

# THE KEYSTONE PROFESSIONAL

Winter 2009

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*Immigration*

and the Engineering Profession

Department Of Geological Sciences: 1910-Present

90<sup>TH</sup> ANNUAL GENERAL MEETING

AWARDS DINNER

*and* DANCE

 **APEGM**

Association of Professional Engineers,  
Engineers and Geoscientists of  
the Province of Manitoba



PROFESSIONAL  
DEVELOPMENT  
CONFERENCE



SPEAKER: ROBERT J. SAWYER  
TOPIC: THE CHALLENGE OF TOMORROW

Association of Professional Engineers and  
Geoscientists of the Province of Manitoba  
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# THE KEYSTONE PROFESSIONAL

## WINTER 2009

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- Comments can be forwarded to us through A. Moore: [amoore@apegm.mb.ca](mailto:amoore@apegm.mb.ca). Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.
- Although the information contained in this publication is believed to be correct, no representation or warranty, expressed or implied, is made as to its accuracy and completeness. Opinions expressed are not necessarily those held by APEGM or the APEGM Council.

Front cover photo by Leif Anderson.  
 Leif Anderson is an amateur photographer in Winnipeg, MB, who is slowly being pulled into the world of professional photography. He has been strongly involved in the hobby for ten years and is captivated by the depth of the craft.

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John Woods, P.Eng.  
President's  
Message

## ENGAGE

**G**reetings. As this is my first official message as President, the first order of business is to thank you, the APEGM members, for the opportunity to fill this role. I also want to thank you for taking the time to read, or at least scan, this newsletter, as it is an important document. In these pages, APEGM reports to the membership, and provides an opportunity for the members to 'feedback' in print – when a topic needs some reinforcement or rebuttal. Of course, in this day of electronic communications, we also provide e-mail newsletters, and it is my hope that we will be able to arrange for online discussion forums this year as well.

Perhaps I will stir things up a little in this communiqué this year, so I encourage you to revisit this page later in the issues to follow. I will be asking some specific questions, so please write back or e-mail me with any comments or suggestions you may. We have some important issues to resolve in the near future, and your input is essential. Clearly, this is one of the responsibilities of a self-governing organization and without your opinions and input – well, you just might get stuck with mine. Along these lines, this is a good point to encourage each of you to take a turn on council and consider a run for president. While I will not insult the respected past-presidents by saying 'if I can anyone can', with some dedication, I can assure you it is possible.

The 90th Annual General Meeting on October 23, and the Awards Dinner following, was one of the best I've attended. Congratulations to Grant and Angela and all of the other APEGM staff for a job well done. The only downside, for those of you who were not in attendance at the meeting, was its slow start due to a lack of quorum. This strikes me as unacceptable. If you were not there, can you please let us know why not?

I know in the past the AGM was held on a Saturday – so as not to interrupt a working day. But the ones I attended on a Saturday were not much better attended. Please note that the meeting this year was only 2 ½ hours long – including lunch. Not much time to contribute to your profession for the year.

You are probably aware that Continuing Professional Development is on the agenda, as it has been for ten years. We, as a group of like-minded professionals, need to move forward on this. Our taskforce has indicated that we are on the shrinking half of engineering and geosciences associations who do not have a mandatory reporting system. Professional development is, of course, not the question here since it is mandatory (By-Law 11.3).

If APEGM were to arrange for you to have a simple, web-based tracking system where – with a few mouse clicks – you would be able to: enter an event title, the number of hours, and check off the applicable category; to make it simple for you to track this development, would you be interested?

As a consulting engineer, and member of several provincial associations, it is imperative to me that any CPD program be recognized by other associations, so that there is only one record to keep. APEGGA has a good guideline on their CPD program at [www.apegga.org/pdf/Guidelines/08.pdf](http://www.apegga.org/pdf/Guidelines/08.pdf). If you have a look, you will see that in their program, there are many categories which count as PD, both formal and informal (such as attending seminars, giving presentations, writing articles and papers, sitting on committees etc.).

In the coming year, we are planning to run one or more workshops on the topic of CPD, so that all of the members can help us develop a working guideline which reflects Manitoba's engineers and geoscientists' vision of professional development. If you are interested in this topic, please be sure to attend and let your opinions count. If you are not interested, please think about why, and let me know at the next AGM. Any comments or questions can be sent to [president@apegm.mb.ca](mailto:president@apegm.mb.ca). ■

## NOTICE

### Notice to Members

Annual dues invoices have been mailed to all members and members-in-training. If you have not received yours, please contact the APEGM office. Payment can be made online or submit the completed forms with payment by December 31, 2009.

Please note that the Declaration of Compliance must be signed annually. The APEGM office will be closed December 24, 2009, at 1:00 p.m. for the holiday season, and reopening on January 4, 2009, regular hours.

*Grant Koropatnick, P.Eng.,  
Secretary*

# Engineering Philosophy 101

## Competence and Accountability

M.G. (Ron) Britton, P.Eng.

In one of my original Philosophy columns I observed that “professionals base their services on some body of knowledge which requires specialized training and certain intellectual skills.” Now, three years later, I still find this to be a defensible position. As always, however, there are problems with the details when philosophy and legislation meet.

In Manitoba, our profession is governed by The Engineering and Geoscientific Professions Act. This Act establishes and defines APEGM. In Part 2, clause 3(b) it states that one of the “Purposes of association” is to “promote and increase, by all lawful means and in the public interest, the knowledge, skill and competency of its members and students in all things relating to the professions of engineering and geoscience;” Further, in Part 4 it requires the Council of the Association to “. . . prepare and publish . . . a code of ethics . . . designed for the protection of the public.” Later in clause 11(2) it states that “members”, of all types “. . . shall subscribe to and shall follow this code of ethics in the practice of professional engineering or the practice of professional geoscience.”

If these quotes are reduced to a Coles Notes summary, APEGM exists to assure and enhance each member’s competence. One of the vehicles to accomplish this is to establish a Code of Ethics with which all members must comply. Finally, the overriding concern that all these actions are meant to address is the public interest.

The question is, how can (does) APEGM assure and enhance each member’s competence? Where does it start?

Step One in the process, undergraduate Engineering education, focuses on the development of training and skills. The Canadian Engineering Accreditation Board (CEAB) defines the “goals” and conducts periodic, on-site checks on delivery of the programs. So, the Canadian profession, collectively, does its due diligence at this stage.

Step Two in Manitoba provides relatively well defined, relatively broad requirements intended to expand each individuals experiences beyond the

academic undergraduate level. These requirements must be met, and verified, as the candidate proceeds through the EIT (MIT) stage. The responsibility for due diligence at this stage falls to individual P.Eng. mentors, with backup by APEGM.

Both of these initial steps operate under relatively close scrutiny. However, once one becomes a P.Eng., the picture changes. At this point, Cannon 3 of the APEGM Code of Ethics becomes the only remaining “check” on one’s competence. Specifically, clause 3.2 states that one must “strive to maintain a high standard of competence by seeking opportunities to acquire knowledge of, and experience with, new techniques and developments;”. This is now a personal requirement that is not subject to review. Thus, it is not too difficult to conclude that the

P.Eng. is not only a license to practice Engineering but also an escape from external scrutiny.

Given the legal realities of being licensed as individuals, each of us is personally responsible for our own actions. Our Code of Ethics reinforces this personal responsibility. However, APEGM exists to provide an organization that will “. . . promote and increase . . .” the competence of its members “. . . in the public interest, . . .”. Does this requirement under the Act place a responsibility on APEGM to document individual practitioner’s professional development activities?

At present, those of us who are registered as “practising” are required to sign the following declaration each year as a condition of renewing our licenses.

“I declare that I have, on an ongoing basis, acquired the knowledge, skills and level of awareness necessary to undertake the professional services that I currently provide, or intend to provide, to my employer and clients, and to fulfill my professional responsibilities to the public.”

Clearly this is in the spirit of clause 3.2 of the Code of Ethics in that it places the responsibility on each individual. However, a cynic might say that this is little more than saying “trust me, I’m a professional”. Does my signature next to this statement have any more legal validity than a statement of competence by someone who is not registered under our Act? If all that supports my statement is my membership in an organization (APEGM) that cannot verify my statement, what protection does the public have? How does this meet APEGM’s responsibilities under our Act?

*continued on page 8*



Grant Koropatnick, P.Eng.  
Executive  
Director's Message

## WE DO GREAT ENGINEERING, BUT WHAT ELSE?

**W**e do great engineering! It's true. The city of Winnipeg and the many cities and towns around Manitoba enjoy reliable power, water, bridges, roads, state-of-the-art buildings, telecommunications, bio-technology, data security and other valuable services as a result of the hard work that engineers and geoscientists do everyday. But what else? There are many famous examples of engineers who in addition to their engineering careers pursued other interests. Rowan Atkinson, British comedian, best known as television character "Mr. Bean" is an electrical engineer from Oxford University. Herbie Hancock, Grammy Award winning jazz musician holds a Bachelor of Electrical Engineering degree. Tom Landry, NFL Hall of Fame coach of the Dallas Cowboys was an Industrial Engineer.

At the recent APEGM Awards Gala Dinner and Dance local engineer and master of ceremonies for the evening, Paul Boge, P.Eng. introduced the evening with video highlights from a feature length movie he produced. In addition to movie making, Paul also writes books. I plan to attend an event launching his latest book: *Urban Saint – The Harry Lehotsky Story*. Paul is a fine example of an engineer who is expanding his skills and developing himself professionally in ways beyond the base training he received as a civil engineering grad from the University of Manitoba.

### COMPLEMENTARY SKILLS

Engineering skills and other skills like movie-making and book writing are not commonly associated, but I have met many engineers and a few geoscientists

who have a wide diversity of creative skills. Some are skilled practitioners in their chosen profession while at the same time displaying talent in the areas of painting, sculpting, fundraising, gourmet cooking, singing, volunteerism and community service. I know one professional who balances a stressful day at the office by slicing and dicing gourmet recipes in his kitchen at home. His wife, family and friends have been happy recipients of his "de-stressing" over the years. Another engineer contributes time and energy coaching minor football. A third professional I know, has led political campaigns for a provincial level politician. These professionals are not content to be uni-focused on one set of skills. Moreover, they exercise other skills which complement their life as a professional engineer or geoscientist. I'm confident that if you looked hard at your skill set, you too would have complementary skills above and beyond your technical engineering set.

### CHARITABLE CHALLENGE

For those among us who love community volunteering and mixing it up with the general public, I want to present the following opportunity to use your non-engineering skills to help a local charity – Winnipeg Harvest. In 2010, APEGM will partner with Canada Safeway and Investors Group to donate 10,000 pounds of pasta to Winnipeg Harvest. See the feature article *Spaghetti Bridge 2010 – Winnipeg Harvest* on page 6. We need your help in the following:

- PEGW COMMITTEE – join the Provincial Engineering & Geoscience Week committee to organize the

"Spaghetti Bridge Competition."

- VISIT A SCHOOL – go to a school near your home or office to drop off an event info kit and speak to a science teacher about students participating in this year's Spaghetti Bridge Competition.
- COLLECT DONATIONS – help to organize the collection of donations (either pasta, cans or cash) for Winnipeg Harvest. A grand total cheque will be presented to the food bank at the end of PEGW week, March 1-6, 2010.

I hope there are many out there among our membership who are ready to go above and beyond the daily routine. Yes, we do great engineering every day, but we can do more. Join with me and other professional colleagues to help Winnipeg Harvest through the 2010 Spaghetti Bridge Competition.

Your feedback is invited and always welcomed. If you have any thoughts on anything you read in the KP, please email me at [apegm@apegm.mb.ca](mailto:apegm@apegm.mb.ca) or message me through Facebook. ■



**D**uring Provincial Engineering & Geoscience Week (PEGW, March 1-6, 2010) the Association of Professional Engineers & Geoscientists of Manitoba (APEGM) stages the "Spaghetti Bridge Competition" for students to build a bridge from spaghetti and white glue. The goal is to see whose bridge can support the heaviest load. Last year one bridge supported 126 Kg before breaking! The event attracts students, teachers and parents from across Winnipeg and in the rural communities of Brandon, Morden, and Thompson.

The competition is a fun event for students, teachers and parents, to get involved in "hands on engineering," but we want to expand it to be a meaningful charity event for the whole community.

Executive Director Grant Koropatnick said "I always feel a little guilty to see all that spaghetti go in the garbage after its all over. So I began brainstorming ways to recycle the noodles to avoid wasting all that food, but using white glue contaminates the spaghetti; making the recycling option virtually impossible." Instead of re-using the noodles, he suggested making a large donation of pasta to Winnipeg Harvest. In addition to awarding cash prizes to the winners, a large donation to the local food bank would be an ideal prize for hungry families! Executive Coordinator of Winnipeg Harvest David Northcott agrees: "This is a great idea! Pasta is part of our 'Top Ten List' for most wanted food items."

### **10,000 POUNDS OF PASTA**

In 2010, the engineers of Manitoba will partner with Canada Safeway and Investors Group to donate 10,000 pounds of pasta to Winnipeg Harvest. Our goal is to make a pasta donation equal to the cumulative weight supported by all entries in the Spaghetti Bridge Competition. Last year the cumulative weight supported by all bridges

was 3347 Kg or 7363 lbs. So its up to the students to build strong bridges in order to achieve the target goal of 10,000 pounds. This has never been done before.

### **GET INVOLVED**

Volunteers are needed in several areas to make this event a success. Joining the PEGW Committee to organize the event is one opportunity. Going to a school near your home or office to speak to science teachers and deliver contest info kits is another way to participate. Helping on the event weekend is a third way to get involved! Get your children to build a bridge and enter the competition. Also, bring an extra box of spaghetti noodles, jar of tomato sauce or any other "tin for the bin" to the event.

### **CORPORATE SUPPORT**

Canada Safeway and Investors Group have agreed to provide generous support. In addition, local engineering firms have also joined the effort. Thank you to the engineers at AECOM, Hatch, KGS, Teshmont and Wardrop. The generous support of these companies will help make this event a huge success benefiting Winnipeg Harvest. If your company would like to participate in this worthy cause, please call the APEGM office at 474-2736 or email Angela Moore [amoore@apegm.mb.ca](mailto:amoore@apegm.mb.ca). ■

Happy Holidays  
from the APEGM Staff





M.G. (Ron) Britton, P.Eng.  
Thoughts On  
Design

## . . . IS DESIGN WHAT ENGINEERS DO?

An acceptable definition of the term “design” continues to be elusive. The problem starts on campus in our undergraduate programs, shifts to industry hiring expectations and ends up as an issue surrounding the reporting of professional updating.

On campus, “design” must meet the constraints imposed by the Canadian Engineering Accreditation Board (CEAB). The difficulty here is that CEAB seems to have two views of “design”.

Section 3.1 of the CEAB Accreditation Criteria and Procedures, lists and defines a dozen “Graduate attributes”. In Section 3.1.4 it notes, “Design: An ability to design solutions for complex, open-ended engineering problems and to design systems, components or processes that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural and societal considerations.” Note the mention of “. . . specified needs . . .”.

Interestingly, when one looks at Section 3.1.1, “A knowledge base for engineering”, design is not included in the list of competencies this “attribute” covers. If design isn’t an element of basic Engineering knowledge, what is it? Is it simply answering questions that have pre defined “specific needs”? Is it an individual skill acquired through individual effort?

This definition makes sense for the 18 to 25 year old students who are attempting to gain an understanding of the technical skills future employers expect them to have. But it also leaves them with the feeling that they will be provided with the necessary inputs when they are called upon to “design” something.

Then, four pages later in Section 3.3.4.3, we find a broader definition, “Engineering design integrates mathematics, natural sciences, engineering sciences, and complementary studies in order to develop elements, systems, and processes to meet specific needs. It is a creative, iterative, and open-ended process, subject to constraints which may be governed by standards or legislation to varying degrees depending upon the discipline. These constraints may also relate to economic, health, safety, environmental, societal or other interdisciplinary factors.” The two terms that stand out in this definition are “. . . integrates . . .” and “. . . subject to constraints . . .”. Certainly more inclusive, but apparently not a part of “A knowledge base for engineering”.

Shifting to expectations at the hiring level, there is no question that employers seek individuals who understand and can use all the latest technical tools. We academics are told that graduates are expected to view “design” more in the light of Section 3.3.4.3, with an emphasis on the integration of technical skills and the identification of constraints. They are also expected to contribute as part of a design team. At this point, “design” shifts to requiring individual input to a broad team goal that has seemingly continually varying constraints. The task now is to find acceptable solutions to problems, not correct answers to questions. Individuals must be able to communicate their technical input to others in their technical team. The definition has changed.

The other change that enters the picture is that of precision vs accuracy. During undergraduate courses, students become skilled in applying analysis techniques that produce precise answers to constrained questions that are assigned. Assuming that

the given inputs were correct, then the answer obtained should also be correct. But “on the job”, the inputs often become variables rather than constants. Part of the design task is to select “acceptable” inputs. Once those inputs are used in the analysis tools, precise answers can be produced. But are they accurate? Suddenly the new graduate is faced with the option of being approximately right, or precisely wrong. It all depends on the numbers being used, which may be little more than an educated guess. At this stage, “design” begins to encompass problem definition, configuration assumption, variable selection; all within the constraints of codes, standards, economics and time.

With the passage of time, each engineer gains experience and a broadened view of some part of our “engineering world”. Over that same period of time, new analysis techniques emerge and, for most of us, our “cutting edge” technical skills are replaced by a greater appreciation of the fuller scope of our particular area of practice. Again “design” has acquired a different, more variable definition.

My assessment leans heavily on the front end of the process because we have relatively clear CEAB definitions. The profession has created a specification for the “academically qualified graduate” and I have extracted what I believe to be the definition of the “design” component from that specification. The steps beyond that point become more anecdotal. This is understandable because our profession has a multitude of specific needs beyond the “entry” requirements. Each of us develops a professional profile that reflects the needs we have been exposed to. Each of us looks upon our profile as the essence of design.

Maybe this is at the heart of the “design

*continued on page 25*

## The Importance Of Being Registered With APEGM When You Hold A Computer Engineering Degree

*G. Naigeboren, P.Eng.*

The intention of this article is to present three different stages of my life and the role that professional registration with APEGM had to do with that.

I have a degree in Computer Engineering from Argentina. I worked at a TV Cable company for 14 years. Simultaneously, I started my own consulting firm developing software and hardware solutions. In 2003, I worked for a large bank in Italy, managing the network connectivity between the mainframes and the 1100 branches around the country. Upon immigration to Canada in 2004, I worked for two different firms: Infomagnetics Technologies and Convion. Most recently, I started my own company where we offer different kinds of computer and custom hardware solutions, especially SCADA systems.

My first baby-steps in the profession within Canada came with my degree in Computer Engineering from Argentina, but without registration with APEGM. I was able to find jobs but they were not what I was expecting after I studied so many years to become an Engineer. Moreover, I was expecting to be called Engineer after so many years of sacrifice in Argentina and Canada – studying, working multiple jobs - but that right was reserved only for the ones registered.

For me, licensing began with an assessment of my credentials by APEGM. Having been assigned a certain number of technical Confirmatory Exams, I chose

the IEEQ Program at the University of Manitoba to fulfill the requirements. After twelve months of full-time study, I finished the program and I was ready to work in my first engineering position in Canada with the EIT status. A year later, with the addition of the Canadian job experience and the National Professional Practice Exam, I got my P.Eng. status.

I quickly realized the importance of being registered. Sometime later I became a P.Eng. I remember looking for job opportunities. I will never forget walking into the interviews seeing my resume highlighted where it said 'Registered with APEGM'. It took me a while to understand that for an employer it is important to hire people who are enrolled in the professional associations to protect not only themselves but also the public from poor engineering practice.

Now, a few years later, I decided to start my own practice creating GN Technology Solutions. The company is a service based company but the area of specialization is SCADA - Supervisory Control and Data Acquisition - solutions. This kind of product is a very nice example of what Computer Engineers do, namely software, networks and electronics. We look at systems from the electronics and core structure. The beginnings were hard, but after sometime I got software contracts and opportunities in the SCADA field doing electronics and control software. Recently, with a new partnership with Protegra - one of the largest and most important IT companies in Winnipeg - we will be able to leverage SCADA solutions and take it to different fields such as health, roads and construction. When I look back and think how all this happened the

answer is "It started when I decided to become a P.Eng.". The P.Eng. credential is something very important that shows that you are part of a very prestigious organization that protects the public; in this case the customer.

I remember taking a course at University when a professor asked the following question: can you mention one thing in this room that did not go through the hands of an engineer directly or indirectly? The first few moments were just silent. But few minutes later, all of us were in shock. The answer was: Nothing! Everything in the room had passed through the hands of an engineer, either directly or indirectly.

That day was a very special one for me. It changed the perception I have with engineering. When I say engineering I mean every engineering field. As engineers, we have a role in society. In order to accomplish that role we need to register with the regulatory bodies to ensure the public receives engineering services at the highest ethical and professional standards. At the same time, the registration generates respect and credibility on who you are and what you are capable of.

The registration process is a win-win situation. I encourage every discipline of Engineering, and especially Computer Engineers, to be a part of something that will bring you a lot of satisfaction. As you can see, my P.Eng. not only helped me to get a better job, but also to get better contracts and partnerships with very successful businesses. I am looking forward to what else it will bring. ■

*continued from page 4, Engineering Philosophy 101*

This is not a new problem for APEGM. Countless hours in numerous Council meetings have been devoted to finding a solution, or for that matter, even clearly defining the question. If Engineering was a narrow, technically constrained undertaking it would be relatively easy to create a "check list" that would assure APEGM that each member has met the requirements of clause 3.2. Alternately, a set of "exams" could be created and administered on a regular basis. But Engineering is neither

narrow nor technically constrained. Competency requirements grow, change and expand as we progress through our careers. Creating and administering any lists or any collection of exams would be at best, time consuming, and at worst, completely meaningless.

Clause 3.2 places the responsibility on each of us to maintain our competence. Assuming that each of us, in our own way, is in compliance with that clause, does it not make sense to provide APEGM with documentation of that

competence on a regular basis? Does it not follow that each update list would vary depending on individual circumstances? I am certain that my list, as a soon to be retired academic engineer would look nothing like the list from a 25 year old structural analyst.

We scrutinize our "members" as students and MITs, during their entry into our profession. Shouldn't that level of scrutiny remain after we cross the threshold to the P.Eng.?

But as always, the devil is in the details. ■





Chantal Guay, P.Eng., M.Env.  
Engineers Canada  
CEO Message

## ENHANCING FOREIGN QUALIFICATIONS ASSESSMENT FOR LICENSURE

In April, the Honourable Diane Finley, Minister of Human Resources and Social Development, announced the signing of three new agreements that will help facilitate international labour mobility between Canada and the European Union:

- The Environmental Career Organization of Canada will explore the development of a mutual certification framework for environmental workers in Canada and the EU;
- Engineers Canada will compare regulation and registration practices in the engineering field in Canada and the EU to identify opportunities for the alignment of practices and areas for future collaboration; and,
- The Public Policy Forum will help organize and host two reciprocal roundtables in Europe (2009) and Canada (2010) on foreign credential recognition and labour mobility where experts will discuss effective ways to facilitate mobility and better align foreign credential recognition practices in key occupations of mutual interest in the regulated sector.

These new federal initiatives will likely increase the influx of international engineering graduates into Canada. The work of Engineers Canada's constituent members in the area of foreign qualifications assessment is now even more relevant and timely.

Our constituent members have been working together for the past five years on the Engineers Canada led From Consideration to Integration Program. With the intention of developing new processes and improving current processes by which international engineering graduates are

able to obtain an engineering licence without compromising public safety or lowering professional standards, we have been developing tools in support of our constituent members' activities to better assess foreign qualifications for licensure.

These recommended tools touched on the experience of international engineering graduates, from licensing and employment to language standards, and included:

- **INTERNATIONAL INSTITUTIONS AND DEGREES DATABASE**

This interactive tool helps make assessments for constituent members and allows them to enter information about programs and degrees and to share this information. The database consists of recognized non-Canadian Engineering Accreditation Board degrees and institutions that will be used in a consistent manner in the licensing system. The primary goal of the database is to develop criteria that will govern both how an institution is placed on the database and how that information is used to facilitate consistent assessments of international engineering graduates' applications for licensure in provinces and territories.

- **LANGUAGE BENCHMARKING TOOLS**

Currently under development, these tools will help constituent members to better evaluate their language proficiency in either English or French by establishing benchmarks.

- **ALTERNATIVE METHODS OF LICENSURE**

This project aims to simplify and clarify the process by which engineering work experience, including foreign

work experience, is recognized and evaluated. The project is studying the use of a competency-based assessment method, and will define core competencies, identify the most suitable evaluation methods (exams, interviews, self-reporting, etc.), and develop a high level implementation plan for the adoption of a competency-based assessment system.

- **ENGINEERING AND TECHNOLOGY LABOUR MARKET STUDY**

This study, started in 2006, provided accurate national labour market information to potential immigrants, new graduates and engineers in career change, thereby allowing them to make informed career decisions. This data will allow for the development and implementation of a continuously updated, regionally accurate labour market information system. Engineers Canada staff will now consider options to begin updating the system in 2009. A communications campaign to promote the study and its results is also under development.

As the leading national organization of the engineering profession, all of our work is conducted in the public's interest. We are committed to continually working with our constituent members and the federal government on foreign qualifications assessment, and Canada's engineering profession remains committed to making the profession equally accessible for both Canada-born engineers and for international engineering graduates. The profession will continue to work with the federal government towards reaching common objectives while keeping the safety of Canadians paramount. ■

# Professional Development & Networking Events

## East Side Transportation Initiative Presentation *S. Kass, P.Eng.*

On Wednesday, September 9, 2009, the Professional Development Committee of APEGM sponsored a presentation on the East Side Transportation Initiative given by Doug Peterson, P.Eng.

Doug started by informing an audience of 53 engineers how the East Side Road Authority Inc (ESRA) was formed by the Government of Manitoba with a mandate to build all seasons roads in the east side of lake Winnipeg.

The first phase is to build the road from PR 304 to Berens River with

approximate length of 154 km. This will be done in stages with upgrading what was known as Rice River Road and connecting to Bloodvein as stage one and continuing to Berens River as stage two.

The second phase is to complete the larger East Side route options with connections to several remote communities.

Mr. Peterson explained the challenges facing this initiative such as consultations with stakeholders, community engagement, environmental

impact assessment, exploration for appropriate materials, completing the detailed designs which include many bridges and the tight time frame. It is hoped that tendering for work will be done in the fall of 2010.

The shortage of experienced staff which adds to the challenges prompted Doug to announce to his technical audience that he will be recruiting with some good promises.

At the end of the presentation many questions were answered efficiently by Doug. ■

## AGM Professional Development Conference: The Challenge of Tomorrow *A. Erhardt, EIT*

Thankfully, it was only leaves falling and not snow as the Annual General Meeting was held on Friday October 23rd at the Fort Garry Hotel. People were busy enjoying the deluxe continental breakfast and exchanging handshakes and business cards while discussing the planned events of the day and the theme for the AGM: "Where have we come from. Where are we going".

Shortly after 8:30am, soon to be Past-President Don Himbeault welcomed everyone in attendance and introduced the keynote speaker for the morning, Robert J. Sawyer.

Called "a writer of boundless confidence and bold scientific extrapolation" by The New York Times, Robert began by telling a story about an emperor and a mathematician. In the story, the mathematician introduced the emperor to the game of chess. Delighted by the game, the emperor asked the mathematician how he could reward him for introducing him to such a fine game. The mathematician thought about it for a moment, and asked for one grain of rice for the first square on the board. Then two grains

for the second, four grains for the third and so on. The emperor gladly agreed to such a simple reward, after all, there were only 64 squares on the board! However, by the time the 30th square had been reached, the entire kingdom's supply of rice now belonged to the mathematician.

Similarly, Moore's Law, named after Intel co-founder Gordon E. Moore, states that in 10 years, computers will be 64 times more powerful than today, as the growth of technology is exponential and not linear. As such, we will witness first hand these dramatic changes and the impact they will have upon our lives, and specifically our profession.

Based upon current estimates, sometime around 2020, a computer will be developed that has the same processing power as that of the human brain. Continuing with these exponential models, by Canada Day 2021, computers will be twice as powerful as the human brain. Centuries of progress will be made in the next few decades. Soon, no cancer or disease will exist. With the continued study of genetics, maybe even the

effects of old age could be erased!

"How does this impact our profession," one might ask. Often compared to fellow author Michael Crichton, Robert explained that while Crichton's work would lead you to believe that this exponential advancement is dangerous, Robert is optimistic about technology.

Drawing upon his favorite topic, he presented a Star Trek analogy. Scotty is probably the most famous engineer. However, for all of its technology and advancements, Star Trek on the whole is anti-engineering. Time and time again, Kirk ignores Scotty's warnings that "the engines canna take ane more", and the crew manages to scrape by whatever danger threatens them.

However as engineers and geoscientists, we realize that our reality is a far cry from the fictional work of the USS Enterprise. It is our responsibility as engineers and geoscientists to be the first and best defense against disaster.

Robert continued by explaining that Canada is an engineering and

geoscience nation. While US history is based upon the Civil War and slavery and its abolishment, Canada's history is defined by the creation of a national railway; a great engineering and geoscientific moment.

With the development of nano-technology, new doors are constantly being opened. He described a visit he took to the University of Saskatchewan to learn about a "space elevator". This elevator, envisioned in Arthur C. Clarke's 3001: The Final Odyssey, would be an inexpensive way to get into orbit.

Now, as technology advances, one group is confident that they can make this concept reality by 2018 thanks to carbon nanotubes. Despite recent space-related disasters, this far-fetched concept does not have Robert concerned thanks to engineers. As he described it, engineers and geoscientists act as a "safety net for the human race". Whether it is a billionth of a meter, or an iron road from coast to coast, engineers and geoscientists will always ensure that

things are safe.

Following a brief question and answer period, along with a break for coffee and more networking, the topic shifted to the future of professional registration, and specifically, continuing development.

Robert posed the question of whether an engineer registered in 1980 was still effective today. He explained that there has been a paradigm shift. In the past, certification was done to confirm that you already knew something; today, professional certification isn't just a piece of paper representing what one has done. It is a symbol that as a professional, you are able to provide a service to clients effectively and reliably.

The website amazon.com began the concept of anonymously reviewing authors and books. Now, there are websites where you can anonymously rate university professors. Soon, even professionals will be rated and this information will be readily available to anyone. As technology continues to advance, there will be a

shift from professional "grunt work" to professional consulting and functioning as an expert. As professionals, we will require continual professional development to ensure competency so that we can secure work in the ever-growing competitive marketplace.

Other issues Robert touched on were the economic and environmental crises, inter-agency mobility, the impact of September 11, and the challenges we face competing with China and India.

In closing, Robert described how engineers and geoscientists need to step up and address a variety of issues that are arising with the reality of Moore's Law. Robert presented a risk versus reward theory. Engineers make sure that we take risks safely. Geoscientists make sure that we ensure the safety of the earth. We need to take risks in order to continue to advance, but with the help and guidance of engineers and geoscientists, these advancements can continue without concern of dire consequences. ■

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## APEGM Committees: The Professional Development Committee

*D. Grant, P.Eng.*

Every member is no doubt aware of the events held by this group of dedicated volunteers. Most of the reminders and emails you get from APEGM include notice of upcoming Professional Development Committee events. This article is intended to give you a deeper understanding of all that your PD Committee does.

The PD Committee was established to keep us competent. Its rather extensive "Terms of Reference" document is available from APEGM for more information.

The Committee maintains a long list of potential topics for future presentations. When a member finds a speaker for such an event, the Committee, along with APEGM staff, sets a tentative date and venue, confirming with all those involved. They put in place a team to hold the event: venue liaison, speaker liaison, providing a gift for the speaker, a person to introduce the speaker, a registration team, and the volunteers who will take any needed items to and from the venue. One volunteer handles attendee-feedback evaluations, while another writes a article for the Keystone Professional. This sounds like a long process which could be challenging and complicated. While that may be, the folks who do all this on a regular basis have so much experience, that it is as routine as your trip to work in the morning!

Professional Development events range from luncheons to tours of interesting facilities such as the Smith Carter LEED Building which took place in November or the nearly-complete MTS Center, to full-day academic sessions. There are plans afoot to move into offering Webinars starting in 2010. This would enable us to carry our message, routinely, beyond the Perimeter Highway.

Breakfast sessions were routinely held at hotels in the past, but with the move to APEGM's new building and with their expanded meeting facilities, these events have taken on a whole new shine such as the PD session on Building Structure Snow Loading. What may have struck one as a dry, obscure topic, brought out over 60 enthusiastic engineers, who were ready to learn from an expert, for an hour or two, before their work day began.

The list of future topics will never run dry. It is very long, and each year it is added to. The Committee tries to hold 2 events a month although they don't book anything for the months of July, August, and December. This also holds true during the extra-busy times at the APEGM office, such as near PEGW Week in March and near the time of the AGM in October.

The Committee meets once a month, and tries to plan events 6 months into the future for adequate notice to members and planning procedures. It is tempting to ask speakers to return. The MFA spoke to us when their plans for the floodway were nearly complete. It was expected they would again have a floodway-information luncheon when it

reached it's completion for another view of the project from the final position.

Members are encouraged, as well as the general public is always welcome, to attend these events. There have been times when demand exceeds our capacity to seat participants, so we encourage members to register early. Our events tend to be advertised in our own media, and at places such as the University of Manitoba, so attendees tend to be part of our wider community.

When we develop the idea for a presentation, we try to avoid commercial messages. This means a presenter may talk about a new material or process they are using, however, they should not try to promote a brand name. Of course, those who work for government may have views that are very supportive of their Department, but the Committee has no expectation of complete neutrality in some presentations. There has been discussion in past years of not holding events on 'controversial' topics. This might limit our ability to 'inform' our members in a timely way, so the Committee does not have any such absolute limits.

The greatest crowds tend to be drawn to topics of great current interest. The Floodway and the Bi-Pole III East-West debate are examples. The Committee is pulled two ways in choosing a topic. Things that teach engineers specialized information tend to have small audiences. Those that are of only general interest to a large crowd tend to seem more 'rewarding' regarding attendance. There is a temptation to favour the topics the Committee expects to draw a crowd, but they also put on our calendar any good topic with a confirmed speaker.

The Professional Development Committee is always interested in member contributions. If any member has an idea for a presentation, or more importantly the name of an informed speaker on a topic, the Committee would welcome hearing from you. ■

### Current Committee List:

W. Jackson, P.Eng. (Chair)  
I. Abdalla, P.Eng.  
B. Bruce, P.Eng.  
D. Grant, P.Eng.  
R. Gupta, P.Eng.  
S. Kass, P.Eng.  
G. Lodha, P.Geo.  
E. Loewen, P.Eng.  
D. McKibbin, P.Eng.  
B. Purdy, P.Eng.  
D. Swatek, P.Eng.  
H. Turanli, P.Eng.

### Current Staff Support:

W. Boyce  
A. Moore  
C. Camara

# Hope for Haiti: The Adventures of Design in the Developing World

J. Schmidt, EIT

In February 2009, I had some holiday time to use up, EIT volunteer requirements and a sense of adventure that led me to go on a trip to Haiti with Engineering Ministries International (eMi).



I was part of a team of 11 people, most of whom were design professionals. The purpose of our trip was to design an orphanage complex that Haiti Children's Rescue Mission (HCRM) could build on their newly acquired land. Here in Canada I work in water and wastewater, so my job on the trip was to assist another civil engineer on the design of the orphanage water and sanitary system. I had the pleasure of working with a seasoned professional who taught me an immense amount about water and sanitary design in the developing world.

Before I left, I wasn't sure what to expect. I didn't know how I would process the poverty I would see, or the challenges that lay ahead. Challenges arose once we arrived. For instance, some days we spent just as much time traveling in the land cruiser as we did actually working on the site. I didn't mind

these long drives because I had the pleasure of spending them with like minded and enjoyable people and I got to see the diversity of Haitian culture and landscape. At times I would look out the window and see people with expressionless faces

and feel an overwhelming sense of ineffectiveness. I wanted to solve the world's problems but had very limited ability to do so. I learned that poverty is not as black and white as I once thought. That "doing good" if it can be called that, is very uncertain business. I also realized that if I

looked hard enough, snapshots of hope can be found. Hope is present in the eyes of the children going to school and in the voices of the orphans at HCRM whose singing was sometimes in the background as we worked on our design.

I learned that design in the third world can be quite a bit different than back home in Canada. Every team member had unique and different challenges. As the civil engineers, we ran into difficulties such as trying to design a series of septic fields on an extremely steep slope, to trying to design a water system without knowing

the capacity of the well. The well was 22 metres deep, dug entirely by hand. There were no source water protection measures, water rights licences, or other regulations that would be expected and required here in Canada.

I believe that going to Haiti was a critical and essential part of my journey towards professional designation. Did I change the world? No, I don't believe I did. Haiti changed me more than I changed it. However, I do believe that it taught me lessons that will further my career development right here at the Manitoba Water Services Board, as well as widened my horizons and broadened my world view.

The most common question I have been asked since I returned has been whether or not I will do this again. The beautiful people and the circumstances I saw did something to me. They changed me in ways I still don't understand. So I think the better question is not if I will do this again, but when.

More information on eMi, the work they do, as well as upcoming trips can be found at <http://www.emicanada.org/> ■



## Council Reports

Thursday, September 10, 2009

A. Kempan, P.Eng.

After the traditional sandwich lunch the business meeting opened at 12:37 p.m. Disposing of a few routine tasks, Council turned to an interesting item on the agenda: SPEPEM. This rather formidable acronym stood for the Society of Philippine Educated Professional Engineers of Manitoba. Dr. Marolo Alfaro, P.Eng. (professor in the Civil Department, University of Manitoba Faculty of Engineering) made a presentation to Council at its' June meeting; explaining the group and seeking a working relationship with APEGM. In the meantime, APEGM legal counsel recommended a memorandum of understanding (MOU). Today it was time for Councillors to consider the MOU.

In the beginning this sounded like a rather straightforward MOU, but it ended up generating an extensive debate in which virtually everyone had a say. Councillor Jeannette Montufar thought signing an agreement with a specific ethnic group wasn't a good idea. Councillor Don Spangelo thought the educational requirements for SPEPEM members was loose, but Executive Director Grant Koropatnick said APEGM had approved their education since SPEPEM members consisted of registered Professional Engineers and EITs. Councillors Bob Malenko, Arthur Chapman, and Past President Tim Corkery supported the MOU, noting that SPEPEM was seeking cooperation and nothing more. Appointed Councillor Brian Shortt was more critical in his review of the MOU, suggesting that certain points be removed. President Himbeault said the SPEPEM MOU was modelled on one with UMES (University of Manitoba Engineering Society).

In the end, the MOU did not get a vote. President Himbeault, sensing the mood of Council, suggested a tightening up and re-wording of the agreement. So Executive Director Grant Koropatnick would rejig the MOU for another discussion at the next Council meeting.

On to the "Items For Decision" section of the agenda. The first item was a bylaw revision proposal on changes to the Investigation Committee procedures and the other item regarding the registration of U.S. Engineers. The Investigation Committee bylaw would change the wording of the alternate dispute resolution option. Presently it is the first option, the bylaw change would make it last, the change based on APEGM legal advice. After some discussion Council decided to table that bylaw until the intent of the wording was checked. The APEGM registration policy would be changed to allow the registration of US engineers with a P.E. license as regular members and not "temporary." It was stated that the P.E. process was at least as rigorous as APEGM's qualification process, so P.E.s should be registered in the regular membership category upon proof of status from an engineering state board of registration.

More MOUs came to the table but were routine renewals of existing documents. The home inspectors and UMES agreements were renewed. The last item for discussion dealt

with term limits for Registration Committee members. Three members had passed the six year limit so the committee agreed among itself that two members would resign immediately, while another would stay on for an extra year to provide an opportunity for a smoother transition.

Council made a brief stop at the "outstanding items" list. There was no hope of changing the name of the school science fair to include the term "engineering" they learned, so the item came off the list. As far as Continuous Professional Development was concerned, members were to receive a soft warning that it was on the way, although another Councillor favoured the hard approach. An information item on CPD was planned for insertion into the AGM member packages.

Since 1936 the engineering profession has had a national organization to represent the provincial organizations at a higher level. In that time many points of friction had developed between the national group and its provincial constituents. To set a new course for the future, the parties agreed to create the Synergy Task Force in July of 2008. There they would define roles and procedures which, once agreed upon, would allow everyone to work together more harmoniously. The task force had written a draft report so now Council had a chance to discuss the findings. To start with, Mr. Brent Smith of New Brunswick talked Council through the report via teleconference call, after which Council discussed it in more detail. Their goal was to sign an agreement in October.

In the Information Reports was an item on a proposed industry-based EIT training program. This was an idea which had been floating around for a while and was previously presented to the APEGM Experience Review Committee in 2006. At that time, it was voted down by the committee. Councillor John Woods and a small task group recently re-examined the idea and found it had some merit, but would be an additional drain on APEGM resources when the current program was already handling a growing number of EIT files. Although the concept seemed good, it was doubtful that industry would pick up the tab. Mr. Woods asked Council to either begin a process to implement an industry-based EIT training program or abandon the idea. Council wasn't ready to do either so they referred the matter to Executive Director Grant Koropatnick for handling in the day-to-day operations.

In the meeting evaluation Council agreed they had done well. This was Councillor Bob Malenko's last meeting so the group thanked him for his contribution over the years before ending the meeting at 4:49 PM. ■

## Friday, October 23, 2009

A. Erhardt, EIT

Following the morning professional development session by Robert J. Sawyer, those in attendance made their way to the west ballroom for the AGM business meeting. Shortly before noon, quorum was reached, the meeting was called to order, and members stood for the playing of the national anthem. A moment of silence was observed for those members who had passed away over the past year. After a formal reading of the Notice of Meeting by Executive Director Grant Koropatnick and the approval of the agenda, the APEGM Council and staff members were introduced.

Shortly afterward, outgoing President Don Himbeault took some time to recognize invited guests and association representatives. Greetings were brought by Ken From on behalf of Engineers Canada. Greetings were also delivered by former APEGM President Tim Corkery, representing the Canadian Council of Professional Geoscientists.

These greetings were followed up by the Report of the President. Outgoing President Don Himbeault provided some insight as to the role of the President along with APEGM Council, and what he had learned over the past year, while giving some indications of what to watch for in the upcoming year.

After the minutes from the previous meeting were accepted, the election results for councilors to serve from 2009 through 2011 were announced. New councilors elected to serve on APEGM council were Doina Priscu, P.Eng., and Robyn Taylor, P.Eng., although for Robyn Taylor, it will be her second stint on council. Re-elected to serve another two year term were Alan Aftanas P.Eng., William Girling, P.Eng., and Raymond Reichelt, P.Eng.

The auditor's report for the past financial year was submitted, and BDO Dunwoody was again appointed as the auditors for the upcoming year. The operating budget and schedule of dues and fees were presented for information. There were no changes to dues from the previous year.

It was at this time, that those in attendance were given a few minutes to solicit volunteers for the Nominating Committee. In no time at all, all five committee spots were filled. The following members allowed their names to stand for nomination: Jeff O'Driscoll, Efrek Teklemariam, Suresh Neethirajan, Dawn Nedohin-Meck, and Lindsay Melvin.

Then, the staff and committee reports were brought up as information items for possible comment by those in attendance. They were accepted without comment.

As there were no resolutions presented for the meeting, the agenda proceeded with the recognition of retiring councilors. Councilor Bob Malenko, P.Eng., and Past President Tim Corkery, P.Eng., had both served four year terms, and were presented with certificates thanking them for their efforts.

With no other business having been added to the agenda, the meeting proceeded with the formal passing of the Scott Gavel ceremony from outgoing President Don Himbeault to the incoming President John Woods. As per tradition, President John Woods opened the gavel and inscribed his name upon the scroll within, which contains the signature of each of the Association's past presidents.

President Woods took the opportunity to reiterate his platform of strengthening the position and enrollment numbers of the Association while thanking those around him for their support.

Following some closing announcements, the meeting was formally adjourned. A fantastic lunch was provided along with a variety of door prizes for those who remained in attendance. ■



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# Immigration and the Engineering Profession

*A. Kempan, P.Eng.*

## The Need for Immigration

Manitoba experienced record breaking population growth over the last year; the best in 38 years according to government sources. Around 10,500 people chose Manitoba as their new home during that time, the vast majority of them from other countries. A society's greatest resource is its people and a person's decision to leave their homeland and seek a new place has benefits for both parties, both those who chose Manitoba and those already living there. Immigrants are essential to our welfare and we need people to maintain our growth and prosperity. At the same time, new arrivals have an opportunity to improve their lives. The decision to leave one's homeland is often a difficult one but that uncertainty can be mitigated if the receiving jurisdiction provides active assistance to newcomers to help them succeed in their new situation. Essential areas for assistance are language training, education, employment, housing, family and community support, and cultural integration.

What is true for all of Manitoba applies specifically to the engineering and geoscience community. We see the same need for new people if the profession is to play its part in filling jobs which will ultimately contribute to the prosperity, safety, and well-being of all citizens.

## Methods of Immigration

Immigration is a federal responsibility in Canada, but most provinces have made agreements with the central government to develop individualized programs which address a province's specific immigration

and economic agenda. These provincial programs are usually called Provincial Nominee Programs, and in 1998 Manitoba was the first jurisdiction to implement a nominee program. Since that time 30,000 people have arrived in Manitoba under the program, the largest share of any province. In 2007, 7,689 people entered Manitoba, 45% of all provincial nominees entering Canada that year. Much of the success in drawing candidates to Manitoba can be attributed to the support services offered here.

Under the nominee program, immigrants are chosen for their perceived ability to succeed and prosper in our community, and they fall into different classifications, or "streams". Most engineers qualify under the Economic Class, as skilled workers or dependents of skilled workers. In the latest available statistics, from the year 2007, 130 engineers from all categories landed in Manitoba. Engineering held down third spot among all Economic Class immigrant occupations.

## Sources of Immigration

In previous decades, most immigrants were from European countries, but the sources of immigration have changed radically in recent times. Today over 53% of immigrants come from Asia and the Pacific region, although Europe still holds a respectable second place with 19%.

In the 1960s Manitoba sewing factories went to the Philippines to recruit mainly female workers for the garment industry and over the years that connection has blossomed into a special relationship with that country. In February of 2008,

then Premier Gary Doer travelled to the Philippines with a delegation to promote Manitoba as a prime location for immigration and investment, while introducing Manitoba businesses to a new export market.

Since those first garment workers arrived in the 1960s, Philippine immigrants have become the largest newcomer group in Manitoba as characterized by language. 27% of new arrivals speak Tagalog as their mother tongue. Their occupations have also changed through the years, from skilled manual labourers in the 1960s, to professionals in the 2000s. Engineers are in this group, but other professions are represented too. In late 2009, a Manitoba recruitment team made conditional offers to 131 Philippine nurses to work in various locations around the province.

Just as Manitoba has had an influx of Philippine immigrants, APEGM has seen a similar rise in the number of Philippine-trained engineers, with 175 going through the assessment process. They are followed by India (132) and China (121). Altogether, 304 candidates made it through the assessment process to become registered, and with 180 MITs still in the pipeline.

To illustrate the growing importance of Philippine professionals in our organization, at the September 10, 2009, Council meeting APEGM councillors reviewed a Memorandum of Understanding with the Society of Philippine-Educated Professional Engineers of Manitoba (SPEPEM). APEGM retains all its regulatory powers under the MOU, but agrees to cooperate on issues



important to both organizations. (Council has still to vote on the MOU at a future meeting.)

### Support to Immigrants

For newcomers to succeed, they must receive training and support, and Manitoba has done much to assist them. On November 3, 2009, the province opened the Manitoba Nominee Application Centre where applicants receive group and one-on-one assistance on completing PNP applications. By helping applicants with the paperwork, incomplete submissions will be reduced and the whole application process will be accelerated.

Foreign-trained professionals often have difficulty proving their credentials meet Manitoba standards, so in 2007 the province passed The Fair Registration Practices in Regulated Professions Act. This legislation requires that licensing bodies practice fair, transparent, objective, timely, and impartial assessment procedures. At the time, Executive Director Grant Koropatnick said APEGM was already doing those things

and would have no difficulty conforming to the act.

APEGM has other means to support immigrants, both institutionally and personally. APEGM has partnered with the University of Manitoba in a unique program known as the Internationally Educated Engineers Qualification Program (IEEQ). When foreign-educated engineers, with extensive engineering experience abroad, are assessed by APEGM and are assigned five or fewer confirmatory exams, they may apply to the IEEQ program. There they will receive, in 12 to 24 months, a mixture of language, culture, and academic training, coupled with co-op work experience. Upon completing the IEEQ program, graduates will be considered academically qualified by APEGM and able to undertake the next steps leading to registration.

Helping new immigrants can also be a personal experience. As a volunteer, former Councillor Bob Malenko was able to assist certain foreign-trained engineers because he spoke their language and so was able to give them advice and support.

### Conclusion

We need immigration and as a society we should actively support them to become fully functional citizens. The economic case for immigration is clear . . . but immigration provides other benefits beyond supplying the manpower for present day needs. Each new arrival will, in turn, create more citizens in the future. In 2008, the Manitoba Bureau of Statistics performed an economic simulation to determine what the impact of 10,000 new citizens would be on the province at 2 year, 10 year, and 20 year intervals. After two years, the newcomers would have swelled by reproduction to 10,100, at ten years to 11,400, and after twenty years, to 12,800. Due to population growth, housing starts would also increase over two years (3,700), ten years (4,700), and twenty years (6,000). Similar increases in gross economic output, wholesale and retail trade, and disposable income would follow.

And we should not ignore the cultural enrichment that people from other cultures provide. So in the end all parties benefit. ■

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# 90<sup>TH</sup> ANNUAL GENERAL MEETING AWARDS DINNER *and* DANCE

A. Erhardt, EIT

It was a night of celebration on many fronts as many APEGM professionals gathered together for the 90th Annual General Meeting Awards Dinner and Dance in the Crystal Ballroom at the Fort Garry Hotel. With the dinner and dance completely sold out, many people enjoyed each other's company over a glass of wine or a cocktail as magician Anders Boulanger of Anders Magic wandered about, mystifying groups of people with feats of magic prior to the commencement of the official festivities.

After a video montage profiling the night's emcee, Paul Boge P.Eng., the evening began with a brief introduction from Executive Director Grant Koropatnick, followed by greetings from the Province of Manitoba by Bidhu Jha on behalf of the Premier. As those in attendance began to enjoy appetizers, the official awards presentations were made.

took the opportunity to thank those most important to them, both personally and professionally.

Following an outstanding four course meal, Paul Boge turned the room over to Anders Magic, who proceeded to not only amaze the audience with his magic, but even took the time to teach everyone a few basic tricks.

A special lesson was provided to APEGM's new president, John Woods P.Eng. While he caught on rather quickly and did a great job of "working the room", Anders managed to convince him not to give up his day job. Pulling volunteers out of the audience at will, the magic continued to flow and excitement and entertainment filled the air. From straightjackets to power saws to a "missing" watch, it was a spectacular performance.

After the magic show had come to a close, the festivities shifted over to the Concert Ballroom, where things were turned over to Winnipeg's hottest dance band, the Ron Paley Dance Band. While some people stayed back in the Crystal Ballroom to chat, others made their way onto the dance floor to enjoy the timeless classics that were being belted out. In one corner of

the ballroom, a lineup quickly formed in front of a classic photo booth that was set up to add a little "flash" to the evening.

FRIDAY, OCTOBER 23, 2009  
THE FORT GARRY HOTEL  
222 BROADWAY, WINNIPEG



Joey Anderson shows her take home souvenir from the classic photo booth.

too soon, the night began to wind down and the dance floor slowly emptied out. When all was said and done, it had been a fantastic night, spent celebrating Engineering and Geoscience in Manitoba with friends, family and fellow professionals. ■



Anders Boulanger admires the knot made by President John Woods.

Congratulations go out to all of the winners of this year's awards. A brief video profile of each award winner was presented prior to receiving their awards. All of the winners



Cyndy Stewart helps Anders with another trick to entertain the crowd.

## CERTIFICATE OF ACHIEVEMENT AWARD HUSBAY MINERALS INC.

# HUDBAY MINERALS INC

**H**udBay Minerals Inc. is an integrated mining company operating mines, concentrators and a metal production facility in northern Manitoba

and Saskatchewan for the last 81 years. Since its inception, HudBay has discovered more than 26 ore bodies and mined 155 million tons of ore. The company is currently engaged in one of the most aggressive exploration programs in Canada, spending \$42.8 million for exploration in 2008.

Lalor story begins in the 1980s when HudBay's Chisel Lake Mine located in the Flin Flon Greenstone Belt was close to being mined out. The exploration team headed by Kelly Gilmore embarked on an aggressive exploration program integrating land acquisition, geological mapping, geophysical surveys and drilling. Drilling close and far from known mines in exposed as well as soil-covered areas tested the subsurface models interpreted by integrated studies.

In early 2002 project geophysicist Alan Vowles tested deep penetrating commercial EM systems utilizing large multi-turn transmitter loops at Chisel North, and received a response from a known ore body at a depth of 600 metres. This successful test helped project geologist Chris Roney

and Vowles to use EM surveys in large prospective areas to target deep drill holes. Computer modelling of EM data indicated two conducting bodies, one about 1.4km and one 3 km northwest of Chisel North at depths of 800 metres.

The closest target was drilled first and confirmed mineralization, but the ore grades were not economic. After fine-tuning of EM interpretation and a bold decision by senior geologist Craig Taylor, the second target was drilled in March 2007. This time the team hit high-grade 24-metre thick mineralization of zinc (13%) and copper at predicted depth. This was a stunning exploration success. Since then five more drills have been moved into the area drilling more than 60 drill holes. By now they have delineated six ore zones within the mapped broad geophysical anomaly covering a surface area of 0.7 square kilometres. A NI 43-101 technical report gives an estimate of the inferred ore resources at 13.2 million tonnes grading 2.9 grams/tonne gold, 34.1 grams/tonne silver, 0.70% copper and 8.19 % zinc. The indicated reserve estimates are 3.4 million tonnes grading 1.9 grams/tonne gold, 20.5 grams/tonne silver, 0.71% copper and 8.82% zinc.

At this stage of development, the deposit is considered larger than what the 777 mine and Flin Flon Mine deposits were prior to starting production. This discovery gives life to The Company as well as to the whole town of Snow Lake. The Association is pleased to recognize HudBay Minerals Inc. for its excellence in exploration and feels it is a worthy recipient of the Certificate of Geoscience Achievement.

## PROFESSIONAL-IN-TRAINING AWARD MATTHEW WHEATLEY, EIT



**M**r. Matthew Wheatley graduated from the University of Manitoba in 2007 with a B.Sc. in Computer Engineering. During his fulltime studies, he balanced his busy academic commitments with equally as challenging athletic commitments that include earning the role of captain of the Winnipeg South Blues Jr. A hockey team as well as working as a hockey coach for children aged three to eighteen. Matthew became a Student member of APEGM in September 2005 and an Engineer-in-Training (EIT) in February of 2007.

In January of 2006, Matthew was hired on a part-time basis by E.H. Price Ltd. Initially he worked within the Customer Service Department as a Mechanical Estimator where he provided strategic quotations for custom products to their customers. Within a very short period of time Matthew distinguished himself as someone with excellent communication skills and an outstanding ability to recognize and eliminate inefficiencies in a process. One such example includes the development of custom software to monitor information related to specials as they are processed from order entry through to shipping.

By April of 2006, Matthew completed his studies and became a fulltime employee of E.H. Price Ltd. Soon after his transition to fulltime, after repeated demonstration of his commitment and ability to execute, he was the company's candidate of choice for the Customer Service Manager role that opened in July of 2006; which he enthusiastically accepted.

In Matthew's role as Customer Service manager he had the challenge of managing 40% growth in demand. Recognizing the current processes were manual and not well suited to support the long term growth of the department, he led an initiative to write and implement software that would both standardize and streamline the quotation process. It wasn't long after starting his initiative that Matthew realized streamlining

the quotation process would get him only so far. It had quickly become evident to him that if he was going to keep up to the ever increasing demands, the optimal solution was to focus on effectiveness rather than efficiencies, or in other words get a special order to follow the same information route used by products ordered out of a catalogue. To accomplish this massive undertaking, he knew he needed to put in place a Cracker Jack team – which he accomplished through the hiring of three EITs who had recently graduated from the University of Manitoba's Computer Engineering program.

Approximately 1 ½ years later, in February 2008, a value stream manager position opened up within the Operations team. Again, Matthew's successful can-do track record made him an excellent candidate for the position – which he again enthusiastically accepted. As a value stream manager, Matthew responsibilities included both the administrative and production areas of the business. Essentially, he was in control of a \$6M plus business.

Matthew held the value stream manager position until very recently; when he was promoted to the position of Product Manager, whose primary responsibility is to drive the growth of strategic product lines.

Throughout his academic studies and professional career, Matthew has been actively involved in several committees, some of which include sitting on council for the University of Manitoba Engineering Society (UMES) and filling the role of treasurer for IEEE Gold.

Additionally, Matthew has spent numerous hours volunteering his time to help promote the profession. His breadth of service includes judging school science fairs and attending school barbeques, answering questions from inquisitive students during engineering week, managing the company hockey team, and membership of the company Wellness Program Leadership Team.

The Association of Professional Engineers and Geoscientists of Manitoba is pleased to present the Professional-in-Training Award for 2009 to Matthew Wheatley, an exemplary individual, committed to his community and to his profession.

## EARLY ACHIEVEMENT AWARD



**R**obyn Taylor was born and raised in Winnipeg. She earned her bachelor's degree in Electrical Engineering from the University of Manitoba in 1998 and her Project Management Professional designation from the Project Management Institute in 2005.

Robyn commenced working at Teshmont Consultants in Winnipeg upon graduation in 1998, where she currently is a Project Manager. Robyn has over eleven years of experience in project management, engineering of submarine and

underground cables, transformer engineering and inspection, substation design, and system studies. She has worked on projects in Canada, USA, Chile, Norway, Australia, New Zealand, Ireland, China, India, and Malaysia.

Robyn was President of APEGM in 2007, and was unable to fulfill the role of Past President as she accepted an overseas position with Teshmont in December 2007. Teshmont was retained as Owner's Engineer for an HVDC transmission project in Malaysia, where Robyn acted as Project Manager, based in Kuala Lumpur, for over a year and a half. She worked closely with the Client in order to meet their tight schedule, and issued regular reports to project stakeholders to identify risks and issues in order to maintain the schedule, budget, and quality of the project. Robyn was involved with prequalification; preparing functional specifications for the HVDC converter stations, transmission lines, and submarine cables; and assisting the Client during discussions with the power off-takers, project advisors, and lenders.

## ROBYN L. TAYLOR, P.ENG.

Since returning to Canada, Robyn has been acting as Teshmont's Project Manager for the proposed HVDC projects in Alberta.

As part of engineering community service, Robyn is very active in encouraging and promoting high school students to select engineering by giving presentations at high schools and at Rotary Career Symposiums. She coordinated "Special Engineering" awards and judges for a number of years at the Manitoba Schools Science Symposium (MSSS). Robyn has been involved with the Rotary Club of Winnipeg, and was an active member of the Rotary Youth Exchange Program and Rotary Model United National Assembly (MUNA) activities.

Robyn served as a Chairperson of the Institute of Electrical and Electronics Engineers (IEEE) Winnipeg section, Chairperson of the IEEE Power & Energy Society (PES) Winnipeg Section, and is currently the Chairperson of the IEEE PES High Voltage DC (HVDC) and Flexible AC Transmission System (FACTS) Subcommittee.

Robyn Taylor has been an APEGM member since 1998. She served on the APEGM Council from 2005 until 2007, and as a member of various committees including the Public Awareness Committee and Nominating Committee.

Robyn is also registered as a Temporary Engineer with the Board of Engineers Malaysia (BEM), as a P.Eng. with the Alberta Association of Professional Engineers, Geologists, and Geophysicists of Alberta (APEGGA), and as an Engineer-in-Training with the North Dakota State Board of Registration for Professional Engineers and Land Surveyors.

In recognition of Robyn's significant contributions as an engineer, to society, and the engineering profession, in the early part of her career, the Association is pleased to present the Early Achievement Award to Robyn Taylor.

## CHAMPION OF ENGINEERING EDUCATION XIMENA MUÑOZ



**M**s. Ximena Muñoz, herself an immigrant professional, came to Canada from Chile and has spent over 20 years demonstrating her commitment to the improvement of qualifications recognition practices for internationally educated professionals in Manitoba. As director of the Settlement and Labour Market Services Branch of Manitoba Labour & Immigration, she set new directions for Manitoba to develop services and supports that meet the needs of increasing immigration to the province. In 2001, she organized

Manitoba's first think-tank meeting bringing together immigrants, regulators, employers, policy-makers and other stakeholders which led to the development a Qualifications Recognition Strategy that was the first of its kind in Canada. On the basis of this strategy, Muñoz and her provincial colleagues worked in collaboration with regulators, employers and educational partners to establish a series of ground-breaking demonstration projects. One of these was the Internationally Educated Engineers Qualifications Recognition Program, or IEEQ Program at the University of Manitoba.

Throughout the five-year pilot phase of the IEEQ Program (2003-2008), Ms. Muñoz was an unwavering champion of the program. Although the most visible contribution was the project funding contributed to the IEEQ project over the pilot phase, Ms. Muñoz' contributions far exceeded monetary support. She demonstrated a tremendous amount of advocacy

and eventually assisting the program in securing permanent, sustainable funding for an expanded program.

Ms. Muñoz extended a great deal of flexibility to the IEEQ program to fine-tune its mandate, objectives, and delivery as the program developed. In doing so, she demonstrated sensitivity to the unique challenges of the program model, which delivers a regulatory function within a post-secondary education setting. Ms. Muñoz and the project officers she assigned to the program demonstrated an active interest in the program not only from an administrative perspective, but for the individual participants as well.

Ms. Muñoz has also served the engineering profession nationally, by serving on the steering committees of Engineers Canada's From Consideration to Integration (FC2I) project (2003-2005) and the engineering Qualifications Recognition model (eQRm) project (2005-2008). The FC2I project focused on understanding and improving the integration processes for international engineering graduates nationally, while the eQRm project provided information and training to other Canadian jurisdictions interested in setting up an IEEQ-style program, in whole or in part. In both projects, Ms. Muñoz was an invaluable resource to interested stakeholders in other jurisdictions, sharing information of our Manitoba experience.

Since 2008, Ms. Muñoz serves as the province's first fairness commissioner, responsible for implementing the Fair Registration Practices in Regulated Professions Act.

The Association, along with the Faculty of Engineering, is pleased to honour Ms. Ximena Muñoz with the inaugural Champion of Engineering Education award.

## OUTSTANDING SERVICE AWARD



**A**lfred Poetker became registered with APEGM in 1967. He was a member of Council from 1998 to 2002. He served on the Registration Committee for six years, the MAA-APEGM Joint Board Committee for two years, the EGIAR Joint Board Committee for four years, the Member Competence Board committee for two years, the Nominating Committee for one year, and the Bulletin Committee for two years.

Alf graduated from the University of Manitoba with a Bachelor of Science

degree in Civil Engineering in 1965. He completed his Graduate Studies course work in Environmental Engineering in 1972.

He started his engineering career with the Manitoba Water Resources Branch in 1985. He was Chief Engineer of the Manitoba Water Services Board (MWSB) from 1969 to 1978. In 1978, Alf established A.J. Poetker & Associates. In 1981, he partnered with two other engineers to form Poetker Engineering Consultants Ltd. In 1990, the company merged with another firm to form Poetker MacLaren. Alf was President of Poetker MacLaren, which later became Cochrane Engineering, until 1995, when he relinquished his administrative and executive duties to focus on technical projects with Cochrane until his retirement in 2007.

While with the MWSB, he was instrumental in facilitating the provision of water and sewer facilities for some 45 rural Manitoba communities, which at the time was a major advancement for Manitoba in terms of public health and community development.

As a Consultant, Alf was been involved in engineering projects in Manitoba, as well as in British Columbia, Alberta, Saskatchewan, Ontario,

Mexico, and Venezuela. Significant projects include the design of the first regional water treatment plant at Letellier, now a part of a much larger system operated by the Pembina Valley Cooperative providing water to a large part of southern Manitoba, and as Project Director for the Cartier Regional Water System, helped to establish the first public-private partnership water supply project in Manitoba, which serves four municipalities west of Winnipeg.

Alf was on the Board of the Consulting Engineers of Manitoba (CEM) from 1983-1990 and President from 1988-1989. From 1991-1994 he represented Manitoba on the Board of the Consulting Engineers of Canada. In 2007, he was presented the CEM Lifetime Achievement Award in recognition of exceptional leadership, integrity, innovation, diligence, and unwavering respect for his fellow engineers and the citizens of Manitoba.

For many years, Alf was a volunteer lecturer at the MWWA's Annual Operators' School. He has been on his church council for over 25 years and on the Board of Trustees for five years, plus working with various church ministries and committees. From 2000-2009, he volunteered on a Community Based Language Program for immigrants. He served on the Board of the Family Life Network (a non-profit Christian media production agency) from 1996 to 2004.

From 1977 to 1984, Alf served on the Agassiz Drive School Parent Committee. He also headed the committee that raised funds for and built a new community playground structure. He obtained government assistance to hire students to run a skate park program for neighbourhood youth. He is also a member of the Fort Garry Horticultural Society.

The Association of Professional Engineers and Geoscientists of Manitoba is pleased to confer on Alfred Poetker the Outstanding Service Award in recognition of his commitment to the Association, the profession and the public.

## LEADERSHIP AWARD



**M**r. McDermid graduated with a B.Sc. in Electrical Engineering from the University of Manitoba in 1961. In 1962, after a year with Ontario Hydro as an engineer-in-training, he joined Manitoba Hydro. He soon became involved in diagnostic testing of electrical insulation, to assess the condition of electrical apparatus. For many years Mr. McDermid was in charge of the Insulation Test group at Manitoba Hydro. Under his leadership, it grew from a small handful of staff, to a very busy group of over 20 engineers and highly trained technicians.

Mr. McDermid has been an extremely active volunteer for the IEEE, in both the Power Engineering Society and the Dielectrics and Electrical Insulation Society.

While Bill is highly respected in the electrical utility industry, for his knowledge, discoveries and hard work, he is being recognized in this award for his vision and long-term planning. There is ample evidence that Bill's career-long goal was to enhance electrical system reliability by the development and application of so many predictive and failure-preventing tests. This vision has benefited Manitoba Hydro and its ratepayers with reduced outages and repair costs.

He is currently the Director of Manitoba Hydro's High Voltage Test Facility, for equipment rated up to 550 kVAC and 500 kVDC. This Test Facility, now

## W.M. (BILL) MCDERMID, P.ENG.

under construction in Winnipeg would not have come to be without his persistence and hard work. By demonstrating how it will benefit Hydro, Bill was able to sell this concept to Hydro's Executive and its Board. This lab will bring all of Manitoba Hydro's high-voltage testing under one roof, albeit a very tall and wide one. It will greatly expand Hydro's ability to test equipment before it goes into service.

Mr. McDermid has authored or coauthored more than 40 IEEE papers during his career, 12 of them in refereed journals such as the Transactions EC and Transactions DEI. Some important refereed papers where Mr. McDermid was a main author are:

- "Practical on-line partial discharge tests for turbine generators and motors", Energy Conversion, IEEE Transaction on Volume 9, Issue 2, June 1994. This paper was the seminal paper that described the time-of flight and pulse shape methods of separating PD from electrical interference. The result was the first practical on-line PD test that has since been widely adopted. This paper also won the IEEE PES Best Paper Award.
- "Experience with directional couplers for partial discharge measurements on rotating machines in operation"; Energy Conversion, IEEE Transaction on Volume 14, Issue 2, June 1999. This paper shows the experimental work he did to verify that the time-of-flight noise separation method can work successfully.

In recognition of his scientific knowledge and outstanding leadership, applied to benefit Manitobans and utilities world-wide, the Association is pleased to present the Leadership Award to W. M. (Bill) McDermid.

# Department Of Geological Sciences: 1910-Present

*B. Brisbin, B. Miller and N. Chow*

## 1910-1947 – THE BEGINNING AND THE BROADWAY CAMPUS YEARS

The Department of Geology and Mineralogy at the University of Manitoba was established in 1910 with the appointment of R.C. Wallace as Head. Dr. Wallace began teaching courses in mineralogy, petrology and petrography, and physical and historical geology. He also began field investigations of the natural gypsum deposits and saline brines in the Interlake district and of the sulphide mineral resources of the Precambrian Shield. He later served as Commissioner of Mines for Northern Manitoba.

Over the next twenty years, the teaching staff grew with the addition of J.S. DeLury in 1915 (Petrology), S.R. Kirk in 1927 (Palaeontology), G.M. Brownell in 1928 (Economic Geology), and E.I. Leith in 1935 (Stratigraphy and Sedimentation). Dr. DeLury became Head in 1928 when Dr. Wallace resigned to become President of the University of Alberta.



R.C. Wallace circa 1910. He was the first Professor and Head of the Dept of Geology and Mineralogy at the University of Manitoba.

Although small, the Department was ambitious from the start. Geophysics began in 1911 with the installation of a seismological station at St. Boniface College as part of the Jesuit network. The Geology Club was formed during 1916-17, and the first student field trips were launched in the following year. The resources of the Department

received a major boost in 1918 when J.W. Winthrop Spencer donated his lifetime collections of fossil, mineral and rock specimens, and his library of over 600 volumes. The "Spencer Collections" to this day form the core of the departmental teaching materials.

The University's Broadway Campus was the home of the Department during the years 1910 to 1947.

The Department offices were in an annex of the Science Building. Although the Department had its own museum, the lecture rooms and labs were shared among the Arts and Science disciplines. During this time, the Geology research equipment was limited to specimen preparation facilities, microscope labs, and field equipment.

During the late thirties to mid 1940's the University took steps to move all its facilities from the Broadway campus to the site of the Manitoba Agricultural College, later known as the Fort Garry Campus. The Department of Geology and Mineralogy moved into the Buller Building, where it occupied the top two floors of the west wing. G.M. Brownell became Head in 1944 and the following new faculty members were added in 1947: R.B. Ferguson (Crystallography and Mineralogy), H.D.B. Wilson (Petrology and Petrography), and G.A. Russell (Photo-geology, Environmental Geology and Mining Geology).

## 1947-1962 – THE BULLER BUILDING YEARS

The years in the Buller Building represented a successful transition to a robust department with well-defined objectives in teaching and research.

Introductory classes taught by E.I. Leith drew ever-increasing numbers of students and led to larger enrolments in the General and Honours Geology programs. The Department also took on the Geological Engineering Curriculum, with a Geology-Civil Engineering committee providing curriculum guidance. The five professional staff had their hands full



Early students in the field - year and location unknown.

and had limited space yet they met the challenge by providing excellent courses and by establishing research labs and programs. R.B. Ferguson acquired X-ray diffraction equipment for his research on feldspars. H.D.B. Wilson spent his time researching and writing on layered intrusions and ore deposits. G.A. Russell acquired separation equipment for his labs in mineral processing. In 1957, W.C. Brisbin was appointed to the staff and took on the teaching of Structural Geology and Petroleum Geology. He also began a program of regional gravity interpretations of continental crust and mantle. In 1962, D.H. Hall was appointed to the staff and developed a full program in Geophysics. Dr. Hall brought seismic and other geophysical equipment to the Department and thereby developed a full program of study leading to specialization in geophysics. In 1963, the Department's name was changed



Early student at a microscope.

to Geology, Mineralogy and Geophysics. Technical staff between 1947 and 1962 included W. Hill, K. Irwin, R. Wadge, and W. Hutchcroft.

It soon became obvious that the Department's continued growth would require considerably more space and negotiations led to the acquisition of the old Chemistry-Physics Building of the Agricultural College (now the Fitzgerald Building). A complete building renovation resulted in new teaching labs, museum space, and laboratories for trace-element analysis, X-ray fluorescence spectrometry, mineral processing, and X-ray diffraction.

### 1963-1985 – THE GEOLOGY (FITZGERALD) BUILDING YEARS

The move into the newly renovated space invigorated the Department and led to new appointments, new areas of research, and increased enrolments over the next 22 years.

Professorial appointments between 1965 and 1967 included D.T. Anderson (Remote Sensing), A.C. Turnock (Igneous and Metamorphic Petrology), G.S. Clark (Geochronology), J. Cherry (Groundwater Geology), and C.D. Anderson (Exploration Geophysics). At this time, the name of the Department was changed to the Department of Earth Sciences, in recognition of the additional fields.

From 1970 to 1974, new appointments covered other important areas of geological science. These included J.T. Teller (Glaciology and Quaternary

Geology), P. Cerny (Pegmatite Mineralogy and Geology), R.S. Harrison (Carbonate Geology), P. Laznicka, (Metallogenesis), L.D. Ayres (Precambrian Volcanology), and A.G. Green (Solid Earth Geophysics and Global Tectonics). From 1979 to 1983, new staff appointments included R.J. Elias (Paleontology), W. Moon (Satellite Imagery and Geophysics), W.M. Last (Petroleum Geology, Sedimentology), F.C. Hawthorne (Mineralogy, Crystal Chemistry), and N.M. Halden, (Geochemistry). Technical staff consisted of A. Pasquale, J. Berta, K. Ramlal, P. Beaudoin, R. Pryhitko, I. Berta, I. Cerny, and J. Wenham.

Two collaborative research initiatives stand out during this period. Project Pioneer, which began in 1966, was a study of the Rice Lake-Beresford Lake area by the Department and the Manitoba Department of Mines. The project was innovative in that it applied a coordinated series of geological, geochemical, and geophysical techniques to a single Precambrian area. The second initiative was the formation of the Centre for Precambrian Studies as a semi-autonomous unit of the University in 1972 to implement multi-disciplinary research on larger areas the Precambrian Shield. M. Keys served as the administrative officer.

Annual geology and geophysics field courses were introduced first at the Chemalloy Mine property at Bernic Lake in 1964 and in 1971 at the newly constructed Star Lake Field Station. The field courses were augmented by local and international field trips to acquaint our students with a multitude of geological environments and processes. This philosophy has continued over the ensuing years with trips to the Black Hills, Grand Canyon, Canadian Cordillera, plate margins in California and Baja California, Southern Appalachians, Florida Keys, Northwest Territories, and Yellowstone.

The Department was also committed to providing geoscience education to grade school teachers through its EdGeo program at the Star lake Field Station. Many staff members were also involved with continuing education, travelling

to communities to present geoscience courses in places as far north as Churchill, as unusual as Stony Mountain Penitentiary, and as far away as Canadian Armed Forces Bases in Germany. The Department hosted the GAC-MAC Annual Meeting in 1981.

By 1975, the growth of the Department surpassed the capacity of the Fitzgerald/Geology Building. The growth and lack of space required creative initiatives such as the addition of an annex to the existing building, the placing of trailers in the quadrangle in front of the Buller Building, graduate students found themselves occupying trailers near the Russell Building, and eventually, classroom, lab, and office space spilled over into the Bison Building. Although the University and University Grants Commission considered a new Geology building to be at the top of their priority list, construction did not begin until the early 1980s.

### 1986 – PRESENT – THE WALLACE BUILDING YEARS

The official opening of the R.C. Wallace building occurred on October 26, 1986. The new building carried the name of the first head of the Department of Geology and Mineralogy. Coinciding with the grand opening, the Department's name was changed to the Department of Geological Sciences.



Students working in the Petrology Lab, 2007.

The design of the Wallace Building represented a major change in architectural style on the campus and provided a site for much of the 1996 GAC-MAC Annual Meeting. The new

building was also a harbinger of other changes for the Department. During the six years after the move, the following appointments were made: M. Osborne



Graduate students working with the secondary ion mass spectrometer, 2008.

(Mineralogy, Crystallography), N. Chow (Carbonate Sedimentology), C. Macrides (Geophysics), B.L. Sherriff (Mineralogy), I.J. Ferguson (Electromagnetic Geophysics), A.C. L. Larocque (Geochemistry), A. Chakhmouradian (Mineralogy), A. Frederiksen (Earthquake Seismology). Teaching appointments included J. Young, W. Mandziuk, and K. Ferreira.

During this same period, discussions in the Department were focussing on the future and the changing role of the geological sciences in Canada. These discussions led the Department to take a major step in promoting the formulation of a new faculty. In 2003, a new faculty was formed involving the Department of Geological Sciences, the Department of Environment and Geography, and the Natural Resources Institute.

The name of the new faculty was modified in 2005 to the Clayton H. Riddell Faculty of Environment, Earth, and Resources. Clayton Riddell is an alumnus of the Department (B.Sc. Hon. 1955) and provided a \$10 million endowment to support the new faculty. Four new departmental appointments followed 2003: E. Sokolova (Crystal Chemistry), M. Fayek (Environmental and Isotopic Geochemistry), A. Camacho (Tectonics), and A. Bekker (Isotopic Geochemistry).

Since the move to the Wallace Building, the Ed Leith Cretaceous Menagerie has been created with generous donations from alumni, the R.B. Ferguson Museum of Mineralogy has been expanded, and another half storey has been added to the Wallace Building to accommodate the Riddell Faculty offices and the Centre for Earth Observation Science. Lab facilities related to the research of faculty have been redesigned using impressive, state of the art, analytical and data processing equipment. Technical staff supporting and advancing this world-class research have included N. Ball, M. Cooper, R. Chapman, S. Mejia, W. Blonski, G. Morden, M. Serzu, P. Yang, M. Yun, and R. Sidhu.

Over the Department's history, many other individuals have passed through our doors and helped build the Department into what it is today. Office support staff, including M. Riddell, F. Starratt, E. Ross, S. Kirsch, M. Watson and B. Miller, have spent significant portions of their careers ensuring that students receive the advice and assistance they need to succeed. Research associates, post-doctoral fellows, adjunct professors, and visiting researchers have made significant contributions to research and student progress.

### DEGREES CONFERRED THROUGHOUT OUR HISTORY TO 2009

Without question, the most important component of the Department throughout its history has been the students. Each year they challenge, they frustrate, they entertain and above all they provide the Department with a sense of accomplishment, satisfaction and pride. The Department has strived to maintain contact with alumni and in return, alumni have provided generous support through contributions to the Department's endowment funds, scholarships, and other initiatives.

The first B.Sc. degrees were awarded at the University of Manitoba in 1912 but without

discipline designation. The first recorded B.Sc. Geology degree was awarded in 1922 to C.A. Merritt. The first M.Sc. Degree in Geology was conferred in 1924 to L.G. Thompson and the first Ph.D. Degree in Geology was conferred in 1960 to L.C. Kilburn. Departmental records for the period between 1922 and August, 2009 indicate the conferring of 902 B.Sc. Geology (Hon.) and B.Sc. Geology (Maj.) degrees, 357 B.Sc. Geological Engineering degrees, 300 M.Sc. degrees, and 45 Ph.D. degrees.

### CENTENARY CELEBRATIONS 2010

The Department will be celebrating its centenary in 2010 and several exciting projects are now underway to commemorate this special occasion.

**Winnipeg Weekend 2010** – A reunion of the Department will be held at the University of Manitoba during the weekend of August 27-29, 2010. The reunion will include a "beer and bull" session in University Centre on Friday evening, and an open house and formal welcome in the Wallace Building on Saturday afternoon/evening. On Sunday, alumni will be able to visit the Star Lake Field Station.

**Department History Wall and Mosaic Map of Manitoba Geology** – Two important displays will be added to the Department to celebrate the Centenary:



Geology field school, Whiteshell Provincial Park, 2009.

the Department History Wall and the Mosaic Map of Manitoba Geology. Design work for the displays has been finished and the fundraising campaign is underway to complete these projects.



**GeoCanada 2010** – A special technical session is planned for the GeoCanada 2010 Conference, May 10-13, 2010 in Calgary. The theme of the session will be geological processes over time in central Canada and the talks are anticipated to be broad ranging. The follow-up project is a special issue of the Canadian Journal of Earth Sciences.

**Jack Gallagher Visiting Scientists –**

Two prominent geoscientists will be invited to be visiting scientists during the Centenary year. Each individual will visit the Department for 2-3 days during which they will give several talks and meet with students, faculty and staff. The endowment fund for this program was established by Jack Gallagher in 1990 and enables the Department to bring in scientists with outstanding careers in the petroleum and mining industries. Speakers and dates are still be determined and announced.

**Geoscape Park** – The largest and most ambitious project is the construction of a rock garden around the Wallace Building. The Geoscape Park will be designed to serve the teaching and outreach functions of the Department by showcasing the geology of Manitoba and the industrial and environmental importance of the geological sciences. It will transform the grounds around the Wallace Building into an attractive facility that will create a link between the outdoors and the Ed Leith Cretaceous Menagerie and R.B. Ferguson Museum of Mineralogy. The Geoscape Park will involve a major fundraising campaign which will commence in 2010.

Updates for the Winnipeg Weekend and the other Centenary projects are available at [www.umanitoba.ca/geoscience](http://www.umanitoba.ca/geoscience). ■

*continued from page 7, Thoughts on Design*

definition” problem. We can, within limits, define attributes of new graduates. The attributes reflect skills of “typical” graduates from “typical” programs. We can, within broader limits, define the expansion of attributes through the EIT process. Beyond that point, we seem hard pressed to define Engineering in general and incapable of developing a definition broad enough to fit the breadth of our profession.

If design is what Engineers do, maybe we should just leave the “doing” to individuals in their specific professional requirements and stop worrying about a universal definition. ■

APEGM is asking members to promote the **Call for Nominations** for the following APEGM awards to be presented at future Annual APEGM Awards Dinners:

- Certificate of Achievement
- Early Achievement Award
- Member-in-Training Award
- Honorary Life Membership
- Leadership Award
- Merit Award
- Outstanding Service Award

If you are aware of **Manitoba engineers or geoscientists** who are deserving of an award, please submit your completed Nomination form, available through the APEGM office or website.

Your help in this regard is pivotal to the ongoing success of the awards program, and to ensure that Manitoba’s most worthy

professional engineers and geoscientists are recognized for their contributions to our professions and society.



[www.apegm.mb.ca](http://www.apegm.mb.ca)



# open source software

*- What You Need to Know*

C. McNeil, P.Eng.

Over the last few years open source software has been getting a lot of attention in the press. As a long time user of open source software I am often asked the following questions regarding open source:

- Is open source software something my business should be relying on?"
- Can I use open source code as the base for my project?
- Why, as an Engineer, do you like open source?

The most important step in deciding if open source software is right for you is to have an understanding of what an open source software license is and how it differs from other licenses.

## What is Open Source Software

Open source is software that has a license that meets the requirements as laid out by [opensource.org](http://opensource.org) (see [www.opensource.org](http://www.opensource.org) for full description). One of most common open source licenses is the GNU Public Licence (GPL).

These requirements in short, are as follows

1. Free Redistribution
2. Source Code Included
3. Must allow Derived Works
4. Integrity of The Author's Source Code
5. No Discrimination Against Persons or Groups
6. No Discrimination Against Fields of Endeavor
7. Distribution of License
8. License Must Not Be Specific to a Product
9. License Must Not Restrict Other Software
10. License Must Be Technology-Neutral

## How is this different from Public Domain Software?

Public Domain software, by definition, does not have a license of any type associated with it. You are free to do whatever you want with the software, including making derivative works that are closed source.

Open source, on the other hand, has a license associated with it that you must comply with. This includes making derivative works open source.

## How is this different from, Berkeley Software Distribution (BSD) style licenses?

BSD style software licenses have very liberal terms in that you are allowed to make derivative works and not supply the source code for the derived work. Opensource.org recognizes what is called the "New Style BSD License" as open source even though it does not require redistribution of source code. There are many derivatives of BSD style licenses. Because of the liberal style of license, many commercial projects have been built from code that has a BSD style license.

## Why do I care what the license is?

If your main goal is to find software that you can use in your business to lower your technology expenditures then the style of license is less important than finding good quality software. There are many mature open source projects that can meet almost any need.

If your main focus is developing software, you need to be keenly aware of the license before you begin your project. If you build a product on top of open source code then your project must be distributed under the same terms. Including making source code available.

If you are looking to make a closed source project, then make sure you have a full understanding of the license of the code base you are building on. Look for a BSD style or public domain style code base to build on.

Common myths and misconceptions around Open Source

1. **I cannot use open source products due to lack of support.** Many mature open source products are released by companies that offer paid support for their product. Many products are also released under

a dual license. You can purchase the commercial version or download a community version. Having used many open source applications, I have never had a problem without a solution. A simple Google search will typically find your answer.

2. **Open source is mainly for Linux geeks.** Although I use Linux for many things, I am currently writing this article on a Windows XP machine using an open source editor (Open Office). When finished it will be emailed through an open source Windows version of the Thunderbird email client to a secure open source Linux mail server (postfix + dovecot). I am looking up information for this article using the Open source browser "FireFox".
3. **Open source is not used in large Companies.** Many of the largest companies in the world are big contributors to open source. IBM, for example, is one of the largest contributors to open source. The most popular web server in the world is the open source Apache server with about 42% of the total market (<http://www.news.netcraft.com/>). One of the world's most popular web scripting language is PHP (free license).
4. **I will have to license the application if it is made into a commercial product.** By its very nature open source licenses give you access to the source code. The terms of the license cannot be retroactively removed. If the original author decides to make it into commercial product or discontinues supporting it, you and the open source community still have the original code and are free to continue using it and improving it.
5. **Open Source is a new unproven concept.** Some of the most popular Open source/BSD projects have been around a long time. Apache has been the number one web server in the

world since 1996 and PostgreSQL has been in existence since 1986. Apache like some other popular projects is run by a foundation.

6. **I cannot use Open Source code in my project.** This depends on what you want to do. Make sure you read and understand the terms of the license before you start using the code in a project. Do not taint your project with code that requires you to release your source code unless you are planning to make your project open source. On the other hand there is much BSD licensed code out there that is typically fine to build a closed source project on. It can be a great way to jump start your project.

It is clear from the above that open source software can and does have a place in the corporate world. It is now common to see a mixture of open source and commercial software in the corporate environment.

### What are some of the mature Open Source software that you would recommend ?

Some stable mature Open Source / BSD projects by function include:

#### Operating Systems (OS)

- Ubuntu, Fedora, Slackware and Debian are all popular versions of Linux.
- OpenBSD (very secure Unix like OS.), FreeBSD

#### Embedded OS / Mini Linux

- Busybox (used in many Dlink products and some Vmware products.)
- Damn Small Linux. (Complete OS that takes about 50MB of space)

#### Mail Related

- Postfix – Mail server
- Dovecot – Secure IMAP server, also supports POP3.
- Thunderbird – Email client
- Squirrel Mail – Webmail client

#### File Server

- SAMBA – Windows compatible file server.

#### Security

- OpenSSH – Secure terminal client and server, secure file transfers, tunneling.
- OpenVPN – Open source Virtual Private Network software.
- Untangle – Network security appliance.

#### Web Server

- Apache – Web Server

#### Web Browsing

- Firefox

#### CRM (Customer Relationship Management)

- SugarCRM – This is a dual licensed product (Open source/ Commercial)
- Vtiger CRM – Open source, paid support available.

### Why as an Engineer I like Open Source software

Many of us have become engineers because we like to know how things work and be able to improve on existing products. Open source software is the ultimate tinker toy for those of us who work in the information technology field. We can look at the internals of a product and understand how it works and make improvements to it.

Some useful links

- <http://apache.org>
- <http://www.openbsd.org>
- <http://www.freebsd.org>
- <http://www.sugarcrm.com/crm>
- <http://www.vtiger.com>
- <http://www.busybox.net>
- <http://www.samba.org>
- <http://www.openssh.com>
- <http://www.freshmeat.net> ■



John Woods, P.Eng.

John Woods graduated from the University of Manitoba with his Bachelor of Science degree in Electrical Engineering and then his Masters of Science in 1985. Running on a platform based upon strengthening and expanding the membership of APEGM, John was elevated to the role of President of APEGM at the Annual General Meeting this past October.

Born in Winnipeg, John moved to Kansas City in 1963 when his father, a futures grain trader, was transferred. John returned to Winnipeg in 1971, and while his professional travels have taken him not only across Canada, but to the Philippines and the Ukraine, Winnipeg has remained his home.

## Meet Your New President - John Woods, P.Eng.

*A. Erhardt, EIT*

Having been registered with APEGM in 1988, John worked for a handful of engineering firms before co-founding the Tower Engineering Group, a multi-disciplined firm. Then, in 2004 he established Woods Engineering, which provided consulting services in electrical engineering and power quality. Currently, John is working as a Senior Electrical Engineer and Project Manager with KGS Group Consulting Engineers.

Since 2006, John has also been involved with the University of Manitoba, in particular with the CCPE initiative to coordinate a national approach to the Internationally Educated Engineers Qualifications (IEEQ) Program. "There is continued pressure on graduates to consider careers elsewhere, and it is our duty to ensure that the opportunity to be an engineer in Manitoba is not missed by graduates nor are opportunities for new comers to satisfy the requirements in the workplace."

A member on several APEGM committees over the years, John has also served as president of the Consulting Engineers of Manitoba for two years. He is or has been a member of professional engineering associations in Ontario, Saskatchewan, Alberta, British Columbia, the Northwest Territories, Nunavut and Yukon, practicing engineering in all of these jurisdictions. He has also held "Designer" status with the Lightning Protection Institute, a not-for-profit organization dedicated to ensuring that today's lightning protection systems are of the highest quality in all aspects from design through to installation.

John has been involved in many energy efficiency projects, and maintains a strong interest in energy production and usage, with a particular interest in sources of alternative energy. This has led him to engage in a PHD program in Mechanical Engineering at the University of Manitoba, with a thesis centered on generating electricity using the kinetic energy of flowing rivers – without the need for a dam or any fixed structure.

Should you meet him in passing, please take the time to congratulate John Woods on being elected as President for the Association. We look forward to the insight and ideas that he will bring forward in his new role. ■



Doina Priscu, P.Eng.

Doina Priscu is a new addition to APEGM Council as of the Annual General Meeting on October 23, 2009. Doina holds two Master Degrees, one in Civil Engineering and one in Mining Engineering, as well as a Diploma in Strategy and Leadership. She is currently the Chief Mining Engineer for Mines Branch Manitoba Innovation, Energy and Mines.

Doina began her career in Romania as a Design Engineer in the Dam Division with a Romanian Engineering Consulting firm. After relocating to Canada and

## Meet Your New Councillor - Doina Priscu, P.Eng.

*S. McFarlane, EIT*

completing graduate studies at McGill University in Montreal, she began work in 1996 with CANMET, Natural Resources Canada as a Research Scientist for the Experimental Mine Val d'Or, Quebec until 1999. After relocating to Manitoba, Doina joined Manitoba Labour and Immigration in 2001 in their Workplace Safety and Health Division, until 2007; while there she held different roles from Safety Engineer to Director Engineering and Ergonomics Branch.

Doina has been very active in the Engineering community as a member of the Canadian Institute of Mining and its Winnipeg Chapter, the Manitoba Prospectors and Developers Association, Women in Mining, and the Canadian Dam

Association. Within APEGM she has been a member since 2005 and has played an active role in our Association as a member of the Safety Committee, member and past Chair of the Women Action Committee, and was invited to be a guest luncheon speaker in 2007. She was also elected as a member of the Nominating Committee for the 2007 to 2008 period.

As a member of Council, Doina will be contributing to a number of areas within the Association to foster excellence through education and advanced development, to promote the engineering profession to the public, and to promote women's contributions within the Association. Through her actions, she hopes to "encourage all engineers and geoscientists to inform themselves, debate the issues, and be prepared to stand up and take a leading role in the public discussions of our day - it is our responsibility".

Doina is married and has a ten year old son. She enjoys volunteering in the community, either at her son's school or participating in Folklorama Festival, which she has been involved with for the last eight years. ■

## Athlete of the year, classical guitarist . . . and now Rhodes Scholar

The University of Manitoba is honoured to announce that Tyler Grant, a student in 4th year engineering, is the recipient of a Rhodes Scholarship for 2010. This continues the excellent record for University of Manitoba students winning Rhodes Scholarships, bringing the total to 93 students, more than any other university in Western Canada. Grant is also the only Rhodes scholarship recipient from Manitoba this year.

A highly motivated and driven student, Grant has his eyes set on becoming a biomedical researcher and an orthopaedic surgeon. He was moved to learn more about biomedicine after watching his grandfather's recovery from hip replacement surgery. He finds orthopaedics a "worthy undertaking, particularly in light of the aging population and their expectation for mobility for life."

A graduate of Springfield Collegiate in Oakbank, Grant was not only good academically but was also athlete of the year six years in a row. He credits his high school physics teacher Kevin Kitching as a source of inspiration who made physics fun but also cared about the world, motivating and encouraging his students.

In the Faculty of Engineering, Grant helps with student activities and works as a teaching assistant. He's won numerous awards for his undergraduate research, presented papers at international conferences and will be graduating this coming Spring, likely near the top of his class. He also is active on volleyball teams, volunteers with a food bank and is a highly proficient classical guitarist, having performed at the master class level under international instructors.

"I learn through repetition and instruction," Grant notes. "I have good hands and I seem to be free of performance anxiety."

He adds: "Those gifts are traits that can help make a great surgeon."

As for how he has managed to excel in so many fields, Grant explains he is a "big fan of prioritization." He actually has a large chalkboard in his bedroom on which he writes his tasks each week, ordering them from A through D. His mother is a dedicated special needs educator, while his father is a professor in agribusiness at the University of Manitoba. He has two sisters; one is in business at Queen's University and the other is at the U of M in Environmental Design.

"Our father taught us how to look for creative solutions to problems," Grant notes. "His students sometimes call him the 'Nutty Professor' because he is a lot of fun to learn from and has a unique way of dealing with problems."

Grant's altruism may stem from his family tree. His great-grandfather, Charles Smith Rutherford, was a recipient of the Victoria Cross at the age of 26. He singlehandedly captured two German pillboxes and 80 soldiers in The Great War, without firing a single shot.

"He was actually a pacifist," Grant says proudly.

Although his career path may seem a bit unusual, Grant explains it this way: "One of the best engineering professors was originally a mechanic. His understanding of how machines worked allowed him to apply his knowledge in research, design and teaching. I want to do the same thing, learning the way in which bones and joints work and then being able to say, 'I can fix that.'"

Grant says that having had the benefit of an "exceptional learning environment," he is motivated to "give freely" of his gifts in order to help others, as "gifts come with responsibility." ■

*Reprinted with permission from University of Manitoba*



## EPIC Educational Program Innovations Center

| Upcoming Course Schedule  | Location   | 2010  |       |       |       |
|---|------------|-------|-------|-------|-------|
|   |            | Jan   | Feb   | Mar   | Apr   |
| <b>Civil</b>  |            |       |       |       |       |
| Avoiding Construction Overruns and the Resultant Construction Disputes                                      | Regina     |       | 22-24 |       |       |
| Building Condition Assessment   | Winnipeg   |       |       | 29-31 |       |
| Foundations of Construction Law   | St. John's |       |       |       | 12-13 |
| <b>Electrical</b>   |            |       |       |       |       |
| Electrical Equipment: Selection, Applications, Operation, Diagnostic Testing, Troubleshooting               | Winnipeg   |       |       | 1-5   |       |
| Canadian Electrical Code  | Saskatoon  |       |       |       | 19-20 |
| Modern Power System Protective Relaying   | Regina     |       |       |       | 19-21 |
| <b>Environmental</b>  |            |       |       |       |       |
| Environmental Site Assessment and Remediation   | Regina     |       |       | 8-9   |       |
| <b>Mechanical</b>   |            |       |       |       |       |
| Power Generation: Gas Turbines, Co-Generation, Combined Cycle Plants, Wind Power Generation and Solar Power | Winnipeg   | 18-22 |       |       |       |
| Pumps: Selection, Operation and Maintenance   | Regina     | 18-19 |       |       |       |
| Industrial Piping and Associated Equipment  | Regina     | 20-22 |       |       |       |

### Online Courses

EPIC offers online courses in the following areas: Information Technology, Business and Management, and Engineering. For more information, please visit [www.epic-edu.com](http://www.epic-edu.com) and select "Online Courses".

### EPIC On-site Programs

EPIC courses are available on-site at your location and they can be customized to suit your specific requirements. For more information on these programs, please call Tim Chugh at 1-888-374-2338 ext 242, or by email at [tchugh@epic-edu.com](mailto:tchugh@epic-edu.com).

Successful completion of EPIC courses entitles you to Continuing Education Units (CEUs). For information regarding the above and recently added courses, please visit our website.

[www.epic-edu.com](http://www.epic-edu.com)

Toll Free: 1-888-374-2338 • Fax: 1-800-866-6343



## Pep Talks with Chris Stoddart

R. Minhaz, EIT

The Pontiac GTO or Shelby Cobra may be history to many of us, but to Chris Stoddart, who hails from Georgetown, Ontario, those muscle cars were part of the inspiration to pursue a career in automotive engineering. If you walk down the hallway of the 2nd floor of New Flyer, on your left the nameplate holder reads Chris Stoddart, Vice President, Engineering Services and if you step into the office to have a chat with him you might think that he is that young man who raced with you on Portage Avenue on Sunday night, or someone you just met at a sports arena.

His passion for cars influenced his decision to attend Kettering University (formerly GMI Engineering & Mgmt Inst.) in Flint, Michigan, where he graduated in 1994 as a Mechanical Engineer with an automotive specialty.

Eighteen years of engineering and management experience at General Motors (GM) and National Steel Car helped prepare him for his present position at New Flyer, which Mr. Stoddart has held since December of 2007.

In his New Flyer office, on Kernaghan Avenue, Pep Talks asked Mr. Chris Stoddart (CS) – Why he went to engineering school?

**CS:** I have always enjoyed mechanical objects powered by motors. I like to race. When I was a kid, I raced BMX bicycles, and then I transitioned into racing motocross. I have always loved cars. I was good at math and science, and when I graduated from high school, I knew I wanted to get into a mechanical engineering co-op position in the automotive field. I chose a school that married those aspects nicely. GM, in Oshawa, Ontario, sponsored the co-op program and it involved

alternating work and school for 3-month intervals during the five-year program.

### Pep Talks: Why did you quit GM?

**CS:** It was a tough decision at the time, but I knew I wanted to see the bigger picture of business. When you are at a company like GM, because of the sheer size of the company you can gain a tremendous amount of knowledge that goes very deep, but not necessarily very wide. In addition the business is very mature and competitive, with lots of talent. It is very difficult to make a significant impact. I wanted to remain in the manufacturing sector, but in a non-automotive environment.

An opportunity came up at National Steel Car, in Hamilton, Ontario, which was a great fit for my career aspirations. The company had the right balance between size and agility. It provided the opportunity to participate in the entire process of business, meeting the customer, designing and building their product, and supporting the product when it goes into service. I was able to gain diverse experience working closely with Sales, Supply Management, Manufacturing, Finance, and Field Service. It was easier for the management team to make changes, because the processes were not as well defined as the automotive environment.

### Pep Talks: What is the earliest engineering interaction that you think was a milestone in your professional career?

**CS:** That would probably be my thesis project. I was very fortunate that GM gave me a significant project, with the necessary budget and mentoring to be successful. I had the opportunity to be the project engineer for the design, installation, and commissioning of completely new tooling for assembling rear suspensions. The project was very real; it had to work in order to support building the 1994 Buick Regal and Chevy Lumina. I learned to deal with outside contractors, maintenance, and production operators in addition to learning the basics of tooling design and robot programming. It was a great experience to have at young age.

### Pep Talks: What is the scope, in terms for engineering, for different engineering disciplines in the transit bus industry?

**CS:** There are fantastic opportunities for engineers, predominantly mechanical and electrical, in our company. The types of areas you can get exposure to include New Product Development; Production Engineering (where engineers make all the specific design modification to meet the needs of our contracts), Manufacturing Engineering (which is essentially the liaison between product engineering and the shop floor with duties such as preparing the tooling, work instructions, labour standards, and safety procedures), and Field Service (dealing with the customer with field concerns and participating in developing solutions to improve our products). It is a pretty

neat industry to be able to get exposure to so many areas of the business from the engineering perspective.

**Pep Talks:** What engineering excellence is keeping New Flyer afloat when there is wide media speculation that the golden era of the North American manufacturing industry is over with the collapse of the empire of General Motors?

**CS:** New Flyer is fortunate to be market leaders in an industry that has not been as negatively impacted as automotive. The economic turndown has actually caused bus ridership to increase and in most cases, our buses are up to 80% federally funded in the United States. In addition, we currently have a solid backlog. The engineering excellence helping us to win business is a combination of our product innovation, diverse product offering, and willingness to provide custom engineering solutions to meet the exact needs of our customers.

**Pep Talks:** Historically when there was an economic crisis, there was opportunity and engineers came up with new innovations. What kind of innovation do you think we will see during this economic crisis from engineers?

**CS:** There is no question when there is crisis there is opportunity. From an engineering perspective as it relates to the transit industry and New Flyer, I think you will see a tremendous amount of innovation on either hybrid technology or energy storage in general, combined with other technologies to improve fuel efficiency and lower lifecycle costs.

**Pep Talks:** The word hybrid is like a phenomenon in today's world. What are the most significant features of New Flyer's hybrid buses and what makes them unique in comparison to its competitors?

**CS:** One thing New Flyer brings to table is experience. We have had hybrid buses in service since 1997. The knowledge you obtain with that many years of experience certainly gives you an advantage. We offer hybrid buses in both gas and diesel, which are available with drivetrains with series and parallel configurations. We provide hybrid solutions across our entire product offering different bus lengths and styles and we continue to evaluate the latest hybrid providers to preserve our competitive advantage.

**Pep Talks:** As vice president of engineering, one of the things you have to do to keep New Flyer competitive in the market is to drive innovation. Tell us about how you encourage engineers toward innovation? What do you think would be the best environment to encourage innovation among engineers, or, if you believe different environments would suit different engineers, what type of environment would be best for you?

**CS:** We are fortunate that product innovation has been part of the New Flyer DNA for many years. We promote an environment for continuous improvement. In order to remain competitive, it is imperative that the products that we build tomorrow will be better than products built today. And the processes we develop tomorrow will be better than the processes we have today. Proper communication of company strategy and how it relates to our product technology roadmap, helps people connect the dots as to why we need to innovate. To complement the need to innovate requires a well-developed cross-functional New Product Development process with dedicated resources.

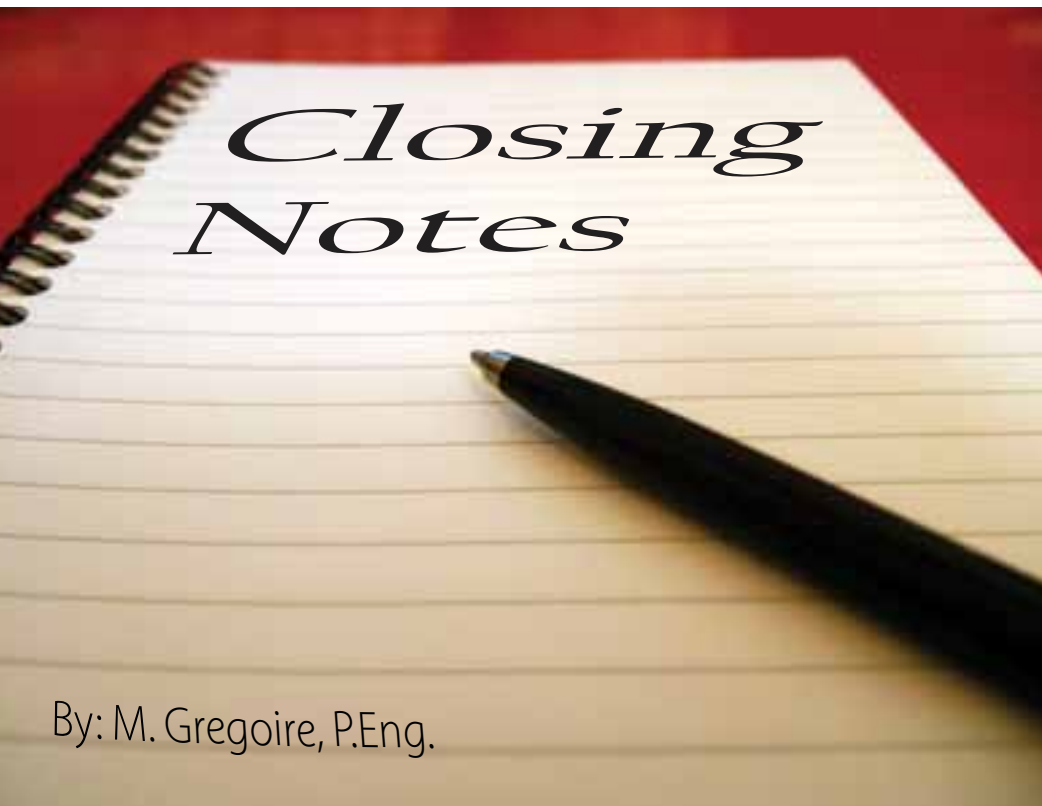
**Pep Talks:** If you were asked to give a piece of advice to those who are at the beginning of their engineering career, what would it be? If an engineer finds themselves laid off, with difficulty finding a job, and has the option to further their education, would you direct them toward management-related programs, or graduate engineering programs, and why?

**CS:** As far as advice at the beginning of an engineering career, it would be to spend some time in the engineering trenches and try to get as much first-hand experience in different areas of the business. Try not to focus too much on upper advancement versus lateral experience.

The education question really depends on the particular individual, their background, and aspirations. While I strongly encourage education, people need to understand education enhances the toolbox. You also require other tools to complement the education.

**Pep Talks:** Thank you very much for your time.

**CS:** Thank you. ■



By: M. Gregoire, P.Eng.

## What Do You Think

Canon 2.7 of our Code of Ethics states that “each practitioner shall refrain from expressing an opinion publicly on engineering or geoscientific matters without being qualified to do so”. At first brush this seems like a fairly easy directive to follow. A structural engineer who specializes in reinforced concrete isn’t going to design a connection detail for a glulam wood truss without having read the proper codes and gained knowledge from a mentor or peer. Nor would a geoscientist ever consider specifying an HVAC system.

But the scenarios described above are already covered by Canon 2.1, which states that “each practitioner shall possess the training, ability and experience necessary to fulfill the requirements of any engineering or geoscientific work undertaken”. The difference between the two canons lies in the term “expressing an opinion”, which implies conduct outside of one’s professional practice. The same principal can be found in the codes of ethics of other professional associations.

As professionals, lay people regard us as possessing a firm body of knowledge in the area we work in. They will therefore defer to us when we express our opinion on certain matters. In order to protect the public’s well being as well as the reputation of the profession, Canon 2.7 needs to be followed.

But exactly what our body of knowledge entails is often a mystery for our friends and relatives, even if they are professionals themselves. Simply ask one of them what the difference is between an architect and an engineer. Well, at least we as engineers understand what our body of knowledge is. Or do we?

I remember being told a long time ago that Engineering involves the application of science, in which case it would make sense that our undergraduate program is a Science degree. The Merriam Webster does indeed define engineering as “the application of science and mathematics by which the properties of matter and the sources of energy in nature are made useful to people”. This differs from the the Engineering and Geoscientific

Professions Act definition, which refers to “... the application of engineering principles ...” I’m baffled at how a legal definition can be self-referential and still be deemed useful, but that’s a discussion for another day.

A quick scan of other jurisdictions shows that four provinces have acts with a similar component to their definition, while four refer to the application of science. The Engineer’s Council for Professional Development, in the United States, also acknowledges science as the fundamental basis of engineering. The two other Canadian provinces simply have prescriptive lists of actions and works/systems that encompass engineering.

If the Canadian associations of engineers can’t come to an agreement on describing our body of knowledge without the use of self-referential definitions, imagine how difficult it is for the lay people around us to filter our comments. Is the statement we just made related to an “engineering matter” or is it simply the discussion of scientific topic of interest? The only way to be clear is to treat all scientific matters (the foundation of our profession) the same way.

The statements that risk causing problems are any that start with “I do/don’t think that ...” or “I believe that ...”. If we, as professionals, wish to take a stance on a scientific issue, it can only be done based on evidence of a scientific nature. Therefore, if we can’t support a statement by referring to a study published on the topic, we need to refrain from doing so. ■



# The Brown Sheet

Detach page for posting

## Winnipeg's New Water Treatment Plant

After over 10 years of study, design, planning and construction the new Winnipeg water treatment plant will come online towards the end of 2009.

The treated water of this state-of-the-art plant will comply with highest drinking water standards, reduce the risk of waterborne disease outbreaks, reduce the level of disinfection byproducts and improve taste and odor levels of the treated water.

This presentation will give an overview about the background of the cities' raw water quality and the treatment requirements; information about location and lay out of the new facility; and an introduction to the various treatment processes of the plant.

More information can be found on the APEGM website.

Date: January 12, 2010

Time: 11:30 a.m. - 1:30 p.m.

Cost:

\$20.00 Pre-registration

\$25.00 at the door

\$15.00 for APEGM

Student Members

Location: Norwood Hotel,  
112 Marion St., Winnipeg,  
MB

## Annual Networking Dinner

APEGM's Annual Networking Dinner is held to help encourage student engineers and geoscientists to become more involved in their profession before graduation.

The dinner features a delicious meal, presentation by Grant Koropatnick, P.Eng., and activities to encourage interaction between the students and professionals.

The Networking Dinner is a great way to promote yourself and your company and support the future of engineering and geoscience in Manitoba.

Sponsorship opportunities are available through the APEGM office. Please contact Angela Moore at 474-2736 for more information.

Date: January 28, 2010

Time: 6:00 p.m. - 9:00 p.m.

Cost:

\$75.00 Registration

\$275.00 Table Sponsor

Location: Canad Inns  
Fort Garry, 1824 Pembina  
Highway, Winnipeg, MB

## Provincial Engineering and Geoscience Week Activities

At 10:00 a.m. Friday, March 5th, centre court of Kildonan Place will host the kick-off of PEGW activities with the Proclamation of Provincial Engineering and Geoscience Week by a member of the Provincial Government; a representative of the Faculty of Engineering, University of Manitoba; the President of Consulting Engineers of Manitoba; and, the President of APEGM.

Saturday, March 6th, will feature the ever popular Spaghetti Bridge Building Contest. The Spaghetti Bridge competition is open to all school aged children. Contestants are required to follow specific contest rules. To enter the contest for 2010, you need to register on line or download the entry form from the APEGM website as a PDF file and mail or fax the completed form to the address on the form.

Other activities during the three days include a variety of related activities for children and displays featuring engineering and geoscience through the University of Manitoba and other local companies.

For more information, see the APEGM website.

Date: March 1 - 7, 2010

Location: Kildonan Place  
Shopping Centre, 1555  
Regent Ave., Winnipeg,  
MB

### □ APEGM Night at the Theatre

In association with APEGM's 90th Anniversary, APEGM will be hosting two award-winning plays presented by NewStage Productions of Winnipeg that were performed at an International One-Act-Play Festival in the UK, May 2009.

#### **You Will Write, Won't You?**

A senior teen living in a remote Saskatchewan farming community tries to overcome her family's and her boyfriend's resistance to her plan to enroll in the Writers' Institute in Banff rather than stay at home and work on the farm for the summer.

Date: March 22, 2010

Time: 7:00 - 9:00 p.m.

Cost:

\$10.00 In advance

\$15.00 At the door

Location: The Park Theatre, 698 Osborne St., Winnipeg, MB

#### **Sudoku Fever**

A mildly off-the-wall comedy in which a family in Minnedosa try to prevent their daughter from enrolling in Mechanical Engineering at the University of Manitoba. The Sudoku room has a hidden meaning for this family.

Tickets available in advance through the APEGM office and at the door. Contact Angela Moore at 474-2736 or [amoore@apegm.mb.ca](mailto:amoore@apegm.mb.ca) for more information.

### APEGM's 90th Anniversary 'Birthday Party'

You are invited to take part in a come-and-go open house 'Birthday Party' for the Association of Professional Engineers and Geoscientists of Manitoba as they celebrate their 90th Anniversary. Come enjoy live music, activities for the whole family, tour of the new office building, and don't forget the Birthday Cake!

Date: March 27, 2010

Time: 2:00 - 4:30 p.m.

Cost: Complementary

Location: The APEGM Office, 870 Pembina Hwy., Winnipeg, MB

□ More information will be available on the APEGM website and in the Spring 2010 issue of the *Keystone Professional*.

### CCWESTT 2010 Conference

The Canadian Coalition of Women in Engineering, Science, Trades, and Technology (CCWESTT) acts as a united voice for women across Canada in SETT (Science, Engineering, Trades and Technology) careers. Established in 1987, CCWESTT has grown to include approximately 25 member organizations and represent more than 20,000 individuals. The goals of the organization can be summarized to include: sharing success stories, disseminating information, and providing consultation on pertinent policy issues. A conference provides the perfect opportunity to address all of CCWESTT's goals.

Date: May 13 - 15, 2010

Time: 8:30 a.m. - 5:30 p.m.

Location: The Fairmont Hotel, 2 Lombard Place., Winnipeg, MB

□ Approximately 400 attendees including women, men, students, academics, entrepreneurs, and professionals from the public and private industries will enjoy keynote speakers, professional development workshops, networking opportunities, panel discussions, presentations and fun activities. Topics for the two day conference will range from examining the growth and development of SETT professions, to opportunities to develop the variety of skills professionals require to advance their careers.

For more information, see the conference's website at [www.cctest2010.ca](http://www.cctest2010.ca)

## New Members Registered August, September, & October 2009

|                    |                |                     |                 |                  |
|--------------------|----------------|---------------------|-----------------|------------------|
| N.S. Abdul Karim   | W.E. Curtis    | L. Hu               | W. Luo          | N.V. Sidenko     |
| A.T. Abrera        | D.M. Darling   | L.C. Hunter         | S.W.M. Mak      | G.P. Smerchanski |
| R.D. Allen         | R.C. deGagne   | T. Huynh            | R.L. Maniere    | R.E. Soriano     |
| L.K.Y. Amarasinghe | J.M. dela Cruz | B.A. Jardine        | G.S. Mankoo     | D.M. Spacek      |
| N. Ansari          | D.J. Desveaux  | G.B. Jonson         | J.J. Marshall   | A.J. Swedlo      |
| B.D. Ardellian     | C.H. Deveau    | K. Kabiri           | R.C. Maze       | G. Taggar        |
| P.T. Arnott        | T.S. Dey       | P.A. Kammerloch     | R.J. McAuley    | K.N. Teng        |
| C.J. Averbeck      | B.S. Dhaliwal  | R.C. Kendrick       | T.C.S. McPhail  | G.T. Thouas      |
| K. Azari           | I.B.M. Dunlop  | C.S. Kim            | R.M. Nepomuceno | J.S. Thurston    |
| S. Balakrishnan    | B.A. Dzuirban  | F. Kordgharachorloo | W.A. Ormshaw    | M. Toma          |
| M.E. Beauchamp     | T.J. Elliot    | L.P. Kotyk          | F. Ortiz        | R. Tse           |
| R.I.P. Benteau     | S.D. Epa       | D.P. Kryska         | C.E. Ott        | T.M. Uitvlugt    |
| J.M. Bertrand      | C. Ferland     | J.R.G. Lagace       | F. Parsaei      | I. Vakurov       |
| L. Bourguignon     | P.J. Flood     | J.J. Lanoway        | P.K. Pawluk     | T.A. Wampler     |
| B.S. Brar          | C.C. Fourie    | R.D. Laplante       | E. Poirier      | J.A. Wheatley    |
| S.M.A. Cabigting   | S.J. Fowler    | T. Le               | S.P. Pouliot    | L.G. Wiechnik    |
| A.D. Cameron       | S.B. Gebhardt  | A.S. Le May         | H. Pouryafar    | D.G.P. Wijeweera |
| S.C. Cameron       | L.J. Gigian    | H. Liao             | G.M. Pucci      | J.F. Wiles       |
| L.M.C. Card        | N.S. Gladu     | X. Liao             | M. Puszynski    | K.J. Wilson      |
| A.D. Caron         | R.K. Goetz     | E. Lin              | R.N. Radons     | R.J. Wilson      |
| P. Cechmanek       | G. Hajecek     | K.E. Lindenschmidt  | D.B. Rempel     | S.Y. Zhao        |
| D. Chan            | A.M. Harrison  | F. Liu              | N. Sabet        | D.A. Zimmer      |
| P.G. Chanel        | S.M. Hartwig   | J.Y. Liu            | I. Safroneev    |                  |
| D.C.T. Clarke      | L.J. Heal      | Y. Liu              | R.H. Secord     |                  |
| I.A. Cohen         | T.G. Hoffman   | R.D. Long           | L. Sepulveda M. |                  |

## Licenses Enrolled August, September, & October 2009

K.J. Fabian

## Members-In-Training Enrolled August, September, & October 2009

|               |                   |                       |                    |                     |
|---------------|-------------------|-----------------------|--------------------|---------------------|
| R. Ahasan     | H.M.J.S. De Silva | D. Garber             | R.M. Lucky         | R. Sadatalhosseini  |
| D.R. Aming    | D.G. Deck         | S. Ghanbari           | O. Makarenko       | S.L. Samarawickrama |
| M.I. Anjum    | H.M. Desai        | I. Gordon             | R.L.O. Marohn      | M.A. Soiferman      |
| I.A. Backus   | C.F. Dileo        | M.M. Habib            | S.A. Mast          | N.I. Stahl          |
| A.S. Basakay  | J.G. Dueck        | X.W. Hao              | R.A. McDonald      | S.G. Suderman       |
| S.G. Beaudry  | A.T.T. Duong      | Y.M. Kharchenko       | G.N. Mediwake      | T. Sun              |
| G.D. Blatz    | R.T. Duplak       | J.S. Kim              | D.E.S. Mitchell    | K. Tang             |
| K.E. Bredeson | L.L. Duyile       | H.K. Kislinger Arauco | D.C. Monnier       | O. Wang             |
| M.M. Cantor   | M.R. Flintoft     | P.A. Klassen          | M. Moshiri         | X. Wang             |
| D.W. Celmer   | J.D. Flynn        | P.E.L. Labossiere     | A.T. Oberez        | K.G. Wimble         |
| A.Y.N. Chan   | F. Fourar Laidi   | Y.K. Lam              | M. Padron Elosegui | A.J. Wojtyla        |
| J.G.S. Chan   | D.D. Froese       | J.L.B. Lambert        | L.M. Pettit        | A.E. Woollard       |
| G.P. Chen     | J.J. Furgal       | Y.Z. Li               | M.A. Pflug         | W. Wu               |
| S.K. Chhina   | K. Gaglo          | A.M. Lokhamoorthi     | M.W. Pouteau       | J. Yang             |
| L.J.M. Daman  | J.P. Garbald      | K.S. Loyal            | P.D.H. Prowse      | L.H. Zaluski        |

## Certificates of Authorization August, September, & October 2009

|                                 |                                   |  |
|---------------------------------|-----------------------------------|--|
| ACS-NAI Ltd.                    | Excelsior Engineering Ltd.        | PTI Group Inc.                             |
| Arcadis US, Inc.                | Ian Dunlop & Associates Limited   | Relumen Engineering Inc.                   |
| BAR Engineering Co. Ltd.        | Kupskay Consulting Inc.           | Synyshyn Architecture Interior Design Inc. |
| CPE Structural Consultants Ltd. | Manuel Jordao and Associates Ltd. | The Odan/Detech Group Inc.                 |
| Enermodal Engineering Ltd.      | MDS Aero Support Corporation      | Tulloch Engineering Inc.                   |
| ESTI Consultants Inc.           | PowerEN Corporation               |  |



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