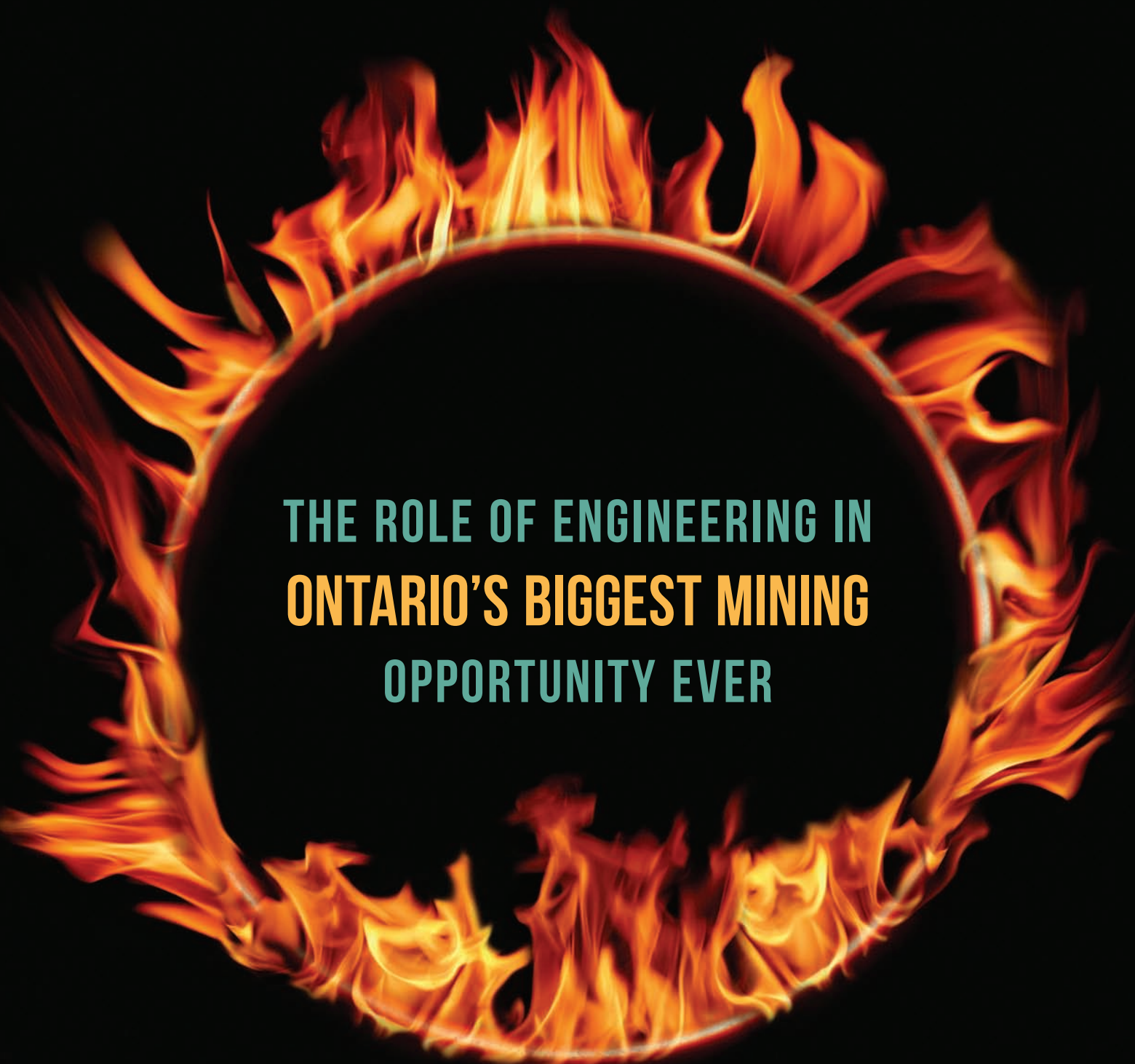




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Ontario

ENGINEERING DIMENSIONS

SEPTEMBER/OCTOBER 2014



THE ROLE OF ENGINEERING IN
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EXPANDING OUR OUTLOOK



J. David Adams, P.Eng., FEC
President

IN 2010, we modified the definition of the practice of professional engineering in the *Professional Engineers Act* to read:

“Practice of professional engineering’ means any act of planning, designing, composing, evaluating, advising, reporting, directing or supervising that requires the application of engineering principles and concerns the safeguarding of life, health, property, economic interests, the public welfare or

the environment, or managing of any such act.” 2010, c.16, Sched. 2, s.5(1).

Since the safeguarding of “economic interests” has been designated as one of the concerns of our act, the annual licensing of only 2500 of the 6000 engineering graduates from Ontario universities, largely because of the lack of opportunity for them to obtain their four years of experience for licensure, is unacceptable! The pursuit of a solution becomes an issue of responsibility and concern about others.

Expansion of our efforts in international marketing and related mobility for our engineers would increase our penetration of world markets, with a resulting opportunity to increase employment in Canada.

While Canada is now among the world’s top exporters of engineering services, it must be duly noted that the promotion of engineering initiatives abroad is no longer the domain of large international companies, but is now welcomed from individuals who have ideas and plans to exploit them, with the aid of government and private investment.

Personally, I became aware of the planned increase in opportunity for Canada when Akhilesh Mishra, consul general of India and an engineering graduate, addressed the Indian Institutes of Technology Alumni Canada’s PanIIT 2014 International Conference in Toronto. He explained in some detail his country’s plans to place greater emphasis on modernizing India’s infrastructure since the recent election of its new government. Subsequent to this event, at which I also spoke on the introduction of new technologies, Mr. Mishra invited me to attend his embassy to discuss the very great need for improved transportation infrastructure, energy generation and distribution, and biomass incineration of waste among other initiatives in India. He expressed

hope that Canadian engineers would increase their participation in this work.

Global demand for engineering services requires the establishment of internationally recognized qualification and practice standards to protect public safety abroad to the same standards of protection as have been established in Canada.

This is accomplished in practical terms through mutual recognition agreements that recognize the substantial equivalence of international engineering qualifications to those of our own, permitting immigrants to practise here in Canada and us to practise abroad.

**GLOBAL DEMAND FOR
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IN CANADA.**

In application of the Washington Accord, one of the mutual recognition agreements referred to above, PEO’s Academic Requirements Committee is favourably “looking to exempt”

[PRESIDENT'S MESSAGE]

from PEO technical examinations those internationally trained engineering graduates coming to Canada from the accord's signatory countries.

However, wishing to learn more at the PanIIT conference about engineers from India, to my surprise, I found a lack of knowledge and profound apprehension of anticipated difficulties with PEO's licensing process from these well-qualified engineering graduates. In fact, most of these engineering graduates from the best universities in India were now working in Ontario without a PEO licence. They were apprehensive of applying because they felt it a barrier they did not need to contend with because, among other reasons, they had the misconception that the so-called industrial exception meant they really did not need to be licensed.

Immediate measures must be taken to alleviate these fears about our licensing process and to correct the inaccurate interpretation of the industrial exception by conducting seminars on the merits, process and necessity for PEO licensure.

Obviously, a second action by PEO should be to drive home just how much the industrial exception is distorting licensure in Ontario. Such action, in addition to providing proper direction, could add a substantial number of new members to our association.

The need to change our experience requirements interview process for international applicants still remains an issue. PEO does not interview Canadian graduates for their experience requirements before licensure, using instead their workplace reports over four years for this purpose. Why do we not require such reports from the signatories to the accord for their internationally trained? Many of the signatories to the Washington Accord could make these available, I am sure, for they, too, are industrialized societies that keep records. Alternatively, the fairness commissioner could demand the introduction of experience reviews for domestic graduates.

In all of this we obviously have a discriminatory perception problem to overcome—one that would be much easier to solve if we accepted academic review under the Washington Accord and required similar experience reports for international applicants.

For your information, signatories to the Washington Accord's academic standards include the following 21 countries, many of which are prominent technical powers: Australia, Bangladesh, Canada, China, Chinese Taipei (Taiwan), Hong Kong, India, Ireland, Japan, Korea, Malaysia, New Zealand, Pakistan, Philippines, Russia, Singapore, South

Africa, Sri Lanka, Turkey, the United Kingdom and the United States.

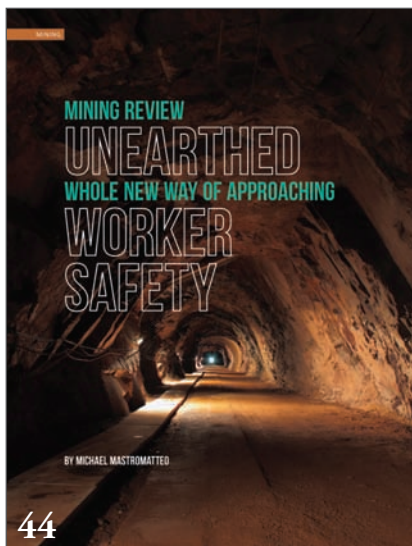
Of those who have worked abroad, I am sure many can relate to such an impressive array of developed and developing countries with which to do business.

With clear indications that a vast array of global engineering work beckons, for single operators as well as large multi-national companies, where design and fabrication might largely take place in Canada, and where both domestic and internationally trained engineers could take part, it behooves us to strike while the iron is hot and exercise our rights as a founding signatory of 25 years. With judicious application, standards set by the Washington Accord could provide a model for appropriate acceptance of offshore engineering throughout Canada.

I urge PEO to accept the realities of fast-moving international business, recognize the adequacy of the Washington Accord, become a compatible, fully established player, and serve our members accordingly. It is too important an issue to leave unanswered and unsolved. Thank you very much. Σ

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PATIENCE IS A VIRTUE



Jennifer Coombes
Editor

“IF WE WIN Lotto 6/49, it would be fun to wait 25 years to collect the prize,” said no one ever. A similar test of patience, except on a provincial scale, is playing out with what’s been dubbed the Ring of Fire—a discovery of what’s thought to be enormous quantities of chromite (a key alloying ingredient in stainless steel) in Ontario’s far north. It’s likely the biggest mining opportunity Ontario will ever see.

According to some estimates, the quantity of chromite in the Ring of Fire could keep North America in the mineral for at least a couple of centuries and would essentially make Ontario a chromite superpower (and give the handful of other countries with appreciable quantities of the stuff a run for their money).

But before we get too excited, there are just a few obstacles to overcome. With the dearth of roads and rail lines, getting to the site—all 5000 square km of it—is itself an achievement. Getting power there will be the next challenge. And, of course, there is the difficult and time-consuming nature of coordinating the development of these basic requirements with all the stakeholders, including multiple layers of government and First Nation communities.

In “Ring of Fire puts spotlight on northern Ontario’s mining industry” (p. 38), Nicole Axworthy outlines some of the project’s current roadblocks and explores the role of Ontario’s engineers in realizing the potential of this vast resource, while also ensuring that environmental concerns and cultural sensitivities are fully taken into account.

With our second feature, we switch gears a bit and discuss the contributions made by the mining industry to modern, workplace health and safety.

Ontario’s workers owe a debt of gratitude to the mining industry and, most especially, to the late James Ham, ScD, P.Eng., who, with his 1976 *Report of the Royal Commission on the Health and Safety of Workers in Mines*, laid the groundwork for Ontario’s *Occupational Health and Safety Act* (OHSA), which came into force in 1979. Ham, of course, was the father of the IRS (Internal Responsibility System), a revolutionary concept at the time that put the responsibility for health and safety squarely on the shoulders of absolutely everyone at a workplace. The “right to participate” concept remains the backbone of the OHSA.

In “Mining review unearthed whole new way of approaching worker safety” (p. 44), Michael Mastromatteo retraces the history of Ham’s groundbreaking review of the province’s health and safety practices and looks at the more recent components of the OHSA, as well as the Ministry of Labour’s ongoing mining safety review, which is intended to increase further the safety of mine workers.

Please also take a moment to read the inspiring biographies of the 11 engineers who will be recognized this year with Ontario Professional Engineers Awards (OPEA) (p. 9). They will be celebrated at the November 22 OPEA gala at the International Centre in Toronto. For tickets and more information, please visit www.ospe.on.ca. Σ

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Professional Engineers Ontario

THIS ISSUE: The mining industry, so closely identified with Ontario and its engineers, hasn't had major play in this magazine for at least 20 years. But with the industry now poised to take advantage of exciting new opportunities, it's time to take stock of the engineering profession's many contributions to this vital sector of the economy.

ENFORCEMENT HOTLINE

Please report any person or company you suspect is practising engineering illegally or illegally using engineering titles. Call the PEO enforcement hotline at 416-224-9528, ext. 1444 or 800-339-3716, ext. 1444. Or email enforcement@peo.on.ca.

Through the *Professional Engineers Act*, Professional Engineers Ontario governs licence and certificate holders and regulates professional engineering in Ontario to serve and protect the public.

SOUNDS LIKE A (STRATEGIC) PLAN FOR PEO

By Michael Mastromatteo



Less than a year into his position as registrar, Gerard McDonald, P.Eng., is well along in leading the development of a new strategic plan for Ontario's engineering regulator.

It's PEO's first attempt at drafting a full strategic plan in nearly 10 years. PEO's most recent strategic plan, covering the years 2005 to 2009, was approved in 2005, but implementation was stopped by a council decision the following year.

Since then, PEO has been without a fully articulated strategic plan, although it made some moves in a strategic direction in 2009 when then-president Catherine Karakatsanis, P.Eng., FEC, won approval of a "big audacious goal," and a number of vivid descriptions and strategic intents.

PEO council authorized work to begin on a strategic plan to focus the organization's activities from 2015 to 2017 at its March meeting. Over the next several months, senior management, staff, volunteers and council members considered PEO's strengths and weaknesses and

the opportunities and threats it would be facing over the plan period. New vision and mission statements were solicited and refined at the Penta Forum, Committee Chairs and Council workshops, and several staff sessions. Goal areas were selected that relate to elements PEO must concentrate attention on during the course of the plan to move closer to its vision. PEO's core values of accountability, respect, integrity, professionalism and teamwork were reconfirmed as part of the strategic planning process.

Now underway is articulation of strategic objectives for the plan period for each of the goal areas, strategies for reaching the objectives, and key performance indicators for council to use to measure progress.

Council is expected to approve PEO's 2015-2017 Strategic Plan and the associated budget elements for the 2015 calendar year at its November meeting.

BUILDING CODE ACT amendment raises red flag for PEO

By Michael Mastromatteo

PEO HAS ONCE again expressed concern to the Ontario government about a potential incursion on its jurisdiction under the *Professional Engineers Act*.

The concern relates to an amendment to subsection 8(2) of the *Building Code Act, 1992* that was introduced in May as part of the provincial budget and subsequently reintroduced in July, following the election, as part of Bill 14, the *Building Opportunity and Securing our Future Act (Budget Measures), 2014*, which was passed by the legislature on July 24.

The amendment adds a clause (b.1) to the subsection of the *Building Code Act* that lists the conditions under which chief building officials

(CBOs) may refuse to issue building permits. With the amendment, CBOs may refuse to issue permits where "the *Architects Act* or the *Professional Engineers Act* requires that the proposed construction of the building be designed by an architect or a professional engineer or a combination of both and the proposed construction is not so designed."

In a July 9 letter to housing minister Ted McMeekin, PEO President David Adams, P.Eng., FEC, describes the amendment as "an unnecessary encroachment" on PEO's exclusive jurisdiction under its legislation. "As we interpret it," he writes, "this clause would authorize chief building officials to enforce the *Professional Engineers Act* and the *Architects Act*, as it would appear to place them in the role of determining when a design submission for a permit would require an architect or engineer, or both."

Adams also reminds the minister that the 2007 Divisional Court decision on PEO's challenge to 2006 amendments to the Ontario Building Code "confirmed the exclusive jurisdiction of the professional acts." He

then reiterates PEO's position that the building code legislation should "play no part in allocating design activities between PEO licensees and architects" because the practices of the professions are defined in their acts and the policing of the acts "should be left to the regulatory bodies established by the acts for that purpose." He closes by noting the provision in both the architects' and engineers' acts for a referral to a Joint Practice Board to allocate design activities between PEO licensees and architects.

In his July 17 reply, Minister McMeekin confirms that the (then-proposed) amendments to the *Building Code Act* "are not intended to allocate design activities between PEO licensees and architects," but are instead intended to "refer specifically to the allocation of design activities as set out in the *Professional Engineers Act* and *Architects Act*." He continues by stating: "Our intent is that any question that a chief building official has regarding whether a particular building is required to be designed by a PEO licensee or architect... would be referred to PEO and/or OAA [Ontario Architects Association]."

However, in an article in the July 31 issue of its *Ontario CodeNews*, the housing ministry appears to confuse the issue again when it says: "The amendment adds a requirement that, where the *Architects Act* or the *Professional Engineers Act* requires that an architect or an engineer design a building, the Chief Building Official can refuse to issue a permit if the building has not been designed by the required professional."

To help ensure the amendment's interpretation is understood to be as described by the housing minister, on August 6 PEO Registrar Gerard McDonald, P.Eng., sent a clarification of the *CodeNews* article to the CBOs in each Ontario municipality via the Ontario Building Officials Association (OBOA) and the Large Municipal Chief Building Officials, as well as to the housing minister and the OAA. In the clarification, McDonald quotes Minister McMeekin's July letter to PEO and cites the statutorily constituted Joint Practice Board as the body to "deal with the division of scope of practice for professional engineering and architecture." The recent amendments to the building code legislation, he continues, "simply allow chief building officials to refuse to issue a permit if the design documents for a building described in section 12(6) of the *Professional Engineers Act* were not prepared by a professional designer. The amendments do not allow chief building officials to rule on whether a project needs to be designed by a PEO licensee, an architect, or both."

PEO Councillor Chris Roney, P.Eng., BDS, FEC, who is scheduled to present PEO's position to the Land of Lakes Chapter of the OBOA on August 26, says PEO must not allow building officials to believe they are authorized to decide what is engineering and what isn't: "We already have our established joint OAA-PEO committee to deal with any gray areas and so we can remind the building officials of its existence and how to refer matters to that committee if they have concerns."

11 RECIPIENTS HONOURED with Ontario Professional Engineers Awards

By Nicole Axworthy



This year marks the 67th anniversary of the Ontario Professional Engineers Awards, a program founded by PEO to recognize engineers for their professional achievements in such categories as entrepreneurship, engineering excellence, management, and research and development, and for their community service.

Since 2005, the awards have been presented jointly by PEO and the Ontario Society of Professional Engineers. This year, 11 awardees will be honoured at a gala on Saturday, November 22 in Toronto. For ticket information, visit www.ospe.on.ca.

ENGINEERING MEDAL—ENGINEERING EXCELLENCE

Brian L. Garrod, P.Eng., executive vice president, Hatch Mott MacDonald (HMM) Ltd., has led some of the most challenging and innovative tunnelling projects in the world and is widely considered to be the foremost expert in his field. Since joining Hatch in 1974, he has worked on many of Hatch's industrial and tunnel engineering projects, and has devoted the last 34 years of his 43-year engineering career to tunnelling projects and promoting best practices and innovations in the underground industry. Garrod has played a prominent role in many of the world's most complex infrastructure projects. One of his most significant contributions is in developing HMM's in-house estimating system for tunnels, which has been used to provide hundreds of estimates for complex and high-risk projects with an unprecedented level of accuracy.

Sigmund Soudack, P.Eng., president, Sigmund Soudack and Associates Inc., has overseen the structural design of more than 400 high-rise buildings in Ontario since 1968. Among his creative successes is the curvaceous Absolute Towers development in Mississauga, which has won numerous awards. For this project, Soudack developed a new method for installing a thermal break, and also helped develop flying forms, a system for high-rise construction that uses large, truss-mounted assemblies that a crane hoists upward from floor to floor. Soudack's other landmark projects include the New York Towers, ARC Condominiums and Kilgour Estate in Toronto, as well as office buildings, shopping centres, industrial buildings and long-term care residences throughout the province.

Bin Wu, PhD, P.Eng., senior NSERC/Rockwell industrial research chair and professor, electrical and computer engineering, Ryerson University, is a leading electric drive and renewable energy researcher whose work has significantly

benefitted Canadian industry and academe. His research and new product development collaborations with industry have resulted in technical and commercial successes for several Canadian companies. For example, many of his designs and innovations have been implemented over the last 20 years in Rockwell Automation's megawatt medium voltage drive products. In 2001, Wu also established Ryerson's Laboratory for Electric Drive Applications and Research, one of the top research facilities in Canada.

ENGINEERING MEDAL—ENTREPRENEURSHIP

Over his 45-year career, David Hunter Purvis, P.Eng., consultant, WorleyParsons Canada, has developed and commercialized Canadian and other technologies around the world. He has held senior management and executive positions in the process and technology divisions of many significant engineering organizations. A holder of several patents in the area of ethylene and polymer production, Purvis was integral in the licensing of the SCLAIRTECH polyethylene process. It was under Purvis' leadership in the 1980s and '90s that this technology was successfully licensed globally. Purvis has also had a hand in the design, construction and operation of many Ontario projects, including the Bruce Heavy Water plant and the DuPont Canada nylon plants in Kingston.

ENGINEERING MEDAL—MANAGEMENT

Gerald Chaput, P.Eng., assistant deputy minister (ADM), provincial highways management division, Ministry of Transportation Ontario (MTO), has inspired innovation and supported MTO staff in delivering the largest capital construction projects in MTO's history. He is responsible for managing an asset comprising 16,500 kilometres of highways, more than 2800 bridges and various other works with a combined replacement value of \$80 billion. Chaput shares Ontario's expertise with other Canadian and US jurisdictions through his involvement with the Transportation Association of Canada and the American Association of State Highway Transportation Officials. Prior to becoming ADM, Chaput worked in various positions and locations within the province, including as chief engineer, director of the highway standards branch and manager of the traffic office.

Todd Arthur J. Young, P.Eng., vice president, customer services and support, Bombardier Commercial Aircraft, is responsible for the worldwide fleet performance of Bombardier's 2700 commercial aircraft, and oversees more than 640 employees who track and manage every aspect of aircraft performance while delivering on the company's financial objectives. To improve the company's customer service, Young envisioned, designed and implemented a worldwide service expansion strategy that now provides regional support

services to international customers. Recognized as an innovative leader, Young introduced a new work culture at the Toronto site, dubbed "Achieving Manufacturing Excellence," the success of which resulted in its adoption across all Bombardier facilities worldwide.

ENGINEERING MEDAL—RESEARCH AND DEVELOPMENT

Raafat R. Mansour, PhD, P.Eng., professor, electrical and computer engineering, University of Waterloo, is considered Canada's foremost researcher in the field of microwave engineering. Among other accomplishments, Mansour developed a superconductive multiplexer that is 50 per cent smaller in size and mass compared to conventional multiplexer technologies. In making the transition to academe, he established the only cleanroom facility in Canada, at the University of Waterloo, that is dedicated to RF micro-electro-mechanical-systems (MEMS) research, providing critical MEMS fabrication support to researchers across the country.

David Naylor, PhD, P.Eng., professor, department of mechanical and industrial engineering, Ryerson University, has become internationally recognized for his work on the thermal performance of windows for energy-efficient buildings. His research group has made tremendous strides in understanding the effects of shading devices on the thermal performance of windows. As a result, several industrial software packages have incorporated his findings. Naylor was also the lead thermal designer for the development of a proprietary, anti-icing system for gas turbines, now installed in almost 100 power plants across North America. He has written more than 150 papers in refereed journals and conferences and more than 20 industry technical reports, and is also the associate editor of the *International Journal of Transport Phenomena*.

Frank J. Vecchio, PhD, P.Eng., professor, civil engineering, University of Toronto, is an internationally respected researcher and renowned authority on the behaviour of concrete structures. His research has focused primarily on developing theories, models and procedures to analyze and better predict the response of concrete structures to various loading conditions, including earthquakes, blasts, impact and high temperatures. His work led to the development of the Modified Compression Field Theory, upon which shear design is based in Canada, the US and Europe. Vecchio also applied his research to develop a suite of software called VecTor for predicting the response of concrete structures to practically any action, which has been widely adopted by the engineering profession.

ENGINEERING MEDAL—YOUNG ENGINEER

Natalie Enright Jerger, PhD, P.Eng., associate professor, electrical and computer engineering, University of Toronto, has emerged as one of the top computer architecture researchers

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of her generation. Her research contributions have demonstrated an innovative approach to challenging problems in the design of future microprocessor chips with a specific focus on interconnecting multiple cores on a single processor die. This work has attracted funding from various granting agencies and, more importantly, from relevant partners in industry. Jerger has been active in the greater research community. As program chair for the 20th International Symposium on High-Performance Computer Architecture in February 2014, she was the first woman and youngest chair in the history of the program, which is one of the premier venues for publishing computer architecture research.

CITIZENSHIP AWARD

Márta Ecsedi, P.Eng., FEC, retired principal, AURA Management Consultants, has been a leading influence in the

engineering profession's transformation into a more inclusive, diverse and equitable community. When she began a 23-year career with Bell Canada in 1976, Ecsedi became a passionate advocate for the advancement of women in the profession. She developed Bell Canada's P.R.I.D.E. (Professional, Recognition, Incentive, Development, Education) Human Resource program and also led the Bell Advisory Council for the Recognition and Advancement of Women in Technology. A steadfast volunteer with PEO, Ecsedi was founding chair of its Women in Engineering Advisory Committee and later founded the Equity and Diversity Committee. She also chaired the steering committee of the Ontario Network of Women in Engineering that developed the Go ENG Girl outreach program, which provides opportunities for young women to experience what it means to be an engineer.

HUMAN RIGHTS GROUP outlines experience requirement concerns

By Michael Mastromatteo



Canadian experience as a condition of licensing for self-regulating professions continues to draw scrutiny from human rights organizations.

At a July 4 presentation at PEO's Toronto headquarters, members of PEO's Registration Committee gained insight into the Ontario Human Rights Commission's (OHRC) Removing the Canadian Experience Barrier campaign, which since 2013 has called on regulators to rethink this key element of their registration practices.

The presentation was led by Rita Samson, a public education and outreach officer with the OHRC.

In July 2013, the OHRC released its policy on the Canadian experience requirement for self-regulated professions. The policy holds that a strict requirement for Canadian experience is discriminatory on its face and should be used only in limited circumstances.

Samson, who was invited to address the committee by PEO's tribunals department, said Canadian experience requirements appear neutral "on paper" but tend to have "adverse effects" on internationally educated or newly arrived immigrant applicants.

She said there is growing onus on regulators to justify Canadian experience as a valid, bias-free tool in assessing an

applicant's suitability for professional licensing. Samson also said Canadian experience requirements will contravene the human rights code if a regulatory body fails to show they are bona fide in accordance with an established legal test.

The OHRC is monitoring a recent decision by Alberta's human rights body, which ordered the province's engineering regulator to reassess an internationally educated applicant's application. The Alberta commission ruled the Association of Professional Engineers and Geoscientists of Alberta (APEGA) discriminated against the applicant based on his place of origin.

APEGA has appealed the decision, with a ruling on the appeal expected before the end of the year.

A spokesperson for the OHRC said the group's Human Rights Legal Support Centre has received some

complaints on the Canadian experience issue, but none has come to a hearing.

PEO and other Canadian engineering regulators require applicants for the P.Eng. to obtain one year of work experience under a Canadian-licensed supervisor before granting the engineering licence. For many internationally educated applicants and recently arrived immigrants, Canadian experience can be hard to come by.

PEO currently assists internationally educated applicants to acquire relevant experience through its provisional licence, which is issued to an applicant who has satisfied all of PEO's licensing requirements except the minimum 12 months of acceptable engineering experience in a Canadian jurisdiction.

Applicants denied a P.Eng. licence may request that PEO's Registration Committee review the registrar's decision to deny the licence.

Among the 15 committee members attending the presentation were Registration Committee Chair Kathryn Sutherland, P.Eng., Corneliu Chisu, P.Eng., FEC, MP, Scarborough-East, and Bill Kossta, a lieutenant-governor appointee to PEO council.

Gillian Pichler, P.Eng., director of registration for the Association of Professional Engineers and Geoscientists of British Columbia, and Christine Comeau, of Engineers Canada, also attended the presentation by teleconference.

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ENGINEERS FOUNDATION

strives to do more in its 55th year and beyond

By Nicole Axworthy



Ontario Professional Engineers Foundation for Education President Marisa Sterling, P.Eng., and Clive Waugh, executive director, advancement, University of Ontario Institute of Technology (UOIT), show off the UOIT donor wall that now features the foundation's name.

Associates, Lafarge Canada Inc., Morrison Hershfield Limited, Brown & Cohen Communications and Public Affairs, The Personal Insurance Co., Robinson Consultants Inc., Spriet Associates, and Ontario Power Generation Inc. Employees & Pensioners Charity Trust.

In 2012, it surveyed universities and learned the average tuition for engineering students has risen 65 per cent. Enrolment in engineering schools has also grown—with enrolment at the University of Guelph, for example, going up 90 per cent—although the growth varies by school.

Yet despite this increased need, Sterling says the foundation's student awards have increased by only 25 per cent in the last 10 years. "We're not keeping pace with the schools but we want to continue to maintain significance," she says.

In the first few months of the 2013 academic year, the foundation distributed \$104,000 in award monies to 104 student recipients. The foundation grants entrance scholarships, valued at \$1,000, to one male and one female student at each of Ontario's 15 institutions having accredited engineering programs; scholarships valued at \$1,250 are available to students in subsequent years of their undergraduate programs. The foundation also awards a gold medal to the top engineering graduate at each institution and a Leaders for the Future scholarship, worth \$2,000, to one engineering student completing a volunteer placement with Engineers Without Borders, one of FFE's partners.

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THIS YEAR marks the 55th anniversary of the Ontario Professional Engineers Foundation for Education (FFE) and its president, Marisa Sterling, P.Eng., says the engineers foundation is working harder than ever to become top-of-mind within Ontario's engineering community and the charity of choice for Ontario engineers.

An independent, not-for-profit charitable organization managed by a board of volunteers active within PEO and the Ontario Society of Professional Engineers, the foundation has provided scholarships since 1959 to engineering students pursuing a degree at one of Ontario's now-15 institutions having Canadian Engineering Accreditation Board (CCAB)-accredited engineering programs, to encourage them to strive for academic excellence, develop their leadership qualities and pursue careers in the profession. The foundation also administers the Benevolent Fund to assist professional engineers who are experiencing financial hardship.

Sterling says there are significant challenges ahead for the foundation.

Most concerning is the drop in donations—10 per cent in the last three years—at a time when student need is growing. "In the last few years, we've learned that we really need to step up our activity because we're facing a bit of a tipping point," she explains.

The foundation believes the drop in donations is due to its aging donor base, cultivated from the early years of the foundation's inception, and limited corporate donors. To date, the foundation has been supported almost exclusively by PEO member donations, which account for about 95 per cent of its funding, with 3 per cent coming from corporate donors and 2 per cent from PEO chapters. PEO continues to route donations from its members to the foundation through the annual PEO fee renewal form. The foundation also offers an online donation option through its website, engineersfoundation.ca. Donations are tax deductible.

In the last year, the FFE received corporate donations from: Schnieder Electric, Sigmund Soudack & Associates, Carson Dunlop Weldon &



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To recognize the FFE for its work, three universities recently named it as a major donor for its cumulative awards of over \$100,000. Carleton University welcomed the foundation to The Task Eternal Society and presented an engraved glass plaque to President Sterling. Ryerson University added the foundation to the Ryerson Circle on its donor wall in the atrium of George Vari Engineering and Computing Centre. And the University of Ontario Institute of Technology added the foundation to its Challenger Society on its interactive donor wall.

The foundation is now focusing on three goals: building awareness, investing in fundraising development, and building stronger relationships with its partners, donors and students. “We want to better understand how we can continue to support the next generation of engineers. The [FFE] board is very open-minded on how we can do that,” says Sterling. “Do we put ourselves in a financial position to increase the dollar amount of the awards? Or do we try to provide more awards because there are more students in need now? Or do we find additional ways to support them, such as linking them with professional engineers for guidance... So, we’re looking at ways to continue to be relevant.”

P.Engs make presence felt ON NEW PREVENTION COUNCIL

By Michael Mastromatteo



PROFESSIONAL ENGINEERS are making their presence felt on the Ontario labour ministry’s Prevention Council, a body created to advise the ministry on occupational health and safety issues.

Established in December 2012 and reporting to the ministry’s chief prevention officer, George Gritziotis, the council now includes three engineers, Graeme Norval, PhD, P.Eng., Roy Slack, P.Eng., and Dawn Tattle, P.Eng., who constitute nearly one-third of the 11-person council.

Together with representatives from industry, labour unions, safety associations and government, the council also assists development of the provincial occupational health and safety strategy, and analyzes proposed changes to the administration of services under the *Occupational Health and Safety Act*.

Each engineer on the council comes with special expertise in safety and health in an engineering setting.

Norval is a professor of chemical engineering at the University of Toronto, where he leads such programs as fundamentals of process design, process safety management and safe design of chemical process. He is also on the board of directors of the Minerva Canada safety institute. Norval is gratified that professional engineers now have more opportunity to influence safety-directed organizations.

Norval told *Engineering Dimensions* August 1 that with their ethical commitment to safety and protection of the public, engineers are a natural fit for a body such as the Prevention Council, especially with its proactive stance on workplace safety matters.

Likewise, Slack says engineers don’t necessarily bring their industry sector expertise to the council, but instead add best practices experience to higher-level deliberations.

“I find it interesting to have the three engineers on the Prevention Council, because it certainly wasn’t planned,” Slack says. “[The organizers] were focused on people who were committed and have shown a career of commitment to health and safety, so it just makes sense for professional engineers when you look at the oath we take to protect the public to be a part of that council.”

Slack is head of North Bay’s Cementation Canada, an authority on Ontario’s mining industry, and a recipient of an Ontario Professional Engineers Engineering Medal.

Tattle, the newest member of the Prevention Council, is president of Anchor Shoring & Caissons Ltd. She is a board member of the Toronto Construction Association and a past president of the Toronto chapter of the National Association of Women in Construction. She is also an occasional lecturer to engineering students on health and safety in construction.

“The abilities to analyze data and identify trends are engineering skills I believe help lay the groundwork for development of prevention strategies in health and safety,” Tattle says. “I have found my engineering background combined with my construction experience to be important in my work as a member of the [labour ministry’s] Vulnerable Workers Task Group and, more recently, the Prevention Council.”

The Prevention Council head is now involved in a special review of safety in Ontario’s mining industry.

Safety specialist becomes OSPE CEO

By Michael Mastromatteo



Sandro Perruzza, new CEO of the Ontario Society of Professional Engineers

ONTARIO'S ENGINEERING advocacy organization has a new chief executive officer.

The Ontario Society of Professional Engineers (OSPE) announced July 14 that it has hired Sandro Perruzza, former head of client services at Workplace Safety and Prevention Services (WSPS), for the top administrative position.

Perruzza takes over from Mark Dietrich, who headed OSPE from August 2012 until this past spring.

Although not a professional engineer, Perruzza has several years' experience in executive management with Ontario safety-related organizations. Before the WSPS, he worked for 11 years as executive director of corporate development with the Ontario Service Safety Alliance.

He has also been active with the Ontario labour ministry's Preventions Forum, and with Minerva Canada, an association of engineers, educators and industry professionals working to incorporate safety instruction in university engineering education programs.

Perruzza's immediate priorities include building OSPE's membership, raising its profile and delivering greater value to Ontario's engineering community.

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ESSCO SETS AMBITIOUS AGENDA FOR 2015

By Liam Morrow

The new executive of the Engineering Student Societies' Council of Ontario (ESSCO), the PEO-supported association for Ontario's undergraduate engineering students, has a three-part slate of objectives for the coming academic year.

The group's goals this year include strengthening services, creating a long-term plan and finding new and better ways to benefit members.

The 2014-2015 term is expected to be a year of evaluating and changing how ESSCO fits in with its members. The needs of ESSCO schools are changing, and it wants to adapt to those changes.

Since ESSCO is a small organization aimed at helping facilitate communication and collecting useful data from member schools, it relies heavily on volunteers from its member schools, and hopes improving its reputation and services to members will entice more students to get involved on a provincial level.

ESSCO's major service, aside from working with PEO and other organizations, is facilitating conferences to help engineering societies develop. By targeting important groups like the current executive members or first-year students, it seeks to provide useful tools and networking opportunities that will be beneficial to students throughout their university career.

By working with the elected or appointed ESSCO representatives from each school, the group hopes to develop these learning and networking opportunities so that it can play an important part in developing student leaders in the engineering community.



The new ESSCO executive includes (clockwise from top) Ola Suchon (University of Waterloo), RJ Sivanesan (University of Windsor), Greg Burns (Conestoga College), and 2014-2015 ESSCO President Liam Morrow (McMaster University).

FEDS LOOK TO ENGINEERS for economic development planning

By Michael Mastromatteo

PEO RECENTLY hosted a trio of federal government officials seeking engineering insights to fine-tune an economic development plan for southern Ontario.

Gary Goodyear, federal minister of state, Economic Development Agency for Southern Ontario (FedDev Ontario), Willowdale MP Chungsen Leung and Don Valley East MP Joe Daniel visited PEO Registrar Gerard McDonald, P.Eng., and other PEO officials July 10 to give details of the government's economic development and manufacturing fund initiatives for the greater Toronto area and the southern Ontario region.

Both Leung and Daniel have undergraduate degrees in engineering, while Goodyear, a former minister of state for science and technology, is described as a "science person."

Paul Acchione, P.Eng., then acting CEO of the Ontario Society of Professional Engineers, and Barry Steinberg, P.Eng., CEO of Consulting Engineers of Ontario, also attended the briefing.

While Goodyear and his MP colleagues outlined some of the highlights of the federal government's economic stimulus and infrastructure renewal plan, they also asked engineering stakeholders for recommendations to improve the economic development package.

Goodyear suggested that all the "macroeconomic metrics" are now in place for a transformation of the Ontario and Canadian economies.

Through its FedDev Ontario and similar agencies, the federal government is attempting to tailor stimulus spending programs to the particular needs of local communities.

FedDev Ontario was set up in 2009 as part of the government's Economic Action Plan. It's designed to work with regional communities, businesses and other organizations to form partnerships and other arrangements dedicated to long-term economic revival.

Natasha Brenders, director general of FedDev Ontario, later outlined elements of the government's Southern Ontario Prosperity Initiatives (SOPI), and its Advanced Manufacturing Fund (AMF), both of which she said could benefit from input from engineering associations.

The AMF supports large-scale, "transformative" manufacturing activity, while the southern Ontario prosperity initiative promotes entrepreneurs, innovation and "globally oriented" businesses and organizations.

The idea is that these firms create spillover benefits for the entire manufacturing sector and, in turn, promote productivity, regional diversification and commercialization potential.

According to Brenders, the FedDev Ontario agency has invested nearly \$1.2 billion in local businesses, entrepreneurs, postsecondary institutions and not-for-profit organizations.



Minister of State Gary Goodyear speaks with PEO officials July 10. Also pictured are Natasha Brenders and MP Joe Daniels.

Engineers attending the session questioned Goodyear about possible disconnects between the federal and provincial governments that could weaken the effectiveness of economic development investments. In particular, they cited rising electricity prices as a result of green energy gambits and disparities in transit policy as impediments to the optimal use of federal stimulus spending.



Conference looks into HOW ENGINEERING STUDENTS LEARN

By Michael Mastromatteo

Engineering educators continue to examine new teaching concepts for Canada's undergraduate engineering students.

As evidenced by the fifth annual Canadian Engineering Education Association (CEEA) conference, June 8 to 11 in Canmore, Alberta, formation is not a static undertaking but should remain open to new approaches to education.

CEEA was founded in 2010 with the goals of developing best practices among Canadian engineering educators, liaising with the deans of engineering and the Canadian Engineering Accreditation Board (CEAB) to align objectives, and examining all aspects of engineering education.

The conference featured science broadcaster and author Jay Ingram as opening speaker, while Twyla Hutchinson, P.Eng., a water resource engineer with the City of Calgary, offered the keynote address. She outlined the city's response to the devastating 2013 floods

of the Bow and Elbow river watersheds, which have been described as among the worst natural disasters in Canadian history.

But it was the preparation of the next generation of engineers that dominated discussion at the CEEA conference. Workshop topics included curriculum quality assurance, accreditation of new programs, new approaches to the teaching of engineering design, and outreach to primary and secondary school students.

David Strong, P.Eng., professor and NSERC chair in design engineering at Queen's University, is past president of CEEA and was chief organizer for the 2014 conference. He was among a small group of engineering educators who saw a need for an education-based organiza-

tion and set about drumming up interest among colleagues.

"From the very beginning, our goal was to ensure CEEA represented all realms of Canadian engineering education," Strong says, "and we worked very hard to be inclusive of those not only within the engineering faculties, but also others such as librarians, educational specialists, and members of the arts and science faculties who contribute to the teaching of engineering students."

CEEA's new president is Susan McCahan, PhD, P.Eng., a professor of mechanical engineering and vice dean (undergraduate) at the University of Toronto. She says educators are adjusting to new needs and expectations on the part of graduates.

"While we are still educating students into a profession—a profession which itself is changing rapidly—we are also educating people who will take many different career pathways," McCahan says. "Having people educated in engineering [who] move into medicine, business, law, government and so on is very exciting. Engineers know how to apply science to solve problems and this is desperately needed in many professions, and the leadership in our society. But educating people who will pursue all of these different career paths is more complex than teaching people who will only go into traditional engineering industries."

McCahan says that as engineering students now come from more diverse backgrounds and, upon graduation, will have more choice beyond the traditional engineering career, it's important for engineering educators to consider new approaches to teaching and learning.

In addition to its annual conference, CEEA publishes and archives education-related papers on its website (ceea.ca). Topics range from design learning, retention of students, connecting the classroom with industry practice, and research into new aspects of engineering education.

The next CEEA conference is scheduled for May 31 to June 3, 2015, at McMaster University in Hamilton.



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2) Shallow and Deep Foundations Design (New)	Toronto	Nov 10-12
3) Soil Dynamics and Earthquake Engineering (New)	Toronto	Dec 1-2
4) Durability of Concrete Infrastructure	Toronto	Oct 30-31
5) Flexible Pavement Design & Rehabilitation	Toronto	Nov 13-14
6) Design of Precast and Prestressed Concrete Structures	Toronto	Dec 8-10
7) Design of Machine Foundations (New)	Toronto	Dec 1-2
CONSTRUCTION COURSES	LOCATION	DATE 2014
1) Construction Planning and Scheduling	Toronto	Oct 27-28
2) Risk Analysis and Management in the Construction Engineering Industry	Toronto	Oct 15-17
3) Concrete Formwork Design (New)	Toronto	Nov 13-14
4) Construction Projects Contracts, Bidding Logistics Administration Logistics & Claims Avoidance (New)	Toronto	Nov 17-19
5) Business Management Sustainability Challenges and Possibilities (New)	Toronto	Dec 8-9

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IIT GRADUATES LOOK TO PROFESSION'S international focus

By Michael Mastromatteo

Partnering with university alumni associations could pay dividends for PEO and other regulators as the engineering profession looks to become more globally focused.

At the PanIIT 2014 International Conference June 6 to 8 in Toronto, sponsored by the Indian Institutes of Technology (IIT) Alumni, more than 1000 engineering graduates and their guests celebrated the engineering profession and its potential for innovation and for securing a more stable future.

The conference theme was “Innovate, integrate and transform—Let’s co-create our future.”

The IIT comprises 16 postsecondary institutions throughout India, whose engineering graduates have risen to prominent positions in Canada, the US, Australia, Europe and Asia.

Members of the IIT, which rivals the Massachusetts Institute of Technology in reputation for quality of education, are schools of national importance in India and known for their high-level admission standards. Only 2 per cent of applicants are admitted to IIT schools each year.

The IIT has active alumni organizations in the US and Canada, which look to support the profession and the community through philanthropy and assistance to recent graduates.

Several PEO members belong to IIT Alumni Canada.

This was the second time the PanIIT conference has been held in Toronto. The first time was in 2006. Conferences are most often held in India or the US, where the majority of IIT alumni reside.

Among the conference speakers were David Johnston, governor general of Canada, Jason Kenney, federal minister of employment and social development and minister for multiculturalism, Nirmal Kumar Verna, high commissioner of India to Canada, and Prem Watsa, CEO of Fairfax Financial Holdings.

Watsa, also chancellor of the University of Waterloo, is sometimes referred to as the Warren Buffett of Canada. He graduated in chemical engineering from the IIT’s Madras campus.

PEO President David Adams, P.Eng., FEC, spoke at a June 8 panel discussing the essential qualities of the engineer of the future (see President’s Message, p. 3).

In his June 7 remarks, Governor General Johnston emphasized how educators and innovators from Canada, India and the US can work together to achieve excellence and equality of opportunity.

“You can influence your institution to build capacity at home. Firstly, by replicating the excellence of the original IITs and building other Indian institutions of excellence; secondly, by graduating legions



Governor General David Johnston addressed delegates June 7 at the PanIIT conference in Toronto.



High Commissioner of India to Canada Nirmal Kumar Verna urged expatriate Indian engineers to support engineering education and research in their native country.

of teachers, researchers and academic leaders who will staff these institutions; and, thirdly, by engaging them in collaborative teaching, research and technology transfer interactions so that all gain,” Johnston said. He later urged engineering graduates to look for partnerships between IITs and Canadian and US schools. “Capacity building, research collaboration, and technology transfer ecosystems are examples of how we can help each other,” he said.

The conference was divided into segments on academic partnerships, energy and the environment,

philanthropy and entrepreneurship, the formation of future engineers, and new trends in engineering regulation.

PEO President Adams, in his observations about the future qualities of engineering practitioners, concentrated on integrating new technologies into Canada's economy (see also President's Message, *Engineering Dimensions*, July/August 2014, p. 3).

A secondary theme to emerge throughout the conference was the potential for engineering graduates to support the education and formation of new practitioners by philanthropic works. On that note, Mohnish Pabrai, of the Irving, California-based Pabrai Investment Funds, argued that successful engineers and entrepreneurs consider giving a portion of their corporate earnings back into the formation of the next generation of innovative practitioners.

Pabrai is founder of the Dakshana Foundation, which allows underprivileged students in India to enroll at IIT schools. Over the last seven years, the foundation has assisted more than 500 Dakshana scholars. Graduates of the Dakshana program are encouraged to support adolescents in situations similar to those they experienced in earlier years.

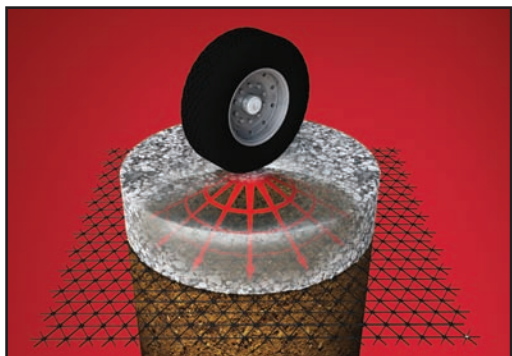
Other speakers to address the PanIIT delegates included Sandra Papatello, chair of the board of directors, Hydro One, and a former Ontario cabinet minister, who discussed changing expectations in ratepayers' energy use, Pearl Sullivan,



Sandra Papatello, chair of the board of directors of Hydro One, was part of a panel discussion on energy and the environment. Other panelists included Pradipta Banerji, PhD, director of the Indian Institute of Technology in Roorkee (left), and David Stewart-Patterson, vice president, public policy, Conference Board of Canada.

PhD, P.Eng., dean of engineering, University of Waterloo, and Ontario Fairness Commissioner Jean Augustine.

Augustine emphasized access to professions, and urged engineers and IIT graduates to support academic research into how the idea of access has changed over time. She also called on engineers to contribute to developing an evidence-based understanding of the promise and challenges of diversity for all self-regulated professions.



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NEW PROGRAM PROVIDES BOOST for engineering education research

By Michael Mastromatteo

THIS SEPTEMBER, University of Toronto (U of T) engineering, in collaboration with the Ontario Institute for Studies in Education (OISE), is launching what the university describes as Canada's first master's and PhD-level program in engineering education.

Officially called the Collaborative Program in Engineering Education (EngEd), the initiative gives students and faculty the opportunity to explore learning concepts at the meeting point of engineering and education, from an engineer's perspective. Research will focus on many of the distinct aspects of training engineers, such as the inherent emphasis on design, quantification, application, systems, constraints and problem solving.

Greg Evans, PhD, P.Eng., a professor of chemical engineering at U of T, chaired the task force that proposed the initiative.

"The EngEd will extend and support our ongoing effort to innovate the instruction of engineering," Evans told *Engineering Dimensions*. "It will foster a vibrant research community that will enrich the education of our graduate students. Structuring the program as a partnership with colleagues in OISE will both strengthen this learning experience, and promote new research collaborations and directions."

Approved by U of T's engineering faculty council in December 2013, and by the university's committee on academic policy and programs in February, the master's and PhD in EngEd will be offered through the department of mechanical and industrial engineering, the department of chemical engineering and applied chemistry, and the department of civil engineering.

Students will complete a graduate degree from a traditional field of education or engineering, enriched through course work and a thesis relating to engineering education. Research is supervised by graduate faculty members in the home departments.

Evans says the initiative involves more than a study of how engineering students learn.

"The EngEd will draw students interested in exploring learning at the nexus of education and engineering," he says. "Topics addressed will span the knowledge base, learning processes, people in engineering programs, surrounding socio-cultural context, and the outcomes that result. Another key element is that the EngEd will help promote research on engineering education, generating knowledge that can help guide how we teach in the classroom or what we teach in terms of course or curriculum design."

Two new graduate courses have been created to support U of T's EngEd. Instructional design in engineering education will be taught by Susan McCahan, PhD, P.Eng., professor of mechanical engineering and

vice dean (undergraduate), while Evans will teach engineering education research seminars.

Although this will be the first cross-disciplinary effort, U of T is not the only Ontario university doing research into engineering education.

David Strong, P.Eng., a professor and NSERC chair in design engineering at Queen's University, says the Kingston-based institution has also long been involved in engineering education research.

As far back as the early 1990s, Queen's research work in engineering education led to its integrated learning approach and to the foundation in 2004 of Beamish-Munro Hall's Integrated Learning Centre, an instrumented working lab for engineering students.

"It was determined that this new approach to engineering education required new and very different facilities from traditional lecture halls and undergraduate labs," Strong says, adding that the centre has since been used as a model for many new facilities.

The growing field of engineering education research comes at a time the profession is seeking to develop more diverse, team-oriented, Renaissance-type practitioners.

Susan McCahan of U of T, who recently became president of the Canadian Engineering Education Association (see "Conference looks into how engineering students learn," p. 19), says there is a continual onus on educators to evaluate engineering formation and to remain open to new approaches. "This kind of research helps us better understand our students—how they learn, how they develop a professional identity, what motivates them, how they make choices, how they problem solve, and so on," she says. "All of these insights assist our understanding of students so we can better support their learning and development."

CONDUCTING A PRACTICE REVIEW: A GUIDELINE FOR ENSURING COMPLIANCE WITH PEO REQUIREMENTS AND INDUSTRY BEST PRACTICES

By José Vera, P.Eng., MEPP

OVER THE YEARS, many engineering companies have contacted PEO to ask variations of the following question: “How can we ensure our company’s internal policies and procedures are in compliance with the requirements set out in the *Professional Engineers Act* as well as the best practices described in PEO’s practice guidelines?” In the past, this question did not have a simple answer because PEO did not have specific guidelines concerning the non-technical aspects of operating and managing a professional engineering practice.

But now, engineers can use a new PEO guideline, *Conducting a Practice Review* (www.peo.on.ca/index.php/ci_id/28047/la_id/1.htm), to assess their own practices, thereby ensuring their company’s internal policies and procedures comply with PEO requirements. Professional engineering enterprises wishing to market their credentials could also commission an engineer to audit them based on this new guideline.

The guideline evolved from a request by PEO council in 2009 that the Guideline for Practice Review Subcommittee, directed by the Professional Standards Committee (PSC), prepare a guideline for use by professional engineers in reviewing individual practitioners, companies, organizations and/or departments providing professional engineering services. In June 2014, council approved the *Conducting a Practice Review* guideline.

To prepare the guideline, the subcommittee reviewed the practice review policies of other professional bodies in Ontario as well as engineering licensing organizations in other jurisdictions, and considered whether PEO should conduct proactive practice reviews in addition to the mandatory reviews ordered from time to time by discipline panels. Other provincial engineering regulators, including the Association of Professional Engineers and Geoscientists of British Columbia, the Association of Professional Engineers and Geoscientists of Alberta, the Association of Professional Engineers



and Geoscientists of New Brunswick, and the Ordre des ingénieurs du Québec, have practice review programs in place.

The subcommittee and the PSC determined that, currently, there are no indicators that PEO should require proactive practice reviews. Consequently, a voluntary practice review pilot program was recommended to gather evidence that would be helpful in determining if a proactive, or some other, practice review program should be implemented in the future. Σ

José Vera, P.Eng., MEPP, is PEO’s manager, standards and practice.

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Is your organization interested in marketing its credentials, while ensuring compliance with PEO requirements and industry best practices?

If so, please contact practice-standards@peo.on.ca for more information on PEO’s voluntary Practice Review Program. Note that organizations that participate in this program will receive a certificate of participation.

SUMMARY OF DECISION AND REASONS

Summary of the decision and reasons in the matter of the Association of Professional Engineers of Ontario v. the member and the Certificate of Authorization holder.

The association was represented by Leah Price. The respondents were represented by Ryan Breedon. David P. Jacobs acted as independent legal counsel for the panel.

1. This matter came before a panel of the Discipline Committee of the Association of Professional Engineers of Ontario (PEO) for hearing on May 12, 2014, in Toronto.

COMPLAINTS COMMITTEE'S REFERRAL AND PEO'S ALLEGATIONS

2. The member is licensed as a professional engineer under the *Professional Engineers Act* R.S.O. 1990, Chapter P.28 (the act). The holder holds a Certificate of Authorization issued under the act. The member and the holder are collectively referred to as the respondents.
3. The referral decision of the Complaints Committee dated August 30, 2013, included PEO's Statement of Allegations in relation to the respondents' inspection of a diesel-fueled, back-up generator system installed by the respondents' client in an eight-storey condominium apartment building in Toronto. It alleged the respondents were guilty of professional misconduct.

SUMMARY OF THE PANEL'S FINDINGS

4. For the reasons that follow, the panel concluded the respondents are guilty of professional misconduct as defined in section 28(2) of the act, specifically under subsections 72(2)(d) and 72(2)(j) of Regulation 941 under the act. The panel accepted that the conduct would be considered unprofessional under subsection 72(2)(j).

SUMMARY OF THE EVIDENCE

5. The parties jointly submitted an Agreed Statement of Facts. Neither party called any witnesses, nor introduced any other evidence at the hearing. The material facts are summarized as follows:

- (a) The Canadian Standards Association standard CSA B139ON-06 (*Ontario Installation Code for Oil-Burning Equipment*) is the mandatory standard for the installation of fuel oil-burning equipment in Ontario. It has been incorporated by reference into Ontario law.
- (b) The Technical Standards & Safety Authority (TSSA) is empowered to grant authorizations and variances relating to B139ON-06 and its inspectors review such variance applications.
- (c) The TSSA received an application for a variance in connection with a diesel-fueled, back-up generator system in 2008. The system consisted of a diesel-fueled, back-up generator located on the mechanical penthouse level of an eight-storey condominium apartment building. The fuel delivery system consisted of a main fuel supply tank located on parking level 2, and an auxiliary (day) tank located on the mechanical penthouse level. The two tanks were connected by piping and were vented through a single vent line leading outside from the main supply tank located on parking level 2.
- (d) The 2008 application referred to above did not proceed, but, in or about September 2010, the application to the TSSA was reactivated. The TSSA advised the applicant that the vent system required certification by a professional engineer since the equivalent length of the day tank vent was in excess of 100 feet. The certification was required to ensure the safe ventilation of the day tank.
- (e) In December 2010, the respondents were retained to provide the certification referred to above. On or about May 9, 2011, the member signed and sealed

a letter on behalf of the certificate holder that stated the “oil piping system is in compliance with CSA B139 code.”

- (f) A TSSA inspector (the inspector) rejected the member’s conclusion that the venting for the system was adequate. The inspector advised that the CSA standard referred to by the member is not applicable in Ontario. In fact, the member had considered a standard that had not been adopted for use in Ontario and, instead, should have considered CSA B139ON-06. The inspector further advised that, under the correct standard, the common vent had to be at least three inches in diameter, instead of the existing two-inch-diameter venting.
- (g) The member continued to assert the existing system was adequate. He was asked to provide his calculations to the inspector in support of this assertion. In response, he provided a document generated by a software tool. He later stated he had done (but did not provide) his calculations under NFPA 30. NFPA 30 is not adopted for use in Ontario, and the inspector advised the member of this as well. The inspector further advised that the reason why neither the software tool nor NFPA 30 was applicable was because neither source accounted for the pipe lengths of the venting system.
- (h) On June 16, 2011, the inspector requested that the member provide a letter “clearly indicating that the entire venting system of both the day tank and the main tank meets the code requirements.” The member did not comply. In response to this request, the member referred only to the vent from the main tank to the outside, which he said was 16.1 metres in length and, thus, “within the 30.5 m allowable length for a two-inch vent.” However, the equivalent length of the day tank venting (to and through the main tank to the outside) was well in excess of 30.5 m.
- (i) The inspector, subsequently, requested that the member either amend or withdraw his certification letter. The member refused to do so.
- (j) The conduct described above constituted professional misconduct within the meaning of section 28 of the act and Regulation 941 thereunder, as follows:

- (i) The respondents considered and applied inapplicable standards and codes and failed to correctly apply the applicable CSA standard and, therefore, failed to make responsible provision for complying with applicable standards and codes in connection with their review and certification of a diesel-powered generating system, amounting to professional misconduct under subsection 72(2)(d) of Regulation 941; and
- (ii) They failed to properly or adequately respond to requests by the TSSA, the regulatory authority, for calculations or verification that the system certified by them, in fact, complied with the applicable CSA standard, amounting to conduct that, having regard to all the circumstances, would reasonably be regarded by the engineering profession as unprofessional.

PLEA BY RESPONDENTS AND THE PANEL’S FINDINGS

- 6. The respondents admitted the allegations. The panel conducted a plea inquiry and was satisfied the respondents’ admissions were voluntary, informed and unequivocal. Based on the jointly submitted Agreed Statement of Facts dated May 12, 2014, as well as the guilty pleas, the respondents were found guilty of professional misconduct, the particulars of which are set out above.

JOINT SUBMISSION AS TO PENALTY

- 7. The parties filed a Joint Submission as to Penalty and Costs dated May 12, 2014. The material points of the submission proposed:
 - (a) Pursuant to section 28(4)(f) of the act, the respondents shall be reprimanded, and the fact of the reprimand shall be recorded on the register for a period of one year;
 - (b) The finding and order of the Discipline Committee shall be published in summary form under section 28(4)(i) of the act without reference to names;
 - (c) Pursuant to section 28(4)(d) of the act, it shall be a term or condition on the member’s licence that he shall, within 14 months of the date of pronouncement of this decision, successfully complete the professional practice examination (PPE);

- (d) Pursuant to section 28(4)(b) and 28(4)(k) of the act, in the event the member does not successfully complete the PPE within 14 months, his licence shall be suspended for a period of 10 months or until he successfully completes the PPE (whichever comes first);
 - (e) In the event the member fails to successfully complete the PPE within 24 months of the date of pronouncement of this decision, his licence shall be revoked; and
 - (f) There shall be no order with respect to costs.
8. PEO's counsel argued that the joint submission was reasonable, especially taking into account the purposes of penalties. Counsel's position with respect to such purposes—as applicable in this case—is summarized as follows:
- (a) *Protection of the public*: In this case, there were no concerns relating to endangering the public. The respondents considered the wrong code to be applicable, but they have admitted and accepted responsibility for this and there is, therefore, no danger to the public.
 - (b) *Public confidence in the process*: There was an admission of guilt, a summary of the decision will be published, and there will be a penalty. This would, therefore, not lead a reasonable person to conclude that the process is flawed and/or to question the ability of the profession to self-regulate.
 - (c) *General deterrence*: Members of the profession know that regulators' authority is to be respected and must take care to ensure compliance with applicable law and timely, appropriate responses to communications from regulators. This decision will emphasize these points.
 - (d) *Specific deterrence*: The member has practised for more than 50 years, and the certificate holder has held a Certificate of Authorization for more than 20 years. They have accepted responsibility and have pled guilty, and it is unlikely they will re-offend.

(e) *Rehabilitation*: The respondents have accepted responsibility, and the member will successfully complete the PPE. He now knows his conduct and his responsibility to promptly respond to communications from regulators are extremely important and are to be taken very seriously. Under these circumstances, there is little concern regarding the need for further rehabilitation of these respondents.

9. The panel was provided precedent decisions of the committee, which supported the appropriateness of the penalty. Both the argument as to fact and to submission on penalty had been negotiated over a considerable period of time, with the assistance of legal counsel. The respondents' counsel confirmed support and emphasized that such joint submission as to penalty deserves serious consideration.

THE PANEL'S DECISION

10. It is well established that a Joint Submission as to Penalty shall not be disregarded unless the circumstances are such that the proposed sentence is contrary to the public interest and/or would bring the administration of justice into disrepute.
11. In this case, in light of the evidence contained in the Agreed Statement of Facts, the fact the parties were represented by counsel who negotiated the submission as to penalty, and the submission of the parties, the panel finds the Joint Submission as to Penalty and Costs is within the reasonable range and should not be disregarded. The panel, therefore, orders the penalty and costs as set out in the joint submission.

WAIVER OF APPEAL RIGHTS AND ADMINISTERING OF REPRIMAND

12. The respondents waived their rights to appeal. The panel administered the reprimand at the conclusion of the hearing.

The Decision and Reasons was signed on May 28, 2014, by David Robinson, P.Eng., chair, on behalf of the other members of the discipline panel: Bruce Clarida, P.Eng., Richard Hilton, P.Eng., Leigh A. Lampert, LLB, and Michael Wesa, P.Eng.

CORRECTION NOTICE

In the third paragraph of Gazette article "Council approves practice standards" (May/June 2014, p. 33), we incorrectly identified the governing regulation. Reports prepared for the purpose of producing a record of site condition are subject to O. Reg. 153/04. Each reference to O. Reg. 170/03 in that paragraph should be replaced with O. Reg. 153/04.

[DATEPAD]

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SEPTEMBER 14-17

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SEPTEMBER 19

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SEPTEMBER 23-24

Advanced Manufacturing Expo 2014, Mississauga, ON
www.amexpo.ca

SEPTEMBER 23-25

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www.sae.org/events/amaf

SEPTEMBER 28-OCTOBER 1

2014 Transportation Association of Canada 2014 Conference & Exhibition, Montreal, QC
www.tac-atc.ca

SEPTEMBER 29

Transformers in Mines, Sudbury, ON
www.ospe.on.ca

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10th International Pipeline Conference & Exposition, Calgary, AB
www.asmeconferences.org/ipc2014

OCTOBER 2014

OCTOBER 8-10

COMSOL Conference 2014, Boston, MA
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OCTOBER 19-22

ASME Internal Combustion Engine Division Fall Technical Conference, Columbus, IN
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OCTOBER 22-24

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ADAPTING ENGINEERING FOR CLIMATE CHANGE

By Emily Ghosh, P.Eng., MSc, LEED AP, and Bonita Costigane, P.Eng., PMP, MPhil, LEED AP



ONTARIO CENTRE
FOR ENGINEERING
AND PUBLIC POLICY

FOR THE PAST several decades, major investments have been made to reduce carbon emissions from infrastructure systems. Examples include implementing water efficiency programs, diversifying the energy portfolio with renewable

energy technologies and constructing LEED-certified buildings, to name a few. However, despite our efforts, scientific evidence demonstrates that the carbon emissions released to date are enough to cause significant climate changes—changes our current systems are not designed to withstand (IPCC).

Currently, Canada's infrastructure sectors, including buildings, transportation, water, energy, and information communication technologies (ICT), are inadequate to meet changing environmental conditions (Birch and Wudrich). These shortfalls have been observed during several extreme weather events across Canada in 2013 alone. As the frequency of climate-related events worsens, engineers must act now to reduce climate risks.

Engineers must design sustainable infrastructure systems that integrate decarbonization alongside adaptive capacity against a spectrum of climate events (Birch & Wudrich). These events include severe, short-term issues such as flash flooding or long-term, gradual changes, including temperature increases and sea-level rise. However, traditional engineering methods rely on historical data to extrapolate future climate information. Due to the potential magnitude and severity of climate change, historical values may no longer be relevant for designing secure and reliable infrastructure. Therefore, to manage the uncertainties of future conditions while balancing socio-economic needs, engineers will need to shift to new ways of approaching infrastructure design.



OPPORTUNITIES AND RISKS OF CLIMATE CHANGE FOR ENGINEERING

Developing sustainable infrastructure presents numerous business opportunities involving the development of a green economy (Royal Academy of Engineering). This is beneficial for engineers and skilled trades whose roles include planning, designing, constructing and maintaining new and existing infrastructure over its life cycle.

On the other side of the coin, failure to adapt may result in a host of professional liabilities. By legislation and tradition, professional engineers are expected to protect the health and safety of the public. Our duties include eliminating risks that can result in the endangerment of the public from myriad hazards, including loss of heat and power, lack of clean water, and destruction of property. Failure to mitigate climate risks could conceivably lead to the revocation of one's professional designation, but also cause legal issues due to negligence. This is evidenced by the increase in climate change litigation cases against owners (and subsequently engineers) (Koval).

However, in a 2012 survey conducted by the Canadian Standards Association, greater than 70 per cent of engineers reported the lack of adequate information and support to address climate change (CSA Group). Failure to integrate future conditions in infrastructure designs due to uncertainties, or "not knowing," is becoming a risky fallback, in particular from a law and ethics perspective. While the scientific community slowly develops complex climate models to populate

future climate data, the engineering profession must move forward and attempt to create certainty out of uncertainty. Engineering education and professional development is key to furthering this agenda.

ENGINEERING EDUCATION AND PROFESSIONAL DEVELOPMENT

Typical engineering education revolves around discussing, processing and analyzing information, i.e. facts, theorems and formulas. However, in reality, modern engineering practice is often guided by heuristics. What should be taught when there is a lack of information to disseminate? Technical competence is important; however, engineering employers are more frequently seeking graduates with an arsenal of sought-after *skills*, including analytical thinking, problem solving, self-directed learning and communication.

In the workplace, these skills support problem solving through experience-based learning, guided by senior engineers and industry heuristics. And yet, the intricacy of engineering problems has evolved and, under this current model, we are slated to fall short of our duty and accountability as a profession. We think analytically, but within defined parameters. We are quick to understand and solve a problem of inputs and outputs, but cross-discipline, cross-culture and cross-continent problems do not fit within our often linear approach.

Formal undergraduate education provides the foundational knowledge and exposure to engineering practices, but does not explore the complexities of evolving information, the spaces between black and white, and decision making in changing contexts. Climate change is a problem of this very nature. So, while it may be wildly popular, this is not a question of introducing course content on climate change; this is a matter of equipping engineers with an enhanced engineering skill set to respond to the epic problems of this century and those yet-to-be discovered problems of the future. Responding to climate change demands infrastructure and systems that are not only adaptable, but also resilient. The same can be demanded of an engineer's skill set.

SKILLS DEVELOPMENT

First and foremost, engineers must be trained to analyze infrastructure systems holistically through the use of systems thinking. The established paradigm of using a linear, reductionist approach is insufficient to address the systemic risks resulting from climate change. Building systems resilience is paramount compared to sector resilience, as municipal infrastructure rarely operates in isolation. For instance, water distribution systems rely on energy to run pumps and ICT to continuously monitor operational functionality. Therefore, a failure in one sector during an extreme weather event can result in cascading failures causing rapid increases in economic costs and reducing the productivity of society.

It is clear from the above example that all sectors must be resilient to an equal degree to be a resilient system. Engineers should, there-

fore, also be skilled in consultation and design integration with multiple disciplines to better understand interdependencies between infrastructure sectors. This will assist in identifying pinch points within systems requiring further analysis.

Once critical infrastructure risks are identified, a vulnerability assessment should be undertaken to understand the impacts of various climate events. Engineers Canada has developed the PIEVC (Public Infrastructure Engineering Vulnerability Committee) protocol (www.pievc.ca/e/doc_list.cfm?dsid=48) to assist in this regard. However, engineers need to be comfortable with ambiguity and the lack of sufficient climate data. Probabilistic modeling and sensitivity studies of complex risk scenarios are examples of how one can alleviate uncertainties. By understanding the potential magnitude and severity of risks, problem areas can then be prioritized.

Understanding tolerance levels for risk will need to be considered to moderate the potential of over-investing in adaptation actions. Engineers will need to be innovative and maximize opportunities to develop all-inclusive solutions to increase adaptation capacity across multiple sectors. This can be through the use of multi-functional infrastructure systems. One such example is a tunnel in Malaysia used as a road under normal conditions, but having a dual-function as a stormwater reservoir under extreme flooding events (Mott MacDonald).

TEACHING METHODS

When it comes to integrating the development of these skills into our undergraduate and professional curricula, there is no need to reinvent the wheel. There are a growing number of programs exploring these concepts in the engineering context (see: University of Cambridge Engineering for sustainable development, MIT Systems design and management). Further, we can look to peers in other professions; law and business curricula rely heavily on case-based learning:

“Using a case-based approach engages students in discussion of specific scenarios that resemble or typically are real-world examples. This method is learner-centred with intense interaction between participants as they build their knowledge and work together as a group to examine the case. The

[POLICY ENGAGEMENT]

instructor's role is that of a facilitator while the students collaboratively analyze and address problems and resolve questions that have no single right answer." (Queen's University)

Case-based learning can be an effective tool in facilitating cross-discipline work efforts and communication, and introduces ambiguity to the problem-solving process.

In the professional development realm, our current approach is relatively unstructured and informal. In other professions, such as dentistry, one can confidently say a dentist is most up to date and informed in state-of-the-art dental practices and technologies. Can a member of the public necessarily say the same about the engineering teams behind our current infrastructure? Implementing more formalized and frequent professional development would be a valuable first step in regularly engaging practising engineers, and in developing and enhancing the broader skill set outlined above.

Open forum, group learning and discussion, much like the nature of the January 13, 2014 panel and group discussion hosted by the Ontario Centre for Engineering and Public Policy (OCEPP), should be recognized as an effective way to promote and develop these skills. Expert guest speakers and case-based learning also support this intent. Conducted outside of the workplace, this approach offers junior and senior professionals an opportunity to collaborate, influence and realign their practising norms—the heuristics—that guide their day-to-day decision making.

Designing a professional development curriculum that encourages continued learning and action is also crucial to effect a transition in engineering professional practice, for example, concluding seminar or workshop sessions with not just a new perspective, but a set of questions or considerations for participants to share with colleagues and reflect upon. This process of reflection and further consideration of concrete actions in the workplace would build the foundation for subsequent professional development sessions and learning. As a whole, this professional development model creates a forum for

defining a new normal—one that better reflects the scope and scale of the problems we are facing. Σ

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ELECTING ENGINEERS: A MATTER OF IMPORTANCE

By Howard Brown and Kaitlynn Dodge

THERE ARE MANY ways to engage with government.

PEO stays on the radar by mobilizing engineers across the province through its Government Liaison Program. The program encourages strong, mutually beneficial relationships between members of provincial parliament (MPPs) and professional engineers, and helps to keep regulatory issues on the agenda.

While contributing as professional partners to government is important, another way to engage with even more impact is to run for and hold elected office.

We need more P.Engs to play a role in elected office if the profession truly wants to improve public safety and the well-being of Ontarians.

As of August 2014, of the 107 MPPs, only two are engineers: Jack MacLaren, P.Eng., MPP (Carleton-Mississippi Mills), and Jim McDonell, P.Eng., MPP (Stormont-Dundas-South Glengarry).

At the federal level, where the number of members of parliament (MPs) is triple that of MPPs in Ontario, only four are professional engineers: Corneliu Chisu, P.Eng., MP (Pickering-Scarborough East), Marc Garneau, P.Eng., MP (Westmount-Ville-Marie), Pierre Lemieux, P.Eng., MP (Glengarry-Prescott-Russell), and Steven Blaney, ing., MP (Levis-Bellechasse).

The number of professional engineers in parliament is low when compared to lawyers and business people, even though engineers have skills that make them perfectly suited to lead in policy.

Engineers are trained to examine issues scientifically and critically, and are able to break down complicated issues using evidence-based decision-making and problem-solving skills. Parliament needs more individuals with these abilities to create thoughtful, practical policies that benefit the public interest.

Often seen as the silent profession, many engineers have a difficult time seeing their potential as policy-makers with a voice to contribute at the beginning of the process. They view their role as technical experts brought in to recommend solutions once the constraints and parameters are set.

What would be most valuable, however, is to have engineers present at the beginning of the policy process when the scope of the problem is being defined.

In Ontario, for example, the government is heavily focused on introducing new technologies to revitalize the energy and manufacturing sectors. This is a great example of the types of initiatives that would benefit from consulting with engineers

early in the process, to ensure solutions are developed that are prudent for the challenges at hand.

In a 2011 *Engineering Dimensions* article (“PEO now firmly on government radar,” May/June, p. 34), Minister of Aboriginal Affairs David Zimmer, MPP (Willowdale), remarked that when first meeting with engineers after being elected he “made the observation that PEO and engineering was the quiet profession in Ontario. I had heard loudly from the lawyers, and I heard from the accountants and the architects, but I had heard nothing from the engineers.”

He added that, at the time, “there was talk about renewal of the province’s economy and renewal of the province’s governance structure and other issues that engineers should be involved in, but it was my sense that they weren’t.”

While this has improved over the years, engineers must lend their knowledge, advice and expertise to finding the most suitable technologies for the long term that are also cost-effective and practical for Ontario’s unique environment.

Infrastructure is another area that benefits from the work of engineers. Bringing engineers in early in the process during, for example, the development of specifications can save the government money and ensure the appropriate parameters are set.

WE NEED MORE P.ENGs TO PLAY A ROLE IN ELECTED OFFICE IF THE PROFESSION TRULY WANTS TO IMPROVE PUBLIC SAFETY AND THE WELL-BEING OF ONTARIANS.

As we tackle complex challenges with many moving pieces, having more engineers around the cabinet table and on committees would make a considerable impact.

Engineering and public affairs go hand in hand. Whether it is regarding regulatory issues, which is PEO’s focus, or public policy issues having an impact on the strategic direction of energy, the environment and infrastructure in Ontario, engineers have a role to play in solving the problems that Ontarians face.

MPP Garneau said, “The decisions that politicians make affect people’s lives and they need to be based on science and fact, not dogma and ideology.”

Including engineering principles in decision making is a proven way to do just that.

As a regulator, PEO plays an important role in protecting public safety. Engineers have a duty and the tools to do the same, and it’s about time they did it from elected office. Σ

Howard Brown is president of Brown & Cohen Communications & Public Affairs Inc. and PEO’s government relations consultant. Kaitlynn Dodge is account director at Brown & Cohen and PEO’s government relations coordinator.

TO MASTER ENGINEERING YOU NEED TO LEAD

By Patrick Sweet, P.Eng.

IT IS WELL known that an engineer's success is contingent on the depth and breadth of his or her technical knowledge. There's a reason we slave for years over second-order differential equations, C++ and the like while in school. Our technical skills are necessary for our success as engineers, for the success of the products we design and the services we provide. This being said, I believe engineers need something a little more to master their domain. Technical skills are necessary, but not sufficient. Engineers must also become leaders to thrive.

This might come as a bit of a surprise to you, as an engineer. The link between soft skills like leadership and technical domains like engineering isn't immediately clear. Most engineers are of the opinion that leadership is something for management to bother with. This likely comes from a general misunderstanding of what leadership really is, and what effects a strong leader can have on a technical team. My goal here is to help engineers better understand leadership, why it's important to engineers, and how to develop leadership skills.

SO, WHAT IS LEADERSHIP ANYWAY?

The first problem we need to overcome as engineers is making sense of what leadership really is. It's easy to see the concept as being a bit nebulous, and, in truth, it's more of an art than a science. Despite this, there is some widely agreed-upon understanding of what leadership is, and what leaders do.

In the past, I've taken a stab at defining leadership on my own site (www.engineeringandleadership.com). There, I define leadership as follows: Leadership is the personal habit of taking selfless action to support the goals and needs of your team.

Before moving too much further, I'd like to expand on this definition and why I see leadership this way.

Leadership is personal

When I say this, I mean to say it's something a single person owns. It's not something that can be assigned to someone. Of course, an engineer can be assigned to a role that requires leadership, but that doesn't mean he or she all of a sudden inherits leadership skills. People can choose to act like leaders or not, regardless of what's written on their business cards.

Leadership is a habit

Aristotle once said: "We are what we repeatedly do. Excellence, then, is not an act, but a habit." You need to act like a

leader day in and day out if you ever expect to become one. The same goes for any personal development—from developing time-management skills or communication skills, or anything else. Practice makes perfect.

Leadership is selfless

Leaders are concerned first and foremost with the success of their teams (or families, organizations or departments, etc.). They do not concern themselves with collecting accolades or praise, and their actions support that. Business researcher Jim Collins has said leaders have "deep personal humility combined with intense professional will." Leadership isn't about promotion of the self, it's about supporting your colleagues.

Leadership is action

Leadership is about *doing* things. Nobody ever won a contract, built a bridge or delivered a product by just *planning* to do it. Of course, you have to start with a plan, but a plan without action is a waste of time. Your actions don't have to be grandiose, they just have to be meaningful. Leaders add value to their teams by taking action on a daily basis. Remember, Nike's slogan isn't "Just plan it," and there's good reason for that.

Leadership is supportive of goals and needs

This is key. Leaders don't tell people what to do. They help people get things done. Leaders empower, teach, guide and otherwise make it easier for teams to do what they set out to do. Leaders have a keen understanding of what their team is trying to accomplish, even if the team itself has lost sight of the end goal. Everything a leader does is in some way supportive of the goals and needs of the team. True leaders never see themselves as being above the team, rather, they see themselves as being behind their teams.

Leadership is focused on people

Everything I've said up to now falls like a house of cards if you forget the fact that leadership is a service to *people*. Excellent leaders never forget that their purpose is to serve the people around them. That means treating their teams, families and organizations with dignity and respect—treating them as they themselves would want to be treated. A leader will not last very long if he or she forgets this critical element.

LEADERSHIP VS. MANAGEMENT

One thing that may jump out at you about my definition of leadership is that it makes no mention of management or authority. I don't believe people need to be in positions of authority to be true leaders. This is a major difference between leadership and management. While managers have the formal authority and responsibility to exercise power, leaders may not. A manager's job is to direct and control a team. A leader exercises influence over a team through their own behaviour and disposition.

The take-home message here is clear: management and leadership are different skills. With this distinction in mind, it's easy to differentiate between average managers and great managers. The best managers are those who are also leaders. This also leads to an important opportunity for engineers. It means you don't need to be a manager to be a leader and you can have a profound influence on your team regardless of the title on your business card or the number of years of experience you have.

LEADERS ARE PASSIONATE ABOUT THEIR TEAMS, ABOUT THEIR PROJECTS AND ABOUT THEIR GOALS. THEY CARE DEEPLY ABOUT THE SUCCESS OF THEIR WORK AND ALSO ABOUT THE PEOPLE AROUND THEM.

WHY SHOULD ENGINEERS BECOME LEADERS?

We've established so far that leadership is about taking action to support those around you, and that leadership need not be restricted to the ranks of management. We also know engineers have the opportunity to become leaders. This brings us to an important question: Why would an engineer want to become a leader?

I believe engineers should indeed strive to become leaders, and it is worth the added effort. Leaders have the ability to amplify their own success, and the success of their teams. Being that transformative individual can multiply the value you bring to a team. All of a sudden, it's not just your own work you're bringing to the table—everyone's work is better as a result of your support. Engineering leaders become the linchpins of their teams.

The result? Engineering leaders have higher job satisfaction because they orient their work to something greater than themselves. They get noticed by their peers and their managers. They earn more respect, command higher pay and have better job security. They become indispensable to the teams they work with. The end result is win-win-win for their colleagues, management and themselves.

HOW TO BECOME AN ENGINEERING LEADER

Becoming a leader doesn't have to be difficult. In fact, there are a few simple things you can start doing immediately that will help you become a leader, regardless of your role or experience in your organization.

Become a role model

Leaders are role models. They conduct themselves in such a way that serves to inspire those around them. That doesn't just apply to their behaviour and actions at meetings; it applies to how they interact with people in the lunch room, how they speak about their spouses, how they treat the custodians...absolutely every aspect of their lives contributes to their ability to lead.

Probably the best way to become a role model is to choose your own role models and to consciously emulate them. What is it about your role model you value? Try to pick things out that are actionable and build them into your daily routines.

Be passionate

Leaders are passionate about their teams, about their projects and about their goals. They care deeply about the success of their work and also about the people around them. They go out of their way to support your goals and your ambitions, and challenge you to be a better you. Being passionate yourself gives others permission to get excited about their own work. Passion can lead to amazing things, even in highly technical endeavours like engineering.

Put others first

As I have mentioned, true leaders see themselves as being behind their teams, not on top of them. Leadership is about service, not about being served. True leaders make it their business to make it as easy as possible for the team to succeed. Try to think about what the team's goals are, and what your engineer colleagues are trying to achieve. What issues are they trying to solve? How can you help? Make an effort on a daily basis to put those needs ahead of your own.

In conclusion, leadership is a critical component of engineering success. Technical skills alone aren't enough for true mastery of engineering. Luckily enough, leadership isn't restricted to the domain of management—anyone can become a leader in their own right. I believe with leadership, engineers have a golden opportunity to get more out of their careers, help others do amazing things and become truly indispensable members of their organizations. Σ

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RING OF FIRE

puts spotlight on
northern Ontario's
mining industry

By Nicole Axworthy

It was a search for diamonds that first sparked a flurry of excitement in this Canadian mining story. De Beers, a world-leading diamond mining company, ventured up to a remote and inhospitable region of the Hudson Bay Lowlands in northern Ontario in 2002 in search of the precious stones. What De Beers found instead was perhaps even more valuable: strong indicators for minerals and metals like copper and zinc.

This sparked interest in the area by other companies, and one potentially commercial find led to another. The most promising of all? The first commercial quantities of chromite in North America. So massive is the opportunity that Ontario engineers and others speak of a multi-billion-dollar potential

that can be mined over many decades and could conceivably supply North American needs for over 200 years.

According to a recent report by the Ontario Chamber of Commerce (OCC), this 5000-square-kilometre, crescent moon-shaped area now known as the Ring of Fire (named by Noront Resources founder Richard Nemis, a life-long Johnny Cash fan) is one of the most promising mineral development opportunities in Ontario in almost a century. The OCC report projects the Ring of Fire will create 5500 potential new jobs in the area and an economic boost of more than \$25 billion across several sectors in Ontario by 2047, including \$600 million within the manufacturing sector alone.



The existence of only two mining exploration camps in the Ring of Fire, including Noront Resources' Camp Esker, above, demonstrates the current lack of adequate infrastructure to support mining operations.

Photo: Noront Resources

“The development of this area of Ontario has the potential to have significant impact on the future of our province,” says Sue Tessier, P.Eng., chair of the Ontario Society of Professional Engineers' (OSPE) Ring of Fire Working Group. However, she believes, as does the OSPE working group, there are many important issues that should be highlighted, particularly labour market needs and the opportunities for engineers—not only in mining but in infrastructure, energy and innovation.

“Engineers will be involved in almost every facet of the Ring of Fire, from extracting the chromite to constructing the roads and rail lines that will carry minerals to the destinations where the processing will take place,” Tessier explains. “The electricity needs of the region will be harnessed by power engineers. And the environmental sustainability of the whole project will demand innovation on the part of Ontario's green industry and clean tech sectors.”

WHAT IS CHROMITE?

While the project involves the potential to mine a number of rich mineral resources, the amount of chromite available has gained the most attention. Chromite is the key mined mineral in the production of stainless steel, among other products. Converted into ferrochrome using an energy-intensive smelting process, the material is subsequently used to make things like refrigerator covers, pots and pans, cell phones and surgical tools. It is highly valued for its ability to improve the properties of stainless steel—to increase hardness, toughness and resistance to corrosion. Currently, worldwide resources with the quality and quantity of chromite comparable to the Ring of Fire are limited. It is estimated the area holds at least 220 million tonnes of chromite—so completion of the project has the potential to position Ontario as a key supplier of this relatively scarce commodity.

To compare, about 22 million tonnes of chromite is mined a year around the globe. The majority of production is limited to a handful of countries: South Africa accounts for 45 per cent of global production, with production also occurring in India, Kazakhstan and Turkey. China is the global leader in the production of stainless steel and thus is the biggest importer of chromite, making up 85 per cent of global demand.

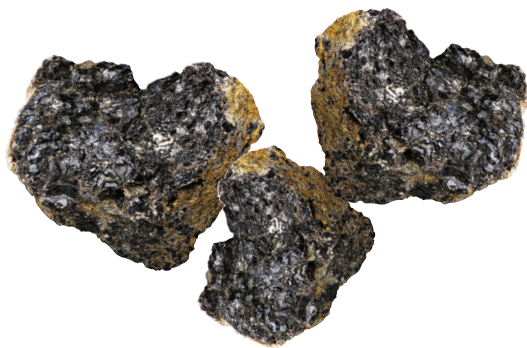
ENGINEERING CHALLENGES

Despite the economic potential, the engineering challenges arising from the project are staggering. First, the distance to get to the area is great and the terrain difficult. Transportation is by air, over water and ice. If not traveling by float plane, the area is serviced by only three small airstrips. The nearest roads are 300 km to the southwest in Pickle Lake, or 340 km to the south in Nakina. The nearest railways are about 400 km away, and major power lines are also hundreds of kilometres away. These issues, which are top of mind for engineers, government and First Nation communities, include concerns about who will pay for the necessary infrastructure and how it will be organized, planned, managed and implemented.

It has been estimated that up to \$2 billion will need to be spent on roads, rail and power lines to serve Ring of Fire mines. Yet there is no consensus on where and exactly which types of infrastructure should be built to serve the region, transport materials to market or link the mines to processing plants farther south. Development of the mines and roads will also have to rely on the availability of all-weather access to deploy fuel, supplies and equipment in advance of construction.

Sorting through competing infrastructure transportation proposals—which route and whether it should be an all-weather road or rail line—is one of the many obstacles confronting the Ring of Fire project. Another consideration is the cost of bringing electricity transmission lines to the region for mines and their camps, as well as to the remote Aboriginal communities. Provincial electricity prices act as a development challenge, too.

“The problem with all those deposits is that we simply can’t go up there as a private corporation and start building roads on Crown land,” said Moe Lavigne, vice president, exploration and



“THE PROBLEM WITH ALL THOSE DEPOSITS IS THAT WE SIMPLY CAN’T GO UP THERE AS A PRIVATE CORPORATION AND START BUILDING ROADS ON CROWN LAND.”

Moe Lavigne, KWG Resources

development, KWG Resources, at a recent Sudbury Chamber of Commerce event. “It’s the government that needs to take the lead on having a vision on how that should take place. Individual mining companies can do all the studies on individual deposits and do the engineering and financial analysis but they can’t sit down and negotiate, for example, with the First Nations on where the infrastructure might be.”

The Ontario government has taken the first step by creating a Ring of Fire Development Corporation to support infrastructure development. It is mandated to “develop, construct, finance, operate and maintain infrastructure supporting access to strategic resources in the Ring of Fire.” In July, Premier Kathleen Wynne pledged \$1 billion for transportation infrastructure and is calling on the federal government to match this funding.

While the mining companies are eager to clear the infrastructure hurdles, Vic Pakalnis, P.Eng., president and CEO, MIRARCO Mining Innovation, a not-for-profit research firm for the natural resources industry, says we need to look beyond a single-road solution. “Don’t look at this as just an infrastructure issue,” he says. “Engineers are interested in a larger vision than just roads and railways... It’s a new opportunity to create a community up there that could survive the next two to three hundred years.”

Marilyn Spink, P.Eng., an independent consultant to the global mining industry and lieutenant governor appointed PEO councillor, believes the key to success is good governance. With a project like this, you have only one chance to do it right, she says: “Once you’ve started, you can’t stop and do it over again. It’s similar to landing a plane—there is a point of no return, therefore you need to execute a perfect landing. Throughout the project there needs to be gating points for ‘sanity checks’ as the engineering progresses, that is, oversight by experienced, qualified individuals. Good engineering builds wealth. Good project governance and engineering management will ensure a successful project outcome.”

“Canada, and particularly Ontario, has a depth of engineering expertise, and we will need to replace the knowledge gap created by the aging engineering workforce,” Spink continues. “We need to start developing it now. We have to look at the human capital—are we preparing our youth to be tech-

The Ring of Fire belt is located about 400 km northeast of Thunder Bay in the James Bay Lowlands of northern Ontario and covers roughly 5000 square km.



nical, to be the good engineers in the right disciplines? Do we have the political will to invest long term? We're talking about billions of dollars in economic benefit to the province."

OTHER CONCERNS

Environmental concerns must be considered, too, alongside economic benefits. Impact on communities might be thought of as positive or negative, depending on the view. In northern Ontario, the Matawa First Nations, the group of Aboriginal communities closest to the Ring of Fire, have a strong voice among those who weigh in on the pros and cons of developing the mines, particularly in respect of exploration and mineral development undertaken on or near their traditional communities.

While more than 30 prospecting companies are involved with the Ring of Fire, and there are tens of thousands of claims, Toronto's Noront Resources is one of only two companies, and the only Canadian one, with a major devel-

opment proposal. In 2007, Noront discovered a high-grade, nickel-copper-platinum group element deposit in the area now known as Eagle's Nest. To minimize the environmental impact from mining, the company has designed a fully underground project for Eagle's Nest. Road aggregates are planned to be sourced from underground and the voids from extracting these aggregates along with the mined-out deposit will be used to capture the mine's tailings. The result of this approach is a greatly diminished surface footprint.

"Because of the lack of bedrock, we've chosen to put a lot of our major facilities underground and we're managing our process plant so there will be no water discharge from our processing," explains Paul Semple, P.Eng., Noront's chief operating officer.

Although Noront also owns a chromite deposit, it is not developing it at the moment, focusing instead on developing Eagle's Nest.

Semple points out that one of the main challenges of the mining project is going through the environmental assessment and permitting process while concurrently negotiating with the province and First Nations. Proposed mining and infrastructure projects in the Ring of Fire require approvals under federal and provincial legislation. According to the Ontario Ministry of Northern Development and Mines, environmental assessments are rigorous undertakings intended to “identify, predict and mitigate” any effects the projects may have on the environment, and ensure potential economic, social and cultural impacts are taken into account.

Noront has volunteered to make its projects subject to a harmonized environmental assessment under the *Ontario Environmental Assessment Act* and *Canadian Environmental Assessment Act*—this means both provincial and federal agencies will work with the company to make sure its technical studies meet the requirements of both the federal and provincial legislation. If the proposal is approved, Noront can proceed with its environmental assessment report.

Noront is also required to engage potentially affected Aboriginal groups at various times during the process to allow them to identify and consider potential concerns and issues, and to provide the communities with an opportunity to get information about, and have input into, the development of the environmental assessment. Since the discovery of Eagle’s Nest, Noront has spent more than \$200 million on exploration, development and community engagement, including holding community open houses, where the mining projects are discussed with the chiefs of councils and the community. “We’ve been doing youth camps in various communities, career fairs—all kinds of activities,” says Semple.

For their part, the Ontario government recently announced a framework agreement with the Matawa First Nations in an effort to move forward with mineral and community development in the remote region. The agreement sets out the principles and guidelines for more formal discussions on these issues. The province appointed former Supreme Court of Canada justice Frank Iacobucci as lead negotiator on its behalf in discussions with the chiefs of the Matawa First Nations Tribal Council. The chiefs have, in turn, appointed former premier Bob Rae as their lead negotiator.

“To be genuinely sustainable, communities need an economy,” said Rae during a lecture on sustainable northern economic development at Laurentian University in March. “So we have to deal with how

ONE OF THE MAIN CHALLENGES OF THE MINING PROJECT IS GOING THROUGH THE ENVIRONMENTAL ASSESSMENT AND PERMITTING PROCESS WHILE CONCURRENTLY NEGOTIATING WITH THE PROVINCE AND FIRST NATIONS.

to ensure the development that happens will actually create work and opportunities for the people who are living there. That needs to happen. That’s how you create the sustainability of communities.”

Spink agrees every mining project must benefit society, not just the company doing the engineering or supplying the equipment, for it to be truly successful. “The recent [OCC] report showed a really interesting graphic—a little coal cart you would think of in the 1800s. The message this coal cart conveyed is that mining isn’t clean [and] the Ring of Fire is about coal. Nothing could be further from the truth,” she says. “The Ring of Fire project is so much more than just a mining project; it’s about mechanical engineers and electrical engineers producing the products and equipment that are going to be needed for the life of the mine, the civil and high-power electrical engineers whose designs are needed to build the critical support infrastructure, the environmental engineering required to meet permitting requirements... I don’t think I will see it actually develop in my lifetime but it will be for your children and my children, possibly, who will reap the benefits. We just need good project leadership to set it off on the right course.”^Σ

PEO PROVIDES GUIDANCE FOR ACCEPTABLE REPORTING ON MINERAL PROPERTIES

Mining projects like those contemplated in the Ring of Fire go through several lifecycle stages, each requiring various reports, often prepared by professional engineers. PEO’s guideline, *Professional Engineers Providing Reports on Mineral Properties*, focuses on what it considers to be acceptable standards of diligence, methodology and reporting for engineers providing exploration reports, scoping studies, pre-feasibility studies, final feasibility studies, due diligence reports and valuation reports—the reports typically required during a mining property’s pre-development stages. It is to be used in conjunction with *National Instrument 43-101, Standards of Disclosure for Mineral Projects* and its companion documents. The guideline is available from PEO’s website at www.peo.on.ca/index.php/ci_id/22096/la_id/1.htm.

MINING

MINING REVIEW

UNEARTHED

WHOLE NEW WAY OF APPROACHING

WORKER SAFETY

BY MICHAEL MASTROMATTEO

THE CONCEPT OF JOINT “OWNERSHIP” FOR RISK AVOIDANCE IN ONTARIO’S MINING SECTOR HAS BECOME THE STANDARD FOR WORKPLACE HEALTH AND SAFETY ACROSS THE BOARD.

In January of this year, the Ontario labour ministry announced the formation of a mining safety review dedicated to improving the health and well-being of workers in this vital sector of the provincial economy.

Acting under the auspices of the Ontario Prevention Office and its chief officer, George Gritziotis, the review has six major focus areas, ranging from emergency response and mine rescue to the management of change as a result of new technology in the mining industry.

Another key issue for the safety review, however, is an examination of the state of the Internal Responsibility System (IRS), a foundational element of Ontario’s far-reaching *Occupational Health and Safety Act* (OHSA).

Ontario engineers might take more than a little pride in the IRS and its impact on safety in the mining sector—and, in fact, all workplaces. For it was an engineer, the late James Ham, ScD, P.Eng., who conceptualized the system and recommended that it be made a key part of Ontario’s health and safety legislation.

In the mid-1970s, Ham was asked by the provincial government to review health and safety conditions in Ontario’s mines, and to make recommendations to protect workers better. The review was prompted by an increase in fatalities and

occupation-related disease, such as lung cancer and silicosis, among Ontario’s miners.

Although the subsequent *Report of the Royal Commission on the Health and Safety of Workers in Mines* resulted in a host of legislative and administrative changes to the province’s occupational health regime, it was the IRS that is regarded as its seminal accomplishment.

In interviews with *Engineering Dimensions*, Bob Barclay, P.Eng., provincial coordinator of the Ministry of Labour’s (MOL) mining health and safety program, said that, in addition to the IRS, Ham’s report led to a reorganization of mining safety oversight in Ontario. “Prior to Ham’s review, the health and safety regulations resided under the *Mining Act*, which was under the Ministry of Natural Resources [and Forestry]. There was also some involvement of the Ministry of Health [and Long-Term Care],” Barclay said. “What happened as a result of Ham’s work [was that] all of that became integrated into the OHSA, or came under the auspices of the OHSA.”

Barclay says as the cornerstone of current health and safety legislation, the IRS and workplace safety programs are a logical part of the current mine safety review. “It is widely accepted that the IRS is fundamentally important to workplace health and safety, not just in the mining sector, but in all workplaces generally,” he noted.

CHANCE FOR POLICY DEVELOPMENT

For professional engineers concerned about their profession’s lack of status among the senior, self-regulated professions, the IRS and related developments in safety legislation can be viewed as a ringing endorsement of engineering’s beneficence in the policy-making realm.

Since the IRS was introduced in Ontario, it has spread to other jurisdictions as a model of workplace safety and the engagement of workers in promoting and maintaining a safety culture. It is a tribute to engineer Ham that the IRS, in effect, gave workers the “right to participate” in matters involving health and safety in the workplace—so much so, in fact, that under Ontario’s labour laws, workers can refuse to work if they believe unsafe conditions exist. At the time, some industry leaders felt the right to refuse would make adversaries of management and labour, resulting in disruption and chaos. Instead, the system is credited with encouraging positive collaboration among employers, management and workers in identifying risk and maintaining a safety mindset.

The Ham report also set the stage for the introduction of the OHSA on October 1, 1979. It has since been augmented with additional regulations, including the mandating of joint health and safety committees in all Ontario workplaces of 20 employees or more.

However, the Ham report offers more than just IRS and workplace safety lessons. It provides a glimpse into how the engineering profes-



James Ham, ScD, P.Eng. (left), whose review of safety in the Ontario mining industry led to the development of the province's *Occupational Health and Safety Act*, participates in a mock demolition ceremony with R.F. Moore in this 1966 photo. Photo: University of Toronto archives

sion, in conjunction with workers and other stakeholders, can take policy- and regulation-making in a more positive direction.

In addition to the Ham report, two other mining safety studies have resulted in further improvements—and have underscored the vital link between engineering and safer workplaces.

The Burkett report of 1981, which came in response to miner fatalities in 1980, reaffirmed the importance of the joint management-union approach to workplace safety, beginning at the senior executive level.

Half a decade later, the Stevenson report of 1986 made an additional 60 recommendations, ranging from mine design to emergency response procedures. It was prompted by four miner fatalities in June 1984, due to underground seismic activity, more commonly known as rock bursts.

The Stevenson report's key recommendation was to establish research chairs in the area of rock stability and rock mechanics at three Ontario universities. Two of the three research chairs were filled by professional engineers—Peter Kaiser, PhD, P.Eng., at Laurentian University in Sudbury, and William Bawden, PhD, P.Eng., at Queen's University in Kingston.

Kaiser is the original appointee to Laurentian's rock mechanics research chair. The past president of the Centre for Excellence in Mining Innovation (CEMI), Kaiser is in a unique position to assess how the engineering profession contributes to safer mining operations by developing protective equipment and designing and administering workplace safety systems.

Kaiser, who in July returned to his position as Laurentian's chair for rock mechanics and ground control, says it's no accident mining safety has advanced to its current, highly regarded state.

"My sense is that, today, we're actually in a situation where the mining companies are becoming more aggressive in creating safe workplaces than just through regulations," Kaiser told *Engineering Dimensions*.

"Regulations are important and they are continually being updated, basically in response to some negative event, but I think the industry has realized for quite a while that fatalities and accidents at the workplace are simply not acceptable, and many companies today have zero tolerance policies. I've taken the view that everything has to be done to minimize accidents and I think if someone does a review of accidents today, they would find there are a lot of errors in judgment and things that are very difficult to regulate."

Nonetheless, he believes the profession, in conjunction with workers' associations, the labour ministry and mine operators, has helped to improve the safety record of the mining industry as it looks to attract more practitioners and take advantage of new projects, such as the much-publicized Ring of Fire development (see "Ring of Fire puts spotlight on northern Ontario's mining industry," p. 38).

Bill Shaver, P.Eng., president and CEO of DMC Mining Services in Vaughan, north of Toronto, is an industry player interested in workplace health and safety.

DMC Mining, in fact, prides itself on safety and protection of workers as a competitive advantage over other operators. The company's vision and value statement says it is "committed to achieving zero harm to health, safety and the environment."

A self-described third generation miner, Shaver, since 2010, has headed Workplace Safety North (WSN), an association of three organizations that

oversee safety issues in the mining, forestry and pulp and paper industries. Previously, Shaver headed the Mines and Aggregates Safety and Health Association, one of the bodies rolled into the newer WSN.

Shaver suggests engineering contributions to safer operations of Ontario mines have been made hand-in-hand with the industry itself, which has long embraced the safety mantra.

“Fatalities and serious injuries in mining always wind up on the front pages of the newspapers,” he says, “so it’s natural for the industry to demonstrate its commitment to safer operations and to be on the lookout for continuous improvement in this area.”

NO ROOM FOR COMPLACENCY

Shaver says engineering ethics require that the profession never become complacent in seeking out new risks and unsafe behaviour.

In outlining the overall impact of engineering on Ontario’s mine safety regime, the labour ministry’s Barclay can point to several examples, including that engineers, whether ministry employees or industry advisors, are well represented in the current and ongoing safety review. To date, the review has established working groups to flesh out the priority areas (health system capacity, the IRS, hazards, management of new technology, safety awareness training and emergency response), with engineers taking part in many of them.

“There have been, historically, engineers serving on the Mining Legislative Review Committee as well as the subcommittees that operate under the auspices of that committee,” Barclay adds. “And apart from the current safety review, the labour ministry relies heavily on its Mining Legislative Review Committee. There is very considerable engineering involvement in mining health and safety in Ontario.”

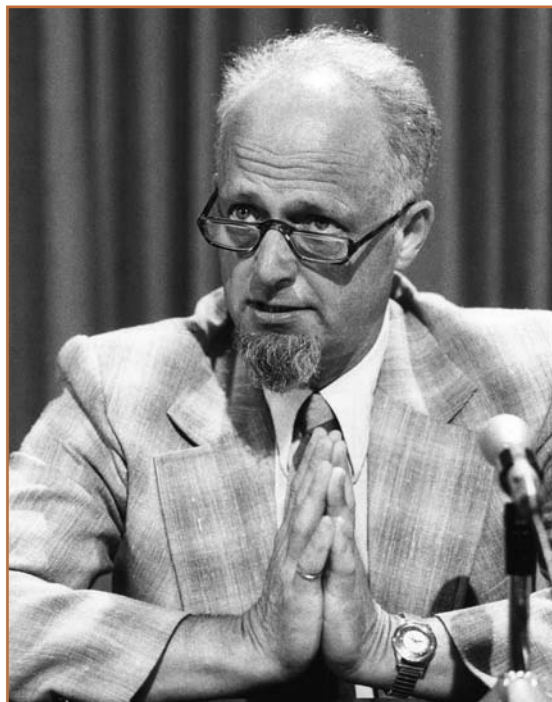
Vic Pakalnis, P.Eng., president and CEO of the Sudbury-based Mining Innovation Rehabilitation and Applied Research Corporation, says the IRS and the current review of the mining sector are good examples of how the engineering profession has taken a leading position in health and safety matters, by developing both technical and administrative solutions.

Pakalnis is chairing the review’s working group on technology and change management, one of its six focus areas.

“Technology in itself has been recognized as reducing death and injury,” Pakalnis told *Engineering Dimensions*. “The accident rates 30 years ago were much higher than today, but the advent of technology, remote-control scooptrams and other forms of automation, have led to safer conditions generally. But we recognize that technology can also have some downside to it, so we’re looking at what risk-assessment processes are in place and which ones we might want to promote in terms of best practices.”

According to the labour ministry, the current mining health and safety review will run throughout 2014, with completion in early 2015. The ministry hopes to implement many of the report’s recommendations as soon as possible.

And while it’s expected the review will make an evolving mining safety culture stronger, a stark note on the MOL website reminds anyone reading it why those involved in the industry keep looking for ways to



James Ham in 1976, announcing the release of his groundbreaking *Report of the Royal Commission on the Health and Safety of Workers in Mines*. The report set the stage for the Internal Responsibility System (IRS), which improved workplace safety not just in mining, but across all industries. Photo: University of Toronto archives

make it more safe: Since 2000, five workers have been killed in Ontario mines as a result of rock bursts. During the past three years, nine workers died and 81 workers were critically injured in underground and surface mines. So despite the improvements in safety and the evolution of safety systems, most notably the IRS, engineers can’t afford to rest on past laurels in the mining sector. Σ

[AWARDS]

ENGINEERS INDUCTED AS FELLOWS, ACHIEVE HONOURS

By Nicole Axworthy



Amethyst Award recipient Thomas Chong, P.Eng., FEC, PEO president-elect, is congratulated by Premier Kathleen Wynne at the Ontario Public Service award ceremony in June.

John Vlachopoulos, P.Eng., was recently honoured with a CAE fellowship, the Bruce Maddock Award from the extrusion division of the Society of Plastics Engineers and the SABIC Lectureship Award from the University of Akron.

Dillon Consulting Limited's work on London's Vauxhall Pollution Control Plant won an Ontario Consulting Engineering Award in the environmental category.

THE CANADIAN Academy of Engineering (CAE) recently inducted 49 new fellows, 22 of whom are PEO members. C.W. (Clem) Bowman, P.Eng., and Terence H. Matthews, P.Eng., were inducted as honorary fellows. Other fellows include: Paul Acchione, P.Eng., Jonathon Beddoes, P.Eng., Brian L. Garrod, P.Eng., Feridun Hamdullahpur, P.Eng., Nancy E. Hill, P.Eng., FEC, Janusz A. Kozinski, P.Eng., Sridhar (Sri) Krishnan, P.Eng., Claude Laguë, P.Eng., Carmine Marcello, P.Eng., Argyrios Margaritis, P.Eng., FEC, Edward Arthur McBean, P.Eng., Lloyd A. McCoomb,

P.Eng., Robert J.C. Reid, P.Eng., James E. Robertson, P.Eng., Edward H. Sargent, P.Eng., Dimitry G. Sediako, P.Eng., Heather Sheardown, P.Eng., Jeanette M. Southwood, P.Eng., FEC, Yu Sun, P.Eng. and John Vlachopoulos, P.Eng. Vlachopoulos, professor emeritus, McMaster University, was also recently honoured with the Bruce Maddock Award of the extrusion division of the Society of Plastics Engineers for fundamental contributions to single screw plastics extrusion and the SABIC Lectureship Award from the University of Akron. The CAE is a self-governing, non-profit organization through which Canada's most distinguished and experienced engineers provide strategic advice on matters of critical importance to Canada. Fellows are committed to ensuring Canada's engineering expertise is applied to the benefit of Canadians.

PEO President-elect Thomas Chong, P.Eng., FEC, has been honoured with Ontario's Amethyst Award to recognize his achievements in the Ontario government. The award was presented to Chong by Peter Wallace, secretary of cabinet and head of the Ontario Public Service. Premier Kathleen Wynne also attended the ceremony at the Winter Garden Theatre in Toronto to show her support of outstanding innovation, energy and leadership in the Ontario Public Service.

Dillon Consulting Limited of London received an Ontario Consulting Engineering Award in the environment category for the design and completion of plant upgrades for the City of London's Vauxhall Pollution Control Plant, which has improved the wet weather treatment facility capacity of the plant. (For more recipients of the Ontario Consulting Engineering Awards program, see page 46 of the July/August 2014 issue of *Engineering Dimensions*.)

CALL FOR ENTRIES

The Ontario Concrete Awards program is accepting entries for its annual competition, which recognizes creative cast-in-place and precast projects in Ontario. Submissions must be received by Thursday, September 25.

For more information, visit www.ontarioconcreteawards.ca. Σ

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[LETTERS]

NIMBYism IN DURHAM

Re: the letter by Elio Comello, P.Eng., "We're not at fault," *Engineering Dimensions*, July/August 2014, p. 52.

Hooray for Mr. Comello, P.Eng.! He couldn't have expressed my opinions of NIMBYs any better. I sent a letter to our local paper about one year ago, which was in response to an article they wrote regarding youth unemployment in Durham region—the highest in Canada, if I recall correctly ("NIMBYism to blame for rise in youth unemployment," *Clarington This Week*, July 25, 2013).

I received a lot of comment about this letter, most of it positive but some negative. One man said "I am not a NIMBY, I am an activist."

He's wrong. An activist is a person who is trying to promote in a positive way some constructive activity, like park enhancements, crossing guards, etc. A NIMBY, if I can be

blunt about it, is a hypocrite. He/she doesn't want something near their place but it's okay if it goes near someone else's place. Don't put it here; put it over there. But forgetting that their "there" is someone else's "here."

Unfortunately, Clarington and Durham are full of NIMBYs and it is costing us all in jobs and increased taxes. The only positive thing that I can see for professional engineers is that some are hired as consultants for extra unnecessary studies. Many more P.Eng. jobs would be created if the proposed projects were allowed to proceed.

I don't hate politicians but I am very cynical about politics and what it does to make folks who, for the most part, are hard working, conscientious people who want to help society do things that, deep down, I believe they would rather not do.
Clayton M. Morgan, P.Eng., Bowmanville, ON



NEED FOR MORE STUDY?

Re: "Energy policies and social acceptance of small wind turbines," *Engineering Dimensions*, July/August 2014, p. 40.

I'm curious. Has there ever been a comprehensive, quantifiable

analysis of the return on energy investment, ROEI, for the life cycle of networked wind turbines? I'm not aware of one and skeptical the ROEI is greater than one. If there is a study, this is something I believe should be shared with the public—positive or negative.

A. Maraschiello, P.Eng., Mississauga, ON

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A closer look at health and disability insurance

How coverage can help the self-employed, contractual and underinsured

Being ill or injured can be challenging enough without worrying about being driven into debt.

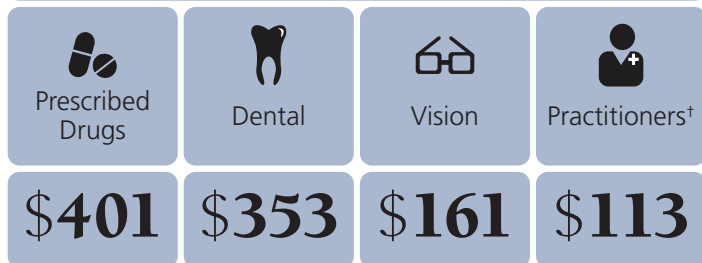
With health and living costs rising steadily, those who are self-employed or don't have coverage at work could face financial hardships. Without an employer's group insurance benefits, you are *left to your own means when it comes to protecting yourself and your family*.

You don't hesitate to insure your home, car and other valuable possessions, so why wouldn't you insure those that are much more valuable than all those things — *your health and your ability to earn an income?*

Health insurance

Supplementary health insurance starts where government coverage ends.

Ontario household health spending¹ (Annual, excluding health insurance premiums)



[†]Other than physicians, dental and vision care professionals

With no supplementary health coverage, you would have to pay *out of your own pocket for common expenses* like prescriptions, dental care, vision care, therapeutic services and more.

If your spouse doesn't have coverage at work, your out-of-pocket medical expenses can get even bigger, especially if you have children.

Private health insurance can be *more affordable than you think*. Plus, if you're self-employed, you may be able to deduct the cost of your health insurance premiums from your business income.²

Disability insurance

Disability insurance helps to replace a portion of your income if you become ill or injured and can't work. These plans provide *monthly benefit payments*, based on a percentage of your monthly earnings, while you are disabled and unable to perform your occupation.

Unlike employee disability plans that end when you change jobs, some association-sponsored disability plans can *provide continuation of coverage between jobs* so you are not left without

coverage while unemployed. If you become disabled within 12 months of your last job, you remain eligible for a monthly benefit payment.

Look for a disability plan that offers coverage for different types of disability, such as total disability, partial disability, residual disability (you are able to return to your regular occupation but in a limited capacity), and catastrophic loss.

And if you pay your own premiums (not your partnership), your monthly disability benefits may be tax free.³

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Affordable coverage is available for professional engineers through the **Engineers Canada-sponsored plans**. This allows you to enjoy many of the benefits of a group plan (e.g., lower cost) so you can focus on your recovery, not on the bills.

¹ Average household annual spending (Source: Statistics Canada, 2010 Survey of Household Spending, April 2012).

² Contact your financial advisor or the Canada Revenue Agency for details.

³ Percentages are based on persons covered at end of 2011 (Source: Canadian Life and Health Insurance Association, Facts & Figures, Life and Health Insurance, 2012 Edition) and 2011 provincial population figures (Source: Statistics Canada).

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