

CONFIDENCE REKINDLED 2017 ANNUAL REPORT



PROSPECTORS &
DEVELOPERS
ASSOCIATION
OF CANADA

CONFIDENCE REKINDLED

2017 ANNUAL REPORT

The Prospectors & Developers Association of Canada (PDAC) is a national association with an international reach that represents the mineral exploration and development industry. PDAC has more than 7,500 individual and corporate members, and encourages leading practices in technical, environmental, safety and social performance in Canada and around the world.

Areas covered by the association's wide range of advocacy work include land access, Aboriginal affairs, access to capital, corporate social responsibility (CSR), finance and taxation, geosciences, human resources, education, business insurance, and securities regulations.

PDAC also hosts the mineral industry's largest annual convention in downtown Toronto. The PDAC 2017 Convention attracted more than 24,000 attendees, including 6,000 international delegates from 130 countries.

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MESSAGE FROM THE PRESIDENT



PLANNING FOR TOMORROW, TODAY

It has been an exciting year for our industry. After several years of economic uncertainty, we welcomed back a sense of optimism and celebrated Canada's return to being the most desirable destination in the world for mineral exploration and mining investment. In total, three Canadian provinces ranked in the Top 10 of the *Fraser Institute's Annual Survey of Mining Companies*, with Saskatchewan taking the top spot, Manitoba second and Québec sixth.

Yet, like the world around us, the industry is changing. For Canada to remain the world leader our members must adapt with innovative technologies and best practices throughout their business—and the Prospectors & Developers Association of Canada (PDAC) is no exception. Five years ago, we laid the foundations to be the driving force behind a successful, responsible, high-performing mineral exploration and mining industry in Canada through the creation of a five-year strategic plan centred on our members and their needs. The plan focussed on the three most important influences, as identified by the Board of Directors, contributing to the success of our sector: access to capital, access to land, and Aboriginal affairs.

The plan concluded this past year and a new strategy to guide the association through to 2022 is under development. It is characterized by operational excellence, diversity and inclusiveness, innovation and technology developments, as well as addressing contemporary shifts in the political and business

landscapes. To build a comprehensive strategy, we consulted with our members, industry leaders, staff, and drew on the expertise, wisdom and experience of our Board of Directors so that we can best reflect and represent the sector.

One thing that hasn't changed is that the annual PDAC Convention in Toronto remains the premier event of choice for the world's minerals industry. In its 85th year, we welcomed 24,161 attendees from 130 countries, featured 472 expert speakers, and included sell-out exhibitor space throughout the Core Shack, Investors Exchange, Prospectors Tent, Trade Show, and Trade Show North. The second International Mines Ministers' Summit (IMMS), co-hosted with the World Economic Forum, brought together an impressive 25 ministers responsible for mining—nine more than 2016. This event will continue to provide an important setting for the global mining community to explore and discuss the challenges and opportunities that exist in various countries.

PDAC also continues to play an important advocacy role for its members. In 2017, we saw the Government of Canada honour our request to extend the Mineral Exploration Tax Credit (METC). The Honourable Jim Carr, Minister of Natural Resources, leveraged the prestigious audience of our Media Reception to announce its renewal, which was broadcasted live on our Facebook account to an audience of 200,000 viewers. We saw success in the Federal Budget 2017 where several of our recommendations were addressed, including sustained flow-through share financing, support for remote areas through the Canada Infrastructure Bank, and investment in Aboriginal communities to support participation in the minerals industry.

To maintain a supportive and predictable fiscal policy and regulatory environment, PDAC staff and volunteers are committed to advocating on your behalf to positively influence the direction of the industry. We must ensure that Canada remains a desirable destination to discover and develop, in a responsible manner, the mineral and metal deposits that make modern life possible—now and well into the future.

A handwritten signature in black ink, appearing to read 'Glenn Mullan'.

Glenn Mullan
President
PDAC

YEAR IN REVIEW 2017

A look back at some of the major developments, political advancements and PDAC initiatives that shaped Canada's minerals sector in 2017.





Changes proposed to reporting thresholds for GHG emissions

As 2017 commences, Environment and Climate Change Canada (ECCC) puts forth a proposal to conduct consultation activities related to its Greenhouse Gas Emissions Reporting Program (GHGRP) in an effort to better inform Canada's national greenhouse gas (GHG) inventory. ECCC proposes to lower the reporting threshold from **50,000** tonnes to **10,000** tonnes of CO₂ equivalent, starting with 2017 data.

NEW ROADS FOR THE NORTH

The Federal Government announces in January that they will pay 25 per cent of the cost to build an all-season road to Whati, Northwest Territories, through the P3 Canada Fund. The Tlicho road will join the Tlicho community of Whati to the Mackenzie Highway, providing improved transportation access for the mineral and mining industry operating in the region. Supporting mineral exploration in remote and northern Canada is a key PDAC priority and was one of the association's recommendations for Federal Budget 2017.

Clean energy resources and projects map

Natural Resources Canada releases its second edition of the Map of Clean Energy Resources and Projects (CERP) in Canada. Seven new layers are added in the latest edition. They explore Canada's biomass, geothermal and uranium resource potential, as well as clean technology incubators and accelerators, upcoming major clean energy projects, nuclear stations, and geothermal heating facilities in Canada. The CERP map has also been updated to show clean energy test centres and energy generating stations in Canada for hydro, tidal, wind and solar.

Minerals and mining—an economic booster

In February, the Advisory Council on Economic Growth recommends several actions through its report, *Unleashing the Growth Potential of Key Sectors*, to the Government of Canada that will benefit the Canadian economy. Developing a national infrastructure strategy was one of the actions, with the mineral exploration and mining sector identified as having significant untapped potential requiring focus and attention. PDAC continues to advocate for investments in infrastructure, particularly in remote and northern Canada where mineral exploration and mining costs are significantly higher.

PDAC ACCOMPANIES MINISTER OF NATURAL RESOURCES TO MEXICO

PDAC President Glenn Mullan accompanied Canada's Natural Resources Minister Jim Carr on his visit to Mexico in February. Following the visit, the North American Energy Ministers Meeting was held in Winnipeg where Minister Carr signed a memorandum of understanding (MoU) with Mexico's Economy Minister Ildefonso Guajardo Villarreal to solidify our countries' close bilateral relationship. The MoU covers geoscience, clean innovation and corporate social responsibility, in addition to sharing best practices in water management and the use of renewable energy.

Saskatchewan and Manitoba ranked top mining destinations

Saskatchewan ranked as the world's top mining jurisdiction, followed second by Manitoba, in the *Fraser Institute's Annual Survey of Mining Companies 2016*. The survey rates 104 jurisdictions around the world based on geologic and policy attractiveness. The survey also shows that Canada is competitive globally when it comes to approving exploratory mining permits, although some provinces are falling behind, and jurisdictions in the U.S., Australia and Scandinavia are more transparent and offer more certainty to miners in the permitting process.



Finding the Win-Win in company-community agreements

The Conference Board of Canada's Centre for the North (CFN) releases its report *Finding the Win-Win in Major Project Agreements: Lessons From Indigenous Groups and Industry Proponents* in March. Given the growing importance of major project agreements, this research aims to better understand the context and elements underlying successful company-community agreements.

FEDERAL BUDGET 2017 ANNOUNCED

PDAC provided several recommendations to the Federal Government for Budget 2017 released on March 22, 2017. PDAC is pleased to see several measures included that support Canada's mineral exploration and mining sector—one of the most important contributors to national employment and the economy.

- Renewal of the Mineral Exploration Tax Credit (METC) until March 31, 2018 and maintenance of the flow-through share system.
- Infrastructure investment for remote and northern Canada—including through the Canada Infrastructure Bank—where exploration projects have average costs of **227%** more than non-remote projects.
- Support for skills development and training for Aboriginal people through the **\$50 million** Aboriginal Skills and Employment Training Strategy that can assist in accessing employment and economic opportunities generated by the minerals industry.
- Investment in clean technology development through a **\$1 billion** commitment over four years for industries such as mining, and a new five-year Strategic Innovation Fund.
- Emphasis on gender equality, which PDAC has championed throughout the sector.

MAP OF TOP 100 EXPLORATION PROJECTS

Natural Resources Canada's Lands and Minerals Sector releases its Map of the Top 100 Exploration and Deposit Appraisal Projects of 2016. It displays—geographically, and by province and territory—the 100 top-spending, off-mine-site exploration and deposit appraisal projects of 2016.

Manitoba's Mineral Exploration Tax Credit

The 2017 Manitoba Budget is released in April and includes an extension of the Mineral Exploration Tax Credit to December 31, 2020. This credit, which is available to Manitobans who invest in flow-through shares of qualifying mineral exploration companies, is equal to 30% of investments in flow-through shares. Previously, this credit was due to expire on December 31, 2017.

Northern concerns about carbon pricing

The NWT & Nunavut Chamber of Mines (Chamber) publically announce support for the Premiers of NWT and Nunavut in their appeals to the Government of Canada to consider the unique circumstances of the northern minerals industry before imposing a price on carbon. NWT Premier Bob McLeod and Nunavut Premier Peter Taptuna express hopes that the move to price carbon would recognize the unique situation of the North and include investment in the creation of viable alternatives to diesel for people and companies living and working in the territories.

CONSULTATION ON CANADA-MERCOSUR FREE TRADE AGREEMENT

In April, the Government of Canada launches public consultations on a possible Free Trade Agreement between Canada and MERCOSUR (Argentina, Brazil, Paraguay and Uruguay). Public consultations seek the views of Canadians to help define Canada's interests, including where such an agreement could provide opportunities to create prosperity for Canadians.

FEDERAL REVIEW OF ENVIRONMENTAL ASSESSMENT PROCESSES CONTINUES

Federal reviews of environmental assessment processes continue. PDAC engages in and monitors these developments, including:

- The Standing Committee on Fisheries and Oceans tables its report on the review of changes to the *Fisheries Act*. PDAC also submits comments on this report in May.
- The Standing Committee on Transport, Infrastructure and Communities releases its study of the *Navigation Protection Act*.
- PDAC responds to Expert Panel report on environmental assessments. Beginning in 2016, the Federal Government commissioned an Expert Panel to review federal environmental assessment processes. After a consultation period, the Expert Panel releases its report, *Building Common Ground: A New Vision for Impact Assessment in Canada*. PDAC made a submission on the final report in May, outlining a number of concerns with the proposed process and the potential for adverse implications for the mineral industry in Canada.

NWT MINING INCENTIVE PROGRAM

In June, funding for the Northwest Territories (NWT) Mining Incentive Program (MIP) was increased to **\$1 million** for 2017-2018. The MIP provides funding to prospectors (**up to \$25,000**) and exploration companies (**up to \$200,000**) who propose new exploration projects or are already carrying out NWT mineral exploration work. The MIP aims to stimulate and sustain mineral exploration activities throughout NWT and reduce risks associated with grassroots mineral exploration.

PDAC responds to government report on protected areas

The House of Commons Standing Committee on Environment and Sustainable Development releases its report on protected areas, *Taking Action Today: Establishing Protected Areas for Canada's Future*. The report makes recommendations regarding Canada's commitment to protecting at least **17%** of terrestrial and inland waters and **10%** of coastal and marine areas by 2020.

PDAC made a submission in response to the report to outline potential impacts to the mineral industry. The submission also identifies some guiding principles for land use decisions, including a process that is:

- Integrative and Balanced
- Evidence-Based and includes a mineral resource assessment
- Transparent
- Flexible and Adaptive
- Inclusive and Collaborative
- Adequately Resourced

Top 40 miners returned to profit in 2016

According to a PwC report released in June, the mining sector returns to profitability with the Top 40 raking in aggregate profits of **\$26 billion** in 2016, compared to a total loss of **\$34.6 billion** in 2015. However, any new revenues appear to be going towards debt repayment rather than capital expenditures or exploration, and for the fourth consecutive year the industry reduced spending on exploration. Capital expenditures were down 41% in 2016 to a record low of just **\$65 billion**. In addition, for the fourth year, the industry reduced spending on exploration, with **\$9.4 billion** invested in 2016, barely one-third of the record **\$21.5 billion** allocated in 2012.

WHERE IS THE CANADIAN MINING INDUSTRY HEADED?

As the mining industry begins to show signs of economic recovery, along with its resurgence comes a problematic thin-labour supply that has the potential to derail projects, drive up the cost of finding workers, and ultimately undermine an operation's ability to run competitively unless corrective collaborative actions are taken to manage the future availability of workers. *Canadian Mining Labour Market Outlook 2017*, an annual report published by the Mining Industry Human Resources Council (MiHR) in July, anticipates critical gaps for numerous mining-related occupations, as well as an increased retirement replacement rate.

MINING FOR CLEAN ENERGY REPORT

In the context of the rapid growth of clean energy in countries around the world, and the rise of solar in particular, a Clean Energy Canada report released in July explores the resulting demand for the metals and minerals used to manufacture clean energy technologies—and the opportunities and challenges this creates for mining companies and communities. *Mining for Clean Energy* examines why Canadian mines are well-positioned to serve as “clean energy enablers.”

Financing continues to improve

The TMX publishes statistics for July 2017 showing significant improvement in financing conducted via the TSX-V. The data shows an impressive recovery of 83% in financing this year, compared to the same period last year. As mining companies account for more than 50% of the number of issuers, this data testifies to the improvement in financing, especially those that are exploration focused.

PDAC RECOMMENDATIONS FOR FEDERAL BUDGET 2018

In a submission to the Standing Committee on Finance in August, PDAC makes five recommendations for Federal Budget 2018 to support the mineral exploration and development sector. PDAC recommends:

- Renewal of the Mineral Exploration Tax Credit (METC) for a minimum period of three years.
- Regulatory regimes under review be effective, efficient and balanced.
- Infrastructure investments be made in remote and northern Canada to support mineral exploration.
- Enhanced investment in public geoscience and support for innovation in the minerals sector.
- Increased investment in Indigenous communities to support participation in the minerals industry.

IRON ORE AND COPPER PRICES ON THE RISE

Over the summer, prices of two commodities were on the rise—iron ore and copper. Following a **10%** rally in copper prices, the red metal reached **\$2.9** per pound, its highest price since December 2014. The price of iron ore increased over 20% from its mid-June level to hover above **\$70** per tonne, recouping around half of the losses that occurred between February and June.

Mergers and acquisitions

According to an Ernst & Young (EY) report, the value of global merger and acquisition (M&A) activity in the second quarter of 2017 increased by **13%** from the previous quarter to **\$14.8 billion**. Corporate activity across the precious metals sector drove the bulk of M&A activity. EY also reported that the global capital raised was **\$71 billion** in the second quarter of 2017 (**\$20 billion** higher than in the first quarter).

Next-generation clean energy infrastructure

In partnership with the provinces and territories, Natural Resources Canada (NRCan) announces it is investing **\$155 million** to support clean technology projects in Canada's natural resource sectors. A call for expressions of interest is targeted for the fall, followed by a call for full project proposals.

CLEER support

PDAC submits a letter of support to The Honourable Navdeep Singh Bains, Minister of Innovation, Science and Economic Development for the CLEER Innovation Network's (Clean, Low-energy, Effective, Engaged and Remediated) proposal to formulate a Clean Resources Innovation Supercluster. The network will bring national and regional research centres, mining companies and established Canadian mining-supply organizations together to accelerate innovation adoption and integration in Canada.

INDUSTRY HIGHLIGHTS PRIORITIES TO ENERGY AND MINES MINISTERS

A brief submitted by the Canadian Mineral Industry Federation (CMIF) in August—of which PDAC is a co-chair—details several key risks and opportunities facing the mineral exploration and mining industry, and what actions governments could take in response. The brief was submitted at Canada's annual Energy & Mines Ministers Conference (EMMC) in Saint Andrew's, New Brunswick and details six policy areas where provincial collaboration and action by governments can enhance Canada's ability to attract new mineral investment and expand the mineral and mining industry's vast socio-economic contributions to Canadians.

1. Improve the regulatory process: Given the importance of the regulatory regime to the mining industry's competitiveness and Canada's ability to compete against other countries for new mineral investment, it is critical that current reviews of the *Canadian Environmental Assessment Act*, the *Fisheries Act*, and the *Navigation Protection Act* result in an effective, timely and coordinated regulatory process, from pre-environmental assessment (EA) to post-EA permitting, with meaningful consultation.

2. Support Indigenous participation in the mineral sector: The mineral industry is the largest private sector employer of Indigenous peoples in Canada on a proportional basis, is a leading supporter of Indigenous businesses, and makes significant investments in skills training and community initiatives. Governments can further enhance the participation of Indigenous peoples in the industry through investments in health, education and skills training, and implementing government resource revenue sharing mechanisms. Building on strengths, government should leverage industry as a platform to advance meaningful Indigenous economic reconciliation.

3. Adopt effective climate change policies: As climate change policy evolves and is advanced, it is critical to ensure the competitiveness of emissions-intensive and trade-exposed (EITE) sectors, as well as the necessity of being sensitive to changing economic and geographical realities. As such, industry associations recommended that governments define and implement robust protections for EITE sectors and ensure remote and northern operators' exposure to the carbon price is reduced. In addition, innovative renewable energy and storage technologies as well as strategic, large-scale and transformative energy infrastructure investments are critical.

4. Carefully consider land use and

withdrawals: Withdrawal of highly-prospective areas is reducing the attractiveness of Canada as an exploration destination. Canadian governments should ensure that land use decisions and the creation of protected areas balance diverse goals and values—including economic—and also be credible, inclusive and evidence-based processes that include a comprehensive minerals resource assessment prior to final land management decisions.

5. Address the costs of operating in remote and northern Canada:

The future of Canada's mineral industry lies increasingly in remote and northern regions, and the current infrastructure deficit is a major barrier to opportunities for greater wealth discovery and production. The CMIF supports the creation of the Canada Infrastructure Bank (CIB) and encourages the federal government to ensure that facilitates investments in remote and northern projects, including northern perspectives within the CIB, as well as by funding infrastructure proposals submitted by the three territories using federal infrastructure programs.

6. Support industry's innovation investments:

To help Canada become the leading supplier of sustainably-sourced minerals and metals, and the technologies the world needs to best extract them, government and industry collaboration is needed. This includes government support for the proposed CLEER (Clean, Low-energy, Effective, Engaged and Remediated) Clean Resources Innovation Supercluster, led by the Canada Mining Innovation Council and the Centre for Excellence in Mining Innovation.

PDAC responds to government Discussion Paper on environmental and regulatory reviews

The Federal Government's review of environmental processes continues. Government releases the Environmental & Regulatory Reviews Discussion Paper which proposes a path forward for project assessments in Canada. PDAC made a submission to the Minister of Environment and Climate Change Canada (ECCC) in response to the Discussion Paper, as well as a submission to the Minister of Fisheries and Oceans in response to proposed changes to the *Fisheries Act* which were also outlined in the Discussion Paper.

YUKON RESOURCE GATEWAY INFRASTRUCTURE ANNOUNCEMENT

In September, the Federal Government and Yukon Territorial Government announce combined support for the development of the Yukon Resource Gateway Project in the amount of **\$360 million**. Industry is also committed to contribute upwards of **\$108 million** towards a total budget envelope of **\$468 million**. Strategic investments in northern infrastructure will help to increase the competitiveness of the exploration and mining industry.

Québec's research and innovation grant

Québec's Ministère de l'Énergie et des Ressources naturelles (MERN) offers financial support for expenditures incurred under research and development contracts with universities, research centres or research consortiums. The program is offered to any business corporation or group of business corporations active in the mining sector that is registered with the Registraire des entreprises du Québec and is established in Québec. The financial assistance comes in the form of grants and can cover as much as 40% of expenses.

Advancing northern infrastructure

In September, the NWT & Nunavut Chamber of Mines says it is encouraged by advances in several northern infrastructure projects that will generate socio-economic benefits for northern residents and communities. The transportation infrastructure deficit in remote Canada makes it significantly more expensive to explore and mine. Support for remote and northern Canada remains a PDAC priority and is one of five Federal Budget 2018 recommendations.

PDAC RESPONDS TO PROPOSED CHANGES

Finance Canada releases its *Tax Planning Using Private Corporations Discussion Paper*. Of particular interest is the review of tax treatment for holding passive investments inside a private corporation. Proposed changes could limit the attractiveness of investment in flow-through shares and adversely impact mineral exploration and development financing. PDAC makes a submission to express industry's concerns.

PDAC launches new tool to collect and share data

PDAC releases its Exploration Assessment Data Digital Formats (EADDF). The project outlines a set of guideline standards for the submittal of assessment data in a digital format. Long identified as a need for improvement within the industry, the project aims to collect exploration assessment data from all jurisdictions across Canada to streamline digital data submission on a national scale.



CLEER on short list of supercluster mining projects

In October, the Federal Government selects a clean resources project by the mining industry as one of the nine so-called "supercluster" proposals that could qualify for a piece of the **\$950 million** fund to help boost job creation and the economy. Up to five consortiums will be eligible for a piece of the fund which will be spent over five years.

Recovery of exploration expenditures

Data released by S&P Global Market Intelligence confirms the view held by many analysts and pundits: that the mining exploration sector is firmly, but cautiously, emerging from a protracted downturn. Preliminary analysis shows that the annual global nonferrous exploration budget has increased for the first time since 2012, rising by more than **14%** year-over-year to **\$9.94 billion**.

REALITIES OF CANADIAN MINERAL EXPLORATION

The Mining Industry Human Resources Council (MiHR) and PDAC conducted a pilot study on the exploration industry. Based on responses from the national survey, the report, *Canadian Mineral Exploration HR Outlook*, helps fill a gap in labour market information, allowing for a more refined and accurate reflection of Canada's mineral exploration sector. This research will support stakeholders in creating strategies to increase the industry's ability to engage new pools of talent in mineral exploration.



Finance Standing Committee report recommends three-year METC

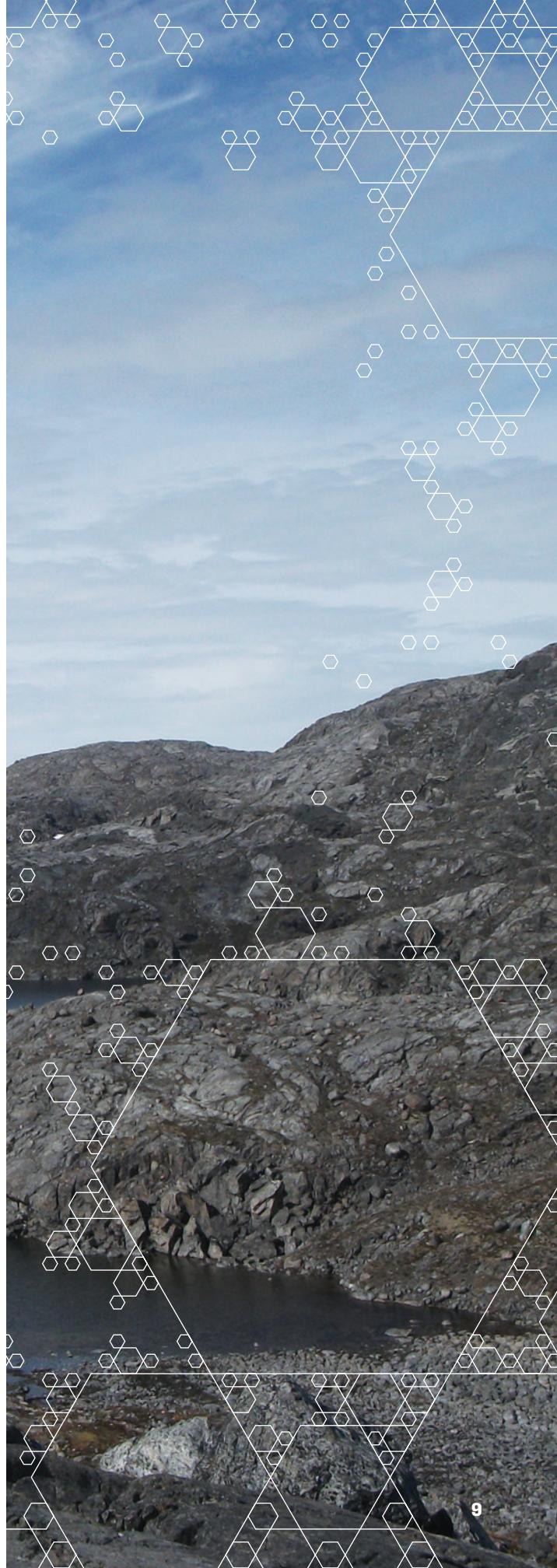
In December, the House of Commons Standing Committee on Finance releases its report of recommendations for consideration by the Minister of Finance for Federal Budget 2018. The Committee's report includes the recommendation to "Facilitate decision-making in the mineral sector by renewing the Mineral Exploration Tax Credit for a three-year period". PDAC has been advocating for a number of key priorities to enhance the mineral industry's competitiveness, including maintaining the flow-through share regime and renewal of the Mineral Exploration Tax Credit (METC) for a minimum three years.

NRCan Clean Growth Program

Natural Resources Canada (NRCan) and Canada's Office of Energy Research and Development (OERD) launch a Clean Growth Program (CGP). The CGP provides **\$155 million** for clean technology research and development and demonstration projects in Canada's energy, mining and forestry sectors. Their aim is to advance emerging clean technologies toward commercial readiness so that natural resource operations can better reduce their impacts on air, land, and water, while enhancing competitiveness and creating jobs.

Recovery of mineral exploration

Analysis at the end of 2017 by S&P Global Market Intelligence announces that non-ferrous mining exploration budgets increased **14%** in 2017 to **\$10.2 billion**—the first increase since 2012. What are the main drivers of this trend? Unsurprisingly, solid global economic growth and the strong price performance of many metals through the second half of 2016 and into 2017 underpin the industry's higher spending on exploration. "The mining industry is in a far better state," said Scotia Capital's head of global metals and mining Peter Collibee. "Most of the commodities are financeable at the moment."





PDAC 2017 CONVENTION

THE 85TH EDITION OF THE PDAC CONVENTION EXCEEDED ALL EXPECTATIONS, a reflection of the growing confidence that has returned to the mineral exploration and mining sector. The PDAC 2017 Convention—the world’s largest industry event—attracted more than 24,000 investors, analysts, mining executives, prospectors, geologists, government officials and students. “The mineral exploration and mining industry is cyclical in nature and has faced a variety of economic challenges over the past several years, but optimism has always remained and it’s fantastic to see this being reflected at the PDAC Convention,” says PDAC President Glenn Mullan, referring to sold out exhibitor space, Short Courses, Mineral Outlook Luncheon, and Awards Gala. “There was an upbeat vibe throughout the convention—a positive sign for the sector going forward.”

2ND INTERNATIONAL MINES MINISTERS SUMMIT (IMMS)

PDAC, in partnership with the World Economic Forum, hosted the International Mines Ministers Summit (IMMS) for the second year, bringing together 25 Ministers, responsible for mining, from around the world. The event, hosted at BMO, provided an important setting for the global mining community to explore challenges and opportunities affecting the industry. This year’s summit focused on innovation in the mining industry and the clean innovation agenda. “PDAC is seen as the voice of responsible mineral exploration and mining, not only in Canada but also abroad,” adds Mullan. “We must continue to build strong working relationships, both nationally and internationally, and the PDAC Convention is the best opportunity to make these connections and showcase our industry and its importance to social-economic development.”

PROGRAMS

The Student Program offered young professionals a unique opportunity to connect with industry leaders and peers from all over the world. More than 1,200 students attended the convention, including many who took advantage of mentoring services courtesy of Patrick McAndless. The Student-Industry Networking Luncheon also allowed industry to recruit students for summer work. S-IMEW participants for 2017 and the Mary-Claire Ward Geoscience Award recipient were also announced. The Student-Industry Forum featured discussions about women in mining, career opportunities, mentoring, and the role of gender when hiring.

A highlight of the PDAC Convention, the Aboriginal Program provided an important platform for fostering cooperative, respectful and mutually-beneficial relationships between Aboriginal communities and industry. The Aboriginal Program consisted of four sessions:

- The mineral industry and Indigenous communities – Canadian and international experiences
- The Aboriginal Forum: Reconciliation – the new context for relationship building in Canada
- Aboriginal law, Indigenous frameworks and regulatory regimes: Examining the evolving landscape
- Aboriginal communities and the mineral industry: Partnerships, leadership and perspectives

This year marked the eighth consecutive CSR Event Series, attracting more than 600 attendees from across the world. Programming featured presentations and panel discussions highlighting key aspects of social and environmental performance. Sessions focused on topics such as the importance of a multi-stakeholder approach to development, the mining sector's "social contract", tools for minimizing social conflict, effective company-community water management, and the impetus for gender equality in the mining sector.

With 2016 marking a pivotal year for many commodity prices, the PDAC 2017 Capital Markets Program created a forum for learning and dialogue. The two opening sessions focused on financiers' perspectives, hosting heads of mining groups from all major Canadian banks and leading private equities. The third session gathered a panel of industry veterans who debated the common assumptions and approaches that executives, investors and other stakeholders adopt regarding country risk and how it affects their decisions. The Capital Markets Program concluded with a panel discussion on proxy fights and other actions taken by activist shareholders, and how to approach such situations. ◀

PDAC 2017 HIGHLIGHTS

- During his address at the Media Reception, the Honourable **Jim Carr**, Canada's Minister of Natural Resources, announced the renewal of the METC for one year, along with the maintenance of the flow-through share system. A further 20 Parliamentarians attended, including three Cabinet Ministers.
- An outstanding Technical Program featured **Mark Cutifani** (Anglo American), who led the *Commodities and market outlook* session, while **Mark Bristow** (Randgold Resources Limited), **Lukas Lundin** (Lundin Mining Corporation), and **Roque Benavides Ganoza** (Buenaventura) spoke during the *Keynote session: What drives success in our industry?*
- The sold out Mineral Outlook Luncheon featured **Dr. Dambisa Moyo**—one of *TIME Magazine's* 100 Most Influential People and *New York Times* best-selling author—who discussed *Global shifts in economics, geopolitics & business: What's it going to take to be successful?*
- Attendees enjoyed continuous networking opportunities: 700 people celebrated at the sold out **Awards Gala & After Party** where seven industry leaders were honoured in recognition of their outstanding contributions to the minerals and mining industry; and the new and free Grand Finale saw over 500 attendees celebrate the success of PDAC 2017.
- Many Short Courses sold out and, for the first time, **Laurentian University's** Mineral Exploration Research Centre offered a workshop entitled *New exploration methods for base and precious metal deposits: How to increase success in Greenstone Terranes*.
- **University of Toronto** engineering students showcased an Electric Race Car, sponsored by Barrick. The race car was made from aerospace-grade construction materials and some of the best technology on the planet, from its solar panels to the battery.
- PDAC partnered with **Precious Metals Summit Conferences, LLC** to offer professionally organized one-on-one meeting services to bring qualified investors together with senior management. The program provides investors the opportunity to efficiently conduct meetings and derive maximum value from their time spent at the convention. This exclusive program was available only to a select group of exhibitors, and carefully screened, qualified investors and portfolio managers from around the world.
- The **Royal Ontario Museum** once again displayed its visually-stunning **Kirwin Collection**, built from hundreds of deposits from around the world.



TRADE SHOW & TRADE SHOW NORTH

867 Booths
 490 Exhibitors
 68 Governments

2017

24,161 Attendees

Outside of Canada the largest number of attendees came from: **USA, Australia, Peru, United Kingdom, Mexico, Brazil, Chile, China, Argentina, Germany, South Africa and Finland**

- 26% International attendees
- 130 Countries represented
- 1,256 Students
- 500+ Self-identified Aboriginal attendees
- 270 Accredited media
- 45 Sponsors
- 3,807 Investors
- 42 Media partners



MINING MARKETPLACE

26 Exhibitors

MOBILE CONVENTION WEBSITE

46,749 Visits



INVESTORS EXCHANGE

470 Exhibitors
443 Exhibiting Organizations
13 Prospectors Tent Booths

CORE SHACK

40 Exhibitors



PRESENTATIONS & WORKSHOPS

19 Technical Sessions
8 Short Courses
35 Presentation & Reception Rooms
102 Corporate Presentations Forum for Investors

472 Speakers



PDAC AWARDS

The PDAC Board of Directors was pleased to announce the following award recipients for their outstanding contributions to the mineral exploration and mining industry.

Recipients received their awards on March 7 at the Awards Gala & After Party at the Fairmont Royal York Hotel in Toronto during the PDAC 2017 Convention.



◆ THAYER LINDSLEY AWARD

This award recognizes an individual or a team of explorationists credited with a recent significant mineral discovery anywhere in the world.

Peter Megaw, MAG Silver Corp

For the 2003 discovery of the 200 million ounce Juanicipio silver deposit in the Fresnillo District, Mexico, ultimately leading to a further 600 million ounces being identified in the immediate area.

In 2003, Peter Megaw, a Professional Geologist and co-founder of MAG Silver, made a blind discovery known as the Juanicipio silver deposit that contains more than 200 million ounces silver. The discovery resulted from an understanding of structural controls and mineral zoning patterns of epithermal vein systems and persistent application of field-based exploration methods.

The Juanicipio silver deposit was discovered in the 500 kilometre-long Fresnillo epithermal belt in Mexico, extending from the Guanajuato district (1.3 billion oz Ag) through Zacatecas (1.0 billion oz Ag) and Fresnillo (1.2 billion oz Ag) to the San Martin-Sabinas district (800 million oz Ag). The belt overlies a regional structural zone and is the most productive silver deposit trend in the world, yielding more than 10% of the silver mined in human history. All but two of the major silver deposits in the Fresnillo silver belt were discovered in outcrop during Colonial times. Peter recognized that there should be more under the alluvium that mantles two thirds of the belt. Most of the intrusive centres and ore deposits occurred at structural intersections, and Peter suggested that exploration focus on understanding the structural fabric of exposed areas and then apply the results to covered areas. Thus, the structural and alteration patterns of historic mining areas were projected into nearby covered ground, with target depths indicated by using the results of detailed studies by others of paleo groundwater levels.

Peter first recognized the potential of the Juanicipio area in 1995, but it took three years to acquire the ground. Mapping, sampling and geophysical surveys began in 1998 with target definition and drill permitting completed in 2001. A hiatus set in until MAG Silver was established in July 2002 and began drilling in May 2003, shortly after going public. The first hole intersected the Juanicipio vein, demonstrating that Megaw's model was right. A joint venture with Fresnillo plc commenced in 2005, and the really big vein was hit on the sixteenth drill hole.

Megaw's other discoveries in Mexico include La Platosa silver deposit in Durango (Mexico's highest grade silver mine), and Cinco de Mayo in Chihuahua. Both lie in the Mexican carbonate replacement belt, and further demonstrate Megaw's systematic, disciplined and long-term exploration approach.

As a result of Peter's Juanicipio discovery, renewed exploration of neighbouring ground led to new veins being identified and a further 600 million ounces defined and developed into mines. The Juanicipio mine itself should start production in 2018 with silver grades in excess of 500 grams per tonne and significant by-product gold, lead and zinc.



Mountain Province
DIAMONDS

DE BEERS
GROUP OF COMPANIES

● VIOLA R. MACMILLAN AWARD

This award, which is named in honour of PDAC's longest serving president, is given to an individual or organization demonstrating leadership in management and financing for the exploration and development of mineral resources.

Gahcho Kué Diamond Mine, De Beers Group of Companies & Mountain Province Diamonds

For development of the world's largest new diamond mine in the last 13 years, a complex project that is expected to produce approximately 54 million carats of rough diamonds over its lifetime.

Gahcho Kué Diamond Mine in Canada's Northwest Territories (NWT) officially opened in September 2016. It is a joint venture between the De Beers Group of Companies, a privately-owned diamond exploration, mining, rough diamond sales and retail company that owns 51% of the project; and Toronto-based Mountain Province Diamonds, that owns the remaining 49%. Mountain Province discovered the first kimberlite at Gahcho Kué in 1995 and entered into a joint venture with De Beers in 1997. Gahcho Kué is the world's largest new diamond mine in 13 years and is expected to produce approximately 54 million carats of rough diamonds during its initial 12-year lifespan. It is comprised of three open pits and has reached full commercial operation.

The US\$1 billion exploration, delineation and construction of Gahcho Kué was no small undertaking. Most of the supplies were brought in via an ice road from Yellowknife—approximately 280 kilometres away—and sometimes took more than 20 hours to transport. The ice road season typically lasts between just six and eight weeks, making the window of opportunity very short. Despite these challenges, the project was completed ahead of time, and under budget. It also proudly recorded no serious injuries and achieved a lost-time injury rate of 0.15 and has not recorded a lost-time injury in over one million work hours.

The mine brings many benefits to the region and to all of Canada, by employing 530 full-time positions on a fly-in, fly-out rotation. During its construction, between 2006 and 2015, the mine provided \$440 million to the NWT economy, and another \$350 million across Canada. Once fully operational, estimates are equivalent to \$5.7 billion in Gross Value Added to the NWT. Including its supply chain impacts, the mine supported more than 2,700 jobs, with employment at the site representing more than 10 per cent in the NWT's extractive industries. As of October 2016, while still ramping up to full production, the De Beers workforce at Gahcho Kué already had 46% representation of NWT-resident employees, 20% self-identified Indigenous employees and 14% female employees.

Gahcho Kué is De Beers' largest ever mine outside of southern Africa. It will offset declining production at the company's other two Canadian diamond operations. It is Mountain Province Diamonds' first ever mine. Canada is the world's third largest diamond producer, and Gahcho Kué is the sixth commercial diamond mine in the country. It will account for 3% of the world's diamond market.

◆ SPECIAL ACHIEVEMENT AWARD

From time to time, PDAC presents a Special Achievement Award that recognizes exceptional contributions to the mineral industry.

Women's Association of the Mining Industry of Canada (WAMIC)

For continuous philanthropy to the mining industry, as well as Canadian health and educational institutions for 95 years.

WAMIC was founded in 1921 with the objective of promoting friendship among women connected to mining, supporting the industry and people in it, and participating in work that related to the well-being of Canadians.

Over the past 95 years, WAMIC members have overseen the distribution of more than \$1.8 million in support of young peoples' education, most of which was raised directly by their efforts. WAMIC is probably best known for its fundraising, its numerous and imaginative social events, and the association's strong presence at both the PDAC and Canadian Institute of Mining, Metallurgy and Petroleum conventions in Toronto. WAMIC was also the inspiration for the similar Greater Vancouver Mining Women's Association in British Columbia.

While the role of the association has evolved in recent years, it continues to make a significant impact. WAMIC has provided financial support for hundreds of students undertaking earth science and mining-related subjects and programs at colleges and universities across Canada. Canadian students attending Michigan Technological University and the South Dakota School of Mines in the United States have also received financial support. Furthermore, university and college programs have received direct contributions for field trips, technology and educational events.

In 1939, WAMIC established its first bursary at the University of Toronto. Named after WAMIC's founder Edith Tyrrell, the annual award continues today and provides a significant benefit to a third- or fourth-year student in the mineral engineering or geology programs.

WAMIC's generosity continues to support many good causes. Special emphasis has always been given to those involving education, health, women and children, Aboriginal communities and museums, such as the B.C. Museum of Mining (now the Britannia Mine Museum) and the Royal Ontario Museum.

WAMIC began from very humble beginnings as a simple meeting of women connected to the mining industry. Despite a changing world, it still provides friendship amongst mining women and supports worthy causes, while its legacy continues to assist the next generation of mineral exploration and mining professionals in Canada.



◆ DISTINGUISHED SERVICE AWARD

This award recognizes an individual who has achieved one or more of the following: made a substantial contribution to mineral exploration and mining development over a number of years; given considerable time and effort to the PDAC; made outstanding contributions to the mineral industry in the field of finance, geology, geophysics, geochemistry research, or a related activity.

Neil Gow

For using his vast knowledge and experience as a respected geologist to volunteer for the betterment of the mineral exploration and mining industry in Canada.

Neil Gow is a geologist who served the mineral exploration and mining industry in an exemplary fashion. He started his career in Australia before making his way to Canada in 1982. For the most part since then he has been an independent consulting geologist based just outside Toronto in Burlington.

Neil is well-known for his work in lead-zinc, laterite and gold deposits, which included valuation reports for potential investment by clients and independent qualifying reports. Yet, it's his many generous volunteer commitments that make him a standout in his field.

For the past 12 years, Neil has volunteered on the PDAC Convention Planning Committee, and chaired numerous Technical Sessions at the PDAC Convention. For around 15 years he was Secretary-Treasurer of the Toronto Geological Discussion Group, where he organized bi-weekly presentations on various economic and exploration topics.

And it doesn't stop there. Serving as Chairman of the Mineral Resource and Reserves Committee at the Canadian Institute of Mining, Metallurgy & Petroleum (CIM), Neil was part of the team that wrote the *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines* to assist in the planning, supervision, preparation, and reporting of Mineral Resource and Mineral Reserve (MRMR) estimates, which were adopted in 2003. He was also a panel member of a committee for the Ontario Ministry of Northern Development and Mines to identify guidelines for areas having the most likely potential for mineral discovery.

The extensive volunteer contributions of this one individual over the last 30 years are invaluable to the ongoing development of the industry.



◆ SKOOKUM JIM AWARD

Recipients of this award have demonstrated exceptional achievement and/or service in a Canadian Aboriginal-run service business for the Canadian mining industry or a Canadian Aboriginal exploration or mining company, or have made a significant individual contribution to the mining industry.

Peter Moses

For his significant contribution to Canada's mineral exploration and mining industry through his work with companies, government, and Aboriginal communities over a career of more than 50 years.

Peter Moses is an active member of Canada's mineral exploration and mining community. His work as a prospector started early in life when he worked on the family's trapline. Learning from his father and grandfather, Peter's interest in geology grew and would eventually become the basis of a prolific career spanning more than four decades.

The industry is in Peter's blood. He is a fourth generation family member connected to exploration and mining, dating back to his great-grandfather in 1860. In 1964, Peter became one of the first members of his community to succeed in completing a post-secondary education. He began prospecting on his own and also partnering with local team members in the Pic River and Marathon region. He frequently led a prospecting team on extremely rugged terrain, including the North Shore of Lake Superior.

Over 35 years as a part-time prospector, Peter successfully promoted, negotiated and executed 34 option agreements between his partners and junior and major mining companies throughout Canada and the United States. Additionally, he provided prospector training, staking and geoscience (exploration) information workshops to 123 of the 134 First Nation communities in Ontario, as well as the Métis Nation of Ontario. He developed the entire curriculum with the support of other industry associations.

Peter is credited with fostering positive relationships between industry and Aboriginal communities. His impact transcends provincial boundaries, as he networks nationally within the Canadian Aboriginal Minerals Association (CAMA). Outside of CAMA, Peter works in partnership with various industry, government and First Nations organizations, such as PDAC, Northwestern Ontario Prospectors Association (NWOPA), Boreal Prospectors Association (BPA), the Ontario Prospectors Association (OPA), Ministry of Northern Development and Mines (MNDM), Nishnawbe Aski Development Fund, Matawa Tribal Council, and Confederation College and Lakehead University.

Currently, Peter is the Mineral Development Information Officer for Matawa First Nations Management. Here he continues to build on the relationships and accomplishments of the past 50 years, providing perspective and advice on mineral development to the nine Matawa First Nation communities in Northern Ontario, including projects such as the Ring of Fire, Hard Rock Mine Project and the Albany Graphite Deposit.

Peter's past achievements include the Lifetime Achievement Award from NWOPA in 2008, Ontario's Amethyst Award for Outstanding Achievements by Ontario Public Servants in 2009, team recipient of MNDM Group Award, and a Certificate of Appreciation by PDAC in 2009.



AGNICO EAGLE

● BILL DENNIS AWARD

This award, named for a former president of the association, honours an individual or team of explorationists who have accomplished one or both of the following: made a significant mineral discovery; made an important contribution to the prospecting and/or exploration industry.

Val d'Or Exploration division, Agnico Eagle Mines Limited

For discovery of the Amaruq gold deposits in the Amer Lake Basin in Nunavut, Canada.

The high-grade Amaruq deposits represent a significant gold discovery in Nunavut, and are one of the few recent large gold discoveries in Canada. Agnico Eagle Mines Limited's Val d'Or Exploration Division made the discoveries between 2013 and 2016 while prospecting a virtually unexplored part of the Woodburn Lake Belt, 350 kilometres west of Hudson Bay.

The 1,167-square-kilometre Amaruq property includes the robust Whale Tail mineralized system and between 100 and 800 metres north run three parallel gold zones named I, V, and R (IVR). Inferred resources are estimated at 19.4 million tonnes grading 5.97 grams per tonne gold for a total of 3.7 million ounces of gold. Ore-grade drill results include a hole that intersected 47.6 metres estimated true width grading 5.9 grams per tonne gold, at 288 metre depth in the Whale Tail deposit. This illustrates the potential for this to become a giant deposit. Drilling in 2016 indicated that Whale Tail mineralization extends for at least 2.2 kilometres along strike from surface to locally as deep as 730 metres. The highlight of the project for 2016 was the discovery of additional lenses in the V Zone, which dips shallowly toward Whale Tail from surface to 540 metres locally, improving its potential as a second source of open pit ore.

The exploration program originally targeted the IVR gold after reviewing public geological maps and assessment reports. An initial exploration program in 2013 consisted of prospecting, mapping, and a small ground geophysical survey (Mag-EM). A four-hole diamond-drill program targeted the best conductors and the fourth hole intersected gold mineralization. Additional budget was allocated to drill another 10 holes later that year that identified three mineralized zones; I, V and R. The project has grown quickly since then, with significant investment.

In addition to the IVR deposit and Whale Tail, the Val d'Or Exploration Division discovered two more zones of mineralization at nearby Mammoth Lake. Samples from a boulder field north of Mammoth Lake contained visible gold, adding to the resource potential of the area.

The excitement of the discovery is heightened by the timing and location. Reserves at the Meadowbank Gold Mine—one of Agnico's largest gold producers—are expected to be depleted during 2018. Meadowbank is conveniently located just 50 kilometres southeast of Amaruq, meaning much of the essential infrastructure for a producing mine is already in place. Construction of a 62 kilometre access road is underway to connect the mine to Amaruq.

● 2017 MARY-CLAIRE WARD GEOSCIENCE AWARD

*This year's recipient of the Mary-Claire Ward Geoscience Award is **Holly Steenkamp** of Laval University.*

Her PhD thesis involves new regional bedrock mapping in an underexplored part of the south-central Rae craton, in the Tehery Lake–Wager Bay area of northwestern Hudson Bay, Nunavut. Holly is determining the areas regional tectonometamorphic history as recorded by supracrustal rocks. She will use the results to evaluate the character, timing and duration of metamorphic processes that developed in this area associated with the 1.86-1.83 Ga Trans-Hudson orogeny.

Holly received her award at GAC-MAC 2017 that was held May 14-17 in Kingston, Ontario. The award, comprising \$5,000 and a certificate, is given annually and honours the memory of Mary-Claire Ward who died in 2004. Mary-Claire was the Chair of PDAC's Geoscience committee, Chairman of Watts, Griffis and McOuat Ltd., and Past President of the Geological Association of Canada (GAC). She was a passionate advocate for the geosciences in Canada.

The intent of the award is to encourage and support a graduate student in Canada whose thesis contributes to our knowledge about the geological history of Canada. Mapping must be a significant component of the winning thesis.

The award is administered by PDAC, GAC, the National Geological Surveys Committee, the Canadian Geological Foundation, and Watts, Griffis and McOuat Ltd.





◆ ENVIRONMENTAL & SOCIAL RESPONSIBILITY AWARD

This award honours an individual or organization demonstrating outstanding initiative, leadership and accomplishment in protecting and preserving the natural environment and/or in establishing good community relations during an exploration program or operation of a mine.

Teranga Gold Corporation

For outstanding community relations and making proactive, lasting contributions to the communities and surrounding regions of its Sabodala Gold Mine in Senegal, West Africa.

The Sabodala Gold Mine is the first and only gold industrial mine in Senegal. Teranga Gold Corporation has operated the mine since 2009, and has established itself as a leader in community relations and responsible mining practices.

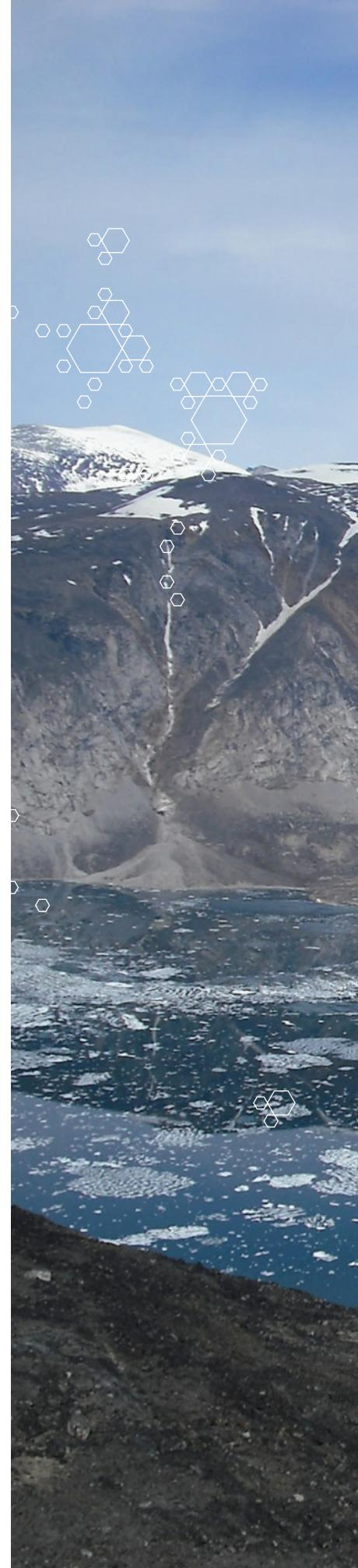
In its 2015 *Sustainability Report*, Teranga acknowledges that it is operating as a guest in Senegal, and the right to be there must be earned. This is reflected in the company's approach to mining, which begins by creating a culture of risk mitigation and shared long-term value with host communities.

Teranga employs more than 1,000 people from Senegal, most from the two regions near the mine, and delivers more than 40 training programs to develop employee skills, literacy and numeracy. Women comprise 9% of the workforce at the Sabodala mine site, and are represented across all departments.

Through the creation of a Regional Development Strategy, Teranga identified ways to further contribute to sustainable growth and development. The company launched initiatives aimed at the growth of small businesses and service providers to feed its local supply chain, and proactively sought partnerships with government, international and local NGOs, and other organizations with similar interest in supporting the long-term, socio-economic development of the region. One such partnership, the Canadian Cooperation Roundtable, was supported by Teranga and gathered 30 Canadian industry and civil-society actors with an interest in the region where the Sabodala mine is located. The Roundtable aimed to facilitate collaboration and information-sharing and contributed to the advancement of 20 different development projects. One such project was a partnership between Teranga and the Paul Gérin-Lajoie Foundation, which aims to provide 50 youths in the region with hands-on vocational training in agricultural skills and technical maintenance.

Teranga is working closely with the Government of Senegal as it introduces its Emerging Senegal Plan, which includes implementing the *Extractive Industries Transparency Initiative*. Furthermore, support from Teranga and the Embassy of Canada in Senegal has enabled the creation of three long-term land use management strategies and development plans in partnership with department-level governments in the area of the mine.

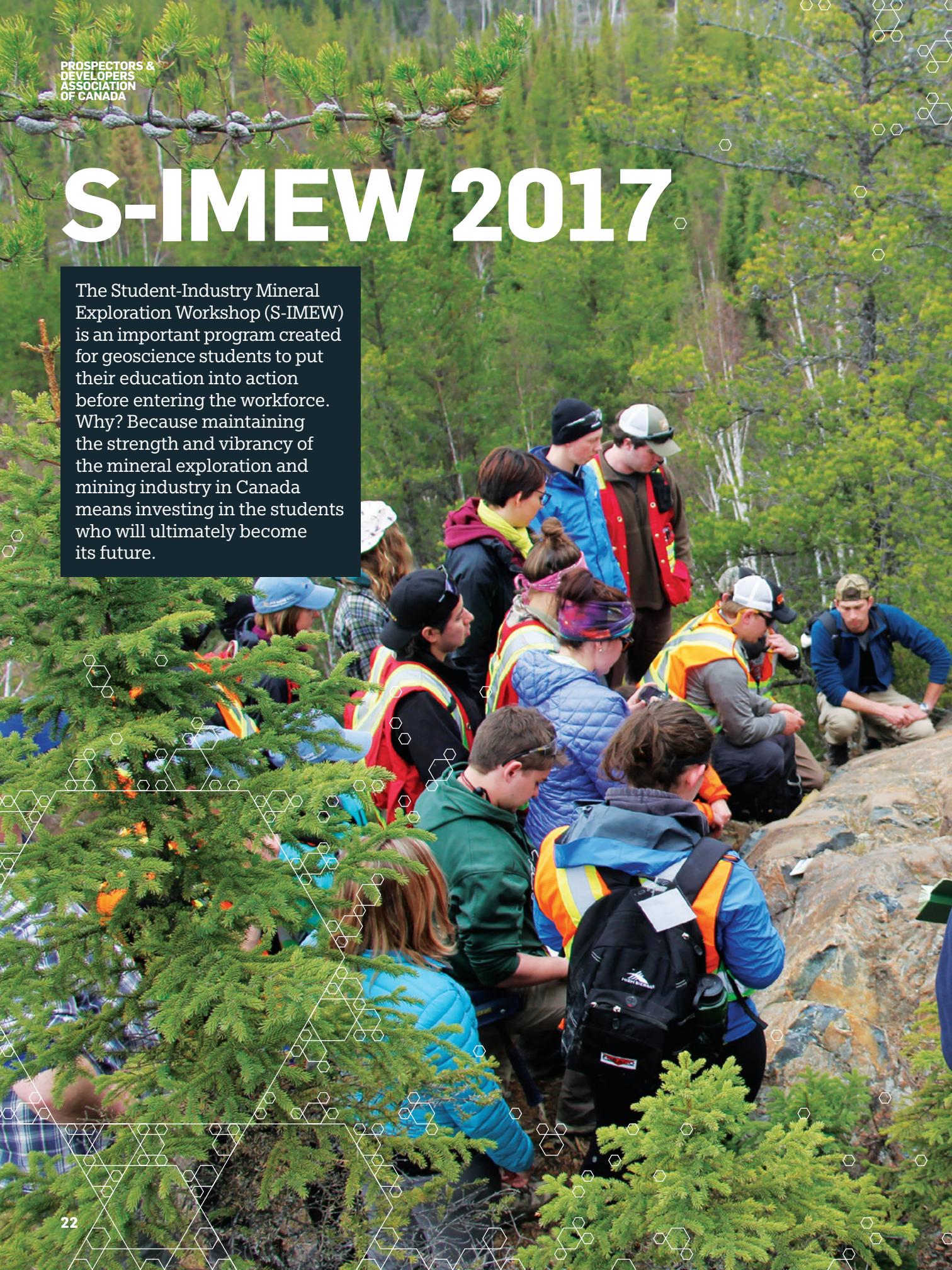
Teranga also employs a Social Fund, managed in partnership with local administration and community representatives, to support small-scale, sustainable community development projects. In 2013, more than \$1.79 million was invested through the Teranga Social Fund. By 2015, it was over \$4.48 million, with an annual commitment of \$1.57 million going forward. ▶





S-IMEW 2017

The Student-Industry Mineral Exploration Workshop (S-IMEW) is an important program created for geoscience students to put their education into action before entering the workforce. Why? Because maintaining the strength and vibrancy of the mineral exploration and mining industry in Canada means investing in the students who will ultimately become its future.



S-IMEW 2017 HIGHLIGHTS

- Hands-on demonstrations of electromagnetic induction and induced polarization geophysics
- Tour of the Sudbury Basin
- Government mapping with the Ontario Geological Survey
- Exploration grid-mapping with Wallbridge personnel
- Exploring a diamond drill with Foraco
- Glencore Smelter tour
- Lake sediment sampling
- Two underground mine tours (Bell Creek and Timmins West)
- Career presentations by several S-IMEW alumni

THIS YEAR, PDAC WELCOMED 25 OF CANADA'S TOP GEOSCIENCE STUDENTS TO SUDBURY, Ontario to take part in the annual S-IMEW program from May 4-19. As a point of pride, more than half of the students in 2017 were female, demonstrating the diverse and gender-balanced direction the sector is moving towards.

More than 90 geoscience professionals—without whom, S-IMEW would not be possible—generously donated their time and expertise to the workshop. Keith Barron, Chairman and CEO of Aurania Resources Ltd. kicked things off by sharing his exploration journey and gave an update on his exciting new project, Lost Cities.

The workshop included a tour of the Sudbury Basin, exploration mapping with Wallbridge Mining personnel, government mapping with the Ontario Geological Survey, a tour of the Glencore Smelter, and a crash course in mineral economics with Professor Michael Doggett. There were stops along the Noranda camp in Quebec and the world-class Pyke Hill Komatiite where students marvelled at the spinifex texture of the flows. Tahoe Canada hosted a tour of two underground mines, Timmins West and Bell Creek, providing a glimpse into the daily life of a mine geologist.

PDAC was surprised to recently learn about a student program named National Exploration Undercover School (NExUS) operating in Australia. It closely resembled S-IMEW, however neither program was known to the other. To learn more about S-IMEW—and to look for ways to possibly partner and collaborate—one of the NExUS founders, Dr. Richard Lilly from the University of Adelaide, South Australia, travelled to Canada to join the students on a four-day field trip to the Abitibi Greenstone Belt to explore the geology of Timmins and Rouyn-Noranda. At the final reception, Richard thanked the S-IMEW organizers and presented the co-chairs, Felix Lee and Karen Rees, with a ceremonial boomerang.

Thank you to all of the outstanding volunteers and sponsors who allow S-IMEW and its participants to succeed each and every year. Without this ongoing support and generosity, students would not have this exceptional opportunity. ◀

PDAC'S S-IMEW AN AUSTRALIAN PERSPECTIVE

by Richard Lilly, National Exploration Undercover School (NExUS), University of Adelaide

THE AUSTRALIAN NATIONAL EXPLORATION UNDERCOVER SCHOOL (NEXUS) WAS ESTABLISHED IN 2016 by Graham Heinson and Richard Lilly of the University of Adelaide. The aim was to immerse and upskill 30 students and early career geoscientists from across Australia. Topics included current and emerging geophysical, geochemical and geological exploration techniques, the challenges facing the minerals industry, career advice and networking opportunities. Unknown to the NExUS organizers, the Prospectors & Developers Association of Canada (PDAC) has been proactively addressing the same challenges since 2007 through the prestigious Student-Industry Mineral Exploration Workshop (S-IMEW).

After learning about the existence of each other's mutually-aligned courses, and a couple of good-natured Skype calls later, I found myself on a flight to Sudbury. I would join the students for the second week of their S-IMEW experience to provide a perspective for our NExUS course and to learn from our Canadian counterparts. Student participants apply to take part in S-IMEW—a single student selected from each institution teaching geology (NExUS selects two per institution)—with the aim to bring a cohort of highly-motivated future geoscience leaders together for an exceptional training and professional development experience.

The first week of S-IMEW covered professional and networking skills, geochemistry (including QAQC), geological reporting, geological mapping from both government survey and exploration approaches, a Sudbury Basin fieldtrip and a visit to Glencore's Ni smelter. The second week promised a fieldtrip through the Archean Abitibi Province with world-class field days at Rouyn-Noranda (Archean VMS), Timmins (Greenstone Au), Pyke Hill (komatiites), industry meet-and-greet and career advice sessions, a 'diamond-day,' as well as an underground visit to a producing Au mine and Au processing facilities. A packed schedule!

I was met in a sunny Sudbury by S-IMEW Student Coordinator Marc Gasparotto and immediately joined the group in their fleet of mini-buses to travel the 350 km north to Rouyn-Noranda, Quebec. One thing Australia and Canada certainly have in common is scale! On route a stop was made to observe 2.79Ga banded iron formations (BIF) of the Archean Abitibi Basin. Being used to Australia's often ancient and deeply weathered exposures, seeing polished fresh rocks of such great age was staggering. I am not sure the Canadian students can appreciate how fortunate they are to have such well-presented outcrops!

The theme of being staggered by what I was seeing continued in the field for the next couple of days with a full-day fieldtrip around the classic Noranda-camp VMS deposits (led by Gérald Riverin) to view mineralized exposures, brecciation and alteration. This was followed by a textbook volcano-stratigraphic logging exercise within sight of Glencore's Noranda operation. I also felt I was getting a true taste of Canada by crossing a beaver dam to get to outcrops and tasting my first double-double and poutine (but not at the same time).

As soon as we were in the field it was clear that the S-IMEW selection process is working well, with keen cheerful students having to be prised off each outcrop to return to the buses. A neat bonus for the students is that they each get their own 'rock-box'—a large cardboard filing box that gets delivered by PDAC to the students' homes to encourage sample collecting. Some of these boxes were seriously weighty by the end of the week!

Evenings were also packed, with time for a quick change before evening activities and post-dinner talks from industry representatives. Evening sessions covered a range of topics including career paths, ore deposit models and successful exploration case studies.

After two days in Quebec the fieldtrip moved locations to Timmins, Ontario stopping at Pyke Hill to view the world-class komatiite flows and also visit the Potter Mine Cu-Zn-Pb deposit. Timmins reminded me very much of Mount Isa in Queensland, a proud mining community with a history inseparable from the minerals industry. The first day in Timmins featured a geology tour





of the area, including historical outcrops and mine visits to Goldcorp's Porcupine Dome and Hollinger open pits. Tahoe Canada hosted an excellent meet-and-greet evening where the students could meet senior staff from all facets of the Timmins operations and get a perspective on the range of geoscience-related careers that exist. The students were also treated to comprehensive tours of Tahoe Canada Timmins West and Bell Creek underground mines and their Bell Creek Au processing mill. I have never been on a tour that has had such open access to operations at this scale. The pace of the fieldtrip was unrelenting and after a day spent underground at a mine and visiting processing facilities, the group re-boarded the mini-buses to return 300 km back to Sudbury.

The energy and positivity displayed by the students in the field was impressive. It was also extremely pleasing to see the students looking out for each other in the field; a sure sign that a strong group dynamic has been built. Hopefully these friendships will continue into the cohort's professional networks during their careers; an aim very much shared by NExUS.

The final day of S-IMEW was hosted by senior geologists from De Beers Canada and included a great series of lectures on kimberlite geology and diamond exploration. We were also allowed privileged access to diamond exploration drill core and spent a few fascinating hours viewing complex breccia textures. The level of technical expertise the students were exposed to on this and every other day was remarkable. To top the diamond-day off we were then taken to the (not-so) secret diamond cutting facility in downtown Sudbury where we were allowed to get up close to hundreds of Canadian diamonds, including raw stones in the process of being cut and faceted. With exposure

to so much information and new experiences I suspect some of the learning outcomes from the workshop will take some time to settle in, and for the students to reflect on the fantastic opportunity that S-IMEW represents to their careers.

The workshop concluded with a farewell meal, where contributing industry geoscientists, academics, previous S-IMEW alumni and their guests mingled and discussed the previous two weeks. Speeches were made and the whole experience was wrapped up by the organizers. I was able to present S-IMEW Chairman Felix Lee with an Australian boomerang painted with traditional Aboriginal designs—a symbol of a relationship between S-IMEW and NExUS that will hopefully keep returning. To provide a Canadian perspective for NExUS 2017 we plan to involve a S-IMEW alumnus as a demonstrator during the course. Hopefully further cross-pollination initiatives can take place in future years to continue to exchange ideas and approaches in exploration between Australian and Canadian geoscientists.

Reflecting on an extremely memorable week I was struck by the profound similarities of the exploration and mining histories of Canada and Australia, including the scale of both countries and the late-nineteenth century timing and serendipity of many of the mineral discoveries. The logistical and climatic challenges of development and sustaining remote mining camps (in the face of the near opposite climatic extremes between Australia and Canada) and the pride inherent in the mining communities we visited (and their mutual love of big trucks and beer!).

The current and future challenges facing the exploration industry are also highly comparable between the two countries as we explore ever more remote areas and under cover. Surely one of the best ways to address the challenges of the future is to upskill the next generation of explorers and to assist in providing a network for them to learn from. Hopefully the motivated future leaders of S-IMEW will help address the challenge in Canada as it is hoped the NExUS alumni will in Australia.

My thanks go to Felix Lee, Karen Rees and Marc Gasparotto for the invitation to attend and for the S-IMEW cohort for making me feel so welcome during the fieldtrip. I am hopeful to be able to join the next S-IMEW group in 2018 to continue the positive connection between our two exploration training initiatives. ▲

THE S-IMEW QUESTIONNAIRE



**Matthew
DeGasperis**
Western University (UWO)

What was your favourite S-IMEW moment?

Meeting and getting to know my fellow students was definitely a highlight. Picking a specific moment is difficult but if I were to choose it would be at the Glencore drill site. I learned some important drilling techniques (e.g. ins and outs of wedging) that have given me more insight for operations support in my role as a project geologist. It was also a great spot for talking with students about their experiences. Overall, good job Glencore!

What was your favourite day?

See above. Glencore day was great. However, there were many other amazing days, mainly while out in the field, like government mapping day, exploration mapping with Wallbridge, as well as the days spent in Noranda and Timmins.

What effects do you think S-IMEW will have on your career?

I strongly believe S-IMEW will have a positive effect on my career. Not only have I made strong connections with some top industry personnel, I have made strong connections with my generation's geologists around the country. The latter alone could bring amazing job and entrepreneurial opportunities going forward. Also, the prestige of being a S-IMEW alumni and having it on my resume could instantly translate into a career. Other benefits include being exposed to industry regulations, technologies and processes.

Was there a speaker that inspired you the most?

I would say the keynote speaker Keith Barron was most inspirational to me. His story of perseverance through tough times in the industry and/or in his career eventually leading to his discovery of the Fruta del Norte world-class deposit in Ecuador was amazing and truly inspirational. What an amazing speaker and storyteller.

How did the presence of S-IMEW alumni speakers affect your experience?

Learning what S-IMEW did for fellow alumni was eye opening and a really nice change-up in the daily talks. It made the evening more relaxing after a long day. The talks were a lot easier to follow at that time of the day/evening. Learning where these alumni are at in their careers within just a few years after their S-IMEW experience was also very motivational. Overall this was a really great part of the program and they should try to bring in more speakers for the evening talks.

What lesson did you take away from your experience underground?

Safety is definitely a priority. This is true anywhere but underground there are so many more concerns to look out for and be aware of.

What lesson did you take away from your experience in the field?

Same as above. Also some techniques used for mapping and drilling processes.

Would you like to say anything to the sponsors?

Thank you to all the sponsors for making S-IMEW possible. Your sponsorship of this program is very important for the development of the many new generations of geoscientists for the mining and exploration industry. Not only have we made strong, long-lasting connections and friendships, we have gained valuable practical knowledge and experience. Programs like S-IMEW are what make our industry great and will continue to do so with your help.



**Kassandra
Sofonio**
McGill University

What was your favourite S-IMEW moment?

My favourite moment was when we visited the Glencore Smelter and saw them pour the molten metal into large crucibles. I had never seen anything similar and it really impressed me.

What was your favourite day?

My favourite day was the Pyke Hill day of the Noranda Field Trip. Seeing the komatiites and having a tour of the geology in that area was one of the highlights of the trip for me. In addition, our guide made the visit extremely dynamic and poignant.

What effects do you think S-IMEW will have on your career?

I think S-IMEW has given me a bit of an advantage over the other students that didn't get the chance to participate in the workshop. The connections I made, the experiences I gained, and the speakers I met all helped give me insight into having a successful career. I developed tools at the workshop that I am sure will help me with my career in the future.

Was there a speaker that inspired you the most?

There are many speakers that inspired me, but if I had to choose one I would say Patrick McAndless stands out the most. He gave an incredible speech and he really tries to help the students with their careers. Even when the workshop ended we kept in contact and he has helped me with various things, such as how I should present myself to a potential employer.

How did the presence of S-IMEW alumni speakers affect your experience?

The speakers really opened my eyes to a lot of topics I knew nothing about. In school we learn a lot of geological theory, but we don't really learn about the industry. The speakers provided a lot of insight and advice about having a geological career.

What lesson did you take away from your experience underground?

Considering how our underground experience was terminated prematurely due to a power outage, the main takeaway is that going underground can be unpredictable. There are dangers, as well as unforeseen circumstances, so vigilance is required while working underground.

What lesson did you take away from your experience in the field?

I learned a lot of techniques in the field that I hadn't learnt during my field schools. Essentially, it made me realize that there are a lot of different methods to conduct exploration, and that these methods ameliorate with time as technology advances.

Would you like to say anything to the sponsors?

I would just like to immensely thank the sponsors. S-IMEW has been one of the most enriching experiences of my geological career to date. I am often reminiscent about the workshop and all the wonderful memories I got thanks to it. ▶

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FLOW-THROUGH SHARES

A TOOL FOR SUCCESS

To showcase the critical role the Mineral Exploration Tax Credit (METC) and super flow-through share system play in supporting early stage exploration in Canada, PDAC undertook extensive research to understand how it works. Here is what we found.

Without super flow-through shares (SFTS), the successful, globe-spanning company we now know as Agnico Eagle Mines would not exist. This was just one of the astonishing insights gleaned from PDAC research into the impact of this one-of-a-kind fiscal incentive that supports early stage mineral exploration in Canada. Tax policy is arcane at the best of times, and rather than trying to explain how flow-through shares work, this article tries to shine some light on the impacts of this innovative tax policy measure.

THE ONLY GAME IN TOWN: SUSTAINING COMPANIES DURING MARKET DOWNTURNS

While the absolute amount of money raised using SFTS goes up and down in line with the broader business cycles that characterize the industry, PDAC's analysis of financing data has shown that flow-through financing accounts for a larger percentage of the total amount of money raised for mineral exploration in Canada during downturns, highlighting its importance as a counter-cyclical tool. This finding was reinforced by PDAC research in 2016, including the results of a questionnaire distributed by PDAC to its members. Thirty per cent of respondents noted that the primary appeal of super flow-through shares is their ability to raise capital during times when it's difficult to raise "hard dollars" (i.e. financing from other sources). Almost two-thirds of respondents indicated that the ability to raise money via SFTS helped catalyze additional equity financing subsequently, with over 80% indicating that it helped attract funding from new investors, beyond their flow-through financing base.

INFRASTRUCTURE

"[Flow-through financing] allowed exploration to continue almost without interruption through the post Bre-X scandal dark years."
– Kerry Curtis, CEO of Cumberland Resources

Two PDAC case studies also reveal the critical importance of SFTS during financial downturns. Cumberland Resources raised \$18 million between 1998 and 2002, a time when it was very difficult to finance mineral exploration. During this period, flow-through share financing accounted for between 50% to 100% of the total amount of equity financing raised by the company during these tough years. Their exploration work ultimately led to the opening of the Meadowbank mine in Nunavut. Similarly, 100% of the \$5.5 million raised by Terrane Metals in 2009, at the depths of the global financial crisis, came from flow-through funds. Their exploration work led to the opening of the Mt. Milligan mine in British Columbia.

LAYING THE GROUND FOR PROSPERITY: MAKING DISCOVERIES, MOVING DISCOVERIES INTO PRODUCTION

The most common exploration activities undertaken with flow-through funds include drilling and geophysical surveys. All of the companies that responded to PDAC inquiries indicated that without flow-through financing, exploration programs would either have been significantly smaller, or cancelled altogether. Sixty per cent of respondents said that the exploration financed using SFTS led directly to a new discovery, with one-quarter of respondents saying that their flow-through financed exploration activity led to discoveries that have become producing mines.

"[Exploration activity financed by flow-through shares] directly led to the discovery of the over one-million ounce resource [Meadowbank deposit, Nunavut] in 2000."

– Kerry Curtis, CEO of Cumberland Resources

CONTRIBUTING TO SUSTAINABLE DEVELOPMENT: THE SOCIO-ECONOMIC IMPACTS OF FLOW-THROUGH SHARES

While the socio-economic impacts of operating mines are relatively well-known, economic opportunities are also generated by mineral exploration. Over 90% of questionnaire respondents noted that the exploration activity financed by super flow-through shares generated employment and business development opportunities for the residents of rural and remote communities. Over 80% generated employment and business development opportunities for Indigenous People and communities.

It is impossible to overstate the importance of the flow-through regime for jobs and investment in the North and Aboriginal communities.

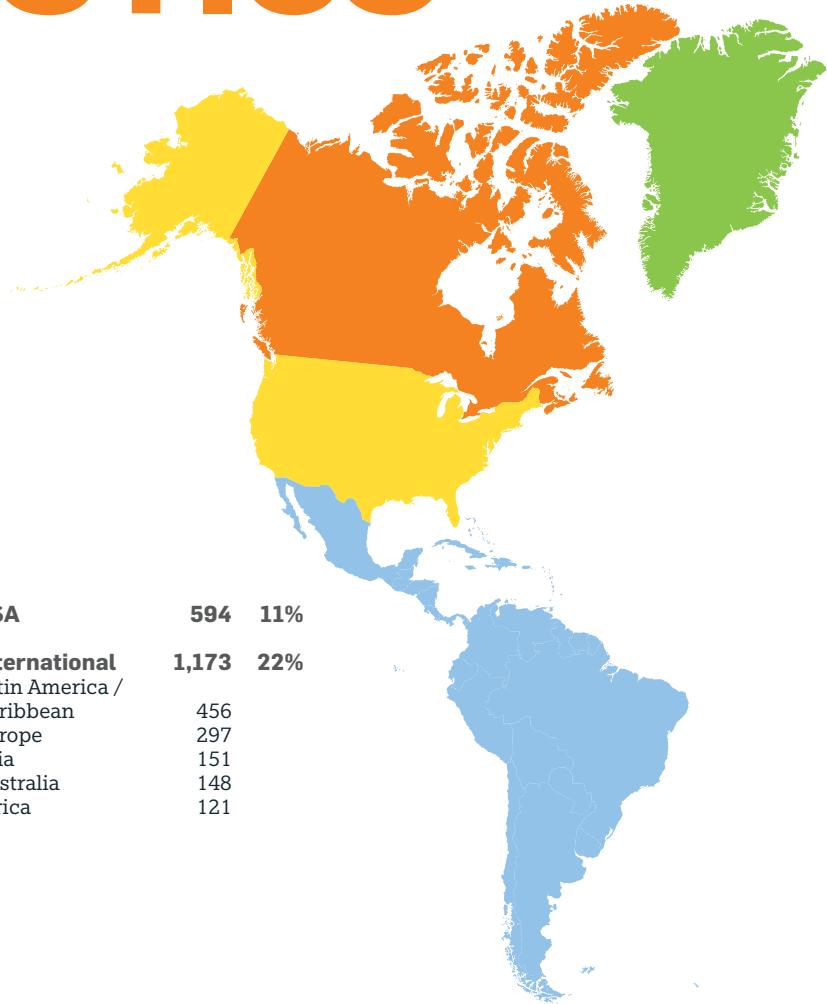
– Trent Mell, President & CEO, First Cobalt Co.

The super flow-through regime can also take some credit for the socio-economic opportunities generated at the production stage, for those mines developing mineral deposits discovered by flow-through financed exploration. Meadowbank mine, for example, distributed \$24 million in payroll to 300 Inuit employees in 2015, and spent \$1.3 billion in local procurement between 2007 and 2015. Mt. Milligan spent \$250 million in local procurement between 2011 and 2015, and has 60 First Nations employees (13% of the workforce). Both mines have generated tens of millions of dollars in resource-related revenues for various levels of government, in the form of taxes and royalties.

DEFENDING SUPER FLOW-THROUGH: PDAC STEPPING UP TO THE PLATE

Based on this research, PDAC undertook a range of advocacy activities in 2016 to inform the Federal Government's review of the super flow-through share (SFTS) regime, in partnership with regional industry associations and Mining Ministers from across Canada. This advocacy successfully secured the support of Natural Resources Minister Jim Carr and Finance Minister Bill Morneau. As a result, the SFTS regime was maintained in Budget 2017, a significant advocacy win for PDAC and Natural Resources Canada on behalf of the Canadian mineral exploration industry. This is just one more example of how PDAC is working for its members, to support a competitive and responsible Canadian mineral exploration industry. ◀

2017 PDAC MEMBERSHIP STATISTICS



INDIVIDUAL MEMBERS
(EXCLUDING STUDENTS)
5,433

Canada	3,666	67%	USA	594	11%
NT	28		International	1,173	22%
NU	8		Latin America /		
YT	36		Caribbean	456	
BC	855		Europe	297	
AB	110		Asia	151	
SK	75		Australia	148	
MB	53		Africa	121	
ON	2,032				
QC	334				
PE	2				
NB	30				
NS	47				
NL	56				

PDAC MEMBERSHIP TREND	Individual members	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Core	2,053	2,300	2,061	2,185	2,432	2,524	2,540	2,355	2,068	1,805	1,636
	Regular	2,683	2,755	1,976	2,408	3,283	3,891	3,827	3,124	2,794	2,450	2,713
	Senior	462	484	509	501	644	768	832	808	792	733	688
	Student	487	637	606	933	1,048	1,543	1,662	1,407	1,228	1,114	1,092
	Life	175	197	208	273	288	290	293	289	283	294	396
	Total	5,860	6,373	5,360	6,300	7,695	9,016	9,154	7,983	7,165	6,396	6,525
	Variance (%)	12%	9%	-16%	18%	22%	17%	2%	-13%	-10%	-11%	2%

**CORPORATE MEMBERS
908**

Canada	688	76%
NT	4	
NU	4	
YT	2	
BC	244	
AB	27	
SK	13	
MB	6	
ON	291	
QC	74	
PE	0	
NB	8	
NS	7	
NL	8	

USA 81 9%

International	139	15%
Europe	54	
Australia	43	
Latin America / Caribbean	16	
Asia	15	
Africa	11	

**STUDENT MEMBERS
1,092**

Canada	1,003	92%
NT	0	
NU	0	
YT	2	
BC	45	
AB	26	
SK	24	
MB	28	
ON	677	
QC	107	
PE	1	
NB	18	
NS	51	
NL	24	

USA 45 4%

International	44	4%
Europe	22	
Africa	9	
Latin America / Caribbean	8	
Australia	5	
Asia	0	

Corporate members	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Class A	13	18	17	19	26	24	25	23	20	16	18
Class B	7	7	4	5	10	8	9	5	9	8	6
Class C	11	15	15	16	20	23	22	9	10	9	9
Class D	9	7	16	19	22	24	21	26	18	15	14
Class E	1	2	8	18	17	15	18	12	12	11	14
Class F	17	15	-	-	-	-	-	-	-	-	-
Junior Exploration	445	547	561	545	577	651	583	449	384	303	355
Non-Mining	277	349	374	402	430	525	556	537	507	514	492
Total	780	960	995	1,024	1,102	1,270	1,234	1,061	960	876	908
Variance (%)	10%	23%	4%	3%	8%	15%	-3%	-14%	-10%	-9%	4%



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PRODUCED BY PDAC'S
COMMUNICATIONS DEPARTMENT

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