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President's Report



APEGS President Andrew Loken, P.Eng., FEC

Thoughts of a president finishing his term

If you read the *Edge* regularly you will see that there is a trend this time of year for presidents to look back at the past term and reflect on what has happened and perhaps speculate on the future. At least one president has tried to reach "beyond the grave" as it were to influence the agenda of the incoming president. I will do all of that and maybe more. ertainly it has been an enjoyable and challenging year as president of APEGS. I have met engineers and geoscientists from all over this country and had a chance to find out not only about the regulation of our professions throughout Canada but about the actual engineering and geoscience work that is going on. Not surprisingly, I have met dedicated individuals who work hard at regulation and their professions. The other thing I found out is that most of them know how to have a good time as well.

Given that engineering and geoscience are subject to provincial and territorial regulation, it is not surprising that there are differences across the country. Through our two national organizations, Engineers Canada and Geoscientists Canada, we work hard to manage and minimize those differences and in general determine the best practices that can be adopted or adapted for use in each of the provinces and territories. I won't say that there is full harmony between all of the players but everyone is there working to improve the conditions surrounding regulation. This is why it is frustrating to say that one of the members of Geoscience Canada has chosen to leave the organization. In my opinion the best place to effect change is from the inside. Hopefully this will not be permanent and we can once again say in the near future that all of Canada's geoscience regulators are members of Geoscience Canada.

Here in Saskatchewan we have been making changes and improvements. We have brought in outside consultants to help review foreign graduate credentials and in the future we will take advantage of even more services that can help us streamline the process. Due to the strong economy that Saskatchewan has experienced for the last 10 years, there has been a considerable increase in applications from foreign graduates. Within Canada, we are able to take advantage of the fact that engineering programs are accredited through Engineers Canada and the Canadian Engineering Accreditation Board. When a Canadian graduate applies for membership, it is a simple process to confirm they are a graduate of an accredited institution. When foreign graduates apply we do not have that same facility. Even though there are programs such as the Washington Accord to provide a form of accreditation to other institutions around the world, most of the applications we receive need to be evaluated on a course-by-course basis to be sure that they meet the standard that Canadian regulators have determined is necessary for new members of our professions. We have a backlog of applicants that need to be reviewed and the consultants will help us to get that backlog back to acceptable levels.

Also within the past year, we opened a new office for APEGS near the Regina airport. We had been in our former space in downtown

Regina for many years and it was just too small to allow us to do our jobs safely, securely and efficiently. During our tenure downtown, our membership approximately tripled and our staff went through similar changes. Our new office is larger with many meeting rooms that are already actively used by staff and committees and has enough parking for everyone. The new office also has a separate area to keep member information secure and private while allowing staff to be available to work with members of the public as well as volunteers in a very comfortable environment. If you haven't been there yet, I invite you to stop by and see our new space.

Last year we also started a new strategic planning process called the APEGS Value Proposal or AVP for short. The AVP is meant to meld our ongoing continuous improvement along with the *Horizon Watch* we have been doing for the last several years. One of the advantages of the new AVP is it allows us to assign tasks and responsibilities as we identify trends in our professions that we need to anticipate and prepare for. We started the process last fall with the development of our vision, mission and goals and will kick off the first full planning session this June at our Council orientation and retreat.

In regards to the future, we still have a long way to go to reach the goal of 30 by 30 for bringing women into our professions. This is intended to mean that by the year 2030, 30 per cent of new entrants to the professions will be women. Currently our universities are achieving around 20 per cent so we have a long way to go. The other area we have a lot to work on is Aboriginal involvement. As I have said in earlier president's messages, we don't even know how many Aboriginal members we have but again we can draw some information from university enrolments to know that we have a long way to go on that front as well.

Finally I want to thank the members of APEGS for electing me to this position and giving me this incredible opportunity. I want to thank my employer, Hatch, for giving me the flexibility to undertake the activities of the past year; the staff at APEGS, especially our CEO Dennis Paddock and his wife Wendy who looked after myself and my wife Flaviana as we travelled from one end of the country to the other; and especially my wife Flaviana for accompanying me on most of the trips and without whom it wouldn't have been anywhere near as enjoyable.

Respectfully submitted,

Andrew Loken APEGS President



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City of Super Structures

BY MARTIN CHARLTON COMMUNICATIONS

Building any giant structure is sure to be a challenge, but bridges have an especially unique set of problems to tackle.

ake, for example, the most recent bridge completed in Saskatoon: The Circle Drive South bridge. While project manager Doug Drever, P.Eng., FEC, says the work went mostly smoothly, builders faced unexpectedly high river flows for two years during construction. They had to build their berms higher than expected, and at one point when they began work on the substructure, they couldn't go onto the river because it was too dangerous. Mother Nature might swell the river's banks, regardless of the puny humans who are trying to bridge it. Within the next year, construction will start on the replacement Traffic Bridge in downtown Saskatoon and the North Commuter Parkway Bridge, connecting Marquis Drive to University Heights.

The Parkway is in a somewhat secluded part of the city because the east bank of the river hasn't been fully developed yet, and the west bank is in an industrial zone. But that doesn't mean the project will be easy.

"The west bank is very steep and high, and it has a low elevation on the east side," says Dan Willems, P.Eng., City



of Saskatoon special projects manager with the transportation and utility department, major projects division. "Because of the nature of the river valley on either side of the river, the bridge will need to be 400 metres long." River bridges are typically about 300 metres long.

But the biggest challenge of all is construction months. They say there are only two seasons in Saskatchewan: winter and construction. And bridges have some additional environmental limitations.

"It's a fish-bearing body of water so there are certain periods of the year that you can't work on the water because you may be disturbing spawning areas," says Willems. "It's not uncommon for a bridge in Saskatchewan to take three full construction years."

The Traffic Bridge is at the city core. Where it will connect on the west side of the river, parks play host to festivals all summer long, and on the east side of the river sit residential buildings.

The river is also under Transport Canada's jurisdiction, so city has to ensure river traffic can keep moving during construction. The river is often used by water sport enthusiasts, and the *Prairie Lily* Riverboat conducts daily cruises.

"There are a lot of key stakeholder groups to keep happy," says Willems.

The heart of the city

If the river is Saskatoon's heart, the bridges are its arteries, making the necessary connections to keep the city alive. As with anything so integral to a city's function and identity, residents have a lot to say about the bridges.

The North Commuter Parkway has followed a fairly expected, straightforward timeline for a bridge, says Willems. As the northeast side of the city grows, commuter traffic is getting heavier on Circle Drive North, and the need for another bridge was established in 2012. Plans have moved forward relatively quickly since then.

The Traffic Bridge is more unusual. The bridge is highly visible and historically important, as it was the first bridge built in the city to connect the town of Saskatoon to the town of Riversdale, thus birthing the cross-river city as it is known today.

After it was declared structurally unsafe in 2010, an intense public debate started. Every option was considered, including extensive refurbishment of the existing structure, building a stylistically different signature bridge in its place and even building a bridge exclusively for pedestrians and cyclists.

"The challenge with bridges is it's not just a structural engineer [saying], 'That's the bridge you need,'" said Willems. "It starts with the public."

The final decision was to build a replica of the current steel truss bridge, but with wider lanes, pedestrian and bike paths on both sides, and electrical abilities so it can be shut down and used as an event facility from time to time.

Before it was closed, the Traffic Bridge saw about 10,000 vehicles per day. The city's traffic models are showing that with Saskatoon's projected population of 500,000 people, the new bridge could see up to 22,000 vehicles per day. It's also incredibly useful as an "emergency valve" if any of the other bridges need to be closed.

Healthy arteries

Maintenance is an ongoing challenge with bridges. The City of Saskatoon learned the hard way with the Traffic Bridge what happens with a lack of proper maintenance, but with some foresight, that shouldn't happen again.

From May to August this year, crews will be ripping up and repairing the deck of the University Bridge. At peak capacity, the University Bridge can accommodate 2,400 vehicles an hour, and on average it sees 38,000 vehicles per day. And for this rehabilitation, the bridge will need to be closed to public traffic the entire time, though one lane of traffic is being left open for emergency vehicles, health region shuttles and buses.

Fully closing the bridge will allow them to do the rehabilitation as quickly as possible. Leaving two lanes open, for example, would push the work into two construction seasons.

"Traffic is going to be our biggest challenge on this project," says Rob Frank, P.Eng., City of Saskatoon engineering manager of asset preservation, with the transportation and utility department, major projects division. "There are going to be traffic impacts for this closure. It's really a good-news story because this is a planned repair so that something unexpected doesn't happen and we have to do an emergency repair."

It would have been preferable to wait to do the rehabilitation until the North Commuter Bridge and the Traffic Bridge were finished, but deferring the project until then would have resulted in further deterioration.



NORTH COMMUTER PARKWAY BRIDGE TIMELINE



"We didn't want to start losing deck sections, or have a bus tire go through and have to do emergency repairs," said Frank. "There's no guarantee that would happen, but we don't want it to get to that point. You have to be proactive."

Built in 1916, the existing concrete deck was installed in 1972 and the asphalt was replaced in 1985, but there hasn't been any deck work since. This year they'll be removing the asphalt surface, taking off a layer of concrete, painting the pedestrian handrails, strengthening the steel columns supporting the deck and installing new expansion joints, which is important to helping the bridge expand and contract during the extreme weather changes between summer and winter.

Once renovated, the deck is expected to be in good shape for another 20 to 30 years. The bridge's initial lifespan was 70 to 100 years, but Frank says it should be able to last indefinitely with regular maintenance.

After the University Bridge deck is repaired, the next big bridge project will likely be some fairly major renovations on the Senator Sid Buckwold Bridge, which is approaching 50 years old.

The City of Saskatoon has over 70 bridge-like structures in its inventory, including overpasses, walkways and tunnels. To keep up, they'll need to do one to two bridge rehabilitations per year, at a cost of about \$5 million per year. They currently are working at getting that level of funding, but they don't quite have it yet, says Frank.

Looking at the list of challenges to be faced when planning bridges – dealing with Mother Nature's caprices, managing traffic, following Transport Canada regulations, keeping the public happy, finding funding, working within budgets, ensuring regular maintenance – it's almost amazing that the bridges get built at all.

But Willems knows, that if anyone can pull it off, it's engineers.

"I look at the engineering professionals as problem solvers," said Willems.

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The Biggest Move

in Saskatchewan's History

BY MARTIN CHARLTON COMMUNICATIONS

n November 2014 and January 2015, the largest items likely ever transported on Saskatchewan highways trundled down the icy roads.

"It's like if you were driving down your street and you saw your house driving next to you, but it's bigger than your house," said John DiMonte, P.Eng., vice president of operations, HPD Evaporation and crystallization, Veolia Water Technologies, the company that supplied the equipment to K+S Potash.

Delivered on January 8, the potash crystallizer is 11.6 metres high by 10.1 metres wide by 56.7 metres long, and weighs about 330 tonnes. Similar in size to the crystallizer, two evaporators were delivered in November. DiMonte says that when they were being transported, the top of the equipment was about 40 feet off the ground.

Moving at an average speed of 30 to 40 kilometres per hour, it took three days to deliver the crystallizer from Saskatoon to the K+S Legacy Project near Bethune, a distance that would be about two hours by car.

"You can't stop very quickly, you can't go around turns very quickly, you're shutting down the road in both directions, so you need to have escorts," says DiMonte. The move included a truck at the front pulling the unit, two on the back pushing, four pilot trucks and a police escort.

"You can only travel certain times of the day, from about 10 to 4, because they don't want you around during rush hour, and they don't want you around at night. It's short durations of transportation because you go a little ways then there's a power line and you have to stop to get a crew to move it . . . Sometimes there's a bridge, and you have to get off the highway and go on some little farm road."

Crews from SaskPower lifted over 30 wires to accommodate the equipment, and sometimes had to remove or lower cables. Organizers also had to communicate with the rail companies because they had to remove some rail crossing arms in order to complete the trip, and they had to talk to local municipalities and notify the public of the move through news outlets like radio stations and newspapers.

The time of year the equipment was moved is also important: it's so large, the only time of year they can move it is during winter when the ground is most solid.

"It was unbelievable how we ran into very few problems, and when we did, whoever the problem involved was eager to find a solution," said Scott Kloss, Veolia Water Technologies procurement manager, who helped organize the move.

Kloss says getting the permit approval to move the equipment was a trial all on its own. The entire process took close to a year of back and forth with several of the provincial transportation authorities. The actual permit was granted about 30 days in advance.

Complex logistics

Getting permit approval was the key to the entire endeavour. DiMonte says one of their competitors faced the unenviable situation of having built a piece of equipment this size, ready to ship, but then learning they couldn't get the permit. In order to avoid facing this problem, Veolia got pre-approved for the delivery two years before the move, before fabrication even started.

"Logistics was one of the biggest challenges of the jobs," said DiMonte.

Veolia Water Technologies is based out of Plainfield, Ilinois. They supplied the crystallizers for K+S Potash, a German company. Veolia hired a Chinese company, Chungchak Heavy Industry (CCHI), to do the prefabrication, using a combination of plate material provided by K+S and material sourced in North Carolina. The components were shipped from China to Houston, then brought by truck to Saskatoon, where they were assembled by JNE Welding. Both JNE and Premay Equipment helped transport the crystallizer to the Bethune mine.

"It is a very international project," said DiMonte.

And that's just counting the companies involved in bringing the crystallizers and evaporators from blueprints to operation. To make the plan a complete success, they also counted on co-operation from the province of Saskatchewan, SaskPower, local municipalities and everyone who shared the road with the monstrosities over those three days.

Three evaporators and three crystallizers have already been assembled on site. These evaporators were even bigger than the ones that were shipped recently, and there was concern about getting the permit to ship them. The crystallizers were assembled on site because they didn't want to overwhelm the local shops with the work.

"In general, shop fabrication is preferred by far," said DiMonte. "It's cheaper, the environment is controlled -there's no wind or rain or dust – it's a higher quality, done quicker. But then you have to offset all of those advantages with the cost of shipping it and the risk that you won't get the permit. The bigger it is, the more likely it shift to a site assembly." Due to the complexities of moving such equipment, it's hard to say whether something this large will be delivered on Saskatchewan roads again. But if it is, the province has proven that its officials, haulers, residents and engineers are up for the challenge.

The equipment in action

K+S Potash's Legacy Project near Bethune is a solution mine, meaning they inject water underground to dissolve the salt (sodium chloride) and the potash (potassium chloride) into a brine, a clear liquid that looks just like water.

"We have the potash in the solution, but now we need to turn that into a product we can sell," says Sam Farris, P.Eng., vice president of operations and general manager of operations for K+S Potash's Legacy Project.

The solution is delivered straight from the caverns into the evaporators, where its heated up and the water boiled off to concentrate the brine.

"What happens as we boil off water, as a byproduct we crystallize a lot of sodium chloride – salt," says Farris. "It's not our primary process, but that's what happens when you boil off the water. It's the same as any potash mine; any potash mine produces sodium chloride as a byproduct."

Now they have a saturated potash solution, but they don't yet have potash. To produce the potash, they cool the solution using the crystallizers. To cool it, they use a vacuum, lowering the pressure over the solution. When you make the pressure over a solution low enough, it will boil at a temperature much lower than the 100 degrees we're used to on our stovetops.

"Basically we lower the pressure in stages, and that causes the solution to cool to that boiling temperature, and it produces solid potash," explains Farris.

The end result is a kind of synthetic potash – pure potassium chloride – that looks much like table salt.

The plant has a 2 million tonne per year capacity. To produce that much potash, you need a certain size of equipment. In this case, incredibly gigantic.

Such a large operation also means they have a huge energy input. Farris says that energy input is their biggest cost driver.

"From an environmental point of view, we want to limit the emissions from our plant, so anything we can do to reuse energy, we do, because it saves us money and reduces carbon emissions."

All of the water that's boiled off in the evaporators gets reused in the mining process, and as much as possible of the heat used to boil the solution is recovered.

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A new home for the Riders

BY MARTIN CHARLTON COMMUNICATIONS

The Regina Revitalization Initiative aims to drastically change the heart of Saskatchewan's capital.

n the largest redevelopment project in the city's history, the first step is the creation of the new stadium at Evraz Place. Once the new Mosaic Stadium is up, the old one will come down, paving the way for a housing development at the Taylor Field site. Finally, the Railyard Renewal Project will expand Regina's entertainment district along Dewdney Avenue.

Seating fewer, but with more than twice the square footage of the old field, the new stadium includes more accessible seats; more club, lounge, suite and media seating; a larger average concourse width; a larger average seat width; and a larger average distance between rows. There are also more elevators, more concession points of sale and more restrooms.

This structure is huge: the excavation on the facility is enough to fill 112 Olympic-sized pools, and there will be enough concrete to build six office towers.

Work is already under way on the structure along Elphinstone Street.

"It's exciting for me every time I drive past it," says Sean Hamelin, P.Eng., district manager with PCL Construction, the lead engineering firm. "It's right in the heart of a part of the city so many people use. I love seeing the progress that's being made on that thing each and every day. There are lots of people standing outside the fence at any given time, looking and seeing, and smiling about what they see."

In February 2015, PCL began work on the foundation in the lower bowl and the seating that will be below grade – which is more than half the seats in the stadium. The lower bowl is being built 10 metres below ground to protect spectators from the wind.

A structure like this is designed to move a large number of people in an inviting environment, says Hamelin, and so needs to balance form, function and elegance.

To meet that delicate task, PCL hired HKS Architects. The American architecture firm has designed many stadiums, including the AT&T Stadium in Arlington, Texas and the Lucas Oil Stadium in Indianapolis, Indiana, both known for their unique styles.

"All the credit goes to our design and engineering team that we've assembled on this project," said Hamelin. "They are extremely creative, and then you couple them with extremely capable engineers and you get a fantastic result."

As with all huge projects, budget is a challenge. Initial ideas for the stadium were to build a structure with a retractable roof, but that publicly-wished-for feature does not fit into the \$278 million price tag for the project. Instead, HKS and PCL have designed the building in such a way as to not inhibit a roof being added in the future. The plans feature a curved partial roof, designed to mitigate wind, rain and snowfall.

"A lot of engineering is really balancing the functionality and the sustainability of a building against the economics of it," said Hamelin.

From Hamelin's perspective, the biggest challenge for his team is managing the sequential design of the facility. Because the project is a design-build with short-term financing, PCL won a competitive process based on their rendering and budget, but they still needed to plan how all the components would fit together.

Essentially the stadium is designed as it is built, with Hamelin's team feeding their designs to the contractor ahead of the work being done.

"It is a continuous process of consultants and engineers designing components with the end in mind," said Hamelin. "What we do here will support the next phase, and the next phase, which all together will support the ultimate vision."

The other option is to delay construction until all of the designs are complete, which would also delay the overall project.

"If we'd taken that approach, we wouldn't have started digging the hole until late 2015, which obviously doesn't achieve our goal of turning it over in 2016."

Understanding what the wind load and the snow load will be on the roof structure translates down to what that will mean in the substructure; you need to know what the roof will be like so you can develop the foundation. Once they've designed some of the upper components, they'll come back to the foundation design to test their assumptions.

"It's all information that's coming to them from past experience and good engineering practices and industry norms and standards. This is what the building is very likely going to look like; what does that mean for the foundation? Then they can take a very educated and professional approach to design the foundation."

The project is currently about 25 per cent complete, and work is progressing at a steady rate. Hamelin says they should be about 32 per cent complete by late April or early May. Completion is scheduled for August 2016, with the first Roughriders game scheduled to take place in June 2017.

The City of Regina expects work on the new Taylor Field neighbourhood to begin in 2018 once the old stadium hads been fully decommissioned, and redevelopment of the CP rail yard begins this year, though completion is not expected until 2025.

ensuring public safety



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.).





University of Regina, Faculty

es Administration



Bai, Lu, P.Eng.







Blixt, Kyle, P.Eng

Bullee Consulting Ltd.





Blumhagen, Levi, P.Eng.

Mosaic

Dumalski, Cory, P.Eng.



Bodnarchuk, Keith, P.Geo.







Bortis Matt P.Geo.



of Rusi



Boutin, Jeremy A., P.Eng.





Dhungana, Dinesh, P.Eng.

Cory Cogeneration Station

Carbonneau, Carolyn, P.Eng. Chahal, Jashandeep, P.Eng.



Dotta, Matthew J., P.Eng.

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Cowan, Robert, P.Eng. Cre Duncan PEnn

Drake, Ernest B., P.Gen

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Eberlein, Dr. Armin, P.Eng.



El Moudir, Walid, P.Eng.

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Davis, Mark, P.Eng.



Aximus Engineering Ltd.



de Paiva, H. Allan R., P.Eng. Desouky, Hebatalla, P.Eng.



Enmark, Christine, P.Eng.

Fan, Jun, P.Eng.

SaskWater





Ding, Yingqiu, P.Eng.





Gauthier, Dan, P.Eng.







Griffin, Shawn E., P.Eng.



Guron Jr., Rufino C.,

P.Eng.

















Hanafy, Ahmed Samy, Hartley, John, P.Eng., P.Eng.

M.Eng.

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Mitra, Pranabendy, P.Eng.

Onyeka, Ifeanyi, P.Eng.

Mouity, Veronique, P.Eng.

Munshaw, Amanda, P.Eng.





Pascual, Ferdinan, P.Eng.

Shylkov, Andriy, P.Eng.

Wang, Yi, P.Geo. Cameco Corporation



Patterson, Kyle, P.Geo.

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Shymko, Kyle, P.Eng.

Whiffen, Gord, P.Eng. SMS Engineering Limited

Li, Cecil, P.Eng.



Nie, Xin, P.Eng.

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Powell, Erin, P.Eng.

Silva, Ricardo, P.Eng.

Wild, Evan, P.Eng.





Pritchard, Dave L., P.Eng. Reinhart, Lowell, P.Eng. TRUE Consulting

Reist, Robyn, P.Eng.

Rivett, Ian, P.Eng. Mera Group



Rodriguez Chavez, Jose

Luis, P.Eng.

11

Vinotharajah, Antony. P.Eng. SaskWater

Ortiz, Jorge, P.Eng.



Owolagba, John, P.Eng.



Parajuli, Roshan, P.Eng.

Ryberg, Warren, P.Eng. TransGas























Segal, Daniel, P.Eng.





Wang, Ling, P.Eng.





























Wallace, Carrie, P.Eng.



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Zygmunt, Kowal, P.Eng.



APEGS

85th Annual Meeting & Conference

Through the Decades We See More

Hotel Saskatchewan, Regina, SK

For more information and online registration: www.apegs.ca

EVENT SCHEDULE

Thursday April 30

Pre-Conference Workshops	8:30 am - 4:00 pm
('Effective Public Speaking' or 'Mes	sage & Media Training')
Welcome Event	6.00 pm - 10.00 pm

Friday May 1

Buffet Breakfast
Professional Development 8:30 am - 12:00 pm and Streams
Tours
Professional Development Luncheon 12:00 pm - 2:00 pm
Past Presidents' / Council Meeting 3:00 pm - 4:30 pm
Past Presidents' Dinner5:00 pm - 8:00 pm
President's Reception8:00 pm - 11:00 pm

Saturday May 2

Buffet Breakfast
Annual Meeting8:30 am - 9:00 am (Registration)
Youth Science Day
Partners' Program10:00 am - 3:00 pm
Recognition Luncheon 12:30 pm - 2:30 pm
Committee Meetings 2:30 pm - 4:30 pm
Awards Banquet6:00 pm – Reception

BUSINESS MEETING

Saturday May 2

The 85th Annual Meeting of the Association will be called to order at 9:00 am. Members must register between 8:30 and 9:00 am to obtain a voting card.

The agenda will include:

- Minutes of the last Annual Meeting
- Business arising out of the minutes
- Report of committees
- Audited financial report
- New business
- Report of the scrutineers

SOCIAL EVENTS

Thursday April 30

• Welcome Event Come and go reception

Friday May 1

- Buffet Breakfast
- Professional Development Luncheon Keynote address from futurist Dr. Lowell Catlett
- Past Presidents' Dinner and President's Reception This dinner and reception in honour of APEGS Past Presidents is a wonderful opportunity to gather and socialize. All conference attendees and guests are welcome to attend.

Saturday May 2

- Buffet Breakfast
- Partners' Program Activities and networking for the companions of the business meeting attendees.
- Recognition Luncheon
 This luncheon will acknowledge our new
 professional and life members and recognize the
 many volunteers who contribute their time and
 talents to the Association.
- Awards Banquet Saturday evening we celebrate members whose outstanding achievements and contributions have earned them the recognition and respect of their peers.
- Hospitality Suite

Keynote Speaker



At the 2015 APEGS Annual Meeting, we will be honoured to welcome as our special guest distinguished author and public speaker Lowell Catlett, Ph.D.

Lowell Catlett, Ph.D.

Dr. Catlett is Regent's Professor/Dean and chief administrative officer at New Mexico State University's College of Agricultural, Consumer and Environmental Sciences where he has received honors as "College of Agriculture and Home Economics Advisor of the Year," as well as "Teacher of the Year."

An exciting futurist, his knowledge of technologies and their implications on the way we will live and work is addressed in his varied and upbeat presentations. Dr. Catlett works both nationally and internationally, presenting his "take" on trends in health care, agriculture, the environment, education, and more. Dr. Catlett has been a consultant for the US Departments of Agriculture, the Interior, Defense and Labor, as well as many Fortune 500 companies.

Dr. Lowell Catlett received his doctorate in economics from Iowa State University and in 2010 he received the Henry A. Wallace Award which was established in 1978 to honor an Iowa State University alumnus who has made an outstanding contribution to national or international agriculture in writing, teaching, research and leadership.

He has twice received the Don C. Roush Award for Excellence in Teaching, and has also received the prestigious Burlington Foundation Faculty Achievement Award for Outstanding University Teaching, as well as being one of two western regional recipients of the National Association of State Universities and Land Grant Colleges "Excellence in College and University Teaching in the Food and Agricultural Sciences Award." He was awarded the "2007 Distinguished Alumnus Award" from West Texas State University where he received his bachelor's degree in agricultural business and economics.

Dr. Catlett received the New Mexico Distinguished Public Service Award in 2013 from the governor of the state because of his dedication to public service and to the betterment of life in New Mexico.

He and his wife, Joni, share their home in Mesilla, New Mexico, with three dogs, a passel of cats and a barn full of bats.

Professional Development Tracks

Friday May 1, 2015 - Hotel Saskatchewan, Regina, Saskatchewan

7:30 - 9:00	Buffet Breakfast			
	TRACK ONE Infrastructure Oak Room	TRACK TWO Environment Saskatchewan Suite	TRACK THREE Innovation Victoria Room	TRACK FOUR Development Regina Room
7:30 - 9:15	Saskatchewan's Electrical Needs Guy Bruce, P.Eng. SaskPower	Water and Energy Usage in Potash Mining Todd Perras, P.Eng. Vale Potash	Enhanced Oil Recovery in Saskatchewan Ken From, P. Eng., FEC, FGC (Hon) PTRC	Social Media Cosanna Preston-Idedia
9:20 - 10:05	Tazi Twe Hydroelectric Proposal Mark Peters, M.Sc., P.Eng. SaskPower	When Will We Notice Climate Change? Dave Sauchyn, Ph.D., P.Geo. University of Regina	Aquistore Ken From, P. Eng., FEC, FGC (Hon) PTRC	Stop Cutting Corners Safety is in Your Hands Duane Janiskevich
10:05 - 10:25	Networking and Refreshment Break			
10:25 - 11:10	Clean Coal Michael J. Monea, P.Eng., P.Geo. Sandra Beingessner SaskPower	Technological Advancements in the Shaunavon Chad Lundberg, P.Eng. Crescent Point	K+S Legacy Project Dwayne Selinger, P.Eng. K+S Potash	A Respectful Workplace Rustin-Ann Blanke
11:15 - 12:00	Powering the Province Tom Kishchuk, P.Eng. Mitsubishi Hatachi Power Systems	Diamonds in Saskatchewan George Read, P.Geo. Shore Gold	Restoration of the Legislative Building Spencer Higgins Architect Inc.	St. Louis Bridge Project Alison Lara, P.Eng. Min. of Highways
12:00 - 2:00	Professional Development Luncheon - Keynote Dr. Lowell Catlett			
2:00 - 2:45	Evolution of Telecommunications Daryl Godfrey, P.Eng. SaskTel	CSA Standards Dwayne Torrey CSA Group	Innovative Advancement Brooke Dobni InnovationOne	Innovative Teaching Richard Evitts, P.Eng. University of Saskatchewan
2:50 - 3:35	Prud'Homme Natural Gas Cavern Incident Phil Sandham, P.Eng. TransGas	South Saskatchewan River Project Jody Scammel, P.Eng. Water Security Agency	Cigar Lake's Jet Boring Mining Method Martin Wacker, P.Eng. Cameco	Present to Persuade Kansheng Wu, P.Eng. Water Security Agency
3:45 - 4:30	Regina Bypass Jeff Holland, P.Eng. Min. of Highways	Water Requirements Potash Mines Greg Vogelsang, P.Eng., P.Geo., FGC Western Potash	Queen Street Water Management System Michael Bucholzer City of Yorkton	Engineering Art Bruno Hernani, Engineer-In-Training University of Regina

Awards Winners & Awards Banquet

Saturday, May 2, 2015

Reception 6:00 pm & Banquet 7:00 pm Hotel Saskatchewan Radisson Plaza, Regina Saskatchewan

Friend of the Professions Award

Pat Faulconbridge

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

Jerad Kupiec, 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

Saskatchewan Ministry of Environment, Code Secretariat (Results-Based Regulation)

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/Jeoscience Project

SaskPower – Boundary Dam Carbon Capture Project

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

Dena McMartin, P.Eng., FEC

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

Charles Harper, P.Eng., P.Geo.

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

Prof. Arthur L. Opseth, 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 profession and the Association.



Tickets: \$50 per person

Contact APEGS

300 - 4581 Parliament Avenue, Regina SK S4W oG3, Tel: (306) 525-9547, Toll Free: 1 (800) 500-9547, Email: apegs@apegs.ca Register online: www.apegs.ca

Member Profile



This month *The Professional Edge* chats with Jody Scammell, P.Eng., a geotechnical engineer with the Water Security Agency.

Tell us about your personal and professional background.

I grew up on a farm in northeast Saskatchewan near the village of Ridgedale. I went to elementary school there but then went to Tisdale for high school before studying engineering at the U of S.

Why did you choose to go into engineering?

Growing up on a farm, you see how things work. In my case, I took an especially keen interest in the way that water moves around the farm in the spring which led me to study geotechnical engineering and the building of dams. It also helped that my parents didn't want me to be on the farm anymore; they were great advocates for college education.

What was your first job after college?

I moved to Vancouver to work on dam projects internationally and in interior BC. After three years of rain, my wife decided we needed to move closer to cold weather. We came back to Saskatchewan where I got a job with the predecessor of the Water Security Agency in 2007. I've been here ever since.

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

I was proud to have tackled the challenge of finishing my master's degree while working full-time and starting a family.

Also, obviously I'm very proud of the geotechnical monitoring work my colleagues and I did for the dams in the Southeast during the 2011 flooding. There was so much going on at that time. We were in a state of continuous monitoring over a period of several months.

What are your interests outside of work?

I enjoy camping with my kids. In general, my kids and their activities take up a lot of leisure time. I also enjoy big-game hunting, skiing and sports of all kinds. Anything that gets me out of doors is up my alley. I also still farm with my dad.

Lately I've taken up running. I have run several half marathons and last year I kicked it up a notch and ran in the full Queen City Marathon and came in at a respectable four hours. That was my first and, I suspect, my last marathon. They are pretty hard on the body.

Running is an interest I share with my wife who does triathalons. But we don't train together. She hates training with me.

On the volunteer side, I'm the treasurer of the Moose Jaw Engineering Society, with whom I've been active for a long time.

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

For my life in general, of course I would say my parents. My mom always valued education and encouraged my brother and me to go to college. My older brother is also an engineer. Both of my parents taught me the value of hard work.

As for my professional life, there were so many great professionals who helped me along the way but if I had to narrow it down I would mention Ryan Douglas, P.Eng. and Russ Johnson, P.Eng. with whom I worked early in my career.

Women's History Month



Tina Beaudry-Mellor delivered the keynote speech





APEGS President-Elect Margaret Anne Hodges



CTV's Morgan Campbell served as host the celebration

Lieutenant Governor Vaughn Solomon Schofield

ina Beaudry-Mellor left the audience ready to act with her keynote speech "This is Our Time." On October 14, 2014 more than 240 people attended the largest ever annual reception in Regina to celebrate Women's History Month.

This free publicevent at the Conexus Arts Centre featured displays from 13 local organizations, activities for children during the program provided by EYES (Educating Youth in Science and Engineering), light refreshments, door prizes and a silent auction. Her Honour Lieutenant Governor Vaughn Solomon Schofield brought greetings on behalf of the Crown. CTV's Morgan Campbell served as host. APEGS President-Elect Margaret Anne Hodges introduced Ms. Beaudry-Mellor.

Thank you to the local organizations that participated!

- Cuernavaca Project
- Dress for Success
- Engineers Without Borders
- Equal Voice

- Grandmothers 4 Grandmothers
- Regina Open Door Society
- Regina Queen City Kinettes
- Regina RIOT Football Club
- Regina Sexual Assault Centre
- Saskatchewan Genealogical Society
- Saskatchewan Polytechnic Women in Trades and Technology
- United Way of Regina Lifelong Learning Centre
- Regina Women's Network

Thank you to this year's generous sponsors, whose monetary and silent auction prize contributions made the event possible:

- APEGS
- SaskPower
- SaskTel
- Stantec
- SaskWater
- Government of Saskatchewan Status of Women Office
- Hillberg & Berk
- Lean Options Consulting Inc.
- University of Regina Student's Union
- Delta Bessborough
- SaskEnergy
- TBM Strategies
- Dudley & Company
- Louis Browne, LL.B., Willows Wellsch Orr & Brundige

Mark your calendar for the next celebration on October 20, 2015 at the Conexus Arts Centre in Regina - featuring keynote speaker Sheila Fahlman of Grandmothers 4 Grandmothers. Email reginawhm@gmail.com to RSVP. For more info visit www.reginawhm.ca and like us on Facebook.

To support this important event through sponsorship, providing a display for your organization, or joining the planning committee, please contact reginawhm@gmail.com.

October was proclaimed as Women's History Month by the Government of Canada in celebration of the many and significant contributions of girls and women to our society – and to the quality of our lives. This October was the 85th anniversary of the "Persons Case", when the "Famous Five" – Emily Murphy, Louise McKinney, Irene Parlby, Nellie McLung and Henrietta Muir Edwards – challenged the British Privy Council and won the right for women to serve in the Senate, leading to changes in laws throughout the Commonwealth.

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From the APEGS home page, click "Login" in the top right corner. Your User ID is your 5-digit registration number (including leading zeros if applicable).

If you have never retrieved your password, click on "New Password / Forgot Password".

Enter the information requested and an email containing your password will be sent to the email address on record with APEGS.

If you do not have a valid email address on record with us, email the APEGS office to have it added to your record at apegs@apegs.ca.

NOTE: If an email with your password does not come through and you are using a work email address, please try a personal email address because some business spam filters will not allow email from APEGS.

Announcing the Winner of the iPad Draw

APEGS held a draw for an iPad to encourage our members to use On-Line Services for 2015 renewals and information updates. At least one of the website functions listed opposite had to be completed in On-Line Services by December 31, 2014 and membership had to be renewed for 2015. 7,919 of the 11,403 members who renewed for 2015 were eligible for the draw.



The winner is....

Hongcan Ruan, P.Eng.

Congratulations and thank you to all our members who used On-Line Services for renewals.

APEGS View



Dr. Shahrooz Nafisi

Celebrating Our Own

The winner of the Buehler Technical Paper Merit Award for Excellence was "Microstructural Evolution of Electromagnetically Stirred Feedstock

Semi-Solid Metal (SSM) Billets During Reheating Process" by Dr. Shahrooz Nafisi, P.Eng. and Dr. Reza Ghomashchi.

The article was published in the April 2013 issue of *Metallography, Microstructure, and Analysis.* The award was presented at the Materials Science & Technology Conference in October 2014.

Dr. Shahrooz Nafisi is a research engineer at Evraz Regina Steel in Saskatchewan, Canada. He received his Bachelor and Master of Science in metallurgical engineering from Iran University of Science and Technology and his Ph.D. from the University of Quebec.

Council Notes

February 5 and 6, 2015, Hotel Saskatchewan, Regina, SK

16 of 19 Councillors present

- The Governance Board reported the following appointments: James D. (JD) Johnston, P.Eng. and Daoyong (Tony) Yang, P.Eng. to the Experience Review Committee for a three-year term; Dr. Lal Kushwaha, P.Eng., FEC as Vice-Chair of the Academic Review Committee for a two-year term.
- Council approved the following as Life Members: Acimovic, Slavoljub M., P.Eng.; Amundrud, Arnold A.W., P.Eng.; Anderson, John E., P.Eng.; Arndt, Robert, P.Eng.; Arora, Ravi K., P.Eng.; Avidor, Albert, P.Eng.; Azarmgin, Touraj, Engineer-In-Training; Aziz, Mohammed A., P.Eng.; Bader, Daniel H., P.Eng.; Bamford, Thomas S., P.Eng.; Banga, Alexander B., P.Eng.; Bodnaruk, Larry E., P.Eng.; Brown, Bland G., P.Eng., FEC; Bruman, Bernard, P.Eng.; Capewell, Donald J., P.Eng.; Chan, Francis K.H., P.Eng.; Clark, Neville J., P.Eng.; Copeland, Alan J., P.Eng.; Corkery, M. Timothy, P.Geo.; Dedman, Ronald G., P.Eng.; Downes, Michael J., P.Geo.; Erickson, Delano E.L., P.Eng.; Esmail, Sadrudin, P.Eng.; Farley, P. Brian, P.Eng.; Ferguson, George J., P.Eng.; Fletcher, Dale G., P.Eng.; Gessell, Brent G., P.Eng.; Gill, Terry S., P.Eng.; Gobert, Garnet M., P.Eng.; Haddad, Yunis E., P.Eng.; Harle, Trevor D., P.Eng.; Heartfield, Alan G., P.Eng.; Hertz, P. Barry, P.Eng.; Hobley, Thomas A., P.Eng.; Holloway, Philip L., P.Eng.; Hubley, Kenneth D., P.Eng.; Hum, Tom P.L., P.Eng.; Keith, Terry A., P.Eng.; King, G. David, P.Eng.; Kutzak, Allan R.J., P.Eng.; Lamplough, John R., P.Eng.; Leonhardt, Robert, P.Geo.; Linney, Darryl B., P.Eng.; Lusk, Robert J., P.Eng.; Macauley, William H., P.Eng.; Marra, Tony, P.Eng.; Martin, Fredrick R.J., P.Eng.; Mitchell, W.A. Garner, P.Eng.; Mraz, Dennis Z., P.Eng.; Nelson, Craig D., P.Eng.; Opseth, Arthur L., P.Eng., FEC, FGC (Hon.); Palmiere, Bruce, P.Geo.; Potter, Clifton L., P.Eng.; Racette, Leonard E., P.Eng.; Ranganathan, R. (Ranga), P.Eng.; Robbins, Donald H., P.Eng.; Schellenberg, Gordon E., P.Eng.; Schmidt, Eldor C., P.Eng.; Sikka, Desh B., P.Geo.; Siu, Wilfred, P.Eng.; Sodhi, Kamaljit S., P.Eng.; Storer, Dr. Dennis K., P.Eng., FEC; Tam, P.H. Frank, P.Eng.; Thomson, J. Dave, P.Eng.; Tibbs, Robert I., P.Eng.; Turcotte, Garnet D., P.Eng., P.Geo.; Wagner, Wayne R., P.Eng., P.Geo.; Wetterstrand, Karl G., P.Eng.; Wilson, Bruce W., P.Eng.; Wong, James H., P.Eng., P.Geo.; and Yee, Wellington, P.Eng.
- The Image and Identity Board appointed Jaylyn Obrigewitsch, P.Eng. as Vice-Chair of the Connection and Involvement Committee for a two-year term.
- The Education Board reported that the 2015 student grant and sponsorship allocations had been completed.

- Council appointed Don George, P.Eng., Satyanarayan Panigrahi, P.Eng., Connor Wright, P.Eng., and Jamie Tratch, P.Eng. to the Discipline Committee for a threeyear term.
- Council endorsed the addition of a World Education Services degree-by-degree International Credential Advantage Package assessment to the registration requirement for internationally educated member-intraining applicants.
- Correspondence from Robert Wares, P.Geo., informing APEGS that the Ordre des géologues du Québec had withdrawn from Geoscientists Canada was presented to Council.
- The next Council meeting is scheduled for April 16 and 17, 2015 in Saskatoon.

Update from the Saskatoon Engineering Society (SES)

The SES has initiated a strategic planning project to revisit the direction of the SES. All members are urged to provide input and guidance on where the SES should direct its energies in the future.

By working together to establish the organization's vision and goals, we hope to develop a strategic plan for the period 2015 to 2020 that will provide focus, direction and action to SES.

Further information relating to planning and other ongoing activities is available on the SES website at http://saskatoonengineers.com/ses-drupal/content/ specialevents



Help Wanted

Preliminary Reviewer Contract job opportunity with APEGS

APEGS is looking for a p.eng. to work on contract doing preliminary reviews of academic qualifications for the Academic review committee.

The preliminary review involves comparing the content of academic programs of internationally trained applicants to the relevant canadian engineering Qualifications board Syllabi.

For more detailed information on this opportunity please see the ad on the APEGS website under Job postings or contact Kate MacLachlan, Director of Academic review at **Katem@apegs.ca**.

Something to Brag About?

The January-February issue of The Professional Edge is all about you!

Our annual **Profile in Achievement** issue will profile Saskatchewan-based engineering and geoscience companies and projects. If you want your company or project profiled, or to recommend one, let us know.

Please contact: Professional Edge editor, Lyle Hewitt at **lyle@martincharlton.ca**

News From The Field

UNIVERSITIES AND RESEARCH



University of Regina engineering graduates receive iron rings

CBC News - Some University of Regina engineering students recently took part in a private ceremony that marked a major milestone in their lives. New graduates received a proud symbol of their profession at the Iron Ring Ceremony at the Delta Regina hotel.

Glenn Jones, P.Eng., is a mechanical engineer, and one of his daughters is an engineer as well. He presented his second daughter, Jacquelynn, with her ring.

"I'm sure that if they're like myself at that time, they don't quite appreciate the full magnitude of it, but they will as their careers proceed," Jones said.

He also said that there were fewer women engineers when he graduated a few decades ago.

"I think there were maybe two women that graduated when I did, out of 300," Jones said. "It was definitely a rarity back then."

While Jones said he let his daughters choose their own career paths, he is happy they decided to follow in his footsteps.

New process 'complicated' for foreign students

Saskatoon Starphoenix - New federal immigration rules make it much harder for international students to stay in Canada after studying in Saskatchewan, some near graduation say.

Two University of Saskatchewan PhD students and a recent grad all in science and engineering - say although they want to stay in Saskatchewan, they may have to leave the country.

A federal bureaucratic change on January 1 lumped international graduates in the same category as every applicant with Canadian work experience applying for permanent residency.

"That's when it started becoming complicated," says Siddharth Suresh, a 25-yearold University of Saskatchewan graduate who obtained a master's degree in chemical engineering. When he first came to Saskatchewan in 2011, the rules stipulated he should have a full-time job after graduation to be eligible to apply for permanent residency.

Now, that job offer must be in his field of study and must be a permanent job.

There are few permanent jobs in the province for chemical engineers, Suresh says.

For now, staying on a three-year postgraduate visa, Suresh works as a machine operator at Saputo Dairy Products - a job that pays the bills and has nothing to do with his training. Most of his friends who studied in Saskatchewan have moved to Alberta, where after working for one year, they can apply to be permanent residents through that province's nominee program, which includes a special stream for engineering jobs.

"I want to stay in Saskatchewan, but I can hardly find a job in Saskatchewan," he said, saying the rules have become too strict.

Shakhawath Hossain, a PhD student in mechanical engineering, says the federal and provincial rules are also stacked against students who want a career in academics.

"They don't really want us here. We don't have any options," he said.

Set to graduate in the spring, Hossain, 29, would like to apply for post-doctoral fellowships. That's the route many people take before seeking a job as a university faculty member. But postdoctoral fellowship is not considered a permanent job, making him ineligible to apply for residency through the federal program. Jobs eligible for the provincial program must last longer than two years, which some fellowships do not exceed.

U of S receives biofuel funding

University of Saskatchewan - Biofuel producers in Western Canada will soon be able to purify and convert raw glycerol more cost-effectively thanks to an investment of \$538,542, announced in February by the federal Western Economic Diversification agency.

With this funding, researchers at the University of Saskatchewan (led by chemical engineering professor, Ajay Dalai, P.Eng.) will be able to purchase highly specialized equipment for the development and commercialization of new, more efficient and affordable glycerol purification and conversion technologies.

Glycerol, a byproduct of processing oils such as canola into biodiesel, must be separated from biodiesel as it does not burn effectively. While raw glycerol has limited commercial value, the University of Saskatchewan's purification technology could double the price that companies can charge for the substance, in turn adding more value to biodiesel production.

The University of Saskatchewan plans to develop and file three patents, one for the purification technology and two for the conversion technologies. A Saskatchewan start-up company is expected to manufacture all three technologies for commercial use, and subsequently market them.

URANIUM AND NUCLEAR

Creighton will not be nuclear waste site

CBC News - The town of Creighton, SK, will not be the home of a nuclear waste storage site, an industry group has decided.

The Nuclear Waste Management Organization (NWMO) told the town it is no longer under consideration as a possible venue for storing used nuclear fuel because it wouldn't be safe enough.

Creighton, a town of 1,500 on the east side of the province next to the Manitoba border, had expressed interested in hosting a nuclear waste storage site.

Used nuclear fuel is currently stored at Canada's reactors, but they're running out of space. The industry is pursuing a plan to bury it deep underground.

Extensive geological surveys were done, but according to the nuclear waste organization, it found "geological complexities" that reduce the likelihood of finding a suitable site in the Creighton area.

Specifically, the analysis showed there was only one region of six that looked promising. However, access was limited, it was relatively small and fractures in the rock were a concern. "The studies show that there is limited potential to meet safety requirements of the project in the Creighton area," the March 2 letter to the mayor of the town says.

"In light of these findings, the NWMO will now conclude studies in your community," the letter said. "Safety, security and protection of people and the environment are central to the siting process, and it is important that we are guided by these findings concerning geoscientific suitability."

The organization is still considering a number of other sites around Canada.



Northerners debate uranium mine's effects

Canadian Press - French nuclear giant Areva is proposing to build one underground and four open-pit mines just west of Baker Lake, Nunavut on the edge of the calving grounds of one of the North's great caribou herds and near the largest and most remote wildlife sanctuary on the continent.

The \$2.1 billion project would provide at least 400 jobs, many reserved for local Inuit. Its annual payroll would be \$200 million for at least 17 years.

Areva has been considering the project since at least 1997. Its current plans have been before the regulator since 2007.

The company hopes its track record will soothe the concerns of local residents. Areva has been working with the community for years, opening an office in Baker Lake and flying residents to its uranium mines in northern Saskatchewan, where it has set up meetings with local Aboriginals.

Areva's plans would empty part of a lake, build a road through the habitat of a declining caribou herd and stretch a bridge across a Canadian heritage river. Planes loaded with radioactive concentrate would take off from its airstrip and barges with the same cargo would leave from its dock on Baker Lake.

Prof. calls for nuclear reactors in Saskatchewan

Regina Leader-Post - Duane Bratt, chair and professor in the department of policy studies at Mount Royal University, Calgary, would like to see as many as five nuclear reactors operational in Saskatchewan in the near future.

Rather than build one large nuclear reactor, Bratt proposes

that Saskatchewan could benefit from five 50-megawatt small modular reactors (SMRs).

The reason for five is, in the event that one requires maintenance, the other four can remain operational.

Modular reactors are similar to modular homes in that there is no large construction project. Instead, the parts would be built, transported to Saskatchewan and assembled upon arrival. Also, unlike contemporary reactors, SMRs would be sunk in the ground.

In terms of the concern over nuclear waste, Bratt noted that it has been stored for decades and is not active in the environment.

He added that more research needs to be done on how to recycle or reprocess nuclear waste, but even if all of the reactors were shut down, the issue wouldn't go away and a solution would still be needed. A solution would also be needed if we continue to add nuclear waste through more reactors, he said.

Recently the Nuclear Waste Management Organization ruled out Saskatchewan as a possible nuclear waste disposal site.

Comparing nuclear energy to coal, Bratt said if the issue was solely cost, coal would be preferable. But, he added, coal is "incredibly dirty" because of air quality and emissions.

Nuclear energy, he argued, is a cleaner and more efficient way of producing energy. As well, Saskatchewan could take advantage of the existing uranium industry.

INFRASTRUCTURE

Sask. town preps for new grain facility

Western Producer - A new grain handling company says it hopes to be buying grain from farmers in northeastern Saskatchewan before the end of the year.

Hanfood Group Holding Corp. announced plans last week to build a new grain handling facility and agricultural food park in Nipawin.

The proposed facility will include 46 000 tonnes of grain storage and a 134-car, loop-track siding that connects to lines owned by Canadian Pacific Railway. The facility is expected to cost \$20 million.

Timelines for construction were not specified, but partners involved in the project say preliminary site work is likely to begin in the next few months, once service agreements with CP have been finalized.

The company hopes to buy new crop grain this fall, although construction of its Nipawin facility is unlikely to be completed by then. Hanfood has business connections in Canada and China. The company said the Nipawin project is the first step in a larger plan to establish Hanfood as a recognized grain handling and food processing company with trading connections throughout the world. The company has longterm plans to establish additional grain handling facilities in other Saskatchewan communities, although a spokesperson would not provide details.

Sask. building permits top \$148M

Regina Leader-Post - The value of building permits in Saskatchewan fell by 29 per cent to \$148.6 million in January from \$209.8 million during the same period last year, the third-largest drop among provinces and more than double the national decline of 14 per cent, Statistics Canada reported Friday.

But Saskatchewan did post a 6.1-per-cent increase in building permit values over the \$140 million posted in December, largely on the strength of residential construction activity, mainly in the multi-family category.

Locally, February saw building permits worth \$55.5 million issued by the City of Regina in February, compared with \$64.7 million in the same month of 2014.

Last month saw building permits issued for a total of 196 residential units – multi-unit attached units, semi-detached units and single-family dwellings – compared with only 80 in the same month of 2014.

Balancing that, the total values of permits for hotel, commercial, industrial and government building construction and alterations was only \$31.7 million last month compared with \$50.5 million a year earlier.

Nationally, the value of residential permits declined 7.0 per cent to \$4.1 billion, following a 1.5 per cent increase in December, the report said.

"Decreases were registered in every province, except Saskatchewan, as a result of lower construction intentions for multi-family dwellings. Ontario, Quebec, British Columbia and Manitoba posted the largest declines. Saskatchewan posted an increase in the value of both single and multifamily dwelling permits," the federal agency said.

MINING

Mosaic announces \$1.7B expansion project

Regina Leader-Post - The Mosaic Company is doubling down on its five-year-old, \$1.5-billion K3 mine project at Esterhazy with a further \$1.7 billion investment, which will make the world's largest potash mine even larger. The expansion project will create 300 construction jobs a year – 600 at peak construction – and bring total investment at K3 to \$3.2 billion when production begins in late 2017.

"When complete, this will make K3 the largest, most competitive potash mine in the world," said Gerry Couture, vice-president, capital and engineering for Mosaic Potash, which is headquartered in Regina.

Walt Precourt, senior vice-president of potash for the Plymouth, Minnesota-based parent company, conceded these are "challenging" times for the potash industry, but said Mosaic was "choosing to see the current environment as a climate for growth" by proceeding with the expansion project.

"We are quite confident in the long-term outlook in food and potash and Saskatchewan," Precourt said. "It also reaffirms our commitment to growth at the Esterhazy site, the first potash mine in Saskatchewan and the world's largest."

The first stage of the K3 Project was approved in 2009 as part of Mosaic's long-term strategy to expand its potash business. In 2008, Mosaic embarked on a multi-billiondollar expansion program at each of its three mine sites in Saskatchewan – Belle Plaine, Colonsay and Esterhazy – which were expected to increase production by about 3 million tonnes. Mosaic currently produces 10.4 million tonnes of potash annually.

K3 will consist of two shafts, mine development and surface facilities. Sinking of the shafts began in 2013 and is expected to continue through to 2016, at which time the potash seam will be reached and mine development will begin.

"Standing 374 feet tall, there is no greater symbol of Mosaic's growth and investment in the future than the production headframe at K3 and the development of the shafts and the mine below," Couture said. The tallest building in the province, the headframe will house and operate the massive hoist and skips that will bring potash to the surface from nearly a kilometre underground, Mosaic said in a press release.

Man. potash mine meets with skepticism

Winnipeg Free Press - An initiative to kick-start what could be a multi-billion-dollar potash mine development in western Manitoba has begun.

The province, through a Crown corporation called Manitoba Potash Corp., recently sent a detailed information package to a number of targeted companies to gauge their interest in developing 28 024 hectares "of undeveloped, mineable high-grade potash deposits" north of Russell adjacent to the border with Saskatchewan. While there are some who believe the potash reserves in Manitoba are large enough to warrant production of a large-scale mine - which would mean the infusion of about \$5 billion in capital investment into the province - industry experts are not very optimistic there will be any takers.

"Interest from current players in a project like that is probably pretty remote," said Joel Jackson, a research analyst with BMO Capital Markets specializing in fertilizer companies.

"The potash industry is quite oversupplied right now and there is massive amounts of new capacity coming on stream in Western Canada and the world."

Spencer Churchill, an analyst with Paradigm Capital in Toronto, agreed with Jackson. "The likelihood is pretty small," he said of a Manitoba greenfield.

Promine sponsors annual Canadian Mining Games

Promine press release - Promine, an AutoCAD-integrated geological modelling and mine planning software company, announced its sponsorship of this year's 25th annual Canadian Mining Games which were held at the University of Saskatchewan.

A staple of Canada's rich mining history, the Canadian Mining Games is held every year to provide collegiate-level students interested in pursuing careers in Canada's thriving mining industry an opportunity to expand their knowledge and test their skills in mining and geology design. The event attracts mining and geology experts as well as mining industry recruiters, opening a robust networking channel participants can take advantage of.

The Canadian Mining Games is an annual three-day event. The competition is broken down into three categories; a technical competition featuring the Promine Challenge, mine design, mineral processing and more; practical applications, featuring equipment handling and mine rescue, to name a few; and a variety of oral presentations.

Promine is an active proponent of education in mining and geology. Apart from the company's involvement in scholastic events for mining and geology, Promine's software donation program grants universities around the world and their students free access to Promine's mining software for career readiness.

News Beyond Our Borders



Hospital project wins award

Canadian Consulting Engineer – A construction project involving the expansion and renovations to the Markham Stouffville Hospital northeast of Toronto was selected as Project of the Year by Professional Engineers Ontario's York Region chapter in early February. The project involved 385,000 square feet of new building, and renovations to 331,000 square feet of existing building, amounting to \$400-million. Demolitions to the structure and mechanical-systems were done while the hospital kept operating, and new features include floating floors to accommodate vibrations from a helipad on the roof. It is the first hospital in Ontario to have a central utility plant that supplies thermal energy, electricity and emergency power through Markham District Energy. The team included PCL Constructors, B+H Architects, The Mitchell Partnership (mechanical, LEED), Mulvey + Banani (electrical, IT), MMM Group (civil), Quinn Dressel (structural) and Aercoustics (acoustics).

Hyperloop to become a reality

Canadian Consulting Engineer - A completely new form of transportation is going to be built in California, beginning in 2016.

The hyperloop is the brainchild of 43-year old Elon Musk, famed inventor and entrepreneur of Tesla, SolarCity and PayPal.

The concept of the hyperloop involves a tube with a low pressure environment, inside which passenger pods travel at almost supersonic speeds. The company says the pressure inside the tube will propel pods up to over 1200 kilometres an hour. Magnets and fans will push the passenger pods, which hold 28 people, through the tubes.

After Musk described the concept in a 57-page white paper in 2013, he handed it over to the public for anyone to develop. From a group of 100 interested engineers and designers who honed in on the idea, a company has evolved called Hyperloop Transportation Technologies. The company was founded by JumpStarters using its crowdfunding and crowd collaboration platform.

The company has struck an agreement to install the system along a five-mile stretch of the planned community of Quay Valley. Quay Valley will be a sustainable community that will be an environmental showcase and will operate on 100 per cent solar power.

According to the BBC, Musk described the hyperloop as a "a cross between Concorde, a railgun and an air hockey table."

Floating wind turbines could aid remote communities

Canadian Consulting Engineer - A company founded at the Massachusetts Institute of Technology has developed a floating wind turbine.

The Altaeros Buoyant Airborne Turbine, or BAT, is described as "a balloon that lifts a wind turbine." It can float up to 600 metres high, catching strong wind forces at these upper levels. A wind tower turbine is around 150 metres at the most.

The BAT's helium-inflatable shell holds a lightweight turbine, while multiple tethers connect it to a mobile ground station. The system is capable of generating more than twice the energy of a similarly rated wind tower turbine.

The first BAT model is approximately 15 x 15 metres and containerized. It could be installed within 24 hours, making it a potential source of energy for communities and industry in remote areas.

Altaeros received \$7 million towards developing and commercializing its technology from the US National Science Foundation.

Drone used on Edmonton construction project

Canadian Consulting Engineer - A company called DIALOG flew the first drone flight in downtown Edmonton at the end of January. The company and Skymatics were granted a special flight operations certificate from Transport Canada to take footage of two projects that are under construction: the Edmonton Arena and Walterdale Bridge.

DIALOG is part of the architectural and engineering teams for both projects. It is providing structural engineering with Thornton Tomasetti at the Rogers Place Arena, and the firm is part of the engineering team with Buckland & Taylor and ISL for the Walterdale Bridge, which is expected to open to traffic later this year.

Jeff DiBattista, principal of DIALOG, explained the reasons for using drones.

"In the past we only had photography available to capture projects. Photography then evolved to virtual tours, then came virtual reality such as fly-through videos. Now technology is allowing us to create augmented realities which lets clients experience their projects before completion, and drones which capture projects in ways photography can't."

In the case of Walterdale Bridge, for example, an aerial view captures both sides of the riverbank and provides a better understanding of the project site and traffic flow. Once the bridge is completed, a drone will also be able to photograph the face of the bridge from a horizontal sight line.



Treatment plant expansion protects St. Lawrence

Canadian Consulting Engineer - A \$55.5-million expansion to a wastewater treatment plant in Cornwall in eastern Ontario is the largest construction project that the city has ever undertaken.

The new treatment improves the effluent and will reduce the number of sewage discharges into the St. Lawrence River.

J.L. Richards and Associates were the consulting engineer on the project, which took two years. Secondary treatment was added, with biological aerator filtration along with ultraviolet disinfection. The sludge thickener was upgraded and the plant's overall capacity was expanded. To house the new processes, buildings were added on the existing site. The plant dates originally from 1968 and serves the entire population of 46,000 people in the city which lies between Kingston and Montreal on the St. Lawrence River. The plant last had a major expansion in 1985, but the latest changes have increased its capacity from 108 000 to 149 000 cubic metres per day.



UBC engineers develop cheap, handheld biochemistry lab

Design Engineering -Engineers at the University of British Columbia's Okanagan campus have developed a hand-sized biochemistry laboratory capable of detecting infectious diseases in microscopic drops of blood, or the presence of chemical weapons and other biohazards.

Housed in a 3-D printed enclosure, the small device integrates with a common smart phone to form an inexpensive and portable testing device that could be used in remote or resource-limited areas.

The system uses several technologies developed by the ACIS lab. Foremost among them is a digital microfluidic processor (i.e. lab-on-a-chip) that precisely controls electrical fields to move sample droplets in and around a chip.

Typically such chips are fabricated on glass wafers and cost \$5 apiece. In contrast, the UBC team's lab-on-a-chip uses conductive ink screen-printed onto paper. This allows several yards of the paper chips to be printed quickly and thereby reduces the price per chip. Hundreds of the paper chips can be manufactured for \$5. In total, the cost of the entire laboratory could potentially be less than \$100.

In addition to the chip, the engineering team also developed the lab's electronics. A rechargeable 3.7-volt battery supplies enough power to manipulate the droplets of sample fluid. The device is monitored and controlled via Bluetooth wireless commands from a smart phone.

At present, the device is simply a working prototype but researchers are seeking an industry partner so they can refine the technology for commercialization. In addition, the team is working with colleagues at UBC, McGill University and other institutions – including Canada's National Design Network – to develop applications for the device.

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Calendar Of Events



APEGS Law and Ethics Seminar April 10 -11, 2015, Saskatoon SK www.apegs.ca/Portal/Pages/Professional-Practice-Exam

Work Experience Reporting Orientation Session Apr 16, 2015 11:30 a.m., Saskatoon SK www.apegs.ca

RES Horizons Dinner April 23, 2015, Regina SK

Society of Petroleum Engineers (SPE) Tight Oil Workshop Apr 28-29, 2015, Lake Louise, AB www.spe.org/events/15aban/

APEGS Annual Meeting May 1-2, 2015, Regina SK

51st IEEE Industrial and Commercial Power Systems Technical Conference May 5-8, 2015, Calgary, AB www.cvent.com/d/krqk3b

Threatened Infrastructure: Our Changing Water Cycle and Its Consequences May 07, 2015, Winnipeg, MB bit.ly/1FgnO7V **CIM 2015 Convention** May 9-13, 2015, Montreal, QC www.convention.cim.org/en.aspx

New Dimensions: Canadian Institute of Mining 2015 Convention May 9-13, 2015, Montreal, QC convention.cim.org/en.aspx

Concrete Forum and Seminar - ACI May 20, 2015, Saskatoon SK info@acisaskatchewan.org

Canadian Society of Civil Engineers Annual Conference May 27-30, 2015, Regina SK www.csce2015.ca

APEGS Professional Practice Exam May 30, 2015, Regina and Saskatoon SK www.apegs.ca/Portal/Pages/Professional-Practice-Exam

Preparing for Future Challenges to Canada's Water Resources 68th CWRA National Conference June 2-4, 2015, Winnipeg, MB www.cwra.org/en/events-news

Canadian Green Building Council: Building Lasting Change 2015 June 2-4, 2015, Vancouver, BC www.cagbc.org

THRIVE 2015 - CIP / SPPI Conference

Jun 27-30, 2015, Saskatoon SK www.cip-icu.ca

Innovation in Water, Energy and Biosystems Jul 5-8, 2015, Edmonton, AB csbe-scgab.ca/edmonton2015

A Climate of Change Western Canada Water 2015 Annual Conference September 15-18, 2015 Winnipeg, MB www.wcwwa.ca/events

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