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THE KEYSTONE PROFESSIONAL

In This Issue:

APEGM The Association of Professional Engineers and Geoscientists of the Province of Manitoba

SEPTEMBER 2005
www.apegm.mb.ca

Executive Director's Message "Parting Shots"

D.A. Ennis, P.Eng.

There are reports on the operations of the Association and the Council in the Annual Report which, this year, is a separate publication. It will be available on the website and at the Annual General Meeting. I encourage you to take a look.

As I am retiring at the end of 2005 this will be my final Executive Director's message. It has been both a privilege and personally rewarding to have been so closely involved with the professions both provincially, and nationally. The more lasting of the personal rewards has been the opportunity to work with many capable and dedicated people. With a rural background I have long been aware of the maxim "the cream rises to the top." In my opinion, it applies to the governance of the professions and operation of the Associations.

There have been a number of advancements in the professions and their governance during the years I have been involved. However, there is still much to do, and I would be remiss in my duties if I didn't use this opportunity to make a few observations.

Professional Development

The President has addressed this issue in his message and has captured the consensus within the professional associations across the country. My observations with regard to moving forward on this issue are; be careful not to confuse activity with accomplishment, and be cognizant that seat time in a learning setting does not necessarily translate into to competence or effectiveness.

Code of Ethics

I have observed before that all too often members only refer to the Code of Ethics when they are upset with another member and are looking for a means of retribution by filing a complaint. To head off such actions I suggest that the Code of Ethics become less idealistic and more in line with its stated purpose in the Act, "standards of conduct pertaining to the practice of professional engineering and of professional geoscience designed for the protection of the public." I am not persuaded that the APEGM Code is confined to that purpose.

Electronic Signature/Seal

There is an ever increasing need for our professions to adopt a functional and secure system for the authentication and non-repudiation of electronic files that are essential to carrying out the practice of the professions. The conventional seal still has its place, but the public interest requires that we get with the times. It will cost, but will offer advantages well beyond "stamping". Recent developments at the Ordre des ingénieurs du Québec are encouraging. There is an opportunity to adopt a Pan-Canadian system, and it would be regrettable if the professionals who work in many Provinces are burdened with 10 or 12 different systems.

Retiring Executive Director Dave Ennis

Compliance and Act Enforcement

The issue of enforcing the provisions of *The Engineering and Geoscientific Professions Act* is more complex, not to mention costly, than the typical member assumes. Persuasion is more economical than prosecution, and both have their place. However, APEGM, and APEGM members in particular, need to come to a consensus on the proportion of the Association's resources that are to be expended in this area, and on the criteria that will trigger prosecution. Those criteria should be based solely on the risk and the responsibility to safeguard the public interest, and not on actions that may offend the sensitivities of individual members. Once that is done members need to ask themselves whether they are willing to spend another $30 dollars per year on their annual dues for such an initiative.

Engineering Principles

In the context of Act enforcement actions there is a need for the engineering profession to come to a common understanding of where the practice of professional engineering begins and ends. The definition of the practice of professional engineering in Manitoba, which is based on the Canadian Council of Professional Engineers (CCPE) definition, turns on the words "requires the application of engineering principles". To my knowledge, we lack consensus as to when the following of a process, leads to a decision that is to be implemented, constitutes an unacceptable risk to the public interest if that process is not carried out by a professional engineer. When that is done you can start on "requires the application of the principles of geology, geophysics or geochemistry".

The Professions in 2020?

Manitoba and Canada are relatively small citizens of the global village. 2006 would not be too soon for the professions to start thinking about

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Notice

Reports on the operations of APEGM, including year-end committee reports, will be published in an Annual Report which will be issued following the meeting of the Council on September 22, 2005. The report will be available on the APEGM website, at the AGM on October 22, 2005, or by contacting the Association office at apegm@apegm.mb.ca, or telephoning (204) 478-3726.

David A. Ennis, P. Eng., Executive Director & Registrar

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SEPTEMBER 2005

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The Communications Committee would like to hear from you. Comments on your newsletter can be forwarded to us through the Association office. Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.

Publications Mail Agreement Number 40062980

New Members Registered May, June & July 2005

R. Akkerman	S.H. Griffin	J.P. Nowak
D.R. Alberti (AB)	J.M.A. Gustafson (SK)	J.R. O'Sullivan (NS)
R.B. Amero (AB)	K.S. Hartikainen	K.V. Pardoski (SK)
T. Aziz	R.V. Hendryanto (AB)	M.A. Patterson
S.D. Ball (ON)	D.E. Hockley (BC)	R.D. Pharmer (ID)
S.L. Bart (AB)	S.W. Honeycutt (TN)	J.O. Pillipow
D.E. Becker	P.T.N. Hum (AB)	D.M. Priscu
W.L. Binger (ON)	S. Jankovic (AB)	K.D. Radtke
R. Bojovic (AB)	M.J. Keerak (AB)	N. Rattanawangcharoen
E.V. Boulanger	S.M. Kelada (AB)	C.J. Reed (BC)
G.E. Brunt (AB)	C.G.G. Lee (AB)	S.R. Reichle (ON)
C.L. Campbell	R.A. LeGall	R.G. Reimer (AB)
S.D. Chapman	K.W.G. Lenton	J.S. Robinson
P.G. Cody (ON)	J.J. Levers	P.B. Schoemperlen
D.M. Collins (AB)	T.L. Liske	P.L. Senez (BC)
R.D. Coulter	H. Liu (ON)	S. Soscia (ON)
D.K. Cuddington (AB)	J.D. Lyzun (BC)	F.T.C. Tang (AB)
R. Cyr (QC)	T.J. Manuel (AB)	J.G. Teetaert
M.D. Ducharme	M.E. McCartney	R.W. Tiller (NF)
H.L. Fisher	S.C.E. McClellan	A.E.H. Uderstadt (ON)
B. Flisak	K.M. Miedzyblocki	R.K. Wallster (SK)
A.K. Garg	M.J. Monka (BC)	J.Y.W. Wong Li
N. Gautam	M.A. Narsing (AB)	J. Yablonski
	D.J. Nedohin-Macek	

Members-In-Training Enrolled May, June & July 2005

W. J. de Bakker	G.A.F. Fuga	H.S. Leung	J.M. Plohman
A.P. Baquiran	R.T. Garvey	Y. Loevsky	N.C. Privat
S.M. Bishoff	N.Y. Girgis	B.L. Muio	R.N. Radons
Z. Bodiroga	P.J. Gould	J.C. Nadeau	D.F.C. Riddoch
H.A. Buhler	M.L. Hawker	B. Nesbit	M.J. Robb
L.J. Chaput	J.T.R. Horrocks	E.O.B. Ogedengbe	T.M. Ross
A.L. Dlot	B. Huang	R.C. O'Keefe	D.S. Sidhu
J.S. Dohie	E.D.R. Jones	G.S. Page	Z. Song
Y. Doustshenas	H.J. Jonker	Y.P. Pathak	K.D. Sproll
D.C. Dyck	N.M. Kesler	V.S. Pathirana	D.J. Tarkyth
B.J.N. Fast	M.W. Kumthekar	N. Patil	J.S. Thurston
J.K. Fast	K.A. Koenig	M.G. Penner	J.T. Wedge
T.M. Frovich McGee	D.M.F. Kotelko	J.M. Pilipowicz	H. Yang

Licenses Issued May, June & July 2005

D.J. Edgerton (MN)	L.A. Robbins (FL)	J.W. Sneed (NE)

Reinstatements May, June, & July 2005

K.L.H. Mills	K.J. Van Dekerkhove

Certificates of Authorization

Acumen Engineering Ltd.	R.J. England Consulting Professional Engineer Ltd.
Bonestroo, Rosene, Anderlik & Associates	Saskatchewan Wheat Pool
Concise Design	Senez Reed Calder Fire Engineering Inc.
DST Consulting Engineering Inc.	Senez Reed Calder Forensic Engineering Ltd.
Elecsys Solutions Inc.	Spectrum Engineering Inc.
Electranix Corporation	SRK Consulting (Canada) Inc.
Fenmark Services Ltd.	Superior Truss
Friesen Drillers Limited	Tuxtla Gas Engineering Ltd.
G.T. Henderson Engineering Inc.	Uderstadt Associates Inc.
LaSalle Consulting Group Inc.	Upside Engineering Ltd.
Magna Electric Corporation	Westeel Division of Vicwest Operating Limited Partnership
Patrick & Henderson, Inc.	
Pharmer Engineering L.L.C.	
Regina Mechanical Design Group	
Robertson Building Systems	

President's Message

A.D. Silk, P.Eng.

One of the most pleasant comments that I received over the past year was from a former Past President who thanked me for reinstating the Presidents Message in the Keystone. I must admit that it has been a challenge meeting the deadlines at times, but I have found it very rewarding. I have received a lot a feedback from my comments and that feedback was appreciated.

It is hard to believe that my time as President is about to end. I have enjoyed it immensely, although there have been many challenging days that I could have lived without. Unfortunately it is impossible to address all the challenges within one year and there are always lots of leftovers for the President Elect.

One challenge that I did not address at all this year was the reporting of Professional Development. There were a number of reasons for this but the main reason was that I did not personally feel that there was a reason to address this issue at this time. I can recall that famous AGM where the mandatory reporting of PD was introduced and the strong arguments from the members against implementing such a program. I also felt that the Declaration of Compliance which was introduced by Council last year, would be a sufficient compromise between the Association's need to insure its members were maintaining competence and the member's desire not to have mandatory reporting of Professional Development activities.

I still believe that the mandatory reporting of Professional Development is not the top priority for the Association. There are other challenges including the licensing of foreign trained professionals, the resolution of our jurisdictional issues with the MAA, and a seamless registration process for Manitoba geoscience graduates which should be at the top of the list. However, the reporting of Professional Development needs to be addressed as a long-term initiative.

When I say that I believe that we need to address the reporting of Professional Development, I am not stating that I have a concern with the level of competence with our members. I don't! I was very proud to find out that over 80% of all members in the practicing category have signed their Declaration of Compliance. I knew that our members would take this statement very seriously and not sign it unless they believed it to be true. At the same time I believe that most of the remaining members were likely protesting the need to sign this form instead of stating that there was a competency gap.

So why do we need to have a Professional Development reporting mechanism? Simply put, I believe that we need it to maintain the privileges that we enjoy today. We are an organization that is under attack from many sides. Our disagreements with the MAA stem from the fact that professional engineers have a scope of practice that falls within an area that the MAA believes to be their sole domain. During the last year the Canadian Council of Technicians and Technologists have stated that it is their goal to have a legislated scope of practice in all 13 jurisdictions within Canada within 10 years. The Federal Government is committed to making it easier for foreign-trained professionals to practice within Canada. Each one of these challenges, and there are many more, impacts either our scope of practice or our independence of self regulation. We have to be prepared for these challenges and the best way to meet these challenges is to have processes in place which meet or exceed the generally accepted practice. This is why APEGM has been at the forefront in tying to support initiatives for foreign trained professionals. We believe that if we are actively working with both the Provincial and Federal governments on these initiatives, we can have the necessary input to maintain or ability to decide who can and can't practice within Manitoba.

Just as working with the various levels of governments to integrate foreign-trained professionals is key to protecting our independence of self regulation, having a strong policy on Professional Development is a key element in protecting our scope of practice. The best defense against those who would limit or dilute our scope of practice is promoting an image of excellence. The best way, in my opinion, to promote this image of excellence is to have practitioners who are able and proud to be able to state that they are the best people to do the work prescribed by our scope of practice. A strong Professional Development policy one of the key elements that is required to promote excellence within the community.

I recognize that this is not an issue that can be resolved quickly and that we have time on our hands. There is no imminent danger if we ignore this issue for another year. However this is also an issue that we shouldn't be waiting to come to the forefront before developing a policy. I believe that the Association should be promoting discussions with its members to prepare for the day that we need to bring this to the forefront. ■

In Memoriam

The Association has received, with deep regret, notification of the death of the following member: Kedar Nath Tandon

Fire Dampers

G. Bolton, P.Eng. & R. Lavitt, P.Eng. – SMS Engineering Ltd.

In the field of building and construction services, one of the current topics of interest is how mechanical systems are applied to ensure the fire safety of a building. The primary mechanical system used is the fire damper, which until recently, has been often overlooked as an issue relating to design, installation, and ongoing maintenance.

Fire dampers are mechanical devices that are typically installed in ductwork where that ductwork passes through a fire separation, such as a fire-rated wall or floor assembly. Generally, fire dampers operate by reacting to high temperature caused by a fire, which triggers a mechanical or electrical device to close off the ductwork with a fire-rated blockage at the penetration in the rated assembly. There are also variations on fire dampers which control smoke and maintain fire ratings on suspended ceilings, which operate on similar principles. What is important is that fire dampers (and the variations) function to maintain the integrity of a fire-rated assembly, which in turn, protects life and property in the case of a fire, and assists safe exiting from a burning building.

Fire dampers have been in use in buildings for years, but it has become apparent to various designers, contractors, and Code authorities within Manitoba that the standard of design, application, installation, and maintenance of these devices is seriously lacking. As such, an ad-hoc committee of representatives from these same various sources has been assembled to review the issue and recommend solutions. This committee is at work to prepare a document that is intended as a reference piece that may be used by any tradesperson, sales representative, engineer, architect, or facility manager to understand how a fire damper works, where it should be used, how it should be installed, and what is required for maintenance. The intent is that distribution of this document through the design, construction, and owner/maintenance community will 'raise the bar' and address the present issues with these devices. A similar endeavour is underway to review and recommend a province wide approach to fire stopping.

The history of this issue is lengthy. In the early 1970s, our firm took an active role in communicating the issues to the design and construction community through dialogue and forums within the industry. Subsequently, standardized specifications and installation details were developed to ensure that installations were compliant to the certifying bodies (such as ULC), the local Authorities Having Jurisdiction, and the manufacturers' requirements. However, over 25 years later, it became apparent that the issues remained and that the required knowledge was not being distributed to the new players in the industry. A case in point was a project in Ontario where problems

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Professional Development

PD Presentation by N. Szoke, P.Eng.

Strategy to Control Combined Sewer Overflows

S.B. Williamson, P.Eng.

Approximately 100 people attended the APEGM professional development presentation on Combined Sewer Overflows (CSO's) on April 27, 2005. The presentation was given by The City of Winnipeg's Water and Waste Department senior engineer, Nicholas Szoke, P.Eng.

Mr. Szoke began the presentation by providing background information on CSO's in Winnipeg. Specifically, he noted that approximately 30% of Winnipeg has combined sewers and they are typically found in the older areas of the City. These areas have a sewer system that collects both surface runoff and sewage. During extreme wet weather events, the combined sewers that normally flow to the City's water pollution control centers overflow to the Red and Assiniboine Rivers, discharging raw sewage into the rivers. On average, these overflows occur 18 times per recreation season (May-September).

Why Control CSO's?

Combined sewer overflows result in an increase in microbiological organism levels, such as fecal coliforms, in the receiving streams. However, complete separation of the sewers would still not significantly reduce fecal coliform levels as agricultural runoff is also a major contributor. Mr. Szoke noted that the reasons to control CSO's were summarized by the CSO Advisory subcommittee. The sub-committee had concluded that CSO's should not be considered a significant public health issue and instead, CSO control is a public policy and regulatory compliance issue. Therefore, to address public concerns and to comply with the regulators (Manitoba Conservation), the City's long term goal is to reduce CSO's to less than 4 overflows per year. This in turn will reduce microbiological organisms from getting into the rivers from CSO's.

To accomplish this task, the City looked at several options, which included:

- Sewer separation
- End-of-pipe treatment via vortex solids separators (VSS) or retention treatment basins (RTB's)
- Off-line storage tanks
- Deep tunnels
- Latent storage, or
- Inline storage with inflatable dams

Complete separation, VSS, and RTB's were not found to be economically feasible and therefore were not recommended. Off-line storage and deep tunnels were considered as they are successfully being used in other large city's such as Toronto and Chicago. Latent storage and in-line storage were also considered as viable options. However, the cost of off-line storage and tunnels was found to be substantially higher than the in-line storage options, which produce similar benefits in the form of reduced microbiological organisms.

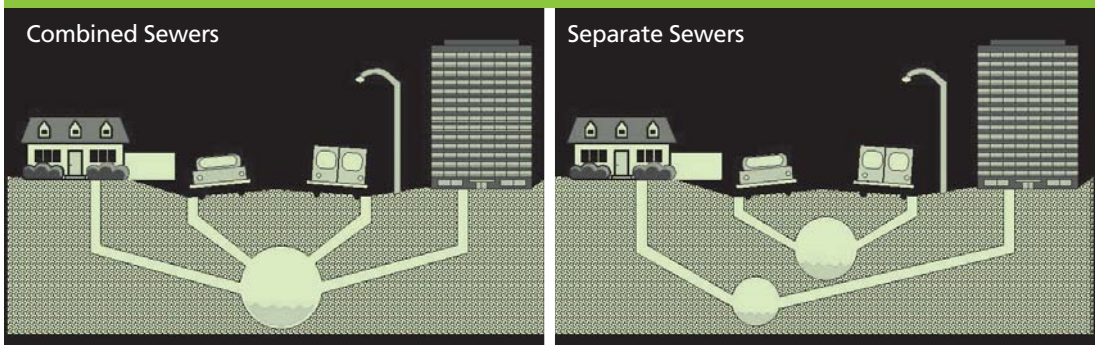
The Plan

As part of the City's goal to reduce CSO's, the Clean Environment Commission (CEC) held public hearings in 2003. These hearings resulted in recommendations to utilize and upgrade the existing sewers that would see the City complete its CSO plan by 2030. Based on the recommendations given by the CEC, the City plans to pursue in-line storage within the existing infrastructure. Integration with other programs including basement flood relief and combined sewer renewal would result in additional benefits such as: oversizing of relief pipes for additional storage; allowances for localized separation; and cleaning trunk sewers, again for additional storage.

Mr. Szoke summarized his presentation by highlighting the major components of the plan, the time frame to implement the work and the associated costs, which are estimated to be $400 million once the plan is completed.

Mr. Szoke's complete presentation may be found at ***www.apegm.mb.ca/pdnet/papers.html*** ■

Winnipeg's Wastewater Sewers



Attention Members-In-Training (MITS)

Thanks to all of you who have taken advantage of the Reinstatement of Credit website. For those of you who don't know what this is, this is a website which will allow MITs who've had experience, professional development or volunteer service credit denied under the 'old rules' of the Manual of Admissions to apply for reinstatement of that credit under the 'new rules'.

We've had about twenty applicants who have taken advantage of this, so we now know that this is a workable solution, and could also be a good method for obtaining feedback and information from the MIT community at large.

This website has been up since January 2005, and has run its course. We will be taking it down as of **October 31, 2005.**

Therefore, if you were enrolled in the Pre-Registration Program prior to January 1, 2005 and you have had experience credit denied due to one of the following: 'clock-stopped' rule, late reporting, or late enrolment (and you wish to request reinstatement of that credit) or if you've had volunteer service or professional development hours denied due to the 'old rules' – please feel free, prior to October 31, 2005, to go to: ***www.apegm.mb.ca/register/accred/05reinstmt.html***

For a summary of the rule changes which went into effect January 1, 2005, please go to: ***www.apegm.mb.ca/register/accred/eitdocs/prereg-changes.pdf***

If you have any questions, please contact ***ssankar@apegm.mb.ca*** and use the Subject header: Reinstatement of Credit.

Sharon Sankar, P.Eng.
Director of Admissions, APEGM ■

Executive Director's Message

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how the regulatory framework in Canada might function in the future, and how it will fit into the global context. Canada and the US are among the few nations that have a licensing system rather than a certification system backed up by demand side legislation. International mobility is very significant to geoscientists working in the mineral exploration area. The opportunities for engineering are expanding. CCPE has identified emerging areas in nano-engineering, tissue engineering and photonics to name a few, and the BBC recently reported on the use of tissue engineering to grow meat in a laboratory. As suggested by Alan Kay of HP Labs, "The best way to predict the future is to invent it." ■

PD Presentation by R. Diduch, P.Eng.

Wind Power Realities

Report by N. Soonawala, Ph.D., P.Geo.

At the end of 2004, the worldwide installed capacity for wind-generated electricity stood at 46 000 MW and is expected to grow to 60 000 MW by the end of 2005. The leaders are Denmark – 19% of its electricity is wind generated (highest percentage) – and Germany with its 16 500 MW installed capacity (largest capacity). Canada's modest capacity of 441 MW is expected to more than double during 2005. In Manitoba, construction started in late 2004 on the 99-MW St. Leon project. Advances in technology over the past decade have made wind power economically viable and attractive as part of an overall energy strategy. Other drivers are the appeal of "clean" energy and the Kyoto Accord requirements of reductions in greenhouse gases. Adverse issues confronting wind power are few and manageable.

These were some of the messages delivered by Ron Diduch, P.Eng. to an overflow lunch-time audience of 185 at Canad Inns Fort Garry, Winnipeg on May 25, 2005 in a presentation which while being technically substantive, was also interesting and comprehensible to the non-specialist. Diduch is the Chief Operating Officer of Sequoia Energy Inc., a Winnipeg company. Bison Wind Inc, the developer of Manitoba's first and Canada's largest wind farm – near the village of St. Leon, about 35 km northwest of Morden along the Pembina Escarpment in southwest Manitoba – is a joint-venture partnership between the international company Global Renewable Energy Partners Inc. and Sequoia.

The theoretical limit to the fraction of kinetic wind power that a wind turbine can capture is 59%, with modern turbines achieving about half of that. Wind speed and temperature largely determine the amount of energy that can be produced. The power generated is proportional to the cube of the wind speed, e.g., a doubling of speed results in an eight-fold increase in power. Turbines have a cut-in wind speed of between 3 and 5 m/s, and a cut-out speed of about 25 m/s where they are programmed to stop in order to avoid damaging the system. Cold air, being denser, is better: power production at -20° C is about 8% higher than at +20° C.

A 1.65 MW wind turbine. The blades are 40 m long and the hub is 80 m above ground

Wind characteristics of an area are, of course, the foremost consideration in siting a wind farm, but unfortunately, the usual meteorological records do not contain all the information required. Wind turbulence reduces efficiency and also increases wear and tear on the turbine blades. High towers and siting

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Practice Note

Notice to Designers of Steel Structures

With the publication of the new Canadian Institute of Steel Construction Handbook, 8th Edition, the CISC recently conducted a series of seminars outlining changes in the CSA Code S16.

Two items are of particular note. The provision for use of Allowable Stress Design Method has been deleted. This will also be reflected in the National Building Code 2005 edition, where the requirement is applied to all structural design. Designs for steel structures and related connections must follow the "Limit States Design of Steel Structures" method.

Secondly, the provision for a minimum connection capacity for bracing members has been deleted.

Designers of steel structures have for many years relied on provisions in CSA Standard S16.1 instructing those responsible for the design of connections to allow either for designer specified loads or minimum loads as prescribed by S16.1. The fabricator normally carries responsibility for the design of connections.

Previous editions of the code called for design to minimum 50% connection capacity, in either tension or compression, as applicable, in the absence of specified loading conditions.

The provision for this minimum connection capacity has been deleted. Steel designers should ensure that design loads for bracing members are clearly specified on drawings and verify that fabricator connections meet these requirements. ■

Workplace Safety and Health Regulations Review

What's New for P.Eng.?

D. Priscu, P.Eng. – Safety Engineer, Workplace Safety and Health Division Manitoba Labour and Immigration

In 2002 significant changes were made to the Workplace Safety and Health Act. Following passage of this legislation, the Government of Manitoba recognized the need to complete the picture on occupational health and safety legislation by launching a review of the existing workplace safety and health regulations of Manitoba. The review was conducted by requiring management, labour and technical – professional representatives with varying expertise – to initiate and develop the process.

In the fall of 2002, Workplace Safety and Health Division staff prepared for regulation review consultations by reviewing Manitoba's regulations against:

- Regulations from other Canadian jurisdictions,
- Proposed regulations that have been recommended by the Workplace Safety and Health Minister's Advisory Council but had not been implemented,
- Inquest reports, and
- The 2002 Workplace Safety and Health Review Committee recommendations.

Sixteen Technical Working Groups reviewed Workplace Safety and Health proposals. In the summer of 2003 they submitted their final reports to government. The Minister of Labour and Immigration than forwarded the technical working group reports to the Minister's Advisory Council for review and comments.

The Technical Working Groups proposals were publicly released in September 2003, with written comments to be provided by the end of March 2004. Based on input from these technical working groups, the Minister's Advisory Council on Workplace Safety and Health, stakeholders, and general public, proposed regulations are now being developed for final consideration by government.

The intent is to develop modernized regulations that are reasonable, practical, and technically viable while offering clear direction. In this context, professional engineers will be called on to apply their technical knowledge in systems and structures design, equipment and site inspections and work procedures or compliance assignments.

Some examples where professional engineers involvement is proposed include:

- designs of fall arrest systems,
- design and erection of temporary structures that have to withstand potential loads like wind or wind gusts in the area;
- systems or equipment designs that have to comply with specific standards,
- different type of scaffolds that exceed certain heights,
- inspection of hoisting equipment,
- work procedures for deep foundation/excavation
- pre-cast concrete structures,
- modifications of equipment and machinery
- demolition work

Presently, separate consultation meetings have been, and will continue to be, held with stakeholder groups to discuss their particular concerns and questions about the technical working group reports. The target date for implementation of updated Workplace Safety and Health Regulations is planned for early 2006. An extensive communication strategy to inform stakeholders about regulatory changes will be implemented. ■

Hello MITs!

If you're a member-in-training (MIT) with concerns, questions, or comments about your experience with APEGM, the MIT Committee is here to help. The members of the committee are MITs, just like you, who meet with APEGM regularly to discuss the issues that MITs face, and work towards a smooth transition into an active membership in APEGM.

If you have issues that you would like discussed, please contact the committee at ***prereg@apegm.mb.ca*** – use the Subject header: MIT Issues for Discussion.

M. A. Froese ■

Manitoba Conservation Districts and Proposed Watershed Management Legislation

P. Weiss and L. Thompson, Manitoba Department of Water Stewardship

Water management in Manitoba is synonymous with spring and summer floods, prairie drought, inland fisheries and hydropower. Some of Manitoba's water issues are well known; hydropower development in the north, water quality in Lake Winnipeg, and Red River flooding. Less well known, nationally, are the challenges of watershed management in the agricultural areas. In southern Manitoba, where agriculture dominates land use and demands for water continue to increase, the challenge is to balance safe drinking water sources and ecosystem health, while sustaining and enhancing the agricultural economy.

Across agro-Manitoba, a fundamental need to control and protect water was facilitated through several watershed management initiatives over the years. Today, the *Manitoba Water Strategy* (released April 2003) is the product of public/stakeholder consultation and is the leading policy for watershed management in Manitoba. The proposed *Water Protection Act* will provide additional watershed management tools.

The Watershed Management story in Manitoba began in the early 1900s when drainage districts were created to deal with flooding. In the 1950s, the concept of a Watershed Conservation District was created to help municipalities deal with watershed issues that crossed municipal boundaries. In 1972, legislation enacted the Conservation District Program, and launched the Whitemud Watershed Conservation District – Manitoba's first official conservation district. The Program was based on three key principles: watershed boundaries; local decision-making; and cost sharing.

Through the 1970s and 1980s, the Watershed Management Movement grew slowly with six Boards formed by approximately 50 municipalities. The past 10 years have seen an explosion of interest in watershed management at the community level. Today, over 130 municipalities form 16 Conservation District Boards, with strong interest for more Boards across agro-Manitoba.

The Conservation Districts' core programs and projects focus on community-driven integrated soil and water management including drainage, water storage, erosion control and other water quality programs. Fisheries and wildlife habitat programs are also offered in partnership with many private and public conservation agencies. There is more fiscal spending on soil testing, surface water and groundwater quality monitoring, questionnaires and farmer workshops to help the Boards measure their progress and be better equipped to prove that investments in watershed protection make economic sense beyond environmental enhancements. Other activities include off-channel irrigation water storage projects, watershed habitat surveys, and watershed management plans.

The growth and evolution of watershed management in Manitoba was supported by:

1. A series of federal-provincial soil and water management agreements, with cost-shared seed money to complement core provincial funding.
2. Successful provincial basin planning programs, led by the Lake Dauphin Basin Board in the 1980s and the formation of the Deerwood Soil and Water Management Association.
3. Increased attention and commitment to watershed planning and management in Saskatchewan and Ontario.
4. Increased municipal support with volunteer appointments and financial support of watershed planning for effective, non-partisan, soil and water management.
5. The trust, confidence, authority and financial resources of government to facilitate successful community-driven watershed management programs.

The success and evolution of Conservation District Boards goes beyond the traditional stakeholder/government partnership. There is a strong coalition of conservation agencies to support producers who are adopting sustainable soil and water management practices. Groups such as Manitoba Habitat Heritage Corporation, Delta Waterfowl Foundation, Ducks Unlimited and the Manitoba Riparian Health Council are actively building innovative programs with local people that contribute to strong rural economies and healthy rural landscapes, complement local watershed planning efforts and build on a strong public desire to minimize health risks associated with drinking water. Often these conservation coalitions provide project funding and technical help to the watershed boards; sometimes conservation districts are asked to be delivery agents at the farm gate.

The Manitoba conservation districts have the following challenges to overcome:

- a strained rural agricultural economy
- complex public/private partnerships
- keeping a sense of optimism
- balancing incentives and enforcement strategies to effect change
- balancing watershed project budgets with watershed planning goals

In April 2003, the Manitoba government expanded its emphasis on watershed management by adopting the *Manitoba Water Strategy*. The *Strategy* contains three main elements:

1. An articulation of principles and policies;
2. A discussion of issues, goals and initiatives;
3. An implementation framework that includes:
   - Watershed-based water planning and management;

Continued on page 8

Letters to the Editor

As a P.Eng. who relocated to Manitoba from Ontario, I find The Keystone Professional to be a very disappointing publication. It seems that not much engineering takes place beyond civil engineering in the province ofManitoba. Engineering has many flourishing disciplines in Manitoba and it would be nice to see an article on something other than transportation or infrastructure. Last time I checked, there were disciplines such as industrial/manufacturing engineering, chemical engineering and mechanical engineering, to name a few.

It would be nice to see some diversified articles in the publication.

Regards, C. A. Miller, P.Eng.

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We strive to print articles of interest for all disciplines. Some examples include "Canadian Firm Contributes to the International Space Station" (February 2003), "Northern Research Basins" (June 2005) and "Nuclear Power: Yucca Mountain" (February 2004) and an upcoming article from IEEE. If it appears that civil engineering articles are dominating the KP, this would suggest that infrastructure projects make up a large component of engineering in Manitoba. It would also suggest that the majority of the articles received are from civil engineers and without them; the KP would not have much for content.

We appreciate any constructive criticism and also look forward to submissions for publication from you and by all disciplines.

S.B. Williamson, P.Eng. Editor of The Keystone Professional

Congratulations on the June 2005 issue of "The Keystone Professional." Every article was highly informative and well written. I particularly enjoyed Arthur Kampan's piece on the Provencher Bridge, Winnipeg ("A Bridge to the Future"). The history that he described has certainly added to my enjoyment of this part of Winnipeg.

B. Stimpson, P.Eng.

Council Report

Thursday, June 16, 2005

E. Schroth, P.Eng.

COUNCIL DISCUSSES PUBLIC'S PERCEPTION OF ENGINEERS

Although it was not listed as a deliberate item on the agenda, the topic of the public's perception of engineers crept passively into the discussion and repeatedly into the June Council meeting. The issue is not that the public necessarily perceives engineers poorly, but rather that they do not perceive us at all. We are analogous to clean air: invisible yet necessary to quality of life; overlooked unless there is a reduction in that quality.

This topic surfaced during a review of the salary survey comments, wherein a recurring theme was the ostensible discrepancy between the years of education and experience required to become a professional engineer and the typical engineer's salary in comparison to other professional disciplines with similar years of training. This subject emerged again during ongoing discussions regarding the jurisdictional dispute with MAA on the design and certification of buildings. And the matter materialised yet again during further discussion on APEGM interactions with various governmental institutions. While no exact failing in these kinds of interactions was identified, it was observed that the CEO of CCPE recently noted that there is potential opportunity for these relations to be expanded, to allow engineers to become more involved in public policy decisions. The challenge would be for engineers to use their problem solving skills beyond tackling technical issues and on to include broader societal and environmental concerns.

Since one of APEGM's stated ends is for the public to understand and value the contributions of the professions it represents, Council agreed to review this topic and potentially consider supporting a public awareness advertising campaign that would highlight the contribution of engineers and geoscientists to society.

Other topics of interest that were discussed at the meeting include:

- How to expedite Inter-Association Mobility Agreement (IAMA) applications.

  In order to move forward with this it was agreed that members of Council would meet with the Registration Committee to foster discussion on this. Council would solicit legal opinion as to whether the Registration Committee can appoint staff as a subcommittee of the Registration Committee to expedite IAMA applications.

- The APEGM budget allotment and consideration for a different allocation of funds, or the development of a rainy day fund.

  This topic has become relevant since the budget is currently strained as a result of the extra demands resulting from unusual legal costs and the search for a new executive director. Since it is unusual for these events to be occurring concurrently it was decided to defer any decision on this topic until after the audit, when the amount of the unrestricted cash assets at year end is known. Further, it was decided that the auditors would be asked to provide an opinion as to an appropriate figure or formula to be available for the cost of closing down the Association's operations should the government elect to rescind the Act, so that this can be used for future budget planning.

- The Thompson chapter of APEGM has requested that the Annual General Meeting (AGM) be held in Thompson in 2006, to coincide with the City of Thompson's 50th Anniversary celebrations.

  Council agreed to consider this request. It was further proposed that perhaps some of the presenters at the AGM Professional Development Conference could go on tour and make their presentations at some of Manitoba's northern communities. ■

Manitoba Conservation Districts and Proposed Watershed Management Legislation

Continued from page 7

  - Review, revision and consolidation of water legislation;
  - Development of mechanisms for financing water management and planning.

The *Strategy* identifies six policy areas: water quality, conservation, use and allocation, water supply, flooding and drainage. Furthermore, it promotes an enhanced "watershed way of doing business" and preparation of integrated watershed plans by the conservation districts.

The *Manitoba Water Strategy* is framed by the proposed *Water Protection Act*. The proposed Act:

1. Promotes the protection and sustainable stewardship of Manitoba's water resources and aquatic ecosystems;
2. Complements the *Drinking Water Safety Act* and provides for the protection of water from source to tap;
3. Recognizes that all Manitobans share the responsibility as stewards of their water resources;
4. Provides for greater water resource protection and for comprehensive water and related resource planning on a watershed basis; and
5. Provides authority to establish regulations.

The Act will provide authority to establish regulations pertaining to the:

1. Institution of water quality standards, objectives and guidelines
2. Designation of water quality protection zones, including prescribing or prohibiting activities in those zones
3. Prohibition of activities that adversely affect water quality, water quantity, and aquatic ecosystems or drinking water sources
4. Control of invasive exotic species
5. Control of water use during serious water shortages
6. Formation of watershed management plans and watershed planning authorities

The *Water Strategy and Water Protection Act* will have numerous legal and administrative tools to facilitate watershed management in agro-Manitoba. Conservation Districts will be one vehicle to implement the *Water Strategy*, and a key method of getting grass-roots direction and buy-in for provincial water management goals. The specific role of the Conservation Districts has yet to be worked out, but they put Manitoba in a position to quickly implement the *Water Protection Act* and many of its regulations.

Is Manitoba up to the challenge of protecting its drinking water sources, watershed ecosystems, and future economic opportunities that rely on water availability? The Watershed Management Movement in Manitoba is evolving and has great potential through teamwork and partnership. The Conservation Districts have been working for 30 years to get Manitoba's rural population onboard and we are confident that they will rise to the challenge. ■

Fire Dampers

Continued from page 3

occurred in the installation of fire dampers. Despite the fact that the specifications and the suppliers' installation instructions were both clear and in accordance with the certifying body, many of the dampers were improperly installed and required correction. Upon the resolution of all of these issues, some many years later, it became apparent through discussion with many parties that it was again time to reopen the book and bring everyone 'up to speed'.

Life safety in buildings is a complicated and critical issue, which requires exactitude and diligence in design and installation. As life safety devices, fire dampers play an important role and require that same diligence in application. With a document pending from a cross-sectional team of individuals within the construction industry in Manitoba, it is hoped that the information required will be easily accessible for all. ■

Engineers in the News

Honours for Digvir Jayas

N. Soonawala, P.Geo.

APEGM Councillor and President-Elect Digvir S. Jayas has been honoured by the American Society of Agricultural Engineers (ASAE) and the Canadian Society for Bioengineering (CSBE/SCGAB), each of which recently named him a Fellow of their respective societies. The ASAE inducted Jayas at a ceremony during its 2005 annual international meeting in Tampa, Florida on July 19, 2005.

Dr. Jayas is Associate Vice-President (Research) at the University of Manitoba, where he is also Distinguished Professor, the Canada Research Chair in Stored-Grain Ecosystems, and Interim Director, Richardson Centre for Functional Foods and Nutraceuticals, Biosystems Engineering department. The ASAE and CSBE have recognized him for his outstanding achievements as a researcher, administrator, teacher, author and contributor to technical societies. In its citation, the ASAE states that to be one of its Fellows, an individual must demonstrate unusual professional distinction, with outstanding qualifications and experience in the field of agricultural engineering. The CSBE notes that Jayas is world renowned for his research on drying, storing, handling and quality monitoring of grains and oilseeds and for his expertise in mathematical modelling of stored-grain ecosystems.

The citations also mention that as a professor, Dr. Jayas has taught university courses at all levels and has supervised 12 Ph.D., 21 M.Sc. and 25 B.Sc. students as well as 12 postdoctoral fellows and research associates, and 10 visiting scientists. He has attracted over 10 million dollars in research grants and contracts. He has published 187 refereed papers in high quality journals in his field and has presented 222 papers at conferences, of which 44 were invited presentations. Considered a highly skilled and articulate writer, he has contributed chapters to 27 books or monographs, has co-authored a 303-page book entitled "Grain Drying – Theory and Practice (John Wiley and Sons Inc.)", has co-edited a 757-page book titled "Stored-Grain Ecosystems (Marcel Dekker Inc.)" and another 281-page book titled "Insect Pests of Stored Products: A Global Scenario (Central Rice Research Institute, India). Many of his research results have been incorporated into ASAE engineering standards.

The Fellowships are also a recognition of Jayas' contribution of his expertise to various professional organizations, including the Canadian Society of Agricultural Engineers (CSAE), Canadian Institute of Food Science and Technology, and ASAE. He is a past president of CSAE and is on the editorial boards of two international journals.

Dr. Jayas is no stranger to awards. In the past he has received numerous national and international awards, including the University of Manitoba's Graduate Students Association award and an Excellence in Graduate Teaching award. He has received three awards from the Canadian Institute of Food Science and Technology, the CSAE/SCGR John Clark award, ASAE's Young Researcher award, CSBE/SCGAB's Young Engineer of the Year award in 1995 and the John Clark Award in 2001. ■

Dr. Stefan Cenkowski of the University of Manitoba wins Award

The Canadian Society for Biosystems Engineering (CSBE) award recognizes outstanding contributions to the field of Biological Systems Engineering.

Dr. Cenkowski, P.Eng., a 17-year veteran with the Department of Biosystems Engineering at the University of Manitoba, has made his contributions through his teaching and research in drying theory and bio-processing activities. His research has broadened the knowledge of drying theory and bio-processing and has produced enormous benefits to industry and humankind. Dr. Cenkowski has made significant contributions to the fundamental understanding of the drying process in superheated steam. His research into the elimination of spores and the extraction of oil from sea buckthorn berries is beneficial to the burgeoning sea buckthorn industry and the functional foods and nutraceuticals industry.

He has worked tirelessly to prepare students to become engineers of the highest calibre. And he continues to provide in his research projects opportunities for undergraduate students to apply theory they have learned in their courses. ■

Release and Related Training for the 2005 Building, Plumbing, and Fire Codes

The National Research Council (NRC) advises that the 2005 editions of the model National Building, Plumbing, and Fire Codes will be published on September 20, 2005.

These model Codes are automatically adopted in Manitoba and therefore their provisions will apply to construction that begins after September 20, 2005. See the NRC website at ***www.national-codes.ca*** for details on purchasing the Codes. The Office of The Fire Commissioner will be releasing a summary of the major changes to the Codes prior to their release. Many of the current Manitoba amendments will be eliminated as they are contained in the model National Codes. The government anticipates releasing the Manitoba amendments as soon as possible after the publication of the model National Codes.

The NRC will provide training on the **technical** changes in each Code. These one-day training sessions will be sponsored by The Office of The Fire Commissioner and will be offered free of charge. Please note the following dates and locations:

Subject:

The National Building Code
(all Parts except Part 3)
The National Plumbing Code

Date & Location:
January 20, 2006
Polo Park Canad Inn (Winnipeg)

Subject:

The National Building Code
(Part 3)
The National Fire Code

Date & Location:

March 29, 2006
Polo Park Canad Inn (Winnipeg)

The NRC has also been working towards developing training material in relation to the Objective Based Codes approach. A contract to develop this material was awarded to an Ontario based consultant. Manitoba's contribution to this material, in terms of both financial support and on-going commentary and feedback, has been provided by The Office of The Fire Commissioner. The courses are being test piloted in Ontario, B.C., Alberta, and Nova Scotia in April and May, 2005. The goal is to have the courses ready for distribution at the time the model Codes are released.

The Objective Based Codes Training will be available through classroom delivery or a self-taught format (CD Rom or hard copy manual). Each Code (Building, Plumbing, and Fire) will be a separate two-day course, however the course approach to each Code will be very similar.

Please contact Nancy Anderson, Manager of Codes and Standards, Office of The Fire Commissioner at (204) 945-3397, or ***nanderson@gov.mb.ca*** ■

Wind Power Realities

Continued from page 5

along coastlines or hills with gentle slopes reduce the effects of turbulence, while forests, cities and other built-up areas increase it. Other siting considerations include inter-turbine spacing, topography, proximity to the electrical grid and soil conditions suitable for supporting the tall and heavy towers. Wind characteristics in Manitoba are favourable for wind-power development in the northeast (Churchill area) as well as the southwest (Pembina escarpment). Churchill would have the advantage of cold temperatures, but its remote location is a show stopper.

Wind turbines almost twice as large as their predecessors, and thus more efficient, have been made possible by developments in technology over the past decade. At St. Leon, the hubs of the three-blade, 1.65-MW turbines are 80m above ground and the blades are 40m long. Stronger but lighter composite materials allow for larger blades – a 40m aluminum blade would be simply too heavy. Computer-controlled variable-pitch blades capture energy at lower wind speeds, while at the other extreme, prevent damage in storm conditions. Higher and heavier towers are possible because of improved tower and foundation designs.

Several adverse issues related to wind power have been identified. A non-mechanical swoosh-swoosh noise is produced by the turbines, but at 50dB it is comparable to normal home or office noise. Bird kill is another issue, but at an average of 2.2 bird deaths per year, a wind turbine is less lethal to birds than a house cat. A wind farm requires large land areas, for example, 36 square miles at St. Leon, but only 2% of that land is actually used for the tower bases and connecting roads – the rest is available for farming or other uses. A far-out and mostly academic concern is that massive wind power development on a global scale would so alter wind patterns as to cause global warming.

Economics of wind power have improved dramatically. At one time the cost of wind power was about 25 US cents per kilowatt-hour. But the St. Leon power will cost about 6 to 8.5 cents per kW-h, comparable to Manitoba Hydro's new developments coming in at 6.6 to 7.6 cents. Installation costs are about $1.75 million per megawatt. Wind power development is a community focused activity. At St. Leon, the project will deliver an estimated $209 million to the community in direct taxes during its life. Wind power has found a niche as a component of an overall power strategy, in which the conventional sources are still the mainstay.

As Ron Diduch's polished PowerPoint presentation came to an end, it was clear that wind power is a serious player in today's energy industry. Just a few years back proponents of wind power were looked upon as tilting at windmills, but today hard-nosed money managers are raising capital on the stock exchanges and big-league utilities are signing purchase agreements. We thank Ron for coming to talk to us and for the time and effort he spent in preparing this excellent presentation. ■

Just So You Know:

Section 5.8 of the APEGM By-Laws states:

> *"Meetings of the Council or parts thereof, not otherwise declared by the council to be in-camera shall be open for professional members, licensees, members-in-training and students to be present as observers, provided that they give 24 hours notice of intention."* ■

Professional Development

PD Presentation by W. Barlow

The 2005 Report of the Lake Winnipeg Stewardship Board (LWSB)

D. H. Grant, P.Eng.

While I had a good seat near the front, the room was just the right size for the 50 or so people present. When everyone was seated, the food started to arrive. When we were done our meal, Ganpat stood to remind us all about the PD Wind Power event next week, and to introduce our speaker, Bill Barlow, recently retired from a lifetime as a teacher on the shores of the subject lake, in Gimli. In turn, Bill introduced Winnipeg's engineer on this issue, Nick Szoke, and Sharon Gurney, representing Manitoba's Water Stewardship Department, to which Bill reports.

Bill started by telling of the changes in his life, since being chair of this lake-saving committee: for example, he can now use all the big words that are part of surface water science and of water pollution control, and can now spell EUTROPHICATION.

As the slides on the APEGM website show, this is a big watershed, over a million square kilometers over four provinces and four states. The problem is largely one of runoff into the lake, largely from the Red River.

Bill presented a list of the economic benefits of Lake Winnipeg. Nutrient sources and processes were described, as were hard numbers on what is going into the lake. The pictures of the experimental lake where one half is artificially loaded with nutrients, and blooms with bacteria, were very impressive. There was a reference to a 10% reduction in the bad things going into the lake over a number of years, but no list of expected outcomes was shown. Out of the dozens of improvement-ideas collected by his committee, the Minister has directed that four shall see further discussion: lawn fertilizing, feedlot runoff, sewage lagoon size, and septic tank alternatives. The first of these is a small but symbolic source of eutrophication nutrients; the other three are infamous as sources of E. Coli bacteria which can close beaches. There is no action-plan on any other nutrient streams.

While Bill said that some reports gather dust on government shelves, he has been assured by his Minister that this one will see action, although it is not due until mid-2006. Some of the solutions are simple and easy to do, while others are more expensive. The enthusiastic audience had many thoughtful questions:

Comment 1: Since public processes like this one go for years, perhaps the LWSB should ask the Minister to take the simplest actions right away. This would boost the morale of the Board Members, and make the Minister look good. (A graduated tax on bad dish soap, a tax or regulations on lawn fertilizer, and new AG education programs could start right away.)

Lake Winnipeg

Comment 2: While most of the subject nutrients are from the Red River, and 60% of those are from the US, why is discussion with the US not on the action-item list from the Minister? This ex-President/Member suggested that phosphate levels in the Red River at Emerson were a bigger problem than Devil's lake dewatering, and that "we should work with the Americans."

Comment 3: A consultant from southwest Manitoba stood to suggest that an anti-livestock theme runs through media coverage of water quality. He referred to Bill's slides on sources of nutrients. He then used the numbers to say that completely shutting down MB agriculture would improve lake water about as much as a 20% nutrient-reduction in the water we get from the US. Based on this rough calculation, he suggested that working with the States to our south should be added to the four topics for further immediate consult and discussion.

Comment 4: We are mostly engineers. We like to list our goals, and get the job done for the lowest price. In this matter, the most cost-effective means seems to involve US sources. It may not be too late to negotiate with North Dakota. If they hold enough water in new wetlands and other storage, we could have a much cleaner lake, and might not need a bigger floodway. The potential for them to drastically reduce nutrient loading to the Red is, as the earlier questioner suggested, very tempting, and worthy of re-opening negotiations. Could the LWSB ask the government to try to talk to ND?

Water sampling

We can hope that some of these ideas from our attendees will make their way to the Minister. Everyone seemed very interested in this topic and the information presented. ■

Looking for Volunteers...

APEGM is seeking a pool of senior professional engineers and geoscientists, for the purpose of conducting interviews of internationally educated engineering and geoscience graduates.

According to the APEGM assessment process, applicants may, under certain circumstances, be allowed to have some technical exams waived if they have had significant high-quality experience in another country. In order to have these exams waived, we require senior engineers and geoscientists (currently registered with APEGM) to help conduct interviews.

To sign up, simply submit your name and discipline to APEGM with a current curriculum vitae or other evidence of at least 5 years of relevant experience in your field. It's possible that you may never be asked to serve on a panel… but if you are, the requirements are not onerous. This will involve studying a candidate's syllabi and a recent project submittal and then participating in an interview panel.

Typically, the interview is one hour long; however, the panellists meet one hour earlier to discuss interview procedure and half an hour afterwards to discuss their findings. We try to have the interviews over a lunch hour, in which case, lunch will be provided to the panellists.

If you are interested in being included on this volunteer list, please contact Sharon Sankar, Director of Admissions at ***ssankar@apegm.mb.ca*** and use the subject header: Interview Panellist. ■

2005 APEGM Spring Golf Tournament

C.J.W. Berkis, P.Eng.

This year's APEGM Spring Golf Tournament took place on Wednesday, June 8th at Pine Ridge Golf Club. Even with the torrential rains that closed many other courses for weeks on end this spring, Pine Ridge was once again in fantastic shape, with only one hole where puddles had to be negotiated. As usual, we had a full slate of golfers eager to get onto the normally private layout.

With the relatively dry but windy conditions, the announced winning score of 5 under par surprised many in attendance, as typical winning teams shoot at least 10 under. With APEGM President Allan Silk in attendance to present the trophies, this year's first place trophy was awarded to the foursome consisting of Dana Bell, Don Lecuyer, Rob Coldwell and Chris Peck. Our second place team included Steve Tormey, Kevin McGregor, Gary Gusberti and Kevin Penner. Congratulations to both teams.

Also, a big thank-you to all those that participated in our fundraising activities for two local charities. The first was "Hit a Ball for MS" which raised $590 from 118 entries. However, only 12 of those participants received a sleeve of balls for hitting the green. Our second fundraising activity was the putting contest put on by KidSport. We were able to raise $485, and the winning score was 45 out of a possible 60.

The APEGM Sports Committee would like to thank all of those that participated, and of course thank-you to all of our hole and competition sponsors that help make this a very successful event year after year. ■

First place winners receive trophy from President Silk. From left to right: A. Silk, D. Lecuyer, R. Coldwell, C.Peck and C. Berkis (Chair, Sports & Social Committee).

Second place team with President Silk. From left to right: K. McGregor, A. Silk, S. Tormey, G. Gusberti and C. Berkis. Missing: K. Penner.

THOUGHTS ON

Design

...and difficult hotel clerks.

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

We recently had a great vacation spoiled by a person employed by the hotel we were registered in. Like all such incidents, it is probably best to simply walk away and chalk it up to an ill-mannered person having a bad hair day. But this one wouldn't go away.

My initial annoyance was directed toward a very rude employee. But the reason it kept bothering me related to the fact that the underlying cause of the problem was a system that did not work as it should. The hotel reservation system apparently contained some complexities that made it difficult to use. These complexities caused a frustrated desk clerk and frustration caused an outburst.

Obviously I do not have any details about the hotel's system. There are probably "good" reasons why it was configured as it is. However our experience suggests that it contains some serious design flaws. In my mind, this system and the difficulties it caused became a symbol of inadequate design as we spent two days driving home.

Virtually every design starts out as an attempt to address a problem. Close examination of that problem usually results in the creation of a list of issues that should be addressed in the process of developing a design solution. Different people with different responsibilities all have different views of the needs and the potential solution. Design engineers are faced with the task of assigning priorities to a list that normally exceeds the limits of time and money available. These priorities, once identified, shape the nature of the final design. Left to most engineers, these priorities will tend to have a decidedly technical bent.

Engineers will tend to be more concerned about the physical characteristics of a material than about its color. We will tend to worry about efficiency rather than aesthetics, manufacturability rather than marketability. The things we "understand" or can "measure" tend to drift to the top of our priority list and therefore tend to define the end product. Our justifications tend to run to analysis of performance or durability or usability or any number of physical issues (all as defined by our priorities).

Almost 20 years ago Donald Norman, a psychologist, wrote a book entitled *The Design of Everyday Things* in which he cited a seemingly endless string of "bad design". He used terms like "ill conceived", "poorly designed" and "unusable" to describe various items which were intended to simplify our lives. He spoke of the human interface with modern machines and the questionable value that interface sometimes provides. He asked why we need "power users" for "simple" machines. Norman's view, after all, is a psychologist's view, not an engineer's. But maybe he had a point. Maybe his message to engineers is that we should broaden our view. And just maybe, that is a message we should take to heart.

Those things we design cannot possibly react to all of the demands that might be placed on them during their useful lifetimes. But there is little doubt that the design priorities we select will shape the final products we produce. If we stick exclusively to the technology biased priorities we are comfortable with, we risk providing future authors with ammunition for books like Norman's. The question is, how do we go about expanding our understanding beyond our current "comfort zone"?

Thinking back to that hotel clerk who made me so angry, maybe she was working with a system that didn't consider her needs. Maybe that system was created to facilitate international accounting efficiencies rather than ease of use at the front desk. Maybe her outburst was, in fact, an outburst of anger at what she considered to be an "unworkable" system and we just happened to be in line when her frustration peaked. Maybe it was payback time. ■

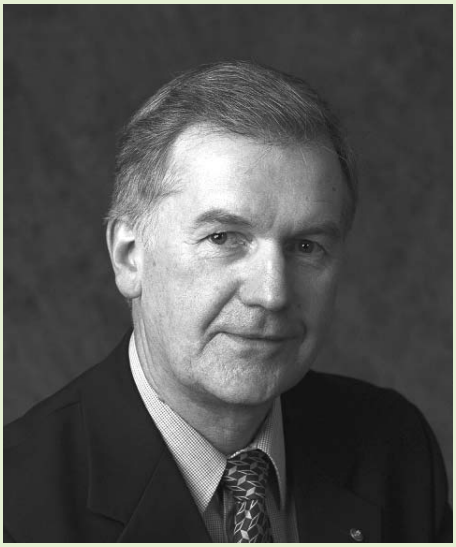
CCPE Press Release

Colin E. Smith, P.Eng., FCIM, of British Columbia, has been elected to serve as president of the Canadian Council of Professional Engineers (CCPE) for 2005-2006.

In the coming year, Mr. Smith will strategically guide CCPE through new initiatives in government relations, national infrastructure renewal and foreign credential recognition.

Demonstrating extensive private and public sector leadership experience, Mr. Smith worked for more than two decades in industry in both Canada and the United States. Since 1990, Mr. Smith has held various assistant deputy and deputy minister equivalent positions in British Columbia's public service.

He is currently president and project director of provincially-owned Rapid Transit Project 2000 Ltd. (RTP 2000), the builder of the Millennium Line SkyTrain expansion. In conjunction, Mr. Smith is also the corporate secretary and chief financial officer of another crown company, Vancouver Convention Centre Expansion Project Ltd.



An extremely active chair for numerous national, provincial, local, community and advisory organizations, Mr. Smith is a past-president, and an honorary life member of the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC).

He is also a Fellow of the Canadian Institute of Mining and Metallurgy and Petroleum, a member of the Society of Mining Engineers of AIME, an honorary life member of the Association of Applied Science Technologists and Technicians of British Columbia, a fellow of the British Columbia Chamber of Commerce, and a Paul Harris Fellow of Rotary International. He further serves as an active director of the West Coast Railway Association and is an enthusiastic supporter of railway heritage preservation. Mr. Smith is a recipient of the Queen's Golden Jubilee and the 125th Anniversary of Canada's Confederation commemorative medals.

Mr. Smith earned a BASc in mining engineering from the University of British Columbia and holds an M.S. in mineral engineering and an MBA from Stanford. He also earned an executive program diploma at the National University of Singapore.

Mr. Smith is joined on CCPE's executive committee by: President-Elect Ken McMartin, P.Eng. (PEO); Past-President Darrel Danyluk, P.Eng. (APEGGA); Tony Dawe, P.Eng. (PEGNL); and, Bruce Wornell, P.Eng. (APENS).

Mr. Smith and the board members will be supported by Chief Executive Officer Marie Lemay, P.Eng. ing., of CCPE, and her staff in Ottawa. ■

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

86th ANNUAL GENERAL MEETING

Delta Winnipeg & Winnipeg Convention Centre
Friday, October 21 & Saturday, October 22, 2005

Attention Student Members:

As you are aware, to register with APEGM you must obtain a minimum of 48 months (four years) of acceptable engineering or geoscience work experience once you've graduated from your undergraduate academic program. To do this, you must first enrol as either an Engineer-in-Training or a Geoscientist-in-Training (otherwise known as a Member-in-Training or MIT). Up to 12 months of this experience may be obtained prior to graduation; however, up until now it has only been possible to get this experience credit once you are enrolled as an MIT on our Pre-registration program.

As a new initiative, APEGM will allow student members in good standing to apply for experience credit prior to starting the Pre-Registration program. This way, when you do graduate and subsequently enrol on our Pre-Registration program, you may start off with up to 12 months "in the bank" so to speak, and will only be required to obtain another 36 more months of eligible experience. Moreover, for student members only, APEGM will waive the $53.50 fee normally required for MITs who are applying for pre-graduation credit.

So, what's the catch? The catch is you'll have to be a student member with APEGM and you'll have to stay a student member until you formally enrol on our Pre-Registration program*.

How do you become a student member?

It's simple – go to our website and download the application at the **APEGM Student Membership Info** link. The first year of your student program is free, while subsequent years are $10.00 per year. If you are an engineering student, membership fees are remitted to UMES to provide funding for your activities and conferences.

Once enrolled as a student member, how do you apply to have your experience counted towards the Pre-Registration program?

Also simple – go to the: **APEGM Student Membership Info** link and select **Pre-graduation Work Experience**, follow the instructions, and complete progress report(s) as indicated. Make a copy for your records and send us the form(s) either by fax at 474-5960 or by mail to the APEGM office. This is similar to what you will do once you become enrolled on the Pre-Registration program.

**Student members who complete their academic program then start work in another province or country are permitted to resign, if they wish. Those student members who resign, rather than enrol in the pre-registration program, may have their pre-graduation credit held for future consideration without additional payment. Just make sure you keep us informed – that's the important thing.*

Please be advised that this program is still in the development stage and may be subject to changes as it grows and develops. Also, because we are uncertain, as yet, how many student members will take advantage of the pre-graduation credit opportunity, we don't yet have a handle on how long it will take to process. We will get to you in due course…however, if you need to contact us, please send an email to ***LDupas@apegm.mb.ca*** *with subject header: Student Membership progress reports. We will also post additional information on the* **APEGM Student Membership Info** *link at the APEGM website, so keep checking. Pre-Graduation credit must be obtained after the third year of your program and must be supervised by a professional engineer or geoscientist (whichever is applicable).* ■

EXCLUSIVELY FOR ENGINEERING PROFESSIONALS

NEW choices make it easier to protect you and your family!

More than 48,000 of your peers have chosen the protection of insurance plans sponsored by the Canadian Council of Professional Engineers.

New Term Life coverage maximums and rate reductions make protecting your loved ones more affordable. And you can look forward to greater support for your financial security, now that Manulife Financial has added the popular CCPE-sponsored Disability and Health & Dental coverage to the choices it offers you!

Choose the coverage YOU need from this expanded range of Plans:

REDUCED RATES!

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