

THE KEYSTONE PROFESSIONAL

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- **87th ANNUAL GENERAL MEETING**
- **CCPG Opens Its First Staffed National Office**



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

SEPTEMBER 2006
www.apegm.mb.ca

2006 Making Links Engineering Classic Golf Tournament

M. Isaak

The third annual Making Links Engineering Classic (MLEC) was combined with the Spring Golf Tournament this year and held on June 15, 2006 at Quarry Oaks Golf Course in Steinbach. The tournament is put on every year by the APEGM Sports Committee in association with the University of Manitoba. Net proceeds from the MLEC go to the education of Manitoba's future engineers at the University of Manitoba.



1st place team: John Jonasson, John McCabe, Rick Lamoine, and Paul Bauer

This year's tournament was a huge success, boasting an attendance of over two hundred registered golfers and raising over \$10,000 for the Faculty of Engineering at the University of Manitoba. The weather cooperated for the attendees, though rain and thunderstorms were forecasted, it remained warm and pleasant for a round of golf.

The tournament itself went off without any hold-ups. It was a great opportunity to enjoy the outdoors and some golf with old and new friends, spouses, and co-workers.

Once the tournament was finished, the golfers turned in their clubs for a set of cutlery and indulged themselves in a tasty meal put on by Quarry Oaks staff. It consisted of BBQ chicken and ribs with chocolate mousse for dessert. As the evening went on, dinner was cleared away and the formalities of the evening began.

Speeches were made by Mr. Rob Roberts from Canad Inns, the major sponsor for the 2006 tournament, and by Dr. Doug Ruth, the Dean of Engineering at the University of Manitoba. Many thanks were given out on behalf of the University of Manitoba for the generous donation from the MLEC golf tournament.

Continued on page 15

This area is in recognition of those who have endeavoured to support and fund the MLEC, without whom, we would not be able to bring you such an outstanding day of golf and networking.

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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.

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M. Augustyniak	R. Ghamsari	D.H. MacKenzie	Samarasekera
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D.J. Edgerton R.T. Rasor R.F. Williamson

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Certificates of Authorization May, June & July 2006

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In Memoriam

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

Siggi Goodbrandson Christopher Preston





President's Message

Digvir S. Jayas, Ph.D., P.Eng.

Governance Model for APEGM

APEGM relies heavily on volunteers for its operation and for achieving its mandate. On behalf of the APEGM Council, I want to thank over 200 volunteers for their contributions to the association.

In this issue, I wish to highlight how the governance process adopted by Council a few years ago has helped Council members to focus on the strategic direction and has kept them away from interfering in the day-to-day running or micro-management of the Association.

Over the past five years, Council has adopted, refined, and implemented the Carver model for

governance. Under this model, Council focuses on long- and short- term objectives (Ends) to be achieved and the Executive Director then develops an implementation plan to achieve the stated Ends.

Through monitoring the progress towards the Ends, Council achieves its mandate. The Nominating Committee approaches volunteers to run for Council to provide this broad thinking. At times, people decline to run for Council because of heavy workloads or because they feel that the position will take a lot of work. However, they may miss out on the opportunity to share in this broad thinking among friends, and to

experience the results of the implementation of their broad thinking.

Some aspects of what one learns in this setting can be applied to his or her job setting and in other personal interest activities. If you enjoy this kind of broad thinking and direction-setting role, then I encourage you to get involved in APEGM.

Therefore, next year when members of the Nominating Committee approach you to run for Council, I hope you will give it some serious thought. They will be approaching you because they have seen you perform in this role in some other setting.

Another very important aspect of the Carver governance model is Council to link with its moral owners. For APEGM, there are several groups which are moral owners. APEGM's mandate is to protect and promote public interest through the professional excellence of engineers and geoscientists who have the privilege to self regulate.

Therefore, the public of Manitoba is the first moral owner. It delivers its mandate through its members, thus its members are also moral owners. Examples of other groups of moral owners are: other sister organizations (e.g. Manitoba Association of Architects, Certified Technicians and Technologists Association of Manitoba, etc.), the government of Manitoba, prospective members of APEGM, and internationally educated engineers and geoscientists.

Council needs input from all these groups to set its Ends. I, therefore, invite you to provide your input to your Council by writing, phoning or emailing me or the association office.

Council is also developing a plan to seek input from its moral owners in a structured fashion. Please e-mail me with your thoughts at digvir_jayas@umanitoba.ca or write to me at the APEGM address. Your input and involvement are critical! ■

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April 20, 2006

Treating Our Water . . . Right! Winnipeg's Water Treatment Program

S.B. Williamson, P.Eng.

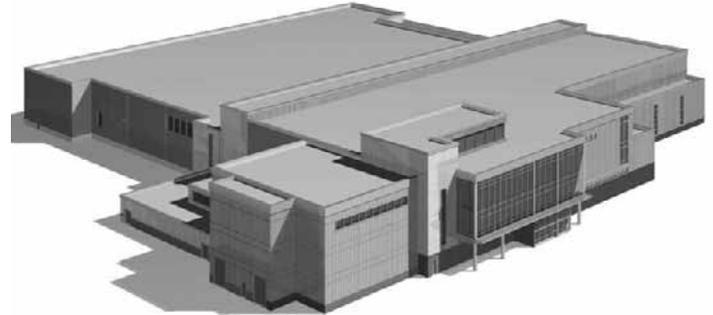
Approximately 60 people attended the APEGM professional development presentation on Winnipeg's Water Treatment Program at the Holiday Inn South on April 20, 2006. The presentation was given by the Director of the Water Treatment Program, Tom Pearson, P.Eng., from the City of Winnipeg's Water and Waste Department.

Mr. Pearson began the presentation by providing some background information on the existing potable water supply in Winnipeg. Specifically, he noted that Winnipeg's water originates from Shoal Lake and flows through approximately 150km of aqueduct to four storage reservoirs located at Deacons corner, just east of the City.

Since the completion of the aqueduct in 1919, Winnipeg has

enjoyed a high quality reliable water supply from Shoal Lake, and therefore, requiring minimal treatment. The only form of treatment currently includes the addition of: chlorine for disinfection purposes; fluoride for dental protection; and orthophosphate for lead control.

In 1993, Winnipeg City Council accepted the recommendation to undertake water treatment within a ten year time frame. Between 1995 and 1999, a comprehensive program of monitoring, pilot testing and engineering studies were undertaken to identify processes for treating Winnipeg's water. In 2000, City Council adopted a recommendation that Winnipeg proceed with a water treatment program.



Rendering of Winnipeg's New Water Treatment Plant.
Courtesy of T. Pearson

Why Treat Our Water?

Mr. Pearson pointed out that water treatment is about protecting Public Health now and into the future. A survey of residents/consumers conducted in 1999 illustrated that providing water that was safe and healthy to drink had received the highest priority. To meet the objective of providing safe drinking water, additional water treatment was necessary to reduce the risk of waterborne disease outbreaks caused by chlorine resistant micro-organisms.

Mr. Pearson noted that the current form of treatment, chlorine disinfection, is effective against bacteria and viruses. However, chlorine is relatively ineffective against protozoa known as Giardia as it requires high dosages and long contact times. Also, chlorine is not effective against the protozoan parasite Cryptosporidium. Giardia and Cryptosporidium can be found in surface waters that are

contaminated by mammal faeces. Both protozoa can lead to gastrointestinal infections, with the major symptoms being vomiting, fever and diarrhea.

In the presentation, it was noted that the additional water treatment will help prevent outbreak occurrences similar to that of North Battleford or Milwaukee. In North Battleford, a Cryptosporidium outbreak in 2001 caused six to seven thousand people to become ill. Luckily, there were no deaths. In 1993, a Cryptosporidium outbreak that occurred in Milwaukee contributed to the death of over 100 individuals with compromised immune systems.

Other benefits in providing additional treatment to Winnipeg's water supply include reducing chlorine disinfection by-products, improving aesthetics such as taste, odour, and clarity, and overall, meeting the Guidelines for Canadian Drinking Water Quality.

Continued on page 5

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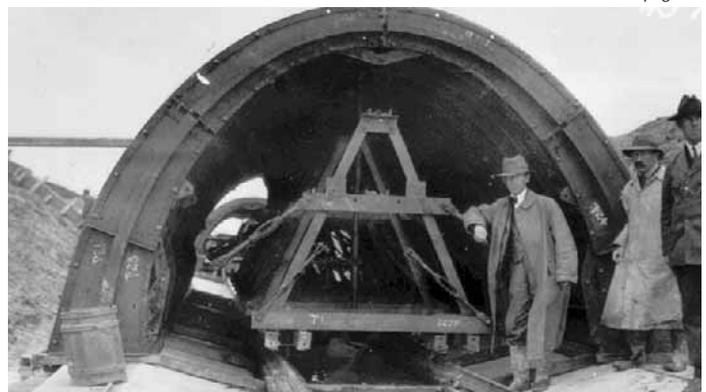


ENGINEERING



RED RIVER
COLLEGE

ORANGE BARRIS, SCARLETT AND TULLOCH



Aqueduct Under Construction – Completed in 1919.
Courtesy of T. Pearson

Engineering Philosophy 101

... about being hidden in plain view

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

You often hear academics speak about “academic freedom”. This past June, I discovered true “academic freedom” when my wife and I toured through Alaska and the Yukon and I was completely free of any and all electronic connections.

It wasn’t because these connections don’t exist in that part of the continent, but rather because I chose to leave my electronic links at home. It provided a chance to relax, to observe, and to think about what we saw, and what others thought was worth seeing.

Basically there were two dominant themes associated with our tour, wildlife and history. We saw bears, Dahl sheep, caribou, moose, eagles, and fox all in their “natural” habitat. I say “natural” because we observed them from air-conditioned buses that drove on roads that clung to the sides of mountains and from rest stops that were equipped with “environmentally friendly” facilities.

History in this part of the continent is almost current affairs to some of us. At the beginning of

the 20th century gold lured many people north, bringing their ideas of civilization and governance with them. Places like Dawson City grew almost overnight and then died as people moved to the next “strike”.

Tourists have, for the most part, replaced gold in the economy now. And because of the tourism industry we had a chance to visit the site of the original strike on Bonanza Creek, to tour a gold dredge and to observe the after effects of the mechanized search for wealth.

Restored infrastructure in the form of the Whitehorse and Yukon Route narrow gauge railway presented truly breathtaking views of the Chilkoot Trail and the White Pass Trail where people (mostly men) and beasts struggled to reach the gold fields. As I listened to our fellow passengers, I wasn’t sure too many of them noticed that we were being pulled by a diesel-electric engine and that the coaches were climate controlled.

Once we were “at sea”, we spent a day cruising into Glacier Bay National Park. When Captain Vancouver explored this area some 200 years ago, the bay didn’t exist,

but rather it presented a wall of ice at the coast line. We, on the other hand, sailed up the bay to view some 19 glaciers feeding into open water. At one point the ship was allowed to drift so we could hear the sounds of the glaciers as well as watch as they “calved” into the bay. Our vantage point, from our stateroom veranda, was, no doubt, much more comfortable than that experienced by Vancouver and his men.

Throughout the tour, the “human” story was always at the forefront. We heard about the wisdom of those who sought to preserve the wilderness for the wildlife, the hardships of those who came to search for gold and the independence and strength of those who chose to overcome and “civilize” the harsh climate and difficult environment. But as I sat on the ship, bus, train, or boat; as I enjoyed a beer and the floor show at Diamond Tooth Gerties Gambling Hall; and as I listened to the poems of Robert Service, I kept reflecting on the engineering input that enabled it all to happen, both then and now.

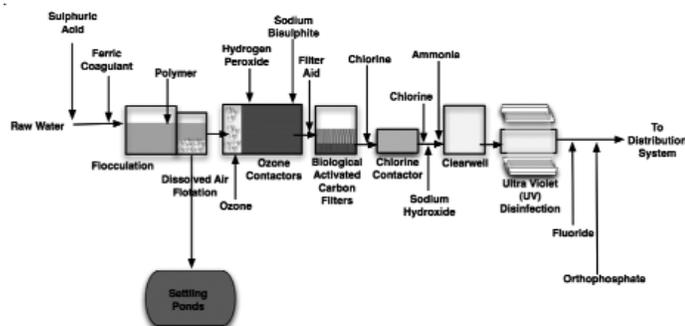
My different perspective became clear to me when a fellow tourist asked me what I had just taken a picture of. She hadn’t notice the bridge and she didn’t seem interested when I pointed it out.

But wherever I looked I saw engineering in action. Roads, bridges, air fields, communication towers, oil pipelines all stood as symbols of our profession’s ability to deal with a less than inviting environment. Buses, boats, planes, ships all allowed people in less than prime physical condition to experience areas that were, as recently as 50 years ago, accessible to only the healthiest and hardiest of people.

We relaxed in air conditioned comfort on trains and buses. We had a delicious meal while sailing down the Yukon River, again in air conditioned comfort. We enjoyed “room service” while sitting on our veranda and watching, and listening to, the glaciers move slowly to the sea. We took in a wine tasting experience and gourmet meals while sailing down the inside passage.

Throughout it all, I kept thinking of the engineering that allowed us to have this experience. I suspect I was the only one who gave it even a passing thought. And Doug Ruth’s comment that “engineering hides in plain view” kept coming back to me. ■

WATER...Continued from page 4...



Winnipeg’s New Water Treatment Plant Processes. Courtesy of T. Pearson

Treatment Processes

Treatment will take on a multi-barrier approach. This means that the water treatment plant will have multiple stages of treatment. For example, treatment for Giardia and Cryptosporidium will involve physical removal (ie. chemical coagulation and filtration) and inactivation via ultraviolet irradiation (UV). Another example includes the addition of ozone for

improving taste and odour, which also acts as a powerful disinfectant and is effective against the viruses Giardia and Cryptosporidium. The end result is a high degree of certainty that the water is effectively treated and therefore safe to drink.

The new treatment plant will consist of the following main processes:

- Dissolved Air Flotation (DAF) – Particles are floated to the

surface and are removed by a scraping mechanism.

- Ozone – Oxidizes taste and odour causing compounds. Also acts as a disinfectant.
 - Biological Activated Carbon Filters (BAC) – Polishes the water by filtering out particles and there is a biological reduction of contaminants.
 - Chloramination – The addition of chlorine and ammonia to produce chloramines (a disinfectant), in which a residual is maintained within the distribution system.
 - UV (currently installed) – additional disinfection for chlorine resistant micro-organisms, such as Giardia and Cryptosporidium.
- The water treatment plant has a projected design life to 2040. It will have a maximum finished water production capacity of 400 million litres per day. On average, the plant will produce 254 million

litres per day.

Construction of the new water treatment plant began in early 2005 and is being constructed at the Deacon Reservoir site. The plant will be a state-of-the-art, modern facility designed for performance, safety, and environmental sustainability. By fall of 2008, the start of testing the new plant is expected to begin with full operation beginning by the end of 2008.

Mr. Pearson summarized his presentation by highlighting and discussing the major challenges of the Water Treatment Program. Some of the challenges faced include: schedule and market conditions and the realization of rising construction costs due to the shortage of labour and competing large scale infrastructure projects.

Mr. Pearson’s complete presentation may be found at www.apegm.mb.ca/pdnet/papers.html ■



Executive Director's Message

Grant Koropatnick, P.Eng.

Jogging, Beer-drinking and Family Roots

What did you do on your summer vacation? This is a question commonly asked in elementary school classrooms at this time of year, but I am genuinely curious about the vacation pursuits of our members. Hopefully you were able to take a vacation from the hectic work schedule that many engineers and geoscientists have lived this past year.

I had high expectations for my two weeks of vacation. My long list included painting the house, working on the car and replacing a portion of my driveway. I know what you're thinking – that doesn't sound like much of a holiday! But I actually enjoy doing manual work around the house at a leisurely pace that is only possible when I take time off. I usually also allocate time for jogging, fishing and some beer-drinking.

As it turned-out, I accomplished very little on my "to-do" list this year. Thanks to my son and nephew, the house got painted and they did a superb job. However, the rest of the tasks were left un-touched including the jogging, fishing and beer-drinking. What?! Yes it's true; these items got left in favour of some reading, resting and reflection.

I don't know about you, but I normally do some recreational reading on my summer vacation. Books by Garrison Keillor, Jake MacDonald and C. S. Lewis have supplemented my summer hours in past years. This year I got wrapped-up in a haunting story by an author named Sheldon Vanauken (*A Severe Mercy*, Bantam, 1979). It was loaned to me by a friend months ago, but I only picked it up in July. Well, I was hooked. In addition to the leisurely reading at my local Tim Horton's, I spent a fair bit of time resting indoors in the air-conditioned comfort of my big chair.

The temperatures were smokin' hot this summer and it was nice to retreat to the cool of my living room



despite not keeping-up my jogging routine or sitting in the middle of the lake in my fishing boat. My times of reflection were centered on my dearly departed wife Esther and the importance of family roots. The kids and I have a rich sense of family roots because of the legacy of pictures and memories she left us over 26 years. It got me thinking about the heritage of engineering and geoscience in Manitoba.

What are we doing with our family roots – those stories, photographs and old relics of engineering and geoscience history? Just prior to summer, APEGM President Digvir Jayas and I attended a meeting with the Transportation Heritage & Technology Centre. This is a group of people who are working to interpret the integrated role of transportation, transmission and communication technologies in Manitoba. Both of us like what the THTC are doing and we became convinced that APEGM needs to do more to show our engineering and geoscience heritage.

I am looking for some members to initiate a Heritage Committee for APEGM. I believe that it is important for us to formalize a committee to look into this important, and somewhat neglected, aspect of Association life. So, the next time you're sitting-back with some engineering and geoscience colleagues and the stories of by-gone years start flowing, consider volunteering with APEGM to serve on the Heritage Committee . . . and don't forget to make some time for jogging, beer-drinking and reflection on the family roots. ■

Young Engineer Achievement Award

James A. Blatz, PhD, P.Eng. has achieved more in his early years as a professional engineer than many accomplish in a lifetime. At 32 years of age, Blatz, an academic who specializes in geotechnical engineering, has already distinguished himself as an excellent teacher, an internationally recognized researcher, a capable administrator, a highly regarded consultant and a dedicated contributor to the engineering profession.

Having completed his PhD studies in 2000, at the University of Manitoba, he spent the next year conducting research at the prestigious GeoEngineering Centre at Queens-RMC in Kingston, Ontario under an NSERC-funded Post-Graduate Fellowship, before returning to Winnipeg to assume a tenure-track position as an assistant professor at the University of Manitoba. In addition to his academic activities, he also started his own consulting company.

Now, in the fifth year of his teaching career, he has introduced and modified geotechnical engineering undergraduate and graduate courses, published an astounding 40 scientific journal and conference papers-two of which have received national awards-presented at international conferences, attracted more than \$600,000 in research funding and has been consistently ranked as an outstanding professor by his students. He has also been approved for promotion to the rank of associate professor and has been



CCPE Award – Blatz

appointed associate head of the civil engineering department.

As if this wasn't enough, Blatz has found time to serve his profession. A member of the Association of Professional Engineers and Geoscientists of Manitoba (APEGM), Blatz was on two APEGM committees, one of which he chaired. Additionally, he was recently elected as an executive member of the APEGM Council and is the youngest person to ever hold the position. He also is on four national Canadian Geotechnical Society committees and is the Director of the North American Geosynthetics Society.

For all that Blatz has already done to enhance the profession, the Canadian Council of Professional Engineers (CCPE) was extremely pleased to honour him with the Young Engineer Achievement Award presented on June 3, 2006. ■

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.

Additional Dollars for Mineral Exploration in Manitoba – New Companies Look for Diamonds, Gold in Manitoba’s North

N. Soonawala, Ph.D., P.Geo. (Ret.)

A total of 42 new mineral exploration projects will create an estimated \$22.5 million in economic activity with \$1 million in financial assistance from the province, according to Manitoba’s Industry, Economic Development and Mines Minister, Jim Rondeau. He noted that the projects are a result of Manitoba’s favourable exploration environment, and “the investment we make with incentives such as the Mineral Exploration Assistance Program (MEAP).”

The projects, undertaken by 29 companies, will explore for a variety of commodities including gold, copper, nickel, tantalum, platinum group elements, magnesium, iron, uranium, silica sand, and diamonds.

“Rolling Rock Resources’ Monument Bay gold project near Red Sucker Lake has the potential to be Manitoba’s next gold mine,” said Rondeau. “The San Gold mining operation in Bissett is boosting the region’s economy by training and hiring people from local communities to help develop the mine site and Crowflight Minerals continues to develop its Bucko nickel deposit near Wabowden, taking the project one step closer to being Manitoba’s next nickel mine.”

“Crowflight is excited to be exploring in such geologically

prospective territory as the Thompson Nickel Belt of Manitoba,” said Thomas Atkins, president and CEO, Crowflight Minerals Inc.

MEAP provides new projects additional assistance of up to 35 per cent of eligible costs to encourage exploration in under-explored frontier regions such as Northern Superior, Far North and Hudson Bay Lowland, and areas that need new discoveries to sustain existing communities including Lynn Lake/Leaf Rapids and Bissett. Of the five companies that are new to Manitoba, four are using MEAP funding to explore for gold and one for diamonds.

The continuing high commodity prices for gold and nickel are reflected in the proposed projects. A total of 16 projects, or over one-third, are exploring for gold, nine are exploring for copper and six are exploring for nickel.

Companies continue to rank Manitoba highly for exploration and mining. Results from the 2006 Fraser Institute mining survey rank the province third worldwide for its mineral policies and geological database. ■

(From a Government of Manitoba press release dated July 28, 2006)



2007 SCHOLARSHIP COMPETITION

The Canadian Council of Professional Engineers invites engineers to enter the 2007 CCPE National Scholarship Program competition.

ELIGIBILITY REQUIREMENTS

Applicants must be Canadian citizens or permanent residents of Canada, and hold one of the following designations: P.Eng., Eng., or *ing.* Engineers-in-training (EITs) are not eligible.

CCPE - Manulife Financial Scholarships

- Value: \$10,000
- Number: Three
- Field: **Engineering**
- Criteria: Candidates must be accepted or registered in a faculty of engineering, beginning their studies no later than September 2007.

CCPE - Meloche Monnex Scholarships

- Value: \$7,500
- Number: Three
- Field: **A field other than engineering**
- Criteria: Candidates must be accepted or registered in a faculty other than engineering, beginning their studies no later than September 2007.

For further information, contact:

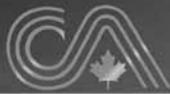
CCPE National Scholarship Program
 Canadian Council of Professional Engineers
 1100-180 Elgin Street, Ottawa, Ontario K2P 2K3
 Tel: 613-232-2474 / Fax: 613-230-5759
 E-mail: awards@ccpe.ca
 Web site: www.ccpe.ca



CANADIAN COUNCIL OF PROFESSIONAL ENGINEERS
 CONSEIL CANADIEN DES INGÉNIEURS

* The term engineering is an official mark held by the Canadian Council of Professional Engineers

Application deadline: March 1, 2007



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87th Annual General Meeting

Thompson, Manitoba
October 26-28, 2006



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NOTICE

Reports on the operations of APEGM, including year-end committee reports, will be published in the Annual Report issued September 25, 2006, following the meeting of the Council on September 14, 2006.

The report will be available on the APEGM website, at the AGM on October 28, 2006, or it can be obtained by contacting the Association office at apegm@apegm.mb.ca, or telephoning (204) 474-2736.

Grant Koropatnick, P.Eng.
Executive Director & Registrar

EDITOR'S NOTE

The following names were not included in the April edition of the Keystone Professional.

Members-in-Training Enrolled January & February 2006

C.R. Caswill	M. Geula	S. Neethirajan	G.A. Rutherford
N.J. Dhruve	C.I. Gikundi	K.T. Oliver	A.J. Singbeil
S.N. Dolyniuk	B.D. Krokosz	G.M. Owolabi	M.J. Smith
D.L.J. Duguay	H.J. Kuyp	E.R. Poppleton	D.Y. Solomon
M.V. Forster	R.M. Llanes	C.B. Porth	E.G. Vogel
A.T. Frezghi	G.S. Mankoo	R.P. Pound	M.G.Y. Woo
N.K. Gadhok	J.Z. Mikawoz	A.D. Rajapakse	J.J. Wowryk
A.O. George	I.T. Moffat	B.C. Roy	

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

87th ANNUAL GENERAL MEETING

WINNIPEG EVENTS

Professional Development Conference
& APEGM Awards Dinner
Niakwa Golf and Country Club
Friday, October 6, 2006

THOMPSON EVENTS

Professional Development Symposium,
Gala Dinner, & AGM Business Meeting
St. Joseph's Hall
Friday, October 27 & Saturday, October 28, 2006

06



THREE
 scholarships of **\$7,500**
 ...to support you
 on your path to greater knowledge

TD MELOCHE MONNEX, which offers you the home and automobile insurance program endorsed by the Canadian Council of Professional Engineers (CCPE), is proud to be associated with this scholarship program.

Through the CCPE National Scholarship Program, TD MELOCHE MONNEX offers three scholarships annually in the amount of \$7,500 each to provide financial assistance to engineers returning to university for further study or research in a field other than engineering. The field of study should favour the acquisition of knowledge which enhances performance in the engineering profession. Candidates must be accepted or registered in a faculty other than engineering.

For further information, or application forms, contact:
 CCPE National Scholarship Program
 Canadian Council of Professional Engineers
 1100-180 Elgin Street, Ottawa, Ontario K2P 2K3
 Tel.: 613.232.2474 Fax: 613.230.5759
 E-mail: awards@ccpe.ca
 Forms are available on the CCPE Website at: www.ccpe.ca

APPLICATION DEADLINE: March 1, 2007



CANADIAN COUNCIL OF PROFESSIONAL ENGINEERS
 CONSEIL CANADIEN DES INGÉNIEURS



*The term engineering is an official mark held by the Canadian Council of Professional Engineers.



One of three
\$10,000
 Scholarships could
accelerate your
 engineering career

We want you to move your dreams forward.

That's why we – The Manufacturers Life Insurance Company (Manulife Financial), underwriters of your life insurance plan – and the Canadian Council of Professional Engineers jointly sponsor a scholarship program to help make those dreams a reality!

Through the program, we offer **three \$10,000 scholarships** to provide financial assistance to engineers returning to university for further study or research in an engineering field.

Candidates must be accepted or registered in a faculty of engineering, beginning their studies no later than September 2007.



Application Deadline: March 1, 2007

For further information and an official application form contact: CCPE National Scholarship Program
 Canadian Council of Professional Engineers
 1100-180 Elgin Street Ottawa, ON K2P 2K3

e-mail: awards@ccpe.ca
 Telephone: 613-232-2474
 Fax: 613-230-5759
 Web site: www.ccpe.ca



CANADIAN COUNCIL OF PROFESSIONAL ENGINEERS
 CONSEIL CANADIEN DES INGÉNIEURS



Council Reports

Thursday, May 11, 2006

A.D. Erhardt, EIT

SCOPE OF PRACTICE OF ARCHITECTS AND PROFESSIONAL ENGINEERS

After a brief lunch, the council meeting was called to order shortly after 12:30 p.m. The agenda began with a review of the concept of APEGM Ownership Linkage. Councillor Avery Ascher discussed the resurrection of the committee and provided a brief summary of its most recent meeting. After explaining a few key concepts behind ownership linkage, she added that she hopes to add a past president and current UMES member to the committee as it moves forward.

The meeting continued with a discussion regarding the home inspectors memorandum of understanding (MOU). Council had the MOU reviewed by legal counsel, and it was decided to revise the memorandum, taking into account the suggestions that had been brought forth, for the next meeting.

At this point of the meeting, Stephen Woodrow and Kathryn Hearson, senior stick and vice stick external for UMES respectively, provided a PowerPoint presentation outlining the role and goals of the student council along with how they hoped to move forward into the future with APEGM. Their primary concern was with the lack of knowledge as to what APEGM is and can offer to the students. The council approved an MOU in principle,

outlining the affiliation between APEGM and UMES. As well, Councillor Jim Miller volunteered to become a Council liaison for UMES for the upcoming year.

Following the review of some Council monitoring reports, the discussion turned to the Nominating Committee. Councillor Bob Malenko discussed the difficulties that the committee has been having in locating new prospective candidates for Council positions. Afterwards, the names of the members who had allowed their names to stand for nomination to Council were presented and accepted.

A few other decisions and agenda items that were brought forward include:

- A registration subcommittee is moving forward and decision is expected soon regarding the expediting of mobility applicants.
- The updated budget for the Annual General Meeting in Thompson for 2006 was reviewed and approved.
- President Digvir Jayas was encouraged to write a letter to the Manitoba School Science Symposium encouraging them to include "engineering" in their title.
- The concept of an Engineering Achievement Hall was presented.

Shortly after a review of the next meetings agenda and a self evaluation of the meeting, Council adjourned shortly after 3:30pm, with the next meeting scheduled to be held on June 22, 2006. ■

Thursday, June 22, 2006

A. Kempas, P.Eng. (Ret.)

APEGM'S STRATEGIC PLAN IS BORN

The June 22, 2006, meeting package was a modestly-sized bundle of paper, usually a harbinger for a tight, well-run meeting. And so it was. Although the agenda was long, Council worked through it in an efficient and timely manner.

After the day's agenda and last meeting's minutes were out of the way, Dr. Digvir Jayas, APEGM president, announced that the Manitoba Schools Science Symposium would henceforth be known as the Manitoba Schools Science and Engineering Symposium.

A few other external relations items followed: a memorandum of understanding (MOU) with the Canadian Association of Home and Property Inspectors - Manitoba (CHAPI-MB) and another with the University of Manitoba Engineering Society (UMES). The UMES agreement would help to promote APEGM membership to students, while APEGM would donate back to UMES fees paid by student members of APEGM.

Next, on to internal matters. Several monitoring reports came before Council, as required under Policy Governance. Executive Director, Grant Koropatnick produced one on financial planning which showed association assets were safely invested. Tim Corkery asked who develops the multi-year plan. Mr. Koropatnick said it didn't exist, but was something which needed to be done.

When it came to the monitoring report on succession planning, James Blatz wondered who had access to APEGM's private information in case the proverbial "bus accident" scenario became a reality. Executive Director Koropatnick assured them several people in the office had access.

Brian Shortt returned to the home inspector MOU. Councillors Shortt and Blatz had been tasked at the May meeting to review the MOU. The MOU wasn't a legal, binding agreement, but rather one which fostered cooperation between the organizations. Councillor Blatz thought CHAPI-MB would be

happy with it. They would perform visual inspections only, and leave significant structural and foundation issues to a Professional Engineer.

As far as the UMES MOU was concerned, Councillor Shortt felt they should remove any imperatives in the memorandum. President Jayas asked for the suggested changes to be incorporated into the MOU.

On the geoscience side of the house, Dr. Hamid Mumin, P.Eng., had stepped down as the Canadian Council of Professional Geoscientists (CCPG) director to APEGM Council. A replacement for Dr. Mumin was required and Council was presented with a list of four candidates. Patrick Lengyel wondered if the candidates had been contacted regarding their willingness to serve.

Executive Director Koropatnick thought the selection committee may have done that. President Jayas asked for the candidates to provide a short CV to aid in the selection process. Councillor Corkery also wanted the candidates to state why they wanted to serve. The Executive Director would present the candidate information at the next meeting under the consent agenda.

The next items touched on our relations with the university community. The first item was the selection of two Canadian Engineering Accreditation Board (CEAB) "general visitors". Those chosen would be non-academics who would provide a broader perspective on the evaluation of engineering education. To act as "general visitor" they could not be graduates or former employees of the institution under review. Executive Director Koropatnick had a few names and agreed to make a selection by June 31, 2006. The general visitors' names would be released at the next meeting.

Council agreed to a request from CCPE for member data. CCPE is working to develop a national membership database to facilitate statistical analysis of the profession and to expedite professional mobility in Canada. They are requesting similar member data from all provincial associations. The shared information will respect all privacy laws. CCPE is still in the proposal stage of the project, which could cost upwards of \$350,000.

It may come as a surprise to learn we have several members who are registered with the French engineering association, Commission Des Titres D'Ingénieur (CTI). This fact came out when Council voted in favour of a

THOUGHTS ON

Design

...and still debating the meaning of design

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

At a recent Canadian Design Engineering Network Conference, the old debate about the definition of engineering design was revisited. This wasn't a planned debate, but one that grew out of discussion following a presentation relating to some work associated with an attempt to gain a clearer understanding of the design process. The concern seemed to be that the presentation did not provide a clear route to the creation of a model that could be analyzed. As near as I could tell, the person asking the questions, and others, sees design as a formulaic process that is restricted to exercises that involve mathematics.

This bothered me. So I resorted to the solution always proposed by my elementary school teachers and went to the dictionary to look up the word that was causing the problem. The Oxford University Press Dictionary contained in the Word Perfect program on my laptop provided precious little help. The folks at Oxford University suggest that, as a noun, design is "a plan or drawing produced to show the look and function or workings of something before it is built or made". As a verb, design means "to plan or intend for a purpose". Ok, so maybe elementary

school solutions don't always work.

Thumbing through various textbooks that address the issue of engineering design, I found mention of design for safety, design for manufacture, design for assembly, custom design, one-off design, sustainable design, and almost endless other design "goals", and often a linear list of steps to reach the stated end purpose. That, at least, responded to the "purpose" component in the verbal meaning.

But the question remains, does the purpose define the process or does it merely dictate the details? Is it reasonable to assume that the design process an engineer follows can be defined by the end product? Isn't it more logical to consider that the process is common to most, if not all, design exercises and the purpose simply changes the details that must be considered?

The presentation that sparked the debate, and my meanderings, was given by Don Petkau, one of my graduate students. Don is studying the engineering design process in the hopes of gaining a better understanding of how we do what we do. Both he and I have discovered that this is a more complex undertaking that we first thought it to be.

At this point we have come to recognize a basic commonality in all design, but a variation of emphasis depending on the situation. This, in turn, has led to recognition of three levels of design; Routine Design, Innovative Design, and Creative Design, each of which can fit, more or less, into any of the purpose-driven design groupings from the design textbooks.

Routine Design occurs when you are working with well established and commonly available options. On campus, this is represented by the "Design of . . ." classes in which one learns how to size parts and select pieces. Off campus, Routine Design is best characterized as the redesign process that is a regular part of most industrial environments or design situations in which the prime effort is devoted to assuring safety and code compliance.

Innovative Design requires that known processes be applied in a new or different manner. Most infrastructure projects fit into this level because no two sites present similar conditions and well known structural solutions need to be adapted to meet new and different needs. Introduction of new materials in almost any situation requires innovation in order to be assured that the properties of those new materials do not inhibit the functions of the existing application.

Creative Design is likely the least common level of design experienced by engineers, but undoubtedly the most exciting. It is working beyond any known or accepted parameters. That famous scene from Apollo 13 in which the engineers were told "failure is not an option" characterizes the need for true creativity. Today, the people working on the "Electric Highway" are in a less dramatic, but genuinely new situation that challenges many former assumptions that have become "facts" because of their long term acceptance.

All three levels of design are contained, to some extent, in all projects. They all include the accepted design steps on problem definition, idea generation, refinement and analysis, and decision and detailing, as well as the cycles of reconsideration associated with refinements. The real difference is the increase in risk due to the increased number of unknowns and a resulting shift of concentration of effort between/among the steps.

In many cases, Routine Design is effectively accomplished by individuals. However, as the level of innovation and/or creativity increases, the complexity of the design problem usually increases and demands for, and on, design teams will increase. That, in turn, increases the demand for communication among an increasingly diverse design team. Maybe this is where the debate over the definition of engineering design originates.

Does that make sense? What do you think? ■

STRATEGIC PLAN...Continued from page 10...

mutual recognition agreement with France. CCPE is polling all constituent associations on this agreement.

Near the end of the meeting a special guest addressed Council. He was Hugh Goldie, P.Eng., and he was there to evaluate the meeting, at the request of APEGM. He congratulated the councillors for a quick meeting, but he wondered if they spent their time wisely. They needed "a multi-year plan, priorities, and policy reviews", he said, to judge whether they were meeting their goals. He urged Council to become "risk managers" where the Executive Director does the work, and councillors make sure he does a good job.

Jim Miller commented that risk management appeared to be a backward-looking exercise. Mr. Goldie responded that risk was an impediment to future progress, thus risk management was actually a forward-looking exer-

cise. Avery Ascher said Mr. Goldie's suggestions appeared to increase the Executive Director's workload, and was he provided the resources necessary to perform such duties? Councillor Ascher also asked which organizations used the risk management form of governance. Mr. Goldie said one of the Catholic health organizations did, although they were at an early stage.

Before Mr. Goldie left the room, President Jayas thanked him for his input, and then wondered why APEGM had no strategic plan. Speaking from a historical perspective, former Executive Director, Dave Ennis, said it was because of cost. President Jayas asked when council would be available for an all-day planning session. A date was chosen near the end of August. Soon APEGM will have a strategic plan. ■

This article originally appeared in *Canadian Consulting Engineer* and is used with permission. For further information on *Canadian Consulting Engineer*, please visit www.canadianconsultingengineer.com

STRUCTURES

For the Thrill of It

P. H. Boge, P.Eng.

The revolutionary RoboCoaster G2 designed by AMEC and a German company hurls riders into a fantastic four-dimensional world.

Who says engineering can't be a blast?

One of the greatest challenges and most rewarding experiences in engineering is creating new technology to improve people's lives. Sometimes that comes in the way of making better facilities, transportation or medical systems.

And sometimes it comes in the way of giving people the ride of their lives.

Enter AMEC's Dynamic Structures division based in Port Coquitlam, B.C. and robotics giant, KUKA, based in Germany. The two companies looked at the traditional rollercoaster and decided they could revamp the entire concept and bring a new experience to theme parks. KUKA began by looking to create static robots for entertainment purposes. However, when they teamed up with AMEC the result was a brand new approach to how people would enjoy thrill rides.

Their solution? The revolutionary RoboCoaster G2.

"Unlike roller coasters, which are a 'train' of cars on a track, a RoboCoaster G2 is a very agile single robot 'car,'" says John Kageorge, communications manager for AMEC. "Current roller coasters give away all their secrets to the rider by simply following a track, which the rider sees and anticipates. RoboCoaster G2, however, doesn't simply move forward and backward on a track; it has multiple planes of motion. It can go side-to-side, spin, rotate... all motions that can't be anticipated simply by viewing the track."

Kageorge adds that the RoboCoaster G2 provides "4D technology so that people don't simply ride; they experience an adventure. For example, this

technology allows riders to enter into a scene of a movie, projected around them, and feel as if they are a part of it."

David Halliday is vice president and director of special projects at AMEC. He oversees the complete design and construction of RoboCoaster G2 projects and is passionate about the product he and his team have created.

"The G2 provides people with a 4D experience," says Halliday. "Not only do they experience a 3D story with animated characters interacting with them, but also the RoboCoaster itself moves, providing the fourth dimension of motion as you watch the movie." RoboCoaster G2 riders wear 3D glasses to enter into a new world while progressing through various story stages. It's a new kind of ride that integrates motion and visual effects.

A Thirst for Entertainment

The timing couldn't be better. The western world is increasing its demand for entertainment products and theme parks are working hard to attract and keep visitors. In the world of thrill rides, Halliday points out that, theme parks require 1,800 to 2,000 people per hour to experience the attraction. They need to find a way to keep people coming back.

One way to keep drawing people back to a ride is by using the element of suspense. Space Mountain in Disneyworld has a ride that takes place in darkness – that way people have no idea when the dip or curve is coming. Disney-MGM's Rock 'n' Roller Coaster starring Aerosmith in Florida uses an incredible burst of speed at the beginning that leads into a darkened



For the Thrill of It

area so riders waiting in line aren't able to predict the experience.

RoboCoaster goes even further by asking the question: What if it were possible to customize the ride itself?

"The future of the industry lies in robotics because it has the capability of individualizing the experience for each rider," Kageorge says.

"Traditional iron rides are reaching their limit," says Halliday. "They capture only a portion of theme park traffic and once riders have a sense of where the turns take place they can become accustomed to [them]. But now you have a ride that captures everybody."

RoboCoaster G2 is fully programmable for each individual ride. Teens can hop on one car and the attendant can program a fast, hip ride. If the next group in line prefers the slower, less intense version, no problem; they can opt to go through at a different pace. Both groups see the same visual effects, but they experience different robotic movements along the track. Essentially, you can "order your own ride," Halliday explains, "making it possible to have different rides within the same venue."

Reprogramming allows the theme park to keep the visual side the same but change the motion to make it seem like a whole new ride. Each robot holds four people. The robot is attached to a carriage and the carriage is attached to a track.

There could be three to seven individual screens and you go from one area to another experiencing a progressive story. "Riders can be saved by superheroes, soar past galaxies, or experience adventures around the world," explained Ron Kelly of AMEC when the full scale model was showcased for the first time in Orlando, Florida last November.

Software Overcomes Physics

Christon Manzella is the key technology manager for KUKA Robotics. He explains that the human tolerances for spinning devices, launch mechanisms and other mechanical features are limited by physics. But with the introduction of robots into the thrill ride, the system is governed by software. This offers guests an interactive experience.

"The RoboCoaster combines the latest mechanical device – a robot with [a] 15-foot reach, millimetre accuracy, and speeds of 12 feet per second – with tens of millions in software advancements that allow the guest to feel like he's floating on air, diving underwater, or flying a jet." The software component provides the thrill ride industry with a whole new outlook on rides, causing Manzella to believe "there will be a huge change in the purchasing direction from hard automation (roller coaster) to favour flexible automation (robots)."

In a traditional iron ride there are two loads: loads from

CCPG Opens Its First Staffed National Office

CCPG, the Canadian Council Professional Geoscientists, opened its first staffed office on March 15, 2006, in Vancouver. CCPG is the national federation of the 10 constituent associations that govern the practice of geoscience in Canada (similar to CCPE's role for engineering).

CCPG's new office, located in Burnaby, BC (a suburb of Vancouver) is hosted by APEGBC, the Association of Professional Engineers and Geoscientists of British Columbia. Heading the new office is Oliver (Ollie) Bonham, P.Geo., hired as CCPG's Chief Executive Officer and first full-time staff member. Mr. Bonham has over 28 years of experience in the mining and mineral exploration sector and, more recently, in the regulatory sector as Executive Director/Registrar of the Association of Professional Geoscientists of Ontario.

Prior to Mr. Bonham's appointment, CCPG operated as a volunteer organization with significant administrative support from APEGGA (the Association of Professional Engineers, Geologists and Geophysicists of Alberta) — in particular, from its Deputy Registrar Al Schuld, P.Eng., and his assistant Carolyn Deets — as well as the office of the Canadian Council of Professional Engineers.

In November 2002 the CCPG Directors created a strategic plan for 2003-2009 that included hiring a CEO and establishing an office. In January 2005 Marc Boivin, géo., (of Quebec), then President of CCPG, sent a letter to the 10 constituent associations requesting

increased funding to cover the cost of the new position and office.

Mr. Boivin explained that the organization's volunteer resources were no longer adequate to fulfill its mandate to facilitate national and international mobility, and promote recognition of Canadian geoscientists. The CCPG had, as he put it, "outgrown the President's briefcase" and a full-time staff member was required to provide the continuity necessary to maintain visible contact with external organizations, government agencies, academic institutions and the media.

All 10 constituent associations approved the funding increase and a task force was subsequently struck to hire a CEO; after an extensive search, Mr. Bonham was hired. APEGBC agreed to host the CCPG office and signed an agreement with CCPG outlining the general terms to support the new position on both a funding and operational basis.

The establishment of a new office for CCPG will benefit geoscientists across Canada. Vancouver, with more than 700 exploration companies, is a world centre in the practice of geoscience — not only with respect to mineral exploration and mine development, but also for the raising of venture capital for the resource sector. A western base is also advantageous in view of the many head offices of oil and gas companies located in Alberta.

Speaking at a recent meeting of the Executive Committee of CCPG at the new office in late March — which included a modest "flagging tape" cutting ceremony to officially open the new office — the current



At the official "flagging tape cutting" ceremony to open the new CCPG Office — (Left to Right) — Standing: Oliver Bonham, P.Geo., CEO CCPG; Brenda Wright, P.Geo., Vice-President CCPG; Anne Garrett, P.Eng., Executive Director/Registrar APEGBC. Seated: Jim Wright, P.Geo., Treasurer CCPG; Barry Collins Q.C., P.Geo., President CCPG.

President of CCPG, Mr. Barry Collins, Q.C.(Can), P.Geo., of Saskatchewan, stated that "It is a momentous event for CCPG to finally have an office of its own and to have a full-time professional to lead the organization. But I must say that without the work of all our practitioner volunteers over the years since CCPG's inception almost 10 years ago, and the support from both APEGGA and CCPE, we would not have been able to get to this point.

"I would also like to say thanks to APEGBC for making CCPG so welcome here in BC," continued Mr. Collins. "I have great feelings about the future of CCPG and the future of the geoscience profession,

which is so very important to Canadian society."

More than 7,600 geoscientists are now licensed as professionals in Canada and this number is expected to reach 10,000 within two to three years. The new address and contact details for the new CCPG office are as follows:

Oliver Bonham P.Geo.
Chief Executive Officer/
Chef de la direction
Canadian Council of Professional Geoscientists/Conseil Canadien de Géoscientifiques Professionnels
200-4010 Regent Street
Burnaby, BC, Canada V6C 6N2
T: 604-412-4888 • F: 604-433-2494
obonham@ccpg.ca • www.ccpg.ca ■

Thrill...Continued from page 12...

acceleration and loads from the rate of change of acceleration, called jerk. One of the difficulties iron rides face is keeping the track smooth. Sometimes, the track and car can be subjected to a 9G force. So it becomes possible, through prolonged exposure, to overload the material and over time run into problems of fatigue.

RoboCoaster rethinks this approach by creating motion through drive. The robot is attached to the carriage and the carriage travels down the track. But the robot has the advantage of being

able to move independently of the carriage and can reach a distance as far back as 15 feet and as far forward as 15 feet, giving a reach of 30 feet relative to movement of the carriage. So if the robot moves forward and the action on the screen moves backward you create an illusion of motion. This way it is possible to eliminate fatigue issues.

Safety and Human Endurance

Brand new technology brings with it the increased responsibility of evaluating safe performance.

RoboCoaster went through a detailed process to become licensed to carry humans.

There are two major aspects to ensuring safety on the RoboCoaster. First, KUKA produces 10,000 robots a year and has performed extensive testing for robots in the car industry. The company adheres to the TUV standards in Germany and its experience provided a wealth of knowledge and safety performance to the project that AMEC could tap into.

Second, there are four levels of redundancy. All the drive systems,

limit switches, velocity meters, strain gauges and other components have their own dedicated means to shut themselves down.

The safety of RoboCoaster is further enhanced by the design attention AMEC gave to fatigue analysis. "The life of a structure is controlled by the number of cycles. If you test for a hundred million cycles then fatigue is no longer a governing factor," Halliday says. In addition, visual inspections of the RoboCoaster's track and structural members are conducted every day. Non-destructive testing is carried

Continued on page 15

Why I Spend My Summer Vacation In Oshkosh, Wisconsin

N. Kelly, P.Eng.

For the past several years I have worked as a volunteer at the EAA's (Experimental Aircraft Association) "AirVenture" in Oshkosh, a week long event that is billed as the "World's Greatest Aviation Celebration".

The EAA, founded in 1953 by Paul Poberezny and a small group of individuals who were interested in building, flying and maintaining their own experimental homebuilt airplanes, is now the world's premier organization for fostering interest in the design, construction, maintenance and use of experimental homebuilt and sport aircraft.

AirVenture is the very public display of the essence of the EAA. On its grounds you will find most of the major manufacturers of aircraft kits and accessories, various engine manufacturers, hundreds of examples of homebuilt and experimental aircraft, and a huge "flymarket".

The homebuilt aircraft, together with many "warbirds" (aircraft that were used by various military organizations), ultralights and various light commercial aircraft result in more than 1500 aircraft being displayed on the grounds. As well, there is the EAA museum, Heritage Airport, Ultralight and Sea Plane bases, NASA and USAF exhibits, presentations, discussions, workshops, group get-togethers, and daily air shows.

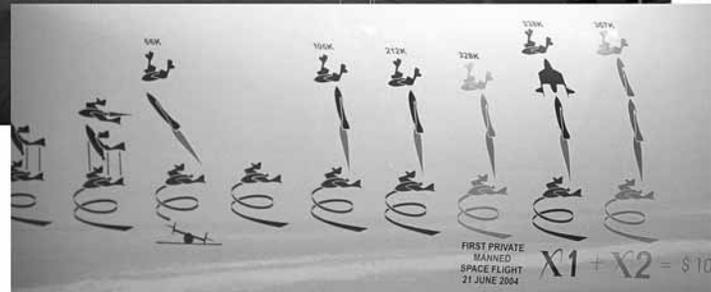
Then there are the people: Pilots, developers, designers, builders,

visitors, volunteers and EAA staff. This year alone I met a man who was part of the design team for the AVRO Arrow, a fellow who built an authentic full scale P51-A Mustang from scratch, the designer and builder of "Synergy" (an all composite one-of-a-kind hand built airplane that is one of the prettiest and most efficient planes I've seen) and a former NDSU Dean of Engineering.

In years past I have had the opportunity to meet Paul Poberezny and designer Bert Rutan. I've had discussions with the designer of the "Rad Cam" engine, a radial engine utilizing a cam system instead of a crankshaft, listened to a gentleman who built his own airplane after he retired and then flew it around the world, and heard Mike Melville talk about becoming the world's first civilian astronaut.

I've walked beside an exact replica of the Hughes H1 racer and through a field containing more than 2 dozen P-51 Mustangs. I've taken close up photos of SpaceShipOne and Global Flyer and seen Glacier Girl, a P-38 Lightning extracted in 1992 from the glacier where it landed in 1942, was later restored to perfect flying condition and eventually flew formation alongside a P-51 and an F-16.

It was the encouragement of a friend that got me to attend my first AirVenture; I volunteered immediately. I thought volunteering would be a good way to meet new



(TOP) Homebuilders Headquarters: Display aircraft are parked in front between the building and the taxiway.

SpaceShipOne: SpaceShipOne and carrier plane, "White Knight", with a close up insert of the markers (painted on the port side of White Knight) detailing the aircraft's winning of the X-prize.

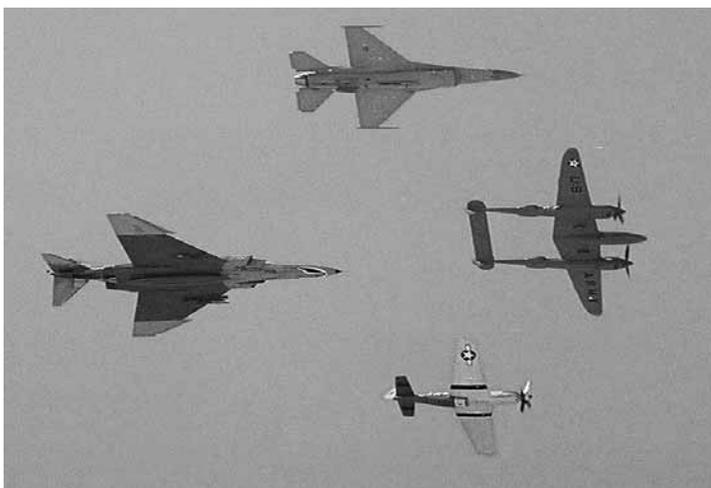
friends and pass some time, so I sent off an application to Chairman, Dennis Hasha, to work in Homebuilders Headquarters registering aircraft.

From that first offer to volunteer, Dennis, and the folks at "Homebuilders", made me feel welcome. Located right on the main flight line, our building is a great place to experience the aerial activities and the best part, is that all

of these interesting people come to visit me!

AirVenture is an unparalleled experience. The grounds are filled with unique aircraft, the people are filled with ideas, optimism and good spirits, and volunteering has proven to be an exciting, enjoyable and rewarding way to experience much, much more of it all.

That's why I spend my summer vacation in Oshkosh, Wisconsin. ■



Multi-generational Formation – Clockwise from lead (rightside of photo): Glacier Girl (a restored P-38 Lightning), P-51 Mustang, P-4 Phantom, F-16 Fighting Falcon, seen from below.

Thrill...Continued from page 13...

out for critical components at regular intervals.

However, in engineering for thrill rides, the human factor is also one that designers must take into consideration.

Halliday explains that “the RoboCoaster has six degrees of freedom. All this motion can give a great thrill. The challenge is to marry the amount of load into the human body to the visual side in order to give a thrill.”

The six degrees of freedom refer to the rotational ability on the x, y and z axes enabling the rider to experience movement in all directions. However, a ride of this kind requires designers to analyze the G-force on people’s bodies. The human load is broken down into two components – radial and spinal. The radial load is the similar feeling passengers in a car feel when banking around a curve. The spinal load refers to the axial load down the torso of the body. The average human limitation is 1.9G, which became a design factor in

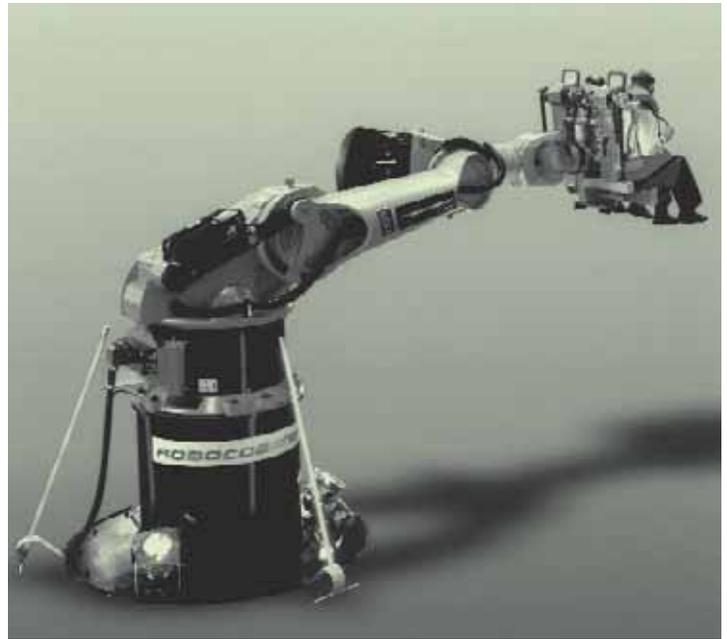
creating RoboCoaster to ensure that people are not exposed to excess loading.

Essentially, RoboCoaster is a unique and fascinating combination in the design limitations of both materials and humans.

“We’re engineering to thrill people,” Halliday says.

And this could mean that the field of thrill rides is opening another dimension in our diverse profession; namely, that of Entertainment Engineering. Perhaps the increasing desire for excitement and the need for analytical and design skills will mesh to create this new discipline.

Halliday says it will be about a year until we see a RoboCoaster G2 in North America. If, the next time you’re at a theme park, you find yourself climbing aboard one of these revolutionary rides, you can take comfort in knowing that engineers are safely entertaining you to the limit.



Entertainment Engineering

Paul H. Boge is an engineer with Boge & Boge in Winnipeg. He is the author of *The Chicago*

Healer, Father to the Fatherless and The Cities of Fortune. ■

GOLF...Continued from page 1...



(LEFT) 2nd place team, (MIDDLE) 3rd place team, (RIGHT) Garth Fallis tries his hand at the Chipping Contest

The 2006 MLEC had several competitions including a hole-in-one contest sponsored by Eastern Sales which sported a grand prize of a brand new Dodge Charger; a chipping contest by Lafarge Canada Inc.; longest drive contests for both men and women sponsored by the National Testing Laboratories Ltd., Manitoba Hydro, and Flanders Insurance; and closest to the pin contests sponsored by Vansco and Triple L Construction Inc.

There was also an astounding amount of prizes available to the players. Each player received a tee gift which included a golf bag umbrella, a sleeve of golf balls, and other items, sponsored by CanadInns, Dave’s Quick Print, Lavergne, Draward & Associates Ltd., Manitoba Hydro, ScoreGolf, University of Manitoba, and World of Water.

In addition to the tee gift, each player received a numbered prize at random from a large selection of items ranging from power tools to home accessorizing equipment. Additional prizes were also available from the silent auction and for tournament placement.

This year’s tournament winners were John Jonasson, P.Eng., Paul Bauer, John McCabe, P.Eng., and Rick Lemoine, P.Geo. The Landon Cup (2nd place) was awarded to the team of Eric Wiens, P.Eng., Tim Stratton, P.Eng., Ray Forman, P.Eng., and Jerome Mauws. The Sullivan Cup (3rd place)

went to the team of Neil Ferguson, P.Eng., Warren Gendzelevich, P.Eng., Rick Hay, P.Eng., and Tony Kettler, P.Eng.

The APEGM Sports Committee would like to thank all the people that came out to play, who doing so, helped support the future of Manitoba’s Engineers at the University of Manitoba and made tournament festivities possible. Hope to see you all next year on June 14, 2007. Watch for more details to come. ■

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