HUTSON MENTORSHIP AWARD WINNER: RACHEL PINEAULT

Pineault is a mentor to many women in the Canadian mining industry. She takes the time to advise and mentor several women, whether they are past or present colleagues or through more formal mentorship programs. She shares advice and resources with the women she mentors and rarely imposes her own opinions. Instead, she works through the issues, which are often emotional and sensitive, in a collaborative and judgment-free manner. She is dedicated to developing the next generation of passionate industry leaders, and her mentorship is one of the many ways this dedication manifests itself. She was nominated by Stephanie Labelle. ⚒️

Generation Mining advances Marathon-Palladium-Copper Project towards construction



Work completed in 2022 provides solid foundation for 2023

Located along the Trans-Canada Highway, on the northeast shore of Lake Superior, the Marathon Palladium-Copper Project is anticipated to be an environmentally sensitive, low-cost producer of critical minerals needed to support emission controls and the transition to a greener economy.

Developing the Marathon Project will involve the construction, operation, decommissioning and remediation of three open pits to produce copper concentrate consisting primarily of copper, palladium and platinum. There will also be an on-site ore processing facility, a 115 kV transmission line, an access road, a mine rock storage area, a process solids management facility and a water management system, among other infrastructure. The processing plant is expected to operate at approximately 9.2 million tonnes of ore per year and produce roughly 87,000 tonnes of copper-concentrate annually.

In the 42 months since Generation Mining first acquired interest in the Marathon Project, the company has advanced it towards becoming the next greenfield critical minerals mine in Canada by preparing a feasibility study and 43-101 technical report. Generation Mining

also obtained federal and provincial government environmental assessment approvals, entered into agreements with affected Indigenous communities, including the community benefits agreement with the Biigtigong Nishnaabeg First Nation (BNFN), and advanced significant financing arrangements to fund construction of the mine. The community benefits agreement between Generation PGM (Generation Mining's wholly owned subsidiary) and BNFN describes the benefits the BNFN community will receive from the project, as well as details how its impact will be mitigated. It includes commitments from the company regarding environmental management, employment, training and education, business opportunities, social and cultural support and financial participation.

In March 2022, Generation PGM received the first of two \$20-million payments from the precious metal purchase agreement with Wheaton. Under the terms of the agreement, Wheaton will pay Generation PGM \$240 million in return for a stream on all gold production and 22 per cent of platinum production from the Marathon Project.

In July 2022, Generation Mining announced an agreement with Valard Equipment LP for the lease of a construction camp located in Marathon, Ont. with an option to purchase the camp. The camp will be used to accommodate up to 286 workers throughout the construction phase. Additional accommodation capacity will be secured for the Marathon Project as construction ramps up to the maximum peak of approximately 1,000 workers. The camp has all the required infrastructure services, including a commercial kitchen, a recreation facility,

The joint review panel was established in 2021 to review the environmental impact statement (EIS) of the Marathon Palladium-Copper Project, as well as to conduct public hearings that enable Generation Mining to outline and explain the key elements of the Marathon Project while answering questions from government agencies, non-government organizations, local and regional communities and Indigenous groups.

a maintenance facility and management offices. BNFN will operate and service the camp as part of Generation PGM's commitments to BNFN under the community benefits agreement.

In August 2022, the company entered into an agreement with Hycroft Mining Holding Corporation for the purchase of an unused, surplus SAG mill and ball mill. The agreement for the mills reduced risks with the procurement, logistics and cost-uncertainty associated with some of the long-lead items for the project.

September 2022 saw receipt of the second \$20-million payment from Wheaton. During construction of the Marathon Project, the remaining \$200 million will be payable in four stages of installments, which are subject to various customary conditions precedent being satisfied.

The Marathon Project was approved by the joint federal and provincial environmental assessment process in November 2022. The joint review panel was established in 2021 to review the environmental impact statement (EIS) of the Marathon Palladium-Copper Project, as well as to conduct public hearings that enable Generation Mining to outline and explain the key elements of the Marathon Project while answering questions from government agencies, non-government organizations, local and regional communities and Indigenous groups. The process followed a thorough, multi-year, joint federal and provincial environmental assessment process, with input received from Indigenous groups, the public and federal government departments, including the Ministry of Environment Canada and Climate Change, Fisheries and Oceans Canada, Natural Resources Canada and Transport Canada, as well as provincial government departments, including Ministry of Northern Development, Mines, Natural Resources and Forestry, the Ministry of Environment, Conservation and Parks, the Ministry of Transportation, the Ministry of Labour and the Technical Standards and Safety Authority. The company

may now proceed to obtain the necessary permits for construction and operation.

The decision statement and approval order included conditions on such matters as ongoing consultation, follow-up programs, reporting, information sharing, fish and fish habitat, migratory birds, wildlife, greenhouse gas emissions, health and socio-economic conditions of Indigenous peoples, the current use of lands and resources for traditional purposes and reclamation, amongst other things. The company continues to work to satisfy any pre-construction condition(s) and ensure compliance with the conditions needed to advance construction and operations of the Marathon Project. ⚡



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Tartisan Nickel Corp. outlines low-cost nickel sulphide mine at the company's flagship Kenbridge nickel project, Kenora mining district, Ont.

Following a 10,700-metre drill program completed in late 2021, Tartisan Nickel Corp. (CSE:TN; OTCQX:TTSRF) has released a preliminary economic assessment (PEA) for its 100 per cent-owned Kenbridge nickel project in northwestern Ontario's Kenora mining district. Prepared by P&E Mining Consultants, the PEA outlines a low-cost, 1,500 to 2,000-ton per day operation. The study forecasts an initial nine-year mine life with pre-production capital costs of \$133.7 million and a potential start-up in three and a half years.

The low pre-production capital cost and early start-up potential are attributed to the project's status as a developed prospect with a mineral resource estimate. Kenbridge hosts a 622-metre shaft that was sunk by Falconbridge in 1954 and has never been mined.

The Kenbridge project was discovered in 1937 and acquired by Falconbridge in 1952. Falconbridge began construction of the shaft two years later, when they extracted a bulk sample but then suspended work on the property in 1958 as a result of other corporate priorities.

The Kenbridge nickel project is located 70 kilometres southeast of



Kenora, Ont. and has a land position encompassing 42 km² including a mix of patented and unpatented claims. Work is currently underway on a 13-kilometre all-season access road to the property and is scheduled for completion autumn 2023. Grid power is within 40 kilometre of the site and a skilled workforce is locally available in Kenora, Dryden, Fort Frances and neighbouring Indigenous communities. Tartisan Nickel is considering several green electrification initiatives with ESG best practices being a priority.

Since 1937, the property has

been tested by 665 surface and underground drill holes totalling 99,741 metres, including 40,000 metres drilled by Canadian Arrow Mines and 10,700 metres drilled by Tartisan in 2021.

"We drilled a few 1,000 metre plus holes in 2021 and discovered that the mineralization does continue at depth and along strike," said Tartisan chief consulting geologist Dean MacEacher. "We believe we can expand the resource and, ultimately, the mine life. As a result of the 2021 drill campaign, we were able to increase the resource by approximately 20 per cent. We also did borehole geophysics down

drillholes, and drilled four holes at a site we call Kenbridge North, three kilometres away. Kenbridge North has similar geophysical and geological characteristics, so it's potentially a secondary deposit."

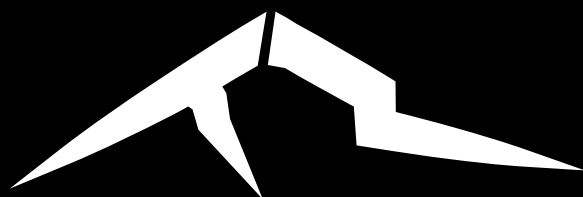
Tartisan has budgeted for an additional 8,500 plus metres of drilling in 2023 to continue to test the down-dip extension and bring some of the inferred resource into the indicated category.

The PEA, which is focused solely on the current underground mineral resource, reports 3.4 million tonnes of ore at 0.97 per cent nickel, 0.52 per cent copper and 0.013 per cent cobalt in the measured and indicated categories. Inferred mineral resources total 1.0 million tonnes at 1.47 per cent nickel, 0.67 per cent copper and 0.011 per cent cobalt.

Life of mine revenues from net

smelter returns are estimated at \$837 million while total capital costs are pegged at \$227 million, including \$133.7 million to be spent pre-production. The PEA reports an estimated pre-tax net present value of \$182.5 million using a five per cent discount rate and pre-tax internal rate of return of 26 per cent with payback in three and a half years.

"Kenbridge is a nickel sulphide, gabbro-hosted deposit similar to



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The Kenbridge Nickel Project heading towards a feasibility study.



Tartisan commences baseline studies and advances permitting for its flagship Kenbridge Nickel Project.



Upgrade of all-season access road for its flagship Kenbridge Nickel project in Ontario.

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deposits that were mined in Lynn Lake, Man., by Sherritt Gordon Mines years ago,” said MacEachern. “At the top, it’s more disseminated and as you go deeper into the zone, it gets more semi-massive and massive. It gets narrower but the grade gets better.”

MacEachern added one of the advantages of the project is the existing infrastructure makes for a modest capex.

“It’s under \$140 million to get started. That compares with a lot of large low-grade deposits that will take \$2 billion to get going,” he said.

“There are some underground zones that are higher grade that can be brought into the mining plan early,” MacEachern added. “That will

allow us to payback the project in a little more than three years and, if the price of nickel moves up, so much the better. By focusing on the underground, we alleviate risk if the price of nickel goes down to, say, US\$6 per pound.”

According to project manager Greg Edwards, Tartisan has strong support from the three First Nations impacted by the project: Nautkamegwanning First Nation, formerly known as the Whitefish Bay First Nation, Northwest Angle #33 First Nation and Northwest Angle #37 First Nation.

“I meet with them regularly to keep them informed. Last year, we invited several of the local First Nations groups to our site for a lunch and learn, took them on a tour and

brought them up to speed on what we were planning. There was also a ceremonial blessing by an elder from one of the communities,” MacEachern said.

Anticipating an early start to permitting, Tartisan hired Knight Piesold Consulting and Blue Heron Environmental in May 2022 to commence baseline environmental work. A fourth phase of studies will begin in March 2023 and will continue to cover all four seasons this spring.

The decision to get a jump on the environmental baseline studies and access at Kenbridge in 2022 reflects the company’s “commitment to an approximate three years to production timeline,” said Tartisan Nickel president and chief executive officer, Mark Appleby. ⚒

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Aftermarket suppliers for electric shovels

For electric shovels in mine operations, service and support for transmissions, shafts and gearing is a large part of any maintenance program. Providing parts and service support for critical equipment will occasionally involve situations that require complicated engineering solutions in a 24/7-time frame to get equipment up and running. With the mine shovel industry, this rarely happens and, if it does, generally all the parts and components are at the site ready to go into service.

Even though there are hundreds of shovels operating in North America, there are very few shovel brands and models, which means there should be more common spares for all the machines in operation. Shovel maintenance is generally based on service hours, which allows for better planning and scheduling of equipment far in advance of when spares are required. Having months or years of pre-scheduling planned for the fleet of shovels means the mine can have replacement transmissions, shafts and gears on site, inspected and certified for service well in advance of the shovel outage.

Key suppliers would be the original equipment manufacturers and any aftermarket suppliers that can provide a superior level of knowledge, experience, quality, service and delivery at a competitive price level. There are very few transmission, shaft or gearing



aftermarket suppliers in Canada or the United States that can meet all these high standards. They should be able to provide their own intellectual property and be current on their knowledge of original equipment manufacturer design changes and upgrades to electric shovels. It is also critical the supplier manufacture their own parts, as well as assemble and test transmissions "in house" so they can control quality and lead times. Having a good list of solid references will provide a level of confidence to the mine and help develop a high level of trust that is needed before the mine will use your parts or transmissions.

Working with the mine's management is also key to being a successful aftermarket supplier. Extra inventory for critical spares should be identified, and every effort must be made to have these components and parts included in a strategic inventory plan. Who will pay for inventory, and will it need to be at the site or in a strategic controlled location? Does the mine expect the supplier to provide an exchange program for their



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transmissions, or would a repair program work and meet their scheduled maintenance needs? Will adding new transmissions to their spare inventory allow for better time frame management on turnaround for repairs? To back up their products and service, they should provide solid warranties that meet or exceed what the original equipment manufacturer is offering.

Aftermarket supply works very well when the need is there and the quality, delivery and price levels meet or exceed the mine's expectations. It should be considered as part of every mine's maintenance and supply programs.

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Ground VLF surveying

Innovating a traditional geophysical tool

The team of Shaun Parent and Sandra Slater and Ashley Possamai from Superior Exploration (YVLF) continue with their innovation of VLF surveys, using either the Geonics VLF EM-16 instrument or the GEM Systems VLF Magnetometer Combo unit. Superior Exploration has been carrying out ground VLF surveys for the past 20 years for various mining companies in North America, Chile, Peru and Mexico, as well as Ireland and Portugal.

The advantages of this field technique are many and include acquiring several transmitting stations during the field survey and collecting magnetic data with the VLF survey data. Super Exploration does ground follow-up and prospecting of VLF targets, with no exploration permits being required. It's a non-invasive approach that doesn't require line cutting and works in a variety of environments, including the desert, jungle, glaciers and tundra. Ground VLF surveying

Interprets depths as far down as 150 meters, depending on frequency and apparent resistivity of bedrock. It delineates disseminated sulfides, shear zones, breccias, contacts and silicified zones, as well as maps geological contacts based on resistivity contacts.

VLF surveying is processed using software developed by Superior Exploration and EmTomo of Portugal. It has been successful in discovering several new gold and massive sulphide zones, including the Sandra Breccia in Batchawana, which was discovered in 2012 after processing reconnaissance EM-16 ground VLF Data. The Breccia pipe is 200 metres south of the defined East Breccia deposit, which was discovered in 1963. The VLF was also successful in defining the source of the McFadden Boulder Train under the Johnny Mountain Glacier in northern British Columbia.



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The advantages of this field technique are many and include acquiring several transmitting stations during the field survey and collecting magnetic data with the VLF survey data.

VLF data acquisition and processing by Superior Exploration (YVLF) can produce raw data profiles with magnetic profiles, elevation and apparent resistivity. It also produces Fraser filtered profiles, Fraser Pseudo sections, KH profiles, KH depth plan maps, JY filter inversions, resistivity profiles, KH data, inversion models, inversion plan maps of various depths and 3D contour shadow maps. 3D inversion models can be viewed using Leapfrog or Miro Geoscience Analyst, and drill hole sections and sampling, as well as geological information, can be added to profiles and plan maps. Historical VLF data can also be processed and presented in the same format as real time data.

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Highlighting Ontario's Lockerby East project

In 2016, SPC Nickel announced the acquisition of the Lockerby East property that was formerly owned and operated by Falconbridge Limited. The property is located next to the past producing Lockerby mine and hosts the partially mined Lockerby East deposit and the large near-surface West Graham deposit.

In 2009, First Nickel disclosed a NI 43-101 indicated resource for the West Graham deposit totaling 8.55Mt grading 0.45 per cent Ni and 0.31 per cent Cu, along with an inferred resource of 2.0Mt grading 0.38 per cent Ni and 0.30 per cent Cu. The resource extends from 40 metres below surface to a depth of approximately 475 metres. The modelled zone ranges in thickness from 1.7 to 66 metres and strikes for 375 metres with a dip extent of up to 533 metres.

In 2010, First Nickel disclosed a NI 43-101 indicated resource for the

Lockerby East deposit totaling 0.18Mt grading 2.32 per cent Ni and 0.87 per cent Cu, along with an inferred resource of 0.04Mt grading 2.90 per cent Ni and 0.80 per cent Cu. The mineralization is predominately contact style, with narrow (<5 metre thick) semi-massive to massive sulphide breccia veins anastomosing proximal to the granite/SIC contact. Historic underground drill intersections reported by First Nickel include hole FNI3414 that intersected 5.60 per cent Ni, 1.26 per cent Cu and 0.10 per cent Co over 10.0 metres.

In 2022, the company completed an 18-hole, 5,200 metres drill program designed to further evaluate and expand the higher-grade Ni-Cu zone hosted within the larger West Graham deposit. Highlights from the drilling include:

- 0.83 per cent Ni, 0.40 per cent Cu over 24.00 metres (WG-22-001),

- 0.53 per cent Ni, 0.44 per cent Cu over 82.60 metres (WG-22-008),
- 0.73 per cent Ni, 0.82 per cent Cu over 12.00 metres (WG-22-009).

In January of 2023, SPC Nickel announced an agreement with Vale Canada Limited. The agreement grants SPC Nickel the right to acquire a 100 per cent interest in the surface and mineral rights of the Crean Hill 3 property. In consideration, certain rights and royalties will be extended to Vale across the combined project. The Crean Hill 3 property is located adjacent to the company's 100 per cent owned West Graham deposit and represents the west extension of the deposit. Historic drilling completed by Vale (formerly Inco) between 1958 and 1960 returned mineralized intersections of similar thickness and grade compared to the adjacent West Graham deposit over an additional 600 metre of strike length.

The focus for the company moving forward will be advancing the combined West Graham and Crean Hill 3 property towards a production decision in five and a half years.

HIGHLIGHTING ONTARIO'S AER-KIDD PROJECT

The 272-hectare Aer-Kidd property is located along the south range of the Sudbury basin, approximately 35 kilometres west of the City of Sudbury, Ont. The property covers an approximate 1.5-kilometre section of the Worthington offset dyke and saw historic production during the 1950-1960s, where it started as a shallow open pit and two shallow underground mines.

The property is strategically located between two world class Ni-Cu-PGM deposits. Totten mine (Vale Canada), located 1.8 kilometres to the southeast, went into production in 2010 on a resource of 10.5Mt @ 1.5 per cent Ni, 2.0 per cent Cu and 4.8 g/t PGM's. The Victoria mine (KGHM International) is currently in the construction phase and hosts a resource of 14.5Mt @ 2.5 per cent Ni, 2.5 per cent Cu and 7.6 g/t PGM's.

In 2000, Crowflight Minerals (now CaNickel) optioned the property (mineral rights) and completed 48 holes for 26,850 meters over a four-year period. Several holes successfully intersected mineralization. Highlights include: 1.42 per cent Ni, 0.62 per cent Cu and 1.75 g/t PGM's over 8.91 meters at 844.16 meters in hole W03-03AW1.

In 2013, SPC Nickel Corp. (formerly Sudbury Platinum Corp.) purchased 100 per cent interest in the mineral rights of the property. To date,



the company has completed 63 holes for 32,620 meters. Several encouraging zones of Ni-Cu-PGM mineralization have been identified. Highlights from the drilling include:

- 1.04 per cent Ni, 0.75 per cent Cu, 2.40 g/t over 8.10 metres (AK-14-001A),
- 0.66 per cent Ni, 1.22 per cent Cu, 3.46 g/t over 13.60 metres (AK-18-030A),
- 2.35 per cent Ni, 2.16 per cent Cu, 5.57 g/t over 1.25 metres (AK-18-030).



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HIGHLIGHTING ONTARIO'S JANES PROJECT

The Janes property was initially explored in 1969 by Kennco Exploration (Canada) Ltd., which reported disseminated and massive Ni-Cu sulphide mineralization (PGM's not reported) occurring near the base of a large Nipissing gabbro sill. Of significant interest was drillhole 69-08 that intersected 10.70 metres of 1.27 per cent Ni and 1.59 per cent Cu. This drillhole was subsequently re-assayed by Falconbridge Ltd. in 1989, returning 1.51 per cent Ni, 1.86 per cent Cu, and 1.78 g/t PGM's over 7.9 metres.

Between 1997 and 2001, the property was explored jointly by Pacific North West Capital Corp. (PFN) and Anglo Platinum Corporation Ltd. Exploration activities focused on the basal contact of the sill where disseminated and massive sulphide mineralization was exposed in a series of trenches over a strike length of more than 400 metres. In 1999, drilling completed down-dip of the mineralization at drillhole JR99-01 and intersected 18.05 metres

grading 0.27 per cent Ni, 1.01 per cent Cu and 2.71 g/t PPG. In 1999, drillhole JR99-03 intersected 8.68 metres grading 0.69 per cent Ni, 0.44 per cent Cu and 4.45 g/t PGM.

In 2007 and 2011, Goldwright/ GoldTrain Resources Inc. conducted diamond drilling in the vicinity of previous drilling by PFN and Anglo Platinum. Results from the diamond drilling include 6.0 metres of 0.26 per cent Ni, 0.62 per cent Cu and 2.49 g/t PGM (drillhole JR07-29).

In 2020, SPC Nickel Corp. entered into an option agreement to acquire a 100 per cent interest in the Janes property. From 2020 to 2021, SPC Nickel Corp. completed ground geophysics, channel sampling, geological mapping and diamond drilling on the property. Highlights include:


- Bonanza grade PGM mineralization with values up to 675 g/t Pd, 89.8 g/t Pt and 35.9 g/t Au hosted within narrow shear zones,
- A 25-line kilometre ground 3D IP and magnetic survey identified several chargeability highs associated with either areas of

known mineralization or previously untested areas.

A detailed channel sampling program completed at the trench one and trench four returned high-grade Ni-Cu-PGM values over significant widths. Highlights include:

- 0.50 per cent Ni, 1.09 per cent Cu, 3.09 g/t PGM over 22.0 metres at Trench 1.
- 0.78 per cent Ni, 0.66 per cent Cu, 5.51 g/t PGM over 6.0 metres at Trench 4.

In 2021, SPC Nickel Corp. completed 920 metres of drilling on the property, including a detailed 647 metre, 16-hole program focused on the trench one mineralized zone. Highlights from the drilling include:

- 0.46 per cent Ni, 0.93 per cent Cu and 4.63 g/t PGM over 10.50 metres (JP-21-001),
- 0.40 per cent Ni, 0.83 per cent Cu and 5.09 g/t PGM over 6.65 metres (JP-21-002),
- 0.30 per cent Ni, 0.69 per cent Cu and 3.06 g/t PGM over 26.60 metres (JP-21-010). 

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PDAC 2023 Convention welcomed 23,819 attendees to world's premier mineral exploration and mining event in Toronto

PDAC 2023 Convention welcomed 23,819 attendees to world's premier mineral exploration and mining event in Toronto

The Prospectors & Developers Association of Canada (PDAC) was thrilled to welcome pre-pandemic levels of attendance back to its annual convention, drawing 23,819 attendees to Toronto for the best business, investment and networking opportunities in the mineral exploration and mining industry.

In addition to the more than 1,100 exhibitors covering over 600,000 square feet of the Metro Toronto Convention Centre, governments, companies and leading experts from around the world made this one of the largest events in the association's 91 years.

"There's never been a more critical time for our industry to gather, share and learn as we drive progress, tackle global challenges and seize opportunities for a better future," said Alex Christopher, PDAC president. "And the energy and optimism witnessed during PDAC 2023 was palpable—it is clear the mineral exploration and mining industry has entered a period of great transformation and growth."

Key speakers included Ken Hoffman, McKinsey & Company; Sinead Kaufman, Rio Tinto; and Alex Dorsch & Kevin Frost, Chalice Mining.

Governments continue to use the event as an important platform for announcements, including Canadian Natural Resources Minister Jonathan Wilkinson who announced an investment of \$344 million to help advance "the development of a dynamic and competitive critical minerals sector."

The final day of the PDAC Convention also marked the transition of presidents. We thank Alex Christopher for his remarkable contributions to the industry and association during his two-year term, and welcome Raymond Goldie to the role.

"For almost a century, the PDAC Convention has been recognized as the leading choice for the world's mineral exploration and mining industry, bringing the latest trends, technologies and conversations to one central location, and 2023 is no exception," said Lisa McDonald, PDAC executive director. "Yet again, we have proudly delivered capital markets, Indigenous affairs, student and early career, sustainability and technical programs, and short courses that offer the latest in professional development opportunities."

Thank you to everyone who participated in PDAC 2023, including all of our volunteers, speakers, sponsors and participants. We look forward to welcoming you back from March 3-6, 2024.

ABOUT THE PDAC

PDAC is the leading voice of the mineral exploration and development community, an industry that supports 664,000 people in direct and indirect employment, and contributes \$130 billion to Canada's GDP every year. Representing over 6,500 members around the world, PDAC's work centers on supporting a competitive, responsible and sustainable mineral sector. Please visit www.pdac.ca. 



Smarter ways to reduce vehicle-to-person collisions through smartdetect

By Michelle Murray and Shivan Singh

Mine safety has come a long way over the last few decades, with new procedures and processes put in place to protect the welfare of personnel and impact on the mine. However, mining accidents still occur, and for individuals working on the surface or underground of a mining site, a collision between vehicles, personnel and infrastructure can often have a catastrophic outcome.

With all the hazards a mine site possesses, a technological solution seemed imperative. Regardless of the level of training or years on the job an operator has, collisions still occur because of these risks, which can factor into mining vehicle collisions. All too often, accidents occur because of limited visibility due to the size and design of mining vehicles, lack of situational awareness and, in underground environments, operating machinery in confined spaces.

Reducing the number of on-site accidents in a mine is crucial and ensures personnel remain safe both in underground and surface settings. To this end, mines are looking at adding increasing layers of intelligence to their vehicles in an effort to avoid collisions. There is a wide range of technologies used in the prediction and prevention of collisions, such as radio frequency identification technology (RFID) and vehicle-to-vehicle (V2V) communications. Newer technologies, such as vehicle-to-everything (V2X), allow for communication between vehicles, personnel and infrastructure through either cellular radio or short-range radio communications.

The smartdetect system from Becker Mining Systems leverages V2X and GPS to provide vehicle operators with a map-based 360-degree view of their surroundings. smartdetect enables vehicles to talk to each other and share vital information about their activities. This information is used to determine whether a collision is likely. When an imminent collision is detected, the systems provide visual and audible alerts, enabling operators to move their vehicle from harm's way, thus avoiding any potential accidents or near-misses. The smartdetect system



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The smartdetect system from Becker Mining Systems leverages V2X and GPS to provide vehicle operators with a map-based 360-degree view of their surroundings. smartdetect enables vehicles to talk to each other and share vital information about their activities.

supports the addition of cameras to add another layer of situational awareness to the operator.


By using V2X on the surface in smartdetect enabled vehicles and personnel tags, the operator is alerted to the precise location of multiple people and vehicles through GPS technology in real-time, providing fast feedback to the drivers. In the case of unresponsiveness from the vehicle operator, smartdetect has automated speed reduction through CAN bus technology, preventing

injuries to mine personnel as well as damage to mining vehicles and other equipment, thus meeting the requirements of the earth moving equipment safety round table (EMESRT) level nine (intervention controls).

With its full range of attachments, the smartdetect system from Becker Mining Systems has been designed to offer vehicle-to-vehicle, vehicle-to-person and vehicle-to-structure detection solution in one comprehensive and robust package, allowing for upgrades and simple

system modifications based on the needs of the customer.

Becker Mining Systems designs each system to ensure high-quality and reliable products for every type of environment and application. The robust components of smartdetect are designed to provide system longevity in the harshest environments.

To learn more about the smartdetect system from Becker Mining Systems, contact info@ca.becker-mining.com. 

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