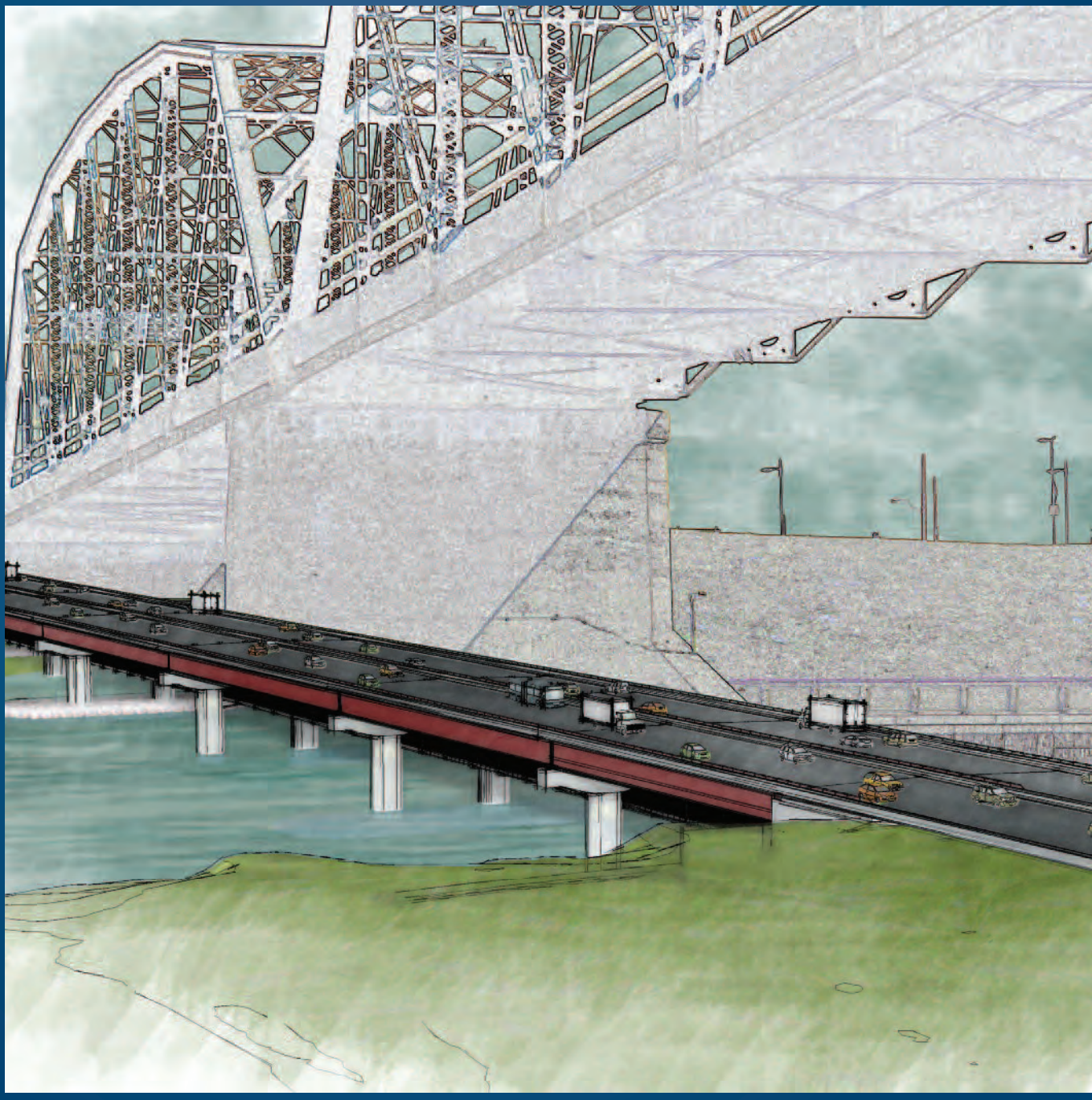
THE PROFESSIONAL

EDGE

ISSUE 141, NOVEMBER/DECEMBER 2012



Then and Now

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Structural Engineering for Non-Structural Engineers	24	Winnipeg			22-25
Foundation Design	18	Regina			24-26
ELECTRICAL			**Feb**	**Mar**	**Apr**
Applications of Power Capacitors in the Operation of Electrical Equipment and Systems	18	Winnipeg		6-8	
Electrical Design Concepts for Non-Electrical Engineers	18	Winnipeg			8-10
ENVIRONMENTAL			**Feb**	**Mar**	**Apr**
Small Communal Wastewater Treatment Systems	12	Regina	21-22		
Understanding Environmental Regulations	17	Regina	25-27		
Designing Wastewater Pumping Stations and Lift Stations	17	Winnipeg			15-17
MECHANICAL			**Feb**	**Mar**	**Apr**
Design of HVAC Systems	18	Winnipeg		4-6	
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Achieving a Safe and Prosperous Future through Engineering and Geoscience

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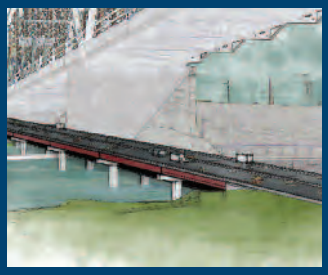

Collage created from archival bridge photo and City of Saskatoon concept drawing.

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President's Report

As engineers and geoscientists, our professions have made huge contributions to the growth of our province. The theme of this issue of *The Professional Edge* is "Then and Now," so I think it is only appropriate to put forth a few statistics on how things have changed.

THEN: The 1964 Annual Meeting of the Association of Professional Engineers of Saskatchewan (APES) reported a total membership of 1,120 members. The APES Annual Report for 1987-88 reported total membership of 2,900 members for a growth over the 24-year period of 159 per cent.

NOW: Earlier this fall, the total membership in the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) topped 10,000 members. Over this more recent 24 year period, our membership has grown by 245 per cent relative to 1988. This equates to growth in membership of 793 per cent since 1964.

THEN: The Saskatchewan Bureau of Statistics, Ministry of Finance reported a population in Saskatchewan of 928,061 on October 1, 1971, which was a decrease of more 4,600 people from July 1 of that same year. The net out-migration for that three-month period was more than 6,300 people, while the natural population growth (the difference between births and deaths) for the period was approximately 1,700.

The population of Saskatchewan on October 1, 1988 was reported to be 1,025,453 which was a decrease of more than 3,300 in the three months from July 1 of that year. The total net out-migration in the same three-month period was about 5,250 people. The population declined further to just over 991,000 on April 1, 2006.

NOW: On April 1, 2012, the population was reported to be 1,073,107, an increase over the prior three months of more than 6,800 people, including net in-migration of more than 5,400 people. The population increased by a further 6,800 people by July 1 this year.

THEN: In 1971, the population distribution in Saskatchewan was approximately 53 per cent urban, 47 per cent rural.

NOW: In 2011, the population distribution in Saskatchewan was approximately 65 per cent urban, 35 per cent rural.

THEN: In 1991, the total Saskatchewan labour force was approximately 459,000 people with agriculture having a labour force of approximately 88,000, or approximately one in five Saskatchewan workers being involved in agriculture.

NOW: In 2011, the total Saskatchewan labour force was approximately 526,000 while the agriculture labour force had declined to approximately 39,500 or approximately one in 13 workers being involved in the agricultural sector.

THEN: In 1991, the total value of building permits issued in Saskatchewan was approximately $327 million.

NOW: In 2011, the total value of building permits issued in Saskatchewan was approximately $2,614 million.

THEN: In 1986, the per capita new capital expenditures in Saskatchewan were $4,174, as compared to $3,705 for Canada and $5,125 for Alberta.

NOW: In 2011, the per capita new capital expenditures in Saskatchewan were $18,275 compared to $10,758 for Canada, and Alberta at $23,461.

Why did I pick 1964 and 1988?

Well it was actually sort of fortuitous on the dates. 1964 was the year that my parents brought me into this world. 1988 was the year I graduated from the College of Engineering at the University of Saskatchewan. Just coincidentally, I had two periods of 24 years. Unfortunately I wasn't able to locate all of the statistics for these two dates. I had to rely heavily on the Saskatchewan Bureau of Statistics and Statistics Canada to get the other information presented above. But I think the stats present an interesting picture.

So what does all of this mean?

To start, our province has been through periods of population growth and decline. The population in 2006 was the same as the population in 1982 and only marginally higher than in 1971.

In the last 40 years we have seen a major shift from a rural population base to a more urban population base, which is reflected in the agricultural labour force which has dropped by more than half in the last 20 years. This drop has largely been achieved as a result in an increase in efficiencies brought about by engineering advances in the technology of agriculture.

With the change in population base from rural to urban, there is a greater demand on the infrastructure in our cities and towns. And with the increase in construction activity for new capital projects, there is a huge demand for engineering in advance of these projects. When you also look at the growth in the mining and oil and gas industries, one easily recognizes the increased demand on our geoscientists who are involved long before any capital spending on these projects.

Getting back to the increase in our membership, it is worthwhile noting that in 2005, our total APEGS membership stood at about 5,000. The membership truly began the current upward spiral in 2005 and 2006. So while it took about 20 years to double the 1964 level membership, it took 15 years to double the 1988 level membership, and it has taken less than eight years to double that again. The growth in our membership preceded the economic boom we have seen in this province and I believe it is a good sign that engineers and geoscientists truly are key economic drivers for our economy.

Since May 1, 1930 when *The Engineering Profession Act* was first passed, our association has always provided strong leadership and effective regulation of our professions. Prior to the signing of the Inter-Association Mobility Agreements, an engineer or geoscientist who wanted to work in more than one province or territory would be required to navigate their way through the myriad of different registration processes and deal with variations in the licensing requirements. Working with our sister associations across the country, we are now able to facilitate the rapid movement of geoscience and engineering talent across our provincial and territorial borders, to meet the needs for the projects that are driving our economy forward. And we do this while upholding our commitment to protect the public and the environment.

Leon Botham, P.Eng.
President

IMPORTANT NOTICE:

Emails Needed!

Do you have an email address on record with APEGS?

APEGS is relying more and more upon email distribution to notify members of upcoming events, including APEGS-organized events. In some cases, such as the new Work Experience Reporting Orientation Sessions, no notice is sent by regular mail.

If you don't have an email address on record with APEGS, either phone the office at 525-9547 or toll free 1-800-500-9547 or email us at apegs@apegs.sk.ca.

To change your preferred email address if you already have one on record, contact us by phone, email or log on to APEGS Member Services: go to the APEGS website at www.apegs.sk.ca and click on the link "On-Line Services." Your user name is your 5-digit registration number and if you have forgotten your password or if it is your first time logging on, you can obtain your password by clicking on "New password / Forgot password." Enter the information requested and an email containing your password will be sent to the preferred email address on record with APEGS.

If you have any questions, please contact the APEGS office.

Something to Brag About?

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

Our annual Company Profiles issue will profile Saskatchewan-based engineering and geoscience companies and projects. If you want your company or project profiled or would like to recommend one, let us know.

Please contact:
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Oil's Well In Saskatchewan

BY MARTIN CHARLTON COMMUNICATIONS WITH SOURCES FROM THE ENCYCLOPEDIA OF SASKATCHEWAN AND THE GLENBOW MUSEUM

Saskatchewan Archives

Records show that in 1874, geologists at Fort Pelly in what was then the North-West Territories were given the task of digging wells for water to supply the fort. Instead, they stumbled upon petroleum, a relatively worthless substance used mainly for medicinal purposes. Today, the oil and gas sector has grown to become one of the economic engines of the province.

Over the course of the intervening 138 years, the petroleum industry has evolved in many ways. Technologies for exploration and extraction have changed dramatically. The province has seen several boom and bust cycles over the decades.

Will Saskatchewan's current boom period be sustained or is it headed for collapse? Experienced veterans and visionary innovators in the field offer widely different answers.

A Slow Start

Although the presence of oil in Saskatchewan has been known since the 19th century, commercially viable reserves remained hidden until halfway through the 20th century.

In the 1930s, geologists theorized the existence of the oil-rich Williston Basin stretching across Montana, North Dakota, southeast Saskatchewan and southwest Manitoba. The find led the Saskatchewan government to offer generous incentives for exploration in the 1940s. Imperial Oil drilled a few exploratory wells, but when no viable discoveries were made the company quickly abandoned the province.

The search for oil was hampered in part by the exploration methods used at the time. In a memoir for the Glenbow Museum, legendary Saskatchewan petroleum geologist Jack Porter complained of the use of dowsers in the industry.

"When I started to work with this company [in] 1948 that there were actually professional dowsers in my office claiming they could locate the position of oil. I was told that a dowser had used a cigar box with a bullfrog in it with batteries and a button concealed underneath that he would press, resulting in a slight shock to the bullfrog. The jolt of the box would determine the position of the well to be drilled," Porter said.

Not until the famous Leduc discovery in Alberta did the oil industry start paying more serious attention to neighbouring Saskatchewan. In October 1952, Imperial Oil's Tidewater Wapella well went into production. Others soon followed. According to Don Kent, P.Eng., P.Geo., the growth of the industry could be tracked through the listings of oil companies in the Regina phone book.

"In 1948, there was only one. By the time I came along in 1958, there were 29," Kent said.

Kent initially worked as a researcher for the Saskatchewan Department of Mineral Resources. With an eye to putting the era of dowsers in the past, the department established a Regina lab to store and study drill cores. The deputy minister himself would sometimes drop in to discuss matters pertaining to the industry.

Saskatchewan Archives

Boom and Bust

Kent got into the industry at the tail end of the province's first boom. By 1959, that first rush of activity was over and companies moved on.

Kent was among the lucky ones who stayed productively employed in the field during those dry years. He was on hand to witness the next boom starting in 1964.

"Those years from 1964 to 1970 involved companies extending existing resources rather than finding new ones," Kent said.

According to Kent's observations, the end of that cycle came about more due to politics than resources.

"When the government set up SaskOil and raised utilities, a lot of companies just packed up and moved back to Alberta because they felt the government was easier to deal with there."

But even in Alberta, the industry couldn't escape political factors.

"The National Energy Program had a devastating effect on the whole industry, but especially in Saskatchewan because it was more costly to drill here and the royalties were higher."

www.cbc.ca

Bakken Business

According to Kent, from the 1970s through to the end of the century the industry went through a number of smaller ups and downs. Then a perfect storm of discovery and innovation came together to transform the Saskatchewan oil industry.

The Bakken Formation (named for the Montana farmer on whose land the original exploration was done) was initially discovered in 1953. As far back as 1974, geologists theorized that the formation might hold a significant amount of oil. But it wasn't until 1995 that Denver geologist Leigh Price astounded the world with his estimate of its potential. He determined that the Bakken had estimated potential reserves of over 400 billion barrels; in contrast, the Ghawar oil field in Saudi Arabia holds 128 billion barrels.

The problem was that the Bakken oil was caught between rocky formations that made it nearly impossible to extract by conventional methods. Horizontal drilling helped to make some of it more accessible. But the secret key to the Bakken treasure chest came with the development of fracturing – a process that involves pumping high-pressure sand into the well, causing rocky layers to collapse, thereby freeing the oil to flow up.

These discoveries acted like pulling a cork off a champagne bottle in Saskatchewan's Southeast.

"These days almost all the interest in drilling is in the Bakken. Almost all the land leased out for drilling is down there – so much so that you can hardly get any more," Kent says.

Where We Are At

The interest in the Bakken has created an unprecedented interest in oil production in Saskatchewan. The rush of companies into the area has brought investment and population growth to the cities and towns of the southeast but has also brought the problems of growth. The region suffers from frequent labour shortages and cannot build housing fast enough to accommodate the influx of workers.

According to *The Encyclopedia of Saskatchewan*, Saskatchewan's oil production is second only to Alberta among Canadian provinces, and provides about 20 per cent of all Canadian production. The province's daily production was 432,000 barrels per day in 2011; in comparison, Saudi Arabia produces, on average, 8.5 million barrels per day.

Surging Ahead

While fracturing technology has unlocked a vast amount of the province's oil potential, researchers and oil companies are not resting on their laurels.

The federal and provincial governments, along with industry partners, have invested in the Petroleum Technology Research Centre in Regina, a research institute investigating new extraction technologies such as using water, solvent vapours and gases to boost the viscosity of oil, making it easier to pump out of the ground.

PTRC's most famous project is the Weyburn-Midale CO_2 Monitoring and Storage Project. The project involves injecting huge volumes of CO_2 into oil wells in order to produce a dual benefit: increasing well productivity by pushing oil to the surface while at the same time testing the potential of storing greenhouse gases underground.

But according to APEGS Past President Steve Halabura, P.Geo., FEC, developments in extraction technologies are not the only innovations driving the industry.

"Geomatics are a less recognized but critical tool in changing the way companies look at resources. Sequenced stratigraphy – the study of rock layers – has vastly improved our way of looking at resources. We have at our disposal these days massive amounts of digital data, allowing us to map out southeast Saskatchewan at a level in a way we could not easily achieve before. Mapping exercises that would have taken humans months can now be done in days."

To Halabura, the ability to visualize and conceptualize a resource is just as important as the ability to extract it.

"The great petroleum geologist William Pratt once said 'oil is found in the minds of men.' Any tool that allows us to improve those minds, to improve our ability to perceive where resources can be found, is extremely important," Halabura said.

Looking Forward

As exciting as Saskatchewan's current oil boom is, it casts a certain chilling shadow. With every boom comes a bust. How long will the province's current good fortune last? Opinions are varied.

Kent, with the perspective of experience, takes a reserved view.

"I think we're heading for a time of declining production – to the gradual end of the boom. Looking further down the road, say 20 years, I think alternative forms of energy will become more prominent and the importance of petroleum as a fuel source in general will decline," Kent said.

Halabura maintains the excitement of an enthusiastic visionary.

"I have restless creativity on this subject. I think the province has multi-billions of potential conceptual barrels yet to exploit. Looking in the crystal ball, I see continued advances in extraction technology that could push our reserve recovery rates from the 10-30 per cent of today up as high as 80-90 per cent. In the longer term – 20 years or more away – I believe we will find ways to create new oil by 'cooking' organic matter with source rock and then extracting the oil. All in all, I firmly believe the Saskatchewan oil industry has a long, bright future ahead of it."

Bridges – A Love Story

BY MARTIN CHARLTON COMMUNICATIONS

There are few romances in Saskatchewan quite as deep as that between the residents of Saskatoon and their bridges. Despite the civic slogan, Saskatoon is not so much a "City of Bridges" as it is a city of bridge lovers. Residents are known to pick favourites, to navigate according to them and to carry on some of their most intense civic debates about the past, present and future of their beloved bridges.

In a river town, bridges dictate much of the evolution of the community. In this environment, the civil engineers almost become artists. They become responsible for traffic patterns, urban development, city aesthetics and more.

Over the course of the past century, the scale, scope and techniques of Saskatoon bridge building has changed enormously. A look at the two extremes of development the oldest and the newest bridges in Saskatoon – shows how much both bridge-building and the city have changed.

THEN – The Traffic Bridge

In 1906, the banks of the South Saskatchewan River were home to a hodge-podge of small towns and villages gradually congealing into a single community. The east side community of Nutana demanded a bridge for foot and vehicle traffic as a condition for joining the towns of Riversdale and Saskatoon to form the City of Saskatoon.

Not unlike megaprojects of today, the provincial government assisted with the funding and provided the design. Construction was tendered to a Winnipeg contractor while fabrication was given to the appropriately named Canadian Bridge Company from Windsor, Ontario. The entire project cost the grand sum of $106,000.

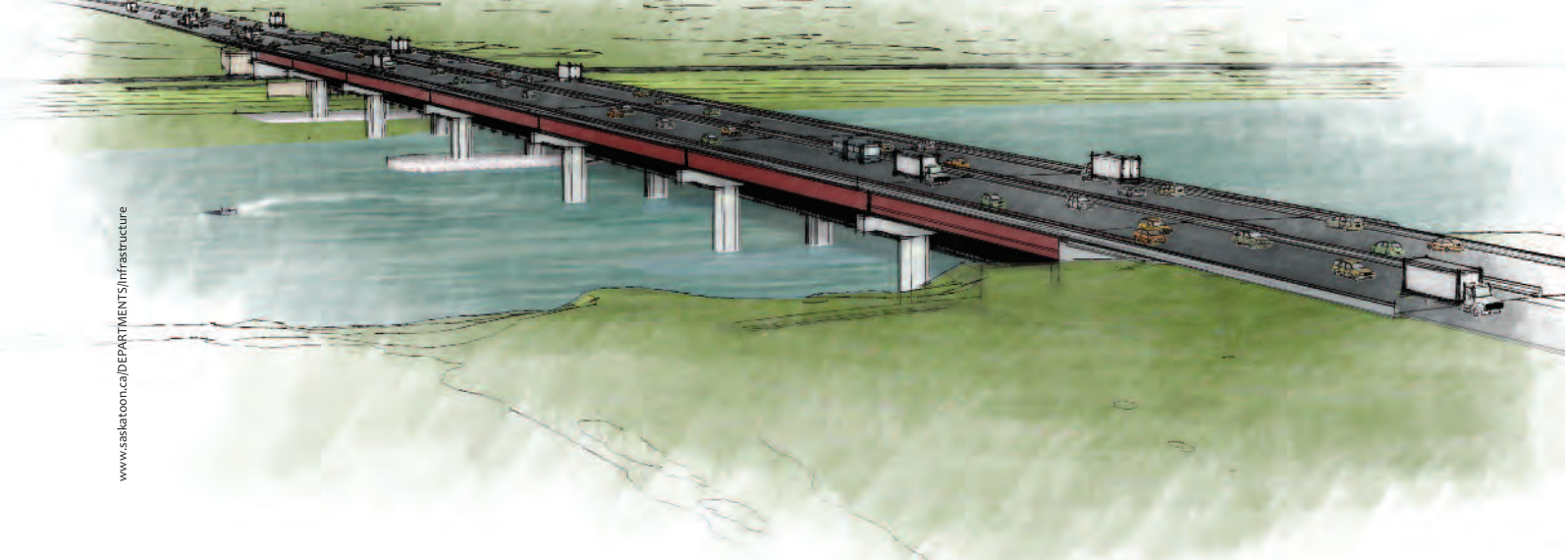
Officially opened on October 10, 1907, it is a truss bridge that consists of one 53 metre span at each end with three central spans, each 61 metres long, supported on concrete piers and abutments.

"You can see just by looking at it that every piece of each truss is riveted together – a very labour-intensive way of building a bridge. Of course, we wouldn't do it that way now. Today, we have longer spans that have less labour intensive girder and deck construction. We can also use larger equipment to build bridges," says Rob Frank, P.Eng. with the City of Saskatoon Infrastructure Services (IS).

In terms of capacity, the bridge pales in comparison with modern bridges.

"Final rated capacity was 5 tonnes. To put that in perspective, a a non-permit semi could weigh as much as 62.5 tonnes," says Dan Willems, P.Eng with IS.

The classic folk rock band America may have crossed the desert on a horse with no name but generations of Saskatonians crossed a bridge with no name. The iconic metal truss bridge that helped secure Saskatoon's status as a city went without an official name for nearly a century.



www.saskatoon.ca/DEPARTMENTS/Infrastructure

City residents referred to it by a half-dozen different names – including the Victoria Bridge, the Iron Bridge, the 19th Street Bridge and the Black Bridge. Finally, in 2007 the city officially named it the Traffic Bridge.

Over that century, the bridge traffic evolved from foot traffic and horse-drawn carriages to streetcars and automobiles. But time is not kind to steel bridges. Gradually a combination of environmental factors and simple wear and tear left the bridge structurally unsound. In 2010, it was declared structurally unsound. While many in the city defended its heritage value, a study by Stantec determined that, at a minimum capital cost of $27 million, it would be too expensive to put the bridge back into service as functioning infrastructure.

"We have started demolishing the old bridge. We are looking into building a replica bridge with wider lanes and walkways on each side to replace it, but that's still in the concept stage. We are currently working to secure funding to proceed," Willems says.

NOW – the New Circle Drive South Bridge

Saskatoon's burgeoning population and growing importance as a trade centre has opened up a new era of bridge building, starting with the long-awaited Circle Drive South Bridge.

"The new project involves a six-lane bridge with eight spans of steel girders and concrete. It will stretch roughly 422 metres across," says Frank.

Combined with the other aspects of the project, including expanded freeways, sound walls and pedestrian paths, it will be the biggest megaproject in the city's history, costing over $300 million.

The main bridge structure will include 24 girders, each of which weighs roughly 45 000 kilograms and is designed to hold a total capacity of 230 tonnes.

"One of its biggest benefits will be freeing up capacity on other bridges and reducing traffic congestion. Our modelling shows that it should have traffic counts around 15,000 vehicles per day initially, growing to 30,000 over time," says Willems.

While the bridge is now mostly complete, the contractor has advised the city that the project is behind schedule. It is currently expected to be finished sometime in 2013.

Ahead?

Frank notes that the new South Bridge is likely only the first of several new bridges that may go up in Saskatoon in the medium term.

"We just build as the city grows. With the boom going on, there is more need."

Commerce is the single biggest defining force in most bridge projects.

"Truck traffic is really what has driven bridge design. At the turn of the 20th century, heavy transportation was all done by rail. Now we have to design bridges for more and bigger truck traffic," Frank says.

IS is currently studying building a new North Bridge which has become the subject of political posturing. In his re-election bid, Mayor Don Atchison promised to have the North Bridge completed by 2016. IS engineers are performing preliminary work to get the north bridge started.

"In addition to the North Bridge and the possible Traffic Bridge replica, we are also starting to give some thought about whether we are at the point of needing another core bridge," says Willems.

"Beyond that, who knows? Like most cities in North America, Saskatoon is now at the point where much of our original infrastructure is 100 years old and has to be replaced. It will be interesting to see what happens once the infrastructure from the construction boom of the 1960s gets to be 100 years old."

Radient Success: Uranium Mining Then & Now

BY MARTIN CHARLTON COMMUNICATIONS WITH SOURCES FROM CAMECO AND THE SASKATCHEWAN MINING ASSOCIATION

Saskatchewan Archives

Cameco officials enjoy calling Rabbit Lake the "Energizer Bunny" of uranium mines since it has stayed in production nearly 30 years longer than originally projected due to the discovery and development of additional desposits. In many ways, that colourful description could be applied to the entire Saskatchewan uranium industry. Through good times and bad and in the face of enormous technological change, the industry has survived and thrived as one of the province's key economic drivers.

The uranium industry has come a long way since its earliest days in the province but, then and now, it is an industry steeped in both great risks and great rewards.

History

The early Cold War history of Saskatchewan's uranium mining industry was built on a certain irony. To support our allies' fight against communism, the federal government established an absolute monopoly over uranium exploration, mining and development through its Crown corporation, Eldorado Mining and Refining.

When the ban on private exploration was lifted in 1947, Saskatchewan experienced a rush of prospectors who ultimately discovered massive deposits in the Athabasca Basin and leading to the original "Uranium City" – originally just a hodge-podge of tents surrounding the mine sites.

The discoveries paved the way for Saskatchewan's status as one of the leading exporters of uranium in the world. So large and extensive are the province's uranium deposits that they are scattered across almost the entire width of the province – from the sites of the former Uranium City mines in the Northwest to the Rabbit Lake mine in the Northeast.

The earliest mine sites, such as the Gunnar and Beaverlodge mines, have long since been mined out. They have left behind a legacy of mining practices that have helped guide and improve mines today.

"The whole idea of a planned mining industry town is becoming much less common. The logistics of flying people in and out to temporary camps has become much easier and more effective," says Scott Bishop, P.Eng., Principal Mine Engineer at Cameco's head office.

Rabbit Lake

The star of the second generation of Saskatchewan uranium mines is Cameco's Rabbit Lake mine and mill operation. Ore was discovered in 1968 and the mine went into operation in 1975. Except for a brief hiatus between 1998 and 2002 due to depressed uranium prices, it has defied original projections by remaining in operation ever since.

Google "Rabbit Lake" and you will quickly find a host of superlatives: it is the second largest uranium milling facility in the western world, and the longest operating uranium production facility in Saskatchewan. It has been the

recipient of numerous safety and operating awards. It was the first Canadian mine to distinguish itself from the old mining town model by implementing a seven-days-in/seven-days-out commuter system for its workers.

The mine is actually not one but a series of deposits that Cameco has successfully exploited over the decades. While modern uranium mining in Saskatchewan is associated with increasingly complex underground mining methods, Rabbit Lake began its existence as an open pit mine.

"The uranium was extracted in much the same way you would mine any other mineral in a surface deposit, but there were certainly more safety precautions taken due to the radiation but there have been trade-offs. There are some health and safety considerations with underground uranium mining that you would not have to deal with at an open pit mine," says Bishop.

Over the course of its 37 years in operation, the mine has produced over 186 million pounds of U3O8. Cameco has also been investing in the on-site milling facilities to allow them to handle not only Rabbit Lake's ore but also that of other regional mines. The original pit mine continues to be used as a tailings facility.

Cameco

Cigar Lake

If Rabbit Lake symbolizes the endurance of the uranium industry, Cigar Lake symbolizes its tenacity. The project was scheduled to be in production by 2007 but a series of setbacks have continually delayed the projected production date which is currently set at late-2013.

"What we've accomplished here should be on the Discovery Channel. It has been a story of passion, stubbornness, creativity and teamwork," said Cameco vice-president Grant Goddard, P.Eng.

The reason for the company's determination is easy to understand: Cigar Lake is the world's largest undeveloped deposit of high-grade uranium. Excluding McArthur, Cigar Lake has the potential to produce more high-grade uranium than all of Cameco's other mines around the world combined. But reaching these treasures has proven to be perhaps the biggest challenge the company has ever faced. The mine site was hit by a catastrophic inflow of water in 2006, only to be hit by another one in 2008 just as the site was nearing remediation.

Dealing with the flooding problems has led Cameco to develop innovative approaches, including the use of remote-operated mini-submarines to assist with the sensing and repair work, and a water suppression system that essentially amounted to a 3,000-pound compressed towel.

The innovation will continue once the mine is in operation.

"For starters, we are taking ground freezing literally to a whole new level – down as far as 480 metres," says Bishop.

Bishop also notes that the mine will use cutting-edge jet boring technology to extract the uranium. This involves using water under high pressure to carve out cavities in the ore body and then collecting the resulting ore slurry. The Cigar Lake mining process also involves backfilling the cavities in the ore body with concrete once the ore is removed.

"Using jet boring will help us minimize the hazard of mine workers being exposed to uranium by doing more of the mining essentially by remote control," says Bishop.

Evolution

Bishop has seen a lot change in the industry during his time at Cameco but says that much has also stayed the same.

"In terms of the basic equipment involved in conventional mining, not much has changed really. Where the biggest changes have come over the decades have been in data processing and communications. On the data side, the speed of computers today allows us to process and visualize a lot more information than 20 years ago."

"Today's communications technology has also allowed many improvements, especially in health and safety. Many mines now have systems that allow you to know exactly where workers are located so, in the event of an accident, you know how many to look for and where to find them."

Bishop sees both those trends continuing.

"Like many in the mining industry, one of our biggest challenges is finding people – recruiting enough skilled workers to fill the jobs. As this gets harder and harder, we're going to have to come up with new ways of doing these mining tasks with fewer people through things like more automation and teleremote operation."

Member Profile

This month *The Professional Edge* chats with Cory Zubrowski, P.Eng., a geotechnical engineer with MDH Engineering in Saskatoon.

Tell us about your personal and professional background.

I was born and raised in a very small town called Prairie River, which is near Hudson Bay in northeast Saskatchewan. I went to high school in Hudson Bay and went to university in Saskatoon.

Why did you choose to go into engineering?

Actually, I didn't go into it right away. After high school, I spent one year working at a labour-intensive job and realized that I didn't want to do that for the rest of my life. I went back and talked to my former high school teachers to get advice on what I should do, and one of them told me about some cool stuff his son (an engineer) was working on. I had an affinity for science and math so it made sense.

What was your biggest challenge in college?

Having no money! I also had to learn to work hard to get good grades. It wasn't like high school, which I'd found easy. When you're paying for your education, you don't want to waste it. In particular, I hadn't taken calculus before so that was challenging.

What was your first job after college?

I worked for Schlumberger, an oilfield services company, and was based in Leduc, Alberta. I was a wireline engineer (geophysical logging of oil and gas wells) which was very interesting, but involved a lot of time at work and little time at home. I knew that lifestyle wasn't for me, so I switched to geotechnical consulting.

What was your single greatest accomplishment as an engineer?

It's hard to pick a specific accomplishment because I've worked on a large number of projects, but some of the highlights are the BHP Billiton Jansen project (which has the potential of becoming the largest potash mine in the world), the Shore Gold Fort a La Corne site (potential Saskatchewan diamond mine) and the Children's Hospital of Saskatchewan.

What are your interests outside of work?

Fishing is my favourite hobby, but I also enjoy travelling, playing slow-pitch and squash, and have recently started curling on a team with my wife.

Have you ever met anyone famous?

I can't say I've talked to or shaken hands with anyone famous but when I was at the World Juniors in 1991 I saw a number of famous hockey players and got autographs from the entire Canadian team. At one point, I was in an elevator with Jaromir Jagr as he was staying at the same hotel as us.

What is your favourite vacation spot?

We like to go to the Caribbean. We've gone to the Dominican Republic, Mexico, Cuba and Jamaica, and are getting ready to head back to Cuba soon. We also want to try out Hawaii and the Mediterranean.

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

My dad is a really hard worker, and I suppose I get a lot of my work ethic from him. He always did what he needed to provide for us and never complained about anything. Professionally, I have had the opportunity to work with several engineers with a lot of practical experience who took the time to mentor me. If I had to pick just one individual that had the greatest influence, I'd have to say Paul Machibroda, P. Eng., as his level of experience and knowledge is something that takes a lifetime to gather.

APEGS

83rd Annual Meeting

May 2 - 4, 2013
Hotel Saskatchewan
Regina, SK

Lives and Careers - A Balanced Approach

Thursday May 2

Evening Welcome Event

Friday May 3

Professional Development Streams
Professional Development Luncheon
President's Reception

Saturday May 4

Business Meeting
Partners Program
Youth Science Day
Volunteer Recognition Luncheon
Awards Banquet

Celebrating Excellence

Do you know an outstanding professional engineer or geoscientist or a non-APEGS member that have served our professions? Have you been involved in an amazing project?

If you answered yes, the APEGS Awards Committee would like to hear from you!

Please take a couple of minutes to fill out this pre-nomination form to identify the candidate and the attributes deserving recognition.

All submissions will be held in confidence. You are also welcome to self-nominate. A representative from the Awards Committee or APEGS staff may contact you for more details, if needed.

Individual Awards

Nominee: .....

Designation: .....

Check all that apply to your potential nominee.

- ☐ Technical Accomplishments Service to the Professions
- ☐ Community Involvement
- ☐ Environmental Excellence
- ☐ Promising Member (Professional Member for less than 5 years)
- ☐ Non-APEGS Member – Friend of the Professions

Project Awards

Project Name: .....

Project Contact: .....

Check all that apply to your potential nominee.

- ☐ Outstanding Project
- ☐ Environmental Excellence

Nominator's Name: .....

Contact (phone/email): .....

More details on the awards, as well as previous recipients, can be found on the APEGS website www.apegs.sk.ca under Members / Awards.

Please Send Nominations to:

APEGS Awards Committee
104, 2255, 13th Avenue, Regina, SK S4P 0V6
Fax: (306) 525-0851 or Email: apegs@apegs.sk.ca

UNIVERSITY OF SASKATCHEWAN

100th Anniversary

The College of Engineering University of Saskatchewan celebrated its 100th anniversary September 20 through 23, 2012 in Saskatoon. APEGS was proud to be the Patron Sponsor for the event. Alumni and guests enjoyed many events over the four days of celebrations.

ABOVE:
Past C.J. Mackenzie lecturers and members of the College's "Wall of Fame" at the unveiling of the plaque honouring C.J. Mackenzie, P.Eng.

RIGHT:
Saskatoon Mayor Don Atchison and College of Engineering Dean Ernie Barber, P.Eng. unveil the plaque on the Broadway Bridge commemorating the contributions of the first dean of the college and first APES president, C.J. Mackenzie, P.Eng.

TOP:
Visiting at the Clifton Reception of the College's centennial celebration. From left to right, Professor Emeritus Mel Hosain, P.Eng., Jason Mewis, P.Eng., Peter Wright, P.Eng. and APEGS President Leon Botham, P.Eng.

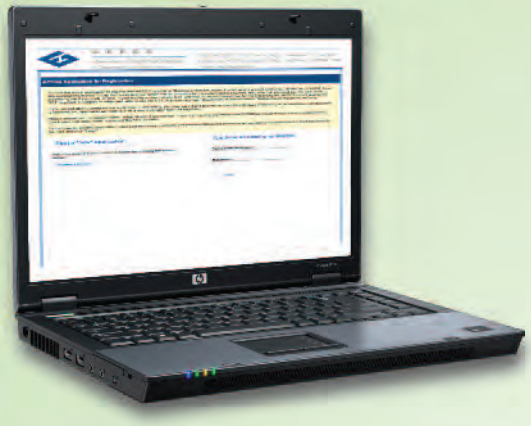
LEFT:
Former Dean Peter Nikiforuk, P.Eng., current Dean Ernie Barber, P.Eng., APEGS President Leon Botham, P.Eng. and event emcee Dr. Jim Kells, P.Eng. unveiling the plaque on the Broadway Bridge honouring C.J. Mackenzie, P.Eng.

RIGHT:
Class of '45 graduate Dr. Jack Mollard, P.Eng., P.Geo. and Mary-Jean Mollard at the Clifton Reception.

More photos and stories from the event can be found on the College's website at

www.engr.usask.ca/100Years/index.php

Online Applications Now Available!



Online applications are now available for all membership types available for individuals. The online application system can be found here: www.apegsservices.ca/applications/

Feel free to give it a try just to see how it works. The online application isn't actually received at the APEGS office until you've paid, so you can go as far as the payment screen and stop there.

We welcome your feedback at apegs@apegs.sk.ca.

Applicants can now enjoy the convenience of entering their information and paying online but will still have to submit all required documents and other forms by mail if applicable.

Online applications can only be processed with a credit card. Anyone who wishes to pay by cheque, debit or cash must still submit the paper application form along with payment. Also, you must pay GST if you are applying online. This might affect some applicants whose employer will be reimbursing them and that employer does not pay GST (for example, Government of Saskatchewan, Saskatchewan Watershed Authority).

Applicants who do not complete the online application in one sitting may save it and then return later. After 60 days of inactivity on an application, the incomplete application is deleted and the applicant will need to start a new application from the beginning. We will continue to bring Permission to Consult and Certificate of Authorization applications online in the coming months.

APEGS Easy Renewal

If you have never accessed this service before, it is very easy to use. Your User ID is your five-digit registration number and you can retrieve your password by using the New Password / Forgot Password button.

There are now more membership renewal requirements that you can complete online. New for 2013 is online renewal for Permission to Consult. If you have been approved for Permission to Consult in the past, then you will see this option on your Online Profile under My Demographics, Permission to Consult:

» **I wish to renew my current Permission to Consult for the year 2013 without any changes to my Field of Practice.**

If you need a change in your Field of Practice or you haven't been approved for Permission to Consult in the past, then you will have to submit a Notice of Intent to Consult which can be found on the APEGS website under Registration, Permission to Consult.

Other online features that are already available under your Online Profile are:

- annual fee payments
- contact information updates
- Continuing Professional Excellence reporting and registration for some APEGS events.
- Registration for some APEGS events.

You will no longer have the option of providing contact information updates, CPE reporting and Permission to Consult renewal to APEGS using a paper form. Your online profile can be accessed through this website: **www.apegsservices.ca**

Be Entered to

WIN an iPad

Help us test-drive the online services to get your chance to win an iPad. Access Member Online Services and do at least one of the following:

1. Pay your annual dues for 2013.
2. Renew your Permission to Consult for 2013.
3. Report your Continuing Professional Excellence Credits (CPE) for 2012.
4. Update your contact information.

At least one of these items must be completed online by January 31, 2013, and your membership must be renewed for the 2013 year to be eligible for the iPad draw. Your name will be entered only once even if you do all four online. However, we encourage all members to complete as many of these things online as possible. The draw will be held on February 27, 2013 and the winner announced in the March / April issue of *The Professional Edge.*

APEGS ANNOUNCES

A New Constituent Society Grant Formula and Reporting Structure

Starting next year, APEGS constituent societies will be getting a long-awaited boost through a series of initiatives.

New Grant Formula

Under the current budget formula – which has not been updated since 1995 - small and start-up constituent societies lack sufficient funds to conduct a sufficient number of appealing, effective, interesting and productive events to obtain and maintain a critical mass of active members.

Beginning in 2013, the new grant formula will establish a base grant of $4,000 per constituent society and apply the existing formula of $10 per professional member and $5 per member-in-training after the formula exceeds the base grant (e.g. exceeds 400 members professional members.)

New Grant Reserve Fund

Even with the new grant formula, constituent societies may not have the funds to host one-time special projects that would be of significant benefit to APEGS members.

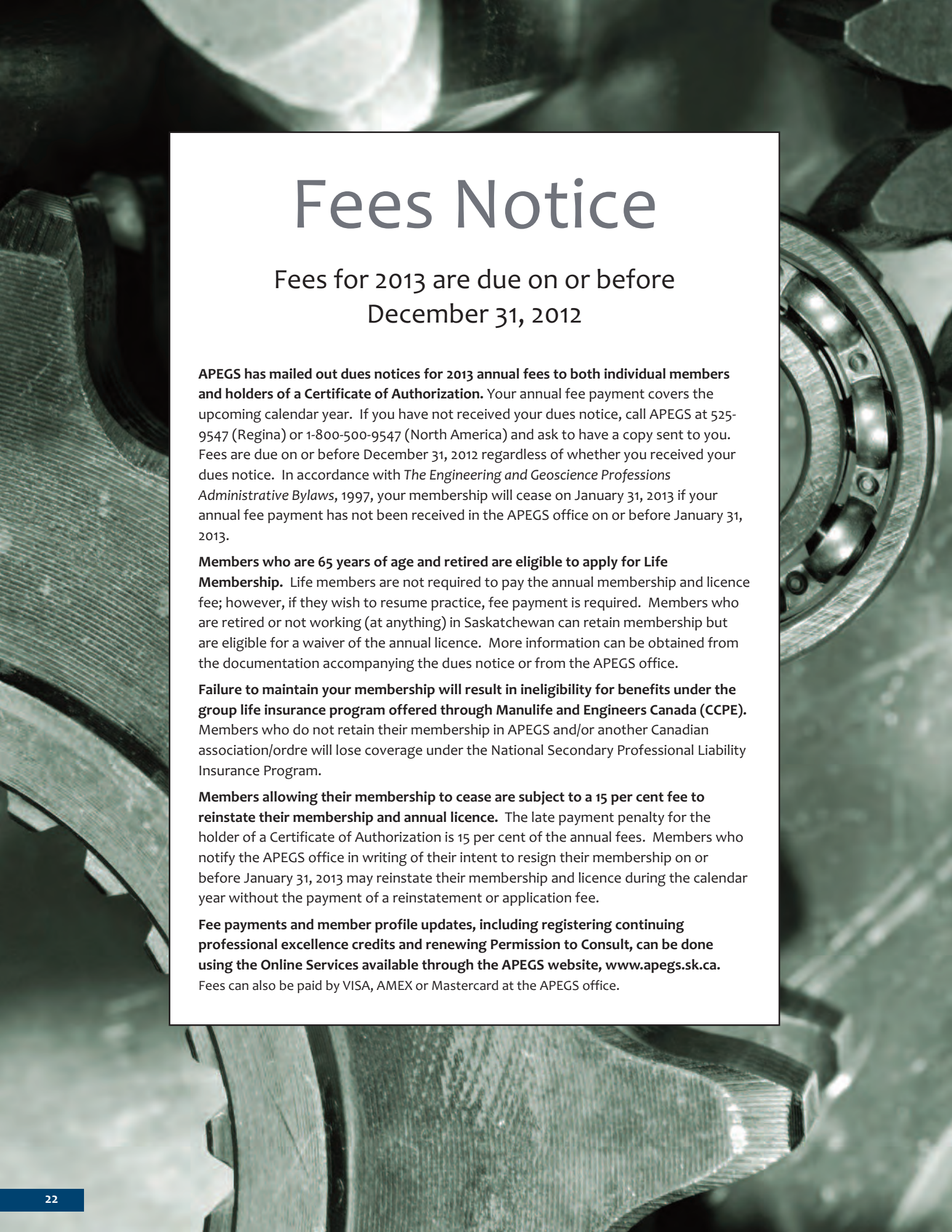
An amount of $5,000 will be budgeted annually to support special projects that the constituent societies cannot afford on their own. These funds would be budgeted through the Connection and Involvement Committee budget. Requests for funds should be presented to the committee as early in the year as possible. Constituent societies should contact the Connection and Involvement Committee for further requirements of the application process.

New Reporting Structure

The Connection and Involvement Committee is taking a more active role to network with the constituent societies. The interaction between the organizations is considered beneficial in discussing best (and worst) practices, coordinating activities and exploring future planning.

Beginning in 2013, reporting of the constituent society activities will flow through the Connection and Involvement Committee. The Connection and Involvement Committee will collect and forward relevant documents required for funding to APEGS.

For more information regarding the new grants or the reporting requirements contact Chris Wimmer, P.Eng., at the APEGS office.



Fees Notice

Fees for 2013 are due on or before December 31, 2012

APEGS has mailed out dues notices for 2013 annual fees to both individual members and holders of a Certificate of Authorization. Your annual fee payment covers the upcoming calendar year. If you have not received your dues notice, call APEGS at 525-9547 (Regina) or 1-800-500-9547 (North America) and ask to have a copy sent to you. Fees are due on or before December 31, 2012 regardless of whether you received your dues notice. In accordance with *The Engineering and Geoscience Professions Administrative Bylaws*, 1997, your membership will cease on January 31, 2013 if your annual fee payment has not been received in the APEGS office on or before January 31, 2013.

Members who are 65 years of age and retired are eligible to apply for Life Membership. Life members are not required to pay the annual membership and licence fee; however, if they wish to resume practice, fee payment is required. Members who are retired or not working (at anything) in Saskatchewan can retain membership but are eligible for a waiver of the annual licence. More information can be obtained from the documentation accompanying the dues notice or from the APEGS office.

Failure to maintain your membership will result in ineligibility for benefits under the group life insurance program offered through Manulife and Engineers Canada (CCPE). Members who do not retain their membership in APEGS and/or another Canadian association/ordre will lose coverage under the National Secondary Professional Liability Insurance Program.

Members allowing their membership to cease are subject to a 15 per cent fee to reinstate their membership and annual licence. The late payment penalty for the holder of a Certificate of Authorization is 15 per cent of the annual fees. Members who notify the APEGS office in writing of their intent to resign their membership on or before January 31, 2013 may reinstate their membership and licence during the calendar year without the payment of a reinstatement or application fee.

Fee payments and member profile updates, including registering continuing professional excellence credits and renewing Permission to Consult, can be done using the Online Services available through the APEGS website, www.apegs.sk.ca. Fees can also be paid by VISA, AMEX or Mastercard at the APEGS office.

APEGS View

Geoscientists Canada facilitates new framework for assessment processes in the licensing of Professional Geoscientists in Canada – its rationale and its development

The Geoscientists Canada Board of Directors recently voted to accept a newly developed consensus document aimed at harmonizing due diligence procedures used across Canada to assess applicants for registration as professional geoscientists. This work represents a pioneering achievement in the field and will be of great benefit in facilitating labour mobility within Canada and internationally.

The new framework, entitled "Framework for Assessment in the Licensing of Professional Geoscientists in Canada," can be found on the Geoscientists Canada website at www.ccpg.ca

Speaking about the Framework, the president of Geoscientists Canada, Greg Finn, P.Geo, said:

"We are delighted to have been able to facilitate this work and assist the regulatory authorities–our constituent associations–in achieving this. As a framework, of course, it is neither prescriptive nor legally binding. Instead it is a series of broad, visionary and collectively agreed-to principles that the profession and admissions officials, working together, will undertake to bring into use over the coming years. Put simply, it is a companion to Geoscientists Canada's Geoscience Knowledge and Experience Requirements for Professional Registration in Canada, published in May 2008. Whereas the latter outlines expectations on admissions requirements to become a professional geoscientist in Canada, the Framework describes the processes used to determine that admissions requirements have been satisfied."

Council Notes

October 11 and 12, 2012
Hotel Saskatchewan, Regina SK

19 of 19 Councillors present

- Council's attention was drawn to the hiring of Stantec Architecture Ltd. to complete a space requirements analysis and report on the Association's office requirements.
- Terry Fonstad, P.Eng., Bert Munro, P.Eng., FEC, Henry Feldkamp, P.Eng., FEC, Shawna Argue, P.Eng., FEC, Leon Botham P.Eng. (as Chair) and Penny Semczsyshyn, Engineer-in-Training were appointed to the Task Group on Surpluses. The Task Group will provide recommendations to Council with respect to the Association's financial surpluses.
- Council was advised that Kara Fagnou, P.Eng. has been appointed Vice-Chair of the Experience Review Committee. Colin Abernethy, P.Eng., Jeremy Gabel, P.Eng. and Annie Meng, P.Eng. were appointed to the Experience Review Committee for a three-year term.
- Council approved revisions to the terms of reference for the Experience Review Committee allowing discipline-appropriate substitute reviewers to be chosen from the list of former Experience Review Committee members when required.
- Council was advised that Guoxiang Chi, P.Geo. and Aryan SadaatMehr, P.Eng. have been appointed to the Academic Review Committee for a three-year term.
- Council approved the revised English Language Competency Policy AR5.0.
- The proposed changes to the Engineers Canada / CTI France Mutual Recognition Agreement were accepted by Council.
- Council was advised that Salman Akhter, P.Eng., has been appointed for a second three-year term on the Professional Practice Exam Committee.
- The following individuals were granted Life Membership: D. Bruce P. Frogley, P.Eng.; Nur R. Gurak, P.Eng.; Ain Suurkivi, P.Eng.; Richard C. Swider, P.Eng.; Robert D. Waymouth, P.Eng.; David M. Reynolds, P.Geo.
- Council was advised that three new members have joined the Professional Edge Committee for a three-year term, Rajeev Chadha, P.Eng., Jeanette Gelleta, Engineer-In-Training and Brent Marjerison, P.Eng., FEC.
- Council reappointed Grant Guenther, P.Eng., FEC as Chair of the Professional Edge Committee for a one year term.
- Gillian Ash Richard, P.Eng., was appointed Chair of the Communications and Public Relations Committee for a one-year term.
- Bob Berry has agreed to serve as Vice-Chair of the Communications and Public Relations Committee for a

two-year term. Two new members have joined the Communications and Public Relations Committee, Diana Podborochynski, Engineer-In-Training and Dino Philopoulos, P.Eng. Three existing members, Anna Anthony, P.Eng., Neil Richards, P.Eng., FEC and Doug Vandenberghe, P.Eng., FEC will remain on the Communications and Public Relations Committee for an additional term of one year.

- Darla Bodnarchuk, Engineer-In-Training, Margaret Kuzyk, P.Eng., FEC and Trevor Knoll, P.Eng. have joined the Connection and Involvement Committee for a three-year term. Osman Mustafa, Engineer-In-Training has rejoined the Connection and Involvement Committee for a second three-year term.
- Ian Farthing, Engineer-In-Training, Michael Famulak, P.Geo. and Philip Winter, P.Eng. have joined the Awards Committee for a three-year term.
- Council was advised that the Equity and Diversity Committee was provided a grant in the amount of $750.00 for the Women's History Month.
- Council accepted the Student Financial Award framework as presented by Kevin Hudson, P.Eng. and Art Opseth, P.Eng., FEC on behalf of the Scholarship Task Group. Council also approved advancing the 2013 funds to the College of Engineering at the University of Saskatchewan if required to obtain matching funds, provided that the distribution of such funds are subject to APEGS' implementation plan and award criteria and that equal payments from APEGS will be made to each of the University of Saskatchewan and the University of Regina in each fiscal year of the program.
- Council appointed Lenard Erickson, P.Eng., FEC to the Investigation Committee for a three-year term.
- Council appointed Jon Gillies, P.Eng., FEC, Grant Gingara, P.Eng., and Brent Marjerison, P.Eng., FEC to the Discipline Committee for a three-year term.
- Council approved the recommended amendments to Administration Policy Admin 6.0, dealing with the administration and refund, credit, waiver, deferral and remission of fees.
- Council was advised that the Past Presidents will meet on November 22, 2012 in Saskatoon.
- The next APEGS Council meeting is scheduled for November 23, 2012 in Saskatoon.

In Memoriam

Anthony F. Banks, P.Eng.
Douglas C. Ruse, P.Eng.
Arnold H. Vossen, P.Eng.
John J. Syrnyk, P.Eng.
Larry O. Cleven, P.Eng.

Habitat for Humanity®

O'Kane Consultants volunteers at El Sauce school, El Salvador.

Fundraiser

SPONSORED BY O'KANE CONSULTANTS INC.

EVENT:
Dinner, silent auction and raffles in support of El Sauce School, El Salvador, a project of Rainbow of Hope for Children and Habitat for Humanity

DATE & TIME:
December 13th, 2012, 6:30 PM

LOCATION:
Cosmopolitan Seniors Centre (off Broadway)
614 11th St. E, Saskatoon

COST:
$30 per ticket for buffet-style taco bar

CONTACT:
Kristie Bonstrom at kbonstrom@okc-sk.com for tickets and info.

UPDATE

Competency-Based Assessment of

Engineering Work Experience Project

BY TINA MAKI, P.ENG., FEC, DIRECTOR OF REGISTRATION

Earlier this year, Engineers Canada chose APEGS as one of two national pilot sites for the Competency-Based Assessment of Engineering Work Experience Project. The project has been completed with highly positive results.

I want to thank all the Engineers-in-Training and Professional Engineers who volunteered to take part in the project and give honourable mention to the more than 100 Engineers-in-Training who put their name forward as pilot candidates. The nine engineers-in-training that were chosen to give the competency-based system a whirl were:

Michael Bubnick, P.Eng.

Lee Heebner, P.Eng.

Lingen Jiang, Engineer-in-Training

Cameron McNaughton, P.Eng.

Michael Nemeth, P.Eng.

Partha Pal, Engineer-in-Training

Roxanne Pauls, Engineer-in-Training

Ravi Seera, P.Eng.

Anita Sharman, P.Eng.

We chose candidates so that a wide range of backgrounds would be covered including Canadian and international graduates and recently graduated to very experienced candidates.

Our six volunteer Assessors were:

Wayne Gienow, P.Eng.

Archie Gillies, P.Eng.

Ken Linnen, P.Eng., FEC

Derrick Mann, P.Eng.

Kevin Ness, P.Eng.

Damodar Pokhrel, P.Eng.

Key results

The key result from the pilot was "forge ahead!". Everyone who participated in the pilot was impressed with what they saw and recommended that work continue toward its adoption in Canada.

Details of the new draft version of the competencies and the specific "Indicators" required to demonstrate the competencies can be found on the Engineers Canada web site, www.engineerscanada.ca under Projects, Competency-Based Assessment.

What does this project mean for the future of work experience assessment at APEGS?

It has yet to be determined if APEGS will adopt the competency-based experience review system. The work that remains to be done is:

- December 2012 - Final report released (will include next steps)
- February 2013 –Engineers Canada Board makes a recommendation to the Constituent Associations (such as APEGS) whether or not to continue forward
- April 2013 – APEGS Council meets to consider the recommendations of Engineers Canada

No matter what is decided, at a minimum, you can expect to see improvements in how we assess work experience for both engineers and geoscientists as a result of this project.

Schedule for the future

Should work be approved to proceed, is it estimated that on-line experience reporting would be developed in 2013 and rolled out in 2014. After the competency system is released, there would be a transition period where we phase out the existing experience reporting system and allow those who started reporting in the old system to finish in the old system if they choose.

Women's History Month

Lieutenant Governor Vaughn Solomon Schofield

Dr. June LeDrew, Professor in the Faculty of Kinesiology and Health Studies at the University of Regina delivered the keynote address.

Sherri Doidge visiting with Penny Semczyshyn

Strong Girls, Strong Canada: Leaders From the Start

The Women's History Month held its annual event Wednesday, October 17, 2012 at the Conexus Arts Centre in Regina.

"People must know the past to understand the present, and to face the future."

Nellie McClung

Celebrating Our Own

Kushwaha Receives Alumni Achievement Award

Professor Emeritus Lal Kushwaha, P.Eng., FEC was honoured by the 2012 University of Saskatchewan Alumni Achievement Award for his service to the engineering profession nationally and internationally.

Lal was one of the first recipients of a Ph.D. in Agricultural Engineering in Canada. His international activities–which reach into Asia, Africa and South and Central America–have garnered him widespread recognition from both engineering bodies and industry. He has made significant contributions to soil–machine interactions and the transfer of resulting technologies to developing countries. Among his notable works is a system to mechanically neutralize anti-personnel and anti-tank land mines, an area in which he is co-holder of three patents.

Call For Council Nominations

Nominating Committee

The Nominating Committee, chaired by Past President Peter J. Jackson, P.Eng., FEC, is soliciting names for the positions described below. You may contact staff support to the Nominating Committee, Bob McDonald, P.Eng., FEC, LL.B., at rhmcdonald@apegs.sk.ca to propose the names of potential candidates. Bob may also be reached through the APEGS office in Regina by phone at 525-9547 (toll free 1-800-500-9547 North America), or facsimile 525-0851.

The bylaws require the Nominating Committee to nominate, whenever possible, for president the person holding the office of president-elect, and for president-elect the person holding the office of vice-president. Dwayne Gelowitz, P.Eng., FEC is the current president-elect and Andrew Loken, P.Eng., FEC, is the current vice-president. The Nominating Committee is also required to nominate, whenever possible, at least two persons for vice- president and at least two persons for any other vacancies.

Submission of Nominations

Any five members may nominate over their signatures an eligible nominee for any elective office, except that of president. Such nominations shall be in the hands of the Registrar at least 45 days before the election is to take place. To meet this requirement, the nominations must be in the APEGS office no later than 5 p.m., Thursday, March 14, 2013, as the election will take place when ballots are counted on Monday April 29, 2013, the "polling day."

2013 Vacancies and Terms of Office

Officers

President-Elect one-year term

Vice-President one-year term

Group and Electoral District Councillors - to serve three-year term

Group I (Civil)

Group III (Electrical and Engineering Physics)

Group IV (Geological, Mining, Petroleum, Geophysics and Geoscientists)

Group VII (Environmental)

Eligibility for Nomination

Only members in good standing are eligible for nomination. A person elected to Council mayhold office only while a resident of Saskatchewan.

A person nominated for president-elect must have served at least one full year as a member of APEGS Council prior to the date on which they would assume office as president-elect.

A person who is nominated as a representative of an electoral group must be classified with the association in that electoral group. The councillor representing Members-in-Training can complete the term of office after obtaining his or her P.Eng. or P.Geo. status.

News Beyond Our Borders

www.calgaryherald.com

Alberta Needs Skills

Late-summer media reports were starting to suggest that the need for workers in Alberta is being overstated. Still, few would argue that the success of energy projects hinges upon access to skilled workers. Recent data from the Petroleum Human Resources Council of Canada says the industry will have to fill at least 9,500 jobs by 2015.

The council predicts employment in Alberta's oil sands will increase by 29 per cent over 2011 levels — that's about 5,850 jobs. Pipelines will add about 530 jobs. The labour shortage is expected to affect all industries of Alberta. A recent study by Calgary Economic Development suggests that the city will have to fill an additional 190,000 jobs by 2020.

APEGA recently filled a management position to assist immigrants through the process of becoming licensed. Guillermo Barreiro, P.Eng., is in charge of integration and liaison for internationally educated graduates.

Source: Association of Professional Engineers and Geoscientists of Alberta

Collapses Prompts Call for More Oversight

The president of Professional Engineers Ontario (PEO) has recommended creating a provincial engineer position to help guard against a repeat of incidents similar to the June 23 tragedy in Elliot Lake.

In a July 20 letter to Ontario Premier Dalton McGuinty, PEO President Denis Dixon, P.Eng., FEC, says a provincial engineer "could take overall authority for engineering works in the province, to provide specific direction in the event of situations like Elliot Lake, and to ascertain whether such situations are indicative of systemic problems."

Dixon's letter was in response to the sudden collapse of the Algo Centre Mall in the northern Ontario community of Elliot Lake, which killed two local residents, and to the collapse of a stage tower just prior to a June 16 concert in Downsview Park in Toronto. The stage collapse resulted in the death of a drum technician employed by British rock group Radiohead.

Source: Professional Engineers Ontario

www.designsdelight.com.

Medieval Is the New Modern

If you think medieval castles are mainly for tourism and weddings, think again. In the Austrian town of Frisch, work continues on a 30-year project to replicate medieval designs and materials while creating a new castle.

One project aim, says an article in *Science Daily*, is to learn more about medieval construction methods and materials. Known for structural stability, many castles have stood for 1,000 years. Medieval mortar, for example, is judged to be as perfect as mortar gets. Unlocking its mystery could have applications in modern construction.

Source: Association of Professional Engineers and Geoscientists of Alberta

BC Engineers Receive Jubilee Medals

APEGBC congratulated Captain Mark Adams, P.Eng., Paul Blanchard, P.Eng., FEC and Sheldon Cherry P.Eng. for being awarded the Queen Elizabeth II Diamond Jubilee Medals.

Captain Adams is a dedicated advocate of the mining and engineering industries in BC. Mark enlisted as a Royal Canadian Air Cadet where he served his community and volunteered for six years before enrolling in the Canadian Forces as a part-time reserve air force officer in the Cadet Instructors Cadre.

A senior engineer at Stantec's Surrey office, Paul Blanchard has worked on various high-profile projects and has been active in professional organizations. An invaluable contributor to countless APEGBC branches, committees, and task forces since 1978, Mr. Blanchard also served eight years on Council, including one as president.

Sheldon Cherry is a respected researcher, engineer and educator in the field of structural and earthquake engineering as a professor emeritus at UBC. He is also the founding chairman of the National Research Council's Canadian National Committee for Earthquake Engineering and has made significant contributions to the Canadian and global engineering profession.

Source: Association of Professional Engineers and Geoscientists of British Columbia

Top Five Skills for Young Professionals

Natalie Cornelius, P.Eng., Chair of Engineers Nova Scotia's Young Professional Committee, recently published an article on what she feels are the top five non-engineering skills that engineering schools should teach:

This list is drawn from her personal experience as well as observations of the many engineering co-op students she has mentored over the years:

- Written communication.
- Attention to detail.
- Networking.
- Skillful negotiation.
- Flexibility and adaptability

Source: Engineers Nova Scotia

Engineers Nova Scotia Adopts Code of Ethics

Engineers Nova Scotia is the most recent of the provincial and territorial engineering regulators have adopted the national Code of Ethics as set out in the Engineers Canada publication, Guideline on the Code of Ethics (April 2012). The Code became effective for Nova Scotian engineers on September 30, 2012.

ucalgary

The guideline states that professional engineers shall uphold a series of nine tenets relating to the values of truth, honesty and trustworthiness and safeguard human life and welfare and the environment.

In confirming their adoption of this code, Engineers Nova Scotia requested that Engineers Canada consider modifying the introductory paragraph to clarify that a member cannot use a corporate structure to insulate themselves from the Code of Ethics.

PEGNL were the first of the engineering regulators to adopt a version of the guideline in 2008. The document was first published in 2001.

Source: Engineers Nova Scotia

News From The Field

Sask. construction to stay strong through 2013

Daily Commercial News - The Saskatchewan economy appears to be growing at a healthy pace as it approaches 2013. Analysts see residential construction continuing to be strong, given that the inventory of completed and unoccupied dwellings in mid-2012 is approximately 30 per cent lower than it was at this time last year. This view is reinforced by a 30 per cent increase in the value of residential building permits issued in the province in the past three months.

Following a strong gain in 2011, a number of indicators suggest that the pace of non-residential building will moderate over the next several quarters. The most recent Enterprise Saskatchewan's Major Project Inventory indicated the total value of major projects in planning, design or construction phases increased by 4.6 per cent in 2012, largely due to increased spending on mining projects. The impact of weakening global demand appears to have caused a number of companies to scale back their capital spending plans.

Sask. names nuclear centre in tribute to former Lt.-Gov. Sylvia Fedoruk

Canadian Press - The Saskatchewan government is honouring a former lieutenant-governor.

Saskatchewan Premier Brad Wall announced that a nuclear research centre located at the University of Saskatchewan will now be called the Sylvia Fedoruk Canadian Centre for Nuclear Innovation.

Fedoruk, who was the first female lieutenant-governor in Saskatchewan, died this fall at the age of 85.

Fedoruk was the chief medical physicist for the Saskatchewan Cancer Foundation and one of four scientists to develop one of the first nuclear scanning machines and the cobalt 60 therapy unit in 1951.

Report: Sask resource sector still thriving

Equities.com - Saskatchewan's economy remains among the top performers in Canada, even with some softening of momentum, according to the Provincial Monitor report released by BMO Economics.

Activity in the oil and gas sector is still strong, and the province is expecting double-digit growth in oil production in fiscal 2012-2013, the report stated.

While resource-sector activity is still robust in the province, activity has shown signs of moderating in recent months; a soft pricing environment has led some potash producers to curtail production. PotashCorp temporarily shuttered production at two mines earlier this year, while BHP Billiton may delay the approval of its $12 billion Jansen mine.

INFRASTRUCTURE

P3 highway projects announced

Regina Leader-Post - A new public-private partnership (P3) approach to building highways and other infrastructure projects is being used to improve one of the busiest stretches of highway in the province.

A $780,000 safety improvement to an intersection on the Trans-Canada Highway east of Regina has added three new lanes, including one acceleration lane and two turning lanes, near what is known as Gravel Pit Road. The project is cost-shared 50/50 between the Ministry of Highways and Infrastructure and Redhead Equipment.

The provincial government also announced that the province will partner with Cameco Corp., AREVA and other companies to build a 53-km connector road to Highway 914 between the McArthur River and Cigar Lake uranium mines at a total cost of about $65 million.

Tear-down begins of rusty Traffic Bridge in Saskatoon

CBC News - The tear-down of the Traffic Bridge in Saskatoon began in earnest as work crews took apart one span.

The rusting bridge was condemned more than two years ago after engineers determined it could collapse at any time.

While the bridge is coming down, a replacement has not been determined. The city estimates a new span would cost around $30 million and says it cannot afford that on its own.

www.mosaic.com

MINING

Mosaic unveils first step of $6-billion expansion

Regina Leader-Post - The Mosaic Company celebrated the first phase of ambitious $6-billion expansion of its Saskatchewan potash mining operations by looking backward - a bit.

Running through a ceremony at Mosaics's K2 mine east of Esterhazy was an awareness that it's been 50 years since June 8, 1962 when one of Mosaic's corporate ancestors first broke into the potash industry.

Sinking that first shaft cost about $50 million. Boring the shaft for Mosaics's new K3 mine, midway between K2 and Esterhazy, will cost about $500 million.

As well, the company marked the first stage of expansion at K2, which will add 800,000 tonnes of annual operating capacity to it.

All told, Mosaic is spending $3 billion on its properties in the Esterhazy area, including a towering headframe at K3 that, when completed, will be the tallest man-made structure between Winnipeg and Calgary. Work at the existing K1 was completed about 18 months ago; that at K3 is expected to be finished by 2016.

Another $3 billion is being spent on Mosaic's other properties at Belle Plaine and Colonsay.

Diamond industry optimism grows

Prince Albert Daily Herald - Foreseeing a major diamond industry in the Prince Albert area as a not-so-distant reality, Embee Diamonds chief operating officer Evert Botha wants to see local job creation.

Unlike the uranium sector, which saw value-added jobs taken away from the local economy, the key will be making sure they stay in Prince Albert, he told Prince Albert city council.

With Embee Diamonds cutting and polishing diamonds in Prince Albert, the next logical step would be for jewellery manufacturing, he said.

During his presentation, Botha gave council a list of things they can do as a city to make sure diamond-dependent jobs are kept in Prince Albert.

An export processing zone should be established and the waiving of taxes for their first five years should be considered, he said.

Flights between Prince Albert and Calgary should be developed to better accommodate international diamond buyers, he encouraged.

Mining industry pays out $9B in 2011

Sudbury Northern Life - The mining industry paid out about $9 billion in aggregate mining taxes and royalties, corporate income taxes and personal income taxes to the provincial and federal governments last year, said the Mining Association of Canada (MAC) in its annual report released Sept. 10.

Royalty/mining tax payments increased by about $700 million over last year, with most of the increase coming from Alberta, Saskatchewan, Newfoundland and Labrador, and Ontario, the report, prepared by ENTRANS Policy Research Group, stated.

Of particular note is the study's findings that show a steady increase in overall mining tax and royalty payments since the 2009-10 figures seen during the international recession where payments to governments declined almost 60 per cent compared to 2008-09.

In 2010-11, royalties and mining taxes began to recover, increasing by 45 per cent from $2.2 billion to $3.2 billion. They increased by a further 20 per cent in 2011-12 to $3.8 billion, which is well above the 10-year average, stated the news release.

Regionally, Alberta and Saskatchewan accounted for the largest portion of royalties and mining taxes at 64 per cent last year, stemming from the provinces' respective strength in bitumen and coal, and potash and uranium.

According to Natural Resources Canada, the mineral sector experienced a 21-per-cent increase in the value of Canadian mineral production in 2011 to a record $50 billion, stemming from a combination of higher prices and expanding output.

Jansen mine site full of activity

Saskatoon StarPhoenix - Despite what some analysts say, there is room for a new greenfield potash mine in Saskatchewan, according to a BHP Billiton official.

Last week a BMO Capital Markets report said BHP should delay Jansen, and instead go after buying US potash producer Mosaic Co.

"We don't really react directly to analysis reports. We believe in the basic fundamentals of potash and the long-term viability. It's our job to build a mine that is going to be low on the cost curve and very competitive," a BHP spokesman said.

The company has already committed $2 billion to the potash business in Saskatchewan, including roughly $1 billion on acreage and exploration and about $1 billion in site development.

In late August, BHP said it would not make a final decision regarding the mine at Jansen, expected to produce up to 8 million tonnes per year, until June 2013.

But work at the mine site continues at a rapid pace about 140 kilometres east of Saskatoon.

There are currently about 400 workers on site. During the day, a truckload of gravel arrives every three minutes at the site as part of the construction process.

They have built the collars for two mine shafts and will begin boring the shafts by late November or early December, said Gord Graham, the Jansen's deputy project director.

And Discovery Lodge, a massive on-site housing facility for construction workers built of modular trailers by Atco Structures & Logistics, will see its first 500 beds in place by December.

In total, Discovery Lodge will have 2,586 rooms, all with private bathrooms, and include a kitchen, rec rooms, a full gymnasium, laundry facilities, a skating rink and a theatre.

Karnalyte opens contractor's office in Sask

Creamer's Mining Weekly – Potash junior Karnalyte Resources officially opened the contractor's office in Saskatoon for its Wynyard property in anticipation of the start of construction activity.

A company spokesman told *Mining Weekly Online* that the company was now gearing up for serious construction activities as part of its $2-billion project. Ground-clearing activities were already taking place.

He said the project involves the construction of a facility that would initially produce 625,000 tons per year of potash, increasing to 2.12 million tons of potash per year over the mine's expected 70-year life.

The property is said to hold 155 million tons of proven and probable reserves.

The development project would be undertaken in a staged approach, with the first phase of development expected to total $600-million.

"We have a number of projects nearing completion that would enable us to start with the full construction by the first quarter of 2013," he said telephonically.

While brine tests were still being carried out on the Wynyard resource, engineering, procurement and construction management (EPCM) was simultaneously being undertaken by Foster Wheeler Canada, which was contracted in September to provide EPCM services for the project.

The company in July examined the feasibility of adding a magnesium product facility to the potash project. It concluded that magnesium chloride brine at a 32 per cent concentration and 104,000 tons per year of hydromagnesite, a form of basic magnesium carbonate, at 99 per cent purity could be produced from the by-product of producing potassium chloride (KCl).

URANIUM AND NUCLEAR

Survey shows split in support for nuclear power

Canadian Press - Saskatchewan residents appear to be evenly split when it comes to nuclear development in the province.

University of Saskatchewan researchers came to that conclusion after a survey of 1,750 people in March.

On nuclear power, 49 per cent were in favour while 45 per cent were opposed.

But Professor Robert Patrick says there were also splits within those two factions.

He says 30 per cent of respondents identified themselves as being strongly opposed to nuclear power while just 18 per cent were strongly in favour.

Saskatchewan hopes to export $3bn in uranium to China

Mining.com - The Saskatchewan government says the negotiation of a nuclear agreement between Canada and China could lead to huge exports of uranium from the Prairie province to the PRC.

According to Premier Wall, the Canadian Prime Minister's negotiation of the Nuclear Co-operation Agreement could enable Saskatchewan to export $3 billion in uranium to China for what the governmnet refers to as the "most robust nuclear power program in the world."

Japan's nuclear shift could affect Sask.

CJME with files from the Canadian Press - Japan's proposed move to phase out nuclear power over the next three decades could have a big impact here in Saskatchewan.

The country is proposing a new energy policy after the Fukushima meltdowns.

It is a major shift from Japan's decades-long advocacy of nuclear power. It calls for greater reliance on renewable energy, more conservation and sustainable use of fossil fuels.

Approving the new policy requires the approval of the entire cabinet. Japanese news reports the cabinet has already agreed to the new policy.

Germany made the decision earlier this year to shut down nuclear plants in the country by 2022.

Energy analyst Tom Adams says this decision is part of a bigger movement

"This is really a global phenomenon. It's by no means just a Japanese thing," he said.

"In enough parts of the world, people are changing their minds that I think really we can say that the nuclear outlook is now very, very different than it was a year and a half ago."

Japan is a big investor in uranium, especially for Saskatchewan-based Cameco. The world's third largest uranium producer saw its stocks fall nearly 50 per cent since Fukushima.

However, other analysts emphasize that Japan and Germany should not be taken as the sole indicators of the health of the industry. In China alone, there are 26 reactors under construction, another 10 in Russia and seven in India.

Cameco plans to go ahead with its goal to double uranium production by 2018, a company spokesman said.

UNIVERSITIES AND RESEARCH

President lobbies for research funding

Saskatoon StarPhoenix - University of Saskatchewan president Ilene Busch-Vishniac was in Ottawa on Tuesday with a message for the federal government–don't tamper with research funding.

"The message we're trying to provide to government is, 'Please don't take your foot off the engine that drives research in Canada,'" she said.

"To do so would produce effects that might not be felt immediately, but five, 10 and 15 years down the road would be devastating."

Joining Busch-Vishniac to promote university-private-sector partnerships as drivers for economic activity and job creation was Maury Wawryk of Venmar CES, a Saskatoon company that has partnerships with the U of S.

"We're doing new research on technology that would change how we conventionally heat and cool our buildings," he said, noting there are plans to bring new technology to market by 2014. "We've been receiving some federal funding over the years. Had we not received that funding, I'm confident we wouldn't be at the position we are today."

Busch-Vishniac pointed to numerous examples of the U of S joining with private firms with tangible results.

U of S establishes geological sciences chair

Saskatoon StarPhoenix - The University of Saskatchewan has established the Murray Pyke Chair in Geological Sciences after a donation from the Pyke family.

The amount of the donation — the largest ever received by the U of S College of Arts and Science — was not released at the request of the family. The largest previous donation to the college had been $1 million.

Pyke, who died in 2009, was a "prominent figure in minerals and petroleum exploration," founding Complex Resources and Bonterra Energy, the U of S said in a news release. He obtained a master's and bachelor's degree from the U of S in the late 1950s.

The donation was made by Pyke's wife, Norma, and his children, David, Jackie, Randall, and James.

The search for his research chair, who will focus on hard rock geology, will begin this year.

Aquistore well the deepest hole in Sask.

Estevan Mercury - They've drilled the deepest hole that's ever been dug in Saskatchewan. At a total depth of 3 396 metres or about 3.3 kilometres, the Petroleum Technology Research Centre's (PTRC) Aquistore primary well in southeast Saskatchewan is officially the deepest hole ever drilled in this province.

Prior to this, the deepest hole was also drilled in the Southeast, an oil-bearing hole in the Torquay-Outram area.

It was confirmed August 31 by the Saskatchewan Ministry of the Economy that the Aquistore well is the deepest well drilled to date in the province.

The well, located near Estevan, will be used as a deep saline carbon dioxide storage site for the SaskPower Boundary Dam carbon capture project. Together the two will meet the emission reduction targets by taking captured CO_2 gases from the emissions coming from the newly refurbished Boundary Dam Unit No. 3 (BD3) and sequestering them deep underground.

The $1.23 billion BD3 clean coal venture is being observed by many global power suppliers since it will be the first commercial-sized exhibit of carbon dioxide capture and storage techniques once it is completed in 2013.

PTRC is attempting to demonstrate that deep geological storage of industrial CO_2 is safe and economically and environmentally feasible since it is geared to reduce greenhouse gases to meet Canada's climate change goals.

The drilling to the deepest point ever took 58 days, said Kevin Brydges, drilling supervisor for Aquistore.

The complete set of logs and other data that accompany the well will be useful not only for CO_2 storage, but also for oil companies in the area who have interests in hydrocarbon-bearing formations.

U of S showcases innovation

Saskatoon StarPhoenix - One hundred years ago, the University of Saskatchewan began offering engineering classes.

To help celebrate the centennial, the College of Engineering at the U of S, in collaboration with the Greater Saskatoon Chamber of Commerce and Innovation Saskatchewan, put together Sask. Innovation Week.

"It is the celebration of Saskatchewan innovators and innovations," said Co-Chair Lesley McGilp, P.Eng.

Innovation Week showcased the latest ideas and research being done on campus and in the province.

Highlights included a public tour of the Canadian Light Source, Engineering Research Day, a talk by best-selling author Steven Johnson who shared his ideas on innovation and a ceremony at the five-corners end of the Broadway Bridge to unveil a plaque to commemorate C.J. MacKenzie, P.Eng., the first dean of the College of Engineering.

"We wanted to acknowledge the great traditions that are associated with the College of Engineering here at the University of Saskatchewan," said U of S Dean of Engineering Ernie Barber, P.Eng.

"We wanted to look to the way our college has used, and will use, its privileged place in society to continue innovation in and through the lives of our students, alumni, faculty and staff."

SRC opens new pilot plant in Saskatoon

Canadian Mining Journal - The Saskatchewan Research Council opened its new mineral processing pilot plant in Saskatoon. The new $2.2-million facility will enable pilot scale demonstrations of new technologies that will potentially increase mining yields and decrease costs. It will also enhance the SRC's capacity to develop and test potential flowsheets for rare earth minerals.

The pilot plant complements and builds on SRC's growing expertise and capabilities in mineral processing, and enables SRC to support mineral industry and mill operators with a broader range of services including:

- Applied research, development, process design, scale-up, and pilot-scale demonstration;
- New and improved processes for the extraction of valuable metals and minerals;
- New and improved processes for sorting diamonds; and
- Technologies for future potential underground mills for uranium, potash and other minerals.

Sick and self-employed?

Why health and disability insurance are two of the most useful business tools you'll ever have

Self-employment has a lot of advantages. However, being your own boss also means fending for yourself.

That's because you have to look after a number of details that most employees take for granted. The biggest drawback, according to over two-thirds[1] of surveyed self-employed individuals, is the lack of access to medical coverage and insurance.

Without an employer's group insurance benefits, you are left to your own means when it comes to protecting yourself, your assets and your family. For instance, if an illness or accident prevented you from working, how would your family cope without the financial support usually provided by an employer?

But this doesn't mean those who work for themselves are completely left on their own. There are insurance policies that can help protect you.

Out-of-pocket costs per household[2]

(Annual, excluding health insurance premiums)

$515	Drugs
$385	Dental
$234	Vision
$106	Health care practitioners (Other than physicians, dental and vision care professionals)

Extended health insurance

A safety net to guard against illnesses and unexpected medical expenses not covered by the government is crucial for the self-employed.

With no employer to provide supplementary coverage, you would have to pay out of your own pocket for prescriptions, diagnostic services, chiropractors, physiotherapists, semi-private or private hospital rooms, out-of-Canada emergency medical care, ambulances and more. Dental costs could also include examinations, x-rays, cleaning, fillings, crowns, root canals and dentures.

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

Private health insurance can be more affordable than you think. Plus, you may be able to deduct the cost of your health insurance premiums from your business income.[3]

Disability insurance

It is far more likely that you will become disabled before age 65 than die. In fact, disability strikes working people far more often than premature death.

How will you and your dependants survive without any source of income? Where will the money come from if you're unable to work?

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

Unlike employee disability plans that end when you change jobs, an association-sponsored disability plan is not only portable — some also provide coverage between jobs so you can continue to receive benefits if you become disabled within 12 months of your employment ending.

Look for a disability plan that offers coverage for different types of disability, such as total disability, partial disability, residual disability (you are able to return to your regular occupation but in a limited capacity), and catastrophic loss. And remember that as long as you pay your own premiums (not your partnership), your monthly disability benefits may be tax free.[3]

Affordability is key

Cost is the main reason offered by those who are not covered by any plans to explain the lack of coverage.[1]

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

[1] Human Resources and Skills Development Canada: 2006 Survey of Self-Employed Individuals: Perceptions of Benefit Coverage, May 2006.

[2] Canadian average household annual spending (Source: Statistics Canada, 2009 Survey of Household Spending, December 2010).

[3] Contact Canada Revenue Agency for details.

Engineers Canada-sponsored plans:

- Health and Dental Care
- Disability Income Replacement

To learn more and to apply:

manulife.com/EngineersCanadaDI

1-877-598-2273 (Monday-Friday, 8 a.m. to 8 p.m. ET)

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APEGS

Association of Professional Engineers & Geoscientists of Saskatchewan

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Calendar of Events

www.chillpillow.Wordpress

Bold Steps: 2012 Canadian Aerospace Summit
December 5-6, 2012, Ottawa, ON
www.aiac.ca/summit

ACHIEVE Training
Leadership and Management - The Essential Foundations
Regina - December 12, 2012 (early rate deadline November 21)
Saskatoon - December 13, 2012
www.achievecentre.com/

Electronic Materials and Applications 2013
January 23-25, 2013, Orlando, Florida
www.ceramics.org/meetings/electronic-materials-and-applications-2013

Association of Mineral Exploration BC Conference
January 28-31, 2013, Vancouver, BC
www.amebc.ca/roundup/overview-2013.aspx

BUILDEX
February 13-14, 2013, Vancouver, BC
www.buildexvancouver.com/

Mould Management and Abatement
March 13, 2013, Winnipeg, MB
www.pinchin.com/iaq/courses/mould-management-abatement

Registration Deadline for Spring 2013 Law & Ethics Seminar and Professional Practice Exam
March 15, 2013

Iron Ring Ceremony for Kipling Camp #25
March 16, 2013, Regina, SK
Contact David deMontigny at 337-2277 or david.demontigny@uregina.ca.

Connecting Water Resources 2013
March 18-21, 2013, Ottawa, ON
new.cwn-rce.ca/events/conferences/connecting-water-resources-2013

Responsibility in Concrete Construction
April 14-18, 2013, Minneapolis, MN
www.concrete.org/EVENTS/ev_upcoming_conventions.htm

Spring 2013 Law & Ethics Seminar
April 26-27, 2013, Saskatoon, SK

CIM Convention 2013
Canadian Institute of Mining, Metallurgy and Petroleum
May 5-8, 2013, Toronto, ON
web.cim.org/toronto2013

APEGS Annual Meeting
May 3, 2013, Regina, SK

Engineering for Global Sustainability
May 27-29, 2013, Montreal QC
www.cctc2013.ca

CSCE Annual Conference
May 29-June 1, 2013, Montreal, QC
www.csce2013.ca/

Professional Practice Exam
June 1, 2013

Canada Green Building Council National Conference and Expo 2013
June 4-6, 2013, Vancouver, BC
www.cagbc.org

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