



THE KEYSTONE PROFESSIONAL

In This Issue:

- **Highlights from the 2005 Manitoba Mining and Minerals Convention**
- **Adaptive, Phased Management for Nuclear-Fuel Waste**
- **Attention MITs: Progress Reports**

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

FEBRUARY 2006
www.apegm.mb.ca

Meet Your New Executive Director

N.J. Kelly, P.Eng.

It's in the DNA," grinned Grant Koropatnick, APEGM's new Executive Director, as he explained what got him into the

Engineering profession. Grant's father was a Civil Engineer who was involved with a dozen power projects during his 38 years with

Executive Director's Message

Grant Koropatnick, P.Eng.

Think Long Term Growth

At this time of year, the commercials on television and radio are pounding the same message at us: "think long term growth." This is the RRSP season and I don't know about you, but I get tired of the barrage. Can anyone really attain financial freedom at age 55? I don't think so. Don't get me wrong, I take the bait most years and so I am not immune to advertising pressure.

If you pause and think about it, the repetitive message of "thinking long term" applies to many other areas as well. For example, what about your personal goals, career goals or goals for our profession? Personal goals might include marriage, having kids, raising and educating them, or pioneering a business or new product invention – many worthy personal goals can be started and grown if we think long term. Career goals might include further studies in your present area of expertise or broadening your skills with a MBA, M.Sc. or LLB.

Who knows? Anything is possible in your career if you plan well, execute well and ...think long term.

What about our profession? The engineering and geoscience professions face a looming challenge – long term sustainability. Demand for good engineering and geoscience is strong, but the ability to deliver top services in Manitoba is at risk due to the aging of our population.

Whether we want to admit it or not, we're getting older. It doesn't take much to notice the trends. Do you have friends who are retiring, reducing their work load or selling off the old homestead and moving into a condo? At my place, I like the idea that I have a teenager whose muscles are rock hard (like mine used to be), so he can shovel the snow, cut the grass, and lug the garbage cans with ease while I cannot. These are true signs that we are aging.

Continued on page 9

Manitoba Hydro. Two of Grant's uncles were engineers who graduated from University of Manitoba and another uncle was a Geoscientist who graduated from Brandon University as a geologist and worked for Inco.

Grant's own career also began at the University of Manitoba. He graduated with a Civil Engineering degree in 1983, proud to be the fourth Koropatnick with his graduation picture hanging in the halls of the Engineering school. His focus was environmental engineering, and he quickly found he was both slightly ahead of his time and facing the poorest employment prospects for engineers in decades. Undeterred, Grant returned to school for training in human resource management with the goal of becoming a technical manager.

He spent the next 22 years managing operations staff in human service environments, specifically at the University of Manitoba and later within the Manitoba public school system.

It was at the urging of colleagues and friends that Grant applied for the Executive Director's position. They could see that his skill set was well suited to what the Association was looking for. Their insights and the opportunity to return to his engineering roots were the attractions that generated his application. What followed was a four month screening process that was the most rigorous Grant ever experienced. "It was challenging, it was fun, and here I am," quipped Grant.

Grant's skills include a strong ability to represent colleagues to the public and to each other, excellent leadership and organizational skills and a solid background in labour



*New Executive Director,
Grant Koropatnick, P.Eng.*

relations. "Labour relations are human relations" says Grant, "and this organization is all about people in the engineering and geoscientific professions serving people in the community at large".

Grant perceives three significant challenges ahead: An aging population, which will see up to a third of APEGM members retiring in the next decade; the increase in foreign trained professionals, which will challenge and tax our screening and guidance programs; and an increase in local demand for engineering professionals, particularly within aboriginal communities, at a time when we will lose so much of the "job knowledge" within our profession.

These are significant challenges indeed, but then Grant is familiar with challenge. Grant's personal life revolves around his family. Sadly, Grant's wife Esther passed away November 22, 2005, after a 14 year battle with cancer.

Grant credits his faith in helping him and his two teenage children, April and Andrew, through their difficult times and certainly the APEGM can count on Grant to face our challenges with that same faith, commitment and integrity. ■

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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.

New Members Registered November & December 2005

B.N. Aboumrada (ON)	L.L. Hathout	J.F. Matemisz (AB)	W.E. Schuhmann
M.D. Alexiuk	J.W. Hildebrand	V.S. Pathirana	S.A. Seyoum
N.R. Aquino	G.A.M. Horeczy	V.A. Peterson	D.G. Stanski
C. Bello (ON)	W.S. Ingham (AB)	Y. Qu	P.V.I. Taiarol
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D.J. Coleman (ON)	M. Jurkiewicz	R.B. Ramsay (AB)	T.A. White (AB)
J.G. Collins (ON)	M. Karpenko	R.D. Rempel (CO)	J.L. Wolfe
R.A. Cook (QC)	L.A. Kempers	A.S. Rueda	C. Zorbas (QC)
D.M. Friesen	K. Kiselbach	G.G. Runge (ON)	
E.F. Gala	D.R. Krahn (BC)	R.P. Sayak	
B.D. Garinger	P. Lapalme (QC)	J.A.C. Schick	
	R.A. LeCraw (ON)	B.L. Schilleman	

Reinstatements November & December 2005

L.D. Llewellyn

Members-in-Training Enrolled November & December 2005

D. C. Bonin	A.B. Fanai	P.L. Keysers	Y.R. Sanchak
A.R. Chevrefils	N.P. Figueroa	Z. Liu	J.L. Scott
V. Cicovski	M.A. Froese	J.P. MacInnes	A.E. Sedik
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S.M. Crouch	L.C. Hunter	T.F.R. Nadeau	C.Z. Warrack
B.C. Di Marco	N.A. Kaminski	A.K. Punj	
J.S. DiGaetano	P.A. Kammerloch	N. Sabet	

Licenses Issued November & December 2005

E. J. Weden (OR)

Certificates of Authorization November & December 2005

All Cover Portable Systems	MacDonnell Group Consulting Limited
Dickin Engineering Inc.	PWA Engineering Ltd.
F.M. & Engineering Services Inc.	Shawano Consulting Services Ltd.
Krahn Engineering Ltd.	SolTech Engineering Inc.

Resignations 2005

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P.A.A.R. Beach	G.W. Duncan	M.W. Kumthekar	D.R. Simpson
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J.B.P. Blahey	K.J. Fallis	L.R. Larson	R.R. Steffan
R.James Blanchard	T.E. Fletcher	N.H. Leupolt	S.G. Tadros
W. Borsia	A.K. Garg	J. McInerney	J.J.P.H. Vallee
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P. Chang	D. Harfield	S.M.H. Naqvi	G.T. Wong
B.A. Christensen	T.D. Harle	B.F. Parsons	G.M. Wazny
F.N. Chunara	E.J. Hare	W.A. Pitura	S.J. Wopnford
G.A. Cohoon	M.J. Helm	D.A. Poncelet	P.C. Varshey
D.A. Cook	R.C. Hurley	K.J.M. Reddy	R.S. Wootton

EIT Resignations 2005

N. Chadha	P.B. Collins	J.L. Fines	A.M.D. Renaud
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NOTICE

SPRING IRON RING CEREMONY

Tuesday, March 21, 2006 at 8:00 pm

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





President's Message

Dr. Digvir S. Jayas, P.Eng.

Happy New Year to all. May 2006 be a very prosperous and professionally rewarding year for you. In the past couple of months, your Council has spent considerable time on settling jurisdictional issues with the Manitoba Association of Architects. A separate article in this issue of the *Keystone Professional* gives you more details on that matter. In this message, I am focusing on the contribution that experienced Professional Engineers can make in the formation of Professional Engineers in the best interest of the public of Manitoba.

The formation of engineers in Manitoba and in other jurisdictions in Canada, for the most part, is a sequential process. A person first has to qualify academically, obtain acceptable engineering experience, pass a professional practice and ethics examination, and get licensed. I am inviting you to ponder a few questions: Is this sequential process the best way to form engineers? What role should experienced Professional Engineers play in educating future engineers? Can some aspects of the academic qualification process be integrated with the experience process because education alone does not provide all of the competencies required for the independent practice of engineering (or geoscience)? I realize that our membership includes geoscientists and increasingly a large number of applicants to the Association are educated in foreign countries. In this brief message, I am focusing on the majority of our prospective members who are enrolled in engineering programs accredited by the

Canadian Engineering Accreditation Board (CEAB). On behalf of the profession, the CEAB sets criteria for accreditation, evaluates engineering programs, against these criteria, and decides on the suitability of programs for accreditation. The graduates of the accredited programs are considered academically qualified by all Canadian jurisdictions that license engineers.

For the CEAB to accredit programs it is expected that all professors teaching senior level engineering science and design courses be registered Professional Engineers. In my opinion, this expectation can be most effectively met, and will fully meet the objective of safeguarding the public interest, if senior level engineering science and design courses were taught by Professional Engineers from both academia and industry. This would allow practicing engineers from industry to contribute to the development of future engineers at an early stage. Their involvement would add value for students and would be of mutual benefit for the practising engineers in academia and in industry. If universities develop appropriate compensation, as has been done for other professional faculties such as medicine and dentistry, would experienced Professional Engineers take an active role at this stage? In my opinion, this desire exists as most accomplished engineers would be willing to share their expertise with future generations of engineers. There would also be benefits from the opportunities for synergy between the professional engineers from industry and those heavily

engaged in research. In addition to dealing with the compensation issue, engineering faculties will have to think differently when delivering curriculum content. To enhance participation by practicing engineers from industry, faculties may have to offer content in modules of one to two weeks long rather than in the lecture-laboratory model dispersed over 12-13 weeks.

Another aspect to developing a Professional Engineer is four years of acceptable engineering experience. The duration of four years, at times, may seem like a randomly picked number. It is not. It has been chosen based on studies that indicate that at least four years are required to meet the intent of the expected experience necessary for the responsible charge of the practice of professional engineering. Engineering experience must include the application of theory and exposure to the broad areas of practical experience, management, communication, and the social implications of engineering. The experience must be obtained under the supervision of a registered practicing member and must demonstrate progression and growth.

Some engineers certainly obtain such broad experience, but many struggle to meet these requirements smoothly. However, there are some who do not have the traditional opportunities. A structured member-in-training program, where practicing members from outside of the employment setting take an active role in training future members, as happens in other professions, will add value for the members-in-training and their employers. Such a program of direct involvement of practicing engineers in training of future engineers and geoscientists will require a commitment from you. Are you ready to commit? The commitment may involve regular communication with one or more MITs on a regular basis, assisting them with ethical dilemmas, exposing them to large engineering systems, making them feel proud of their profession. The structured program can be offered not only to students educated in Canada but also to foreign-trained engineers and geoscientists. Such a program would be seen as value-addition rather than a chore. I look forward to receiving your thoughts by mail or email Digvir_Jayas@Umanitoba.ca. ■

Members in the News

Congratulations to Dennis A. Woodford, P.Eng. who was named Fellow of the IEEE, which signifies world-class recognition for "leadership in the development of digital simulation of DC links and flexible AC transmission devices."

PAY YOUR DUES!

Dues have been mailed to all members and MITs. If you have not received yours, please contact the APEGM office as soon as possible.

All payments received in the Association office after February 28, 2006, are subject to the late payment fee of \$54.00.

Final Payment Date – March 31, 2006.

ALL MEMBERS OR MITs WHOSE DUES PAYMENTS ARRIVE IN THE APEGM OFFICE AFTER MARCH 31, 2006, WILL BE DE-REGISTERED OR REMOVED FROM MIT ENROLMENT. APPLICATIONS FOR REINSTATEMENT MAY BE MADE IN ACCORDANCE WITH SECTION 24(2) OF THE ENGINEERING AND GEOSCIENTIFIC PROFESSIONS ACT.

In Memoriam

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

Lawrence William Blackman William Henry Campbell

Bob Roberts

Explore the Possibilities: Highlights from the 2005 Manitoba Mining and Minerals Convention

Manitoba's 37th annual Mining and Minerals Convention, held November 17th to 19th in Winnipeg, drew 800 delegates to discover the province's mineral potential and industry opportunities. With 2005 exploration expenditures forecasted to reach \$52.7 million in Manitoba – a 46% increase from 2004 – and commodity prices on the rise, the convention provided an opportune venue to *Explore the Possibilities*.

The 3-day conference offered 21 presentations, a short course, 2 workshops, a trade show featuring a variety of industry products and services, geoscientific poster presentations, mineral property displays, and a forum for exhibitor presentations.

The convention opened with the trade show and a half-day short course on the application of radiogenic isotope and age-dating methods for mineral exploration. Geoscientists from the universities of Alberta and Waterloo, the British Columbia Institute of Technology, the Geological Survey of Canada (GSC), and the Manitoba Geological Survey (MGS) teamed up to deliver the well-attended course which also discussed sampling methods, sample processing, analytical techniques and costs.

The convention officially got underway at the evening Welcoming Reception, where the Minister's positive outlook for exploration and mining in the province was reiterated by the mayors of Manitoba's mining communities, who were optimistic about the increase in exploration activity.

Ian Cramer of the Assembly of Manitoba Chiefs mentioned the Assembly's participation in the development of the Manitoba Minerals Guideline, a set of guiding principles to facilitate relationship-building between those involved in, or affected by minerals activity in the province. He welcomed industry to go beyond the guideline objectives to look at partnerships and joint ventures with communities

should there be a common goal for development.

The technical and business sessions started on the second day of the convention. They were preceded with opening remarks by Minister Rondeau, who outlined the government's mining strategy and the key policy priorities that have resulted in Manitoba being rated 1st in Canada and 3rd worldwide for mining policies, according to the 2005 Fraser Institute *Survey of Mining Companies*.

Minister Rondeau announced that the government is working with industry towards Internet map staking to increase security and accuracy of mineral claims. He also announced the recent release of 3800 previously confidential assessment files to the public domain and over \$2.5 million annually in direct financial assistance to encourage exploration and attract investment.

The Minister congratulated the first round of graduates from the University College of the North's Prospector Training Program. The graduates were attending the convention as part of the "Business of Prospecting" course, the final phase of the training program which was developed through a partnership with the province, AMC, the federal government and the minerals sector.

Peter Jones, President and CEO of HudBay Minerals Inc., traced HBMS' historical roots in the Flin Flon area from 1927 to its present day transformation under new parent company HudBay Minerals. Jones mentioned the success of the 777 Project in Flin Flon, a \$435 million investment to create a state-of-the-art mining and processing complex that was completed on time and on budget. The 777 mine has 13 years of known reserves to sustain the operation to 2018. The company's focus in Manitoba is to spend \$10 million annually to explore the Flin Flon Belt.

Ric Syme, Director of the Manitoba Geological Survey, presented an overview of the survey's activities for 2005. Partnerships with the minerals



(Above) Premier Gary Doer and prospector grads. (Below) Students pan for gold.

industry, universities and the Geological Survey of Canada extended the 2005 investigations from southeast Manitoba through to the Nejanilini Lake area of Manitoba's far north. Two Targeted Geoscience Initiative (TGI) projects ended in March 2005, one on the Trans-Hudson – Superior Margin Metallotect, and another on the structure and hydrocarbon potential of the Williston Basin. A third, five-year TGI announced in the 2005 federal budget includes a major mapping project in the Flin Flon–Lynn Lake–La Ronge region of Manitoba and Saskatchewan.

The technical and business sessions began with presentations on advanced exploration projects in Manitoba. Tom Atkins, of Crowflight Minerals Inc., spoke about the company's plans to put the Bucko nickel-copper deposit near Wabowden into production by mid-2007. Marc Simpson, of Bema Gold Corporation, provided an update on the Monument Bay Gold

Project, a joint venture with Wolfden Resources, near Red Sucker Lake. Bema is conducting diamond drilling and geophysics to further its resource calculation. David Black, of Mustang Minerals Corp., presented an update on the Maskwa/Mayville nickel-copper project in the Bird River greenstone belt near Lac du Bonnet.

Highlights from the sessions focussing on base and precious metals included a presentation by Dave Peck, of Anglo American Exploration (Canada) Ltd., on global nickel markets. According to Peck, the industry will find it difficult to meet the demand for nickel, even with the current upswing in exploration and development for the commodity.

MGS geologist Scott Anderson discussed the significant potential for volcanic-hosted massive sulphide deposits in southeastern Manitoba's Rice Lake greenstone belt and a presentation by Tim

Meet Your New President – Dr. Digvir Jayas, P.Eng

J. Etcheverry, GIT

APEGM is pleased to welcome Dr. Digvir Jayas.

Not long ago we introduced Dr. Jayas as a new councillor to APEGM, we highlighted his amazing career so far, and heard his opinions on a number of issues. In a recent interview with Dr. Joanne Keselman, the University of Manitoba's Vice-President (Research), it became apparent that not only is Dr. Jayas impressive on paper but he is also a highly regarded, accomplished and approachable administrator, researcher, and teacher.

Currently Dr. Jayas is a Distinguished Professor of Biosystems Engineering and an Associate Vice-President (Research) at the University of Manitoba. He also holds a Canada Research Chair in Stored-Grain Ecosystems and is the director of the Canadian Wheat Board Centre for Wheat Storage Research, a unique, state-of-the-art research facility established under

Dr. Jayas' leadership. "Despite his very extensive list of academic and administrative responsibilities at the U of M he is able to juggle and indeed excel in the duties required of him in each of his many positions; and to fulfill his responsibilities with amazing dedication, humility, and a positive attitude." stated Dr. Keselman. Dr. Jayas was also a key driver that led to the establishment of the Richardson Centre for Functional Foods and Nutraceuticals at the University of Manitoba's Smart Park, "Indeed, without his passion and initiative, the centre would not be a reality." said Dr. Keselman

Dr. Jayas' international research reputation as well as his administrative responsibilities makes for a rigorous international travel schedule. Despite this, he always makes time for his graduate students who have come to Manitoba from many parts of the world specifically to work with him. Indeed, Dr. Jayas contin-

ues to maintain significant graduate supervisory responsibilities well above average. He has taught courses in the areas of food engineering, finite element method, and instrumentation and controls. He conducts research in the areas of physical properties of agricultural products; modified atmosphere storage of grains, oilseeds, potatoes, and meats; mathematical modelling of biological systems; and digital image processing for grading and processing operations in the Agri-Food industry. His research is funded by the Natural Sciences and Engineering Research Council of Canada (NSERC) through Operating and Strategic Grants; and by the Agri-food industry through Operating Grants and Contracts; and covers a broad spectrum between basic and applied research.

Last fall Dr. Jayas was the recipient of APEGM's Outstanding Service Award. Dr. Jayas has also received professional awards from the Canadian Society of Agricultural Engineering, the Canadian Institute of Food Science and Technology, and the American Society of Agricultural Engineers, along with a



New President, Dr. Digvir Jayas

host of others; bringing his list of scholarships and awards to over 50. He has over 500 publications and counting and is actively involved in some 13 national and international organizations. He is co-editor of two books entitled *Stored-Grain Ecosystems* and *Insect Pests of Stored Products: A Global Scenario*, and co-author of a book entitled *Grain Drying: Theory and Practice*.

APEGM is pleased and privileged to have Dr. Digvir Jayas as its president. Please join in welcoming him. ■

Meet Your New Councillor – Robyn L. Taylor, P.Eng., PMP

S.M. Jurkowski, EIT

Regular readers of the Keystone Professional will likely recognize Robyn from her reports on the Public Awareness Committee's involvement with the Manitoba Schools Science Symposium. For the past three years, she has organized the volunteers needed to judge the engineering-related science fair projects, and determined the winners of awards sponsored by APEGM and various local engineering firms.



New Councillor, Robyn Taylor

Robyn's dedication to the engineers of the future goes back even further. In my first year of engineering, I remember Robyn participating in the First Year Information program, helping to guide us frosh through the beginning of our engineering education.

Robyn graduated from the University of Manitoba with a Bachelor of Science in Electrical Engineering in 1998, and since then has been employed at Teshmont Consultants, presently in the role of Senior Engineer. Having become certified as a Project Management Professional, she has led projects involving transformers, submarine cables, system studies and cost estimating. Robyn has participated in various projects for power utilities around the globe.

In addition to her work on the APEGM Public Awareness Committee, Robyn joined the Nominating Committee in 2004. She is also very involved in the Institute of Electrical and Electronic Engineers, having served as IEEE

Winnipeg Section Chair in 2004, (Past-Chair in 2005), and chaired the IEEE Winnipeg Section Power Engineering Society in 2003. Robyn is a member of the Rotary Club of Winnipeg, serving on the Model United Nations Assembly Committee, and is involved with the International Youth Exchange Program. She has made numerous presentations to high school students promoting engineering.

Robyn lives in Wildwood Park with her husband Kris, two cats, a newt, and about 160 fish. She enjoys curling and traveling, holding to the principle that no matter how good a vacation is, one should never visit the same place twice.

We are pleased to welcome Robyn Taylor to the APEGM Council. ■

Important Information for Candidates on the Association's Assessment/Examination Program

Re: Policy recently approved by the Academic Review Committee:

Engineering Candidates who have been assigned CONFIRMATORY or PROFICIENCY examinations, are allowed to take equivalent University of Manitoba day-time courses in lieu of the examinations. A list of equivalent University of Manitoba courses is available by emailing the Administrative Officer, Joan McKinley, at jmckinley@apegm.mb.ca. Once you know the equivalent courses you must then write a letter to the Academic Review Committee, listing the courses you are planning to take in lieu of the examinations assigned, and requesting the Committee's permission to take these courses. ■

Meet Your New Councillor Donald Himbeault, P.Eng

J.Q.A. Menec, P.Eng.

Our new councillor, Don Himbeault, P.Eng., was born and raised here in Winnipeg. He is married to Gisele and has two sons; Eric who is 18, and Alain who is going on 17.

Don received his undergraduate degree in Mechanical Engineering at the University of Manitoba in 1983, and his Masters degree two years later. He then continued his education at the University of Waterloo, obtaining his Ph.D. in 1989, specializing in Composite Materials.

After graduation, Don moved to Quebec City to work as a Defense Scientist for National Defense. Don returned to Manitoba in 1992 to take a position as Research Scientist in the area of fracture at the Whiteshell

Laboratories of Atomic Energy of Canada Limited. With the winding down of the facility, Don moved back to Winnipeg in 1998 to work as a Research and Technology Advisor for Canada Revenue Agency. There, Don worked in the Scientific Research and Experimental Development program which provides funding to performers of industrial R&D. More recently, Don has joined Deloitte and Touche, working on the side of companies to help them access the financial assistance available from the federal government for product or process developments projects.

Don has been active in a number of volunteer activities in the past, including Boy Scouts, Innovator in the schools, Folklorama, and more

recently APEGM's professional development committee. Although much of his free time in the past has been devoted to raising his then young family, he now feels ready to give the time required to meet the obligations as a Council member. Don likes to keep active, with summer activities including cycling and canoeing, and cross country skiing in the winter. Generally, the car is his last option for commuting, preferring to walk or cycle to work.

Over the past few years, Don's career has given him the opportunity to interact with hundreds of Manitoba companies operating in various technology sectors. It is this experience that Don expects will help him to best represent the wide variety of members within the profession. Don sees self-regulation as one of the greatest privileges that the profession has; however, this right has to be both earned and protected. Accordingly, Council needs to be vigilant of any government



New Councillor, Don Himbeault

action that will erode this status, and be pro-active in addressing stakeholder expectations in such areas as professional development, mobility, and registration of immigrant professionals. With so many stakeholders involved, (the public, government, and the membership), the task should prove to be a formidable challenge. ■

A History of Electric Power Development in Manitoba

L.A. Bateman, OM, P.Eng. • Reprinted by permission of the IEEE Canadian Review editor Dr. V.K.Sood (v.sood@ieee.org)

(Part I available in the December 2005 issue of The Keystone Professional at: www.apegm.mb.ca)

5.0 Formation of Manitoba Hydro

By 1961 the Government again moved to rationalize the power industry by an amalgamation of the Manitoba Power Commission and the Manitoba Hydro Electric Board. The new organization was called Manitoba Hydro.

With the growth of load in the fifties, the newly created Manitoba Hydro was struggling to stay ahead of the demand. It completed the last

two sites on the Winnipeg River at Pine Falls and McArthur Falls and constructed a thermal generating station at Brandon, and another at Selkirk, while it studied its options for more hydro development on the Saskatchewan and Nelson rivers. The decision was made in 1960 to develop the Grand Rapids four-unit site with a capacity of 479 MW on the Saskatchewan River where it empties into Lake Winnipeg. This was, and still is, the largest head in Manitoba at 120 feet. The decision

was made to use Kaplan units. The site was unique, in that it was built on a porous limestone foundation. This required extensive grouting, and became the largest grouting program ever encountered by any geophysical consultant. One sink-hole under the powerhouse location required approximately 6,000 cubic yards of grout.

6.0 Nelson River Sites

While this construction was progressing, studies were underway on future Nelson River sites. The Federal Government participated in these studies, which involved the future development of the northern Manitoba rivers for supplying the growing electrical load of the province.

The outcome of these studies was an announcement in February 1966 of an agreement between the Federal Government and the Province of Manitoba to proceed to the Northern Sites for the future power requirements of the province. This agreement required Manitoba Hydro to build a 1272 MW power plant at the Kettle Rapids site [4] on the Nelson River, control Lake Winnipeg for storage for this and future Nelson River plants, and

divert the Churchill River into the Nelson at a point above Kettle. The license from the Provincial Government to undertake these projects provided for four feet of storage on Lake Winnipeg and ten feet of storage on South Indian Lake, the reservoir for the Churchill River flow. The Federal Government agreed to lend the Province money, which the Federal Government would use to build a DC transmission line from the Nelson River Kettle site to a point near Winnipeg. Atomic Energy of Canada was the federal agency assigned to build the line. This loan was to be repaid by Manitoba Hydro when the load growth was sufficient to carry the financial burden of the line. In the meantime the interest was accumulating and being charged to the line capital account. This loan was discharged in 1992 when Manitoba Hydro bought the line and the accumulated debt.

To supply power to the construction site of the Kettle Plant, a 138 kV line was constructed from Kelsey [3] in 1966. In 1997, the Kelsey station was connected to the southern system by construction of a 230 kV line from Kelsey to Grand Rapids.



Kelsey Generating Station (Source: Manitoba Hydro)

Continued on page 12

Adaptive, Phased Management for Nuclear-Fuel Waste

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

In November 2005, the Nuclear Waste Management Organization (NWMO) recommended to the federal government an Adaptive Phased Management (APM) approach for the management of the approximately two million used-fuel bundles produced to date, mostly by Canada's nuclear generating stations, and currently in storage at reactor sites. This was the latest in a chain of events that started in the late seventies – the days of Pierre Trudeau, sideburns and eight-track tape. To date, not a gram of nuclear-fuel waste has been disposed of, though it is all safely in storage. In the terminology of the business, *disposal* implies permanency, whereas storage is an in-between step.

The NWMO was asked to assess the following three methods for management of nuclear-fuel waste: deep geological disposal; continued storage at reactor sites; and centralized storage either above or below ground. However, it is recommending none of the above. Instead it is recommending the alternative APM approach whose key attributes are: ultimate centralized containment and isolation of the waste in an appropriate geological formation; phased and adaptive decision making; optional shallow storage at a centralized site prior to placement in the repository; continuous monitoring; provision for retrievability; and citizen engagement.

It was in 1977 that Professor Kenneth Hare, in a review initiated by the government, recommended that nuclear fuel waste should not be allowed to accumulate indefinitely in interim storage. This was followed in 1978 by the establishment of a Nuclear Fuel Waste Management Program by the governments of Canada and Ontario. Atomic Energy of Canada Limited (AECL) was assigned the responsibility for developing a concept for disposal in a deep underground repository in intrusive igneous rock, while Ontario Hydro was asked to research the development of a transportation system to carry the waste from the generating stations to the central disposal repository.

AECL centered the NFWMP in Pinawa, Manitoba, where many APEGM members, both geoscientists and engineers, were employed. During the eighties and most of the

nineties, NFWMP was well funded and produced excellent research in a wide spectrum of engineering and scientific disciplines, as well as on the social aspects. Most of the work was done at the Whiteshell Laboratories in Pinawa, while the nearby Underground Research Laboratory (URL) hosted high-calibre geotechnical research. Other contributors were numerous universities – including the University of Manitoba, – government departments and international organizations.

The disposal concept developed by AECL is known as *geological disposal* of nuclear fuel waste. Multiple barriers would protect humans and the natural environment from both radioactive and chemical contaminants in the waste. The barriers would be: the waste form itself; the containers; the buffer, backfill and other vault seals; and the geosphere which would include the rock body between the waste and humans as well as sediments overlying the rock. In this concept, institutional controls would not be required to maintain safety in the long term. The containers of waste would be placed in a disposal vault excavated 500 to 1000 m below surface in plutonic rock of the Canadian Shield. The vault, consisting of rooms and tunnels, would be connected to the surface by shafts, and roughly resemble a hard-rock mine. AECL research also included study of the socio-economic effects of the disposal vault and development of public consultation processes. Ontario Hydro (now Ontario Power Generation) simultaneously developed a concept for the transportation system that would be required to move the nuclear-fuel waste from the generating stations to the central disposal vault. The disposal vault would cost somewhere between \$8.7 billion and \$13.3 billion in 1991 dollars.

AECL's geological disposal concept was reviewed by an environmental assessment panel appointed by the federal government and chaired by Blair Seaborn, a retired federal Deputy Minister. AECL presented the results of its research to the Panel in 1994 in a document set consisting of an Environmental Impact Statement and nine supporting *primary references*. The Panel held public hearings during 1996

and 1997 and made its recommendations to the government in 1998. The Panel found AECL's concept satisfactory from the technical perspective, but not from the social perspective, and went on to say that the concept did not have the required level of public acceptability for it to be adopted. Amongst the Panel's other recommendations was the creation of a waste management agency at arm's length from the utilities and AECL, to be funded by the producers and owners of the waste. With the end of the Seaborn Panel came the end of AECL's Manitoba based Nuclear Fuel Waste Management Program. AECL's Manitoba facilities are presently undergoing decommissioning and the research groups have dispersed, with the exception of a small number of individual researchers including some at the Underground Research Laboratory.

Largely in keeping with the recommendations of the Seaborn panel, Parliament passed the Nuclear Fuel Waste Act in 2002 which required the owners of the nuclear fuel waste to: establish and fund the *Nuclear Waste Management Organization (NWMO)*; and to decide within three years of the promulgation of the Act on the choice of approach for long-term management of all high-level nuclear fuel waste in Canada. The current, and the first, president of NWMO is Elizabeth Dowdeswell, who in her earlier career was the Executive Director of the United Nations Environmental Program, a federal Assistant Deputy Minister

and a Deputy Minister in the government of Saskatchewan.

It appears that in its Adaptive Phased Management approach, NWMO has chosen AECL's concept of geological disposal as the core of the approach and added other features. The key is flexibility in the pace and manner of implementation. Also included is continuous learning through a monitoring program and research and development. Unlike the AECL concept, APM has provisions for retrievability of the waste at some stage. There are also elements of centralized storage in the APM approach. The NWMO is now awaiting the government's response to its recommendations, and upon their approval would move forward with their implementation.

REFERENCES

- Choosing a Way Forward. 2005. Nuclear Waste Management Organization. www.nwmo.ca
- Report of the Nuclear Fuel Waste Management and Disposal Concept Environmental Assessment Panel. 1998. Canadian Environmental Assessment Agency. www.ceaa.gc.ca
- Summary of the Environmental Impact Statement on the Concept for Disposal of Canada's Nuclear Fuel Waste. 1994. Atomic Energy of Canada Limited. AECL-10721, COG-93-11. ■

Bill 7 Update

As many of you may know, Bill 7 – The Architects and Engineers Scope of Practice Dispute Settlement was passed by unanimous vote of the Legislature on November 30, 2005. However, there remain some important issues to be finalized.

The Office of the Fire Commissioner and the City of Winnipeg are digesting the new Legislation and have stated that they intend to offer an "interpretation document" this month, relating how the Plans Examination and Permitting process will be affected. The Morden – Stanley – Thompson – Winkler (MSTW) Planning District has already issued an information bulletin, which essentially restates the Regulation Changes invoked by Bill 7.

Provisions for (a) "Grandfathering" of engineers, which would license them to continue to perform design work which is now restricted to Architects and (b) details of how a "joint firm" will be accommodated in the MAA's By-Laws, wherein an engineering firm with an APEGM Certificate of Authorization can hire an architect and thereby offer Architectural Services; remain to be worked out. Bill 7 contemplated a resolution by the end of January, through advice from the EGAIAR Joint Board. However, the previous chair of the Joint Board has stepped down, and at the time of printing, the Minister was in the processing of selecting a new chairperson. The legislation can be found on the Manitoba Government website at web2.gov.mb.ca/bills/sess/b007e.php



Professional Development

Manitoba Land Initiatives Website and Its Use with Free GIS Software

PD Workshop Led by Alan Dakin and Bob Bruce, P. Eng.

Report by G.S. Lodha, Ph.D., P.Geo

Thirty-seven attendees were present at a half-day hands-on workshop on the Manitoba Land Initiatives (MLI) website and its use in a desktop environment with public domain Geographic Information System (GIS) software. The event was held on December 12, 2005 at the Government of Manitoba computer labs, located on Osborne Street North in Winnipeg, and was led by Alan Dakin and Bob Bruce, P.Eng.

Alan Dakin is the coordinator-manager of the MLI database warehouse, which is supported by all Manitoba Government Departments. He was previously Registrar and Data Administrator

for Crown Lands and its information system. During the workshop, Mr. Dakin provided useful information about digital databases relating to land systems in various Government of Manitoba departments. Databases covered in the workshop included information about highways/ivers, digital elevations, administrative/township boundaries, ortho-photography, agricultural, forestry data, geology and mineral resource data, city maps, housing developments etc. Most of this data is available for making maps at a scale of 1:2,000,000 to 1:50,000. Reference was also provided to "Geo-Base" databases for all of Canada, including geology

and mineral resources data. This national database is coordinated by the Canadian Council of Geomatics with the joint support of federal, provincial and territorial governments.

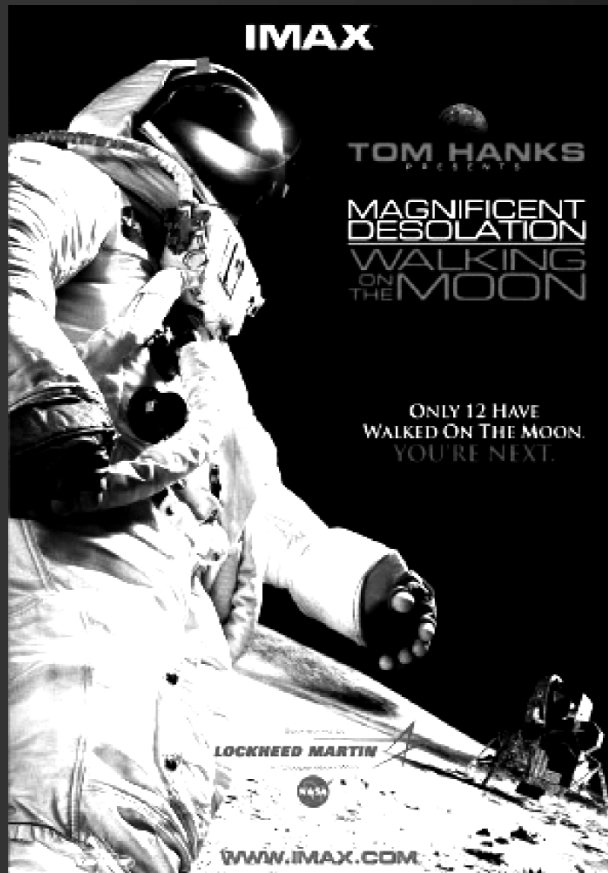
All of this data, including the various overlays, can be best utilized by viewing and editing in the form of digital maps and then by ultimately printing the final version as maps of overlaid data in an appropriate scale.

Bob Bruce, a professional engineer with the Government of Manitoba's Geomatics Branch who specializes in software applications for mapping, covered the subject of Geographic Information Systems (GIS). Mr. Bruce first described the availability of eight different free for public use GIS software in: (1) Vendor-supplied software domain (ESRI Arc Explorer, Cute PDF, Autodesk DWF Viewer and writer); (2) Open source software (QGIS, uDIG, FWTools, GRASS); and (3) Other types of software (fGIS). He also provided definitions of commonly used mapping terminologies like Datum (NAD27, NAD83, and WGS84), Map projection (UTM,

MTM, and Polyconic), Raster data (GeoTIFF, MrSID, JPEG, and PNG) and Vector data formats (DXF, SHAPE, GML etc). He then went into describing the details and strengths of each of the eight GIS systems along with their application to layered digital data from the Winnipeg and Selkirk areas. A hands-on exercise session was then provided on how to work step-by-step with the mapping software and the given sample data by using desktop computers. In the process, Mr. Bruce provided the rationale for development of the various GIS packages from the initially widely used ESRI Arc Explorer system.

Following the workshop event, a CD with installable software of all useful GIS packages and sample data was provided to each participant for personal interest and use. References were also provided to websites of different GIS software for direct downloads or future upgrades.

We thank Bob Bruce and Alan Dakin for their time and effort in providing this useful and timely workshop to the benefit of APEGM members and friends. ■



Provincial Engineering/Geoscience Week

- 5:00pm Sunday, March 5, 2006
- IMAX Theatre at Portage Place
- Enjoy Free Indoor Parking
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The IMAX® space legacy continues with **MAGNIFICENT DESOLATION: WALKING ON THE MOON**, taking you to the surface of the Moon to walk alongside Apollo astronauts who have stepped upon its surface. You will be immersed in the life-changing experiences of these astronauts by showcasing what they saw, heard, felt, thought and did while on the lunar surface.

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CCPE CEO's Message

Marie Lemay, P.Eng. - CEO - CCPE

Canadian Engineers: International Presence and Influence

As we move forward into the New Year, I believe that the Canadian Council of Professional Engineers (CCPE) has made great strides in the development of our 2006-2008 strategic plan.

Charting the profession's course for the next three years, our strategic plan will, among other priorities, focus on the evolution of the profession; build on our government relations profile; and, encourage strategic alliances with national and international organizations.

While I am very proud of the progress we have made in building our strategic plan, I feel that it is important to reflect and focus on one specific element of the plan - our involvement in international activities.

To some, it may seem that there are no tangible or immediate benefits to becoming involved on the international front. After all, being on international committees, and involved with international issues, often requires intercontinental travel, which can take its toll, requiring a lot of time, money and resources. As a frequent traveller, I can certainly appreciate this perspective.

However, with key technological and communications advancements, Canadians can now participate in global development from our own backyards. And, as a value-added benefit, by tapping into the expertise of engineers in other countries, Canada's engineers open themselves to the possibilities associated with sharing information and acquiring new skills.

More importantly, Canada's engineering profession is highly regarded around the world. As a result, we are in a strong position to help build awareness and influence decisions at the international level. Our contributions to the advancement of many great technologies, and the high regard that others have for the P.Eng., gives us prominence in a field that reaches beyond our borders.

Agreements like the Washington Accord, which establish substantial equivalency of education systems, are beneficial to the profession because they provide our regulatory bodies with tools to facilitate the admissions process. These agreements also prompt us to stay current, evaluate, build and develop our own admissions processes; give

us exposure to the systems used in other countries; and, have enabled us to develop partnerships that promote high admission standards, while facilitating the admission process for engineers who bring unique knowledge and skills into Canada. Furthermore, such agreements can also perpetuate the spread of potentially innovative technologies or methods of practice.

An increased presence on the international stage could also help us achieve our goals from a government relations standpoint. If the government becomes more aware of our proactive efforts to engage in the transfer of knowledge and skills with engineering organizations world-wide, key Canadian political decision-makers may realize that we

share a similar agenda in working to enhance the health, safety and well-being of all Canadians.

I am very pleased that the board of directors has approved the three-year project to assess the potential benefits of our international involvement. I believe this project will enable us to effectively identify and focus in on how to maximize our human resources and financial resources, as they relate to our international activities. As an active measure, we will assess the project's effectiveness on a yearly basis and have set up teams to offer feedback to the board of directors.

I believe we are in a unique position to play an influential role both in Canada and abroad. ■

Provincial Engineering & Geoscience Week Coming Soon!

The Planning Committee has been busy organizing events for the upcoming 2006 Provincial Engineering & Geoscience Week! (PEGW) Look for the Engineering and Geoscience Displays and the following events, March 3-5, at St. Vital Shopping Centre:

- Friday, March 3rd – Celebrity Competition
- Saturday, March 4th – Spaghetti Bridge Competition
- Sunday, March 5th – Children's Activities

There will also be a Special Imax Presentation at Portage Place Shopping Centre on Sunday, March 5th.

For more information please see our website: www.apegm.mb.ca

See you there!

Think Long Term Growth...continued from page 1

In many sectors (education, health care, public service, etc) the employee groups are also aging. Our group of professionals is no different. Looking at the APEGM membership statistics tells the true tale: 67% of members are over the age of 40. If you look at the magic age of "freedom 55", 28% are already there (or older). What does this say about the long term growth and viability of a self-governing profession? The answer is obvious – without an influx of new members to offset retiring ones, the membership will decline rapidly, thereby threatening the functioning of our association.

Some strategic decisions will be necessary in the next few years to ensure that long term growth and sustainability is achieved. Implementing programs to attract and register foreign-trained engineers to Manitoba is one step; streamlining the registration process to allow professionals from other jurisdictions to come to Manitoba and practice without undue barriers is another; encouraging our sons and daughters (dare I say grandsons and granddaughters) to pursue a career in engineering and geoscience; getting involved on an APEGM committee to support, promote and defend the profession in Manitoba – these are all good steps



towards preserving and protecting our profession in the face of serious aging statistics.

So as 2006 gets underway, are you thinking long term? Are you thinking about what you can do to support your professional associa-

tion? Don't let the RRSP season go by without investing in your future and don't let another season go by without investing in the long term future of your profession – for yourself and for all Manitobans. Happy New Year. ■

Winners of the 2005 Canadian Consulting Engineering Awards

The annual awards, launched 37 years ago, are the most important national mark of recognition for projects recently completed by consulting engineering firms.

The 10 winning projects, located in Canada and around the world, include engineering for buildings and infrastructure, environmental site remediations, and special studies. The winners were selected from 67 entries on the basis of the engineers' use of technical innovation and project management expertise. The environmental, social, and economic benefits of the project are also taken into account.

The jury was a panel of eminent engineers from across Canada. The chair this year was Mr. Carl Yates, P.Eng., General Manager of the Halifax Regional Water Commission in Nova Scotia.

The awards are co-sponsored and organized by the Association of Consulting Engineers of Canada and *Canadian Consulting Engineer* magazine.

Full descriptions of each winning project are published in *Canadian Consulting Engineer*, October-November issue, posted at www.canadianconsultingengineer.com

THE WINNERS:

Schreyer Award

(chosen as the most outstanding technical project overall)

Ontario College of Art & Design, Sharp Centre for Design, Toronto – Structural Engineering

by Carruthers & Wallace Limited and MCW Consultants Ltd. (Toronto, Ont.)

Category: Buildings

Description: The "Tabletop," structure is a dramatic two-storey block of studios and classrooms that floats 28 metres above the art college's existing building on McCaul Street in downtown Toronto. The structure is partially supported by a set of splayed metal columns in bright colours.

Awards of Excellence

■ Sea to Sky Highway Test Section – Design and Construction Services

Lions Bay, B.C.

by Associated Engineering with Golder Associates (Burnaby, B.C.)

Category: Transportation

■ Remediation of Sungai Bera Holding Basins

Brunei, Southeast Asia

by Jacques Whitford Limited (Dartmouth, N.S.)

Category: Environmental Remediation

■ Harvey Barracks Environmental Remediation

Calgary

by Golder Associates Ltd., (Calgary, Alta.)

Category: Environmental Remediation

■ African Development Bank's Environmental and Social Assessment Procedures

by Tecslult Inc. (Montreal, Que.)

Category: Studies, Software & Special Services

■ Specialty Sinks for Firefighter's Burn Treatment Unit, Walter C. Mackenzie Health Sciences Centre

Edmonton

by Hemisphere Engineering Inc. (Edmonton, Alta.)

Category: Studies, Software and Special Services

■ Pearson International Airport Terminal Development Stage 1

Toronto

by Marshall Macklin Monaghan Ltd., lead consultant in MGP Project Managers (Toronto, Ont.)

Category: Project Management

■ The Alberta SuperNet

by Morrison Hershfield Limited (Calgary, Alta.)

Category: Project Management

■ Dam Safety Programs in Costa Rica and El Salvador

by Acres International (Niagara Falls, Ont.)

Category: International

■ Identification and Analysis of Sources of Pollution in the Dnieper River Basin

Ukraine, Belarus and Russia

by SNC-Lavalin Engineers & Constructors Inc. (Toronto, Ont.)

Category: International

Beaubien Award

The Association of Consulting Engineers of Canada (ACEC) also presented the 2005 Beaubien Award to Mr. Wayne Bowes, P.Eng. of Ottawa. He is a former Chair of the Board of ACEC and had a career of 40 years with the consulting engineering firm Delcan.

The Beaubien Award is presented annually by ACEC for individual lifetime achievements and contribution to the engineering industry and to the association.

Award Sponsors

The Association of Consulting Engineers of Canada/Association des ingénieurs-conseils du Canada (ACEC/AICC) is the national association of consulting firms that provide engineering and other technology-based intellectual services. Its offices are in Ottawa.

www.acec.ca ■



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APEGM Awards Nominations

The APEGM Awards Committee is asking for the support of the membership and employers of Manitoba engineers and geoscientists in providing nominations of members deserving of an award. Your help in this regard is pivotal to the ongoing success of the APEGM awards program.

If you are aware of Manitoba engineers or geoscientists who are deserving of an award, please complete an Award Nominations Form and mail, fax or e-mail the form to APEGM. Information regarding the various awards conferred by APEGM, and the Award Nomination Form, are available by following the link below:

www.apegm.mb.ca/practice/infomem/apegmaward.html

Ensure that Manitoba's most worthy professional engineers and geoscientists are recognized for their contributions to our professions and society. ■

Council Report

December 8, 2005 *A.D. Erhardt, EIT*

Shortly after 11:00 am the meeting was called to order and promptly began with a round of introductions as to introduce all of the new members to one another. After some minor revisions to the agenda and approval of the minutes from the previous meeting, the Council began to discuss the agenda issues.

The first item that was discussed pertained to home inspectors. James Blatz presented a brief summary of the issues and concerns regarding the relationship between home inspectors and engineers that had come to light after a local newspaper article. A possible joint effort between APEGM and the Home Inspector Association was discussed and the Council agreed to explore the issue in more depth at a future meeting.

The selection of a Vice President and Executive Committee Member were the next items for consideration. Several people were nominated for the position of Vice President. However, all nominees respectfully declined and the selection was carried over to the January meeting. There was no such problem with regards to the selection of a new Executive Committee Member, as James Blatz was elected from a handful of nominees.

Following lunch, a presentation was made by Wayne Stewart, a representative of the Thompson Chapter, in an effort to persuade the Council to vote the 2006 Annual General Meeting in Thompson. The presentation was

received warmly and later on in the meeting it was decided to grant the 2006 AGM to Thompson.

Following the presentation, the Council directed its attention to the ongoing jurisdictional issue with the MAA. Bill 7 was reviewed and Rob Dewar, Council's Legal counsel, discussed the situation given the results of the legislation that had been passed. The concept of a joint board to cover "grand parenting" issues was also discussed along with who would chair the board. As no current council member was on the joint board, Alan Silk volunteered and was appointed to the position. In the end, it was suggested that all parties involved get together to allow everyone to move forward.

Following a brief in camera session, several information items were brought forward. CCPG Director Hamid Mumin presented a summary of the recent CCPG Board of Directors meeting. Key issues discussed by Dr. Mumin include mobility concerns and a national registry for Professional Geoscientists. This was followed by a summary of the CCPE Board of Directors meeting by CCPE Director Ron Britton.

The Council then focused its attention to several items for decision, including the future meeting schedule, the 2006 Nominating Committee and Council education. After two additional brief in camera sessions, the Council reviewed the few outstanding actions and revised the agenda for the January Council meeting. As things were wrapping up, Dave Ennis took the opportunity to thank the Council and all those involved for their efforts over the years, and say goodbye. At 4:55pm, the meeting was adjourned. ■

Explore the Possibilities...continued from page 4

Corkery, also with the MGS, dealt with Archean crustal evolution in the northwestern Superior Province and its implications for gold metallogeny.

The diamond exploration sessions were held on the final day and included two presentations by De Beers Canada. Martin Doyle described the company's diamond resource delivery process which employs new methods and technologies to more accurately evaluate potential diamond resources at the early stage of the resource process and at the advanced exploration and evaluation stages. Paulo Pereira, also with De Beers Canada, provided an update on the company's Seal River project in northeastern Manitoba. In 2006, the company will be completing an airborne gradiometer magnetic survey covering 1 950 000 hectares and is planning follow-up and drilling of high-interest geophysical targets.

The Honourable Gary Doer, Premier of Manitoba, was the keynote speaker at the Friday luncheon. The Premier spoke of the government's open door policy to work with industry on concerns that affect exploration and mining. Doer also talked about his government's commitment to keep Manitoba's hydroelectric rates the lowest in North America, a strategy that will provide long-term benefits to the province's mining industry. The Premier concluded with congratulations to MGS geologist Dr. Herman Zwanzig, who was the 2005 recipient of the national Provincial Geologists Medal for his outstanding work and contribution to geoscience in Canada.

For the second year running, an Aboriginal Mining Workshop was held as part of the convention. This year's workshop focussed on exploration and how communities can create opportunities and develop capacities to benefit from exploration activity in their regions. Chief Jerry Asp of Tahltan First Nation gave a thorough explanation of the different business opportunities at each phase of the mining cycle and what communities must do in preparation, from skills training and business development to the how-tos of negotiations and joint ventures. Ben Michel, President of the Innu Nation, and Dave Hunt, President of the Labrador North Chamber of Commerce, spoke of partnerships and joint ventures resulting from the Voisey's Bay nickel project that have benefited the Innu. Charlie Lyall, President and CEO of Kitikmeot Corporation in Nunavut, talked about the Inuit company's service contracts with diamond mining companies in the region.

A mineral education schools program at the convention had one hundred and seventy students from four elementary schools participate in various mineral education activities including gold panning, mineral and fossil collecting, a Roc Doc presentation, lapidary demonstration, fun with minerals on the Internet and a tour of the exhibit area. The Roc Doc portion of the

program was delivered by geology students from the University of Manitoba and Brandon University.

Richard Murphy, President and CEO of Seymour Exploration Corp., had the last say at the convention's Saturday Wind-up Luncheon. Delegates learned how modern-day tools and technologies, such as 3-D mine modelling and borehole geophysical techniques, have been applied in the reinterpretation of the mineral resource potential and the generation of new exploration targets at the former producing Lynn Lake nickel mine.

The 2006 Manitoba Mining and Minerals Convention will be held November 20th to 22nd. ■

Manitoba Firms Win Wood Works Award

On November 25, 2005 Wood Works announced the 2005 Wood Works Award Winners at their 5th Annual Awards Gala, held in Collingwood, Ontario, where many industry and community leaders, politicians, architects and engineers celebrated Ontario's finest wood-based construction. Congratulations to the Manitoba firms of Laverne Draward & Associates Inc. (Structural Engineers) and Smith Carter Architects and Engineers Inc. (Mechanical & Electrical Engineers and Architect) for winning the Jury's Choice Award for their design of the Deer Lake K-12 school in Northwestern Ontario. This award is judged on the projects' excellence in design, use of wood in a unique manner, and its ability to invoke a sense of community spirit and pride. ■



Entrance to the Deer Lake School Library

A History of Electric Power...continued from page 6

This present and future system expansion required additional revenue. As a consequence of this, the first rate increase in 57 years went into effect in July 1968.

7.0 Interconnection with the United States Utilities

This ambitious construction program with the many unknowns caused the Utility to look at alternatives to meet its load requirements in 1970. One option was the addition of another thermal unit at the Selkirk Plant, and an option on a shaft was actually bought. Another, which proved to be the preferred option, was to interconnect with the three utilities south of the border, namely Otter Tail Power, Northern States Power, and Minkota Power Cooperative Inc. and buy capacity for the winter of 1970. This alternative was pursued successfully and a 230 kV line was constructed after receiving approval from the National Energy Board. This line permitted the purchase of 90 MW of capacity for the winter of 1970. It also permitted the export sale of surplus energy, which proved to be very beneficial to all parties.

The first unit of the Kettle Plant [4] came on line in 1970, however the DC transmission terminal equipment was not ready. The two completed DC lines, approximately 900 km in length were used as a temporary 230 kV line with a reactor hung on at approximately the mid point at Grand Rapids to inject this power into the 230 kV system. It meant that Manitoba not only had the US utilities to support the Manitoba System, but the first unit at Kettle also improved the reserve and

energy position. Long Spruce came on line in 1976 associated with the second bipole of the DC transmission Line. The converter station, named Henday was located at the site of the future Limestone plant to facilitate the conversion of this plant to DC. All Nelson River plants are interconnected with 230 kV transmission lines. The Limestone Plant came into service in 1990. There are still several sites on the Nelson and other rivers in the north to develop. Wuskwatim, on the Burntwood River, which carries the diverted Churchill River into the Nelson, is on the verge of being developed. The largest site in Manitoba is on the Nelson at Conawapa below Limestone and is being considered for a sale of power to Ontario Power Generation. A fourth interconnection, rated at 230 kV, has been added to the US system from the western part of the Manitoba system.

8.0 Interconnections

The first Interconnection from the Manitoba Hydro system was with Ontario Hydro's isolated Northwest system in 1957. This was followed by an interconnection with Saskatchewan Power Corporation in 1960 between their Estevan Plant and Brandon. This was initially operated at 138 kV, but designed to be raised to 230 kV, which was accomplished in a few years. With the completion of the first 6 units of the 12 unit Kettle plant, Manitoba had a surplus of generation and negotiated a sale to Ontario Hydro commencing in 1972, but by this time the Northwest Region of Ontario Hydro was interconnected with their main system. This meant



Kettle Plant (Source: Manitoba Hydro)

there would be a circulation of power around the Great Lakes unless phase shifting transformers were installed on this interconnection. Two 200 MVA phase shifting transformers with a 180 degree shift capability were installed to supply two new 230 kV lines to the Ontario System. This rather large angle was determined by test of an isolated machine on the tie line to Ontario and the Manitoba system tied to the US system.

A second 230 kV line was constructed between Saskatchewan and the Manitoba system in 1973.

The operation of the first tie to the US proved so successful that another utility, Minnesota Power and Light, negotiated a tie to their system near Duluth, which went into service in 1976. An agreement was reached with Northern States Power to interconnect their system with Manitoba Hydro at 500 kV. This was negotiated using seasonal diversity as one of the economic justifications for the line. It also provides the Manitoba system with a good backup in case of trouble on the DC system [5] from Northern Manitoba. The line came into service in 1980.

The value of this 500 kV interconnection [6] with the US system was very vividly demonstrated in 1997, when a wind shear toppled 19 towers on the DC line. This occurred in the early morning hours, before daybreak. The Manitoba system went from an export mode to an import mode without any customer interruptions. The public and some large industrial customers were asked to conserve energy and capacity for the few days it took to build a

temporary line around the downed towers. This 500 kV interconnection has had series compensation installed to increase its export capabilities. It has proven to be a valuable source of revenue as well as a source of energy during the 2002-03 years, when one of the worse droughts on record was experienced on the Prairies.

9.0 Winnipeg Hydro

The agreement between the Province and the City of Winnipeg in 1955, which provided for the City to retain its two generating stations and share in the cost of new generation, transmission, and interconnection revenue, was renegotiated each 10 years. The ratio of peak demand and energy use on the two systems had increased to approximately 90/10 and in 2002 Manitoba Hydro purchased the Utility, resulting in one utility supplying the entire province [7] with rates uniform throughout the system and one of the lowest rates in Canada. ■



A view of the largest mercury arc rectifier ever built – this type of valve was originally used in the AC-DC conversion stations in the Nelson River DC transmission system. Most of these valves have now been replaced by thyristors. (Source: Manitoba Hydro).

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.

Professional Development

PD Event: Networks at Home: How to Keep Your PC(s) Happy

PD Presentation by J. Dobrovolny

Report by: N.J. Kelly, P.Eng.

In the early morning of November 9, 2005 about 45 attendees were treated to a breakfast buffet and presentation by Joe Dobrovolny of Computer Council Inc. This was the first breakfast event I had attended and I must admit I was pleasantly surprised to find much more than a continental breakfast.

Primed with coffee and good food, we listened as Joe provided a series of tips, interspersed with humorous definitions (e.g., an expert is someone who comes from 40 or more miles away and you can't understand) on creating and managing a home network.

A few of his suggestions were:

- When looking for a computer buy a "no name" machine from a reliable local corner store. You will get answers, a better fit to

your needs, a more reliable machine, an actual copy of your operating system program and solid warranty support compared to other options.

- Everyone needs to be concerned with network security. Make sure you have good anti-virus, anti-spyware and firewalls installed and up to date. Do not connect to a network without them. Presently the average time to infection of an unprotected system is about 13 minutes. Joe's picks of freeware products are:
 - 'AVG anti-virus' from Grisoft
 - 'AdAware' and 'Spybot Search and Destroy' anti-spyware
 - 'ZoneAlarm' firewall from Zone Labs
- Consider installing a hardware firewall. Hardware firewalls



offer the best protection from hackers and a decent firewall/router can be had for less than \$100.00. If that sounds like a lot of money I can tell you from personal experience that it is not. I bought this inexpensive insurance right after the first "event" I experienced. It was extremely reasonable compared to the cost of repairing the damage done to my system.

- If you are going to install a wireless network, choosing components that adhere to the 802.11a standard will give you an inherent security advantage. This standard uses a different frequency, has more limited range and is less common than components using other standards. That makes it harder for the average hacker to access.

- You can speed up your Windows XP computer significantly by:
 - Removing all promotional applications.
 - Shutting down unused services. This can save 12-70 MB of RAM.
 - Adopt good computing practices:
 - Make a start-up disk for your system.
 - Turn off system restore.
 - Scan all files you download and all incoming and outgoing e-mail.
 - Setup passwords for all accounts, especially any administration accounts.
 - Backup your data regularly.

Joe has kindly given APEGM access to his PowerPoint presentation and members can find it on-line at: www.apegm.mb.ca/pdnet/papers.html The presentation is listed on the page as a link entitled "Networks at home: How to keep your PC(s) happy". The PowerPoint file is entitled "home-pcs.pps". ■

Attention MITs: Progress Reports

S.E. Sankar, P.Eng., Director of Admissions

As all of you know, every six months you're required to submit a progress report describing the type of engineering or geoscience experience that you are getting. Overall the quality of reports that we see is very good. However, some of them, well... we get the impression you think that these reports aren't actually read by anyone.

Let me assure you, each and every report is read very thoroughly by Experience Review Committee (ERC) volunteers.

Perhaps you wonder why we put you through this every six months. Think of it – the only information that we have regarding your engineering/geoscience experience is what you provide to us. We don't know each and every one of you and we certainly don't have the resources to interview all of you.

If you provide sloppy, unreadable, point-form notes which give very little information on what you've actually done – this will be

the impression that the Experience Review Committee will have of you, no matter how brilliant or hard-working you are in your place of employment. Also, people who submit the same report twice just waste both the Experience Review Committee's time and their own – because we will send the report back with a stern note attached. Often, ERC has 90+ files to review, so spending time looking at sub-standard or copied reports is not appreciated – after all they are volunteers and they, too, have their 'day jobs' which they must attend to.

So, here are some suggestions that you should follow when writing your reports:

- 1) Section 2.1 is the most important section. Make sure you complete it thoroughly and make sure that you do address sections: 2.2, 2.3, 2.4 and 2.6 which encompass - application of theory, practical experience, management and professional and ethical responsibilities respectively. We used to

ask these questions separately, in the old format, however, due to popular request, we changed this. Maybe the old format was better?

- 2) Don't cut and paste. Yes, it's tempting in the age of word-processing to do so, but your report will just get sent back. We realize that progression isn't always linear and progression of experience will not always line up perfectly with the six month reporting period – but give us something to work with. Yes, you may be doing similar projects over a 12 month period, but hopefully your abilities and skills have grown in the meantime. If not, it may be beneficial to talk to your supervisor about working on more challenging projects.
- 3) Take a look at the sample report at: <http://www.apegm.mb.ca/register/accred/samples.html>. This is what we would consider an excellent progress report. (We

hope to add a couple more reports, once we get permission from other MITs).

- 4) Since we now accept 'late' experience (with penalty of course), some of you are writing reports that encompass more than six months. In general, the more experience you're claiming for, the more detailed your report should be. Reviewers have enough difficulty assessing experience for sketchy six month reports – the task becomes nearly impossible when a 12 + month report comes in. If you're claiming for a great deal of experience, it would be helpful to append additional pages with information on different project(s) you may have worked on.

This ends my lecture. We realize that you are all busy both personally and professionally, but taking the time to submit good quality reports will be helpful in the end – and it will save both you and us time in the long run. ■

THOUGH ON

Design

...because the devil is in the details.

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

We recently had a “visitor” thanks to a recall associated with our freezer. In today’s society recalls of manufactured goods seem to have become the norm. In fact the automotive industry seems to have an almost steady run. Typically you get the notice, you go to your dealer, your vehicle disappears into the shop and, sooner or later, you drive away with the dealer’s assurance that everything is fine. Thanks to insurance regulations, you don’t get to “participate” in the upgrade.

But our freezer recall was different because the service person has to come to us. We were advised by phone regarding the need and how it would work. When the parts and the service man were both available, they called again to make an appointment. An additional difference, in this case, was the fact that I happened to be at home and was able to watch and ask questions. My observations and the answers to my questions got me thinking about design decisions that had been made some years ago by some unknown person or persons.

But first, a quick review of the events that led to my pondering.

Basically the “problem” required that two plastic ties in the defrost mechanism be replaced. Because the freezer was empty (our task, not theirs) the service man was able to get to an access panel inside the freezer compartment without moving anything other than the empty shelves. I commented that this was a good design feature, and got a nod of agreement. Once the panel was removed, he took two small metal clips out of an envelope and placed them at either end of the heater unit in the defroster. He then clipped the two plastic ties that were original equipment and replaced the panel. Quick and efficient, but necessary?

Apparently the problem that had to be addressed was the fact that a number of these plastic ties had melted causing the heating unit to drop into the evaporating tray, with less than positive results. Ties that were not properly placed over a thin layer of insulation during manufacture caused the problem. All others worked well. The service man was not very forthcoming with respect to the number of “faulty” units he had serviced. As it turned out, our freezer didn’t need the “upgrade”, but it got it regardless.

So, let’s speculate on how this situation might have developed back in the design office. Anyone who has ever designed anything knows that there is significant pressure to keep costs down. Depending on

where the pressure is coming from, cost can relate to material cost or manufacturing cost, but seldom does it relate to service cost. Given that the plastic ties probably only cost about a cent, and that the installation process would be quick and easy, both material and manufacturing requirements would be met. The alternative metal clips, assuming they were ever considered, would probably have cost at least twice as much as the plastic and would be, based on my observation of the upgrade, more difficult to install. That doesn’t sound like much, but assuming an annual production in the order of 100 000 units, the difference in material cost would run at about \$2 000 (2 clips per unit) and the increase in manufacturing cost would be at least that much. And the potential annual saving of about \$4 000 would probably be well received in the accounting office because it would all go to the “bottom line”.

Overall, the freezer was well designed, but the potential problem of incorrect placement of the plastic ties was obviously not considered. If it had been, a quick comparison of the operating temperature of the defrost mechanism and the thermal properties of the ties would undoubtedly have caused some reconsideration. And it only required a quick consideration of detail, not an extended analysis.

Ultimately this small detail turned out to be a costly mistake. Every freezer/refrigerator that used the plastic ties had to be modified. Costs associated with setting up and physically delivering the upgrade were significantly greater than the four or five-cent per unit saving in material and manufacturing costs.

My grandfather always cautioned me about being “penny wise and pound foolish”. As a design engineer I have always taken his caution to heart and tried to assure myself that the savings associated with a design change were not going to cause trouble “down the road”. Seemingly insignificant details can, and will, come back to haunt you. ■

Canadian Council of Professional Geoscientists Appoints General Manager

The Canadian Council of Professional Geoscientists is pleased to announce the appointment of Oliver Bonham, P. Geo. as its General Manager, effective March 1, 2006.

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. Having represented the Ontario Association at national meetings he is thoroughly familiar with the operations of the Canadian Council of Professional Geoscientists.

Mr. Bonham has lived and worked as a geoscientist in five provinces of Canada, in Ireland, in Britain and in South America. He is registered as a professional geoscientist in Ontario and in Ireland. He also carries the Eur. Geol. professional designation.

Throughout his career Mr. Bonham has been a volunteer participant in many technical and industry associations at both local and national levels. He is a Past President of the Geological Society of the Canadian Institute of Mining, Metallurgy and Petroleum. In 1997 he won the CIM Julian Boldy Memorial Award for his work as founding business manager of the CIM journal: Exploration and Mining Geology. He is also a Fellow of

the Geological Association of Canada.

“The appointment of Oliver Bonham as our first full-time staff person is a very important step for the Council.” said Barry Collins, President. “CCPG is fortunate indeed to have the services of a geoscientist with his experience and skills. We look forward to working with him.”

The Canadian Council of Professional Geoscientists is a national federation of the ten professional associations which govern the practice of geoscience in Canada. It was incorporated nine years ago and has operated until now as a volunteer organization with part-time administrative support from the Association of Professional Engineers, Geologists and Geophysicists of Alberta and the Canadian Council of Professional Engineers. Both have been very generous and helpful.

When Mr. Bonham reports for duty the CCPG offices will be hosted by the Association of Professional Engineers and Geoscientists of British Columbia, located in Burnaby, British Columbia.

The mission of CCPG is to develop consistent high standards for licensure and practice of geoscience, to facilitate national and international professional mobility, and to promote recognition of Canadian geoscientists. ■

BizPal, New Online Service for Canadian Business

The Honourable Larry Bagnell, Member of Parliament for Yukon and Parliamentary Secretary for Natural Resources, on behalf of the Honourable David L. Emerson, Minister of Industry, recently announced the launch of BizPal, an innovative pilot project designed to help Canadian businesses save time when accessing licensing and permit information from multiple levels of government.

The multi-jurisdictional online service provides business with a customized list of the municipal, provincial, territorial, and federal licences and permits they require. The list includes basic information about the licences and permits, as well as links to partner websites where they can find out more or begin the application process.

The first of three pilot sites for BizPal will be launched in Whitehorse, Yukon, later this week. It was developed by Industry Canada in partnership with the City of Whitehorse and the Government of Yukon. Yukon has been one of the early adopters and has provided invaluable insight on multi-jurisdictional service delivery.

"BizPal is the next wave in providing business information services," said Mr. Bagnell. "I am very proud that Yukon is on the cutting edge of this technology and is leading the nation not only on high-speed access, but also in online programs and services for businesses and entrepreneurs."

BizPal is also an important part of the Government of Canada's Smart Regulation initiative, helping to eliminate duplication, simplify compliance and reduce costs to clients. The pilot will stimulate further economic growth and prosperity to improve the quality of life for Yukoners and all Canadians.

Two more pilot sites in Kamloops and the Halton Region will be launched early in 2006, thanks to partnerships with the Government of British Columbia and the City of Kamloops, and the Government of Ontario and the Regional Municipality of Halton, respectively.

The BizPal initiative arose from the need to ease the regulatory burden placed on small businesses and a desire to make government services more client-focused. The pilot project is the result of several years of consultation and collaboration with both public and private sector stakeholders. ■

For more information, please contact:

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(613) 995-9001

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University of Manitoba Professors earn National Synergy Awards

Established by the Natural Sciences and Engineering Research Council of Canada (NSERC), the Synergy Awards recognize outstanding research and development partnerships between universities and industry.

One award recognizes the ten-year partnership between the University of Manitoba and Vector Construction Group. Led by ISIS Canada Research Network President, Dr. Aftab Mufti, Civil Engineering Professor at the University of Manitoba, and Vector Construction Group Vice-President, Mr. Garth Fallis, the collaboration has combined innovative ideas with leading-edge materials and systems to advance the state-of-the-art in construction, restoration and monitoring of concrete and timber structures. This partnership is also leading the world in 'civionics' – the use of advanced sensor devices and systems for real-time monitoring of bridges and other structures.

The second Synergy Award recognizes a partnership between the University of Manitoba, the Manitoba HVDC Research Centre, and RTDS Technologies. Led by electrical and computer engineering professor Aniruddha Gole, P.Eng., NSERC Industrial Research Chair in Power Systems Engineering, the partnership has resulted in powerful new simulation tools for the global power industry.

The group has developed the world's first fully digital, real-time simulation tool for power systems. Engineers can now perform realistic tests on equipment before placing it into final operation. ■

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

THIS IS NOTICE that on December 8, 2005 a conviction was registered against Marcel Antoine Neron, P.Eng. on a charge of professional misconduct, in accordance with the provisions of Section 35.1(f) of *The Engineering and Geoscientific Professions Act* of the Province of Manitoba.

The penalty for this professional misconduct is that:

- Mr. Neron be reprimanded for conduct unbecoming a professional engineer and in contravention of the Fundamental Canon 4 of the *Code of Ethics for the Practice of Professional Engineering & Professional Geoscience*;
- Mr. Neron author a letter of apology to the profession, satisfactory to the Investigation Committee; and
- the satisfactory letter of apology be retained in the Association office, a copy of which will be available for viewing by any member of the Association on request and by prior arrangement.

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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