



THE KEYSTONE PROFESSIONAL

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

DECEMBER 2002
www.apegm.mb.ca

Outstanding Members Honoured

The Annual Awards Dinner was held on Friday, October 18, 2002 at the Fort Garry Hotel. Mal Symonds, P.Eng., Chair of the Awards Committee, presented Honorary Life Membership Awards to Andrew Baracos, P.Eng., Bud Christie, P.Eng., and Ernest Bridges, P.Eng. He also presented the Outstanding Service Award to Peter Washchyshyn, P.Eng.

Honorary Life Membership – Andrew Baracos, P.Eng.



Andrew Baracos became registered with this Association on February 27, 1953, and has been a member continuously for 49 years. Andy graduated from the University of Alberta with a B.Sc. (1947) and an M.Sc. (1949) in Civil Engineering.

Andy served as a member of Council from 1967 to 1970. He also served on the Board of Examiners (now the Academic Review Committee) for 12 years, the Advisory Committee for two years, the Committee to Study the Engineering Professional Act for one year, the Nominating Committee for one year, the Anniversary Year Liaison Committee for one year and the Compensation Study Ad Hoc Committee for one year. This makes a total of 21 committee-years of service. Andy received the Association's Merit Award in 1988.

His career was spent at the University of Manitoba, Department of Civil Engineering. He was the first Head of the Department of Geological Engineering. He has accomplished many pioneering achievements and is recognized as the father of soil mechanics in Manitoba. It is estimated that he taught 2,500 undergraduate and 200 graduate students in his long career at the University from 1949-1989. Andy was appointed Professor Emeritus in May 1997.

Honorary Life Membership is granted to Andrew Baracos in grateful recognition of his many years of dedicated service to APEGM and to his significant contributions as an engineer.

Honorary Life Membership – W. D. D. (Bud) Christie, P.Eng.



Bud Christie registered with this Association on March 16, 1959, and has been a member for 43 years. Bud graduated from the University of Manitoba with a B.Sc. (1957) in Mechanical Engineering.

Bud served as a member of Council from 1985 to 1989 and was President in 1988. He also served on the Executive/Finance Committee for three years, the Sports Committee for four years, the Consulting Engineers Committee for four years, the Awards Committee for one year,

the Admissions Review Board for seven years (Chair in 1987), the Ad Hoc Committee on Technologists for six years, and the Nominating Committee for four years (Chair in 1989). This makes a total of 34 committee-years of service. Bud received the Association's Outstanding Service Award in 1991.

Bud worked three years for Manitoba Hydro upon graduation. He then spent thirty-four years with Wardrop Engineering Inc. where he served in many roles including mechanical designer and manager of a wide variety of facilities. A few of his more unusual assignments included being the on-site Project Manager for a major water supply program in Ghana, Africa, for a year, and his secondment to Atomic Energy Canada for two years. Bud was a Principal of the firm for

twenty-seven years and served in various management capacities including Director for ten years and Vice-President for seven years prior to his retirement. For the past eight years, Bud has provided part-time freelance consulting services.

In addition to his contribution to the Association, Bud has served the profession in other capacities. He was a member of the Board of the Consulting Engineers of Manitoba for five years and he was its President for 1991-1992 term. Bud was an industry representative to the Canadian Nuclear Association and a member of the Canadian Nuclear Society. He was also a representative to the Winnipeg Chamber of Commerce where he served for several years on the Energy Committee.

Honorary Life Membership is granted to Bud Christie in grateful recognition of his many years of dedicated service to APEGM and to his outstanding contributions to the engineering profession.

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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.

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 the APEGM or the APEGM Council.



Publications Mail Agreement Number 40062980

New Members Registered August, September & October 2002

M.M. Altun	H.M. Haydl (NY)	M.J. O'Keeffe (BC)
R.D. Andrushuk	P.S. Higgins (CA)	J. Park
J.R.C. Boisselle (QC)	E.C. Himelstein	J.G. Paulmark
D.S. Brown	S.U. Imran	M.J. Procca
J.J. Doerksen	J.D. Johnson (BC)	M.S.A. Qureshi
M.L. Enns	M.E. Jorgenson (SK)	B.S. Ryall
R.B. Eric	J.J. Jykama (AB)	M.J. Samuda Poitras
E.R. Ferbers	C. Kopcalic (ON)	C.P. Senkow
C.U. Franceschino (ON)	C.J. Kroeker	L.M. Simonson
A.P. Frey (AB)	M. Langlois (QC)	H.S. Suan (ON)
L.M. Friesen	M.A. Larouche	T. Takach
T.J. Garde	C.L. Lichkowski	R.L. Taylor
C.G. Graham	J.W. Loring	B.M. Torgunrud (SK)
K. Greflund (ON)	A.F. Martin (BC)	R.G. Wedman (BC)
A.J. Griezic (BC)	M.A. Michaluk	C.L. Wenslaw (AB)
S.J. Hagan (AB)	J.E. Nordstrom	
G.P. Hallson	G.O. Ogilvie	

Members-In-Training Enrolled August, September & October 2002

S.M.R. Almeida	J. Hu	A. Rattan
C.T. Armitage	M.L. Jacobson	J.A. Reimer
M.A. Balachander	D.L. Joshi	L.E.J. Rindall
C.F. Bell	S.B. Kirby-McDougall	K.A. Salzsauler
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J.L. Biczok	c. Leitold	E. See-Toh
T.C. Black	J. Leung	P. Sekhavat
R.A. Bracken	M. Lu	G.D. Shlachetka
M.A. Burgoyne	K.L. Markussen	J.E. Silcox
A. Castro	N.L. Morin	J.K. Sparling
D.W. Chester	M.S.S. Mulder	S. Srinivasan
T.D. Dolyniuk	S.T. Netsere	D.G. Stanski
D.L.J. Duguay	M.P. Page	D. Svecova
J.G. Dyck	S.R. Parde	D. Tran
N. Fenner	T.J. Patience	H.M. Vogel
C.S. Friesen	Q. Peng	T.D. Worms
P.J. Fulton-Regula	M.J. Petrak	M.I. Zandi
M.L. Henderson	J.A. Place	Y. Zhang
P.G. Hillius	P.F. Rasmussen	

Licences Issued August, September & October 2002

J.E. Burson (TX)	M.P. Goslow (FL)	L.M. Sargent (IA)
M. Cervellione (IL)	J.R. Kuenzli (ID)	S.L. Walker (ID)
R.M. Coble (FL)	B.C. Larson (NY)	
E.E. Donahue (WA)	L.K. Pauls (WA)	

Reinstatements August, September & October 2002

D.B. Bushuk	B.J. Deans (ON)	J.D.P. Hrabliuk
J.D. Close	W.P. DeMonye	G.W. Meyer (ON)
K.R. Colomb	T.D. Harle (SK)	

Certificates of Authorization Issued

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Tartan Engineering Ltd.	Frey & Associates Engineering Ltd.
Glotman Simpson Consulting Engineers	Alpine Systems Corporation
Buckland and Taylor, Ltd.	Agricultural Management (AGMGT) Ltd.
AMEC E & C Services Ltd.	– Renamed to
The Mitchell Partnership Inc.	Envirotech Ag Systems Ltd.

Correction

J.M. Symonds, P.Eng. was incorrectly identified as the author of the article AeroDesign 2002 (September, 2002 Keystone Professional). The author was Matthew Joyce. Our apologies to Mr. Joyce.



Executive Director's Message

D.A. Ennis, P.Eng.

The Code of Ethics

The Association's *Code of Ethics for the Practice of Professional Engineering & Professional Geoscience* has the force of law through *The Engineering and Geoscientific Professions Act*, which in section 11(1) provides that "...the Council shall prepare and publish from time to time a code of ethics containing standards of conduct pertaining to the practice of professional engineering and of professional geoscience designed for the protection of the public." (Note the "designed for the protection of the public".) The APEGM Code of Ethics has evolved over time. It sets out five Fundamental Canons, which are in turn further refined by a total of thirty-eight subsections, called Canons of Conduct.

So what you might ask is the issue? Well, as I have noted in the June 2002 edition of this publication, there is a tendency for members to get out the Code of Ethics only when they are annoyed or unhappy with another member. Additionally, the Investigation Committee, which receives complaints and is responsible for the initial decisions on their disposition, has noted a tendency for the specifics of some of the Canons of Conduct to be cited for purposes that, when considered in the context of their purpose, seem inappropriate.

Given those observations it is appropriate that the Association revisit the Code of Ethics to ensure that it is focused on its mandated purpose, i.e. "designed for the protection of the public". In so doing, the question of whether some of the

current Canons of Conduct can be separated from the code itself and become a guideline for use in interpreting the Fundamental Canons could also be addressed. In so doing one should also bear in mind that section 46(1) of the Act provides that, should a panel of the Discipline Committee come to the conclusion that the conduct of a member contravenes the Code of Ethics, he or she would then be "guilty" of professional misconduct. A detailed Canon of Conduct could leave a Discipline Committee with no choice but to assign guilt, even if the conduct in question was not directly related to the protection of the public.

The intent is that such a review process will involve a broad cross section of the membership, not just the Investigation Committee. Members who have views on the subject that they wish to bring forward are encouraged to provide them in writing to the Association

office. In considering the matter you may be interested in a compact ethics code proposed by William H. Wisely cited in the book *Controlling Technology: Ethics and the Responsible Engineer* by Stephen H. Unger. It reads "The engineer shall apply his specialized knowledge and skill at all times in the public interest, with honesty, integrity and honor".

Multi-Jurisdictional Licensure

It is disconcerting enough for members who are practicing in a number of Canadian jurisdictions to learn that the codes of ethics in the various Provinces are not the same. However, that anomaly is less disconcerting than the fact that, despite the recently signed national mobility agreements, they are still required to go through separate and sometimes quite different processes to become registered in a "host" jurisdiction. Added to the concern for many is the matter of being required to pay dues in three or four jurisdictions when one can usually only practice in one at any given time. For professional geoscientists there is the added frustration that, typically, their practice that is conducted away from their home jurisdiction is of short duration, and that their ser-

vices are usually required "the next day", leaving insufficient time to become registered under the current processes before they have to start the project.

That the professions in Canada are regulated provincially and the differences that it leads to is a fact of life – one that is determined by the Constitution of our country. The Associations across the country are aware of the complications and frustrations felt by their affected members, and are in the process of trying to devise a scheme of National Registration or Multi-Jurisdictional Licensure with the cost being somewhat less than the sum of the cost of being registered in each of the jurisdictions. One of the problems to be addressed is that some of the smaller Associations currently rely upon the revenue received from out-of-province memberships to sustain their operations. It is anticipated that the first steps will be to do an economic analysis of the concept and to gain an understanding of the demand within the memberships for such a licensure service. Again, members who have views on the subject that they wish to bring forward are encouraged to provide them in writing to the Association office. ■

Internet Security

By: L.E. McFarlane, P.Eng.

On Thursday, September 19th, the Women's Action Committee hosted an evening presentation on Internet Security. The speaker for the event, Mr. Steve Lukacs, provided a wealth of facts, tips, and practical advice. Steve opened our eyes to our vulnerabilities and then provided us with tools to protect ourselves. By the number of questions from the 30 plus attendees, it appeared that even the most IT-savvy among us gained some useful information for keeping out would-be hackers. Some of the most helpful information was the list of website addresses where free firewall, virus checking, and other types of useful software could be found.

Following the event, we received an e-mail from one attendee, who stated: "This was an excellent seminar. Steve provided valuable insight into Internet Security and the realities with simply accepting downloads, cookies, etc. Personally, I was able to use the recommended free-

ware and find several vulnerabilities in my PC including spyware.

His presentation should be made available in e-format for other APEGM members that were unable to attend. This type of seminar should be repeated in the future."

The Women's Action Committee would like to thank Steve for taking the time to prepare and give this practical presentation.

Please check out the APEGM website at www.apegm.mb.ca/pdnet/papers.html for a copy of Steve's presentation.



The Women's Action Committee will be hosting another event in January or February; look for details on the next Calendar of Events and on the website. ■

In Memoriam

The Association has received, with deep regret, notification of the death of the following member.

Stanley Steven Hodge

Annual Awards Dinner

Continued from page 1

Honorary Life Membership – Ernest Bridges, P.Eng.



Ernie Bridges became registered with this Association on April 12, 1956, and has been a member continuously for 46 years. Ernie graduated from the University of Manitoba with a B.Sc. (1954) and an M.Sc. (1958) in Electrical Engineering. Ernie served as a member of the Association's Board of Examiners (now the Academic Review Committee) for 32 years, the CCPE Affairs Committee for one year and the Salary Research Committee for one year. This makes a total of 34 committee-years of service and a record for 32 years service on one committee. Ernie

received the Association's Outstanding Service Award in 1990.

Ernie Bridges dedicated his career to teaching electrical engineering in the Faculty of Electrical and Computer Engineering, University of Manitoba, where he was directly involved in the education and development of thousands of engineers at both undergraduate and graduate levels. Through his University-based research, including antenna design, he authored and co-authored numerous published papers in journals and conference proceedings. He is a co-holder of six patents in antenna design. He retired from the University of Manitoba as Professor of Electrical Engineering in 1996 and, upon retirement, was appointed Senior Scholar. Ernie was appointed Professor Emeritus, Faculty of Electrical and Computer Engineering in May 1997. Ernie's career included serving as engineering consultant to a large list of impressive Canadian firms and government departments and agencies.

Ernie Bridges has been an active member of the Institute for Electrical and Electronics Engineers (IEEE) since 1954. His involvements included serving as Chair, Winnipeg Section, Chair, Waves Chapter, and Chair, ANTEM Conference 2000. Ernie was recog-

nized by the Institute in 1995 when he received the IEEE Life Membership Award.

Honorary Life Membership is granted to Ernest Bridges by the Association in grateful recognition of his many years of dedicated service to APEGM, his record 32 years of service on the Academic Review Committee and his outstanding contribution to the engineering profession.

Outstanding Service Award – Peter Washchyshyn, P.Eng.



Peter Washchyshyn became registered with this Association on February 2, 1971, and has been a member for 31 years. Peter graduated from the University of

Saskatchewan with a B.Sc. in Civil Engineering in 1968.

Peter served as a member of Council from 1994 – 1999 and was President in 1998. He also served on the Executive Finance Committee for three years, an Ad Hoc Committee Task Force for three years, the Consulting Engineers Committee for two years, the Awards Committee for four years, the MAA/MOU Task Group for two years, the Nominating Committee for two years, the Meetings Committee for two years, the Issues Awareness Board for four years, and has served as CCPE Director for three years. This makes a total of 34 committee-years of service.

Throughout his career in developing and leading a successful consulting business, Peter has been a tireless crusader and advocate for the engineering profession. His commitment, organizational skills, and leadership are greatly appreciated by all who have had the opportunity to work with him.

In conferring the Outstanding Service Award upon Peter Washchyshyn, the Association acknowledges his significant contribution in a variety of services for Association activities. ■

Notice Under the Engineering and Geoscientific Professions Act and The Association's Discipline By-Law

THIS IS NOTICE that on 5 November, 2002 a conviction was registered against Frederick Daniel Wolfrom, P.Eng., on a charge of negligence in the practice of engineering, in accordance with the provisions of Section 35.1(f) of *The Engineering and Geoscientific Professions Act* of the Province of Manitoba. Mr. Wolfrom was assessed a fine of \$5,000.00.

The conviction is based upon Mr. Wolfrom's failure to exercise the care and judgment that can reasonably be expected of an engineer providing professional services in that, having assumed professional responsibility for a drawing in respect of a steel sheet piling cofferdam and, while knowing of a design omission on the drawing, he failed to promptly notify the general contractor and his client.

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.

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

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CCPE CEO's Message

M. Lemay, P.Eng.

It's Time to Stand Up for the P.Eng.

It's said that the strength of an organization is simply a reflection of the strength of its people.

Over the past two years, traveling across Canada in my role as the Chief Executive Officer of the Canadian Council of Professional Engineers (CCPE), I've had the opportunity to meet hundreds of engineers. The experience has reinforced my belief that Canada's engineers are second to none, and made me increasingly proud to be member of our profession. Engineering has attracted and retained a wealth of talented people who, despite the challenges inherent in their work, truly enjoy the career path they have chosen.

This feeling was confirmed recently by the preliminary results of our 2002 National Survey of the Engineering Profession in Canada. The data indicate that we Canadian engineers are a pretty satisfied lot. An incredible 86 per cent of us reported being satisfied with our jobs. And nearly 80 per cent of us reported having a positive outlook on our prospects for the future.

The engineers I've met and the initial findings of the national survey paint a remarkable picture for me of a very special profession, one that deserves to be celebrated – and protected.

Protected may seem like an unusual choice of words. If engineers are as satisfied and happy as the survey results indicate they are, why do they need protection? The answer lies in the fact that a high percentage of engineers also reported that their P.Eng. licence is of little value in their careers, and of little value to their employers.

What's at stake is the future of engineering as a self-regulated profession, with the right to an exclusive scope of practice and title. Our high standards of engineering education, as well as our ability to protect the public and the environment are also threatened.

Canadian engineers are among

the best in the world. One of the reasons for that, I believe, is the holistic approach we have adopted for the formation of an engineer. It is an integrated system, which combines accreditation, supervised engineering work experience, and a demonstrated understanding of professional ethics to "produce" something unique – the P.Eng.

The basis for our system, and the glue that binds it together as an integrated whole, is self-regulation and licensure. Accreditation, which supports a consistent high standard of undergraduate engineering education in Canada, is conducted by a standing committee of CCPE on behalf of our member associations/ordre. The associations/ordre conduct the profession's supervised engineering work experience programs and professional practice exam, the other two elements in our system, in support of high practice and ethical standards.

Our integrated approach to the formation of an engineer has made the "product" of our system, the P.Eng., a symbol of quality assurance around the world. As a result, many other countries are envious of our system.

To maintain our system, we must be careful not to value one of its elements above the others, to forego one of the three elements, or to ignore the structure of self-regulation and licensure on which it is based.

Without self-regulation and the weight of our profession behind us, the career success and job satisfaction we engineers currently enjoy may be short lived. When a group of people has earned a reputation for excellence, another group will invariably try to capitalize on it. Professional engineering in Canada is confronting just such a situation today.

As some of you may already know, in July Microsoft Canada advised Canadian holders of the Microsoft Certified Systems

Engineer (MCSE) certification that they should "feel free" to use the full designation, including the term "engineer." This goes against a decision Microsoft made in 2001, after meeting with representatives of CCPE and its member associations/ordre, which saw the software giant advise MCSE holders to use only the designation MCSE rather than the full designation, to comply with Canadian provincial and territorial laws that restrict the use of the terms "engineer" and "engineering" to licensed professional engineers.

Prior to its July 2002 announcement, Microsoft Canada consulted with MCSE holders, course providers and other stakeholders. It also sought legal counsel. The deciding factor appears to have been the perception that the MCSE designation will be less valuable to Canadian holders, relative to their counterparts in the rest of the world, if they cannot use the full designation and refer to themselves as engineers.

Gary Jones, a regional manager for Polar Bear Corporate Education Solutions, the nation's largest provider of corporate technology education, is quoted in IT Business as saying, "Engineer holds more weight."

The reason for this is very simple. We engineers have built a wonderful, highly successful profession that provides its members with high career satisfaction. The term "engineer" does carry significant value, or weight, because engineers and the engineering profession have gained a reputation for technical excellence.

If we value that reputation, embodied by the P.Eng., then we should be willing to protect it. As individuals, we can work to dispel public misunderstanding about engineering's status as a regulated profession, and make it clear that the P.Eng. licence holds considerable value, whether it be among business leaders, engineering students or the general public.

It's an issue we need to confront now. We must take ownership of who and what we are, and we need every engineer in Canada to get on side.

Ultimately, our goal should be to ensure that our licence becomes the symbol that Canadians recognize when they see an engineer. Our licence must become the rightful symbol of our status as professionals, fully qualified to do engineering

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2002 Annual General Meeting

By: D.H. Inglis, EIT

The 2002 Annual General Meeting was again held at the Hotel Fort Garry, with the business meeting occurring on Saturday, October 19. The meeting was well attended, with representation from Flin Flon and Thompson via teleconferencing. Also present were numerous MITs and representatives from the Ontario, Saskatchewan, Alberta and British Columbia Associations, as well as CCPE, the Manitoba Association of Architects and the Association of Consulting Engineers of Manitoba.

The meeting began with President M.A. Barakat's Call to Order and the Official Opening. After it was established that there was a quorum of members present, a "Moment of Silence for Deceased

Members" was observed in the memory of members deceased during the past year. Dr. Barakat then introduced the members of Council and APEGM staff, the Committee Chairs and recognized the invited guests.

The Report of the President highlighted several important member issues, the need for Professional Development, the need for flexibility on the issue of a Certificate of Authorization and creating a quicker response mechanism to address member concerns regarding admissions.

Proposals to change the By-laws and address the above issues then took place. At times the debate became quite heated, especially with respect to the moving of admissions

requirements from the By-laws to a separate Manual of Admissions, and the proposal for a Declaration of Competence as a method of addressing Professional Development.

Concern was expressed that there was intrinsic value in having the admissions requirements enshrined in the By-laws. As well, the Manual of Admissions would be subject to change not by the membership-at-large but by the executive. This was countered as the

Continued on page 12

Our new Councillors are:

For a two-year term:

- J.R.C. Doering
- D. Harfield
- R.L. Hutchinson
- A.H. Permut
- E.C. Syme

For a one-year term:

- R.P. Hoensen



President-elect Lawrence Ferchoff thanks Dr. Samia Barakat for her support.

Wine & Cheese – Thursday October 17



Awards Committee member Jay Doering (second from right) presented scholarships to (from left) Blair Smith, Raymond Dickey and Jonathon Hiley.



APEGM new members.

The Association would like to thank all of the following Annual General Meeting sponsors.

Canadian Engineering Memorial Foundation 2002 Engineering Scholarships

The Canadian Engineering Memorial Foundation believes that engineering will succeed in meeting society's needs and challenges by being a truly inclusive and diversified professional body and that one of the ways to do that is to attract women to the engineering profession.

The following Scholarships are available in 2002, to be awarded in the spring of 2003:

The Claudette Mackay-Lassonde Post-Graduate Engineering Scholarship

One \$15,000 scholarship is being offered to a woman enrolled full-time in 2002 in a graduate engineering program at the Ph.D. level.

This scholarship is based primarily upon demonstrated leadership, community involvement and extracurricular activities, with special emphasis on those that help attract or retain women in engineering. Engineering achievement is also considered in awarding the scholarship, and will be interpreted to include both research contributions and work experience.

Undergraduate Engineering Scholarships

Up to five \$5,000 scholarships are being offered to women accepted in the fall of 2002 into their first year of an undergraduate engineering program to encourage them to pur-



sue engineering as a career. One scholarship is awarded in each of British Columbia, the Prairie Provinces, Ontario, Quebec, and the Atlantic Provinces.

Scholarships are based primarily on demonstrated leadership, community involvement and extracurricular activities, with special emphasis on community service to recognize and encourage continued contribution to society. Work experience is also considered in awarding these scholarships.

Applicants for these scholarships must be willing to act as role models and to take action in promoting engineering as a career, particularly to young women. Winners of these Scholarships will be required to present their views to a pre-university audience.

The deadline for applications is January 24, 2003.

For more information about the CEMF Scholarships, criteria and application forms, visit our web site at www.cemf.ca. ■

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CANADIAN COUNCIL OF PROFESSIONAL ENGINEERS
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Council Reports

Wednesday, September 11, 2002

By: A.N. Kempam, P.Eng. (Ret.)

PROPOSED BY-LAW CHANGES SPARK CONTROVERSY

At the start of the meeting President Barakat ran through a few of the major items Council would cover that day. He mentioned that the SAE student chapter would be in the parking lot at 2:00 PM with one of their vehicles and Executive Director Dave Ennis said there would be an 'in camera' item regarding Microsoft's usage of the term engineer.

First off, Council had a distinguished guest in the person of Dr. Edmund Kuffel, former Dean of the Faculty of Engineering and a present-day member of The Canadian Academy of Engineering. The Academy has about 250 members, four of whom are from Manitoba. Many members are 'high-flyers' and many are academics. They are self-financing and self-governing and they issue reports every few years on important topics concerning society and the engineering profession. On this occasion Dr. Kuffel was there to talk to Council about the report "Protecting the Public and The Environment." After the presentation Councillor Permut asked what was next. Dr. Kuffel said the Academy expected input and a critique from the Association and for ways to implement the recommendations. Executive Director Ennis said a fair number of organizational "ends" lined up with the Academy's report.

In preparation for the AGM, Council examined the Auditor's report which revealed the Association's sound financial position. Executive Director Ennis noted that some expenses were up over last year and that was because the base for 2002 was twelve months instead of eleven. Councillor Silk asked if the Association was in compliance with its mandated investment goals. Mr. Ennis said they were.

The next item on the agenda, "Implementation of Report of Admissions Policy Review Committee," was controversial in the past and promised to be controversial today. The Admissions Policy Review was initiated by Council at the October, 2000, meeting. The review committee consisted of Past-President Hosang, President Barakat, and Councillor Syme. Their review didn't sit well with Director of Admission Shirley Matile and others. At this meeting Ms. Matile read a statement to Council listing her objections to the by-law changes arising from the review. She said the proposals were regres-

sive and would negatively impact the Association's reputation. She felt that implementing the by-laws would change the nature of the pre-registration program from mandatory to non-mandatory because experienced applicants received different treatment. Furthermore, she said the by-law changes were a serious departure from the current process and were neither necessary or desirable.

Executive Director Ennis had a different take on the situation. He said that the registration rules could be in the by-laws or they could be in the Manual of Admissions. The rules were presently in the by-laws and this meant frequent by-law amendments had to be pushed through the provincial legislature. He said having the rules reside in the Manual of Admissions would stop many of the annual by-law changes. In his assessment the mandatory nature of the registration program would not be altered by the proposed by-law changes. Furthermore, he said that according to APEGM policy, the Manual of Admissions came under the jurisdiction of the Executive Director.

Everyone had a chance to absorb some sunshine and fresh air in the parking lot when the SAE student chapter showed off their engineering prowess with their dune buggy and formula one vehicles. After last year's exciting demonstration the students showed they knew how to improve their designs. This year's dune buggy had a prominent kill switch within easy reach of the driver.

The balance of the meeting dealt with non-controversial, informational items. Councillor Poetker said that the EGAIAR Joint Board (our link to the architects) was functioning smoothly. President Barakat commented on the proposed Declaration of Compliance, one of the proposed new by-laws. All members would be required to sign the declaration when renewing their memberships. In essence it states that the member has voluntarily undertaken responsibility for their professional development. President Barakat said that as professionals it was up to the individual to comply and that the declaration would be filed and, if necessary, used in disciplinary procedures. Council learned that the CCPE annual assessment would rise over the next four years. Councillor Permut thought that graduated increases were the best way to proceed. Council learned that past president Peter Washchshyn was stepping down as CCPE Director in May of 2003 and that the Nominating Committee would use a list of past presidents to recruit a new CCPE representative.

Councillors present at the September meeting: Ferchoff, Pollard, Poetker, Gaudry, Cornell, Goldsborough, Gilmore, Harfield, Permut, Bailes, and Silk. ■

Wednesday, October 9, 2002

By: S.B. Williamson, EIT.

COUNCIL SAYS GOODBYE TO DEPARTING MEMBERS

Prior to getting down to business, an informal meeting was held in the council board room to thank a couple of council members who will be attending their last meeting. In attendance were President Moe Barakat, Councillors Gilmore, Pollard, Ferchoff, Syme, Permut, Goldsborough, and Gaudry, Executive Director David Ennis, CCPE Director Peter Washchshyn, CCPG Director Alan Bailes, and APEGM Staff. They thanked Councillor Allan Pollard and Councillor Alf Poetker (absent) for serving on Council.

President Barakat called the formal proceedings to order at 12:30 p.m. The usual items, adoption of the agenda, and a review of the minutes of the September Council meeting were briefly discussed, along with a couple of items being added to the agenda.

Executive Director Ennis provided a summary of the first item on the agenda. He and Councillor Cornell visited the Thompson and Kelsey Chapters in September. Executive Director Ennis highlighted the differences in attendance at the meetings of the two Chapters. The Thompson Chapter had a reduction in attendance from approximately 30 members to ten members, and of the attendees, five were Members-In-Training. He also commented on the enthusiasm that was shown by the Kelsey Chapter as reflected by the number of members in attendance.

The next item of interest involved a discussion of the Annual General Meeting (AGM). This two day event was summarized by Executive Director

Ennis with points ranging from the roles of the Councillors, proposed Bylaws and Amendments, and the Ministers who would be attending (Hon. Becky Barrett and Hon. Maryann Mihychuk).

The following items on the agenda involved a revision to the date of the next Council meeting and a motion being carried that the Executive Director request the Nominating Committee to provide the Chair of the Nominating Committee with a list of candidates for appointed councillors.

Discussion then turned to the need for Orientation and Policy Governance® Education for new Council members. Councillor Gaudry and Councillor Permut remarked that policy summaries and orientation should be given to all council members and not just new members. Council discussed the importance of having a smooth orientation for new members and also that assistance should be provided to the new Councillors by the returning council members in understanding Councils process of governance. Executive Director Ennis was instructed to schedule the agenda for the upcoming meeting to include Orientation and Policy Governance® Education for all council members.

Council then looked at a proposed new policy, Criteria Governing Professional Practice which was drafted by Executive Director Ennis. Minor revisions to the wording were amended at the meeting and a motion to approve the new policy was moved by Councilor Ferchoff and was seconded by Councilor Pollard. Executive Director Ennis also presented a draft monitoring schedule for monitoring executive performance. It was agreed that Council would try to monitor the reports as they were presented thus ensuring that they are valid and are meeting their ends.

CCPE Director Peter Washchshyn addressed Council and provided a summary of the CCPE Board

Continued on page 14

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Sustainability of Mineral Reserves in Canada

*A Seminar Presented by the PDAC – Mines Ministers' Conference, Winnipeg
September 16, 2002*

By: Bill Mercer

The Prospectors and Developers Association (PDAC) presented a seminar at the Mines Ministers' conference in Winnipeg on trends with respect to the Canadian mineral exploration industry. The talks resulted from work that developed out of the question as to what would it take to sustain mineral production in Canada. This work was an informal cooperative project between PDAC, Natural Resources Canada (NRCAN) and the Department of Geological Sciences and Geological Engineering of Queen's University. The seminar was addressed to delegates from various government departments from across the country. The objective was to present the facts around discovery rates, mineral production and related issues, so that hopefully a healthy discussion would ensue. Many of the presentations are to be repeated at the PDAC convention in March, 2003.

Bill Mercer, President of the PDAC, chaired the session and started the meeting with an overview of the cycle from exploration, through development and mining to closure. The emphasis was on the probabilities of a project succeeding, the costs at each stage and that environmental and social issues need to be considered at every stage of a project.

The following three presentations focused on exploration and discovery rates, on what present reserves are, and on the significance of small and large mines to Canada. The studies were restricted to base and precious metals and diamonds. The discovery rate trends were based on a database of mineral discoveries in Canada that was originally developed by Don Cranstone of NRCAN, and updated and refined by Gerald Harper of Gamah International. In Dr. Harper's talk



some interesting trends were clear:

- Discovery rate in terms of number of deposits plummeted in Canada at the start of the 1990s
- The value of discoveries, however, increased in the 1990s over the 80s, largely due to diamonds
- Of the 857 discoveries made in Canada from 1970 to present, over 60% have not come into production
- Average time from discovery (first announcement of a resource) to production was 6 years

Without diamonds, it is apparent that the exploration business would have been in an even more difficult situation than it is at present. Secondly, many significant deposits, often with values per tonne similar to those in production, are not producers due to a variety of reasons, often external pressures (parks, etc) or lack of infrastructure. Thirdly, the value of mineral deposits discovered is not directly related to money spent in exploration – the 1980s was a period of high expenditures, and many deposits were discovered, but of generally lower value per deposit.

Don Cranstone of NRCAN, then reviewed the relationship of

Canadian reserves to production. Dr. Cranstone presented a series of graphs going across the country, province by province, and commodity by commodity, showing the production and reserves. It was clear that for some metals, notably nickel, iron ore and uranium, Canada has relatively healthy reserves. However, others, such as copper, zinc, lead and silver, the country is facing declining production. Lead is the most dramatic example of this. The threatened declining production of "bread and butter" metals, such as copper and zinc, has profound implications for communities and downstream industries.

Mike Doggett of Queen's University then discussed the significance of small and large deposits to Canada. Companies tend to focus on large "world class" deposits as they have the most dramatic financial impact. For a country, large deposits – or country builders – are important as they establish new industries, grow and sustain communities for long periods and generate significant export earnings. However, smaller deposits – country sustainers – are frequently neglected but also important. For both copper and zinc, the top three mines produced about 50% of the metal, but the remaining 50% was produced by numerous smaller deposits. Small deposits maintain communities when the larger deposits run out of ore. They enable the maintenance of a core of trained miners – a small deposit may be less efficient, as it employs more people per tonne of production, but for a community that may be a benefit. Smaller deposits help maintain the infrastructure that larger mines

need to go into production. Thus, although both for companies and countries, large world class deposits are desirable, the benefits of small deposits should not be ignored, and may be far more important than is generally supposed.

Two papers were presented on related issues. Mary Claire Ward and Peter Dimmell outlined the importance of geoscience mapping to both society and industry. Governments are seen as the custodians of the geological mapping of the country. The basic information provided by such maps is important, not only to the mining industry, but as a societal good for hazard assessment, land use planning and infrastructure development. People in the mining and energy industries, in resource communities and in northern and Aboriginal communities depend on the provision of a geoscientific database as a form of infrastructure. Both provincial and federal governments committed to Cooperative Mapping Strategies but many are not living up to the commitments made under these strategies.

Finally Mike Doggett and Bill Mercer described the problem of aging demographics of the industry, driven by the poor recent economics of the industry, which is in turn caused partially by recent poor metal prices. From a number of perspectives it is apparent that the exploration industry has skewed demographics compared to the Canadian population. Something between 35 and 45% of the geoscientists in the PDAC and in a survey by the Canadian Geoscience Council are due to reach the retire-

Continued on page 13

Notice

Payment of 2003 Fees

Annual Dues invoices have been mailed to all members and members-in-training. If you have not received yours, please contact the APEGM office.

University of Manitoba's Formula SAE Design 2002

By: Neil Doherty, 4th year Mechanical Engineering student, FormulaSAE Project Manager

The Formula SAE (FSAE) is one of the annual Collegiate Design Series competitions sponsored by the Society of Automotive Engineers (SAE) International. The FSAE Competition, in Pontiac, Michigan is the largest worldwide gathering of engineering and other degree seeking students with interests in motor sport engineering. The objective of the FSAE competition is for student members to conceive, design, fabricate, and compete small formula-style racing cars.

The car frame and engine have restrictions placed upon them so that the knowledge, creativity, and imagination of the students are challenged. The cars are built by student teams over a period of about one year. They are then taken to the annual competition for judging and comparison with approximately 120 other vehicles from colleges and universities throughout the world. The result is a great experience for engineering students. The competition is a meaningful engineering project accomplished through dedicated team effort. It also gives them an opportunity to meet automotive professionals as well students from around the world.

For the purpose of this competition, the students are to assume that a manufacturing firm has engaged them to produce a prototype car for evaluation as a production item. The intended sales market is the non-professional weekend autocross racer. Thus the design of the car must provide for very high performance in terms of its acceleration, braking, and handling qualities. The

car must be low in cost, easy to maintain, and reliable. In addition, the car's marketability is enhanced by other factors such as aesthetics, comfort, and use of common parts. The manufacturing firm is assumed to be producing four cars per day for a limited production run and the prototype vehicle should cost below \$25,000.

The design team is challenged to design and fabricate a prototype car that best meets these goals and intents. Each design is compared and judged with other competing designs to determine the best overall car.

The entire competition is four days in duration. The cars are judged in a series of static and dynamic events including: technical inspection, cost, presentation, engineering design, solo performance trials, and high performance track endurance. These events are scored to determine how well the car performs.

In each event, the manufacturing firm has specified minimum acceptable performance levels that are reflected in the scoring equations. The following points are possible:

Static Events

- Presentation 75
- Engineering Design 150
- Cost Analysis 100

Dynamic Events

- Acceleration 75
- Skid-Pad Event 50
- Autocross Event 150
- Fuel Economy Event 50
- Endurance Track Event 350

Total Points 1,000



U of M FSAE 2002 Race Car in Pontiac, Michigan.

With financial assistance and material donations from both local industries and the University of Manitoba, the U of M team was able to fabricate a competitive race car.

Since none of the members of the 2002 Formula team had ever been present at the FSAE competition, the goals for attendance were simple. To attend and experience the competition environment, and to pass the rigorous three part technical inspection which would allow the car to participate in the dynamic events. The FSAE Team at the University of Manitoba is proud to say that they achieved both of the intended goals.

The experience gained by attending this competition was invaluable. The most remarkable aspects of the competition were the morale and

attitude of all the other student competitors. Every team at the event was willing to provide knowledge, parts, and spare equipment to help any other team reach their goal.

This assistance as well as the suggestions and input from more experienced teams, helped the U of M team to find their shortcomings as a team and in the vehicle design. Future competitions will provide continued improvements in all aspects of the Formula team's management and design methodology, as well as providing a great educational experience.

With local sponsors' continued dedication and support to the University of Manitoba SAE Teams there will certainly be an even more rewarding outcome in Pontiac, Michigan in 2003. ■

CCPE CEO's Message

Continued from page 5

work in this country. The P.Eng. says we've earned the right to work in a profession that carries with it tremendous personal satisfaction and hope for the future.

Unless we make the public aware of the meaning and significance of the P.Eng. and what it means to call yourself an engineer, there will always be confusion that pushes people like MCSE certificate holders to take advantage of our status as engineers and, more importantly, inadvertently put the Canadian public at risk.

I hope you will all agree with me that our licence is of great value to the public and to us. Let's make sure everyone understands what the P.Eng. licence means! ■

APEGM VISION

APEGM is the leader and a facilitator of the process that ensures excellence in engineering, geoscience, and applied technology for the public of Manitoba.



FSAE 2002 members in Pontiac, Michigan (L to R): Sean Zasada, Malcolm Symonds, Darren Collyer and Adam Palanuk.

China's Yangtze Project

V. L. Dutton, P.Eng. (Ret.) *Québec Science, Juin 2002, pp 98-99*

China's economic growth – on average by 8% per year – has created a huge need for water and electricity. To meet these needs China is about to build a system of canals that will move some of the water of the Yangtze into the Yellow. The objective is to move 48 billion cubic metres of water from the south to the north each year.

Begun in 2002, the construction of three canals is expected to take a dozen years. In addition to the canals, many aqueducts and tunnels, each up to 1,000 km in length, will be used to traverse hundreds of mountains that are all oriented in an east-west direction.

The opinion of some Chinese experts is more reserved, but they recognize the need for the project. 36% of the population (400 million people) have access to only 12% of the available water. This shortage is costly – 11 billion American dollars in industrial losses each year and 4 billion in health costs.

The crisis is worsening: lakes are disappearing, the Gobi desert is moving eastward on a front of 10,000 km, and sand-storms are reaching the gates of Peking. As one spokesman said, "In less than 20 years, the reservoirs will be empty." Already, during the summer of 2000, the Yellow river was dry for 120 days over 700 km of its length due to excessive pumping.

There are many technical and ecological unknowns to worry the planners. The hydrologists know that there is little they can do against the average rate of evaporation of 10% per year in the canals. Of more concern will be the losses due to fissures in the rock through which the canals will pass.

A major concern is the ecological problem of the flora and fauna of the north and south of China suddenly being brought together after millions of years of separate evolution. The biologists have no idea of the impact the lentils, algae, lichens,

crocodiles, dolphins and salamanders of the Yangtze will have in the basin of the Yellow river. The extinction of species is probable and catastrophes possible.

Another major technical problem concerns the western section of the project where it reaches the Tibetan plateau at elevations between 5,000 m and 6,000 m. In order to prevent freezing it will be necessary to install conduits having a diameter of 8.5 m. Also, there will be dams of 200 m to 300 m in height. To move the water through this section of the system will require very large pumps consuming billions of kw/h per year. Construction techniques at such altitudes simply do not exist. They know already that this section, programmed for later, will consume two-thirds of the final cost in order to guarantee the delivery of a very pure water.

For the central and eastern sections the Chinese government expects to have to invest 24 billion dollars American. (The Three Gorges dam – the largest hydro-electric system in the world – cost 20 billion dollars.) For the entire project, they talk of 60 billion dollars, but considering the inevitable rise in cost of materials and machinery as well as the increase in salaries during the long construction period, it is expected that the final bill runs the risk of doubling.

It is hard for westerners to appreciate the approach the Chinese have



traditionally taken to water and sewage. Many public toilets leak and broken water-distribution systems cause huge losses of water. Waste-water and industrial effluents are simply discharged into the river. Also, 1 000 m² of irrigation water from the Yangtze costs the peasant

the same as a bottle of mineral water. Chinese farmers have much to learn about water. The modernizing of the rural water-and-waste systems may well turn out to be the most formidable task of this huge project. ■

Annual General Meeting

Continued from page 6

By-laws themselves were not changing, merely the location. Furthermore, the executive was ultimately responsible to the membership and this provided a necessary and sufficient check on the application of their authority in any proposed amendments to the requirements.

The Declaration of Competence was proposed as a means of ensuring the public that we as professionals are maintaining our abilities while reminding engineers of the need to obtain professional development relevant to the scope of work being performed. A concern was expressed that the list of those making the Declaration could be used for purposes other than that being expressed at the AGM.

In the end, all amendments were adopted by the majority of members present.

It was reassuring to see the level of interest and passion that members brought to the debate in regards to how we govern ourselves, as this is where we as a profession have meaningful input into the manner in which we conduct business within our profession.

Due to the heated debate over amendments to the By-laws, the

break for lunch was delayed. However, when lunch came it was delicious. Following lunch we were entertained and informed by Dr. Henry Petroski from Duke University, whose topic dealt with the importance of knowing the history of engineering and engineering accomplishments. He used bridge-building as an example of how knowledge of history can ebb and flow, resulting in failure or, conversely, the avoidance of failure. Dr. Petroski examined the development of suspension bridges as a reliable and cost-efficient structure, along with the competing vision of bridges as an art form. This was applied to the first Tacoma Narrows Bridge, where aesthetics and the failure to appreciate the design elements underpinning the structural elements resulted in catastrophic failure. Finally, the present development of cable stay bridges was examined in light of how our knowledge of history can inform and shape the development of this construction technique.

The meeting continued during the afternoon session, and wrapped up the day's business by welcoming our new President, Lawrence R. Ferchoff, P.Eng. with the traditional Gavel Ceremony, following which Mr. Ferchoff briefly addressed those present. The meeting was then adjourned and each of us departed with much of the day still waiting for us. ■



Professional Development

The 2002 AGM Professional Development Conference – An Excellent Learning Opportunity

By: R.J. Bruce, P.Eng.

What do you do if you are a renowned professor of ethics and you are faced with a crumbling foundation – do you sink enough money to buy a Mercedes Benz into repairing it – or do you patch it and paint it and then sell it and “let the buyer beware”? This question was posed to the registrants at this years PD conference during a presentation by Professor Art Schafer titled “The Virtuous Engineer: Does Ethics Pay?”. This was one of the seven excellent presentations at the conference.

The conference was nearly sold out, with over 100 people registered for it, and the presenters had a challenging task of condensing presentations that normally take hours into time slots of between 45 and 60 minutes in order to give an overview of their subject. The focus of the presentations was on “soft skills” – people and organization skills needed by engineers and geoscientist to succeed in their lives. This theme continues to be seen by the



membership as an area of professional development that should be provided at events such as the PD conference.

The seven presentations were entitled: “Team Building – Dancing With a Bear”, “Plain Language Communication-Sounds so Simple!”, “Successfully handling Stress in the Workplace”, “Mentoring”, “The Virtuous Engineer: Does Ethics Pay?”, “Situational Leadership”, and “Project Management

and its Applications”. This covered a broad range of topics and the audience was privileged to have some gifted presenters to hear from, and although this was a long day, it kept the attendees engaged.

During the question period the audience got their answer to the question at the beginning of this article and to the title of that presentation: you do the ethical thing and you can live with your conscience and preserve your reputation in the long run. Other presentations provided valuable insights into leadership, how to strike a balance in your work in order to reduce stress, how to get your point across and maintain good working relationships with colleagues and how a large construction project was managed.

The organizing committee thanks the members who committed the time to attend, the excellent presenters, and the APEGM staff who worked at the event. You all helped to make this years PD conference a success. ■

Professional Development

By: B.W. Purdy, P.Eng.

On September 18, 2002, Mr. John Madison, Vice-President of Aon Reed Stenhouse Inc., gave a presentation on Construction (Surety) Bonding.

The presentation focused on the three main types of construction bonds: 1.) Bid Bonds, 2.) Performance Bonds and, 3.) Labour and Material Payment Bonds and what the various parties to a contract might expect from each in the event of problems (default).

Mr. Madison gave examples of how a Performance Bond may respond when a contractor is unable to complete a contract. He explained that while the Performance Bond does provide for the completion of the contract, it is not intended to respond to claims from trade contractors for unpaid bills. A Labour & Material Bond is intended to pick up this construction exposure.

He explained that brokers like Aon Reed Stenhouse are given working authorities to issue bonds on behalf of the surety companies they represent.

In addition to the above, Mr. Madison also spent some time reviewing the current state of the insurance and surety marketplace. While the events of 9/11 and Enron have certainly had their impact on the world wide reinsurance market, a recent article in a major financial newspaper quotes a reinsurer as saying that the collapse of the stock market has in itself, removed more capital from the insurance marketplace than these two combined. The article suggests that the increases in premiums most insurance buyers are experiencing may not be short lived.

Mr. Madison responded to several questions from the audience. The questions dealt with how contractors qualify for bonds, the amount of coverage each bond provides and how to know if a bond is valid. Mr. Dave McKibbin, Chair of the Professional Development Committee, thanked Mr. Madison for the interesting presentation. ■

Notices

Golden Links Lodge Personal Care Home is seeking an individual to serve as a community representative on the Board of Directors. Term of office is one year with options for continuation. Interested individuals should have an engineering or construction background, an interest in the elderly and be able to attend monthly meetings.

Please send a letter of interest with a brief biography on or before December 15th to:

Mr. Herman Nikkel, Chair of the Board
c/o Golden Links lodge
2280 St. Mary's Road
Winnipeg, Manitoba R2M 4A5

The Association would like to advise all members and members-in-training that Shirley Matile, P.Eng., Director of Admissions, is currently on a two-year leave of absence.

Sustainability of Minerals Reserves

Continued from page 10

ment age of 65 over the next 15 years. There is not easy answer to this, but the success of the Canadian mining industry on the world stage is wholly due to its people. A healthy Canadian mining industry has given many benefits to Canadian society as well as other countries. Illustration is given of US\$3B in investment in a sample of 5 projects in less developed or developing countries, that resulted directly from the activities of Canadian junior companies. The danger to Canadian exploration is that some 15 years from now, there will be start to be a shortage of experienced geoscientists who can carry the industry forward to the future. ■

THOUGHTS ON

Design

...Is it an applied science or an art?

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

At a number of universities, engineering students receive degrees in "Applied Science". One can infer from this that our profession is simply science that has been put to some practical use. There is no question that our design and analysis tools are based on "scientific truth", but does that make design the simple application of science?

It is always dangerous to generalize, but when asked to differentiate between Engineers and Scientists, I like to reflect on the manner in which each group responds to problems. Typically Scientists will attempt to explain the root causes of the problem, supporting their argument with accepted scientific "fact" or undertaking research to support their explanation. On the other hand, Engineers tend to seek out a solution

to the problem, usually based on a series of assumptions and approximations that will enable them to arrive at some practical end point. The Scientist deals with an explanation of what is. The Engineer deals with the creation of what can be. The "tools and rules" are more or less the same. It is the direction of travel that is different.

With regard to direction of travel, some persons hold the view that the practice of Engineering has much more in common with the experience of being an artist than being a scientist, applied or otherwise. And there are some interesting similarities.

Engineers "create" solutions to problems. Petroski has suggested that "Engineering is the rearrangement of what is." We start by assum-

ing something into existence, gathering "parts" from whatever resources we have access to and then refining the concept until a real object, process, or system emerges. Artists "create" in much the same manner. They have a vision of something and they proceed to use a blank canvas, a block of marble, a lump of clay or any number of other media to cause that vision to be realized. In neither case do we spend a great deal of time explaining the wheres or whys of what we have done. The target is to "create", and the end product, whatever it is, justifies the process.

Material constraints are the bane of every engineer's existence. Physical properties, cost, durability, availability, compatibility, all place limits on what we are able to do. The end product is defined by the materials we have at our disposal. In spite of our creative input, the realities of materials inevitably rule the day. But again, artists face the same problem. Sculptures must resist loads just as buildings must. Paintings are affected by creep in the canvas and chemical instability in the paint. If the artist's work is to endure, they

must find ways to deal with material limitations just as we do.

Analysis provides us with some level of comfort because it is a theoretical reassurance that our designs will work as we intend them to. Increasingly we use analysis to optimize our systems and/or to replace prototype testing. Computer models provide virtual products that can be subjected to virtual usage patterns and analysed to predict performance. While it is very unlikely that artists will submit their work to the same sort of rigorous mathematical assessments as the engineer, they do analyse appearance, proportions, and impact. Artists seek to create an effect, and that effect is usually well considered.

If innovation is considered to be the creation of something new, the parallel between engineers and artists is, as the math professor said, intuitively obvious. Engineers seek to provide new solutions to new problems. Artists seek to provide new effects or new perspectives relating to the world around them. Innovation is fundamental to either endeavour.

So, if we share the experiences of creativity, material constraint, analysis, and innovation, does that mean that art and engineering are, if not siblings, at least close relatives? If we use science as a base of understanding, but frequently venture outside of the limits of "known" facts, are we more than "applied scientists"? Does it make sense to suggest that engineering design is really just "practical art"? ■

October Council Report

Continued from page 8

of Directors meeting. Mr. Washchysyn advised Council that the Canadian Engineering International Board and the Canadian Engineering Resources Board will no longer exist because of revenue cutbacks at CCPE.

The CCPE Director also gave a brief summary on some preliminary results of a recent survey about engineering enrollment. These early results have indicated that enrollment in the computer and mechanical disciplines are rising at an extreme rate while enrollment in the civil engineering program is declining. Reasons for the changes in enrollment trends will be finalized and presented at future meetings.

Mr. Washchysyn also provided comments on the title of Microsoft Certified Engineer and how this still remains an unresolved issue. The CCPE Director also discussed issues arising from the Kyoto Accord. He emphasized that the Accord and climate change are not the same issue. Mr. Washchysyn indicated that the CCPE will be seeking an appropriate audience to

present a constructive unbiased commentary on the Accord.

Councillor Permut provided a summary of a meeting with HRDC he recently attended in Halifax. One of the Councillor's key points that lead to a discussion was from a recent study indicating that there are more foreign educated engineers immigrating to Canada each year than there are engineers graduating from Canadian Universities. Councillor Permut also commented that the HRDC is looking for a model with a holistic approach in evaluating the qualifications of immigrants from the engineering profession. He noted that the Federal Government also believes that labour integration is important and that the Government would consider providing funding. The CCPE is preparing a proposal on what needs to be done, what areas need to be addressed, and how it should proceed. The Council was in agreement that the standards must not be lowered and that the public be protected.

The Council meeting wrapped up with a couple of FYI's and was adjourned at a surprisingly early hour of 3:40 p.m. ■

First Annual APEGM Bingo Bowl & Pizza



- When:** Friday, Feb. 7, 2003
Time: Bowling from 9:00pm-12:00am, Pizza @ 10:30pm
Where: Garry Lanes – 1118 Pembina Hwy. (Licensed)
Who: APEGM members and guest
Why: To socialize in a non-business setting
Cost: \$16.00 per person for bowling, shoes, pizza & prizes

Please submit payment to APEGM before January 24, 2003. We are limited to a maximum 48 bowlers. NO registration will be accepted without payment.

COMMITTEE REPORT

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This Committee Report was inadvertently excluded from the September 2002 Keystone Professional

Safety in Engineering Practice Committee

F.A. Roberts, Chair

Members

M.S. Anderson
D.R. Beacham
D.N. Burney
D.E. Cross
A.O. Dyregrov
O.C.B. Edirmanasinghe
M.J. Frye
T. Gluck
J.S. Sagoo
P.T. Sims
R.D. Stark
V.J. Tanner
J.V. Weiszmann



It goes without saying that the hallmark of good engineering practice is that it ensures the safety of the public and all those involved, while achieving the desired design objectives. To be successful in accomplishing both effective and safe designs, engineers must have the best and most complete information available to them. Advice and experience shared by peers is a very valuable way to protect the public and enhance the effectiveness of our profession.

Again, this year the Safety in Engineering Practice Committee has been grateful to members who have brought issues to our attention to ensure that unsafe situations can be avoided. The Committee has been able to examine the concerns and publish notices to membership or where appropriate advise the relevant authority.

The composition of the committee is intended to represent the widest possible spectrum of disciplines and industry sectors. This year we have been joined by Vic Tanner whose practice involves timber design and Ben Edirmanasinghe, a Senior Mining Engineer with the Province of Manitoba.

The following are highlights of issues which have come before the committee.

Wood Truss Installations

A concern was raised that large wood trusses are often designed by manufacturers but frequently are incorporated into building roof structures where professional engineers are not involved in the design of the overall project, or involved with only specific aspects of the project. Thus responsibility for the design of truss bracing systems can fall through the cracks.

Wood trusses vary significantly in complexity of design and their need for lateral bracing. Wood trusses may require not only bracing at panel points but also lateral bracing for the bracing members themselves. In properly engineered structures, bracing systems required for installa-

tion of wood trusses are carefully detailed. Problems arise when large trusses are installed without consulting appropriate design professionals. The greatest area of concern is the use of these products in large farm structures where the building process is largely unregulated.

This situation gave rise to discussions in the committee regarding the safety of large farm structures and recommendations regarding the adoption of the Canadian Farm Building Code. In the meantime, members who are aware of large wood structures where bracing systems may not have been designed adequately should contact local authorities.

Farm Building Code

The construction of farm buildings is largely unregulated in the Province of Manitoba due to their exclusion from the Buildings and Mobile Homes Act.

The problem with wood trusses considered by the committee is only one example of problems which can occur when large structures are built on farms without the required design input and without proper plan examination. While still considered "farm buildings", the trend in agriculture is for larger and larger structures which more closely resemble industrial processing plants.

The committee is concerned that this type of structure must be built with regard for proper design and adherence to the relevant sections of Parts 3 and 4 of the National Building Code.

After much discussion, the committee prepared a recommendation to the Minister of Labour for the Province of Manitoba that the Farm Building Code be adopted in the Province under the Buildings and Mobile Homes Act to deal with this situation.

It is noteworthy that during the course of our deliberations on this issue, the committee became aware of similar concerns from insurers who have been faced with major losses as a result of collapses and fires.

We are hopeful that through the efforts of the profession, building authorities and other stakeholders that significant improvements can be made to the safety of structures in the farm industry.

Fire Hydrants on Low Pressure Water Mains

The committee concluded its investigation of the use of fire hydrants as clean outs on low pressure water mains which were never intended for fire fighting. The committee is grateful to the assistance of Chris Macey for obtaining valuable information and presenting it to the committee.

It appears there may be many locations in the province where fire hydrants have been used at the end of runs on small diameter, low pressure water mains as a convenient means of providing a clean out. SEPC believes there is a danger in pro-

viding a fire hydrant which has the appearance of meeting the requirements for fire protection, but where the water service is unable to deliver necessary flows.

Present regulations do not appear to deal specifically with this issue. However, the AWWA Manual of Practice prohibits the use of such hydrants. It should also be noted that a recent decision in Ontario confirmed the public's right to expect that where a fire hydrant is installed, it should be capable of delivering the necessary level of fire protection.

Safety Issues

The SEPC Committee requests that members who become aware of safety issues bring them to the attention of the committee by way of the chairman or registrar. Matters will be dealt with in confidence where requested.

The Committee

I would like to thank all the members of the committee for their generous support in attending meetings and investigating issues on subcommittees. They have given generously of their time and expertise in their commitment to the profession.

On behalf of the committee I would like to thank Dave Ennis and the APEGM staff for his continuing support of the work of this committee. ■

Position Available in APEGM Office

The Association is seeking a professional member (P. Eng. or P. Geo.) for employment in a term position expiring in November of 2004 with the possibility of an extension thereafter, or conversion to another permanent position.

The duties would be primarily in the admissions area of the Association's operations (member-in-training program, registrations and assessment of unaccredited degrees), but would also involve other operational aspects.

Expressions of interest will be held in confidence and should be forwarded to the Executive Director at the Association office or by e-mail to daennis@apegm.mb.ca by December 16, 2002.

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



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