THE PROFESSIONAL

EDGE

ISSUE 161 MARCH/APRIL 2016

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Association of Professional Engineers & Geoscientists of Saskatchewan

ETHICS

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Editorial provided by:

Martin Charlton Communications
#300 - 1914 Hamilton Street, Regina, Saskatchewan S4P 3N6
T: 306.584-1000, F: 306. 584-5111, E: marylynn@martincharlton.ca

Editor:

Lyle Hewitt, Managing Director, Martin Charlton Communications
E: lyle@martincharlton.ca

Design and Layout:

Jo Anne Lauder Publishing & Design, T: 306.522-8461, E :joanne.lauder@sasktel.net

Submissions to:

The Professional Edge Editorial Committee
300 - 4581 Parliament Avenue, Regina SK S4W 0G3
T: 306.525.9547 F: 306.525.0851 Toll Free: 800.500.9547
E: apegs@apegs.ca

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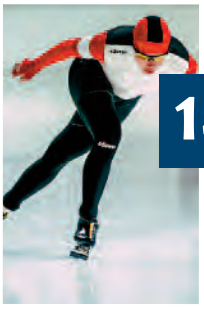
Table of Contents

ISSUE 161
MARCH/APRIL 2016



President's Message

What does it mean to be a person of good character?

I would argue that being of good character is an expectation of a professional person. We all know good character when we see it, but it's a challenge to put that down on paper. APEGS is in the process of reviewing the definition in our Good Character Guidelines, and it's taking a lot of time to draft and reflect on because the meaning of good character changes with time.

Ethics is at the heart of the matter, and in this issue of *The Professional Edge* that topic will be explored. In fact, the issue of ethics within the professions has been a constant topic of conversation across the country at our sister Constituent Associations' annual meetings and at Engineers Canada. And it should be a topic of constant conversation, because while the definition may evolve the need stays the same.

An excellent professional development session at Engineers and Geoscientists Manitoba's annual meeting featured exercises that pointed out the differences in their code between when the association was formed in 1920 and the present. The session also involved thought experiments to illustrate that acting ethically can vary, depending on the order of events and the vantage point from which a situation is viewed.

So what to do? I have been talking to many people about writing this message for *The Professional Edge* and a couple of themes have risen to the top. First and foremost, we must all talk about this subject. In our modern, busy lifestyles, many of the traditional forums for having these discussions have disappeared from our day-to-day activity. That is why it is crucial for an organization like APEGS to lead those discussions with the membership. In a way, this is our second themed *Edge* on the topic of ethics, because Continuing Professional Excellence and Reporting is an activity that gives each of us time to contemplate, and states to our world that as a professional, "I am responsible; I act with integrity in my promise to be up to date on my professional skills; and I am honest in making that claim."

Second, being a member of good character and in good standing with APEGS benefits each of us personally. As professionals, we benefit from the collective public's vision/view of engineers and geoscientists as honest and trustworthy people. We know from our public surveying about the professions that we are highly regarded for what we do. This is valuable but, as with anything that is of value, there is a risk of it being lost when as professionals we do not act or are seen not to act ethically and in the best interest of the public. As you will read in this issue, some of the saddest tragedies resulting from engineering project failures of the last few years across the country were more about the failure to act ethically than a failure of technical skills alone.

This is my last message for *The Professional Edge*. I would like to give my thanks to a number of people for their support over the last year.

First, a thank you to the membership for placing confidence in me to take on this role and represent you provincially and nationally. It has been a great honour and pleasure to serve you.

Second, my thanks to Dennis and Wendy Paddock for their mentorship throughout the year of leading Council, travelling the country and understanding the issues of our professions from regional and national points of view. As you may know, Dennis is retiring from APEGS this year. He will be greatly missed by staff, Council and the membership. Dennis, I want to wish you and Wendy happiness in your next set of adventures.

Third, I would like to again thank my employer, SaskTel, for its support of my professional activities, and I know that the experience I have gained this year will help me do a better job at work!

Finally, to my family: at many speaking engagements, when I discuss what it means to be a professional person, I talk about the examples set for me by my parents, Dr. Alice Goodfellow and William Hodges, P.Eng. Growing up having a medical doctor and a P.Eng. at home as role models, I have always known that I wanted to be a professional person. I am very fortunate to have chosen engineering, and a P.Eng. is who I am and what I will remain. I also hope I have made my grandfather (Sam Goodfellow) proud. As a machinist, inventor and entrepreneur, today he would have been a Licensee member. Perhaps he would have fulfilled his dream of studying engineering had he not been diverted from that goal by the First World War a century ago.

And thanks also, to my husband and daughter, Ed and Alice Willett. You have both successfully managed to keep the home fires burning while I have been away, whether that be travelling or trying to get everything caught up on the weekends at work. Thank you for helping me "do it all!"

Previous page: L-R Engineers Canada representative Dwayne A. Gelowitz, P.Eng., FEC; President Margaret Anne Hodges, P.Eng., FEC; President-Elect Tara Zrymiak, P.Eng., FEC; Dennis Paddock, P.Eng., FEC, FCSSA, FCAE, FGC (Hon.)

Above: R-L President Hodges with retiring Executive Director Dennis Paddock and his wife Wendy.

Prevent, detect, respond

SNC-Lavalin overhauls ethics and compliance program

BY MARTIN CHARLTON COMMUNICATIONS

SNC-LAVALIN is one of the world's largest engineering and construction firms, with a history dating back 105 years. In recent years, the Canadian company's well-known name has been heard most often in connection to controversies. The company has been accused of bribery, fraud, forgery, corruption and conflicts of interest.

The silver lining is that the scandals have given the company the motivation it needed to overhaul its ethics and compliance program.

Hentie Dirker has been SNC-Lavalin's chief compliance officer since October 2015. He says that while some unethical behaviour did happen, "it has been picked up, the individuals have been taken care of, they're no longer with the company, and going forward we have 40,000 employees that want to do the right thing."

Dirker says SNC-Lavalin wants to be a sustainable company going forward and to make sure there are adequate controls in place to achieve that.

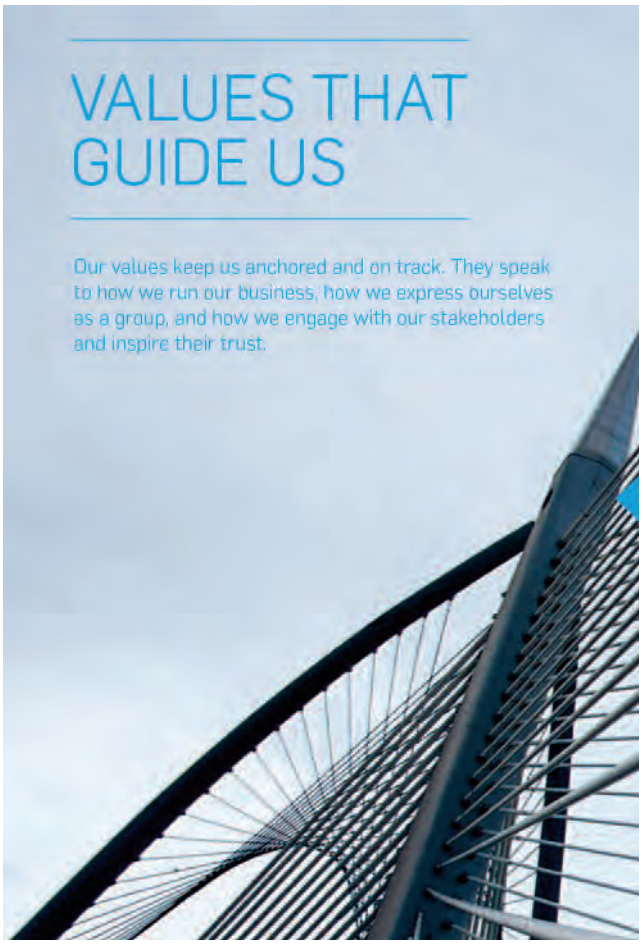
"In any company, irrespective of what controls you have in place . . . you're going to find individuals that want to do the wrong thing. And you're going to find them . . . It always comes out. What a compliance program does is make sure you have adequate controls to prevent things from happening."

In 2012, SNC-Lavalin began the process of revamping its ethics and compliance program. The program consists of three basic elements: prevent, detect, and respond. Each element has detailed action points and guidelines to ensure employees are supporting their code of ethics and business conduct.

The goal of the program is to prevent anything from happening in the first place, but also to have a system to detect problems if and when they happen, and to have an adequate response mechanism in place "to make sure whatever happened doesn't happen again," says Dirker.

"All areas are equally important, but an area where you really can get the most out of the program is ensuring you have a very good training and communications plan in place — training the employees on the code of ethics, and training on other aspects of the program, including anti-corruption training for individuals in sensitive functions."

Training and communications falls under the "prevent" portion of the plan. Dirker says now that the program is fully implemented and there's a full-time team at the Compliance Consultation Centre, they are focusing on sustaining the program through ongoing communication, training and education. Because SNC-Lavalin is a services- and project-driven company, its staff is often changing, and the company needs to make sure it's training new employees in a consistent manner.



The company also needs to ensure it's reaching out to all of its 40,000 employees spread out across the planet.

"As soon as you go global, then of course it becomes much more difficult than having a local organization," says Dirker. "From an organizational perspective, you have the right people in place at the right points of the company in the various regions. From an SNC-Lavalin perspective, we have a full-time ethics and compliance team with various compliance officers situated globally in our regions where most of our business gets done."

The company pays special attention to countries that are higher up on Transparency International's corruption perception index. Each year, Transparency International scores countries based on how corrupt their public sectors are seen to be. SNC-Lavalin does more due diligence in higher risk countries than lower risk countries, making use of the scores to weight the program.

"We make use of this map to really differentiate where there's a higher risk or a lower risk. That's an important point from a compliance program perspective — you try to differentiate in terms of the scrutiny."

Although SNC-Lavalin was pushed into the revamp of its ethics program by the controversies plaguing the company, Dirker says companies all over the world are putting more effort into improving compliance.

Systems for enforcing good ethical behaviour are a rare business asset that companies can share freely with each other. Dirker participates in the Corporate Ethics Management Council, where compliance officers share materials with one another. He and others in his field share information on the topic both officially and unofficially.

"We are constantly trying to reach out to our peers, to other companies within our industry across sectors to share ideas . . . The more companies that have robust programs, the more level the playing field is when doing business."

In fact, Dirker says he knows some people who are envious of SNC-Lavalin's ethics and compliance program because of the huge investment the company has made into this area of the business.

The renewed focus on ethics has permeated every aspect of working at the company. Dirker compares the new ethics culture to the company's long-standing safety culture. Any meeting with more than five people starts with a safety moment and an ethics moment. Typically before the meeting starts, someone will volunteer to tell a story that relates a learning moment in either safety or ethics. The story can come from something they've seen or read, or can come from something that's happened at their own workplace.

"The more management, the more employees, the more individuals talk about ethics, the more comfortable you get about it."

And the more comfortable people are in talking about it, the more likely they'll also be comfortable taking action when they're confronted by unethical behaviour.

On ethics and ethical support

In conversation with APEGS Deputy Registrar: Bob McDonald

BY MARTIN CHARLTON COMMUNICATIONS

Bob McDonald, P.Eng., FEC, FGC (Hon.), LL.B.

As a professional engineer and lawyer with a master's degree in business, Bob McDonald's expertise in ethical matters is highly sought after. He instructs a portion of the law and ethics seminar for members-in-training preparing to write the professional practice exam, and hosts a number of lectures in the area of law and ethics, including for other professional associations.

He's worked for APEGS for 17 years. As the deputy registrar, he's involved in many aspects of the Association, including corporate governance, in-house legal counsel to the APEGS Council, secondary support on the Investigation Committee, and more.

The Professional Edge talked to Bob to learn more about his work as a law and ethics expert, and to hear about how APEGS supports its members in all things ethical.

What kind of ethical support does APEGS offer?

I get a number of calls from our members, from time to time, who have some questions.... Sometimes there are some ethical dilemmas involved, and I try to work through an analysis of the issues. I'm not going to tell somebody do this or do that. I work with them to identify the problems, try to identify some courses of actions, tell them the consequences as I see them as to some of these courses of actions, and then the ultimate decision is up to the person I'm talking to.

What happens if an APEGS member needs help?

I'm one of the people that they call, and I also ask them, are there some other people that they've got in a bit of a support network, some people that they respect — depending on the nature of what the problem or the issue is. Sometimes there are people in the organization they can't talk to. I know I have a good network of connections and I try to use that for members and say, this person may be in a better position to provide some commentary or advice than I am. It might be somebody from a faculty at the university, it might be someone senior in the profession, it might be somebody who has some legal background, because you're only getting one side of it from me.

If some of this matter should come up to an investigation or discipline perspective after I've been in conversation with somebody like this, I will declare a conflict of interest and recuse myself from any of the discussion going on. I think that provides some value to members because then they're in a position to suggest to me what the issues are and I can provide that commentary. If I didn't do that, the Association may be the last place they want to call.

Do you have some real-world situations you can share with us where the application of ethics can make a difference?

Sometimes people ask me about [signing] a confidentiality or non-disclosure or non-compete clause as a condition of employment . . . I will look through those types of things for somebody. The interesting thing is not only is there that contractual relationship, but there's a common law obligation in many cases as well as an ethical obligation . . . You still have a common law and ethical obligation under the Code of Ethics, so signing this isn't really doing anything more than what is already required.

One time a member was doing some farming and some tinkering around the farm and coming up with some inventions, and the confidentiality agreement said all patents of invention would belong to the employer. And I said, well that's really geared towards your work. The net result was the tinkering that this guy did at the farm was

exempted from the confines of that agreement because he wasn't using employer's time or employer's facilities for the tinkering on the farm.

Do you wish more people would ask questions?

I suppose that people that don't know me might hesitate to give me a call. Sometimes, I'll get a call from members I've known for a long time, since before I was a professional engineer. Some of these people call and ask "can you help me with this?" and I'm thinking "you're asking me? When I was a kid, you were the guy I went to for advice!" Really, it's not an age thing. It's an experience, support and respect thing. You need to work with someone whose judgment you respect.

So you're saying people shouldn't feel they must know the answers, because it might still be valuable to talk it over with someone else?

With ethical dilemmas, if you've got this bad feeling in the pit of your stomach that says, I don't know if this is right; I need to get some help on it – you probably know the answer to the question. You're just asking for confirmation. My concern is with people that don't get that feeling in the pit of their stomach, and that's where you start to see things getting in trouble. If you can't foresee a conflict of interest, or if you don't know what it is, those are the things that start to concern me.

Confidentiality and conflicts of interest

Bob McDonald's confidental information lecture delves into the details of professional regulation, professional ethics and legal considerations, with real-world examples.

Since engineers and geoscientists often deal with confidential information, they can be put into positions that create a conflict of interest. As regulated professionals, it's their responsibility to understand how to act when faced with such a dilemma.

Luckily there are a lot of case studies available to learn from. McDonald notes that when there's big money at stake, any issues will go into serious litigation. Because so many of these cases make their way through the court system, "we have the opportunity to see what the court's expectation is of us vis-à-vis confidential information and conflicts of interest," McDonald says.

Essentially, the question comes down to "What can I take from one employer to the next?" The answer is that you can take general skills and knowledge, but you can't take information that is confidential in origin — even beyond your term of employment.

Case law examples McDonald cites in his lecture include:

- Pre-Cam Exploration & Development v. McTavish (1966)
- Canadian Aero Services Ltd. v. O'Malley (1973)
- Guyer Oil v. Fulton (1977)
- Chevron Standard Limited v. Home Oil Company Limited and Leeson (1982)
- LAC Minerals Ltd. v. International Corona Resources Ltd. (1989)
- Murphy Oil v. Predator Corp. (2006)
- Canadian Metals Exploration Ltd. v. Wiese (2007)

The remedy in most of these cases was to hand over all the profits gained from a conflict of interest or breach of confidentiality. Based on this case law, unethical behaviour does not pay.

Corruption in Montreal

OIQ makes changes to better protect the public

BY MARTIN CHARLTON COMMUNICATIONS

Justice Charbonneau

In 2011, amid the ongoing scandal of Quebec's crumbling infrastructure, a storm of media reports linked Quebec's construction industry to political party financing and organized crime.

The Charbonneau Commission was established in October 2011 by then premier Jean Charest's Liberal government to investigate schemes and describe collusion and corruption activities in the industry, and to recommend measures to identify, eliminate and prevent corruption and collusion in the future.

On Nov. 24, 2015, the commission released its final report. The commission heard from nearly 300 witnesses, including provincial cabinet ministers, municipal employees and elected officials, political fixers and fundraisers, engineering firm executives and construction magnates and union officials with links to the Mafia and Hells Angels.

Over 261 days, witness testimony painted a picture of systemic corruption and collusion that involved bid-rigging for public contracts by a cartel of engineering and construction firms, election fixing, back-room deals, kickbacks, off-the-books fundraising, intimidation and bribery.

The effect was to create what former Infrabec president Lino Zambito described as a "closed market" in Montreal and surrounding regions, where a handful of companies, union leaders and top bureaucrats controlled the bidding process for public contracts, squeezing out legitimate competition and inflating costs by as much as 30 per cent.

During the inquiry, former Genivar site inspector Karen Duhamel testified that when she told her superiors in 2003 that construction company GTS was overcharging for materials it had used on a highway project, the mood turned hostile. One senior engineer even told her, "You're so pretty I could rape you."

Duhamel notified the Ordre des ingénieurs du Québec (OIQ) but was told she lacked evidence of wrongdoing. The OIQ says that at the time it "did not have the specialized resources or investigative powers" to assist engineers in Duhamel's position.

But the OIQ has been hard at work to change that. New resources and processes, such as its 1-877-ETHIQUE hotline, allow the Office of the Syndic (the OIQ's ethics council) to follow up on complaints, and it has created a working group to "thoroughly analyze" the conclusions and recommendations of the inquiry.

In 2010, the OIQ adopted an ethics and professional conduct action plan and began taking concrete steps to improve public protection. These steps included improving the Professional Practice Guide, implementing a mandatory professionalism course and exam, providing mandatory training for OIQ board members and establishing a "specialized inquiry unit" in the Office of the Syndic. The OIQ has also partnered with the Bureau de normalisation du Québec to develop a "business practice audit program."

Changes on the horizon

The Charbonneau report outlines 60 recommendations that include creating an independent public works authority, providing better protection for whistleblowers, banning the announcement of grants or contracts during political fundraisers, tightening rules around gifts and donations, increasing penalties for companies that break the law, expanding criminal background checks for construction industry shareholders and compelling all professionals to receive training in professional ethics.

Many of the commission's recommendations reflect solutions proposed by the OIQ.

In 2012, the OIQ was granted intervenor status by the commission, and in 2014 it recommended solutions that fell under two general categories: first, to modernize Québec's professional system, which involves the supervision of engineers; and second, to review the processes of awarding and managing contracts, which involves the supervision of clients and organizations that hire engineers.

The report particularly stresses the OIQ's role in preventing and detecting practices exposed by the commission. The report notes that Quebec is the only jurisdiction in Canada where a professional order can't subject corporations or partnerships to the licensing and disciplinary processes that apply to individuals, and affirms the OIQ's suggested changes to the Quebec Professional Code.

For a model, the commission pointed to the way firms are regulated by professional orders in other provinces and some American states, and recommended regulatory powers that include compulsory registration and licensing, reporting requirements, professional audit and inspection practices and the possibility of disciplinary action.

Such changes should be designed, according to the OIQ, to "provide tools and support to engineers so that they give priority to their ethical obligations over their employment or business obligations."

The report also highlights the need for improved engineering expertise within public bodies that consult with engineering firms and grant public contracts, such as the Ministère des Transports du Québec (MTQ). In addition, the commission stressed the importance of quality worksite supervision and revisions to funding formulas that would see bids evaluated according to criteria "based on the type of structure to be designed and the project owner's specific needs."

Underlying causes

Despite nearly four years of investigation and an initial flood of arrests and charges, Justice France Charbonneau's final report does not assign blame to individuals, either elected or unelected. Instead, the report identifies "systemic collusion patterns" that are "far more widespread than originally believed." It also concludes that organized crime has, in fact, infiltrated the construction industry in Quebec, resulting in millions of dollars in cost overruns and a potentially devastating threat to the legal economy.

Charbonneau's failure to blame any individual or organization has led some to criticize the report as "sanitized." Critics point to 200 warning notices sent to various individuals and groups as evidence that the commission initially considered holding several people and organizations accountable, including the Liberal Party of Quebec, the PQ, Union Montreal, SNC-Lavalin, and former Montreal mayor Gérald Tremblay, among others.

It is clear that the commission "thought about blaming people and changed its mind and chose to just analyze the system," says François Legault, leader of the Coalition Avenir Québec party.

As University of Toronto law professor Kent Roach explained to the *Montreal Gazette*, the value of an inquiry is not in assigning blame but in telling a story that exposes the underlying causes of the broader problem.

"I think a lot of the difficulty that commissions have is in selling that systemic story to a public that wants individual fault and individual sanctions," Roach says.

The commission has also been criticized for split findings and the apparent discord between Justice Charbonneau and co-commissioner Renaud Lachance. Although Lachance reported irregularities in the awarding of public contracts during his time as Québec's auditor general, he distanced himself from the commission's finding that a systemic link existed between Liberal Party financing and the awarding of subsidies and contracts. However, he ultimately agreed with the report's recommended financial reforms.

In partnership with Quebec society, the OIQ remains committed to rectifying the situation described by Justice Charbonneau's commission. According to the OIQ Director of Professional Affairs Louis Tremblay, "the OIQ intends to fulfill its mission of protecting the public."

Now that Justice Charbonneau has released her report, the OIQ's priority will be "to examine the recommendations that directly affect the OIQ's public protection activities," including supporting ethical engineers and punishing those who commit "reprehensible acts."

Engineer failed to uphold "the moral and ethical foundation" of his calling

www.canadianunderwriter.ca

When Robert Wood inspected the roof and parking deck at Algo Centre Mall in Elliot Lake, Ontario, on April 12, 2012, the long-time engineering consultant pronounced the building structurally sound — despite "evidence of rusting" and "ongoing leakage."

Two weeks later, on June 23, a section of the roof collapsed, hailing chunks of concrete and steel onto the patrons below. Dozens were injured and after a frantic four-day search, the bodies of Lucie Aylwin and Deloris Perizzolo were pulled from the rubble.

Justice Paul Bélanger's inquiry revealed that no one should have had to ask, "What went wrong?"

"The real story behind the collapse is one of human, not material, failure," Bélanger writes. Poor design, bad waterproofing, and an inadequate patchwork of band-aid solutions applied by various owners over the years had plagued the notorious "Algo Falls."

"Many of those whose calling or occupation touched the mall displayed failings — its designers and builders, its owners, some architects and engineers, as well as the municipal and provincial officials charged with the duty of protecting the public," said Bélanger.

And he names those failings: "Apathy, neglect and indifference to mediocrity, ineptitude, incompetence and outright greed."

Wood was only the last in a string of engineers who failed to raise the alarm. He also failed to tell the mall owner his licence had been revoked. He has been charged with two counts of criminal negligence causing death and one count of criminal negligence causing bodily harm. He is expected to face trial in September 2016.

No other charges have been laid, but relatives of the women killed are suing the provincial government, the mall owner, the City of Elliot Lake and the engineering firm M.R. Wright and Associates for $2.25 million. A class action suit has also been launched.

Against technology doping

Sean Maw holds a higher standard for amateur sport

BY MARTIN CHARLTON COMMUNICATIONS

There has been a huge outcry about drug doping in sports, but Sean Maw argues that "technology doping" is just as damaging, and instead of being discouraged, it's encouraged.

Technology doping is when the equipment used in sport gives competitors an unfair advantage, says Maw, Huff Chair in Innovative Teaching with the Graham School of Professional Development at the U of S College of Engineering.

Maw is particularly concerned about technology used in amateur sport -- new technology that isn't shared with competitors, creating an arms race where each side builds better and better gear, resulting in games that are not person versus person, but equipment versus equipment.

From an ethical perspective, new technology can have a negative repercussion on the whole sport, sometimes even internationally.

Maw used to work with the Canadian Olympic speed skating and cross-country ski teams, working on projects to advance their performance. He helped design the Canadian skin suits for speed skating.

"We did well on the work on that, but we were playing

"Engineers are the vehicles by which technology doping takes place," he says. "In sports engineering, very often sports engineers do not consider the social impact of what they're doing."

mostly catch-up at that point. But then, once Canada caught up, we wanted to push ahead and be better than everybody else, and that's when I started thinking, is that the right thing to do?"

There are also safety implications of technology doping. When you try to go faster, harder, stronger, it increases the chances of injury. In the case of the LZR Racer swimsuit – which the International Swimming Federation has banned – you're likely not increasing the probability of an injury, but you may be increasing the severity of an injury; if you were going faster and hit your head on the side of the pool, for example. Speed skating suits have a similar increase in injury severity, since the suits help the skaters go faster.

When Maw saw this pattern of technology doping, he decided to get out of that line of work, and went into a related field he thought would have more positive results: sports safety. He designed the crash pads for speed skating for the 2010 winter Olympic Games in Vancouver.

"You figure, that's nice, nothing wrong with doing safety equipment in sports. But it turns out there is: It's the issue of risk compensation, so if you give an athlete safety equipment, by and large they will tend to act more irresponsibly; they'll take more risks to themselves and others . . . Even doing safety isn't ethically positive necessarily."

Even if you develop technology and share it with everybody, that doesn't mean it's neutral, because every technology will favour some athletes over others.

For example, in 1996-97 the clap skate was introduced to speed skating, favouring the more muscular athletes over the technical ones.

"If you were really muscular and had really big calves, that would give you a competitive advantage [with the clap skate] and so you saw a change of who was best and who wasn't based on that technology, which everybody fairly soon had access to."

Because everyone had access to that equipment, it's not an issue of technology doping, but it does highlight the complexity of sports ethics.

Some technology might seem at first to be benign or even helpful, but may have unintended effects. Maw brings up the example of new goal line technology that objectively says whether the shot was in or out.

"In a sense, that's a good thing – you have an objective assessment – but it takes away one of the character-building aspects of sports: resolving disputes and dealing with uncertainty and compromise. People arguing about whether it went in or not, that's one of the aspects of amateur sport, resolving those disputes and differences in a peaceful way. When we automate that process, we eliminate an ethical learning opportunity."

Maw's main concern is about creating a fair playing field for amateur athletes, arguing that amateur sport is only good if it's ethical. He recognizes that it's impossible to make games 100 per cent fair due to economic differences or better facilities or coaches, so he says the goal should be to make it as fair as possible.

"We're not trying to make competitors equal in ethical sport; we're trying to make conditions of competition beyond one's natural or trained abilities equal."

The issue of technology doping in sports can be a controversial one. Certain sports groups have refused to air his thoughts on the topic and the media has generally been reluctant to pick up stories on the subject.

But at least some sports are aware of technology doping and are making attempts to mitigate its effects on their sport. More than 40 of the world's top curlers have signed a statement saying they will not sweep with new broom technology because it threatens to alter the sport dramatically.

"We want the skill of curling to determine who wins and we want the teams who've put in the hardest work to win," Team Canada lead Nolan Thiessen told CBC News. "We don't want the teams with the best technology and whoever sponsors who to win."

Member Profile

This month *The Professional Edge* chats with Andrew Shiwnarain, Engineer-in-Training, a transportation engineer working for the Regina engineering office of WSP/ MMM Group.

Tell us about your personal and professional background.

I was born and raised in Toronto and went all through school there. I took engineering at Ryerson and worked internships in the area before moving out to Alberta in 2013.

Why did you choose to go into engineering?

As a kid I liked to build things - 3D puzzles, K'Nex, Lego. So that pushed me to look at civil engineering as I was finishing high school. But it wasn't an easy choice. I was strong in maths and sciences so I was interested in many fields. I was also interested in medicine and deliberated back and forth before settling on engineering.

What was your biggest challenge in university?

I went through a process a lot of first year students go through of asking myself, "Is this really what I want to be doing?" But that's a function of the general courses you study in first year. As the years progressed and I took more specific courses, I became more confirmed in my choice.

Did you go through any sort of adjustment when you moved to Western Canada?

I moved from Toronto to Red Deer so it definitely took some adjusting to get used to a smaller community. But I adapted fairly quickly. I found the slower pace different but easy enough to get used to.

After that, I moved to Regina. It's bigger, obviously, and the job is better suited to my interests in transportation design.

What's your favourite part of living in Regina?

You can get anywhere in 15 minutes. It's very accessible and the people are friendly.

What's your least favourite part of living in Regina?

You can get anywhere in 15 minutes! It's both my most and least favourite. Because it's a smaller centre, there's a lack of things and there's no such thing as a "greater Regina area." Other centres are far away.

What do you feel has been your single greatest accomplishment as an engineer?

I can't think of one thing specifically. I am proud of being able to work on large-scale projects related to highway work. I enjoy seeing them go from start-up phase all the way to construction, and I'm proud to have a lot of input along the way. I've learned a lot from being involved in those sorts of beginning-to-end large-scale projects.

What are your interests outside of work?

Mainly sports. I enjoy playing basketball. I also still like to build 3D puzzles, something that I have kept going from my childhood days. In my spare time I also like to play around with different types of music-making software to create mixes and things of that nature.

Have you ever met anyone famous?

When I lived in Toronto, our family used to always line up on the red carpet at the Toronto International Film Festival. So I haven't exactly met them, but I've been up close to a number of big stars like Johnny Depp and Tom Cruise. I also met one of the cast members of *Big Brother Canada* in Edmonton.

If you could have any super power, what would it be and why?

I'm caught between two choices. I would like super speed because I'm a fan of *The Flash* TV show but I would also like to have the ability to fly.

Do you like to travel? Do you have a favourite vacation spot?

Last year, I crossed off one of my bucket list trips by spending two weeks in New Zealand and a week in Australia. I got my first sunburn! I really enjoyed the laid back lifestyle in New Zealand. Australia is more like Canada but in New Zealand it's as though the whole country is one big eco-tourism attraction. They are all about nature. It's probably the most scenic place in the world, capturing so many different climates in close quarters. They take the approach of building around nature and they make special efforts to preserve it. I also enjoyed visiting the sets of the *Lord of the Rings*, which is my favourite movie of all time.

Who has had the greatest influence on your life and career?

For my life, I would say my parents. They've been there to support me with major decisions and help guide me through major life choices.

As for my career, it's hard to pick one particular mentor. All the managers I've had since I've graduated have mentored me in different ways. They've all guided me as an engineer and helped me learn about the industry. I've been very fortunate to work with the managers that I've had.

Our Newest Members

Saskatchewan's Professional Engineers and Geoscientists enhance our quality of life, meet the challenges of environmental sustainability and protect public safety. Because of their impact on society, the practice of professional engineers and geoscientists is strictly regulated by the Association of Professional Engineers and Geoscientists of Saskatchewan.

Join over 9,000 APEGS members in congratulating our newest members – dedicated professionals who have completed a minimum of 8 years of university study and work experience to earn the designation of Professional Engineer (P.Eng.) or Professional Geoscientist (P.Geo.).


Mohammad J. Afshin, P.Eng.


Amro A. Alansari, P.Eng.


Holly J. Annand, P.Eng.


Liza T. Baliad, P.Eng.


Nathan A. Barsi, P.Geo.


Bill Berzins, M.A.Sc., P.Eng.


Adrien D. Blais, P.Eng.


Jean-Louis Blanchette, P.Eng.


Krishna B. Chaudhary, P.Eng.


Carolina A. Correia, P.Eng.


Arthur R. Cradock, P.Eng.


Kristen J. Darr, P.Geo.


Claude David, P.Eng., P.Geo.


Adam R. Detillieux, P.Eng.


Koohyar Deylamsalehi, P.Eng.


Abelardo T. Domingo, P.Eng.


Jennifer Doxey, P.Geo.


Sarah M. Gajadhar, P.Eng.


Brian M. Greflund, P.Eng.


Rebecca B. Gustafson, P.Eng.


Tyler R.W Howard, P.Eng.


Adeola Igbalajobi, P.Eng.


Joshua Kowal, P.Eng.


Qiong (June) Lu, P.Eng.


George M. Magalong, P.Eng.


Urvi Malhotra, P.Eng.


Aziz Masood, P.Eng.


David S.E. Mills, P.Eng.


John F. Morrall, P.Eng.


Mohammad A. Nasher, P.Eng.


Ryan Onieu, P.Eng.


Godfrey C. Onwubolu, Ph.D., P.Eng.


Jonathan Y. Palmer, P.Eng.


Najwa B. Pattw, P.Eng.


Marius-Dumitru Peiulescu, P.Eng.


Joseph Ryan L. Petilos, P.Eng.


Sarah Pratt, P.Eng.


Joshua R. Quintal, P.Eng.


Achint Rastogi, P.Eng.


Carl B. Rogers, Temporary Licensee


Tracy Schmidt, P.Eng.


Shiva K. Shrestha, P.Eng.


Anastasiya Shved, P.Eng.


David Shymko, P.Eng.


Kevin Spicer, P.Eng.


Md. Rashed I. Tarafder, P.Eng.


Brennen Trites, P.Eng.


Quintin Tuchscherer, P.Eng.


Graham M. Walker, P.Eng.


Mark E. Williams, P.Eng.


Trevor F. Woiden, P.Eng.


Carmen C. Yausie, P.Geo.


Zhongxin (Adam) Yin, P.Eng.


Justin Ymana, P.Eng.


Tristan Ziegler, P.Eng.

ensuring public safety

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86th Annual Meeting and Professional Development Conference

Evolving Professionals

May 5 - 7, 2016

Delta Bessborough Saskatoon SK

Event Schedule

Thursday May 5

Welcome Event	6:00 - 10:00 pm
Public Lecture - USST Mars Rover	7:00 pm

Friday May 6

Buffet Breakfast	7:30 - 9:00 am
Tours	9:30 - 11:30 am
Professional Development Streams	8:30 - 12:00 noon
Professional Development Luncheon	12:00 - 2:00 pm
Professional Development Streams	2:30 - 4:30 pm
Tours	2:30 - 4:30 pm
Past Presidents / Council Meetinng	3:00 - 4:00 pm
Past Presidents' Dinner	5:00 - 8:00 pm
President's Reception	8:00 pm

Saturday May 7

Buffet Breakfast	7:30 - 9:00 am
Annual Meeting	8:30 - 9:00 am (Registration)
Annual Meeting	9:00 am (Business Meeting)
Kids Camp - ages 4 - 6	8:45 am - 4:00 pm
Youth Science Day - ages 7 - 14	8:45 am - 4:00 pm
Partners Program	10:00 am - 3:00 pm
Recognition Luncheon	12:30 - 2:30 pm
Committee Meetings	2:30 - 4:30 pm
Awards Banquet	6:00 - 7:00 pm (Reception)
Awards Banquet	7:00 pm (Banquet)

Keynote Speaker - Jesse Hirsh

Professional Development Luncheon

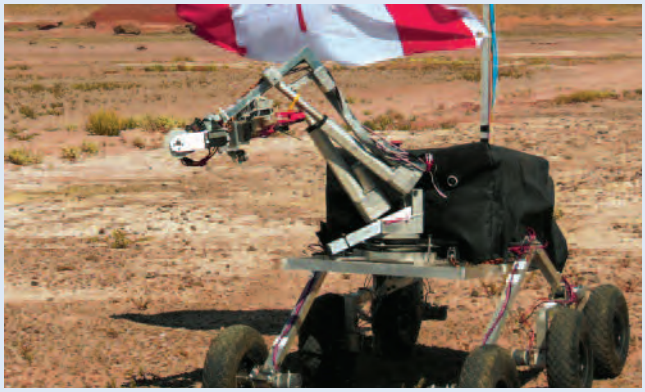
Friday May 6, 2016, 12:00 - 2:00 pm
Adam Ballroom

Jesse Hirsh is an Internet strategist, researcher, and broadcaster based in Toronto. He has a weekly nationally syndicated column on CBC radio, explaining and analyzing the latest trends and developments in technology, using language and examples that are meaningful and relevant to everyday life.

He owns and operates Metaviews Media Management Ltd., which focuses on research and consulting around new media business models, big data and the strategic use of social media. He is also a co-founder of the Academy of the Impossible, a peer-to-peer lifelong learning facility.

For two years, he was the host of an interfaith show on the Rogers and OMNI networks called *3D Dialogue*. That show explored all the world's religions and spiritual paths through interviews with practitioners, gurus, holy people and cynics regarding their rituals, scriptures and beliefs (or lack thereof).

Educated at the McLuhan Program at the University of Toronto, his passion is educating people on the potential benefits and perils of technology.



PUBLIC LECTURE

University of Saskatchewan Space Design Team

7-8 p.m.
Thursday, May 5

Battleford Room, Delta Bessborough
Saskatoon

The lecture is open to the public and free.

APEGS is pleased to present a public lecture at the APEGS Annual Meeting featuring the students of the University of Saskatchewan Space Design Team (USST).

Members of the USST team will review the organization's history and the recent victory of their Mars rover design at The European Rover Challenge in Poland.

Professional Development Tracks

Friday May 6, 2016 | 8:30 am - 4:30 pm | Mezzazine and Convention Levels | Dress - Business Casual

	TRACK 1 Evolving Technology Terrace Lounge	TRACK 2 Evolving Workplaces William Pascoe Room	TRACK 3 Evolving Infrastructure Salon Batoche	TRACK 4 Evolving Professionals Kelsey & Saskatchewan Rooms
8:30 - 9:15 am	Geomatics and Geospatial Positioning Kent Pointon	Radiation Safety Jason Sadowski	Combined Heat and Power City of Saskatoon Kevin Hudson	Space Speaks & Time Talks Graham School of Prof. Dev. Jeanie Wills & Deb Rolfes
9:20 - 10:05 am	Internet Security and The Professional Lawrence Dobranski	Crime Prevention through Environmental Design Elisabeth Miller	City of Saskatoon Growth to Half a Million Alan G. Wallace	Indigenous Peoples Initiatives in Engineering Matthew Dunn John Desjarlais
10:05 - 10:25 am	**Energy Break**			
10:25 - 11:10 am	Unmanned Aircraft Natural Resource Sector BC Matt Sakals	Jet Boring - Cigar Lake	Northern Commuter Parkway	Online Profile CPE Reporting Committee Portal APEGS
11:15 - 12:00 pm	Workplace Wearables	Canpotex: A Global Leader Scott Rudderham	Drinking Water Management in Saskatchewan O.S. Thirunavukkarasu	Professional Ethics APEGS
12:00 - 2:00 pm	**Professional Development Luncheon - Keynote Speaker Jesse Hirsh**			
2:00 - 2:45 pm	University of Saskatchewan Space Design Team Jack Fotheringham	LaRonge Area Forest Fires Thomas Sierzycki	Entrepreneurs	Boreal Watershed Management Strategy Kevin McCullum
2:50 - 3:35 pm	3D Printing Taukeer Ashraf	New Fire Alarm Building Code	Legacy Uranium Mine Mill Sites Remediation Dianne E. Allen Christopher Reid	Present to Persuade Kangsheng Wu Water Security Agency
3:45 - 4:30 pm	Leading Edge Satellite Systems Darryl Kacher	Personality Preferences Rhea Rosvold	5 Strategies to Improve Project Outcomes Karen Chovan	Towards Gender Diversity in Engineering and Science Joy Brown

Evolving Technology / Terrace Lounge

Geomatics and Geospatial Positioning

KENT POINTON, M.SC., P.ENG.
8:30 - 9:15 am

This presentation will discuss the parameters, orientation and 4-D time elements of the NAD83 (CSRS) 1997.0 geospatial coordinate system that is commonly used in Saskatchewan.

Kent Pointon obtained a B.Sc. and M.Sc. in surveying engineering at the University of Calgary. Recently, Kent served as the Senior Geomatics Engineer for Clifton Associates in Saskatoon.

Internet Security and the Professional

LAWRENCE DOBRANSKI, P.ENG.
9:20 - 10:05 am

Our growing dependency on Internet-enabled technologies will affect the practice of all disciplines of professional engineering. This presentation looks at these changes in technology and the corresponding changes in risk.

Lawrence Dobranski, P.Eng. currently serves as the Director, ICT Security, Access & Compliance at the University of Saskatchewan.

Unmanned Aircraft

MATT SAKALS
10:25 - 11:10 am

Matt Sakals has been conducting research on hydrogeomorphology issues in BC for more than 15 years. His areas of specialization include shallow landslides, root reinforcement, alluvial fans, risk and now the use of unmanned aircraft. He is currently the Research Geomorphologist with the BC Government in Smithers, BC.

University of Saskatchewan Space Design Team

JACK FOTHERINGHAM
2:00 - 2:45 pm

Since its establishment in 2005, the University of Saskatchewan Space Design Team (USST) has been continuously dreaming, designing and developing new and innovative space technologies.

As a student group, the USST is unique in its interdisciplinary focus. The team has drawn students from all disciplines in the College of Engineering, as well as students from the Edwards School of Business, the College of Medicine, and the College of Arts and Science.

Leading Edge Satellite Systems

DARRYL KACHER, P.ENG.
3:45 - 4:30 pm

Darryl Kacher is SED's Director of Engineering and has over 20 years of experience with the company. His work recently has concentrated on designing high-performance RF ground stations supporting leading-edge satellite systems for customers around the world.

Evolving Workplaces / William Pascoe Room

Radiation Safety

JASON SADOWSKI, P.ENG.
8:30 - 9:15 am

From soil density measurements to sterilization to measuring fluid flow in pipes, radioactive devices are essential to our modern world.

Jason Sadowski is a scientist and Manager of the Radiation Safety Institute of Canada's National Laboratory located in Saskatoon.

Safe Growth and Crime Prevention Through Environmental Design (CPTED) in Saskatoon

ELISABETH MILLER, MCIP
9:20 - 10:05 am

This presentation will highlight the principles of Crime Prevention Through Environmental Design (CPTED) and the evolving philosophy of safe growth. The City of Saskatoon has formalized Safe Growth/CPTED in its development plan.

Elisabeth Miller, MCIP, is an urban planner with the City of Saskatoon with a specialty in urban safety. She also does private consulting.

Canpotex: a Global Leader

SCOTT RUDDERHAM
11:15 - 12:00 pm

This presentation will focus on Canpotex as a global leader in transportation logistics and explain the complexity of moving 11 million tonnes of Canadian potash overseas each year.

Scott Rudderham has worked with Canpotex for 25 years in a series of increasingly senior roles in the areas of sales, marketing and operations. He is presently the Senior Vice-President, Operations.

LaRonge Area Forest Fires

THOMAS SIERZYCKI
2:00 - 2:45 pm

Thomas Sierzycki was first elected as mayor in 2009 and re-elected in October 2012. One of Canada's youngest elected officials, Sierzycki was elected to council at the age of 18 and later as mayor at the age of 21.

Sierzycki was recognized as one of CBC Saskatchewan's Top 40 Under 40 in 2013 and was profiled in Maclean's Magazine's "Top 11 Young Canadians to Watch" in 2011. Sierzycki is employed with AREVA Resources Canada Inc. and Cameco Corporation as their Community Vitality Coordinator.

Personality Preferences

RHEA ROSVOLD, B.ED.
3:45 - 4:30 pm

Philosophers, psychologists and other observers of human nature have long speculated about personality preferences. This workshop will provide basic information about your own preferences—your strengths and challenges—as well as insight into how peace and productivity can be improved by valuing the preferences of others.

Rhea Rosvold is a Certified MBTI Personality Type Indicator Instructor and promotes the appreciation of personality diversity to support workplace harmony, enhance teamwork and improve productivity for positive bottom line results.

Evolving Infrastructure / Salon Batoche

Combined Heat and Power - City of Saskatoon

KEVIN HUDSON, P.ENG.

8:30 - 9:15 am

This presentation provides an overview of Combined Heat and Power (CHP) applications with case studies from units operating in Saskatoon.

Kevin Hudson is Metering & Sustainable Electricity Manager with Saskatoon Light & Power, and graduated from the U of S in 1991 with a Bachelor of Science degree in electrical engineering.

City of Saskatoon - Growth Plan to Half a Million

ALAN G. WALLACE, MCIP

9:20 - 10:05 am

The Growth Plan to Half a Million (Growth Plan) is about making choices to manage the changes associated with growth, and to create a city that is vibrant and attractive to future generations. A vibrant Saskatoon is a city with a diverse mixture of housing, commercial, social, cultural and recreational opportunities that are universally accessible by all modes of transportation including walking, cycling, transit and driving.

Alan G. Wallace, MCIP is the Director of Planning and Development at the City of Saskatoon.

Drinking Water Management in Saskatchewan

O.S. THIRUNAVUKKARASU, P.ENG.

11:15 - 12:00 pm

The Water Security Agency (WSA) has legislative authority to regulate water treatment systems and enforce standards with respect to drinking water quality in the province. This presentation outlines the regulatory framework, water management and research activities undertaken by the WSA to implement the Safe Drinking Water Strategy in the province.

O.S. Thirunavukkarasu, P.Eng. has been working as a senior standards engineer in Environmental Protection Services Section, EMMS Division, Water Security Agency for more than 15 years and is responsible for developing standards, guidelines, regulations and policies for water/wastewater/biosolids treatment units in the province.

Legacy Uranium Mine and Mill Sites Remediation in Northern Saskatchewan

DIANNE E. ALLEN, M.ENG., P.ENG., PMP AND CHRISTOPHER REID, B.SC., ENGINEER-IN-TRAINING

2:50 - 3:35 pm

On behalf of the Government of Saskatchewan, the Saskatchewan Research Council is managing the remediation of 37 legacy uranium mine and mill sites in northern Saskatchewan. These sites were abandoned with little to no decommissioning, which was the norm five decades ago. Now SRC is applying modern technology and remediating according to today's safety, environmental and social expectations.

Dianne E. Allen, M.Eng., P.Eng., PMP is both a Professional Engineer in Saskatchewan and a project management professional. She has worked in a variety of industries including mining, forestry, GIS and land development.

Christopher Reid, B.Sc. is an Engineer-in-Training with the Saskatchewan Research Council. He has a decade of field experience throughout the province.

5 Strategies to Improve Project Outcomes

KAREN CHOVAN, P.ENG.

3:45 - 4:30 pm

This presentation aims to reduce the risk of project failure. By implementing any or all of the five strategies presented at early stages of the project life, its performance can be improved - by helping to keep it on schedule and on budget, and by ensuring both internal and external approvals are maintained throughout the project's staged evaluation and execution.

Karen Chovan is the Principal of Enviro Integration Strategies, a Professional Engineer and a project management professional. She has a Master's in mine waste management.

Evolving Professionals / Kelsey & Saskatchewan Rooms

Space Speaks and Time Talks: An Introduction to Non-verbal Communication in the Workplace

JEANIE WILLS & DEB ROLFES

8:30 - 9:15 am

This seminar talk will introduce you to the main concepts of non-verbal communication. By developing an understanding of the power of non-verbal communication, you can learn to recognize and respond appropriately to the unspoken messages that surround you in your workplace.

Jeanie Wills currently teaches interpersonal communication, negotiation and a foundational communication class in the Graham School of Professional Development, College of Engineering.

Deb Rolfes is the Undergraduate Program Chair in the Graham School of Professional Development and teaches the foundation communication class, oral rhetoric and the peer mentorship capstone class.

Indigenous Peoples Initiatives in Engineering

MATTHEW J. DUNN, P.ENG., M.SC. AND JOHN DESJARLAIS, P.ENG., MBA, MMP, MNGD CANDIDATE

9:20 - 10:05 am

This session will discuss the University of Saskatchewan College of Engineering's Indigenous Peoples Initiatives.

Matthew J. Dunn, P.Eng., M.Sc. is Dene and a member of the Athabasca Chipewyan First Nation. He worked in the mining industry before joining the College of Engineering in 2014 as the Indigenous Peoples Initiatives Coordinator.

John Desjarlais Jr. is Métis from the northern Saskatchewan community of Cumberland House. He currently works as a Reliability Engineer with Cameco, a sessional lecturer with the College of Engineering and owner/operator of a medical transport business in Cumberland House.

Boreal Watershed Management Strategy

KEVIN MCCULLUM, PH.D., P.ENG.

2:00 - 2:45 pm

Canada's boreal forest, including northern Saskatchewan, contains some of the largest and highest-quality freshwater resources on Earth. The Boreal Watershed Management Strategy was a project initiated to assess the ecological integrity of Saskatchewan's northern watersheds.

Kevin McCullum, Ph.D., P.Eng. joined the Ministry of Environment as Chief Engineer for the ministry and oversees the Technical Resources Branch.

Towards Gender Diversity in Engineering and Science

JOY BROWN P.ENG., M.SC.

3:45 - 4:30 pm

There is a very strong business case for workforce diversity, yet there are still very few women engineers and scientists, especially in decision-making roles. Many of the reasons for this are known and they continue to be explored to reach a greater understanding of their influence.

Joy Brown P.Eng., M.Sc. received her engineering degree and a Master's in geophysics from the University of Saskatchewan. She joined the oil and gas industry in 1990. She is currently a director on the board of the Canadian Centre for Women in Science, Engineering, Trades and Technology (WinSETT Centre - www.winsett.ca .)

Awards Winners & Awards Banquet

Saturday, May 7, 2016 | Delta Bessborough Saskatoon SK

Reception 6:00 pm & Banquet 7:00 pm

Friend of the Professions Award

Benjamin Freitag

This award was established in 2013 to recognize exceptional achievements or unique contributions by a non-member in the promotion of the professions.

Promising Member Award

Beatriz B. de Freitas, P.Eng.

The Promising Member Award was established in 1998 to recognize exceptional achievements by a professional member in the early stages of his/her career in Saskatchewan.

Environmental Excellence Award

Greening Professionals for Sustainability - University of Regina

The Environmental Excellence Award was established in 2005. It is given in recognition of exceptional achievements by an individual or team in the application of engineering, geological and/or geophysical methods related to environmental protection and preservation.

Exceptional Engineering/Geoscience Project

Rosetta Mission - SED Systems

This award, founded in 2001, recognizes accomplishments in engineering and/or geoscience. The project team must be predominantly made up of Saskatchewan engineers or geoscientists. The project may be located in or outside Saskatchewan.

McCannel Award

Malcolm J. Reeves, P.Eng., P.Geo., FEC, FGC

The McCannel Award was established in 1983 to honour service to the Association of Professional Engineers and Geoscientists of Saskatchewan, and to the professions as a whole. The McCannel Award is named after Roy McCannel, a founding member of the Association.

Outstanding Achievement Award

Klaus F. Ottenbreit, P.Eng.

The Outstanding Achievement Award was created in 1998 to honour members who show technical excellence and achievement in engineering and/or geoscience in Saskatchewan.

Brian Eckel Distinguished Service Award

Albert O. Munro, P.Eng., FEC, FGC (Hon.)

This award was established in 1978 to recognize outstanding contributions in service to the community, the Association, technical and learned organizations, as well as to honour distinctive and outstanding achievements in professional and technical fields. The Distinguished Service Award is an honour given only to those who truly exemplify the best standards of engineering and geoscience in Saskatchewan. In 2004 this award was renamed the Brian Eckel Distinguished Service Award in recognition of Brian Eckel's contribution to society, the professions and the Association.

Tickets: $50 per person

Contact APEGS: 300 - 4581 Parliament Avenue, Regina SK S4W 0G3
Tel: (306) 525-9547 | Toll Free: 1 (800) 500-9547 | Email: apegs@apegs.ca | Register online: **www.apegs.ca**

BACK BY POPULAR DEMAND!

Professional Development Opportunity

APEGS is pleased to offer a Continuing Professional Excellence opportunity for technical professionals.

Get to the Point!

A Two-Day Practical Writing Course for Technical Professionals

This highly interactive two-day session is designed for technical professionals who write reports, emails, letters and proposals, and want to write them more efficiently and present their information more effectively. **Sharpen your personal writing style to create a strong and effective presence.** There will be individual and group practice exercises, with lots of discussion and feedback.

This course has sold out each time we have offered it!

The student feedback has been outstanding.
100% of the participants rated the course overall as EXCELLENT.

May 4-5, 2016 (8 a.m. to 5 p.m.)
Saskatoon Club, 417 21st St. E., Saskatoon, SK
The registration fee is $1,100.00 (plus GST)
Continental breakfast, refreshments during breaks and lunches are included in the fee.

Register online at **www.apegsservices.ca/meetings**

For more information, contact
Shawna Argue, APEGS Director of Education and Compliance at:
306.525.9547 or toll free 1.800.500.9547;
Email: sargue@apegs.ca

APEGS View

Council Notes

February 4-5, 2016, Delta Bessborough, Saskatoon, SK
18 of 19 Councillors present

- The Executive Committee reported the appointment of Andrew Loken, P.Eng., FEC as Vice-Chair of the Audit Committee and Andrew Lockwood, P.Eng., FEC as a member of the Audit Committee.
- Rick Kullman, P.Eng., FEC, FGC(Hon.) was appointed the APEGS representative on the University of Regina senate commencing in July 2016.
- Council approved the eligibility category "Other Education Acceptable to Council" to be qualified to become an Engineering Licensee or a Geoscience Licensee. The category requires: successful completion of a minimum of two years of post-secondary education in engineering, geoscience, or related science; eight years of related work experience with a minimum of five years being under the direct supervision of a Professional Engineer, Professional Geoscientist, Engineering Licensee or Geoscience Licensee.
- Council approved the proposed changes to the Academic Review policies AR3.0 – Engineering and AR4.0 - Geoscience.
- Nancy Heppner, Minister of Highways and Infrastructure, designated the week of February 28 to March 5, 2016 as "Engineering and Geoscience Week" in Saskatchewan.
- The Image and Identity Board appointed John Desjarlais, P.Eng. to a second three-year term on the Equity & Diversity Committee.
- The Education Board appointed Marcia Fortia, P.Geo. and David DeMontigny, P.Eng. to the Professional Development Committee for a three-year term.

Continued ...

APEGS Executive Director set to retire

Dennis Paddock, P.Eng., FEC, FCSSE, FCAE, FGC (Hon.)

Margaret Anne Hodges, P.Eng., FEC, President of the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) today announced that long-time Executive Director & Registrar Dennis Paddock, P.Eng., FEC, FCSSE, FCAE, FGC (Hon.) has decided to retire.

"Dennis has helped guide the engineering and geoscience professions through some of their most important challenges and opportunities. Our organization has grown and evolved tremendously during his tenure. We owe him a mountain of gratitude and we will greatly miss him. Needless to say, we wish Dennis and his wife Wendy all the best as they move on to this new stage of their lives," said Hodges.

Paddock assumed the role of Executive Director & Registrar in 1993 for the organization that was then known as the Association of Professional Engineers of Saskatchewan (APES). Among the changes that Paddock oversaw was a major Act revision that integrated Professional Geoscientists into the Association.

Also during his tenure, the membership of the Association more than tripled, requiring a rapid expansion of the Association's staff, and ultimately a move to new, larger headquarters.

"Those were challenges that came to us because of circumstances in the wider world but, thanks to Dennis's intelligent, deliberate management style, we handled them very well," said Hodges.

Paddock graduated from the University of Saskatchewan in 1968 and has been a Professional Engineer since 1971. Prior to joining APEGS, he had worked in progressively more senior engineering positions with the Saskatchewan government for nearly 25 years. Before becoming a staff member, he held several senior positions with the APES / APEGS executive including serving as President of APES in 1989-90.

"I feel privileged to have been surrounded by such a great team. We have accomplished more than I could have imagined when I started. It has been my privilege to work with excellent volunteers and staff, and with government, to create an effective engineering and geoscience regulator that is so important to the public safety and prosperity of the people of Saskatchewan," said Paddock.

Paddock's last day in the office will be a date in May yet to be determined. APEGS has launched a national executive search for his replacement.

COUNCIL NOTES CONTINUED

- Council approved the proposed revisions to the Education Board terms of reference.
- The Image and Identity Board reported the following selections for the 2016 APEGS Awards:

  Brian Eckel Distinguished Service Award – Bert Munro, P.Eng., FEC, FGC(Hon).

  Outstanding Achievement Award – Klaus Ottenbreit, P.Eng.

  McCannel Award – Malcolm Reeves, P.Eng., P.Geo., FEC, FGC.

  Promising Member – Beatriz deFrietas, P.Eng.

  Environmental Excellence – University of Regina, Greening Professionals for Sustainability (Dr. David DeMontigny, P.Eng.).

  Exceptional Project – SED Systems – Rosetta Mission.

  Friend of the Professions – Ben Freitag.

- Council appointed Mary Anderson, P.Geo., Alan Duff, P.Eng., Metro Hrabok, P.Eng., Peter Jackson, P.Eng., FEC and Gary Yeo, P.Geo., FEC (Hon.), FGC to the Investigation Committee for a second three-year term.
- Council approved Life Membership for:
  Adnan F. Alsaadi, P.Eng.
  Leslie A. Bell, P.Eng.
  Byron Birch, P.Eng.
  David J. Brooks, P.Geo.
  Michael R. Chapman, P.Eng.
  Glen D. Cook, P.Eng.
  David A. Cox, P.Eng.
  Allan S. Crawford, P.Eng.
  Deb R. Datta, P.Eng.
  Peter M. Dimmell, P.Geo.
  Kenneth W. Drever, P.Eng.
  Dale F. Duprey, P.Eng.
  Karim Fardi, P.Eng.
  Douglas R. Flaig, P.Geo.
  W. James Fox, P.Eng.
  Robert E. Gander,P.Eng.
  Charles T. Harper, P.Eng., P.Geo.
  Jerry W. Harris, P.Eng.
  Douglas L. Harrison, P.Eng.
  Leonard P. Haukeness, P.Eng.
  Ron J. Hilton, P.Eng.
  Joseph Hladky, P.Eng.
  Goran Kenk, P.Eng.
  Rodney R. Koch, P.Geo.
  Stylianos Kontonikolas, P.Eng.
  Donald K. Kreuger, P.Eng.
  Jim Kulchisky, P.Eng.
  George W. Labelle, P.Eng.
  Ronald K.M. Lau, P.Eng.
  Ah K. Lim, P.Eng.
  Roland Loewer, P.Geo.
  Hesham M.E. Marzouk, P.Eng.
  Charles P. Maule, Engineering Licensee
  Frank H. McDougall, P.Geo.
  Guy E. McLean, P.Eng.
  Cunningham T. McWhinnie, P.Eng.
  Alexander S. Middleton, P.Eng.
  Michael C. O'Krancy, P.Eng.
  Philip E. Olson, P.Geo.
  Robert R. Padget, P.Eng.
  John G. Pearson, P.Geo., FGC
  Gary W. Phillips, P.Eng.
  Robert W. Pollock, P.Eng.
  Ronald W. Pylypchuk, P.Eng.
  Philip L. Reeves, P.Eng., P.Geo., FEC, FGC
  Craig Robertson, P.Geo.
  William G. Rogers, P.Eng.
  Larrie A.J. Roosdahl, P.Eng.
  Fred P. Rumak, P.Geo.
  Keith J. Scott, P.Eng.
  Eric W.K. Siu, P.Eng.
  Andrzej Slawinski, P.Eng., P.Geo.
  Lowell T. Snodgrass, P.Eng.
  Lawrence W. Strilchuk, P.Eng.
  Robert J.M. Sutherland, P.Eng.
  Joseph C.B. Tam, P.Eng.
  Trevor G. Titheridge, P.Geo.
  John C. Ulmer, P.Eng.
  B. Brian Wagner, P.Eng.
  Brian S. Waldner, P.Eng.
  Donald P. Widynowski, P.Eng.
  Paul J. Wilson, P.Eng.
  Norman C. Wood, P.Eng.
  Edgar D. Zsombor, P.Eng.
- The next Council meeting is scheduled for April 7 and 8, 2016 in Regina.

Use of On-Line Profile

BY SHAWNA L. ARGUE, P.ENG., FEC, FCSSE, FGC(HON), APEGS DIRECTOR OF EDUCATION AND COMPLIANCE

Did you know…???

You can access and update your APEGS membership information through your On-Line Profile?

You can use your On-Line Profile to:

- Update your contact information and employer information;
- Reset your password;
- Report your Continuing Professional Excellence (CPE) activities;
- Renew your Permission to Consult (if applicable to you);
- Volunteer for committees, one-time events and other activities;
- Select the types of information / communications you wish to receive from APEGS;
- Monitor the status of your membership application;
- Pay your fees (including application fees, annual fees, other purchases from APEGS); and
- Register for APEGS events and meetings.

Certificates of Authorization also have their own On-Line Profile which Official Reps have access to. Official Reps can see "Official Rep – C of A" in their personal Profile for login information to the C of A Profile.

APEGS encourages all members to use their On-Line Profile for all of the above activities. It is simple to access and easy to use. Here's where to access your profile on the APEGS website (www.apegs.ca):

If you have not logged in before, you will need to request a password from the website.

NOTE – on the "Exclusions" tab, there have been two new categories added:

- Email notification of when *The Professional e-Edge* has been posted; and
- APEGS promotional emails (free events and for cost) – includes events, professional development opportunities, etc.

Because these are new options, APEGS automatically excludes you from receiving this type of information. If you wish to receive it, you will need to go online and remove the check beside these options under My Details, Exclusions.

Watch your mail and email for a members' information bulletin with more detailed instructions on the use of your On-Line Profile.

College Corner

Donald Bergstrom, P.Eng.
Interim Dean

As you may be aware, we have had some recent changes in leadership in the College of Engineering. As the new interim dean, effective January 1, 2016, I am pleased to share with you the news and accomplishments of our college. Joining me in leading the college are Professor Jim Bugg, P.Eng. as an interim associate dean college operations and Aaron Phoenix, P.Eng., who is returning to the role of associate dean academic. This team, together with our department heads and our faculty and staff, are excited about the opportunities and possibilities for our college as we move forward.

We have enjoyed many recent successes. Among our most exciting news this academic year was the huge first-place victory by our U of S Space Design Team at the European Rover Challenge in Poland last September. As well, a group of dedicated students pulled together to successfully organize and host Cameco Spectrum 2016 at the college in January. Our students take a great deal of initiative across so many areas and truly do our college proud. This continues in the broader community and world, to our great pride and benefit, when they—many of you—become our alumni.

Other significant activities of recent months include our 40th C.J. Mackenzie Gala of Engineering Excellence. I hope those of you who made it to the event enjoyed it as much as I did—our 2016 distinguished alumnus Marvin Romanow delivered a memorable lecture. In early March, we will celebrate the academic excellence of our students and thank our award donors at the college's 57th Student Awards Ceremony.

Our faculty continue to excel as teachers and researchers. A few examples include Tony Chung, SaskPower Research Chair in Power Systems Engineering, who was named a Fellow of the Institute of Electrical and Electronics Engineers for his exceptional contributions to power systems control and stability. As well, Jim Kells, P.Eng. professor of civil and geological engineering, and Ha Nguyen, P.Eng., professor of electrical and computer engineering, were named Engineering Institute of Canada Fellows for their exceptional contributions to engineering in Canada.

Our college leadership team, faculty and staff appreciate and look forward to our ongoing engagement with you in the coming weeks and months, in our shared profession of engineering.

Donald Bergstrom, P.Eng.
Interim Dean

U of S Space Design Team

APEGS Member Guilty of Professional Misconduct

Mr. P. Geoffrey Pybus, P.Eng. a member of the Association of Professional Engineers and Geoscientists of Saskatchewan, plead guilty to four counts of professional misconduct before a hearing panel of the Discipline Committee at the Radisson Hotel in Saskatoon, Saskatchewan on November 27, 2015. The resulting order of the panel was effective December 23, 2015.

The following complaints were made by the Investigation Committee of the Association of Professional Engineers and Geoscientists of Saskatchewan (the "Association") in its report to the Discipline Committee dated 29 July, 2013 with respect to the conduct of P. Geoffrey Pybus, P.Eng.:

1. Mr. P. Geoffrey Pybus, P.Eng., a member of the Association of Professional Engineers and Geoscientists of Alberta, is guilty of professional misconduct in that he permitted his professional stamp issued by the Association of Professional Engineers and Geoscientists of Alberta to be physically located in a manner which would allow its use by a person other than himself, contrary to Regulation 54(2) of *The Engineering and Geoscience Professions General Regulation* made pursuant to *The Engineering and Geoscience Professions Act* (Alberta). and thereby contrary to subsections 30(a), 30(b) and 30(c) of T*he Engineering and Geoscience Professions Act* (Saskatchewan) and the Code of Ethics contained in subsections 20(1) and 20(2)(a) of *The Engineering and Geoscience Regulatory Bylaws* (Saskatchewan).

2. Mr. P. Geoffrey Pybus, P.Eng., a member of the Association of Professional Engineers and Geoscientists of Alberta, as the professional member taking responsibility for DFK Engineering Canada Ltd., failed to provide adequate personal supervision and/or control over the practice of engineering conducted by DFK Engineering Canada Ltd. as required in his position as responsible member for that company, in contravention of Section 24 of *The Engineering and Geoscience Professions Act* (Alberta) and/or Section 48 of *The Engineering and Geoscience Professions General Regulation* (Alberta), and thereby contrary to Subsections 30(a), 30(b) and 30(c) of *The Engineering and Geoscience Professions Act* (Saskatchewan) and the Code of Ethics contained in Subsections 20(1) and 20(2)(a) of *The Engineering and Geoscience Regulatory Bylaws* (Saskatchewan).

3. Mr. P. Geoffrey Pybus, P. Eng., provided engineering services without first obtaining permission to consult, contrary to Subsection 17(2) of *The Engineering and Geoscience Professions Regulatory Bylaws* (Saskatchewan) and/or Subsections 30(a), 30(b) and 30(c) of *The Engineering and Geoscience Professions Act* (Saskatchewan).

At the outset of the hearing, the parties confirmed that there were no objections and agreed that the Hearing Committee had the jurisdiction to hear and determine the Complaint.

Counsel for the Investigation Committee and for Mr. Pybus filed a joint submission with the panel, which was accepted as an admission of professional misconduct by Mr. Pybus. The Hearing Panel found Mr. Pybus guilty of professional misconduct on all four counts.

Counsel for the Investigation Committee and for Mr. Pybus submitted to the Hearing Panel a Joint Submission as to Disposition. In the Joint Submission, the parties proposed the following disposition:

A. That the member pay costs of the investigation and discipline hearing to a maximum of $5,000.00;

B. That the member's membership in the Association be suspended until termination of the APEGA five-year non-practice discipline order or payment of costs and meeting of readmission or reinstatement conditions, whichever shall last occur;

C. That as an alternative to suspension, the member be permitted to resign his membership in the Association for the same period of time;

D. That as a condition of any application for readmission to or reinstatement of membership in the Association, the member attend the APEGS Law and Ethics Seminar and pass a Professional Practice Examination of a Canadian Provincial Association of Professional Engineers;

E. That the particulars of the disposition and sentence be published in the *Professional Edge*, with names.

The Hearing Panel gave consideration to the Joint Submission of the parties in determining an appropriate Disposition and Order in this case. The Hearing Panel considered the decision made by the Discipline Committee of the Association of Professional Engineers and Geoscientists of Alberta. In that case, a similar disposition was made although the member was allowed to voluntarily withdraw from the Alberta Association for a period of 5 years. The Hearing Panel finds that the general terms of the Joint Submission is an appropriate penalty given the Member's conduct. The Hearing Panel therefore ordered:

A. That the member pay costs to the Association in an amount fixed at $5,000.00 to be paid within 90 days of the date of this order;

B. That the member be suspended from the Association until:

1. The expiry on 9 July, 2017 of his voluntary undertaking to withdraw membership in the Association of Professional Engineers and Geoscientists of Alberta;

ii. The payment of the costs set out in paragraph A above; and

iii. The meeting of the readmission or reinstatement conditions set out in paragraph C below;

whichever shall last occur.

C. That as a condition of any application by the member for readmission to or reinstatement of membership in the Association, the member shall attend the Association's Law and Ethics Seminar and shall pass a professional practice examination administered by a Canadian Provincial Association of Professional Engineers;

D. That the particulars of this Disposition and Sentence shall be published in the *Professional Edge*, with names.

Failure to comply with any of the foregoing orders of the Hearing Panel shall result in P. Geoffrey Pybus, P.Eng. remaining suspended from the Association of Professional Engineers and Geoscientists of Saskatchewan until the orders have been complied with.

LOST

The Association reports the following as "Active Lost" as of Monday, February 1, 2016.

Anderson, Paul, P.Geo. . . . . Regular
Brittner, Chad, P.Eng. . . . . Regular
Chaput, John, P.Eng. . . . . Regular
Comber, Barry, P.Eng. . . . . Life Member
Derkach, Victor, P.Eng. . . . . Life Member
Eghan, Angelina, P.Eng. . . . . Regular
Francis, David, P.Eng. . . . . Life Member
Gorrie, Barrie, P.Eng. . . . . Regular
Harmsworth, Leslie, P.Eng. . . . . Life Member
Liang, Zhiwu, Engineer-In-Training
Lindsay, Maurice, P.Eng. . . . . Life Member
Makari, Nabil, P.Eng. . . . . Regular
Millar, Barry, P.Eng. . . . . Life Member
Morton, Ross, P.Eng. . . . . Life Member
Nelson, Michael, P.Eng. . . . . Life Member
Paulsen, Eric, P.Eng. . . . . Regular
Pelech, Harry, P.Eng. . . . . Life Member
Peng, Jinglin, Engineer-In-Training
Peterson, Robert, P.Eng. . . . . Life Member
Rachar, Paul, P.Eng. . . . . Regular
Ritchie, Hugh, P.Eng. . . . . Life Member
Sadleir, Alicia, P.Eng. . . . . Regular
Sirois-Leclerc, Amelie, Engineer-In-Training
Smith, Thomas, P.Eng. . . . . Life Member
Xu, He (Xavier), P.Eng. . . . . Regular
Zhang, Yonggang, P.Eng. . . . . Regular

In Memoriam

Bradley W. Simonar, P.Eng.
Charles N. Bradford, P.Eng.
Glenn N. Kolot, P.Eng.
David A. Pashniak, P.Eng.
Yeoung-Ting J. Kao, P.Eng.

Assessing & Applying Sustainability in Remediation Projects

BY DIANNE ALLEN, P.ENG., DAVID SANSCARTIER, P.ENG., PH.D., AND DAVID PARKER, ENGINEER-IN-TRAINING

Note: Views expressed are those of the individual members and do not represent the official policy of APEGS.

The 1987 Brundtland Report defines sustainable development (SD) as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

While SD is now widely regarded as a universal imperative, public and private interests continue to struggle with implementation. Engineers and geoscientists play a key role in the sustainability aspects of the projects they undertake. As subject matter experts, they are uniquely positioned both to identify sustainability issues and influence related decisions.

To improve SD implementation, engineers and geoscientists can benefit from the use of generic or purpose-built tools such as sustainability assessment (SA) frameworks. These assessment and decision-support tools guide the selection of options to achieve the optimal outcome - one that considers all sustainability aspects including economy, society and environment. Such frameworks promote the inclusion of sustainability issues in project planning, options assessment, design, implementation and verification, and can be tailored to particular industries, projects or activities.

Environmental remediation[1] is a type of development that has obvious sustainability-related implications such as improved human and environmental health, and reuse of idle properties. However, these benefits often come alongside negative impacts such as water and air pollution, risk to workers and the pre-emption of local resources from other uses. The remediation industry is progressively becoming aware of these impacts. As a result, SA frameworks are being developed and applied to this industry. These frameworks go beyond common remediation frameworks, which typically focus only on regulatory requirements, cost, duration and technical feasibility of remediation options.

For example, Sustainable Remediation Forum – UK[2] has developed a framework that consists of a stepwise, three-tiered approach ranging from simple qualitative assessment to complex quantitative analyses. With this approach, practitioners only move to the next tier when the former has not yielded a clear preference.

Using this framework, a remediation project team could engage with stakeholders to identify the remediation strategy that optimally balances cost, risk, social acceptability and environmental impacts. Social acceptability may include employment for local residents and opportunities to improve the marketable skills of those workers. Additionally, the framework could highlight the relative nature of sustainability, the inevitability of trade-offs among sustainability criteria and the importance of acknowledging interplay between social, economic and environmental considerations. Overall, the framework can be a powerful tool when integrated from the beginning of a remediation project to achieve best outcomes.

A wide range of engineering projects beyond the remediation industry use sustainability assessment frameworks to support decisions that optimally balance economic, societal and environmental outcomes. The International Federation of Consulting Engineers provides another approach. It has published guidelines[3] for project sustainability management that consider three issues where engineers should seek to limit usage (energy, water and materials) and three issues where engineers should seek to preserve or improve the existing circumstances of affected communities (environment, health and safety and human rights). Closer to home, Engineers Canada has recently released the National Guideline on Environment and Sustainability.

FOOTNOTES

1 Remediation is the improvement of a contaminated site to prevent, minimize or mitigate damage to human health or the environment. See recently released guidelines for remediation from Engineers Canada.

2 Sustainable Remediation Forum UK (2010). A framework for assessing the sustainability of soil and groundwater remediation. Contaminated Land: Applications in Real Environments (CL:AIRE), London.

3 FIDIC. Project Sustainable Management: Applications Manual, 2nd Edition, 2013. Geneva.

Dianne Allen, P.Eng., is a member of the APEGS Environment and Sustainability Committee and a remediation project manager at the Saskatchewan Research Council (SRC). She is currently managing the remediation of the former Lorado uranium mill near Uranium City.

David Sanscartier, P.Eng., Ph.D., is project manager at SRC, coordinating the remediation of legacy uranium mines in northern Saskatchewan. He has 12 years of experience working in applied research and environmental engineering across Canada.

David Parker, Engineer-in-Training, is an environmental sustainability analyst at SRC and a CSA certified Greenhouse Gas Inventory Quantifier. He recently completed the M.Sc. program in civil engineering at the University of Saskatchewan where he focused on life cycle assessment.

The Environment and Sustainability Committee would like to dedicate this article to Lyle Benko who passed away on February 26, 2016. Lyle was a past member of the K-12 Committee and a current member of the Environment and Sustainability Committee. He was one of the original recipients of the APEGS Friend of the Professions Award.

36

News From The Field

Saskatoon StarPhoenix

Saskatoon's home brewers' success

Saskatoon StarPhoenix - After ascending from his basement laboratory and emerging into the kitchen of his City Park home, Greg Paterson produced two glasses and began pouring pints from the stainless steel tap embedded in the counter.

The beer, which he dubbed "Sail Hatan," is special not only because it's now available for purchase, but because he brewed it himself.

Paterson, who works as a chemical engineer, started brewing beer 15 years ago. In 2012, he switched from simple kits to all-grain brewing, which replicates the process developed over centuries by brewers, of mashing grain and adding yeast and hops . He now makes between 600 and 700 litres of traditional and experimental beer — "way more than I drink!" — each year.

Paterson is part of a growing community of home brewers plying their trade in basements and garages across the city. Last Friday, Regina-based brewery Rebellion Brewing Co. launched Headhunter's Black Bier, which Paterson and another Saskatoon home brewer helped develop. Rebellion's vice-president and brewmaster, Mark Heise, said collaborating with Saskatoon's home brewers made sense.

"Obviously home brewing is that real grassroots thing, and we always want to keep a relationship to that," said Heise, who worked in IT and made his own beer before opening Rebellion Brewing in November 2014.

Most home brewers aspire to do what Heise did — that is, start a brewery. However, there are significant obstacles to success, including the high cost of equipment and provincial regulations that a director of the newly formed Saskatchewan Craft Brewers Association described as "disincentives" and "barriers to growth." Those regulations are currently under review.

Linde awarded contract for helium purification plant

PRNewswire - The Linde Group has been awarded a contract to provide its helium purification and processing technology to Virginia-based Weil Group Resources, LLC. The helium plant, to be located near Mankota, Saskatchewan, will process 10 million cubic feet per day of natural gas and produce industrial grade (99.999%) helium. The plant is expected to be operational by early 2016.

Linde Gas North America LLC will purchase Weil's industrial grade helium production under a long-term purchase-sale agreement.

Linde is the leader in helium processing technology and gas distribution. Weil is a privately owned company exclusively devoted to producing industrial grade helium.

The Saskatchewan helium production will be the first to come on stream, since the 1960s in the province.

RESEARCH AND UNIVERSITIES

canadianarchitect.com

Room-temperature superconductors get one step closer

Canadian Press - Canadian scientists have made an important advance that could one day lead to a science-fiction world of levitating trains and batteries that don't lose their juice sitting in the drawer.

Superconductors, already used in devices such as MRI machines, could also usher in a new generation of everything from super fast computers to ultra-efficient wind turbines. But first, scientists have to crack the temperature problem.

Even a so-called "high-temperature superconductor" operates at -110 C — achievable in a lab, but not in everyday situations.

University of Waterloo scientists used powerful polarized X-rays generated by the synchrotron on the University of Saskatchewan

campus to peer into the electrons of certain copper-containing superconducting crystals.

Those X-rays found that electrons in the atoms of those crystals form patterns that may ultimately be related to how much superconductivity the crystals are capable of achieving. The patterns appear to be a key characteristic of this family of materials.

BHP Billiton pledges toward carbon capture research

bloomberg.com

CBC News - One of the biggest mining companies in Saskatchewan says it will spend $20 million on a carbon capture and storage knowledge centre in Regina.

BHP Billiton says it will spend the money over five years to help create a research centre at Innovation Place Research Park, next to the University of Regina campus.

SaskPower is also involved in the centre. The Crown utility says it will contribute its expertise and experience gained through various carbon capture projects, and will help staff the centre with seconded employees.

SaskPower CEO Mike Marsh, P.Eng. said the centre will help advance the technology and commercial viability of carbon capture and storage, which can involve extracting carbon dioxide from coal-burning power plants and pumping the gas underground.

CCS is a major part of the Saskatchewan government's plan to curtail greenhouse gases and fight climate change.

SaskPower operates what it calls the first commercial power plant in the world with a fully integrated carbon capture system at the Boundary Dam Power Station near Estevan.

$2.6M research cluster to tackle corrosion in Sask

Northern Miner - The Saskatoon-based non-profit International Minerals Innovation Institute (IMII) has announced a research initiative that could benefit miners in the province.

The Mining Materials Research Cluster "will examine the corrosion of materials used in mineral processing and mining equipment and its supporting infrastructure, used in Saskatchewan's potash industry," IMII stated in a press release.

"The high chloride conditions that exist in the industry can cause corrosion and wear to production and related equipment and infrastructure, and lead to hazards to personnel and reduced asset life."

The cluster will comprise a handful of researchers from the University of Saskatchewan and the University of Regina who will look into four related projects: slurry erosion corrosion, stress corrosion cracking, concrete corrosion and corrosion inhibitors.

The cluster's budget totals $2.6 million over four years. IMII will provide $1.2 million and the federal government will kick in $915,000 through Western Economic Diversification Canada. The remaining funds are expected to come from the Natural Sciences and Engineering Research Council and Mitacs, an industrial research institute.

Formed in 2012, IMII is driven by the industry's priorities and funded by both industry and government partners. The institute focuses on developing and executing "innovative education, training, research and development partnerships" in support of the minerals industry.

U of S researchers exploring mining, pipelines, nuclear

Newswise — University of Saskatchewan researchers working to protect the environment from oil and mining contamination and improve nuclear power technology have received a $1.5 million boost from the Natural Sciences and Engineering Research Council of Canada (NSERC).

Environmental toxicologists have been awarded $725,000 to find out how excess selenium released from mining affects aquatic food chains, from biofilms growing on rocks to invertebrates and fish.

Mechanical engineering professor Jerzy Szpunar has been awarded $788,000 for two projects, one looking at advanced steels for safer, more reliable petroleum pipelines, and another aimed at developing better fuels for nuclear power plants. Szpunar holds the Canada Research Chair in advanced materials for clean energy.

In his pipeline project, Szpunar will look at ways to manufacture steels resistant to hydrogen-induced cracking and stress corrosion cracking. Hydrogen sulphide, colloquially known as sour gas, is a common component in unrefined petroleum products transported by pipeline, and special steels are required for such environments.

Szpunar's second project is focused on accident-resistant nuclear fuels.

Szpunar and his team will used advanced modelling techniques to study the properties of composite fuels. This knowledge will support design and construction of new Generation IV nuclear reactors.

The three U of S projects will be funded through NSERC's Strategic Partnerships Grants program.

PTRC and EERC receive $2.5M in US DOE funding

Pipeline News – The Petroleum Technology Research Centre (PTRC) at the University of Regina and the Energy & Environmental Research Center (EERC) at the University of North Dakota announced $2.5 million in US Department of Energy (US DOE) funding awarded through the National Energy Technology Laboratory. The project will develop an "intelligent monitoring system" (IMS), utilizing data acquired through PTRC's Aquistore project. The newly developed IMS will allow future CO_2 storage site operators to more efficiently manage operations, data management and monitoring.

The EERC will work to develop the IMS through real-time, data-capable workflows, algorithms and a user interface to automate the integration of carbon dioxide (CO_2) monitoring and simulation data from Aquistore. Current monitoring technologies require various project teams to acquire and process data to manually combine multiple forms of data in order to manage the program. The IMS will automate many of these steps and substantially streamline the process. By providing a more efficient and cost-effective measurement, monitoring and verification system, Aquistore and other CO_2 storage projects will optimize storage efficiency and costs while minimizing risk.

Managed by the Regina-based PTRC, Aquistore is the storage component of SaskPower's first-in-the-world Boundary Dam Carbon Capture and Storage (CCS) Integrated Demonstration Project, and is one of a handful of active CO_2 storage projects in the world. The EERC is recognized as one of the world's leading developers of cleaner, more efficient energy and environmental technologies. A high-tech, non-profit division of the University of North Dakota, EERC has a long history of collaboration with PTRC.

"Aquistore is a working example of a dedicated CO_2 storage project," said Ken From, P.Eng., PTRC's chief executive officer. "This bilateral research initiative strengthens the relationship between PTRC and North Dakota's EERC and our North American efforts to develop cost-effective technologies to reduce greenhouse gas emissions."

Intelligent monitoring solutions have become popular in the oil and gas industry in the recent decade. The application of these systems for CO_2 storage projects however, is a new development and has yet to be fully demonstrated. The outcomes of this project will address multiple goals set forth in the US DOE's Carbon Storage Program and by the province of Saskatchewan in its Provincial Climate Change Plan.

ENERGY

www.worldbank.org

Geothermal power plant being developed in Sask

Cleartechnica.com - What will be, once completed, the first geothermal power plant in Canada, is now under construction in Saskatchewan, according to recent reports.

The planned pilot plant for the project is set to total just 5 megawatts (MW) in capacity, but the potential is there for the geothermal resource being tapped to provide hundreds of MW of generation capacity, reportedly.

Preparations for the pilot plant's development began at the leased site in question, roughly two hours drive southeast of Regina, late last year. The company behind the project — Deep Earth Energy Corporation — is reportedly still in the process of securing funding for development. The company's CEO, Kirsten Marcia, P.Geo., recently noted that, with $4 million already spent on feasibility studies, another $5 million would have to be raised from investors "before she can receive approval for the loans that will finance construction of the plant itself."

Assuming electricity prices in Saskatchewan (~$0.10/kilowatt-hour) remain somewhat level within the near future, estimates are that the $40 million project could pay for itself in under 15 years. Notably, the facility would then be expected to remain operational for (at the very least) several decades after the pay back period.

OIL AND GAS

canwestpropane.com

Oil and gas land rights sale sees high prices

Yorkton News Review - Saskatchewan's first sale in the 2016 calendar year of petroleum and natural gas rights raised $5.1 million in revenue for the province. This brings final land sale revenues for fiscal 2015-16 to $44.0 million.

While land sale revenues show evidence of the current oil market cycle, industry continues to place a premium on the lands they are acquiring in Saskatchewan. The province continues to be a preferred jurisdiction for conventional producers.

February's sale averaged $444 per hectare, compared to Alberta's latest sale that averaged $117 per hectare and British Columbia's that averaged $76 per hectare.

The Weyburn-Estevan area led the way this sale, accounting for 80 per cent of the sale total. Four parcels located west of Estevan received bonus bids totalling $2.1 million. The region has multiple zones of interest including the Torquay and Bakken Formations along with the Midale Beds of the Madison Group.

The Fraser Institute's most recent annual Global Petroleum Survey of petroleum executives rated Saskatchewan number one in Canada and among the global top 10 in its rankings of attractive jurisdictions for investment in petroleum exploration and development.

The next sale of Crown petroleum and natural gas rights will be held on April 12, 2016.

Experimental extraction technique unveiled

Meridian Booster - A new pilot project was unveiled at an oil field site south of Marshall.

The site is dedicated to a method developed by R.I.I. North America Ltd., at a cost of $50 million in research and development, and is said to be able to raise oil recovery rates from 5 per cent to 45 per cent in certain reservoirs of heavy oil.

The site in the Buzzard area, about 25 kilometres southeast of Lloydminster, is the first production-scale test of the technology, and is intended to demonstrate its viability.

The process, known as STRIP (Solvent Thermal Resource Innovations Process), uses a burner installed deep underground to heat flowing water, which produces steam. The steam is then injected into underground wells, heating heavy oil and moving it to production wells where it can be more easily extracted.

The new technology was first tested a year and half ago around Neilburg, Sask. The method results in less carbon dioxide emission.

URANIUM AND NUCLEAR

Sask: Overbudget Gunnar cleanup federal burden

Saskatoon StarPhoenix - Politicians from northern Saskatchewan say the federal government should take

www.youtube.com

greater responsibility for the cleanup of an abandoned uranium mine in their jurisdiction, and contribute more than $12.3 million to the quarter billion dollar project.

Located near Uranium City on the northern shore of Lake Athabasca about 800 kilometres north of Saskatoon, the Gunnar mine was abandoned in 1963 with virtually no cleanup work. In 2006, the federal and provincial governments signed a memorandum of agreement to evenly split the cost of the cleanup, which involves 4.4 million tonnes of radioactive mine tailings, the flooded mine pit and other debris left on the site.

The project was originally expected to cost $24.6 million and take 17 years to complete, according to Natural Resources Canada documents. However, the cost has since ballooned to more than $250 million, about $60 million of which has been spent on site preparation — including tearing down asbestos-laced buildings — and studies.

Remediation of the tailings deposits began this year but it remains unclear how the bill will be split. A spokeswoman for Natural Resources Canada said: "The province of Saskatchewan is the owner of the Gunnar site and is responsible for developing remediation plans, funding and management of the remediation project. The Government of Canada has agreed to provide up to $12.3 million of funding for the project."

The provincial government takes a different view.

While there has been "no resolution on cost sharing," the province believes the federal government has "a responsibility to contribute to the cost of the cleanup," Laurie Pushor, deputy minister of Saskatchewan's Ministry of the Economy, said.

NDP MLA Buckley Belanger said he believes in the concept of "polluter pays."

"The federal government's Crown corporation . . . they operated these mines. They're the ones that really led to the creation of Uranium City."

News Beyond Our Borders

Discover Magazine

Super crystals can house "eternal" data

Discover Magazine – Consider it the ultimate time capsule. Millions of years into the future, whatever life-form occupies the planet assuming this hypothetical society still dabbles in archaeology might hail the discovery of tiny, glass discs that contain the history of their ancient forebears.

Researchers at the University of Southampton have created an "eternal" memory storage device that could preserve the story of human civilization long after we've departed. Their five-dimensional data storage technology uses a combination of lasers and nanostructures to encode information in a fused-quartz glass disc. The researchers say their storage device could theoretically survive for billions of years.

The chips are just 1 inch in diameter, but the researchers say they can encode 360 terabytes of information, or about 45 years of YouTube videos. The largest single hard drive on the market today can store roughly 16 terabytes.

Aside from its storage capacity, the chip can withstand temperatures of up to 1,800 degrees Fahrenheit, and has a projected lifespan of over 13.8 billion years at room temperature — making it essentially eternal, the researchers say.

Engineers Canada teams with Excellence Canada

Engineers Canada - Engineers Canada has partnered with Excellence Canada to enhance all aspects of Engineers Canada's work to advance the engineering profession in Canada.

"This relationship is designed to bring greater structure to the work we are already doing, and to ensure that all facets of the organization are aligned and sequenced for maximum impact," said Kim Allen, P.Eng., FEC, Chief Executive Officer of Engineers Canada.

"This isn't about reinventing the wheel or adding to our work, but rather applying a structured approach to ensuring that everything that we do is of the highest quality."

Employees at every level will become empowered to be more productive and engaged through new policies, planning and procedures that support excellence, innovation and wellness.

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APEGA successfully appeals Human Rights Tribunal

Association of Professional Engineers and Geoscientists of Alberta – Madam Justice Ross upheld the Association of Professional Engineers and Geoscientists of Alberta's (APEGA) appeal and reversed the decision of the Alberta Human Rights Commission (AHRC) tribunal in the case of Ladislav Mihaly. Mihaly had complained to the AHRC alleging that by being asked to write confirmatory examinations by the APEGA Board of Examiners in order to be registered as a Professional Engineer in Alberta, he was being discriminated against based on his country of origin, the Slovak Republic.

"APEGA firmly believes that the public interest must be the paramount concern of any self-regulating profession," says APEGA CEO Mark Flint, P.Eng.

"While we respect the important role of the Alberta Human Rights

Commission, the tribunal's decision with regard to Mr. Mihaly, were it to stand, would have had significant negative impacts on the ability of regulators – and not just in engineering but in geoscience, medicine, law, dentistry, and accounting to name but a few – and would have resulted in an unacceptable increase in risk to public safety and well-being."

"The decision contains an extensive analysis of APEGA's registration process for internationally educated engineers," says APEGA Registrar Carol Moen, P.Eng. "I believe the decision confirms the fact that APEGA's application process is fair, equitable and transparent and that the same rigorous standards should apply to all applicants for licensure as Professional Engineers."

blog.ceo.ca

Huge Yukon copper-gold find moves forward

Mining.com - The Casino project in Yukon passed a major milestone by announcing it will move to a higher level of environmental assessment.

In a press conference, Yukon Environmental and Socio-economic Assessment Board (YESAB) will send the copper-gold project, considered to be Yukon's largest mine, for its highest level of review. It's the first time that has happened in the 10 years the board has been in existence. A panel consisting of YESAB members will evaluate the mine's impacts on caribou as well as its tailings and waste management plans.

Owned by Casino Mining Corporation, a subsidiary of Western Copper and Gold, the Casino mine is expected to produce over 400,000 ounces of gold per year and more than 200 million pounds of copper. Molybdenum and gold-silver bars would also be produced. Concentrates would be trucked to the port of Skagway, Alaska for ocean shipment. Up to 1,000 jobs would be filled at peak construction and the mine would employ about 600 people during its 22-year life, according to the company's project page.

An on-site liquefied natural gas (LNG) power plant will be used to generate the needed 150 megawatts of power for mine operations. The LNG will be trucked to site from northeastern British Columbia.

www.on-sitemag.com

Municipal asset management plans challenges Ontario's infrastructure investment

Canadian Consulting Engineer - The 2015 Ontario auditor general's annual report raises concerns about the fact that the Wynne government doesn't have a long-term infrastructure plan that includes an accurate description of the current condition of the province's assets, including roads and buildings.

That is to say that there is no reliable estimate of Ontario's infrastructure deficit – a crucial factor in making evidence-based, properly planned investment decisions, both for new capital and refurbishment of existing infrastructure.

Contributing to government's inability to create an accurate estimate of its infrastructure deficit is the lack of consistency among municipal asset management plans that communities must produce in order to qualify for infrastructure funding.

Municipal asset management plans help communities track and categorize not just what sort of infrastructure they have, but also its precise condition, including location, age, condition and remaining life expectancy – all essential variables to consider when prioritizing crucial infrastructure investments.

These plans are essential for the province and municipalities to prioritize where to invest valuable dollars, ensuring they're being directed to infrastructure priorities accordingly.

However, despite their needs, fewer than 40 per cent of Ontario's municipalities have a long-term asset management plan in place, according to the research undertaken in 2012 by Ontario's Ministry of Municipal Affairs and Housing.

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Calendar Of Events

SustainTech 2016 - SEIMA
April 12, 2016 at 8:00 AM
Saskatoon, SK
www.seima.sk.ca/

Strategy Formulation
April 21, 2016, Winnipeg, MB
www.umanitoba.ca/faculties/management/exec_programs/strategy-formulation.html

Asper Executive Education: Strategy Implementation
April 22, 2016, Winnipeg, MB
http://umanitoba.ca/faculties/management/exec_programs/strategy-implementation.html

Mining 4 Requirements Workshop
April 30, 2016, Vancouver, BC
http://cmme.ca/mining-4-requirements.html

Get to the Point!
Practical Writing Course for Technical Professionals
May 4-5, 2016, Saskatoon, SK
www.apegs.ca

APEGS Annual Meeting
May 5-7, 2016, Saskatoon, SK
www.apegs.ca

Drill Program Management
May 7, 2016, Vancouver, BC
http://cmme.ca/drill-program-management.html

2016 Region XI Chapters Regional Conference (CRC) - ASHRAE
May 12-14, 2016, Saskatoon, SK
http://www.ashraesaskatoon.ca/2016CRC

Geoscientists Canada Annual Meeting
June 3-4, 2016
Calgary, AB

2016 PACWEST Pulp & Paper Conference
June 8-11, 2016, Jasper, AB
http://www.pacwestcon.net/

Canadian Academy of Engineering
June 27-28, 2016, Winnipeg, MB
www.cae-acg.ca

PNWER 26th Annual Summit
July 17-21, 2016, Calgary, AB
www.pnwer.org/upcoming-events.html

International Mineral Processing Congress - IMPC 2016
Sept 11-15, 2016, Quebec City, QC
www.impc.org

Ingenium 2016 - Professional Development Seminars
Oct 27, 2016, Winnipeg, MB
www.apegm.mb.ca

Canadian Design-Build Institute Conference 2016
Oct 13-14, 2016, Winnipeg, MB
http://www.cdbi.org/conference/2016-conference/

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