THE PROFESSIONAL

EDGE

ISSUE 138, MAY/JUNE 2012

2011 APEGS SALARY SURVEY SUMMARY RESULTS

Tradition ■ Innovation ■ Celebration

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for the party of the century!

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September 20th-23rd 2012

The College of Engineering is celebrating its 100th anniversary in 2012 and you are invited to be a part of it!

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Please join us **September 20-23, 2012** for many opportunities to get together with old friends and see what's new at your college.

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Go to **www.engr.usask.ca/100years/class.php** to find out who your Class Rep is, who else is coming, and make your plans to attend special activities organized for you and your group. Use the slider to select the year you graduated to skip to your class area.

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The Circle Drive South Project is the largest single project in the City's history at an estimated cost of $272.5 million. You can be one of the first to get a close up look. ***Sign up for this separately.***

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Fill in the required information and choose the "pay by cheque" option. Mail your cheque to:

College of Engineering – Dean's office
University of Saskatchewan
57 Campus Drive, Saskatoon, SK S7N 5A9

3. MAILED REGISTRATION FORM
Complete the registration form in this brochure, detatch and mail to the address above.

Register early and receive a free copy of *A Safe and Prosperous Future – 100 Years of Engineering and Geoscience Achievements in Saskatchewan* courtesy of APEGS. Limited number available.

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For more information, check out our website:
http://www.engr.usask.ca/100Years/

100 YEARS
ENGINEERING

Achieving a Safe and Prosperous Future through Engineering and Geoscience

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Table of Contents

ISSUE 138
MAY/JUNE 2012

Incoming President – Leon Botham, P.Eng.

07 Rock Star Engineers: Bringing the Creativity of Music to a Scientific Profession

BY MARTIN CHARLTON COMMUNICATIONS

13 Track Sessions

2011 Salary Survey Summary Results

President's Report

I would first like to say that it is a true honour to be elected to serve as President of APEGS. Our profession has given a lot to me, and I believe strongly that what you get out of something is proportional to what you put in.

Over the years, I have been involved with consulting engineering associations, provincially, nationally and internationally, which has been very rewarding for me personally. I am now extremely humbled to be able to serve as president of this association. I look forward to being able to continue with the good work started by my predecessors, in particular Shawna Argue, P.Eng., FEC and Peter Jackson, P.Eng., FEC who through their leadership have helped to refocus APEGS on the true mission of the association.

As a kid growing up in the thriving metropolis of Lucky Lake, Saskatchewan, I never dreamt that I would have a chance to see the parts of the world that I have seen. Whether it was in the southernmost tip of the African continent or the Canadian North or Old World Europe or Mongolia (home of one of the greatest empires ever), I have seen the marvels of our professions. And yet our professions rarely receive any recognition unless there is a failure. Good news, it seems, just isn't news.

This is one area in which the APEGS Council has decided we need a new focus. We need to look at the accomplishments of our professions and we need the world to understand what we do.

Thinking of my travels, I marvel at some of the accomplishments of engineering. Two in particular that have amazed me are the ancient city of Petra in Jordan, and the Great Wall of China. Both of these amazing feats of construction came about, in part, to protect great civilizations.

The city of Petra, the capital city of the Nabataeans was established sometime around the 6th century BC. It was literally carved out of the sandstone on the slopes of Mount Hor. The site was not known to the Western world until 1812 but at its peak, was home to more than 40,000 people. Access to the city is through a gorge about a kilometre long, which is in places no more than two metres wide, but the sandstone rises more than 30 metres above you. The city was almost impenetrable by enemies as a result of the limited access.

The Great Wall was another engineering and construction feat, designed to protect one great civilization from another. Construction of the Great Wall was started in about the 7th century BC, and extends almost 9,000 km, which includes more than 6,200 km of actual wall.

What amazes me the most is that both of these engineering feats are still standing. Sadly though, most of the world would not consider them to be engineering projects.

Other engineering accomplishments are all around us. Something as simple as turning on the light switch or turning on the faucet to get a drink of clean, safe drinking water are among our many accomplishments.

Canadian philosopher and author, John Raulston Saul, once said:

"Engineers have done more to improve the quality of life and health in the world, than all of the medical advances (many of which are also engineering marvels) combined."

We just have to figure out how to get the word out. We will be starting that now.

To close, I would like to say thank you to a few people. First I want to say thank you to all of the APEGS staff. You work tirelessly to keep our association moving forward. I have been amazed at what you accomplish in a short time. I look forward to the opportunity to work even more closely with you in the coming year.

Next I would like to say thank you to all of our volunteers, whether on Council or on committees, who spend countless hours keeping our initiatives moving forward.

I would like to say thank you and congratulations to Peter Jackson. Peter, my friend, I know the year didn't exactly work out as you had planned, especially with your new work responsibilities, but you represented us well. Even when emotions ran high at our 2011 business meeting, you held it together. I was trying to think of a rebuttal for your final president's message, but I look forward to working with you in the coming year.

And lastly, I have to say thank you to the people who always put up with me, whether I am heading halfway around the world for work or spending time away on APEGS or other activities. Suz, Kyla, Cody and Austin, thank you for your support that allows me the opportunities to do the things I love.

Leon C. Botham, P.Eng.
President

CORRECTION

The Professional Edge editorial staff has been made aware of two misprints in the 2012 APEGS New Member ad, which ran in *The Professional Edge* and all Saskatchewan daily newspapers. The titles of Brock Galecki, P.Eng. and Scott Pearson, P.Eng. were inadvertently published as "Brock Galecki, Eng." and "Scott Pearson, Eng."

The editorial staff would like to extend our apologies to these members for any embarassment caused by this misprint. Below are the corrected listings:

Rock Star Engineers:

Bringing the Creativity of Music to a Scientific Profession

By Martin Charlton Communications

"A lot of people view music as straight creativity, but there's a lot of structure and math in it. And there's also an aspect of creativity to engineering."

Traditional stereotypes sometimes lead us to believe that art and science are wholly separate pursuits, but industrial systems engineer Glenna Stewart, P.Eng. sees similarities between the art of music and the science of engineering.

"A lot of people view music as straight creativity, but there's a lot of structure and math in it. And there's also an aspect of creativity to engineering," Stewart said.

Stewart's engineering career has taken several different paths over the years. She's done design work for a robotics company, contract work for SIAST and has worked in manage-ment positions. More recently she has been consulting and is currently in the process of setting up a company called Flaveart, the goal of which is to promote Canadian artists and help them with the business side of selling art.

Throughout her career, she has played the harp. She plays a wide variety of music, from classical to pop country to Celtic to songs from musicals like Phantom of the Opera. The harp has been her passion since buying one from one of her professors in university.

> "I think it's interesting that it was an engineering professor who first introduced me to the harp. I had always wanted to learn harp ever since I was young. The fact that the door opened through engineering shows how much interest there is in music," Stewart said.

She says she knows many engineers with an interest in music. Stewart judges fourth-year engineering projects at the University of Regina, and says it's not uncommon to see a musical basis for a project.

"I recall two specifically. One was an 'electric harp' that operated by sounding a note when a light beam was interrupted. The other was a device to remove dents from brass instruments, typically done in a labour-intensive manual process."

Birds are Dinosaurs

Kyle Leadbeater, Engineering-in-Training and Jonathan Carteri, P.Eng. are also engineers with a side-career in music. They met while studying industrial systems engineering at the University of Regina. During university, they discussed the idea of playing together, but nothing came of it until shortly after they graduated.

Now their eight-piece band, *Birds are Dinosaurs* has been together for about seven years. The band consists of Leadbeater as one of two drummers, Carteri on guitar, a bassist, a trumpet player, a keyboardist, a turntablist and one person who plays the mandolin and bassoon.

The result of this eclectic collection of instruments is a dreamy instrumental sound. A listener might describe it as experimental rock — the turntable mixes hearken to electronica, the guitar breaks and heavy drums are all rock, and the spaces between are filled with jazzy trumpet.

"Our name is *Birds are Dinosaurs* because we're into science. A lot of our songs are inspired by science.... We are constantly trying to apply scientific theories to our music. I suppose music is just another way we as engineers are applying science." said Leadbeater

Some of their songs include "John Ostrom," an ode to the paleontologist who posited the theory that birds are dinosaurs; "Solar Max," referencing the period of greatest activity during the sun's cycle; and "Higgs Bassoon," a play on the hypothetical Higgs-Boson particle.

Leadbeater Lead Beater

Leadbeater is a design engineer at the Mosaic Company. He started in a production role, but later moved into process design and project management in the capital expansion department. He says being in a band has positively influenced his engineering career. He points out that a lot of engineers are in leadership roles, but engineers who are first starting out might lack that leadership experience.

"At different times, you're asked to step into a leadership role in a band. That experience has helped me in my career."

Carteri is a project manager with Brandt Agricultural Products. He started in research and development, designing agricultural equipment, but more recently moved into a project management role. He agrees that playing in a band can have a positive influence on one's work. He says having a creative outlet can help you see a problem from a different angle, and adds that his work as an engineer has influenced his music.

"Being in engineering in school and working as an engineer, Kyle and I certainly developed a different perspective of how to look at the music. Having analytical minds, you have an analytical approach to the music." said Carteri.

Stored Outlet

Stewart takes a slightly different approach, describing her music as an outlet separate and apart from the engineering world, but she does see a connection between the creativity of music and the creativity of engineering.

"Engineering is a discipline that's a crossover between the pure sciences and the practical application, and the practical application requires a lot of creativity," she said.

There is a surprising amount of interplay between music and engineering. Both engineers and musicians build something: engineers construct buildings, systems, or devices while musicians construct songs. Constructing and maintaining musical instruments are themselves an engineering challenge and both pursuits require an understanding of mathematics.

"Everything in music is based on math. As a harpist, one of my most valuable tools is being able to tune and obviously an engineer somewhere designed the tools I use on a regular basis for amplification, tuning, even for carrying the harp around," said Stewart.

Creative Math

Leadbeater says *Birds are Dinosaurs* definitely uses math in the creation of their songs.

"We're always using math — not any intense math, but it's always mathematically based," he said.

They'll use math to play with time signatures, or make mathematically-based decisions about structure or sound to create a certain effect. Carteri pointed out that one mathematical concept that is found in both music and engineering is the Fibonacci sequence.

"When you're trying to relate a part to another part, in an aesthetic form rather than functional form, you use ratios in the Fibonacci sequence. In music, if you're using those same types of sequences and rhythms, it can create a nice sound."

But for all their similarities, Leadbeater points out there is at least one fundamental difference.

"One of the differences I found is that in engineering there's some tried and tested rules and a most efficient or best practise, or just the right way of doing things, while in music those rules just don't exist."

All three of these musical engineers agree that the seemingly disparate pursuits of art and science are actually complementary. The creativity they practise in their art gives them an alternative viewpoint in their profession, and the scientific and mathematical principles learned in their profession enhances their understanding of their art.

Their music also gives them a getaway from the everyday. Stewart describes her music as "an escape," and Leadbeater suggests there's an element of fantasy in his music career.

> "Everybody at some point when they pick up an instrument thinks they'll be playing to a sold out stadium," joked Leadbeater.
>
> "But the pressure is off knowing that we have engineering careers. That's what we do for a living, but once a week we get to be rock stars."

Member Profile

This month *The Professional Edge* chats with Doug Vandenberghe, P.Eng., FEC a retired, systems engineer and a former professor at the University of Regina.

Tell us about your personal and professional background.

I was born in Winnipeg. I grew up on a mixed farm where I helped out growing grain, sugar beets, potatoes, parsnips and other things. After high school, I worked for about a year before deciding to take engineering at the University of Manitoba, where I graduated in 1963.

Why did you choose to go into engineering?

Growing up on a farm, I learned how to take apart anything and put it back together. I got stuck with the mechanic job around the farm and I liked it. I was lousy at English and hated physical work so I figured engineering would be the most rewarding career for me.

I've spent most of my life successfully dodging work. My philosophy is that I only do things I enjoy. As soon as I stop enjoying what I'm doing, I drop it and move on to something else.

What was your biggest challenge in college?

I had academic challenges at first. I left high school with a 55 average, so in my first year of university I was essentially learning grade 12 and engineering at the same time. But by my second year, my marks were in the 70's and by third and fourth year they were in the 80s.

What was your first job after college?

Right out of college, I went to work for Atomic Energy of Canada. I was connected to the WR1 reactor in Pinawa, Manitoba. First they sent me to Chalk River for a year for experience and to assist with writing the commissioning manuals. Then they moved me to Pinawa to commission various reactor systems as assistant reactor shift supervisor.

What brought you to Saskatchewan?

It was a combination of things. I was getting stuck with too many graveyard shifts and was getting dissatisfied with the job. I was also interested in learning more about reactor control systems. AECL had a generous program for paid educational leave, so I headed off with full benefits to take my masters and then my Ph.D. in systems control at the University of Saskatchewan .

The educational leaves came with a condition that I go back to work at AECL for a certain amount of time. By 1978, I had worked that off and moved on to take a job at the University of Regina Faculty Of Engineering, teaching and researching industrial systems. I taught there until I retired in 1998.

What was your single greatest engineering accomplishment?

That's hard to say since many of my research projects didn't produce anything. I did some work on emergency reactor shutdown systems that was probably significant.

What are your interests outside of work?

After the kids grew up, I took up Tai Chi. It provides a reasonable level of exercise and flexibility. I like photography but I'm poor at it. We do a lot of camping. We've travelled all over Canada and the US with our camper van.

What is your favourite vacation spot?

Again that's hard to say because there are so many places I would like to go back to. I like the Rockies and always wanted to go back to some of the desert parks in the US - Utah, the Grand Canyon and so forth.

What book you are reading now?

The Tunnels of Cu Chi, a history of the underground network in Saigon built by the Viet Cong during the Vietnam War. The tunnels gave the Viet Cong the power to hide, move and launch guerilla attacks at will in the city. It's an amazing story of how these ordinary people were able to stop the US military using little more than shovels and buckets.

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

In terms of my life, I would say my parents and my wife. When I was in first year engineering, I was in a hopeless situation with my final calculus exam. I hadn't done one calculus assignment all year and I didn't understand the material at all. My mother came and gave me a tongue-lashing and, for some reason, that was the turning point. I opened the calculus book, started studying and suddenly I understood it. To everyone's surprise, including mine, I ended up with a 70 on that exam.

My wife has given me a lot of practical guidance that has helped me get through the messes I'm always getting into. She was supportive of our frequent moves and managed the family.

As for my career, my choice is probably an odd one. When I was leaving AECL, I chatted with one of the human resources guys while I was waiting for the bus. He told me to never cash in my AECL pension but to get it transferred over to the U of R. That advice has allowed me to be quite comfortable in my retirement, so that five minute conversation with an acquaintance was the best career advice I ever had.

APEGS Election Results 2012

Incoming President – Leon Botham, P.Eng. with past president Peter Jackson, P.Eng.

Voting for the APEGS elections was completed on May 5, 2012. A total of 1661 votes were cast, representing 17.1 per cent of the 9703 total ballots sent out. There were two spoiled ballots. Results of the Council elections are as follows:

Officers of Council (1 year term)

- President – Leon Botham, P.Eng.
- President-Elect – Dwayne Gelowitz, P.Eng., FEC
- Vice-President – Andrew Loken, P.Eng., FEC

Councillors (3 year term)

- Group II (Mechanical & Industrial) - Andrew Lockwood, P.Eng.
- Group V (Agriculture & Forestry) - Robert Cochran, P.Eng.
- South-East District - Robert Stables, P.Eng.
- Geoscience South District - Mark Wittrup, P.Eng., P.Geo.
- Members-In-Training - Penelope Semczyshyn, Engineer-In-Training

Voting was conducted electronically this year. The results were tabulated and verified by Insightrix Research.

The Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) sets and maintains the standards of licensure and professional practice of its over 26,000 members.

APEGBC APPOINTS CHIEF REGULATORY OFFICER AND DEPUTY REGISTRAR

The Association of Professional Engineers and Geoscientists of BC (APEGBC) announced the appointment of Tony Chong, P.Eng. as Chief Regulatory Officer and Deputy Registrar.

Chong has a proven track record as an effective senior executive in the public sector with over 17 years of experience as the Chief Administrative Officer with the City of Port Coquitlam. In this role, Mr. Chong was responsible for leading a multidiscipline team of senior managers providing local government services to the community. He has played a key role in the development and implementation of city policies and regulations and has led the successful development and implementation of two corporate strategic plans.

Prior to joining the City of Port Coquitlam, Chong held senior executive level positions with the Northwest Territorial Government (NWT) as the Regional Superintendent of Public Works for the Western Arctic and Vice-President for the NWT Housing Corporation.

Chong holds a Bachelor of Engineering from the Royal Military College of Canada and a Master of Applied Science in Environmental Studies from the University of Toronto. He is a Director of the Municipal Insurance Association of BC Board, a Director of the local Government Learning Academy Board and volunteers with the Royal Military College. He is also a registered professional engineer with APEGBC.

Professional Engineers and Geoscientists of BC

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Rare Earth Myths and Mysteries

Looming shortage

Anyone following the stock markets in recent years has likely heard of rare earth elements (REEs). Wall Street and Bay Street have had on-again, off-again romances with this set of minerals that are essential to today's high-tech electronics. Allegedly, a looming shortage of these vital minerals will soon drive up the price but the timing and nature of this shortage is uncertain.

John G. Pearson, P.Geo., Vice president exploration for Saskatchewan-based Great Western Minerals Group, explored some of the myths and misconceptions of REEs in his presentation, "Rare Earth Deposits – Mineralogy, Metallurgy, Markets and Myths."

Are they rare?

It is hard to get a clear answer to even the most basic question about REEs: Are they actually rare? According to Pearson, the definitive answer is "sort of, but not really."

Currently, China controls 97 per cent of the REE supply in the world. As a monopoly supplier under the control of a planned economy, the Chinese suppliers manipulate quotas and prices to suit their interests. The Chinese project that by 2015 their own internal REE requirements will exceed their supply – leaving the rest of the world hanging.

Exploration companies have therefore been scrambling to find new sources or to revive old mines that the Chinese had previously driven out of business. These companies have found considerable success in exploration but little in development. Even though ample supplies of REEs exist outside of China, the quest to develop new sources is a complicated one.

Light and heavy

The REE minerals break down into two major categories, light (LREE) and heavy (HREE.) China at the moment remains the world's only source of high-grade HREE, which are the most highly prized by the electronics industry. LREEs are not particularly rare or in demand. The value of LREEs is expected to fall precipitously in the next three years. The main use of LREE deposits is that they can be processed for trace amounts of HREE.

But the prospect of extracting HREE from LREE deposits is complicated from several sides. First, several of the types of LREE deposits, including thorium and uranium raffinates, leave radioactive deposits – and a regulatory headache. Others face acute processing costs.

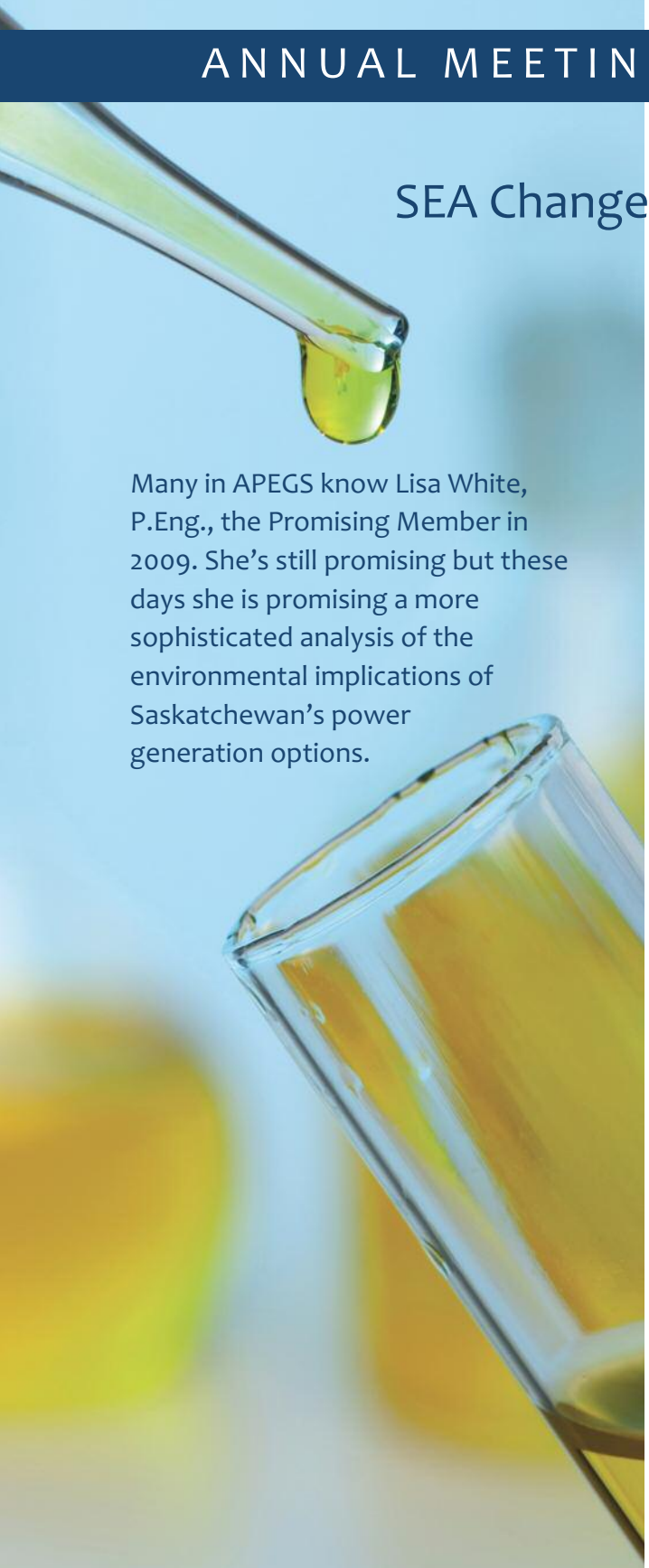
Murky markets

Ironically, despite the minerals' high value, the ultimate hurdle for a prospective new REE producer would be finding a market for its product. Practically the entire value chain – all the stages in the processing of the mineral – reside in China. To compete with China, a new producer would not only have to build an expensive mine but would effectively have to build a new industry from the ground up.

Pearson sees a good deal of the non-Chinese industry focusing on South Africa, whose government is accepting storage of radioactive by-products for potential later use.

Beyond that, Pearson speculates that the Chinese may have shot themselves in the foot with their frequent manipulations of the market. The Japanese government has invested $1.3 billion in researching alternative non-REE based technology. The final ironic end of the modern REE may be that they end up neither especially rare nor particularly desired.

SEA Change for Environmental Assessment



Many in APEGS know Lisa White, P.Eng., the Promising Member in 2009. She's still promising but these days she is promising a more sophisticated analysis of the environmental implications of Saskatchewan's power generation options.

Saskatchewan is facing a major power crunch over the next 15 years. Not only will its existing (but aging) 3,800 megawatts of electrical generation have to be maintained but the province will need an additional 4,000 megawatts before 2030 to meet anticipated growth in demand.

It will prove difficult to make these major infrastructure decisions in an environmentally sustainable way especially given the limitations of the traditional environmental review process. The environmental impact assessment (EIA) process – familiar to most engineers and geoscientists – is aimed mainly at assessing local environmental effects while the rapid growth in power generation has implications that span the province and beyond.

White's research seeks to apply strategic environmental assessment (SEA) to Saskatchewan's energy choices. SEA takes a broader approach to environmental assessment, looking at sustainability considerations and effects on a regional level.

White used an expert-based assessment of alternative scenarios for future electricity development in Saskatchewan. The framework demonstrates sustainability integration in SEA in a practical sense in order to gain information that can be used in identifying of a preferred electricity future scenario for Saskatchewan.

The overall goal of the SEA application was threefold: to determine a preferred future electricity production path for Saskatchewan; to demonstrate the application of an SEA process that uses sustainability principles and criteria; to examine the implications of using a generalized SEA framework that was based on sustainability principles.

White's study looked at a wide array of energy alternatives, ranging from the status quo to nuclear-dominated. Through weighted analysis of the responses of the expert panel, White's study concluded that the most sustainable energy model involved a mix of current generation systems and alternative energy sources.

This however, was one of the most expensive options for consumers, requiring that power rates roughly double. The SEA model was not focused primarily on economic factors; some audience members at the track session suggested that it would be interesting to see an SEA analysis that incorporated consumer resistance. White noted that the recommended energy mix from her SEA model was nonetheless cheaper for consumers than the long-term costs of SaskPower's carbon capture sequestration plan.

Secret Agent Man

There's a man who leads a life of danger. At every convention seminar where he speaks, he stays a stranger.

One of Canada's real-life secret agent men – a member of the Canadian Security and Intelligence Service (CSIS) – gave a presentation on some of the risks engineers and geoscientists face travelling abroad and steps they can take to reduce those risks.

The presenter was a little pudgy, bearded and bland-looking – not at all like Daniel Craig. However, he refused to provide his name and got upset when someone tried to take his picture.

The presenter (referred to through the rest of the Annual Meeting as "Spy Guy") explained that, because of their knowledge, engineers and geoscientists could often be prime targets of foreign intelligence agencies and rebel groups. He also pointed out that, as relatively prosperous Westerners, engineers and geoscientists could become victims of criminal organizations in Third World countries.

Spy Guy gave several technology-related tips for reducing exposure to foreign intelligence agencies.

"If you've got a fancy laptop, get a crappy one. If you've got a smartphone, leave it at home and get a temporary phone where you are going. Just use the minimum amount of technology you need to get the job done."

He also recommended that business travellers not carry personal photos which could be used by spies and criminals for manipulation purposes.

"Those pictures could tell them that you have a spouse and kids. They could tell them that you have a big house or a car that you could sell for ransom."

Spy Guy outlined several techniques that foreign intelligence agencies might use to manipulate or recruit visiting scientists such as the classic "honey pot" tactic in which the professional is blackmailed after having been seduced by a member of the opposite sex.

He discussed the difference in objective and styles of spies and criminals. The latter, he explained, typically look only for short-term opportunities such as money, objects or technology that could be easily resold or for kidnapping opportunities. The best defence against these, according to Spy Guy, is staying low-key and using common-sense personal security in poor countries.

"Anything you can do to prevent yourself from standing out is a good idea. You might even want to think about buying some clothes in the host country. It will make you less of a target… and you might even pick up some cool souvenirs!"

Spy Guy also outlined some security tips for staying in foreign hotels, such as never using hotel safes, never returning key cards (which can be imprinted with credit card or passport information) and trying to stay between the third and tenth floors.

"Higher than the third floor makes it harder for burglars and other crimes of opportunity but the typical maximum reach of emergency vehicles is the tenth floor," he explained.

For all of that, Spy Guy closed off by saying that business travellers "shouldn't get too paranoid." He recommended that all travellers check their destinations on the federal Foreign Affairs website, **www.voyage.gc.ca**.

Two-For-One Industry

Saskatchewan's forestry industry has been through ups and downs in recent years but Ben Voss, P.Eng. is aiming to even things out. As president and CEO of the MLTC Resource Development Limited Partnership (a division of the Meadow Lake Tribal Council), he is working to enhance the profitability of a sawmill by turning it into a two-for-one industrial facility.

MLTC Resource Development is a First-Nations owned limited partnership and one of Saskatchewan's largest private equity investment managers. The partnership employs over 2,400 people across a wide range of projects.

MLTC Resource Development Limited Partnership, together with its planning partners, has developed a biomass power generation plant adjacent to the NorSask Forest Products sawmill located east of Meadow Lake.

The facility will use sawmill residual wood and other biomass inputs to generate 36 MW of baseload electricity for interconnection and supply to SaskPower. The facility will use state of the art, proven technology for conversion of biomass to steam which will drive a conventional steam turbine.

The capital cost of the facility will be in the order of $150 million. The biomass power boiler will be designed to burn primarily wood residue fuel, mostly sawdust, chips, shavings and bark. Other miscellaneous organic materials from the forest are suitable as fuel sources and will be added to the plant's mix.

Once generated, the electricity will be fed into the main SaskPower grid system. The electrical substation specification and layout as well as the design for the electrical transmission line and tie-in to the local utility system will be tailored to suit local conditions and local utility requirements. SaskPower will take a lead role designing, building and engineering this part of the plant's operations.

Professional Development Lunch Keynote Speaker:

Linda Nazareth

At noon on Friday, May 4, 2012 in Saskatoon, the sky was blue, the sun was shining and the birds were singing. But inside the Delta Bessborough of the APEGS Professional Development Luncheon, economist Linda Nazareth was describing the imminent and unavoidable doom of the global economy.

Nazareth is a well-known business journalist who has been the in-house economist for over a decade for Business News Network (BNN), Canada's only all-business television network. Prior to joining BNN, Linda was a senior economist with CIBC, where she spent 10 years honing her analytic skills. Earlier in her career she was an economist with the federal government where she specialized in demographic and labour market forecasting.

Nazareth reviewed some of the causes and consequences of what she calls "the Humpty Dumpty economy" a.k.a. the 2008 economic crunch. She described how Canada and the world have struggled to emerge from it.



In Nazareth's judgment, the key to long-term recovery and growth of Canada or any major economy lies in boosting productivity – doing more with the inputs you have. Achievement that requires innovation, an area where she sees Saskatchewan falling behind.

"The recession actually ended years ago but no one really believes it. The prevailing mentality is reminiscent of hard times, not good times," said Nazareth.

While the economy generally may technically be out of recession, Nazareth noted the "jobs recession" continues. She pointed out particularly concerning statistics on youth unemployment which is averaging into the double digits in OECD countries and, in some cases, hovers around the 40 per cent mark.

The road to full economic recovery and vibrant growth is even more complicated because the world can no longer depend on the US to lead the way out.

"Too much has been shattered – from jobs to wealth to confidence – for the US to provide strong leadership," she said.

Governments have tried everything to shock the world economy back to life but it is just simply going to take a while, Nazareth said.

All the while that countries are trying to recover from current economic woes, other problems loom on the horizon. The world's aging population threatens to sharply reduce the workforce and tax base of most countries while at the same time raising social costs for things like health care.

The debt problems of Europe have not gone away and could easily stall any effort at economic recovery. As well, today's climbing fuel prices are a bad sign since American consumers have historically overreacted to any increased cost at the pumps.

On the plus side, Nazareth said there are signs of growth, albeit tepid, from the US. The so-called BRIC countries (Brazil, Russia, India, China) inspire hope for strong growth in the world economy, although these prospects remain long-term.

Canada is doing relatively well, but we have our own set of problems. Consumer debt remains a danger for Canada but the Bank of Canada faces a dilemma. The only proven way to discourage consumers from borrowing is to raise interest rates but Canada could not risk raising money costs as long as American lending rates remain low.

The country's high loonie, driven by the commodity sector, has had the effect of depressing production and employment in manufacturing and other sectors.

Focusing in on Saskatchewan, Nazareth admitted the province is in a very good spot compared to other places.

"The atmosphere you feel in Saskatchewan today is a lot like what you would have felt in Calgary 20 or 30 years ago," Nazareth said.

She rattled off a long list of positive factors in the Saskatchewan economy, from building permits to employment rates. However, she emphasized that, as an export-based economy, Saskatchewan can not escape the world's problems forever.

In Nazareth's judgment, the key to long-term recovery and growth of Canada or any major economy lies in boosting productivity – doing more with the inputs you have. To achieve that requires innovation, an area where she sees Saskatchewan falling behind.

Saskatchewan ranks sixth of Canadian provinces in terms of patents per capita. Availability of venture capital is second-worst among the provinces. Saskatchewan research and development spending is on par with Prince Edward Island.

It is in this area that Nazareth sees engineers playing a lead role.

"There aren't enough of you! Even though you've had a lot of growth lately, in 2009 Saskatchewan was dead last in percentage of engineers and scientists in the workforce. We need more of you out there developing the productivity innovations of the future."

2011 APEGS Salary Survey Summary Results

The Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) contacted via email a total of 4,270 Professional Engineers, Professional Geoscientists, Engineers- in-Training, Geoscientists-in-Training and Licensees living in Saskatchewan. A total of 1,486 members completed the survey representing a 34.8 per cent response rate. Of those, 1,444 were employed full time and used in the analysis. Surveys were completed from mid February to mid March 2012 and salaries reported were as at December 31, 2011. Insightrix Research Inc. compiled and tabulated all results. The detailed report from Insightrix can be found on the APEGS web site at **www.apegs.sk.ca**

The main goals of the survey are:

- to provide information to all members regarding monetary compensation for different levels of responsibility and advanced degrees;
- to provide information to employers to assist them in establishing appropriate pay levels for recent graduates and ensuring competitive compensation packages for experienced professionals; and
- to give students, career counsellors and other interested persons information on employment, including salaries, in the engineering and geoscience professions in Saskatchewan.

Annual Salary by Designation

DESIGNATION	COUNT	MEAN	5	25	MEDIAN	75	95	%
P.Eng.	845	$111,053	$70,000	$88,000	$104,000	$126,000	$178,500	58.5%
P.Geo.	56	$117,573	$84,000	$100,000	$110,000	$131,742	$180,000	3.9%
P.Eng. and P.Geo	9	NA	NA	NA	NA	NA	NA	.6%
Engineering License	7	NA	NA	NA	NA	NA	NA	.5%
Engineer-in-Training	493	$68,382	$51,480	$59,000	$66,000	$75,000	$90,000	34.1%
Geoscientist-in-Training	33	$83,834	$53,000	$75,000	$81,000	$90,000	$127,000	2.3%
	1443							**100%**

*NA = Not available due to reporting rules

Annual Salary by Discipline

DISCIPLINE	COUNT	MEAN	5	25	MEDIAN	75	95	%
Agriculture and Forestry	30	$82,751	$51,480	$64,500	$79,500	$92,130	$130,000	2.1%
Chemical, Ceramic and Metallurgical	69	$106,149	$63,000	$78,800	$100,000	$125,000	$175,000	4.8%
Civil	285	$90,046	$55,000	$67,500	$81,163	$105,000	$153,000	19.7%
Electrical and Engineering Physics	226	$93,247	$53,250	$70,000	$90,000	$108,000	$155,000	15.7%
Environmental	89	$89,842	$57,000	$70,000	$83,482	$101,125	$146,500	6.2%
Geological, Mining, Petro. Engineering	134	$109,811	$65,000	$80,636	$103,250	$130,000	$180,000	9.3%
Geosciences, Geology	88	$100,171	$59,000	$80,000	$90,925	$122,500	$150,000	6.1%
Mechanical and Industrial	360	$94,655	$55,000	$69,300	$88,000	$112,504	$150,500	24.9%
Software Engineering	23	$86,636	$54,300	$61,000	$70,000	$92,400	$160,000	1.6%
Other	140	$105,731	$57,247	$76,500	$97,719	$126,000	$193,500	9.7%
	1444							**100%**

Annual Salary by Degrees

DEGREES	COUNT	MEAN	5	25	MEDIAN	75	95	%
Bachelor's or academically qualified	985	$92,864	$55,000	$68,000	$84,000	$108,000	$160,000	68.2%
Between Bachelor and Master's	195	$98,961	$59,573	$75,000	$93,000	$115,000	$151,000	13.5%
Master's	177	$103,636	$60,000	$80,000	$97,437	$120,000	$185,300	12.3%
Between Master's and Doctorate	22	$128,418	$73,800	$93,000	$111,500	$170,000	$180,000	1.5%
Doctorate	65	$107,736	$60,000	$90,000	$106,000	$126,500	$150,001	4.5%
	1444							**100%**

Annual Salary by Final Year of Graduation (B.Sc.)

YEAR	COUNT	MEAN	5	25	MEDIAN	75	95	%
<1976	51	$151,133	$84,000	$110,000	$138,000	$174,544	$235,000	3.6%
1977	10	$128,914	$95,000	$106,000	$116,869	$150,000	$185,000	0.7%
1978	21	$143,019	$95,000	$110,000	$127,000	$169,000	$225,000	1.5%
1979	13	$139,482	$95,266	$130,000	$142,000	$145,000	$195,000	0.9%
1980	12	$128,841	$69,634	$121,228	$135,000	$141,000	$180,000	0.8%
1981	11	$136,802	$86,000	$108,000	$135,000	$155,000	$212,000	0.8%
1982	22	$127,329	$75,000	$100,000	$109,327	$150,401	$215,000	1.5%
1983	17	$144,396	$90,000	$120,000	$143,000	$165,000	$250,000	1.2%
1984	13	$130,320	$82,000	$105,000	$120,000	$135,860	$241,000	0.9%
1985	17	$117,799	$84,450	$99,802	$110,000	$123,000	$187,000	1.2%
1986	27	$128,880	$84,000	$101,000	$125,000	$155,000	$200,000	1.9%
1987	32	$117,795	$88,000	$95,250	$112,162	$126,500	$180,000	2.2%
1988	21	$116,968	$92,000	$105,000	$118,500	$128,232	$150,000	1.5%
1989	24	$118,608	$78,720	$97,500	$112,014	$132,500	$167,000	1.7%
1990	18	$132,362	$73,416	$107,000	$118,556	$142,000	$307,500	1.3%
1991	18	$118,751	$80,142	$95,000	$115,000	$136,000	$200,000	1.3%
1992	16	$118,518	$96,000	$109,084	$117,500	$123,560	$160,000	1.1%
1993	22	$117,303	$86,564	$106,700	$114,000	$128,000	$155,000	1.5%
1994	33	$119,035	$61,000	$105,000	$115,000	$135,000	$170,000	2.3%
1995	30	$120,829	$80,000	$90,000	$119,500	$145,000	$180,000	2.1%
1996	28	$113,741	$79,900	$95,500	$106,356	$128,000	$162,500	2.0%
1997	31	$111,830	$70,000	$90,984	$105,000	$129,000	$150,000	2.2%
1998	30	$98,969	$65,000	$80,000	$97,153	$110,000	$150,000	2.1%
1999	47	$99,726	$66,500	$80,000	$100,000	$115,000	$155,000	3.3%
2000	43	$97,017	$66,000	$82,810	$96,000	$109,000	$132,000	3.0%
2001	57	$96,447	$75,000	$87,000	$95,000	$104,281	$139,900	4.0%
2002	55	$94,834	$65,000	$83,000	$92,000	$106,000	$126,300	3.9%
2003	48	$93,246	$67,008	$80,000	$91,000	$104,100	$132,000	3.4%
2004	58	$86,945	$61,000	$75,000	$85,500	$97,500	$128,000	4.1%
2005	82	$84,601	$60,000	$74,200	$84,500	$92,000	$110,000	5.8%
2006	69	$80,924	$55,185	$67,750	$80,000	$90,000	$110,000	4.8%
2007	83	$74,375	$53,250	$64,770	$74,000	$82,000	$104,000	5.8%
2008	93	$75,589	$57,600	$67,000	$73,000	$82,000	$95,625	6.5%
2009	86	$68,658	$55,500	$60,639	$66,800	$73,700	$90,000	6.0%
2010	96	$64,753	$52,000	$57,460	$61,950	$70,000	$80,636	6.7%
2011	90	$60,448	$45,000	$55,000	$58,750	$66,000	$80,570	6.3%
	1424							**100%**

Annual Salary by Function

FUNCTION	COUNT	MEAN	5	25	MEDIAN	75	95	%
Corporate Management	102	$147,133	$93,000	$112,000	$139,500	$160,000	$230,000	7.1%
Design	329	$79,129	$52,000	$61,500	$73,200	$89,000	$125,000	22.8%
Exploration	33	$70,300	$51,000	$57,000	$64,064	$75,000	$119,000	2.3%
Inspect/Quality Control/Res. Services	85	$95,014	$65,000	$78,800	$90,000	$108,900	$135,000	5.9%
Marketing/Sales	42	$94,627	$67,000	$75,000	$91,000	$109,000	$127,347	2.9%
Operating or Maintenance	25	$112,829	$75,000	$96,500	$120,000	$130,000	$150,001	1.7%
Project Administration	46	$87,366	$59,500	$68,000	$79,000	$99,560	$140,000	3.2%
Project or Operations Management	572	$101,112	$58,800	$77,525	$95,000	$118,500	$164,000	39.6%
Reg. Approvals and/or Enforcement	50	$95,681	$59,000	$78,000	$90,000	$110,000	$144,000	3.5%
Research/Planning	94	$89,089	$52,000	$69,000	$86,750	$105,000	$140,000	6.5%
Teaching	16	$96,113	$53,250	$65,385	$89,000	$120,000	$170,000	1.1%
Other	50	$83,135	$50,000	$58,000	$76,500	$103,000	$133,000	3.5%
	1444							**100%**

Annual Salary by Industry

INDUSTRY	COUNT	MEAN	5	25	MEDIAN	75	95	%
Agriculture and Forestry	17	$84,132	$52,000	$67,332	$80,000	$105,000	$120,000	1.2%
Consulting	404	$90,843	$55,000	$65,000	$81,700	$108,000	$156,000	28.0%
Educational Services	44	$103,017	$60,000	$76,000	$104,500	$128,560	$140,000	3.0%
Manufacturing Durables	139	$80,128	$50,000	$60,000	$71,000	$92,130	$133,538	9.6%
Manufacturing Non-Durables	46	$98,827	$63,600	$75,000	$87,000	$115,000	$170,000	3.2%
Procurement and Construction	96	$91,719	$55,000	$67,300	$82,558	$102,000	$170,000	6.6%
Resource Industry Oil & Gas	44	$103,783	$58,995	$75,000	$95,300	$121,000	$185,000	3.0%
Resource Industry without Oil & Gas	272	$111,193	$72,000	$84,800	$102,500	$130,000	$175,000	18.8%
Service For Profit	19	$95,611	$52,000	$61,000	$87,000	$132,140	$160,000	1.3%
Service Not For Profit	102	$95,856	$62,000	$75,467	$90,000	$108,000	$150,001	7.1%
Utilities	200	$98,980	$58,260	$77,350	$94,536	$113,375	$160,500	13.9%
Other	61	$91,580	$55,000	$68,000	$85,000	$105,000	$152,000	4.2%
	1444							**100%**

Annual Salary by Experience

EXPERIENCE	COUNT	MEAN	5	25	MEDIAN	75	95	%
<1 year	105	$63,460	$48,000	$55,000	$60,000	$69,000	$83,700	7.3%
1 year	36	$67,287	$48,000	$53,000	$59,793	$65,750	$120,000	2.5%
1.5 years	60	$65,133	$51,692	$56,651	$62,500	$69,650	$91,275	4.2%
2 years	72	$73,990	$56,000	$60,000	$66,466	$75,357	$117,555	5.0%
3 years	110	$71,598	$54,000	$62,000	$71,000	$78,360	$91,000	7.6%
4 years	96	$78,994	$51,886	$66,104	$76,500	$88,000	$121,000	6.6%
5 years	95	$81,248	$62,800	$70,000	$76,000	$88,900	$114,000	6.6%
6 years	95	$86,921	$61,500	$76,000	$85,000	$94,500	$113,008	6.6%
7-8 years	113	$93,092	$66,000	$78,000	$90,000	$101,920	$132,000	7.8%
9-10 years	101	$101,025	$67,000	$85,000	$94,500	$112,000	$144,000	7.0%
11-12 years	96	$99,693	$71,000	$86,800	$98,200	$109,500	$139,900	6.6%
13-14 years	61	$110,465	$75,000	$95,000	$105,000	$123,000	$150,000	4.2%
15-17 years	97	$120,171	$84,000	$96,760	$114,000	$136,000	$187,000	6.7%
18-20 years	55	$115,759	$80,142	$100,500	$113,000	$130,000	$160,000	3.8%
21-24 years	72	$126,462	$88,000	$110,000	$120,000	$134,842	$175,000	5.0%
25+ years	180	$139,019	$83,000	$107,000	$131,000	$156,000	$212,500	12.5%
	1444							**100%**

Annual Salary by Sector

SECTOR	COUNT	MEAN	5	25	MEDIAN	75	95	%
Public Sector	445	$72,195	$52,000	$60,000	$68,640	$80,000	$105,000	31.0%
Private Sector	992	$95,163	$55,000	$69,000	$85,550	$111,725	$165,000	69.0%
	1437							**100%**

Total Salary

SECTOR	COUNT	MEAN	5	25	MEDIAN	75	95	%
Base Salary	1444	$96,219	$55,135	$71,000	$89,472	$112,441	$160,000	100%
Salary including bonus	1444	$110,182	$58,000	$77,053	$97,918	$127,549	$200,000	100%

Salary Changes - Full Time Positions

YEAR	MEDIAN SALARY	% INCREASE	AVERAGE SALARY	% INCREASE
1987	$48,000	-	$49,269	-
1989	$50,928	6.10%	$62,887	27.60%
1991	$54,110	6.20%	$57,578	-8.40%
1993	$54,480	0.70%	$56,703	-1.50%
1995	$56,400	3.50%	$59,142	4.30%
1997	$60,000	6.40%	$62,266	5.30%
1999	$62,500	4.20%	$65,401	5.00%
2001	$66,000	5.60%	$68,877	5.30%
2003	$68,800	4.20%	$71,210	3.40%
2005	$71,008	3.20%	$73,607	3.40%
2007	$74,000	4.20%	$77,374	5.10%
2008	$76,352	3.20%	$83,025	7.30%
2009	$80,000	4.80%	$86,908	4.70%
2010	$82,950	3.70%	$91,548	5.30%
2011	$84,224	1.54%	$91,154	-0.40%
2012	$89,472	6.23%	$96,219	5.56%

Regression Analysis

Stepwise linear regression was used to find the best model for estimating salaries. The formula produced explains over sixty percent of the variance in salary (61.3%). Any model explaining at least 50% of the variance in the dependent variable can be considered an effective model. Refer to the "Classification Rating Guide", which can be found on **www.apegs.sk.c**a, to determine the values for each factor.

FACTOR	B (COEFFICIENT)	BETA (RELATIVE IMPORTANCE)
Duties (A)	106	0.184
Experience (C)	266	0.294
Recommendations, Decisions and Commitments (D)	70	0.082
Supervision Scope (G)	904	0.291
Absence From Base Of Operations (J)	558	0.067
Receipt of professional designation	7389	
(Constant)	44168	N/A

Formula for Expected Salary (SE) without Bonus:

SE = 44168 + 106*(A) + 266*(C) + 70*(D) + 904*(G) + 558*(J)
Add 7389 if you have acquired professional status within your field (P.Eng or P.Geo)

Brian Eckel Distinguished Service Award

Clarence Arthur Reed, P.Eng., FEC

The Distinguished Service Award was created in 1978 and renamed the Brian Eckel Distinguished Service Award in 2004 to recognize the contributions of the late Brian Eckel, P.Eng., P.Geo. to society, the profession and the Association. This award recognizes outstanding contributions to the community, the Association and technical and learned organizations. It honours distinctive and outstanding achievements in professional and technical fields. This award is an honour given only to those who truly exemplify the best standards in engineering and geoscience in Saskatchewan.

Brian Eckel, P.Eng., P.Geo. graduated from the University of Saskatchewan with a B.Sc. in Civil Engineering (great distinction) in 1982 and with an M.Sc. in Geotechnical Engineering in 1985. He was involved in many economic and infrastructure projects in Western Canada throughout his career. Brian was an active volunteer, serving in a wide variety of capacities with APEGS, including serving as president in 2001-02. He also served the broader engineering and geoscience community, including the Consulting Engineers of Saskatchewan, the Saskatoon Geotechnical Society, the University of Saskatchewan's College of Engineering and a variety of technical and learned societies. He also served as member and executive member of the Saskatoon North Rotary Club and made numerous presentations to professional and community organizations.

Brian was dedicated to his family and enjoyed hunting, fishing, curling and cycling. Unfortunately, Brian was the victim of a boating accident less than a month after taking over as APEGS Past President.

This year's recipient of the Brian Eckel Distinguished Service Award is Clarence Arthur Reed, P.Eng., FEC.

Clarence was born and raised on a farm just outside of Tisdale, Saskatchewan. He credits his farm background for his work ethic and his mother for his decision to study engineering. According to Clarence, his mother was "bound and determined" that all three of her sons receive a professional education so he followed his older brother into the engineering field.

Clarence graduated with a degree in Civil Engineering in 1960 from the University of Saskatchewan. Straight out of college, he went to work for B.B. Torchinski Consulting Engineers, for whom he had previously worked as a summer student. He later went to work for Western Caissons Ltd. in Alberta. Finally, in 1969, he started his own consulting firm, C.A. Reed and Associates. Although the company was originally headquartered in Edmonton, Clarence yearned for home and ultimately moved the company to Tisdale. The company currently employs eight people and maintains a branch office in Yorkton.

Clarence's career has taken him from one end of the country to the other, and into the northern United States. During the 1970s, Clarence's company worked extensively in the Northwest Territories, building housing, apartments and commercial developments throughout the territory.

Back home in Saskatchewan, Clarence earned distinction in the potash industry for his work developing repair systems. This work involves finding effective ways to maintain gigantic buildings that can measure as large as 100 feet high and 1600 feet long. To develop the repair systems, Clarence had to conduct extensive destructive testing which included conducting a wind tunnel test on an entire building.

Throughout his career, Clarence has contributed extensively to the profession. For a decade, he served as APEGS Councillor for the Northeast District. In 2006, he was honoured to serve a term as APEGS President.

Wherever he has lived, Clarence has been active in his community. He has been active in a variety of community organizations including serving as President of the Cosmopolitan Club in Edmonton and as a board member for the Tisdale Anglican Church. In 1981, he was elected reeve of the RM of Connaught No. 457.

In addition to his engineering career, Clarence is an active farmer and is just as much an innovator in that business. His accomplishments in the agriculture industry include serving as President of Zenon Park Cooperative De-Hy Ltd., an award-winning alfalfa plant that exported to customers around the world.

Clarence and his wife, Kathleen, have been married since 1959. They have two girls and three boys, including one son who is an engineer in the oil industry. The Reeds spend as much time as they can enjoying the company of their 13 grandchildren and one great-grandchild.

Environmental Excellence Award

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

This year the award recognizes the Saskatchewan Research Council's Combined Heat and Power (CHP) Unit.

The CHP unit installed at Inland Metal is a first-to-market system that combines diverse capabilities into one package. The system operates on natural gas and has the ability to generate heat and power simultaneously to reduce the overall energy consumed.

This CHP unit requires 35 per cent less input energy to create the same amount of usable output energy when compared to traditional power production and gas- fired heating systems in Saskatchewan.

These efficiency savings also provide an environmental benefit by reducing greenhouse gas emissions by up to 55 per cent for the usable electrical and thermal energy produced by CHP systems when compared with traditional power production and gas-fired heating systems in Saskatchewan.

SRC's CHP unit is different from similar systems on the market because of its unique combination of technologies and its specific design for the Canadian marketplace.

The results of this demonstration show good potential for CHP systems to reduce emissions from generating power and heat, as well as to provide building owners with a backup power system.

Exceptional Engineering - Geoscience Project Award

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

This year the award recognizes the Saskatchewan Watershed Authority.

The Saskatchewan Watershed Authority (SWA) leads the management of the province's water resources to ensure safe drinking water sources and reliable water supplies for economic, environmental and social uses for Saskatchewan people.

In spring 2011, Southeast Saskatchewan faced runoffs greater than any in recorded history. The catastrophic event put to the test the province's extensive system of weather forecasting and flood management.

SWA staff advised communities on flood mitigation techniques and helped put them in touch with resources. They distributed over $22 million for flood prevention structures – mainly simple ditches, berms and sandbags. In the aftermath of the flood, they helped property owners get in touch with funding to help turn temporary flood barriers into permanent flood prevention structures.

SWA was also responsible for managing the region's major water control structures, the Rafferty-Alameda Dams. Although flood waters ultimately proved too much even for these massive structures, the dams gave engineers a level of control over flood waters that they would not otherwise have had.

SWA employs roughly 80 engineers, geoscientists and support technicians to manage the various aspects of the agency's mandate.

Mc Cannel Award

Harry Sabier, P. Eng., FCSCE, FEC

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

This year's recipient, Harry Sabier was born and raised in Fort Qu'Appelle, Saskatchewan. He graduated from the University of Saskatchewan in 1954 with a bachelor's degree in Civil Engineering. He then went to work for the Saskatchewan Department of Highways, first in the Materials and Testing Branch and then as a resident engineer on grading and paving projects.

After three years with Highways, Harry attended Purdue University which granted him a master's degree in Engineering in 1959. Harry returned to Saskatchewan to work as a consulting engineer for the next 26 years. He worked in geotechnical and materials testing, civil engineering aspects of municipal engineering and some major civil projects such as the Morrison dam near Coronach.

He was the engineer in charge of the site exploration for Regina's primary sewage treatment plant in the 1970s and led the design and contract administration team on what was at that time one of the largest capital projects undertaken by the City of Regina.

Harry served as the Director of Membership Services at the APEGS office from 1985 to 1998 when he retired. Excellent co-workers and volunteers made this period of career pleasurable and rewarding.

Harry's volunteer work with APEGS began in the 1960s when he and Reg Bing-Wo, P.Eng. formed the Admissions Committee. Harry served on APEGS Council from 1972 to 1974. He was elected as vice-president in 1980 and president in 1981. Harry also served as president of the Regina Engineering Society and was a founding member of the Regina Geotechnical Group.

Harry's community activities were strongly linked to alpine skiing. He was an instructor with the Alpine Disabled Ski program of the Regina Ski Club (RSC). He guided paraplegic skiers to two provincial championships. He also served in several executive positions with the RSC. He was a founding member of the Regina Masters swim club.

Harry's interest in fitness also carried over to the health field. He served on the board of the Regina Community Clinic for nine years, three as president.

Harry and his wife Audrey recently celebrated 55 years of marriage. They have three children and four grandchildren.

Outstanding Achievement Award

Art Bergan, P.Eng.

The Outstanding Achievement Award was created in 1998 to honour members who show technical excellence and achievement in engineering and/or geoscience in Saskatchewan. This year's recipient is a distinguished member of our association, Arthur Bergan, P.Eng.,

Art studied civil engineering at the University of Saskatchewan, where he graduated with a bachelor's degree in 1961 and a master's degree in 1964. He was then hired by the Department of Civil Engineering at the U of S, where he remained a faculty member until his retirement in 1995. He went on to earn his Ph.D. in civil engineering at the University of California, Berkeley, in 1972.

During Art's 32 years as a faculty member at the U of S, he supervised 46 graduate students. Art authored or co-authored more than 140 refereed journal papers and conference proceedings, sat in various capacities on 18 committees. Art has had a lifelong fascination with roads

and traffic systems. After completing his Ph.D., he established the U of S Transportation Research Centre where he continued as a director until 2005. The centre attracted over $5 million in research funding.

Art served two terms on the civil engineering grant selection committee of the Natural Sciences and Engineering Research Council, including one year as committee chair. He served on the Canadian Engineering Accreditation Board visitation teams to the University of British Columbia in 1987 and the University of Calgary in 1992. He was appointed to the Board of Examiners of the University of Nairobi in Kenya for all students registered in the master's and Ph.D. programs in transportation engineering.

Art came to realize that there was a need for much better information on the vehicles using our transportation networks. In 1980, he founded International Road Dynamics to develop weigh-in-motion technology. Art continues as Chairman of the Board, technical adviser and mentor for this award-winning company.

Throughout his career, Art has been involved with many professional organizations. In the early 1990's, he was honoured with the Saskatoon Engineering Society's Engineer of the Year award. In 2003, he was elected to the Saskatchewan Transportation Hall of Fame. In 2007, Art was inducted to the University of Saskatchewan College of Engineering's Alumni Wall of Distinction.

Art was the major organizer of the U of S College Reunion in 1982, 1993 and 2002. He is the honorary co-chair of the 100th anniversary of the College of Engineering to be held in 2012.

Promising Member Award

Sarah M.C. Gauthier, P.Eng.

The Promising Member Award, established in 1995, recognizes exceptional achievements by professional members in the early stages of their careers in Saskatchewan. This year the award recognizes Sarah Gauthier, P.Eng.

Sarah holds bachelor's degrees in Microbiology and Civil Engineering and is currently pursuing a Master of Engineering degree. She is registered as a professional engineer in Saskatchewan, the Northwest Territories and Nunavut.

Sarah has served on the boards of Saskatchewan Transportation Company, Saskatchewan Power Corporation, Northpoint Energy Solutions, Saskpower International, and the Saskatchewan Environmental Industry and Managers Association. She currently serves on the advisory board for the Wilson Centre for Entrepreneurial Excellence.

Sarah's accomplishments have been recognized through many awards including the Saskatchewan Centennial Medal, Women of the Dawn First Nations Awards in Science and Technology, and the Athena Young Professional Leadership Award, in addition to numerous academic scholarships.

In her spare time, Sarah enjoys speaking to young women and Aboriginal youth regarding career opportunities that exist within science and engineering. On a personal level, Sarah enjoys running and cycling. She is registered to run the New York marathon in November.

Sarah and her husband have recently welcomed their first child. She is looking forward to pushing a running stroller this summer while on maternity leave from her position with Cameco Corporation.

APEGS View

The Gerry Zoerb Award

The Gerry Zoerb award is presented each year to recognize the member achieving the highest mark in the Principles of Professional Practice exam.

The winner of the award in 2011 was Ila J. Klassen, Engineer-In-Training. Ila achieved a mark of 93.5 per cent, the highest mark of a total of 323 members-in-training who wrote the exam in 2011.

Council Notes

March 1 and 2, 2012, Delta Bessborough, Saskatoon SK

16 of 19 Councillors present

- Council was advised that APEGS was selected for the competency-based work experience reporting pilot project conducted by Engineers Canada. Nine APEGS members-in-training will participate in the pilot project.
- Council approved the Academic Review Committee's revised Terms of Reference, amended to include the roles of the ARC Reviewer and the Special Advisor.
- Council approved a new APEGS award, "Friend of the Professions Service Award". It will be awarded only to non-members in recognition of outstanding contributions to the profession.
- Council approved the Equity and Diversity Committee's revised Terms of Reference, amended to remove reference to advisory groups that are no longer active.
- Council congratulated the ¼ scale tractor international design competition team, which placed 4th overall (out of 24) in Peoria, Illinois.
- Council adopted the administration policy Admin 6.1 – Delegation of Remission of Fees in Certain Circumstances to the Executive Director, to take effect immediately. The policy provides the Registrar with the authority to grant a credit for periods of three months or more under circumstances of parental leave, unemployment and seeking work, full-time attendance at an educational institution, away from the work force for an extended period of time to raise a family, retired and on long term disability.
- Council appointed Stephanie Campbell, Engineer-in-Training as Chair of the Student Development Committee for a two-year term ending after the first meeting of the committee following the 2013 APEGS annual meeting.

In Memoriam

Briggs, Reginald J., P.Eng.

Burton, J. Frank, P.Eng.

Chang, Lloyd G., P.Eng.

Chaudry, Huma K., P.Eng.

Filson, Russell N., P.Eng.

Registrar's Advisory Committee

There was a recent case before the Registrar's Advisory Committee where a professional member whose licence had lapsed due to non-payment, continued to practise in Saskatchewan without a licence. This was in contravention to the Good Character Guideline which states that contravention of a professional statute with a professional regulatory organization is cause for examining the character of the applicant. The Good Character Guideline can be found on the APEGS Web site under Registration, Overview.

Conditions on

Reinstatement Due to Character Issues

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

Cases can come before the Registrar's Advisory Committee when an applicant:

- has a record of professional misconduct, professional incompetence or contravention of a professional statute with a professional regulatory organization or agency;
- has committed a criminal offence for which a pardon has not been granted pursuant to the Criminal Records Act;
- has been found to be at fault in a civil action relating to negligence in his or her professional practice; and
- wilfully obtains or attempts to obtain registration or renewal of registration by cheating on an examination, making or causing to be made a false statement on his/her application or committing any other impropriety during the application process.

In this case, the former member couldn't recall paying annual dues recently so contacted the APEGS office to check on his status. It had been more than two years since the person's membership ceased, so the person was required to reapply as a professional member.

The APEGS reinstatement policy states that if membership lapsed more than two years ago, the former member is treated as a new applicant. Subsequently, a professional member application, application fee, experience review and three professional references were required (the APEGS reinstatement policy can be found on the APEGS website under Resources, Policies).

If this member had a current membership with another association in Canada, the reassessment of experience and references would not be required because the person could have applied under Inter-Association Mobility. However, the person would still have been subject to the Good Character Guideline for practising in Saskatchewan without being licensed.

The Registrar's Advisory Committee reviewed the circumstances as well as the explanation provided by the applicant. The committee recommended to the Registrar that the applicant be registered as a professional member with conditions. The two conditions were that the member attend the Law and Ethics Seminar and ensure that a valid professional seal be applied to any documents issued during the time the member's licence was lapsed. If the member did not comply with the conditions, the matter would be referred to the Investigation Committee. Time limits were placed on the conditions However, the member could submit a written request (providing reasons) for an extension.

Important considerations in this case:

Maintaining a valid membership and licence is your professional responsibility:

a) **It is crucial that you promptly inform APEGS of change in address so that renewal notices are delivered successfully.**

b) **Negligence of an administrative assistant in having the dues paid does not absolve the member of the responsibility of ensuring dues are paid.**

c) **Be aware of delays in administrative/accounting processes that may cause your payment to be late if your employer pays your dues on your behalf.**

A delay in paying membership/licence fees could trigger the late payment penalty, and in the worst case, cause your membership to cease and licence to expire. If your membership/licence ceases, you will no longer receive renewal notices for subsequent years and you are removed from the APEGS mailing list. You may also lose your eligibility for affinity programs such as the ManuLife Life Insurance program.

It is APEGS practice to mail renewal notices in mid-November for the upcoming year's dues. Should any member not renew by January 31 and no contact is made with the association office indicating resignation, a registered letter is sent to help ensure members are aware their membership has ceased. Reminder emails are also sent as a courtesy in mid-January for those members for whom the association has an email address.

It is recommended that you also maintain a valid email address with APEGS so that you can receive important notices. APEGS aims to keep email notices to a minimum.

You can now maintain your contact information through the APEGS On-Line Profile System. There is a link to this at **www.apegs.sk.ca**. Look for the yellow banner containing the link. Your UserID is your five digit registration number (preceded with zeros if your registration number is only three or four digits). You can obtain your password by using the "New password / Forgot password" tool found on the log in page. Should you need assistance using the On-Line Profile system, please contact the APEGS office and staff would be happy to help you.

GEOSCIENTISTS GÉOSCIENTIFIQUES CANADA

Geoscientists Canada Facilitates New Framework for Assessment Processes in the Licensing of Professional Geoscientists in Canada – its rational and its development

BY KEITH JOHNSON , MBA AND OLIVER BONHAM , M.SC., P.GEO.

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 achieve-ment 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

Much of the impetus for this work by Geoscientists Canada arose in response to (and has followed in parallel with) changing trends in the regulation of professions and inter-provincial labour mobility that have occurred in Canada in recent years. Most important of these are the changes to the federal-provincial Agreement on Internal Trade - Chapter 7, which in effect amount to a legislated mutual recognition agreement between all regulatory authorities for each profession in Canada.

Transfer applicants between provinces now have labour mobility and, subject to certain conditions only, must be re-registered without reassessment and without delay. Because now only one jurisdiction is undertaking an individual's complete assessment, the criteria and methodology used by any one jurisdiction, directly affects the competence of practitioners working in all jurisdictions. Greater harmonization of assessment practices and policies for both domestically-trained and internationally-trained applicants is therefore vital in ensuring the integrity of the entire admissions system nationally.

The regulatory trends and forces has made it necessary that the geoscience profession take a shared, pan-Canadian approach to due diligence in assessing the competency of all individuals seeking licensure as professionals.

The Framework for Assessment in the Licensing of Professional Geoscientists in Canada is directly targeted to address these challenges. It consists of a series of broad, visionary practices and protocols which Canadian geo-science admission officials collectively agree should be used, in the context of the following key topics:

- Document authentication and assessment
- Academic training assessment
- Practice experience assessment
- Timeliness and communications
- Reconsiderations and appeals
- Quality assurance

Core research for the Framework project was a study conducted in 2010 involving a 134-question survey, completed by representatives from all ten regulatory authorities that make up the membership of Geoscientists Canada detailing their current geoscientist assessment and admission practices. This was followed by debate among the regulatory authorities, together with consultations within the geoscience community. Much of the construc-tion of the resulting Framework is based on best practices in the field of credential and competency assessment already in use across Canada in geoscience, in engineering and in other progressive regulated professions. It also takes into consideration due diligence approaches in use in admissions assessment at professional geoscience organizations outside Canada.

Taken together over time, Geoscientists Canada's Geoscience Knowledge and Experience Requirements for Professional Registration in Canada, and the new Frame-work for Assessment in the Licensing of Professional Geoscientists in Canada will ensure similar outcome decisions across the country, when applicants to the profession are assessed and ultimately admitted.

Together they will ensure geoscientist competencies required for licensure can be demonstrated in a consistent and fair manner across the country, while at the same time providing improved due diligence, transparency and effici-ency of process. This in turn will lead to greater overall protection of the public, greater inter-provincial mobility of practitioners, and improved admissions systems for both domestically-trained and internationally trained-geoscientists seeking to enter the profession anywhere in Canada.

Keith Johnson, MBA, is the former Project manager for Geoscientists Canada's International Trained-Geoscientist Project which ran from January 2010 until March 2012.

Oliver Bonham, P.Geo is CEO of Geoscientists Canada.

Annual Meeting 2012

TOP LEFT: Dennis Paddock, P.Eng., FEC chats with Garry Wacker, P.Eng., FEC at the Past Presidents meeting

MIDDLE LEFT: Margaret Anne Hodges, P.Eng., FEC, Robert Schultz, P.Eng. and Kristin Bogdan, P.Geo. at the ice breaker

BOTTOM LEFT: Long-time APEGS staff member Barb Lakeman, FEC (Hon.) (seated, centre) surrounded by family members celebrating her receiving an honourary FEC at the Awards Banquet

TOP RIGHT: Dr. Ernie Barber, P.Eng. and Shawna Jardine promote the upcoming Centennial for the U of S College of Engineering

MIDDLE RIGHT: Barb Lakeman, FEC (Hon.) and Toni Cruickshank taking registrations

News Beyond Our Borders

Geoscientists Nova Scotia Offers Corporate Certificates

Since 2011, Geoscientists Nova Scotia has offered a corporate Certificate of Authorization. The association has long provided certificates for individual professionals but now is able to administer and offer certificates to corporate bodies.

This system is similar to corporate licensure in other jurisdictions and most organizations that are familiar with corporate licensure in these other jurisdictions have complied with the Nova Scotia legislation.

For a corporate body with one professional geoscientist, there is a one-time administration fee of $150. The annual renewal is $100. For a firm with multiple geoscientists, the administration fee is the same but the renewal fee is $500.

Source: Geoscientists Nova Scotia

BC Considers Alternative Complaint Resolution

The Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) is consulting its members on an alternative complaint resolution (ACR) bylaw that the association's Discipline Committee has submitted to APEGBC Council for consideration.

The proposed ACR bylaw will include the forms of ACR (such as mediation or negotiation), the association's involvement in mediation, payment for the process and publication of any consent order negotiated as a result of ACR.

APEGBC has found that the mediation process has been very successful as an efficient and effective means of resolving discipline cases and protecting the public interest. A number of APEGBC discipline cases have been successfully resolved at mediations over the past few years.

APEGBC has significantly reduced discipline-related legal expenses through the use of mediation. Alternative approaches also allow for more flexibility and speed and less complexity in resolving disputes.

Source: The Association of Professional Engineers and Geoscientists of British Columbia

BC Revives Geothermal Projects

While the geological instability of the Pacific Northwest has obvious disadvantages, it also has advantages. The area has an abundance of natural hot springs that have the potential for generating significant amounts of geothermal power.

Producing power from superheated water two to three kilometers under the earth's surface is being done in other countries with similar geology, notes Mory Ghomshei P.Eng., P.Geo., who came to Canada in 1983 to work on BC Hydro's Meager Creek Geothermal Project. Yet today, he says, "Canada is the only major country on the Pacific Ring of Fire which has not yet developed geothermal power."

BC Hydro halted the Meager Creek project in 1984 for financial reasons and because of declining energy prices. Today, Meager Creek is one of two areas in BC being actively investigated for geothermal power production.

While bringing a power plant on-stream still has risks and considerable upfront costs, the timing is looking better than ever. Four private companies have acquired permits to investigate the potential for geothermal power generation in BC.

Source: The Association of Professional Engineers and Geoscientists of British Columbia

New Wing Takes Flight

After four years, PCL crews are putting the final touches on an Edmonton International Airport terminal expansion. The new wing is about 50 per cent (463,000 sq. ft.) bigger than the old terminal. It includes nine aircraft bridges, 34 new stores and eateries, and moving walkways for weary travellers. The wing is also home to a large art program featuring the work of locals and others.

In the US Customs area, travellers enjoy a large mural of Jasper's mountains. In one of the waiting areas, fibreglass chairs and couches resembling melting chocolate provide a quirky place for people to rest.

The new wing is part of $1.1 billion in improvements announced by the airport in 2007.

Source: The Association of Professional Engineers and Geoscientists of Alberta

Ontario Battles Continue

Professional Engineers Ontario (PEO) has once again found itself at loggerheads with the Ontario Society of Professional Engineers (OSPE). The former is the official regulatory body; the latter, an advocacy group. OSPE has been pushing a bill in the Ontario legislature that would officially empower OSPE to be the advocacy group for the profession. PEO has expressed a number of concerns, including that OSPE does not require legislation to fulfill an advocacy role and that such legislation would cause public confusion about the two associations. Although PEO refused to support the bill, it conceded that it would not formally oppose its passage. OSPE feels that the lack of PEO's active support weakens the legislation's chances for success. A sharp exchange of correspondence has ensued.

Source: Professional Engineers Ontario

Alberta Needs Talent

A number of industries are looking at labour shortfalls, with the province projecting the creation of 600,000 new jobs in Alberta over the next 10 years. Worried about looming worker shortages, 15 Alberta business groups have created a lobby group called the Alberta Coalition for Action on Labour Shortages to push the provincial and federal governments to do more to attract talent. If action isn't taken, the group argues, the province's economy will suffer.

The coalition includes the Canadian Association of Petroleum Producers, Canadian Manufacturers and Exporters, the Canadian Energy Pipeline Association, the Alberta Enterprise Group and others. The Petroleum Human Resources Council says that 39,000 new workers

Calgary Herald

will be needed by 2020 to replace retiring workers. About 130,000 new energy workers may be needed in that same period, the council says.

Source: The Association of Professional Engineers and Geoscientists of Alberta

Gee Whizzed: Alberta Adopts Standard Title

After several years of discussion and debate, Alberta's professional engineers and geoscientists have renamed their association and brought their titles in line with the nation-wide standard.

"As a leader in professional mobility, APEGA recognized the value of a single, cross-Canada, designation," stated a document issued to members from the association.

Previously known as the Association of Professional Engineers, Geologists and Geophysicists of Alberta, it will now simply be known as the Association of Professional Engineers and Geoscientists of Alberta. Previously-licensed geologically-trained members will have the option to continue to use the titles P.Geoph. or P.Geol. if they wish but all future geologically-trained members will be given the P.Geo. title familiar across Canada.

Although the name change may seem minor, the association identified important public safety considerations.

"Prior to this change, some geoscience activities fell between geology and geophysics, thus exposing Albertans to potential harm. The public has the right to know that persons offering professional services are fully qualified. That can only be achieved through licensing," stated the association document.

Source: The Association of Professional Engineers and Geoscientists of Alberta

Celebrating Our Own

Quarshie a Woman of Influence

Liz Quarshie, P.Eng. was named as one of Saskatchewan's Women of Influence by Saskatchewan Business Magazine. After a stint as an executive with Areva, Liz Quarshie headed to Calgary to become the commissioner of the National Energy Board. When that appointment expired, she was lured back to Saskatchewan to become the deputy minister of Environment. With degrees from Notre Dame, the University of Saskatchewan and Oxford/Princeton, she is one of only 180 certified professional environmental auditors in the world.

Stewart honoured at Women of Distinction

The 2012 YWCA Regina Women of Distinction awards included recognition for an accomplished APEGS member.

The award for Leadership and Management was presented to Glenna Stewart, P.Eng., a professional engineer and member of Saskatchewan Women in Trades and Technology.

Stewart uses her leadership and management skills to implement new methods in engineering and hire visible minorities. As an Industrial Systems Engineer, Glenna, P.Eng. has held management positions and developed significant process improvements in several companies.

Can't 'Argue' With Success, Says Who's Who

Shawna Argue, FEC, P.Eng. APEGS president from 2010-2011 and president of Argue and Associates Management Consultants, Inc. was recognized by Continental Who's Who as a Pinnacle Professional for her excellence in the field of consulting.

Shawna has vast experience in the areas of environmental, health and safety management (EHS) consulting. Shawna's commitment to the field of Consulting has led to professional recognition in many forms. Shawna was the recipient of the 2000 YMCA Woman of Distinction in Science and Technology Award, as well as the recipient of Honours from both the Regina Engineering Society and Fellow of Engineers Canada.

Continental Who's Who is a respected business directory that spotlights thousands of professionals each year by their specific industry. The men and women published represent every important field of endeavor. Included are executives and officials in business, science, education, philanthropy, religion, government, finance, law, engineering and many other fields.

Awards Nominations

Do you know a professional engineer or geoscientist who should be considered for an award?

Do you know about an engineering or geoscience project that deserves recognition?

The Awards Committee is seeking nominations for the annual APEGS awards as well as for a range of other provincial and national awards.

For more information on awards or the nomination process, please contact the APEGS office at: 1-800-500-9547, fax (306) 525-0851 or email apegs@apegs.sk.ca.

News From The Field

Silver medal for Sask. economy

Sources from Regina Leader-Post and Financial Post - Saskatchewan's economy grew by 4.8 per cent in 2011 – second-highest among the provinces and the biggest increase in gross domestic product (GDP) since 1997, Statistics Canada said.

The federal agency attributed the strong economic growth largely to the goods-producing sector - agriculture, mining, oil and gas production, and construction.

Strong export demand led to higher output in mining, exploration and engineering construction activity. The growth came in spite of recent weakness in the potash sector.

"Potash mining was down 19 per cent as a result of the closure of mines in Saskatchewan in response to weak world demand," the Statistics Canada report said. It was the steepest dive for the industry since 2009.

Two of Potash Corp. of Saskatchewan Inc.'s mines in Saskatchewan, Rocanville and Lanigan, were shut down during February.

Doug Elliott, publisher of *Sask Trends Monitor*, said despite what some people think, Saskatchewan economy is being propelled by mining and agriculture.

"Oil and gas production in Saskatchewan have been effectively flat for last five years," Elliott said, adding potash and uranium have seen large fluctuations in production in the last few years.

Revolutionary jet engine has no moving parts

CBC News - A Regina-based aerospace company is working on a new jet engine that has no moving parts.

Avro Aircraft will be testing its unique design using a jet called the Canadian Tebuan.

The Avro engine converts sound waves into energy.

"We've eliminated the turbine blades and the moving parts forward of the compressor," an Avro spokesman told CBC News.

"We've replaced it with our patented intake system. So essentially we've created a jet engine with no moving parts."

The company hopes to have the jet fitted with its engine for testing by late summer.

Avro is working in conjunction with Atlantis Research Labs, also based in Saskatchewan.

Construction Sector Council forecasts shift to resource projects

Daily Commerce Record - This year's Construction Sector Council (CSC) labour market forecast highlights a major shift in non-residential construction as the number of energy projects rise and infrastructure projects shift away from institutional work.

The CSC's national forecast of labour supply and demand between 2012 and 2020 emphasizes that many of the upcoming projects will often be in remote, northern locations and the scale of the work will generate significant demand requirements across many provinces.

Michael Atkinson, Canadian Construction Association (CCA) president, pointed to the labour mobility provision in the Agreement on Internal Trade which specifies that all provinces accept the training qualifications of another province.

The forecast indicates that key challenges will be identifying the availability of workers, the portability of skills and their willingness to work in remote areas.

The projects in the centres of resource construction — mining, oil and gas, pipelines, and electrical generation and transmission — have an estimated total value of $250 billion, about one-fifth of the total national non-residential investment in construction.

Canada will need an estimated 319,000 new construction workers between 2012 and 2020 as resource projects peak and retirements continue to rise across the country. The forecast estimates a need for 100,000 jobs due to expansion demands in the mining, oil and gas, electricity and transportation sectors.

Jobs in civil engineering, especially those on road, highway and

bridge projects, are expected to decline between 2012 and 2015 as fiscal stimulus programs end.

Nationwide, an estimated 219,000 workers are expected to retire, meaning the construction industry will need to replace more than 20 per cent of its current workforce over the next decade. The forecast assumes that the demand requirements will be partially offset by the estimated 162,000 first-time entrants to the workforce.

The remaining 156,000 workers will need to be recruited from outside the industry, which will require increased efforts targeting youth, women, Aboriginals, other industries and immigration, says the CSC.

Regionally, Saskatchewan and Newfoundland and Labrador report very strong employment growth, and at peak times, major resource projects exhaust the available workforce for some skilled trades and occupations in these provinces.

UNIVERSITIES AND RESEARCH

Canada, Brazil Synchronize With Synchrotron

Newswise - Use of advanced Internet technology to bring scientists and leading-edge research infrastructure together half a world apart was demonstrated between the national synchrotron facilities of Canada and Brazil.

The demonstration in Brazil, observed by Canadian Governor General David Johnston and Dr. Antônio José Roque da Silva, Director of the Brazilian Synchrotron Light Laboratory (LNLS), made use of remote control software developed at the Canadian Light Source (CLS) synchrotron in Saskatoon to access a CLS beamline and collect data from a computer at a research station in the LNLS.

Scientists located in their lab or office at a university in Brazil, for example, can access the CLS to run experiments directly or collaborate with Canadian researchers and students.

The CLS software innovation, funded by Canada's CANARIE Network Enabled Program, has led to a suite of web-based applications called ScienceStudio that involves the University of Western Ontario, Concordia University, and IBM Canada.

Planes fuelled from Sask. crops

CKOM - A research team is hoping airplanes will someday use jet fuel made from Saskatchewan crops.

Agrisoma Biosciences, Genome Prairie and Canada's National Research Council are currently conducting flight tests using a crop similar to canola, called Brassica carinata and petroleum-based jet fuel.

The test flights are taking place in Ottawa with a small research jet owned by the National Research Council. The crop used for the test flights was grown in Kincaid, SK.

Brassica carinata is heat and drought-resistant, which could make it an even more popular crop to grow on the prairies.

Summer science set to inspire kids up north

Saskatoon Star-Phoenix - This summer up north, students will be dissecting dog's heads and dissolving human teeth. It's part of a University of Saskatchewan initiative to bring science to those who have notoriously poor access to it.

The inherent challenges of learning science, combined with high teacher turnover rates, have made it tough to develop science-inspired students in the north. But since 2007, the Science Ambassador program has reached more than 2,300 young people in 12 communities across Saskatchewan, Alberta and Manitoba. This year, 10 U of S students will spend up to six weeks in places like Wollaston Lake, Opaskwayak Cree Nation, Fond-du-Lac and Flin Flon.

The U of S students will spend the summer helping teachers and coming up with activities to get young aboriginal kids interested in the sciences – everything from biology to physics to environmental and earth sciences.

The idea is not only to foster a lifelong interest in natural sciences, but also to help young people in Canada's north prepare to enter the workforce or continue into post-secondary education.

ENERGY

TransAlta abandons carbon capture project

CBC News - TransAlta has pulled out of Alberta's controversial carbon capture program claiming the economics are wrong. TransAlta partnered with the province in Project Pioneer, one of four carbon capture projects planned for the province.

Alberta put up $400 million for the project, with the federal government putting up $370 million more. Project Pioneer was to take carbon from Keephills 3, a 450-megawatt coal-fired power plant west of Edmonton being built by TransAlta and Capital Power Corporation. The carbon was to be used for enhanced oil recovery or stored in deep saline aquifiers.

The first step of the project was to study the technical and economic feasibility of carbon capture and storage before making any major capital commitments, said a news release.

The study found that, although the technology works and capital costs were in line with expectations, the market for carbon sales and the price of emissions reductions were insufficient to allow the project to proceed.

TransAlta said the project doesn't make economic sense without a federal cap-and-trade system for carbon gases.

Critics have complained the carbon capture projects are too expensive for unproven technology.

Carbon capture projects are underway in Saskatchewan

Net-zero house allows 'normal' lifestyle

Saskatoon StarPhoenix - A Saskatoon couple has achieved net-zero energy consumption in their home.

They built the home, located on an acreage just west of the city, in 2009. It was designed to be as energy-efficient as possible, utilizing south-facing windows to harness passive solar energy and built with triple-thick walls dense with insulation.

The final step was the installation of solar panels in 2011. At night and on cloudy days they get their energy from SaskPower, and on sunny days the solar panels compen-sate for the energy drawn off the grid. This year they have managed to produce as much energy as they consumed.

The panels will eventually pay for themselves, too, thanks to a rebate program offered by SaskPower. The program has since been discontinued, but SaskPower has committed to honouring those who have already signed up.

The solar array is producing electricity at about eight cents per kilowatt hour right now, while the current SaskPower price for electricity is 10.84 cents per kilowatt hour. The couple has also just completed the design of a new system for a solar array that they expect to cut down the price by another two cents.

The system is a rotating mount for the panels that will track the movement of the sun, maximizing the panels' exposure.

URANIUM AND NUCLEAR

Cameco watching Japan for nuclear reaction

Saskatoon StarPhoenix - Cameco CEO Tim Gitzel admitted the company is closely monitoring Japan's decisions about its nuclear industry but expressed optimism.

The question of where Japan's nuclear program is headed is a wild card, but Gitzel said they think reactors will be brought back online in the near future. Japan has only one reactor running.

"A lot of people are watching Japan and its reaction on its nuclear program," Gitzel said.

"Our view is that they are eventually going to start bringing their reactors back online. The country needs the power. Some of their large industrial companies are calling for the power. They are having to buy a lot of other sources of energy – liquefied natural gas, coal, oil – and it is costing their economy considerably."

"We believe the nuclear plants will start being brought back on later this year and that will be good news for the nuclear industry."

MINING

Negotiations fail for new Sask. diamond mine

Global News - Economic uncertainty has taken some of the sparkle off of a proposed diamond mine in central Saskatchewan. Shore Gold says it was negotiating with a company for development financing, but it fell through.

The company remains bullish about the project about 60 kilometres east of Prince Albert.

Spokesman George Read, P.Geo. says the company continues to work on its environmental assessment for the mine.

Camp Contract Goes To ATCO

Calgary Herald - ATCO Structures & Logistics has won a three-year contract to build and run a 2,600-person facility for potash workers in Saskatchewan. The structure will house workers at the Jansen Potash project, an underground mine operated by BH Billiton and located about 100 km north of Regina.

As well as individual living quarters with en-suite bathrooms, the facility will include a 20,000 sq.-ft. sports complex, several dining areas, a library, a convenience store and a hockey rink.

The first phase of the project – which will build the first 500 rooms – will be completed by October 2012. The remaining facilities are slated for completion in mid-2013.

One published report pegged the value of the contract at $340 million to $350 million.

INFRASTRUCTURE

Highways focus on new roads, rural upgrades

CBC News - Saskatchewan's highways minister says he is taking a two-pronged approach to road construction this year, with the goal of both building new roads and upgrading rural highways.

The provincial government's highway construction plan includes a pledge to start work on Highway 22 north of Regina between Earl Grey and Southey.

That stretch of highway has long been identified by motorists and politicians alike as one of the worst roads in Saskatchewan.

But the Highways minister said the construction work is part of a "big picture" plan. He said the government will fund ways to accommodate increased traffic, including "the passing lane program that we've announced, the interchanges that need to be built, those sorts of things."

"On the other hand, though, we still have a huge task ahead of us," he said. "We have a lot of bad highways that have been neglected for a lot of years that need to be rebuilt."

Some roads that were damaged by flooding last year will still need work, but the minister said that will not delay this year's project.

The province is spending more than $580 million for this year's road construction work, the second-most it has ever spent.

Saskatoon expands water reservoir system

Journal of Commerce - Seeking to increase water storage capacity during peak summer months, the City of Saskatoon has started work on a major expansion of its water reservoir system that will take two years to complete.

Of the city's three water reservoirs, two will be expanded to meet future demand and will undergo a number of modifications and improvements.

The city's 19 million-litre-capacity Avenue H reservoir on the southern bank of the South Saskatchewan River will be doubled in size to hold a total of 38.5 million litres.

The storage capacity at the 42nd Street reservoir, which at present holds close to 36 million litres, will be boosted by 20 million litres of water.

Associated Engineering in partnership with the Calgary office of CH2M Hill designed the expansion plans.

There has been an active water treatment facility at Avenue H for more than 100 years.

More storage capacity will allow the water treatment plant to cut the volume of water it pumps out through the day, which strains the plant's infrastructure.

In addition to expanding the Avenue H reservoir, Saskatoon will also build two new facilities that will be located next to the existing reservoir – an ultraviolet (UV) disinfection facility and a high lift pump station.

Water will be pumped past a series of UV lamps to neutralize organisms missed by chlorination. The system is designed to comply with anticipated future regulations.

Engineers left homeless at CCS

Journal of Commerce - Saskatchewan is attracting professionals and tradespeople from across Canada to work on a carbon dioxide capture and sequestration (CCS) project, but they are forced to commute about 2.5 hours each way between Regina and Estevan due to a shortage of rental accommodations.

SaskPower is rebuilding a coal-fired generation unit at the Boundary Dam Power Station in Estevan and is installing a fully-integrated carbon capture system.

It is estimated that there will be about 1,000 people – including several engineers - working on the project at peak construction, with about 450 working on the carbon capture system. The region cannot keep up with the infrastructure to house all the new arrivals in commercial accommodation. There is one temporary camp run by ATCO, but this facility does not have enough accommodation for all this manpower.

BOURGAULT

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- *Strong computer skills - Solidworks, Microsoft Office*
- *Strong organizational and project management skills*
- *Well developed interpersonal and leadership skills*
- *Excellent knowledge of industrial facilities, construction techniques and foundations*
- *High degree of analytical thought and creativity*

Bourgault Industries Ltd., a privately owned agricultural equipment manufacturer, and world leader in the development of seeding and tillage equipment, has an opening for a Senior Civil, or Senior Structural Engineer at its corporate headquarters in St. Brieux, Saskatchewan. Bourgault Industries Ltd. has 6 manufacturing facilities located in Western Canada and the Northern United States, as well as sales offices in Canada, the United States, Australia, Russia, Ukraine, and Kazakhstan.

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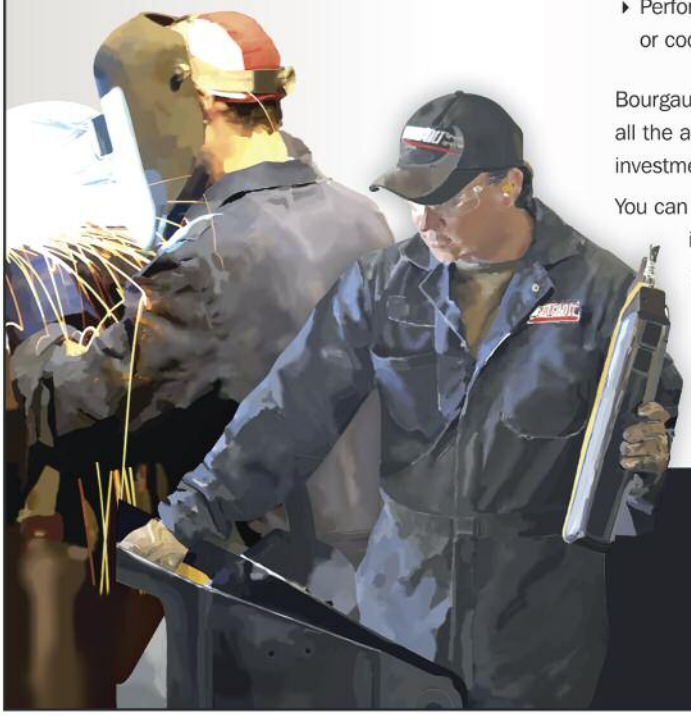

www.bourgault.com

Calendar of Events

wikitravel.org

Canadian Engineering Education Association Third Annual Conference
June 17-20, 2012, Winnipeg, MB
www.ceea.ca/EN/index.php

APEGBC Professional Development Event: Power System Stability and Control
June 19-22 2012, Vancouver, BC
www.apeg.bc.ca/prodev/events/power_system_stab.html

Canadian Academy of Engineering 2012 AGM
June 21-22, 2012, Ottawa, ON
www.acad-eng-gen.ca/e/events_.cfm

Pacific NorthWest Economic Region 22nd Annual Summit
The Power of Partnership
July 15-19, 2012, Saskatoon, SK
www.pnwer.org/2012annualsummit.

15th International Specialty Conference on Cold Regions Engineering
August 19-27, 2012, Quebec City, QC
www.csce.ca/2012/iccre/

Construction Law for Consultants
Septemeber 13, 2012, Vancouver, BC
orviaWebcast
www.apeg.bc.ca/prodev/events/Constr_Law_2012.html

Water, Treat it Right
Western Canada Section AWWA Annual Meeting and Conference
September 18-21, 2012, Winnipeg, MB
www.wcsawwa.net

Canadian Dam Association
September 22-27, 2012
Saskatoon, SK
www.cda.ca/cda_new_en/conferences/conferences.html

International Pipeline Conference and Exposition 2012
September 24-28, 2012, Calgary, AB
www.InternationalPipelineConference.com

51st Annual Conference of Metallurgists
September 30-October 3, 2012, Niagara Falls, ON
www.cim.org/com2012

Introduction to Stormwater Management and Modelling
October 3, 2012 , Prince George, BC
www.apeg.bc.ca/prodev/events/stormwater_management_and_modelling_PG_Oct12.html

2012 Transportation Association of Canada Conference & Exhibition
October 14-17, 2012, Fredericton, NB
www.tac-atc.ca/english/annualconference

Forming Our Future: American Concrete Institute
October 21-25, 2012, Toronto, ON
www.concrete.org/EVENTS/ev_upcoming_conventions.htm

15th Canadian National Conference on Drinking Water
Canadian Water and Wastewater Association
October 22-24, 2012, Kelowna, BC
www.cwwa.ca/drinkingwaterconference_e.asp

ASHRAE 7th International HVAC Cold Climate Conference
November 12-14, 2012, Calgary, AB
www.ashrae.org/events/page/coldclimate2012

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