

THE KEYSTONE PROFESSIONAL

Spring 2008

Inside this issue:

*Blown In
The Wind*

Global Warming and the Kyoto Protocol
- A Review of the Issues

Globalization

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

SPRING 2008

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- Comments can be forwarded to us by email: commfeedback@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 Barry Striemer, "Haskett Wind Farm"
 A row of the modern windmills from the power generating wind farm around St. Leon, MB.
 Barry Striemer is a Winnipeg based photographer concentrating on urban, landscape and nature photography in the digital format. Fine art prints are available of Barry's photographs and he can be contacted via E-mail at bstriemer@shaw.ca

3	President's Message
4	Engineering Philosophy 101
5	Executive Director's Message
7	Thoughts On Design
8	Press Clippings
10	Professional Development & Networking Events
20	Council Reports
33	The Brown Sheet
14	Globalization
22	Global Warming and the Kyoto Protocol - A Review of the Issues
26	Blown In The Wind

FEATURES

Publications Mail Agreement Number 40062980



Tim Corkery, P. Geo.
President's
Message

“IF IT AIN'T BROKE, DON'T FIX IT”

Professional registration: “If it ain't broke don't fix it?” Well I'm afraid that, although it is not 'broke', in today's competitive world it is not serving Manitobans as well as it should or could. For those of you who are not in the habit of surfing our Act, Bylaws, and manuals, here is a little background information.

According to the Act, the main purpose of our existence as an Association is to govern and regulate the practice of Professional Engineering and Professional Geoscience in Manitoba. There are 'b' and 'c' clauses to our 'Purpose', but they follow logically out of the above statement.

Further along in the Act we are tasked to decide who should be included and more to the point, who has to be regulated. From that it follows that we must register, govern, and regulate all who would make their calling Professional Engineering or Professional Geoscience.

SO WHAT'S THE PROBLEM?

There is a caveat on all Act regulating professions, and that is, that the reason for regulating is for the public's safety and welfare. This may be where we are in some danger at this time. First I have to alleviate any misinterpretation that we are letting in less than qualified people. That is quite definitely not our problem. On the contrary, my suggestion that there is a problem is because I am of the opinion that we are making it far too difficult. Or, as I have been told by some people, the registration process is too onerous to even attempt to register in Manitoba.

The reason for the shortfall in the numbers of engineers and geoscientists is the booming economy. It is expanding at such a rate that we cannot train young Manitobans or other Canadians fast enough to keep up with demand. This has become the key problem in virtually

all professions. For instance the medical profession is in the media almost on a daily basis. Their problems are clearly visible and on the public's mind. We, on the other hand, are expected to fulfill all of our tasks efficiently, competently, and quietly.

Society needs and demands that engineers are, for instance, available to design safe, state-of-the-art infrastructure as required by our economic growth. If we can't educate and register our own, then we must look outside of the Province and Country for the much needed expertise to add to the workforce. Unfortunately, our registration system is designed for new graduates from within. Arguably, it works perfectly for what it was designed to do.

However, we are struggling with applications from highly qualified and

continued on page 16

NOTICE

Nominations for Election to the APEGM Council

The Nominating Committee of APEGM requests recommendations from members and members-in-training, for nominees who they consider to be qualified to participate in the governance of the Association and who are willing to so serve the engineering and geoscience professions in Manitoba. There will be four professional engineer positions and one professional geoscientist position to be filled as of October 2008.

The Committee will consider recommendations received by the secretary up to the close of business on Friday, September 12, 2008. In the event insufficient recommendations are received, the Committee may exercise its prerogative to put forward a slate of candidates for election that is equal to the number of positions to be filled. Persons submitting a recommendation are required to obtain the consent of the professional member being recommended and to provide a curriculum vitae or biographical sketch.

Members can also be nominated directly and be on the ballot for the 2008 election by the completion of the prescribed nomination form. The form can be obtained from the Association office or from the website at www.apegm.mb.ca/practice/infomem/nominations.html. The consent of the nominee must be obtained.

Grant Koropatnick, P. Eng.
Secretary of Council

Engineering Philosophy 101

... just what rules apply?

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

The basic theory used to justify professional licensure of any kind is that the members of a profession have, or ought to have, a greater knowledge of the details of their profession than do members of the public at large. With this in mind, the provincial legislatures in Canada have enacted laws that both enable and restrict the behaviours of the members of licensed professions. They create institutions that permit the professions to govern themselves.

From time to time it is worth going back and examining the legal foundations upon which our institutions are based. Here in Manitoba, the Engineering and Geoscientific Professions Act of June 1998, and subsequent amendments, establishes the current structure of the Association of Professional Engineers and Geoscientists of the Province of Manitoba is, and states what it is expected to accomplish.

Like most Acts it begins with a series of definitions. From this engineer's perspective, two definitions stand out, "practice of professional engineering" and "professional engineer". One can argue with respect to the details, but "engineering" boils down to the use of our specialized knowledge and skills for "safeguarding of life, health, property, economic interests, the public interest or the environment" and "engineer" boils down to a "natural person" who is a member. The "geoscience" and "geoscientist" definitions are essentially the same thing.

Part 2 of the Act goes on, in clause 3, to list the purposes of the Association as:

(a) govern and regulate the practice of professional engineering and professional geoscience in Manitoba;

(b) 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; and

(c) advocate where the public interest is at risk."

and, in clause 5 it identifies "The membership . . ." as those ". . . who hold valid and subsisting certificates of registration . . .".

In my layman's understanding, this comes down to an organization that has defined legal responsibilities and is made up of persons who

meet membership requirements. Given that an organization can only carry out responsibilities through the actions of "natural persons", it follows that

responsibilities assigned to the Association are, in fact, assigned to the members.

Further on in the Act (Part 5), Council is charged with the responsibility to create, and enforce, both a Code of Ethics and Bylaws. Bylaws simply define how the business of the Association will be carried out. The Code of Ethics, however, defines very specific behavioural standards. Members are specifically charged (clause 11(2)) with following the Code of Ethics. To an extent, members, both engineers and geoscientists, are placed in double jeopardy, first by the laws of the land and second by the laws of our profession.

From a personal perspective, the crunch comes in Fundamental Canon 2 in the Code of Ethics. "Each practitioner shall regard the physical, economic, and environmental well-being of the public as the prime responsibility in all aspects of professional engineering and professional geoscientific work." This reinforces, and personalizes, the Association's responsibilities as laid out in Part 2, clause 3.

So now we are faced with the question, what is meant by ". . . the physical, economic, and environmental well-being of the public . . ."? Who makes these decisions? What criteria apply?

Each of us has personal knowledge and experience that guides us in our approach to problem solving. No one of us has the full knowledge of all the implications of all of the aspects embodied in the almost universal charge of protecting ". . . the physical, economic and environmental well-being of the public . . .". But most of us have expertise that relates to some component or components of a problem needing solution. In general, this knowledge base is relatively easy to define. And the Act and the Code of Ethics say we have a responsibility to make that definition and apply our knowledge as appropriate.

The problem is not really founded in knowledge however. Rather, it is founded in belief. Just as we each possess unique knowledge, we also possess unique beliefs. Knowledge is founded on definable, defendable "facts". Belief, on the other hand, is less absolute. It has its roots in our upbringing, our culture, our religion and other situations that impact who we are as persons, not necessarily

“... the physical, economic, and environmental well-being of the public...”



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

THREE IN THE BAG

This column is a "mixed bag" of my thoughts on three topics – so bear with me. If any of this sounds crazy, call the psychologist and sign me up . . . or just email me with your feedback.

BIPOLE 3 TRANSMISSION LINE

Should APEGM state an official position on the issue of the Bipole 3 transmission line route? This question was discussed at the council meeting January 17, 2008. Council came to the conclusion that whether you like it or not, the decision for the west side route is a political decision and not an engineering decision. No further analysis or discussion is necessary.

However, council did feel that engineers and geoscientists should get more involved. After all, many of our 5,300 members work in power generation, northern development, environmental protection, and engineering consulting. Our Code of Ethics Canon 2 states, "Each practitioner shall regard the physical, economic, and environmental well-being of the public as the prime responsibility in all aspects of professional engineering and professional geoscience work."

The Bipole 3 transmission line project certainly will have physical, economic, and environmental impact on the citizens of Manitoba.

As a result, Council has accepted an invitation by the Leader of the Opposition, Hon. Hugh McFadyen to speak to members on the Bipole 3 issue at an upcoming luncheon. An invitation was extended to Premier Doer to speak

at a similar event. APEGM members want to hear from the two top political leaders in our province on this important topic affecting all Manitobans.

RECRUITMENT OF PROFESSIONALS

The Manitoba economy is booming and there is strong demand to hire engineers and geoscientists to get the work done. Unfortunately, the supply of professionals is low. Many employers are looking to recruit foreign-trained engineers and geologists to Manitoba. The pressure

is on to certify these applicants and to expedite them through the APEGM registration process.

As registrar, one policy that I believe should be followed more often is the policy that deems an

applicant "academically qualified for registration" when they have attained a Masters degree in their engineering discipline from a CEAB accredited Canadian university. In my view, this is adequate proof that an applicant with a foreign bachelors degree can function in English, in a Canadian context, with technical concepts that are part of their engineering tool kit.

Of course, their engineering work experience would have to be validated also, but this happens once they are deemed "academically qualified." Speeding up this step of their registration process means that they can get registered as a P.Eng. or P.Geo. in a few months instead of years. This would greatly benefit the employers who are ready to hire these applicants and get them working on Manitoba projects.

“Listen carefully, sort thoroughly, and repeat cautiously.”

CLIMATE CHANGE AND GLOBAL WARMING

I listen to the daily radio news and read it on the internet. What about this topic of climate change? Is this the coldest winter on record? Did it rain in January? Snow in Florida again? I don't know about you, but I'm growing tired of the doom and gloom reports. Whether you believe there is a catastrophic trend occurring or this is all just "normal" it reminds me of a story I first heard as a small child in kindergarten.

Do you remember the story of Henny Penny? *One day Henny-penny was picking up corn in the cornyard when – whack – something hit her upon the head. 'Goodness gracious me!' said Henny-penny; 'the sky's falling; I must go and tell the king.'*

Off the hen went, convincing everyone she met along the way that the sky was falling. In the end, all of her friends (excepting Henny Penny) get gobbled-up by Foxy-woxy because they weren't paying close enough attention.

Like the story of Henny Penny, I feel the same way about David Suzuki and Al Gore. They tell an interesting tale and have managed to convince a lot of people that the "sky is falling" but remember, Suzuki is a television-journalist and Gore is a recycled politician – they're good at telling stories! Listen carefully, sort thoroughly, and repeat cautiously. Engineers and geoscientists need to respond with solutions to the affects of climate change and global warming, but I don't believe the sky is falling.

Your feedback is welcomed. If you have any thoughts on anything you read in *the Keystone Professional*, please email me at apegm@apegm.mb.ca. ■

WHAT DO YOU THINK?

Just had to drop you a line after receiving the newest Keystone Professional - love the new format and look! The old one was nicely done, but this format is quite a step forward. Congratulations to all involved in this improved KP! Cheers,

-R. R., P.Eng.

I would like to pass onto the communications committee that the new format for the KP looks great! I like it! Good job!

-A. P., P.Eng.

Congratulations on the successful transition of the Keystone Professional from newsletter to professional magazine format!

I've just skimmed through my recently-received copy, and it looks terrific!

Regards,

-N.G., P.Eng.

I just want to say I am thoroughly impressed with the new version of the KP. It is such a striking improvement over the previous version it is hard to compare. That is not to say that the older version was poor, in fact I thought it was well done. It was simply time for the publication to move to the next level and this has been accomplished in stellar form. I sense that this new format has also provided some motivation for more to get involved in writing content and for giving some creativity for layout and design.

I also particularly like the section about news articles related to engineering. We need to promote to our members the need to promote engineering in the public forum and this is a great way to remind members about when this is happening. Regardless, the final product is nothing less than fantastic as far as I am concerned. Please pass on my regards to your committee for doing such great work.

-J. B., P.Eng.

Nice job with the Keystone Professional! Have a good day. Regards,

-T. O., P.Eng.

Great comments about the new KP which showed up today. People here really think it looks great. Very well done!

-P. B., P.Eng.

We received the new-format APEGM "Keystone" magazine—looks great! How do we submit adverts for the magazine? I think we'd like to run one!

-B. B., P.Eng.

editor's note:

Thanks for all the great comments that came in regarding the new look for the Keystone Professional. Your comments are always welcome through commfeedback@apegm.mb.ca.

Advertising in the Keystone Professional: Advertising will generally be limited to products and services of technical or professional interest to members of the Association. They can include: engineering, geological, or geophysical services, educational products and services supporting continuing professional education and development, employment opportunities, and financial services.

The publication is produced using full-colour process (CMYK), however, Advertisers have the option to submit black & white advertisements instead.

Would you or your company like to advertise in an upcoming issue of the Keystone Professional? More information, including our full Advertising Policy, Mechanical/General Information, and Insertion Order form can be found at www.apegm.mb.ca/keydocs/mpe/index.html or by contacting Angela Moore at amoore@apegm.mb.ca.

Date: Thursday, June 12, 2008 @ 12:00 p.m. BBQ lunch will be served at the clubhouse starting @ 11:00 a.m.

Place: The Links at Quarry Oaks, Steinbach, MB Ph: (204) 326-4635 **Format:** Texas Scramble, Shotgun Start

Cost: \$195.00 per person (includes BBQ lunch, 18 holes of Golf, Cart, Dinner, and Prizes) or \$750.00 per team of 4

The first 220 registered golfers with accompanying payment will play. Entries and payments are to be submitted to the APEGM office by 4:00 p.m. Friday May 16, 2008.

Contact the APEGM office at 478-3727 for more information and registration
Or see brochure in this issue of the *Keystone Professional*



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

MOVING FROM “QUALIFIED” TO “COMPETENT”

Every year at about this time, many students write, and pass, the examinations they need to complete the requirements for their respective degrees. Those who have been enrolled in an accredited undergraduate engineering program will receive their degrees and they will also become “academically qualified” to register as Engineers-in-Training (EIT). In many countries, persons who graduate from engineering programs are entitled to practice as soon as they receive their degrees. Not so in Canada. Here, an accredited engineering degree is simply the first plateau on the route to becoming a Professional Engineer.

Under our system, as EITs, they will enter the work force and begin to gain the practical experience needed to be considered competent to receive their license to practice Engineering and to call themselves Engineers. At minimum, the EIT process adds another four years on top of the time spent in school. So, theoretically a person can pass from being a high school graduate to a P.Eng. in eight years. In most cases it probably takes closer to 10 years.

So, if students spend four or more years in university studying fundamentals and how those fundamentals might become useful, why isn’t that enough? After all, the undergraduate degrees must meet accreditation guidelines that are imposed by the profession. The degrees include, at the insistence of the profession, theoretical and applied technical courses to provide a sound basis upon which to build a career, “soft skill” courses to help fit into the working world, and courses in non-technical areas to provide perspectives beyond the technical. If

graduates meet these criteria, why not go straight into practice?

The difficulty is that new graduates are skilled at using tools, not at applying them. During their undergraduate programs students gain their skills by moving through a progression of learning stages that must focus on the details of the systems under discussion. In order to make certain that they understand the idiosyncrasies of the various systems, the problems they work on are constrained. In other words, variables that must be assumed in practice are “givens” in the academic programs. Before students can apply the tools they need to have a thorough understanding of how the tools work, and unspecified design variables can interfere with that understanding.

Another difficulty is that the various undergraduate programs are, by their nature, offered in isolation from one another. There is simply too much to learn in any one of the disciplines to allow the luxury of significant amounts of interaction among the disciplines. Students who study the details of automobile stability are unlikely to take many classes with students who study electronic systems that might be used in crash avoidance. Students who study structural analysis do not have the opportunity to share classes in heating and ventilation or of lighting analysis with their colleagues in other disciplines. They are all kept busy becoming “academically qualified” within a narrow slice of the profession we call engineering.

If you think back to your undergraduate years, you will recall the rush to compare answers before your assignments were

handed in. The problems you worked on were often complex, but they all led to a “correct” answer. Today some of these classes are offered as “design” classes in which students can make their own assumptions and arrive at their own answers, but again the constraints of time tend to keep these classes confined to a specific discipline. The difficulties of satellite communication are seldom considered in a project relating to in-flight satellite stability. There is a trend to bringing the various disciplines together in capstone design courses, but this is, at best, an exposure to the reality of the work force, not an in depth understanding of it.

This should not be taken to mean that the graduates are not valuable additions to the profession and the clients the profession serves. Indeed they possess significant understanding of the new and evolving tools that many of us with “mileage” on our biological odometers can only hope for. What they lack is an understanding of how these tools can fit into an unspecified, unconstrained world. Remember, the first phase of the transition from high school graduate to P.Eng. is delivered under relatively constrained conditions. Like the assignments students complete as they learn how and why various analysis programs work, there is a level of control that assures the “academic qualifications” of the graduate.

Transition from “academically qualified” to “professionally competent” however, is less controlled and less constrained. The EIT experience varies greatly from person to person and from province to province.

continued on page 17



PRESS CLIPPINGS

J. Blatz, P.Eng.

The following are brief excerpts of some news items in the local media which may be of interest to APEGM membership.

COLLAPSE OF MINNEAPOLIS BRIDGE

The National Transportation Board released its report on the failure of the bridge in Minneapolis which was one of the most alarming bridge failures in recent times. The report showed that a critical design error resulted in gusset plates being used that were half the thickness that they should have been. Fracture of the plates was reported to be the triggering mechanism that led to the catastrophic collapse.

(Winnipeg Free Press, January 15, 2008)

FEMALE ENGINEERING STUDENTS STIR SCIENCE WONDER

Alexia Stangherlin, a final year student in Biosystems, has been showing elementary students how to make sparks fly on behalf of Women in Science and Engineering (WISE) to promote engineering careers. The Dean of Engineering noted that only eight per cent of students were women when the WISE program started compared with 17 per cent today. However, with the University's overall population being 60 per cent female, engineering is still lagging behind and has work to do promoting the field.

(Winnipeg Free Press, January 16, 2008)

NEW MILITARY TRANSPORT CONTRACTS

Manitoba's aerospace industry got a boost when Federal Industry Minister, Jim Prentice, announced new spinoffs from military spending that would benefit a number of regions including Manitoba. The region is expected to see spending in the range of \$340 million dollars in the aerospace sector. The spending distribution is linked to the regional distribution of the aerospace industry.

(Winnipeg Free Press, January 23, 2008)

DAUPHIN ENGINEER SUSPENDED

APEGM, for the first time in its 88-year history, suspended a Professional Engineer for failing to comply with a ruling from the discipline committee. The decision was published in local newspapers along with details of the decision to ensure that local jurisdictions having authority were aware of the suspension. See notice in this issue of the Keystone Professional.

(Winnipeg Free Press, January 24, 2008)

MANITOBA MOVERS

One of our members, Madhav Sinha, chief of engineering and quality programs with the Manitoba Department of Labour & Immigration was recently honored as the first Canadian to receive the Jack Lancaster Medal from the American Society for Quality (ASQ) for outstanding contributions in the field at the International level. This is the fourth time that Madhav Sinha has been the first Canadian recipient of major international medals in his field. The Jack Lancaster Medal will be presented at a major conference in Houston this coming May. Well deserved indeed. See brief review on page 15 of this issue.

(Winnipeg Free Press, January 28, 2008)

EXPANDING OILSANDS OPERATION

As stories of soaring housing costs, labor shortages and increasing workloads from Alberta, things are just going to get busier with the recent announcement by Suncor to expand the Voyager oilsands project north of Fort McMurray. The CEO announced that the expansion of the core oilsands operation would be in the order of \$20.6 billion dollars. This announcement came shortly after a report by Calgary Economic Development indicated that Alberta would need in the range of 250,000 skilled workers over the next ten years based on current forecasting.

(Winnipeg Free Press, January 31, 2008)

SAFER HIGHWAYS ARE BUILT ON DECADES OF RESEARCH

Road safety and transportation engineering has been a topic of considerable discussion following a dangerous accident where an SUV plunged over a guard-rail on the North Perimeter ultimately ending upside down in the Red River. Questions about the build-up of snow along the guardrail have called into question whether the snow may have been a factor in the accident. Eric Christiansen, Manitoba's director of highway planning and design, and Jeanette Montufar, Associate Professor of Civil Engineering, note the challenges that exist in road safety due changing vehicle characteristics and standards that outpace the ability to upgrade existing infrastructure to keep up.

(Winnipeg Free Press, February 11, 2008)

MANITOBA HIGHWAY SPEED LIMIT RISE

In a move to catch up to speeds in neighboring provinces, the Provincial Government is holding hearings to review a proposal to increase the speed limit on selected sections of the Trans-Canada and Highway 75 in the Province. The board has heard

from a number of stakeholders including some against the proposed increases. The director of traffic engineering for the province, Glenn Cuthbertson, has noted that the proposal is really only going to move the speed limit to where people are already driving.

(Winnipeg Free Press, February 13, 2008)

HYDRO PRESIDENT TO DISCUSS UNDERWATER POWER LINE

As the discussion continues on the Bipole 3 transmission line, the CEO of Manitoba Hydro, Bob Brennan, will be meeting with the author of a three part series that explored the potential for the line to be run through Lake Winnipeg. The segments highlight details of the cable in a related project connecting Norway to the Netherlands along with how the technology would be deployed for the Bipole 3 line. Stay tuned, as the debate is likely to continue.

(Winnipeg Free Press, February 13, 2008)

NEW FOCUS FOR INFOTECH

Novra Technologies Inc., InfoMagnetics Technology Corp., LibreStream, Vansco Electronics and TR Labs were a few of the Manitoba based companies highlighted for their developments in the tech sector. Part of the success was noted due to their flexibility to recognize the shift in focus from raising capital to getting technologies and products to market since the original dot-com days. Clearly the tech sector in Manitoba is leading the way in many areas.

(Winnipeg Free Press, February 14, 2008) ■



continued from page 4, Engineering Philosophy 101

as engineers. It is easy to define professional judgement based on technical knowledge. But it is almost impossible to fully understand how our “beliefs” might affect our “knowledge”.

It is simplistic to suggest that all engineers and geoscientists will see every issue in the same light. Those working in the nuclear industry will have critics who see them as ignoring the very problem they are focused on solving. Those in the oil industry will have critics who see them as prolonging the negative environmental impacts of both oil production and the internal combustion engine. These positions can be “justified” based on technical knowledge. They are, however, coloured by personal perspective. And that is a matter of personal belief. The difficulty is trying to determine if we are substituting our “beliefs” for our “knowledge”.

As I consider this “belief” vs. “knowledge” issue, I find myself being drawn back to considering Billy Koen’s definition of the Engineering Method, “the strategy for causing the best change in a poorly understood or uncertain situation within available resources”. But that leaves the problem of what is “best”, and how do I come up with a clearer “understanding”? ■

Frank Dagg Centennial Prize

On the occasion of his 100th birthday, Mr. Frank Dagg (B.Sc.C.E. 1929) has provided a gift of \$10,000 to the Faculty of Engineering at the University of Manitoba. The gift also marks the 100th anniversary of the Faculty of Engineering.

During his career as a civil engineer, Mr. Dagg relied on common sense and strong problem-solving skills as he worked on varied projects including hydro dams, wharfs for ocean ships, and aluminum smelters. His gift will be used to offer prizes to three graduates of the Faculty of Engineering who have demonstrated the value and importance of common sense in the working life of a professional engineer.

Three prizes of equal value will be awarded to graduates of the Faculty of Engineering who:

- have successfully completed all the requirements for a Bachelor of Engineering degree at the University of Manitoba;
- have a convocation date prior to December 2002;
- have achieved a minimum cumulative grade point average of at least 2.5 on all courses completed in the Faculty of Engineering;
- have at least five years experience as a practicing engineer;
- submit the best essay, in one of the three categories noted below, to demonstrate how he/she has made use of common sense in the application of his/her engineering skills.

One recipient will be identified from each of the following three categories:

- Civil Engineering, Geological Engineering, Biosystems Engineering
- Manufacturing Engineering, Mechanical Engineering, Industrial Engineering
- Electrical Engineering, Computer Engineering

For the purpose of this award, common sense is defined as knowledge that is acquired in the course of daily living that allows us to solve problems. Common sense is distinct from knowledge acquired from university courses, which provides a means to apply common sense in a professional manner.

The selection committee will be named by the Dean of the Faculty of Engineering and will include representation from the English Department of the Faculty of Arts, Media, APEGM, industry, and a current Engineering student.

Applicants must submit their curriculum vitae, proof of graduation (copy of degree or transcript is sufficient), and an essay (maximum 500 words), by March 31, 2008 to:

Frank Dagg Centennial Prize
c/o Faculty of Engineering
E2-290 EITC University of Manitoba
Winnipeg, MB R3T 5V6

Essays submitted for the prize competition may become part of the permanent collection of the University of Manitoba Libraries.

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Professional Development & Networking Events

Presentation By
Richard Jones

ABCs of the Spoken Word - Engineer to Engineer

W. Jackson, P.Eng.

November 21, 2007

Are we getting maximum value from every day conversations, and do we understand what we're hearing during those conversations?

These were some of the questions that Richard Jones, a former Royal Air Force Aeronautical engineer and consultant, addressed during his presentation to about 50 people at a luncheon sponsored by APEGM's Professional Development committee at the Holiday Inn South on November 21, 2007.

Jones said everyone, including engineers, are often guilty of "poor conversation", and he proceeded to demonstrate how and why this happens starting out with some surprising data: experts suggest we speak 16,000 words a day, there is little difference in the number of words used by men and women in conversation, and the time needed to recognize a word may be less than 200 milliseconds.

He added that a key finding of a recent UK study was that people form impressions extremely quickly. Forty five percent of women's decisions at speed dating events are made in less

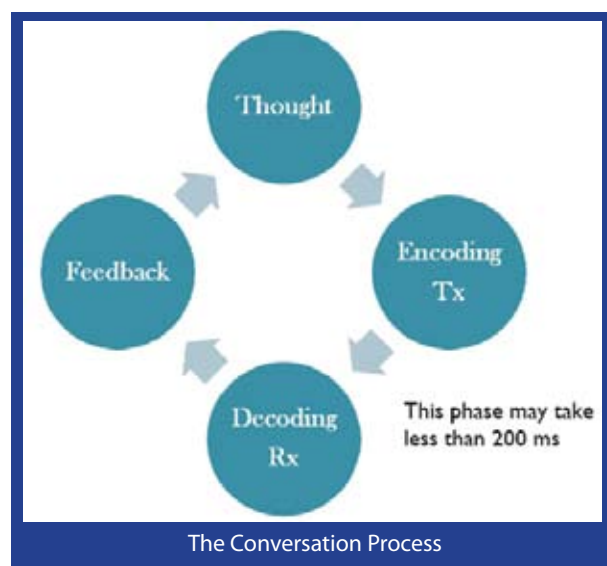
than 30 seconds, compared to just 22% of men's decisions.

As a result, Jones suggests the lesson here is that an ability to listen and show genuine understanding is crucial to forming rapport early in discussions. Managers, including engineers, spend between 60% and 80% of their day in conversation.

Misunderstandings can cost all of us in frustration, time and money, and little effort is devoted to improving how effective our conversations are in communicating, according to Jones. Without realizing it, we get into "autopilot", and the impact of an intended conversation is lost.

So, what meaning do we get from a conversation? Jones quotes experts who suggest we take only 7 percent of the meaning from the words in a conversation, 35 percent of the meaning from the body language, but a large 55% comes from the tone of the interchange. Calling it Conversation 101, Jones demonstrated that comprehension is the act of the

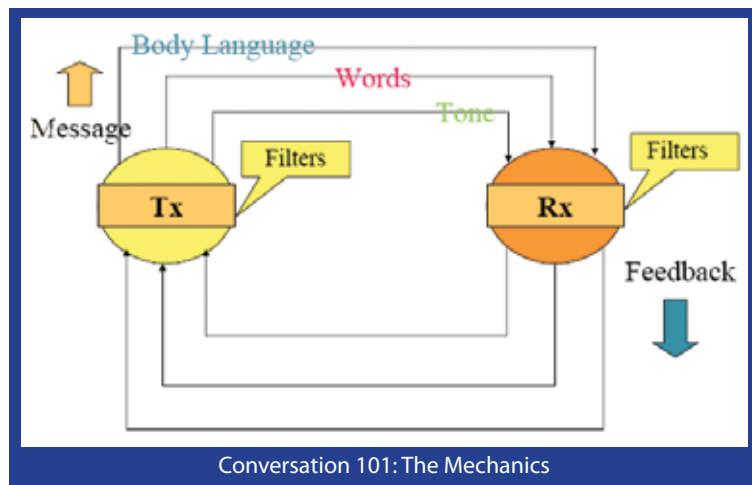
listener, but the responsibility of the speaker. Quite often, he says, the place, time and surroundings of a conversation are a factor and what is left unsaid is equivalent to what isn't seen below the tip of the iceberg



He also explained how to measure a conversation by asking yourself three questions -

1. Did I improve my understanding?
2. Did I improve our relationship?
3. Did we make progress?

Jones wrapped up his 40 minute presentation by taking questions and comments. Several people indicated that there was too little time allowed for presentation on this topic and they expressed an interest in attending a half-day seminar. The Professional Development committee is making arrangements for such a seminar in the spring of 2008. ■



Emerging Possibilities for Nuclear Energy

D. Himbeault, P.Eng.

Presentation By
Dr. Robert McCamis

January 23, 2008

A group of approximately 35 people braved the cold weather of January 23, 2008, to attend the Professional Development presentation by Dr. Robert McCamis of Atomic Energy of Canada, Director of Decommissioning Operations at Whiteshell Laboratories. Dr. McCamis, who began his career at AECL 22 years ago as a Reactor Physicist and Thermal Hydraulics Analyst, provided a very informed discussion on emerging possibilities for nuclear energy in Canada.

Dr. McCamis began by presenting a brief overview of AECL and the state of nuclear energy in Canada. Canada presently has 22 CANDU reactors: 18 operating, 2 being refurbished, and 2 shutdown. In 2006 these reactors accounted for 15.5% of Canadian electricity production. AECL is currently designing a new generation of power reactor, known as the Advanced Candu Reactor (ACR). Rated at 1085 MW, the ACR has a 40% greater power capacity over its predecessor, the CANDU 6, and requires about 45% less heavy water, thus reducing its initial capital cost.

With the ability to offset green house gases and its competitive economics, Dr. McCamis then presented how nuclear energy is experiencing a renaissance, showing potential for growth in Ontario, the tar sands projects, and other applications such as hydrogen generation.

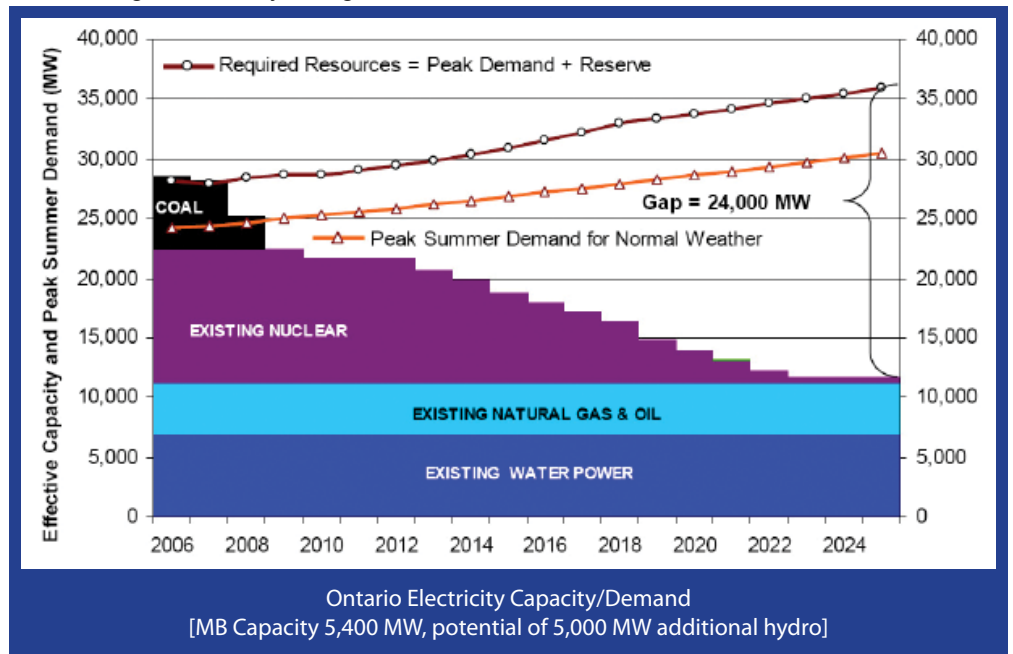
Ontario currently derives 54% of its electricity through nuclear energy, however many of its nuclear facilities will be reaching their end of life over the next few decades. Other electrical generation facilities are also going offline soon, as the province has committed to phasing out all coal burning stations in the next year or so. This situation, together with the projected growth in demand for power over time, means the province is facing

a 24,000 MW shortfall in electrical generation capacity by the year 2025. The province needs to take action very soon on a strategy to replace the lost generation. One solution to fill this gap, as per Dr. McCamis's presentation, is the construction and/or refurbishment of 22-35 CANDU's.

Nuclear energy possibilities also exist in oil-rich Alberta, where large amounts of natural gas are being used in the Alberta tar sands oil extraction process. Dr. McCamis' presentation highlighted the potential of combining nuclear power with the oil recovery operations, where essentially CANDU generated steam could be used to displace the natural gas currently being used to

reactor. Hydrogen would be produced during off-peak periods of electrical demand, and it can then be used for transportation or upgrading heavy oil products.

Further possibilities for nuclear include desalination plants, heavy water production (as a by-product), and the siting of a station in the Pinawa area. This latter reactor would take advantage of the Winnipeg River for cooling, the proximity to an existing transmission corridor (no need for long transmission lines and associated losses), and the existing licensed nuclear site of the Whiteshell Laboratories.



extract and upgrade the tar sands oil. In this way and at no extra cost, the natural gas can be saved for higher value uses and CO2 emissions can be reduced. In fact, this proposal is underway as Energy Alberta Corp. has applied for a license to build a two unit CANDU station in Northern Alberta.

Other possibilities for Nuclear energy include the generation of hydrogen gas through hydrolysis, a process that can be efficiently achieved using a CANDU

A lively Q&A period followed the presentation, underlining the audience's engagement and desire to learn more about our energy options for the future. We thank Dr. McCamis for sharing his knowledge to better inform us on this topic of growing interest. ■

Professional Development & Networking Events

Turning Challenges into Successes

N. Aquino, P.Eng.

On the evening of November 22, 2007, at the Norwood Hotel, the Women's Action Committee organized an event that spotlighted Barbara Bowes, President of BowesHR and a well-known columnist for the Winnipeg Free Press.

Barbara Bowes presented a new twist on dealing with challenges in the workplace – she shared her personal career experiences, both negative and positive, to a group of approximately 25 guests.

How many of you ask yourself:

- Am I happy where I am today?
- What is more important to me: family, money, or status?
- Where do I want to be 3 years from now? 5 years from now?
- How do I balance both my professional and personal goals?
- Can I truly have it all?

Barbara Bowes' career started at a time when business was conservatively powered by men and didn't truly allow women to publicly hold high-powering positions. Moving from Northern Manitoba with two young children, little money, and a degree in education, she found her success through continuously educating herself and by taking risks with professional opportunities.

Through personal self-evaluation, she quickly discovered that she

needed variety in her career to avoid boredom and a driving need to work independently and be recognized for her efforts. After overcoming many challenges, she took a huge leap and established BowesHR, her own Consulting business that has now branched to include Legacy Partners, an Executive search firm, and BowesBenefits, customizing benefits programs to match business needs.

Not everyone needs to strive for the CEO's seat; and financial gain doesn't always guarantee happiness. Barbara Bowes' life lessons can be used as a guide to your success:

1. Success means taking risks
2. Never accept 'no'
3. Education doesn't guarantee success
4. Bigger is not always better
5. Titles don't mean much – it's who you are, the relationships you build, and your accomplishments that are important
6. Assess yourself – What am I good at? Where could I do it?
7. Never stop learning
8. Take a stand – negotiate and mediate; you always have control of yourself
9. Take charge of your career – only you can make a difference
10. Be ready for change
11. Network, Network, Network – building relationships and maintaining contact with colleagues and professionals guarantees opportunities

Barbara closed by presenting 8 Career Anchors that can help self-evaluate and determine what motivates you to succeed and be happy in your job. If you are unhappy in your job, examine what motivates you and chances are you will discover you are missing a motivator in your job.

Presentation By
Barbara Bowes

November 22, 2007

8 CAREER ANCHORS THAT DRIVES MOTIVATION:

1. Security/Stability/Organizational Identity – a person who seeks the security of long-term employment, regular wages, and minimal travel
2. Autonomy/Independence – a person who strives for independence, needs to do things in their own way, in their own time; also known as individual contributors not Entrepreneurs
3. Technical/Functional Competence – a person motivated by the content of work they person; highly productive in some field of specialization
4. Managerial Competence – a person looking to advance to higher levels of responsibility, leadership roles; wanting to increase the overall success of a company
5. Entrepreneurial Creativity – a person with a strong desire to create a new business, motivated to overcome obstacles; desire for personal gain and recognition
6. Sense of Service/Dedication to a Cause – a person motivated by dedicating their work and sometimes their lives in the service of others
7. Pure Challenge – a person who needs to be challenged at the highest possible level; easily becomes bored if there is no variety in job and challenging tasks
8. Life-Style Integration – a person who is more interested in ensuring that they have a life balanced among various interests such as family, friends, recreational activities, etc. ■



Wine, Cheese, and Friends

L.M.K. Melvin, P.Eng.

February 7, 2008

Do you consider yourself an expert in tasting and selecting wine? Or, when you arrive at the wine store, do you simply look for the wine that you recognize, leading you to choose a bottle, not necessarily for its taste, but because of the successful marketing behind it?

On Thursday, February 7, 2008, the APEGM Women's Action Committee provided approximately 45 participants with the opportunity to taste some wine, and ask all the things we've wondered about wine, but needed an expert to answer.

In the beautifully arranged upper room at La Boutique Del Vino, presenter Michaela Scrimger, led us through a delightful evening of tasting wine and cheese, intermixed with her presentation, time for questions, and the opportunity to discuss our reactions to the wines sampled.

Server Barbara Marsland, pleasantly assisted participants in sampling three different wines, all which are reasonably priced and available at La Boutique Del Vino. The wines tasted included Sauvignon Blanc by Porta from Chile, Negroamaro by An Marzano from Italy, and Shiraz by Camelot from California.

Some basic suggestions for tasting wine are:

- Take time to smell the wine. You don't have to inhale the wine, but the smell is part of the experience.
- Swallow.
- Recognize the aftertaste. You may like the wine initially, but you may or may not appreciate the aftertaste.
- Enjoy! Talk about the wine with your friends. Try thinking, what does this remind me of? Discussing the wine, and what impact cheese or other food may have on the taste, is part of the experience. One person's explanation may help you form your opinion, and

the discussion will definitely help you remember whether or not you liked the wine.

- Lastly, remember which wines you don't like, and avoid them! There are so many others to choose from.

When selecting a wine, Michaela suggests going to a wine speciality shop. That's where the experts are, and they're there to help you. Don't be afraid to ask for assistance, whether you are purchasing a \$12 bottle of wine, or a \$50 bottle of wine.

Be aware that as many as 1 in 5 bottles of wine should be considered spoiled. This may happen due to leakage from the cork, or perhaps from freezing. So, if you see a bottle that is either sticky, or has the cork protruding out the top - don't choose it. Also, if you bring your favourite bottle home and find that the wine does not taste as good as it normally does, it's not you - it's the wine. Take the bottle back to the store.

Additional thoughts to consider when enjoying wine include that wine is meant to be enjoyed. There is no need to store the wine for a period of time, once it is purchased. However, if you are saving the bottle for a special occasion, be sure to store the bottle on its side (to keep the cork moist), in a constant temperature room. If part of the bottle is going to be saved

for another day, be sure to either re-cork the bottle or use a wine stopper.

Pay attention to how the taste changes as the days pass, so you know how long you have to enjoy the bottle. Small wine bottles are available, if you're interested in a small serving size. Another option is to incorporate left over wine into your cooking. Lastly, if you are looking for more information, do a search on the internet. Good websites, with valid information, do exist.

So, next time you're out to purchase some wine, will you go for the usual, or will you visit the wine specialty store? Consider speaking to an expert, and trying something new. But most importantly, take the time to enjoy your wine with friends. ■



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Globalization

R. Minhaz, EIT

“Globalization” is a word political scientists and economists have used for a long time and in the last 4 to 5 years it has become a “buzz word”. To define globalization one can say, “Globalization is the beginning of the end of national borders”. But the true definition of globalization can be the reflection of mobility, how things move, how expensive it is to move things, how quickly they move, and how they move around the world. In the last couple of decades, this mobility increased rapidly and moving things around the world became inexpensive and efficient with the magical development in modern technology.

But the ideas that shape the human mind are set to be creative and cannot be digitized, i.e. they cannot be coded in bits and bytes and sent across fiber optic cables. Amsterdam understood that in the 17th century. They understood that the only way to generate above trend economic growth is to attract people with ideas and knowledge to live in Amsterdam. In the twenty-first century, the mobility of human beings with ideas and knowledge accelerated.

Instead of organizing big vertically integrated corporations where everybody is organized hierarchically and related to the community within corporate boundaries, companies such as those located in the Silicon Valley created a much more open environment where people move between firms quite regularly, fueling ideas and rife with venture capital investment.

This open mobility allowed people to experiment much more freely with new ideas and technologies and it created a more dynamic and adaptive environment, leaving some of the older mini computer makers “in the dust” because they weren’t able to keep

up with the pace of technological and market change.

Silicon Valley is dominated by people with ideas and knowledge especially from countries such as India and China who are building very powerful links back to their home countries. The Taiwanese began going back and forth to Hsinchu Science Park, the Indian to Bangalore and the Chinese to Shanghai where they began setting up firms and businesses and creating new markets in their home countries while working with policy makers to effect change. They were seeding new centers of technologies and entrepreneurial experimentation.

Silicon Valley is no longer the dominant center of technology and engineering. Hsinchu, Bangalore, and Shanghai are equally innovative and competitive to what Silicon Valley has to offer. The success of Hsinchu, Bangalore and Shanghai has spilled over not only in other cities but also to small towns in the entire region. Those cities and towns started connecting them to these technological super highways of two-way passages for the exchange of ideas and knowledge, which flow with unprecedented speed connecting Silicon Valley, Hsinchu, Bangalore and Shanghai and creating a big interconnective network.

The astounding development of communication systems, especially the internet and cable network interconnections, have affected the world in such a way that if anything happens in one part of the world it spreads to the whole world virtually instantaneously. Innovative and creative ideas to take advantage of the development of communication system are best described through the example of a creative idea conceived by Narayan Murthy, the founder of Infosys.

Twenty years ago he arrived in California and began telling people at different companies, “Listen! I started a software company in Bangalore and I can work with you”. They responded, “We like your products but you are too far away. We are in California, you are in India. With a 12 hour time difference, what can we do together?” Narayan replied, “It’s perfect. This 12 hours time difference is an asset. You work all day, you develop the software and just before you go to bed, you package the software, zip it to us in Bangalore, and while you are sleeping, we will work on it, develop it even further, and the next morning when you come back to work you will receive a much better product and we will have a 24 hour time cycle for developing the software.” Engineering projects can be now done in different parts of the world in much the same way.

Due to globalization engineering, teams are becoming more diverse in terms of culture and language with an international perspective. Therefore it is important that engineers consider that they have to be capable of working in a global environment which means engineering education has to change to reflect the global view.

In a global village, a place such as Winnipeg faces the challenge and opportunity that it can become an engineering and technological hub by taking advantage of globalization. It has to create not only local talent with a global mind-set but also has to attract global talent to come, work and open businesses. It also has to find a way to retain local talent and engage the foreign educated engineers by simplifying the process of accreditation, permitting them to practice engineering as professionals. ■

A Man of Quality

A. Kempan, P.Eng.

Winnipegger Madhav Sinha, P.Eng, will be in Houston, TX, in May of 2008 to receive a singular honour from the American Society for Quality (ASQ). Madhav is the first Canadian to earn ASQ's Jack Lancaster Medal for outstanding contributions to the quality control field. No stranger to awards, Mr. Sinha has captured over a dozen awards for his quality control work, often being the first Canadian to do so.

Madhav came to Canada in 1969 to earn a Ph.D. in metallurgical and material science from the University of Manitoba. After a two-year stint at McMaster University on a post-doctoral research fellowship, Madhav returned to Winnipeg to test his academic knowledge in the industrial world, taking up a position in the casting industry as a metallurgist and quality control manager. It was there he wrote the company's, and his, first quality manual.

It was 1976 when Sinha first became a true disciple of quality control. To become more knowledgeable in the field, he took a quality control course at the University of Manitoba in

1979. He loved it, but was surprised at how few books on the subject were available in those days. His solution was to write a book, "The Management of Quality Assurance" in collaboration with, and on the invitation of, his teacher, Walter Wilborn.

A random act of TV viewing in June of 1980 put Madhav in touch with the world's most respected quality man of the time, W. Edwards Deming. It was Deming, who six years later advised Madhav to stay in Canada, to stay in Winnipeg, rather than seek an international career. Mahav took his advice to heart and has never regretted staying in Canada.

In 1980, Mr. Sinha took up a position with the Manitoba Department of Labour and Immigration, and he is still there, although he is now preparing for retirement. His passion for quality is strong as ever – he thinks Total Quality Management can be a savior for the health-care system. He has three dreams; to start a Canadian society for quality, establish an annual Canadian quality conference, and found a Canadian publication on quality. Given his drive and commitment, he'll probably succeed.

Gleaned from an article in the Winnipeg Free Press, February 3, 2008.



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Engineers Canada adds new identity theft protection plan to its sponsored home/auto insurance program

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We all know that the theft of personal information is a growing problem, in Canada and around the world. Falling victim to identity theft can take a heavy financial and personal toll, since restoring damaged credit can be a stressful, time-consuming process.

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Don't take chances with your name and credit rating! To sign up or learn more about Identity Plus Solution for Engineers Canada sponsored program participants, call TD Meloche Monnex today at 1-877-536-7755.

continued from page 3, President's Message

often experienced people who come from an education and work experience system different than our own. Students coming from Geosciences have not come from a long established country-wide accredited program and often don't fit the moulds. And for foreign applicants, it is not simple to translate undergraduate degrees from other education systems.

Assessing the applications has to be done right, in a timely fashion and in a way that shows that we appreciate and welcome them. They need to know that we are glad they chose to bring their expertise to Manitoba and they want to join in our vibrant and prosperous society.

Now I will do what may appear to be a little bit of ranting. The problem, as I stated above, is an adherence to a good system of registration that was premised

on two things: a standard and predictable education system and experience gained under the supervision of a practicing P.Eng.

For newly arrived applicants it is not working as well as it could. Today, as we assess a new applicant, we often seem obsessed to adhere to general guidelines as though they are regulatory absolutes.

For example, we don't have to assign exams so aggressively. We look like we are punishing people for applying. We almost never apply a "looking to exempt" policy, but rather "look to examine." What about applicants who willfully go to Ontario or Saskatchewan, get registered and apply back under mobility? That is a growing problem.

What about young geology grads who disregard regulation altogether because

applying means more exams from APEGM? What about veteran geologists who disregard regulation for the same reasons: because it is a humiliating experience to apply!

Someone whose opinion I value a lot, pointed out what I consider to be truism: "If we gain a new member through a negative registration process, we actually lose."

So as your President and on behalf of the APEGM Council, I am grateful for the work of the Registration, Experience Review, and Academic Review Committee volunteers who are tasked with the goal of reviewing and approving applicants. I hope that we can make the necessary changes to speed up our process, while fulfilling our regulatory mandate for the public of Manitoba. ■

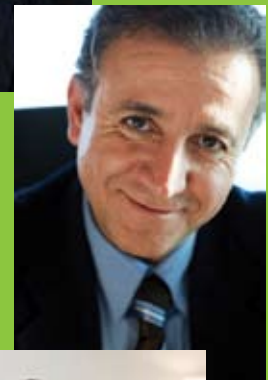
APEGM is asking members to promote the Call for Nominations for the following APEGM awards to be presented at the Annual APEGM Awards Dinner:

- Certificate of Engineering or Geoscience 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

continued from page 7, Thoughts On Design

Theoretically it is a time that allows the EITs to gain an understanding of how decisions are made in an unconstrained world. It should allow for an interaction with people who see projects from an entirely different technical and social perspective. Mature professionals should provide guidance with respect to the professional judgements that must be made as one moves from a contract to a completed project. It should be a learning experience that is every bit as intense as the undergraduate experience. But the examinations are not prescheduled and the grades are not posted on the "web site of life".

The lucky EITs will find, as I did many years ago, people who will take the time to help them understand the new realities they face. Because with that assistance, they will quickly become assets to their

employers and to the profession. They will see the scope and challenge in design and better understand how they can contribute.

"Qualification" involves making technical judgements, and an undergraduate engineering degree provides a reasonable basis. "Competence" involves making professional judgements and that requires the guidance and advice of those who have gone before.

Our Code of Ethics notes that we have a responsibility to support colleagues and encourage professional development. There can be no better way to do this than to make certain that the EITs you work with have a chance to grow during their second phase of development. They need to move from "qualified" to "competent". The future of our profession depends on it. ■

In Memoriam

The Association has received, with deep regret, notification of the death of the following members:

*Charles R. Byth
James D. Leisle
Bernd U. Lutter
Barry A. Mulder*



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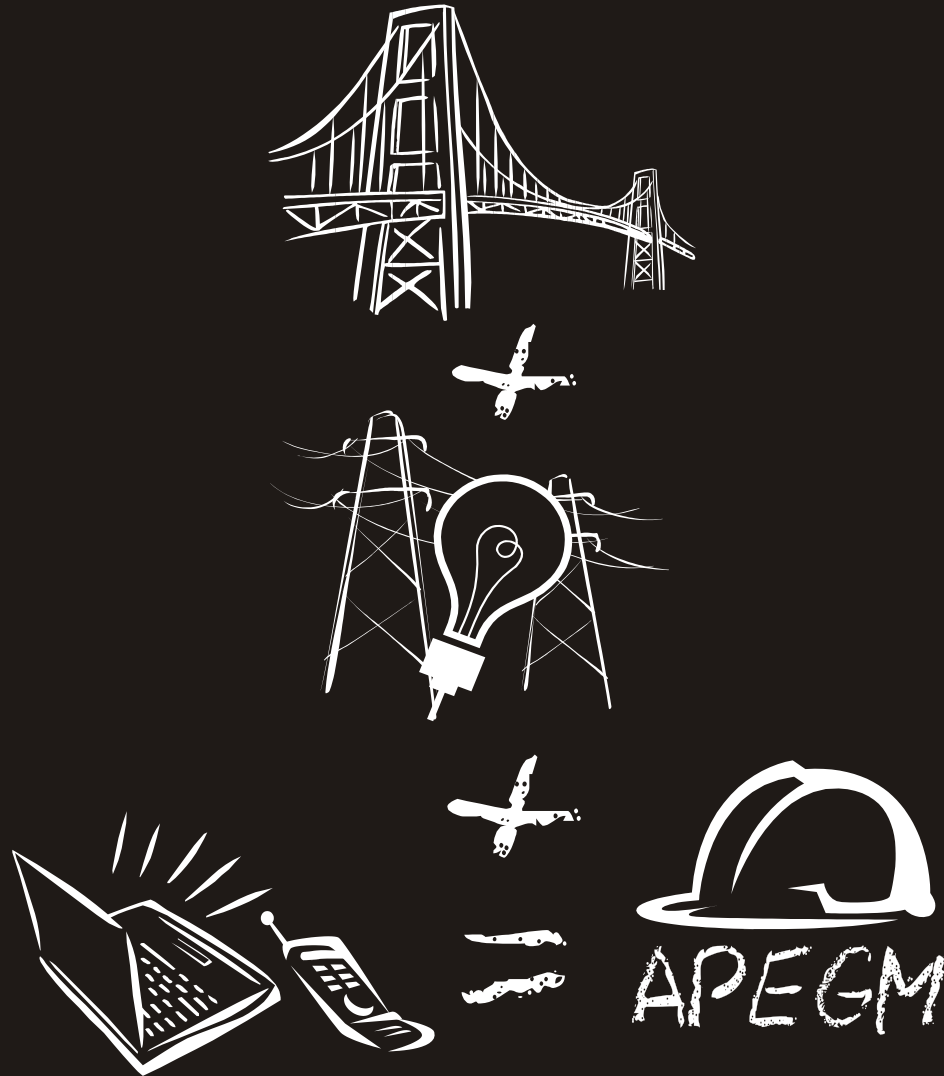
Whatever your retirement dreams may be, you can benefit from consolidating your retirement financial planning with the Engineers Canada-sponsored Financial Security Program administered by Great-West Life. You'll enjoy the advantages of lower-than-market retail fees while tapping into a comprehensive investment selection. With enhanced interest rates and flexible solutions through personalized financial advice, we have everything you need to make the right plan for what's ahead. Go to www.engineerscanada.ca/e/prog_services_4.cfm or call 1-800-724-3402 and get us working for you.



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Council Reports

Thursday, December 6, 2007

A. Erhardt, EIT

Following a brief lunch, the Council meeting was called to order at 12:30 p.m. As this was the first Council meeting following the Annual General Meeting, there were some changes to Council. President Tim Corkery started off the meeting by welcoming everyone, and led a round of introductions for all present.

This meeting was the first for Councillors Alan Aftanas and Ray Reichelt, who had been elected to serve on Council at the AGM. As well, Councillor Brenda Bilton was present via telephone.

Before beginning with the meeting agenda, a moment of silence was observed in remembrance of the 14 women who lost their lives on this day in 1989 at the École Polytechnique in Montreal, QC.

Following the review and acceptance of the agenda and the past meeting's minutes, the floor was turned over to Alan Pollard and Rick Syme, two members from the APEGM Foundation. They presented a quick PowerPoint presentation outlining the history of the Foundation, its accomplishments, and where things stood today.

The original purpose of the Foundation was to help fund the new Engineering and Information Technology Complex at the University of Manitoba. APEGM made a commitment to the EITC of \$350,000 to be paid out over five years through the Foundation. This commitment secured the naming rights for the room that replaced 229 Engineering as "The APEGM Design Studio". The Foundation also has annual financial commitments to the Star Lake Geological Field Station and the Brandon University Geology Department.

The main reason for the APEGM Foundation's attendance at the meeting was to look for guidance from Council as to their role moving forward. The EITC commitment will be completed in December 2008, and the Foundation was hoping to continue its efforts by developing a memorandum of understanding with APEGM to act as a guide for the future. President Corkery asked for a "wish list" from the Foundation, while Councillor John Woods asked if internationally trained engineers might be eligible for AFI scholarships or bursaries. In the end, a motion was brought forward that Council would work towards the development of an MOU to establish terms of reference for the Foundation to move forward.

Executive Director Grant Koropatnick provided an update on the Ownership Linkage Committee. He explained that the committee currently does not have a chair, as the previous chair, Avery Asher had completed her term on Council. Alan Silk has offered to chair the next meeting in the interim, but President Corkery expressed that he feels that the committee is very important and wants it to continue the momentum it has established, so a new chair needs to be found quickly.

At this time, Council reviewed the consent agenda. The membership applications that were approved by the registration committee were accepted. As well, a memo from Director of Admissions Sharon Sankar informed Council that the effective date for the issuance of temporary licenses has been postponed until January 2009.

The floor was then turned over to Past-President Robyn Taylor, who had joined the meeting by telephone from Malaysia earlier. She informed Council that she and her husband would be moving to Kuala Lumpur in January 2008. The final details had not all been determined at this time, so she requested that her replacement not be chosen until the next meeting. Eligible replacements would be other former past-presidents. Congratulations and best wishes were brought forward by all councillors, along with some comments of jealousy in regards to the weather!

Executive Director Koropatnick led an orientation PowerPoint presentation for Council. The presentation reviewed the history of the Association, highlighting the only major change since 1920, which was the 1998 addition of geoscientists thanks to the Bre-X scandal. Other Council responsibilities that were outlined include policy governance, committees, strategic priorities, as well as introducing the APEGM staff and daily operations. Following the presentation, the list of 2008 Council meeting dates was reviewed and approved.

With all of the Council changes that occur with the AGM, several committee positions on Council were vacant as well, and needed to be filled. The first of which was for the position of Vice President. Following a round of nominations, two names remained: Councillors Don Himbeault and James Blatz, who was not in attendance to accept or decline the nomination. Council decided to defer the vote until the next meeting, to allow Councillor Blatz to be present to accept or decline the nomination. Councillor Arthur Chapman suggested clarification in the future on how to deal with this situation to avoid the issue again the future. As well, in response to the departure of Robyn Taylor as Past-President, it was decided to defer the selection of a new Past-President until January.

With the departure of Avery Asher, there were only two appointed councillors on Council. President Corkery commented that it would be good to add another, as well as to the Ownership Linkage committee. It was moved that a committee be formed to find another appointed councillor, based upon guidance from the Act.

Two vacancies also remained on the Nominating Committee. Don Himbeault and Alan Aftanis offered to sit upon the committee. As well, several names were brought forward for other Association members to be contacted in regards to sitting on the committee. Any other nominations by Council were encouraged with a decision to be made at the January meeting.

Following the nominations, Council was asked to make a decision on the "specified scope of practice" license by the

APEGM-CTTAM joint board. There was great debate over the issue, including discussion as to whether or not a new title would be required for this licence. Given the debate that ensued, a motion was brought forward that this issue continue to be discussed as an agenda item for the next meeting.

As things began to wrap up, Council reviewed the list of outstanding action items. One item of note that came forward

was that a revised Manual of Admissions has been submitted to the Registration Committee for them to review with comments. Following this, councillors were assigned monitoring responsibilities and several information items were presented. Council performed its meeting self-evaluation and the meeting was adjourned at 4:15 p.m. ■

Thursday, January 8, 2008

A. Kempas, P.Eng.

President Tim Corkery opened the meeting at 12:40 p.m. with routine items; introductions, adoption of an agenda, and minutes of the last meeting.

Next, the Manual of Admissions was on the agenda with a presentation by Past President Allan Silk. Mr. Silk spoke for a subcommittee formed to deal with revising the Manual. Mr. Silk gave a thorough presentation on the state of the Manual of Admissions, a document with a long and tortuous revision history dating back many years. Now the manual needed a complete overhaul to clear up some of the redundancies.

One of the topics within the Manual of Admissions dealt with the academic qualification process. A councillor recounted a humorous anecdote about an academic who had his qualifications reviewed by an APEGM committee, and was found wanting. The remedy was for the academic to take a particular course to upgrade his credentials. As it turned out, the recommended course was taught by the academic under review. Councillor John Woods said the job of the ARC was difficult, and that the educational quality of a foreign university can vary from year-to-year. Council agreed to a future meeting to review progress of the new Manual of Admissions.

The next few agenda items all dealt with filling vacant positions; Vice President, Executive Committee member, Past President, appointed councillor, and CTTAM Joint Board member. Vice President was first and easiest to fill. Councillor Don Himbeault was the only candidate to come forward and was acclaimed. According to the APEGM by-laws, Councillor Himbeault will be the next APEGM president.

Executive Committee member was a post a little more difficult to fill. Councillors nominated and counter-nominated their colleagues, but the correct procedure was paper ballots. After the papers were opened and tabulated, Councillor John Woods was crowned Executive Committee member.

Filling the Past President post was more problematical. There was indeed a Past President, but Ms. Robyn Taylor was moving overseas, so geography prevented her from fulfilling the role. Executive Director Koropatnick had sent six e-mails asking for volunteers from a pool of previous Past Presidents and had collected two candidates. Council chose Dr. Digvir Jayas, P. Eng.

on the grounds that he was the most recent Past President.

Choosing an appointed councillor was even more difficult. Executive Director Koropatnick said the Past President was involved in finding an appointed councillor, and not having a Past President had slowed the process. This item was set aside for the March meeting.

As for the CTTAM joint board, Council deferred the discussion on creating a limited license for technologists to practice under the Act to the March meeting.

Next was an item on the Manitoba Hydro plan to run the Bipole 3 transmission line on the west side of Lake Winnipeg. The plan had generated public debate because a line east of Lake Winnipeg was shorter and cheaper, but involved ecologically sensitive lands. Council opted for a one hour in-camera session to discuss the matter.

The meeting moved into windup mode, covering many topics in a short time. The term for Mr. Dave Ennis as Manitoba Director for Engineers Canada was extended for a year by a motion of Council. APEGM's governance policy was revised to update the investment policy from the previous old policy of 1987. Council ran through the outstanding actions list, but most had been dealt with previously or no report was available. President Corkery spoke briefly on the registration of professors, saying it was a difficult issue and that two Brandon professors were in process for registration.

Council moved on to the agenda for the next meeting. They planned for a large time allocation to discuss a broad range of issues all related to the registration of members.

Finally, Council learned that because of the year end reduction in the GST rate, some members paid slightly more GST than other members when they renewed their memberships. Council passed a motion to keep the practising fee at \$300 and not refund the excess because it was a very small amount. Council briefly reviewed the case of a member convicted of professional misconduct. The last item was a Council self-evaluation and then, at 4:55 p.m., everyone was free to go. ■



Global Warming and the Kyoto Protocol - A Review of the Issues

L. Haberman, P.Eng.

The United Nations Intergovernmental Panel on Climate Change (IPCC) has concluded that warming of the climate system from rising Greenhouse gas (GHG) concentrations is unequivocal. Its impact will affect all nations.

CURRENT CIRCUMSTANCES:

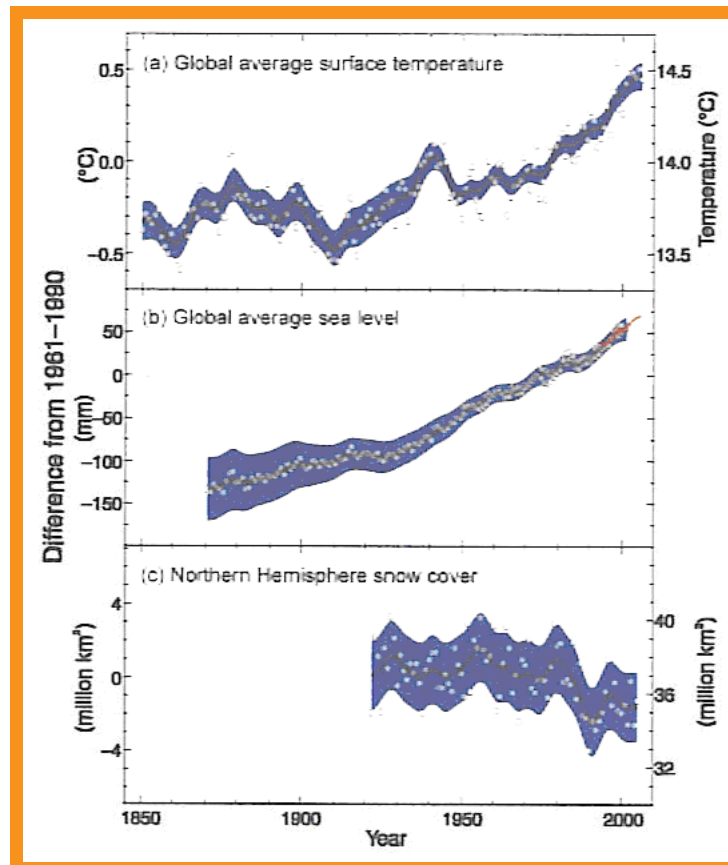
GHGs are long-lived gases which have a cause-and-effect relationship with global warming. The concentrations of these gases in the atmosphere have increased markedly from natural levels prior to 1750 to current levels (e.g. in 2005); CO₂ - 35%, methane - 148% and nitrous oxide - 18%. Concurrent with these increased GHG concentrations, global temperatures increased about 0.8°C between 1850 and 2005.

Additionally during the second half of the 20th century, temperatures in the Northern Hemisphere were likely the highest of any other 50 year period in the last 1300 years. As noted by the IPCC, this warming of the climate has affected global systems. The world has experienced; more intense and longer droughts, increased frequency of heavy precipitation events, widespread changes in extreme temperatures over the last 50 years, a decline in mountain glaciers and snow cover in both hemispheres, losses from the ice sheets of Antarctica and

Greenland, increased temperatures at the top of the permafrost layer, an increase in Arctic air temperatures at almost twice the global average rate in the past 100 years, shrinkage of Arctic sea ice extent by 2.7% per decade since 1978, and sea levels rising at a rate of 1.8 mm/year from 1961 to 2003.

Other key impacts of global warming on the world's systems are:

- WATER** - increased water availability in the moist tropics and high latitudes, and decreasing water availability and increasing droughts in low latitudes and semi-arid low latitudes with 75-250 million people across Africa facing water shortages. Water supplies from glaciers and snow cover are expected to decline, reducing water availability from mountain ranges where more than one-sixth of the world population lives.
- FOOD** - tendencies for some cereal productivity to decrease in low latitudes, some cereal productivity to increase in mid to high latitudes, and complex localised negative impacts on small holders, subsistence farmers and fishermen. Agriculture fed by rainfall could drop by 50% in some African countries. Crop yields could increase in East and Southeast Asia, but decrease in Central and South Asia.
- HEALTH** - increased morbidity and mortality from heat waves, and an increasing burden from malnutrition, diarrhoeal, cardio-respiratory and infectious diseases. Cities that currently experience heat waves are expected to be



further challenged. Floods, droughts and climate change related exposures are likely to affect the health status of millions of people and place an increased burden on health services.

- **ECOSYSTEMS** – up to 30% of species face increased risk of extinction, an increase in weeds, insect pests and wildfires that are likely to imperil forests, increases in sea surface temperature and acidification of the ocean with related negative impacts on marine shell forming organisms (e.g. corals) and their dependent species, ecosystem changes due to weakening of the meridional overturning circulation, widespread increase in thaw depth over permafrost regions and contraction of snow cover will affect related ecosystems, and net carbon uptake by terrestrial ecosystems is likely to peak before 2050 and then weaken or reverse thus amplifying climate change.
- **COASTS** - increased inundation, storm surge and coastal erosion, negative impacts on coastal wetlands and salt marshes, a decline in the number but an increase in the intensity of tropical cyclones, more navigable northern sea routes, and the flooding of millions of people in developed coastal areas (e.g. the mega-deltas of Asia and Africa, and small Pacific islands).
- **SECURITY** - there is concern that further imbalances in the standards of living between countries and the migration of millions of people from flood and drought stricken areas could cause increased international security concerns.

KYOTO PROTOCOL:

The Kyoto Protocol seeks to reduce global GHG emissions in order to stabilize atmospheric concentrations at a level that would prevent dangerous interference with the climate. The Kyoto Protocol is connected to the United Nations Framework Convention on Climate Change (UNFCCC) and calls for the reduction of six heat trapping greenhouse gases; CO₂, Methane, Nitrous oxide, and three Fluoride gases.

The Protocol covers 176 countries which are divided into two categories; 37 industrialized (Annex 1) countries which have agreed to reduce emissions 5.2% below 1990 levels by 2008-2012*, and the remaining 139 countries that are not obliged to reduce GHG emissions (including China, India, other developing countries, and the USA which has not ratified the Protocol). Annex 1 countries recorded

a 14% decrease in GHG emissions from 1990 to 2004 as a result of a 37% decrease in emissions from the eastern and central European economies in transition. Although emissions from Annex 1 countries decreased, emissions from the other 139 countries caused global GHG emissions to increase by 24%. In 2004, these 139 countries generated 69% of global CO₂ emissions.

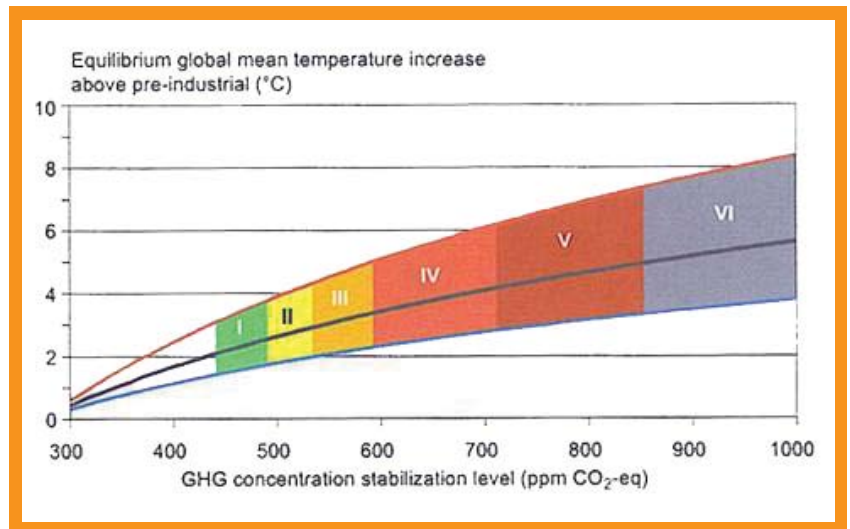
China, India and the United States generated 43% of the world's CO₂ emissions. Therein lays the weakness of Kyoto, it cannot reduce global GHG emissions with the current Annex 1 countries under the Protocol. Emission reduction commitments from the other countries under the Protocol should be encouraged, but may be difficult to obtain.

The current position of China and India is that they cannot take on emission caps because they need to promote economic growth and reduce poverty. They justify this position on the basis that their current per capita emissions

of the last twelve years (1995-2006) rank among the warmest years since 1850. Subsequent change in the climate will depend on the specific emission reduction measures adopted by the world community.

EMISSION FORECAST SCENARIOS:

The IPCC and the International Energy Agency (IEA) have analyzed the effect of emissions on global warming. The IPCC evaluated the relationship between GHG concentration stabilization levels (i.e. levels at which GHGs would stabilize in the atmosphere by 2100 to 2150) and related temperature increases. This relationship has been defined in six IPCC Categories for specified reductions in CO₂ emissions. GHG concentrations in 2005 were 375 ppm CO₂-equivalent.



IPCC Category	I	II	III	IV	V	VI
Change in global CO ₂ emissions in 2050 (% of 2000 emissions)	-85 to -50	-60 to -30	-30 to +5	+10 to +60	+25 to +85	+90 to +140

are a small fraction of the developed economies, and they have produced only a small fraction of the world's GHG emissions (China generated 8% and India generated 2% of global emissions from 1900 to 2005).

The United States has also rejected GHG emission caps and supports a flexible framework for climate change that accommodates individual national goals. While these positions may be persuasive, they would nonetheless place in jeopardy any hope of controlling global emissions (China will overtake the United States as the world's biggest CO₂ emitter in 2008, and India will become the third-largest emitter around 2015). The 2007 reports of the IPCC describe a world facing the consequences of climate change. Eleven

The IEA developed three energy/CO₂ emission forecasts, which relate to IPCC Categories I, II and VI:

- The IEA Reference Scenario forecast is based on the premise that governments will continue to use current policies, which would result in a long term temperature increase of up to 6oC and a 57% increase in energy related CO₂ emissions from 2005 and 2030. This forecast is consistent with IPCC estimates (IPCC Category VI) where an increase in total emissions of more than 90% between 2000 and 2050 would result in an equilibrium temperature increase of 5-6oC above pre-industrial levels by 2100 to 2150. This increase in global temperature would likely induce

changes in the climate system larger than those experienced in the 20th century. Unmitigated climate change would, in the long term, likely exceed the capacity of natural, managed and human systems to adapt.

- The IEA Alternative Scenario forecast is based on the premise that governments around the world will implement currently proposed policies to enhance energy security and mitigate energy related emissions. The IEA has estimated that energy related CO₂ emissions from 2005 to 2030 would increase by 27% and result in a temperature increase of 3oC above pre-industrial levels by 2100 (IPCC-Category II).
- The IEA 450 Stabilisation Case Scenario forecast is based on a pathway of energy use from 2005 to 2030, which would result in a 15% decrease in energy related CO₂ emissions and a maximum temperature increase of 2.4oC. The IPCC has estimated that keeping global average temperature increases to within 2.0-2.4oC by 2100 to 2150 can be achieved with a 50-85% reduction in total emissions from 2000 to 2050 (IPCC Category I). This lower temperature increase would avoid some of the most damaging and irreversible impacts of global warming. Exceptionally strong and immediate policy action would be essential for this to happen. This scenario has been proposed for adoption by many nations.

ADAPTATION AND MITIGATION MEASURES:

Measures with the largest economic potential for adaptation, mitigation and reduction of global emissions in the short to medium term are:

- **ENERGY SUPPLY** - Improved energy supply, distribution and integrated national/regional energy networks - increased renewable energy, nuclear energy, cogeneration, and carbon capture and storage.
- **TRANSPORTATION** – More fuel efficient vehicles, increased use of public and non-motorized transport, increased use of biofuels, and improved land use and transport planning including increased development of all-weather transportation infrastructure/ systems.
- **BUILDINGS** – Improved insulation, heating and ventilation, energy efficient lighting and appliances, passive solar design and new refrigeration/recycling of fluorinated gases.
- **INDUSTRY** – More efficient end use electrical equipment, heat recovery and power recovery, material recycling and substitution, and improved control of gas emissions.
- **HOUSEHOLDS** –Reduced use of energy through conservation, household purchases and lifestyle choices.
- **AGRICULTURE** – Improved land and livestock management, land and soil restoration, soil carbon storage, cultivation techniques and energy efficiency. Adjustment of planting dates and crop variety, including dedicated energy crops to replace fossil fuels.

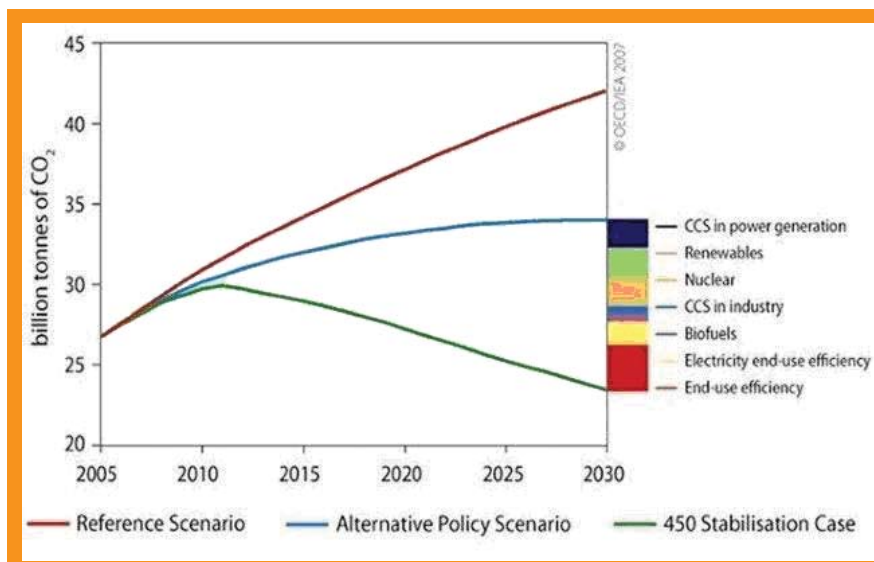
- **FORESTRY** – Improved forest harvest and management, reforestation and use of forestry products for bio-energy, and reduced tropical deforestation.
- **WASTE** – Increased recycling and waste minimization, composting of organic waste, landfill methane recovery, and waste incineration with heat recovery.
- **WATER SUPPLY** – Improved water management and increased water supply facilities encompassing flood and drought considerations.
- **HUMAN HEALTH** – Improved health infrastructure and availability of health services to all people.
- **COASTAL/INLAND DEFENCES** – Improved coastal defences including beach nourishment, dykes and control structures - improved inland flood control structures, diversion channels, reservoirs and dykes - creation of marshlands/wetlands as a buffer against sea level rise and flooding - and global early warning systems and forecasts.
- **TECHNOLOGY** - Increased collaborative efforts in R&D of low GHG emitting technologies, and deployment of proven technologies to developing countries.

Disaster preparedness and risk reduction measures must also be established to offset and reduce the impact of climate change from past GHG emissions, and any increase in GHG concentrations resulting from delayed or inadequate international initiatives. The United Nations Hyogo Framework for Action can provide the necessary blueprint for this purpose, as it supports the development of disaster risk reduction measures as an integral part of sustainable development policies and practices.

In the longer term geo-engineering may play a prominent role and would involve the intentional human modification of the planet's climate to arrest or slow global warming. The projects could range from; blocking a fraction of incoming solar radiation (e.g. placing sulphate aerosols in the atmosphere), to reducing atmospheric CO₂ concentrations with carbon sinks (e.g. stimulation of ocean plant productivity). Associated R&D will be required to ensure that proposed initiatives are feasible and will have no unintended consequences.

ECONOMIC IMPLICATIONS:

The United Nation Framework Convention on Climate Change (UNFCCC) has noted that additional investment and financial



flows of 1.1% to 1.7% of global investment (0.3 to 0.6% of global GDP) will be necessary in 2030 to return GHG emission to current levels. Developing countries, with 46% of global investments, could achieve 68% of global emission reductions by 2030.

The UNFCCC study shows that governments will be required to shift future investment and financial flows and adopt new policies to reduce GHG emissions. The UNFCCC has noted that it is important to focus on the role of private sector investments. The largest share of investment and financial flows comes from the private sector (86%); corporations are responsible for 60% of investments, and small business, farms, households and individuals are responsible for 26%. The IPCC has also concluded that it is often more cost effective to invest in end-use energy efficiency improvement than in increasing energy supply. The investment decisions taken today will affect the world's emission profile in the future.

GOVERNMENT POLICIES AND STRATEGIES:

A wide variety of instruments are available to governments to address climate change including:

- Integrated Policies that include climate change in broader policy development within the context of national and international sustainable development priorities can; ease the implementation of adaptive and mitigation measures, overcome policy based barriers that inhibit low carbon solutions, and support technology transfer and adaptation funds to assist developing countries.
- Regulations and Standards provide consistency on emission levels, establish GHG emission limit performance standards on production operations and products,

and discourage a business-as-usual approach.

- Taxes and Fees can be used to support specified levels of reduction, and send a price signal that may encourage investments in reducing GHG emissions.
- Financial Incentives can be used to stimulate R&D and new markets for innovative technologies to reduce GHG emissions.
- Tradable Permits establish a market and price for carbon, and draw on the power of the marketplace to reduce emissions in a flexible manner.
- Voluntary Agreements between industry and government can raise awareness, promote coping strategies and encourage investment in GHG emission reducing alternatives.
- Information Programs and Related Initiatives can increase awareness of the economic and environmental implications of global warming, and promote informed choices and related lifestyle change opportunities.

BEYOND KYOTO:

The 192 parties to UNFCCC met in Bali, Indonesia in December, 2007 to further long term cooperation in addressing global warming issues. Following intensive negotiations, an agreement was reached to further an ongoing process of climate change negotiations.

An Action Plan was established detailing factors that the UNFCCC will address in formulating a successor Climate Change Agreement, namely: defining appropriate/comparable mitigation and emission commitments for developed countries taking into account national circumstances; defining appropriate mitigation commitments for developing countries in

the context of sustainable development; and defining incentives/assistance to enable developing countries to; accelerate technology transfer/deployment, reduce deforestation, and implement strategies/ measures for adaptation, risk management and disaster reduction, The Long-term Cooperative Action Working Group of the UNFCCC will use this Action Plan in the development and finalization of the Climate Change Agreement for adoption by the parties to the UNFCCC by 2009, and subsequent ratification before the expiry of Kyoto in 2012.

This Agreement must provide the world with a lower carbon system that will support a sustainable economy and environment.

The world's governments, public and private sectors, and civil society have the intellectual, natural and financial resources to limit the impact of global warming on our planet. The primary shortage is time. ■

Additional information including references are available in the full version of the article at www.apegm.mb.ca.

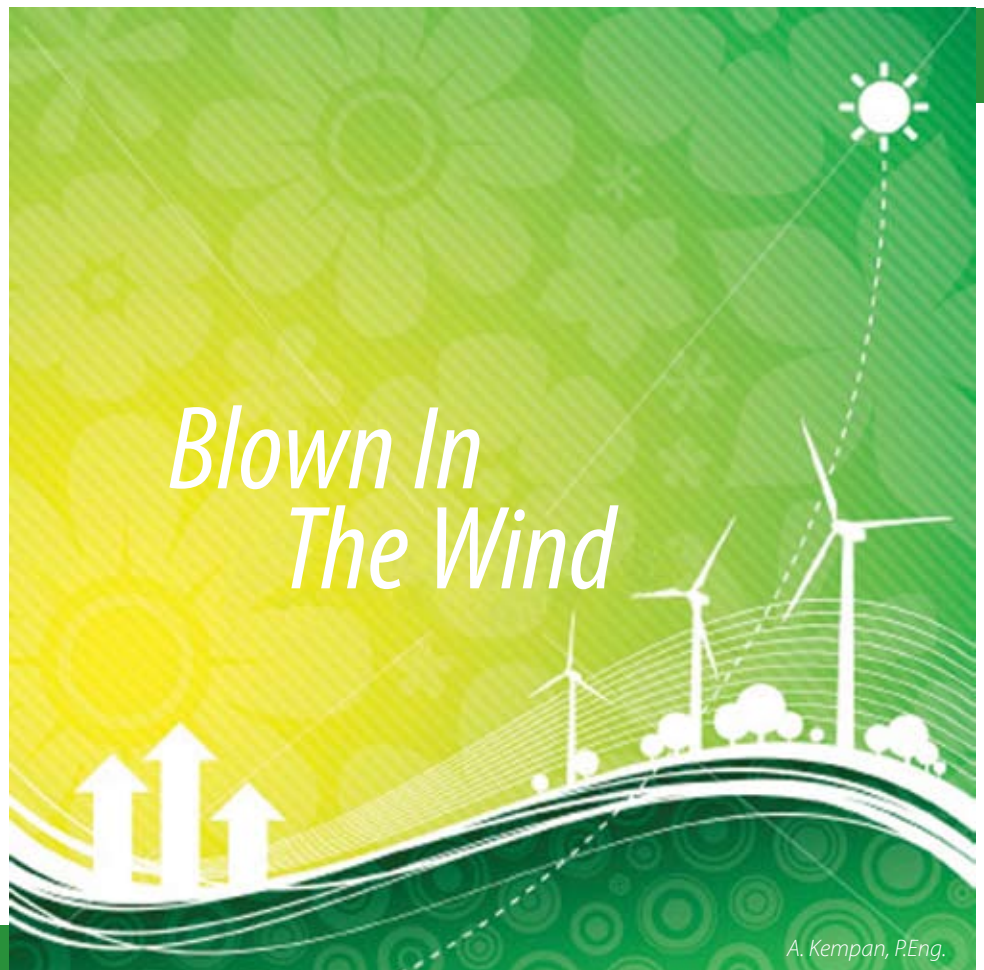
Lawrence P. Haberhan, P.Eng., holds a B.Sc. C.E. from the University of Manitoba, and D.I.C. (C.E.) from the University of London.

Lawrence has worked for many companies including Manitoba Hydro, Manitoba Water Commission, the Manitoba Department of Energy and Mines, and the Government of Canada - Natural Resources Canada.

Lawrence established L.P. Haberman & Associates in 1990 which included the preparation of a Provincial Contingency Plan to reduce demand for petroleum products during a national oil shortage, and a related frame work to provide an energy policy, program and regulation measures for Manitoba.

*Canada cannot meet its Protocol obligations. Canada's emissions increased 25.3% from 1990 to 2005. In 2005 GHG emissions were 33% above the 2008-2012 Kyoto target. Canada proposes to reduce emissions from 2006 levels as follows; 20% by 2020, and 60% to 70% by 2050. Canada generates 2% of global CO2 emissions.





Blown In The Wind

A. Kempas, P.Eng.

INTRODUCTION

Imagine an endless supply of non-polluting, free energy. Who would not want it? On the surface, the air flowing around us seems to fulfill those requirements. For centuries humankind has made use of the wind, for travel and for mechanical power. I recall a family photograph, circa 1930, of a tripod-mounted generator charging wet cell radio batteries. During prolonged periods without wind, the radio, the only source of entertainment in those days, had to silently wait for the breeze to return.

In spite of the advantages wind power offers, it's not without critics and detractors, and often the critics bring legitimate arguments into the public domain.

WIND POWER AROUND THE WORLD

Whatever one thinks of wind power, it's undoubtedly a fast-growing industry. The World Wind Energy Association (WWEA)

reported growth rates, for installed capacity, of 25% in 2005 and 2006. Even so, only 1% of global electricity was supplied by wind energy at that time, so those growth rates were based on a very small base. The WWEA projects 160 GW installed by 2010. However, that refers to nameplate rating; actual production is normally much lower due to the inherently low capacity factor for wind power installations. Capacity factor is the ratio of actual production over the theoretical maximum production on an annual basis. For wind energy this is typically 35%. Nuclear plants typically have a 90% capacity factor, coal plants 70%, and oil plants 30%.

Manitoba's St. Léon wind farm produces 40% of its nameplate rating.

Germany is the world leader for installed capacity (2006) with 21,283 MW, followed by Spain, the United States, and India. Canada captured 10th place on the list with 1,670 installed MW.

WIND POWER IN MANITOBA

In Manitoba large wind power installations are privately funded in response to request for proposals (RFP) issued by Manitoba Hydro, who buys the energy from the successful developer. Presently Manitoba Hydro plans to expand its wind power portfolio by 300 MW. Manitoba wind farms must go through extensive reviews to ensure they meet environmental standards. Although wind farms are privately funded, publicly funded infrastructure is needed to connect wind farms to the electrical grid. In turn, wind developers make long-term contracts with individual landowners for use of their land for wind turbine sites and maintenance access roads, usually for a period of 25 years.

Manitoba has a well-publicized 99 MW wind farm installation near St. Léon, the first in the province. Sequoia Energy, owner of the St. Léon facility, has received licenses from Manitoba Conservation for three additional wind farm installations.

The proposed new facilities, near Miami, Killarney, and Dacotah, would add almost 300 MW of additional wind power. However, no developer will commence construction before Manitoba Hydro completes the RFP process and selects a developer from all the bids submitted. Hydro received proposals from 17 wind developers for 84 different projects, some as small as 25 MW, some for the full 300 MW.

While Manitoba relies on corporate developers for wind farm development, other jurisdictions have opted for mixed financing models. The state of Minnesota encourages smaller scale, community-based approaches to wind farm development. Approximately a third of Minnesota's 800 MW wind generation is owned by limited liability companies, schools, rural electric cooperatives, municipal utilities, tribal communities, and local investors. This approach maximizes local benefits by turning wind farm rent receivers into owners.

WIND POWER PROS AND CONS – A REVIEW

WIND GENERATION VARIABILITY

The most common drawback to wind power was enumerated in a report issued by Energy Probe, an Ontario-based environmental watchdog organization. The study looked at production data from three wind farm sites in Ontario. Reduced to its simplest form, wind has an infuriating tendency to blow when electrical demand is lowest (at night time), and rest when demand is highest (during the rush hour), a tendency well known to mariners for centuries. The tendency for wind power to be out of sync with demand is a problem for utilities, who like "dispatchable" power sources, ones that can be ramped up and down in response to demand. This can make wind energy difficult to integrate with other energy generating sources since there's no effective way to store wind-generated electricity during off hours. One way to mitigate variability is to have

geographically dispersed wind farms to smooth the flow.

WIND POWER'S IMPACT ON HUMANS AND THE ENVIRONMENT

Wind farm turbines generate excessive noise: The American Wind Energy Association claims that the sound of wind turbines, at distances of 750 to 1000 feet, generates as much sound as a refrigerator, around 45 decibels. Turbines reportedly produce a light swooshing sound. Good site design is probably the best way to avoid noise complaints by placing turbines well away from human habitation, where possible. In many cases, wind turbine noise is often masked by the sound of the wind itself.

Early wind turbine designs used steel lattice towers that did generate more noise. Modern wind towers are vertical tubes and inherently quieter. Most wind turbines are also "wind facing" so the blades don't rotate through the tower's wind shadow, a design good for both noise reduction and efficiency. Coupled with more aerodynamic nacelle and blade designs and good siting practice, noise complaints should be rare.

Infrasound is low frequency ground transmission noise source. Some

researchers claimed wind turbine generated infrasound could be detected 10 km from the source. While this was true, Keele University (Staffordshire) scientists pointed out this could only be done with very sensitive measuring equipment, and that humans couldn't detect it, and no effect on human health was expected. In any event, there are other natural sources of infrasound at those frequencies.

Blade Flickers will affect neighbors: When rotating, turbine blades block sunlight and could create a flickering effect on nearby residents. The flicker zone can be well defined during the design phase and should be eliminated through proper turbine siting. Even if blade flicker occurs, its duration will be short. The closer a wind farm is to the equator, the lesser the problem, because the sun is too high to cast long shadows.

Wind turbine accidents can kill and injure people: In the early days of wind power, blade throws did occur, but modern designs have virtually eliminated the problem. A common wind turbine setback distance from public land is blade length plus 10 meters, so if a blade does detach, it's unlikely to fall where it could cause damage. Turbine accidents are so rare that many wind farms are built close to densely populated areas, so if accidents occurred



they would be widely publicized. The main threats to human safety occur during construction and maintenance, when falls and entanglement in rotating equipment are possible.

Wind farms are dangerous to wildlife: Conservationists worry that birds and bats can fly into wind turbines and be killed or injured. Researchers have concluded that, in the broad picture, wind turbines are an insignificant source of bird kills. For every wind turbine bird death, 10,000 bird kills are attributable to human activity; i.e. buildings, house cats, power lines, etc.

In the United States a few locations experienced higher bat and bird kills, most of which were attributable to local conditions. In one case, a high population of small mammals around a wind farm led to higher raptor kills because small mammals are a food source for raptors. In most cases, pre-development wildlife surveys could have prevented the problems. Such surveys are now common for new developments.

Wind Farms are Visual Pollution: Most wind farm issues are a combination of subjective and objective factors. Visual pollution is a purely subjective evaluation. U.S. Senator Ted Kennedy, normally a supporter of wind energy, objected to an off shore wind farm near Cape Cod, presumably because he owned property there. In the U.S. and other highly populated urban and suburban areas, visual pollution appears to be a major objection, and wind farms are often considered to be industrialization of the countryside. In more rural areas, where farmers struggle to survive, a wind turbine and the associated revenue are a welcome sight.

THE MANITOBA ADVANTAGE

The starting point for successful wind power generation is to have plenty of the raw product – moving air. To use an

overworked expression, Manitoba has a “world class” wind resource, among the best on the continent. It’s probably because our very flat, ancient lakebed topography presents little resistance to air movement. To make a good thing better, often the winds are cold, making them denser and more energetic. Sometimes it’s too much of a good thing – wind turbines in Manitoba need cold weather packages with heaters and special lubricants to operate year round. Instead of generating electricity, a 100 MW wind farm can actually draw 3 MW of grid power to stay operational during very cold weather. During the intensely cold and windy weather in January, 2008, the St. Léon facility shut down for a short time because of turbine over-speed conditions.

Manitoba’s major electrical production is from water power, which happens to be a good match for wind generation. Hydroelectric production can be ramped up and down quickly, and can compensate for the times wind generation is low.

Rural Manitoba is receptive to wind developments, but obtaining community buy-in is critical. St. Léon appears to be an example of successful community relations. Most of southern Manitoba is agricultural

land where farmers are always looking for extra sources of income. Over a 25-year time span, landowners can receive \$10 million in direct revenue, plus an opportunity for construction and maintenance jobs. Unlike highly populated suburban areas with high scenic content,

southern Manitoba residents are more likely to welcome wind farm developments. Resistance did occur in response to the proposed Dacotah wind farm development, but even their proponents outnumbered opponents 2 to 1.

Wind power is compatible with agriculture in another way. Even though the land

area for a wind farm project is substantial, the amount of land actually lost to wind turbines is small. In the St. Léon project, each turbine and access road represented one acre of assessed land. With 63 turbines and one substation in 50,560 acres of project land, the wind farm took less than two per cent of the land area. Cows can graze and tractors can roll right next to wind turbines.

CONCLUSION

No new technology is immediately accepted by everyone, and wind energy is no different. Public debate and input is always desirable and will lead to even better developments, and this appears to be working in Manitoba. The potential for wind power is immense, and the coming decades will be an exciting time, because we will find out if we’re on a high speed highway or just a side road. ■



This charcoal drawing was found in the archives of the APEGM office. Since then, it has been framed using a special process to preserve its authenticity and protect it from natural deterioration.

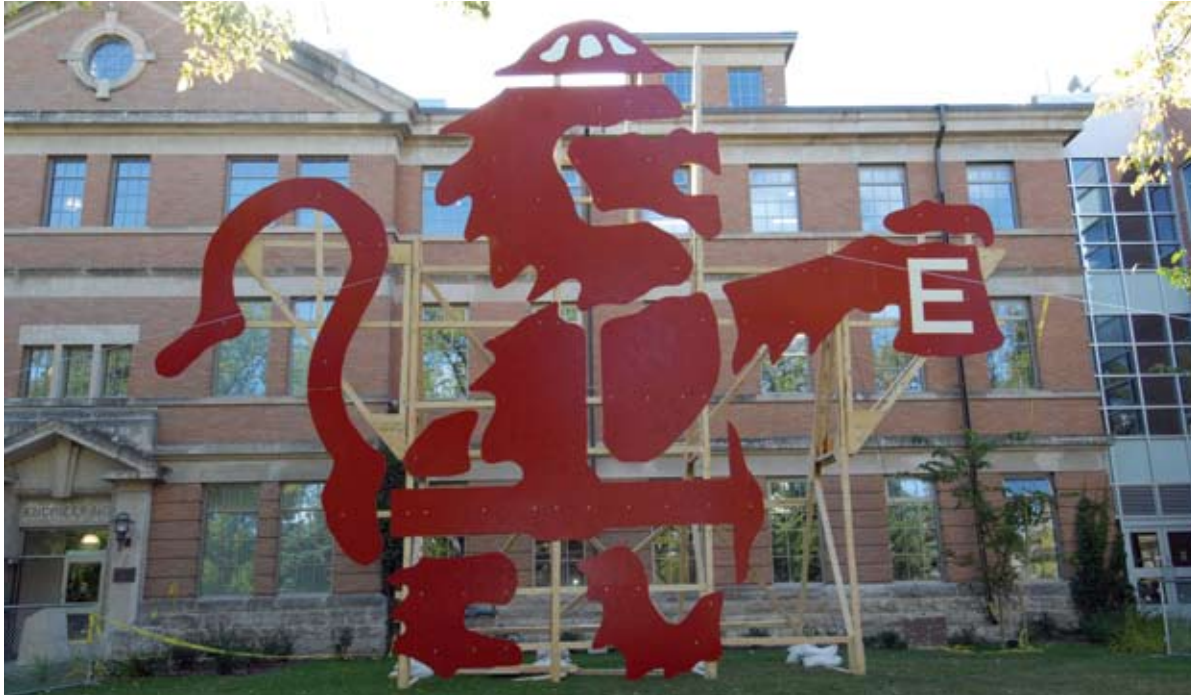
Do you recognize this man?

Submit your guess for the name of the artist and the subject of the portrait, and be entered to win an APEGM prize pack valued at over \$100.

Submissions can be sent to commfeedback@apegm.mb.ca. Please use subject: Mystery Man.

ATTENTION ALL UNIVERSITY OF MANTIOBA GRADUATES!

The Faculty of Engineering has just celebrated 100 years of Engineering Excellence, and work is underway to produce a Centennial Book. We are putting out a call for stories and photos that could be included in this history: pranks, band antics, reflections of your Dean, etc. Please get involved in this once in a century opportunity to be a part of our history!



Submit all stories and photos to:
Amber Anderson
Skrabek
External
Communications
Coordinator
Office of the Dean
Faculty of
Engineering
University of
Manitoba
204-474-9034
amber_skrabek@umanitoba.ca



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you want to see in the world.

Mahatma Gandhi

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NOTICE UNDER THE ENGINEERING AND GEOSCIENTIFIC PROFESSIONS ACT AND THE ASSOCIATION'S DISCIPLINE BY-LAW

THIS IS NOTICE that on November 29, 2007 a conviction was registered against a member of the Association on a charge of unskilled practice of professional engineering and a charge of professional misconduct.

First Charge Unskilled Practice – The penalty for this charge is that the member has been:

1. issued a written reprimand for this contravention;
2. required to repay the client the fees that were charged for the pre-purchase inspection and subsequent report, within 30 days of the date upon which a copy of the resolution was served upon his counsel;
3. required to submit proof of the aforesaid payment to APEGM within 15 days of the payment being made; and

The conviction is based upon the member having prepared and issued a report that failed to adequately describe the structure, and contained erroneous comments regarding the mechanical and electrical systems, thereby failing to regard the well being of his client as paramount in his professional engineering work. In so doing, he contravened Canons 2 and 3.1 of the Code of Ethics for the Practice of Professional Engineering and Professional Geoscience.

Second Charge Professional Misconduct – The penalty for this charge is that the member has been:

1. issued a written reprimand for this contravention;
2. required to pay to the Association the out-of-pocket costs incurred in connection with the investigation of his conduct, and of the prosecution of three complaints in the amount of \$21,000.00, plus GST;
3. required to pay the costs within 30 days of the date upon which a copy of the resolution and order is served upon his counsel;
4. required to pass the Professional Practice Examination by December 1, 2008; and

The conviction is based upon the member failing to respond to the Investigation Committee requests within 10 working days; failing to provide any evidence or documents to explain the concerns about his practice raised by the investigation; having been notified by the APEGM by registered letter and by process server of the investigations into concerns surrounding services he had provided to two clients; and also the member failing to provide four of ten items he undertook to provide to the Investigation Committee, the undertaking having been made during a meeting with the Investigation Committee.

Each of the charges included the penalty:

1. if he failed to comply with the above noted requirements, subjected to suspension from the practice of professional engineering and the requirement to return his Certificate of Registration, Certificate of Authorization and the associated seals to the APEGM office upon request, until the requirements have been satisfied.

This Notice is provided in accordance with the provisions of Section 50 of The Engineering and Geoscientific Professions Act and Section 15.6.6 of the By-Laws of the Association of Professional Engineers and Geoscientists of the Province of Manitoba.

*Grant Koropatnick, P.Eng.
Executive Director & Registrar*

Question:

According to the World Bank and Macquarie Research, how much is estimated to be spent on infrastructure worldwide in the next 12 months?*



- | | | |
|------------------|-------------------|--------------------|
| a. US\$8 Billion | b. US\$80 Billion | c. US\$800 Billion |
|------------------|-------------------|--------------------|

The world is evolving, is your investment solution?

Global spending on infrastructure is projected to skyrocket as population and economic growth around the world requires the creation of new infrastructure. At the same time, existing infrastructure assets are ageing and need to be modernized. Globally, infrastructure investments are projected to total US\$30-35 Trillion between now and 2030.**

For ideas on how to profit from investing in this sector, please call or email for an information package.

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For more information contact:

Karen Kochan
(204) 949-8999
1-800-506-0005

E-mail: Karen.Kochan@NBPCD.com
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ANSWER: C

Source: * World Bank and Macquarie Research

** Foresight Trends and Drivers in Intelligent Infrastructure Systems

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SPRING IRON RING CEREMONY

Wednesday,
March 19, 2008
8:00 p.m.

Multi-Purpose Room,
Second Floor of the
UMSU Centre,
University of Manitoba
Fort Garry Campus

PAY YOUR DUES!

DUES HAVE BEEN MAILED TO ALL MEMBERS AND MITs. IF YOU HAVE NOT RECEIVED YOURS, PLEASE CONTACT THE APEGM OFFICE AS SOON AS POSSIBLE.

FINAL PAYMENT DATE - MARCH 31, 2008

ALL MEMBERS OR MITs WHOSE DUES PAYMENTS ARRIVE IN THE APEGM OFFICE AFTER MARCH 31, 2008 WILL BE DE-REGISTERED OR REMOVED FROM MIT ENROLMENT. APPLICATIONS FOR REINSTATEMENT MAY BE MADE IN ACCORDANCE WITH SECTION 24(2) OF THE ENGINEERING AND GEOSCIENTIFIC PROFESSIONS ACT.

2008 Student Networking Dinner

H. Buhler, EIT

“It’s a great time to be an Engineer and Geoscientist” was the theme that echoed throughout the evening. From Dean Ruth’s proclamation that Canadian Engineers are the strongest engineers in the world through to the event sponsor, Vale Inco Limited’s assertion that now is the time for the Engineers and Geoscientists, it was very apparent that students are no longer desperate and scrambling to get any available job.

The 2008 Networking Dinner was full of confident students with numerous job opportunities to choose from and industry professionals looking for people willing to work. One speaker reminisced back to the 1980 recession, when engineers could be found as cab drivers and dish washers, to demonstrate the significant changes that have occurred in the industry over the last 30 years.

Dean Ruth commented in his opening remarks that for previous engineering job fairs, event organizers had to scrounge up companies to send representatives. This year the organizers were turning companies away in droves. Some companies even rented additional rooms in order to conduct interviews during the job fair.

Despite the abundance of job opportunities, students and professionals alike flocked to the Networking Dinner in an attempt to better their networking skills.

Mary-Ann Mihychuk, P.Geo., a zealous promoter of HudBay Minerals Inc., was the guest speaker for the night. Mary-Ann currently works as the Director for Corporate Relations for HudBay Minerals Inc. She is a nationally

recognized speaker on the topic of mineral exploration and regulatory reform.

Mary-Ann has a unique take on networking, as a Professional Geoscientist and politician, she is intimately aware of the challenges of efficient networking. Mary-Ann encouraged the group to get involved in politics; there are never enough logical thinkers in politics and at the very least, it is a method of gaining better public speaking and networking skills.

To improve networking skills, 208 professionals and students took part in the networking version of Speed Dating. At the sound of the clanging bowls, all the students in the room would stand up, move to a new table, and speak to a new professional. The goal of the exercise was to get as much information and hopefully, a business card in the two minutes allotted. After two minutes, the bowls would sound and there was a mad rush of students trying to get at the few highly desired professionals. Speed Dating was certainly an innovative and entertaining method of meeting numerous people in a very short period of time.

Many thanks are extended to the APEGM Public Awareness Committee and the indispensable efforts of Angela Moore of the APEGM office for taking the time to coordinate and plan the event. Thanks are also in order to the University of Manitoba Engineering Society and Geology Club and Brandon University for assisting with planning and communicating information on the event to students. ■

Thank you to all our Sponsors who made the event a success!

EVENT SPONSORS

Association of Professional Engineers and Geoscientists of the Province of Manitoba

University of Manitoba Engineering Society

University of Manitoba Geology Club

Vale Inco Limited - Event Benefactor

Inland Aggregates - Wine Sponsor

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Stantec Consulting Ltd.

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Earth Tech Canada Inc.

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The Brown Sheet

3D Imaging and its Applications for Surgery

Smartpark Interactive Breakfast Series:

Dr. Mark Torchia's presentation entitled 'Simulation in Healthcare: It's all a fake' will explore applications of 3D imaging and simulation that are currently under development at the Health Sciences Centre in partnership with a number of private Canadian companies and the technological hurdles they face.

Dr. Jason Morrison's presentation entitled 'Digital Bones for Digital Surgery: Testing ideas without patients' will explore the construction of a digital bone library, the current availability of data, the purpose and gains in compiling such a library and the barriers we face in doing it.

For further information, please contact Lindsey Wiebe at 480-1434.

Date: March 19, 2008

Time: 8:00 a.m.

Cost: Free

Location: Smartpark, 135 Innovation Drive, Lobby Boardroom, Winnipeg, MB

Cultural Diversity in the Workplace

Manitoba is seven years into an aggressive immigration strategy to dramatically increase the number of immigrants to this province, and to further the Province's economic agenda by attracting skilled workers and immigrant professionals.

There is a good fit between this immigration strategy and the need for engineering professionals in Manitoba industry. Engineering employers across the private and public sectors consistently report difficulties in recruiting and retaining engineers.

When internationally-educated engineers join the Canadian labour force in an engineering capacity, differences in cultural understandings and cultural expectations can lead to workplace misunderstandings, conflict, and may negatively impact the newcomer's career development.

This presentation will include an overview of culture as a concept, an overview of three prevalent cultural parameters that guide our perceptions and behaviours, how these parameters become apparent in an engineering workplace, and ideas for managing the differences.

Presented by Marcia Friesen, P.Eng., Director of the Internationally-Educated Engineers Qualification Program (IEEQ) at the University of Manitoba.

Date: April 9, 2008

Time: 7:00 a.m. - 8:30 a.m.

Cost:

- \$15.00 Pre-registration
- \$20.00 Walk-ups
- \$10.00 Student Members

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

Registration Deadline: Friday, April 4, 2008

APEGM Women's Action Committee The Application of Engineering Principles to Financial Planning

Pat Karras Spangelo, P.Eng., Certified Financial Planner, will be discussing her background as a Professional Engineer in the Water Resources field and its similarity to the work she does now. She will present the foundation of a sound financial plan, including the financial implications of becoming ill or disabled, dying too soon, and living to enjoy a long retirement.

Please contact Angela Moore at 478-3727 for more information and registration. Pre-registration deadline: Monday, April 7, 2008.

Date: April 10, 2008

Time: 7:00 p.m. - 9:30 p.m.

Cost:

- \$10.00 Pre-registration
- \$15.00 Walk-ups
- \$5.00 Student Members

Location: Canad Inn Fort Garry, 1824 Pembina Hwy, Winnipeg, MB

□ Technical Communication Skills for Technical People

This special education stream of the conference “Technical Communication: The Bridge Over Muddy Waters” promotes the use of basic technical communication skills by technical people who write, but who may not identify themselves as technical communicators.

The education stream features keynote addresses by Dr. Saul Carliner and Dr. Aftab Mufti, and eight modules taught by Red River College instructors including:

- Recent research in information and document design
- Smart - and good looking too!
- Not just a slide show
- Getting bridges to talk
- Just plain English

For more information about the modules and how to register, please visit <http://stcmanitoba.org/conference/node/18>.

Date: April 14 - 15, 2008

Time: 9:00 a.m. - 5:00 p.m.

Cost:

\$275.00 Registration
before March 28, 2008

\$350.00 Late Registration
after March 28, 2008

Location: Red River
College, Princess Street
Campus, 160 Princess St.,
Winnipeg, MB

□ Call For Submissions - CDEN-08

The fifth Canadian Design Engineering Network (CDEN) International Design Engineering Conference will encourage a vigorous discussion on the teaching and practice of design engineering to cross the innovation gap - the gap between research and the design and creation of products, processes, and procedures that help the people of Canada and the world.

Submissions can include, but are not limited to:

- The philosophy of design;
- Tools and techniques for effective and successful design;
- Methods and tools for designing to meet needs;
- Methods for and research into the assessment of design;
- Teaching and promoting design;
- Humanitarian design;
- Design successes and failures;
- Tear-downs of designs and design-processes;
- The infrastructure required for design;
- Lessons and methods used in non-engineering design fields;
- Design for commercialization

The goal of the conference is to explore design practice and teaching that leads to better lives for Canadians. For more information and guidelines, contact Dr. Peter Gregson, Department of Electrical and Computer Engineering, Dalhousie University at peter.gregson@dal.ca.

Date: July 27 - 29, 2008

Submission Deadline:
May 30, 2008

Location: Halifax, NS

Contact Information:

Dr. Peter Gregson
CDEN-08 Conference
Chair
Department of Electrical
and Computer
Engineering
Faculty of Engineering
Dalhousie University
1360 Barrington, St.
Halifax, Nova Scotia
B3J 1Z1

□ Making Links Engineering Classic (MLEC) Golf Tournament

The MLEC will provide attendees with an enjoyable golf outing and an opportunity to network with fellow professionals, while supporting the Faculty of Engineering at the University of Manitoba.

The first 220 registered golfers with accompanying payment will play. Entries and payments are to be submitted to the APEGM office by 4:30 p.m. Friday, May 16, 2008.

Contact Angela Moore at 478-3727 for more information and registration.

Date: June 12, 2008

Time: Tee off at 12:00 p.m.

Cost:

\$195.00 Individual
\$750.00 Team of 4

Location: The Links at
Quarry Oaks, Steinbach, MB

New Members Registered November 2007, December 2007 & January 2008

R.Y. Adedapo	R.J. Dickey	D.E. Henry	E.A. Lezen	K.A. Philip	R.J. Thiessen (AB)
R. Agustin (AB)	S.G. Digel (AB)	M.M. Hoque	F. Li (AB)	X. Qu	J.T. Thompson (BC)
E. Au	T.P. Ellwood (QC)	R.G. Horton (ON)	S. MacConnell (ON)	A.D. Rajapakse	K.M. Thompson (AB)
S.Y.I. Awad	D.C. Felix (AB)	A.R. Hunt (ON)	J.A. Manness	O.A. Ramirez-Iraheta	E. Tremblay (QC)
B.T. Bangert	A.J. Fraser	H.H.H. Ibrahim (BC)	K.S. Mazur	C.V.A. Ramsay	K.L. Tsang (ON)
J.T. Bishara (ON)	C.M. Friesen	D.J. Jackson	J.W. McFarlane	C.G. Rees (AB)	B.C. Tully
J.M.J. Blais	A.C. Froese	B.E. Johnson	P.G. Miller (KS)	J.D. Regehr	B.W. Weger
R.K. Booth	A.L. Fulop (ON)	C.W.K. Jones (ON)	J.D. Mitchell	D.J. Reinbold (AB)	R.D. Wizbicki
C.N. Bradford (AB)	B.D. Gerbrandt (AB)	A.G. Kadoch (QC)	T.T. Mitousis	D.W. Renner (AB)	W. Xiao (BC)
J.E. Burtney (SK)	C.M. Giesbrecht	H. Kazemi-Arbat (ON)	R.D. Morphy	J.C. Sarmiento (AB)	S. Zamani Zavieh (ON)
P.D. Chicatun (BC)	S.L. Goff	D.R. Ketcheson (ON)	D.D.S. Muthumuni	G.E. Savage (AB)	H.M. Zhang
V.F. Corbett (SK)	E.B. Guentsch (AB)	G.M. King	V.F. Nedd	J.D. Shabaga	L. Zhu
P.D. Delver (BC)	D.D. Haake (KS)	J.B. Kirby (QC)	J.P.Z. Nedohin-Macek	C. Shafai	
C.B. Denault (QC)	M.N.N. Habok	J.C.J. Lambert	D.M. Ohta	E.A. Sheridan (ON)	
A.M. Desjardins (QC)	J.S. Hamilton (AB)	M.B. Laylabadi (BC)	E.F. Packulak	A.S. Soimu (ON)	
C.A. Devine	J.P. Hayes	M.P. LeBlanc (ON)	N.A. Penner	R.J. Steinburg	

Licenses Enrolled November 2007, December 2007 & January 2008

P.D. Galloway (WA) N.D.W. Stark (WA) S.L. Wolsfeld (MN)

Members-In-Training Enrolled November 2007, December 2007 & January 2008

B.F. Abou	H.T. Freihammer	D.I.S. Hisanaga	G.S. L'Heureux	A.F. Sajous (BC)	J.L. Sylvestre
H.Y. Chen	S. Ghelichkhani	P. Jin	J. Lim	R.M. Salunga	J.M. Todd
I. Coulibaly	S. Goyal	B.D. King	M.R. Manness	M. Samiee	M. Tomov
E.S. Couture	M.W.R. Halliday	K.L. Kirk (ON)	M.L. McMillan	I.S. Sethi	J.K. Topangu
C.D. Dare	C.W. Harms	K.E.V. Kuby	A.E. Oliver	J.D. Sorenson	J.T. Turchyn
I. de Luna Ayala	T.M. Hengen	D. Landa	S.D. Philopulos (SK)	R.P. Spewak	S.R. Whaley
J.D. Ellis					

Reinstatements November 2007, December 2007 & January 2008

T.D. Harle (SK) M.D. Rusk J. VanEe (AB)

Member and Member-in-Training Resignations as of December 31, 2007

J. Addison	A.B. Duplessis	G.A.M. Horeczy	W.M. Maudsley	M.M. Rahman	B. Wagner
R.P. Aiello	M.J. Ferguson	E.J. Ikonen	M.J.C. McDermaid	P. Raymond	S.J. Walczak
M. Ashraf	R.R. Fielding	S.M. Jurkowski	H.G.R. McKay	P. Sandland	H. Wang
R.R.J. Berard	K.P. Fitzpatrick	T.A. Keith	Q. Meng	G.C. Simpson	A. Wasnea
B. Berestiansky	T.P. Fraser	G.D. Kell	D.A. Menzies	D.Y. Solomon	D. Webster
W.D. Burbank	M.P. Gerrard	G.B. Kennedy	B.D. Mistry	N. Soonawala	W.R. Whitehead
G.G. Burkitt	T. Giesbrecht	W.H. Korol	M.J. Mitchell	J.A. Spencer	S. Wong
R.A. Campbell	R.J. Gladding	P. Lapalme	M. Neumann	C. Steele	J.I. Wong
W.J. Carson	T.W. Goettel	S. Larosa	K. Nguyen	N.Y. Suen	T.H. Woolhouse
R.A. Cook	H.T. Goldie	S. Lee	B.D. Nielsen	A.J. Sweldo	S. Wu
R.J. Cymbalisty	J.W. Grant	N.L. Leipziger	J.A. Patra	R.C. Thingstad	R.G. Zebinski
V.W. Dattani	B.B.J. Han	C. MacFarlane	J. Peterson	P. Toniotti	B. Zoski
M. Desilets	D. Harfield	R.B. Marks	J. Pomerleau	K. Van Dekerkhove	
N. Dirk	J.D. Heidrick	L.J. Marr	A.C. Pradhan	T.D. Vasssos	
K.J. Dunsmore	R.V. Hendryanto	W.T. Matthews	F.C. Racicot	J.H. Vidal	

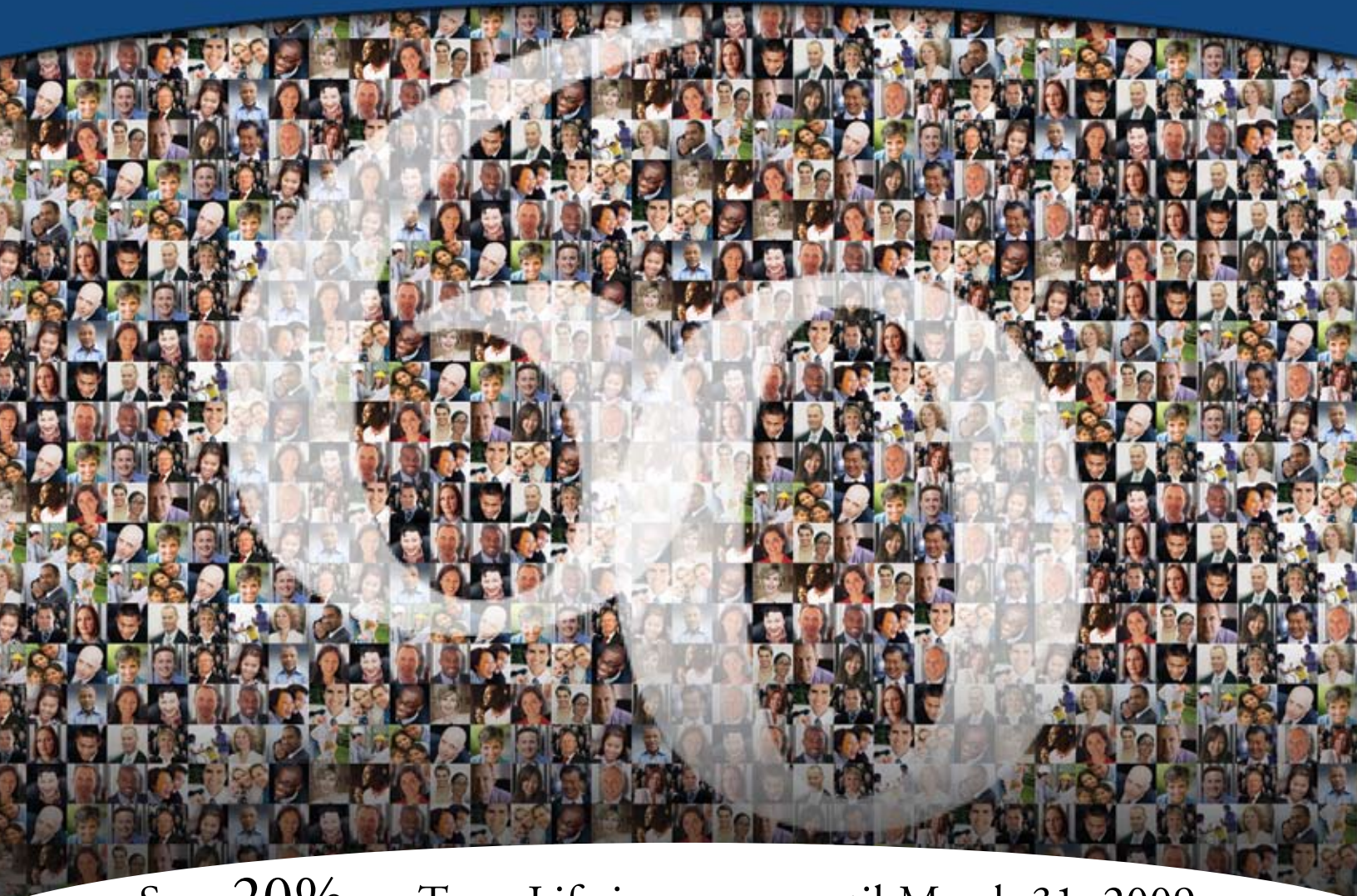
Certificates of Authorization November 2007, December 2007 & January 2008

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Jacobs Canada Inc.
Kova Engineering (Saskatchewan) Ltd.
Matrix Biomedical Inc.
Mirkwood Engineering

Procrane Engineering - Div. of Procrane Inc.
Rangeland Engineering Ltd.
SNC - Lavalin Inc. (AB)
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