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THE KEYSTONE PROFESSIONAL

In This Issue:

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

FEBRUARY 2004
www.apegm.mb.ca

Meet Your New President – Arnold Permut, P.Eng.

By: J.A. Blatz, P.Eng.

Along with the passing of the hustle and bustle of the holiday season, the coming of a New Year again brings new direction on the APEGM Council. The new President, Arnold Permut, P.Eng., has been providing his leadership since the Annual General Meeting in October 2003. I had the pleasure of meeting with Arnold to discuss his vision and goals for the coming year.

It was interesting to hear that Arnold has served three prior terms (of two years each) as an APEGM councillor before becoming the Association President. Although he has been nominated in the past, the timing was not compatible with other commitments. "I felt that it was now my turn to serve as President", he said. "I enjoy the people involved in the Association activities and I always have found the professional atmosphere on the various committees has provided many rewarding experiences".

Arnold has extensive experience in both the technical and management aspects of the environmental engineering field. Arnold is a graduate of the University of Manitoba with a B.Sc. in Civil Engineering, an M.Sc. in Environmental Engineering and a Certificate of Public Administration. This comprehensive management and technical education has served him well in his career. Following graduation, Arnold was a consultant with Templeton Engineering, where he worked on a number of environmentally-sensitive projects, many of which were situated in northern areas. He then joined the City of Winnipeg in 1978 where he has held a number of positions in the Water and Waste Department. He is currently the Manager of Laboratory Services, which encompasses the analytical laboratory services for monitoring activities such as water quality, the research group that is actively examining improvements to wastewater management and water treatment infrastructure, and the industrial and hazardous waste group that is responsible for working with industry to manage and deal with specialized waste products.

New APEGM President, Arnold Permut, P. Eng.

Arnold has a long history of service to the profession through both technical societies and professional associations. Some of his more notable service activities included a term as technical program director of the Western Canadian Water and Waste Annual Conference, four terms on APEGM Council including one term on the Executive Committee, university liaison to Council, member of the Women in Engineering Advisory Committee and member of the Awards Committee. The exhaustive list is far too long to provide in detail but it is clear that Arnold has supported the engineering community considerably in past years.

Arnold outlined two of his primary goals as President of the Association. The first is to develop increased interaction between the universities in Manitoba and the Association. Some of the activities already initiated in this regard include a proposed APEGM Design Studio in the new Engineering Complex at the University of Manitoba and the establishment of the APEGM Foundation that will provide fundraising for continued growth of university faculties that graduate academically-qualified engineers and geoscientists. Another initiative of considerable importance to Arnold is building a stronger relationship with the Engineering Access Program (ENGAP) that provides an opportunity for students of Aboriginal ancestry, who may not have had access to the resources to obtain the normal prerequisites required to get into, prepare for, and succeed in engineering. Arnold noted the importance of recognizing culturally-appropriate engineering solutions in northern and rural communities based on his first-hand experience working in these areas with people of aboriginal and Inuit ancestry.

Arnold enjoys a busy family life with his wife Susan and 21 year-old daughter Janie who recently graduated from the University of Manitoba with a B.Sc. in Biology. Arnold spends what limited spare time he has cycling and learning about digital imaging that has grown out of his interest in photography. He also explained that he is never short of great photo opportunities with their 12 year-old Sheltie, Kelsey, who is always a willing subject! ■

Pay Your Dues!

Dues invoices have been mailed to all members, EITs and GITs. If you have not received yours, please contact the APEGM office.

All payments received in the Association office after February 29, 2004, are subject to the late payment fee of $54.00.

FINAL PAYMENT DATE – MARCH 31, 2004.

ALL MEMBERS, EITs OR GITs WHOSE DUES PAYMENTS ARRIVE IN THE APEGM OFFICE AFTER MARCH 31, 2004, WILL BE DE-REGISTERED OR REMOVED FROM EIT/GIT ENROLMENT. APPLICATIONS FOR REINSTATEMENT MAY BE MADE IN ACCORDANCE WITH SECTION 24(2) OF THE ENGINEERING AND GEOSCIENTIFIC PROFESSIONS ACT. ■

Online Publication Notice

An overwhelming number of members expressed their desire to continue receiving the Keystone Professional in the mail. Therefore, APEGM will not be switching to online delivery at this time. Thank you to everyone for sharing your opinions. ■

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

Publications Mail Agreement Number 40062980

New Members Registered November 2003

K. Anderson	I. Djatiutomo	R.J. Martens	M.M. Simmons
N.G. Barnett	N. Fenner	A.P. Mathew	K. Tran
D. L. J. Carriere	G.S. Hamilton (SK)	E. Muhurdarevic	R.W. Wright (ON)
J.R.L. Cousin	M.J. Holleran (ON)	S. Parent (IA)	M. Zandi
	T.A. Janz	S.S. Sadaka	

Members-In-Training Enrolled November 2003

V.J. Anderson	A. Baquiran	B.L. Heppner	L.M. Stepnuk
V. Banthia	F.G. Curi	M.J. Hildebrand	A.L. Wychreschuk
	L. Fortier	D.M. Ohta	

Licenses Issued November and December 2003

R.D. Rempel

Reinstatements November and December 2003

R. Bartel	A.H. Hachborn	D.M. Nagasaka

Resignations November and December 2003

J.A. Anderson	M.A. Ellis	M.S. Lennox	F. Rizzuto
R.J. Andriuk	J.S. Fedorowich	L.E. Liem	J.N. Roik
M.E. Antonio	R.R.B. Gibson	D. Mannsfeldt	F.I. Rose
W.M. Arnold	C.B. Gilbert	P.J. Marion	E.B. Scalera
R.B. Atkinson	M.J. Grant	M.J. McCormick	D.O. Scott
D.B. Bachinski	G.D. Grieef	R.K. McLean	G.W. Stary
C.L. Begg	M.E. Haukeness	B.R. Megli	M. Sthankiya
C.A. Bell	G.T. Hirose	R.L. Middleton	R.A. Svazas
R.A. Brown	D.M. Hladun	M.L.E. Mikhail	B.J. Szafron
S.D. Brown	B.E. Hulvershorn	G.O. Ogilvie	J.N. Thompson
G.N. Bucholtz	B.J. Hurndall	A. Orlowska	T.T. Truong
W.K. Cheng	S.R. Kormilo	A. Painchaud	P.R. Warkentin
H. Deng	G.J. Kriviak	M.A. Papini	R.G. Wedman
R.B. Dodds	R.D. Lalonde	R.H. Pinon	B.A. Wellenbrink
D.P. Dudek	M.D. Lawton	M.C. Ramsum	B. Yee
P.B. Elliott	M. Lebeau	C.A. Rempel	

EIT/GIT Resignations November and December 2003

D. Federkevic	K.M. Tiede	J. (Jacob) Fehr
L.G. Wytrykush	T.J. Ramnath	

Certificates of Authorization Issued November and December 2003

EBA Engineering Consultants Ltd.
Kassian Dyck & Associates
Les Industries Harnois inc.
PharmEng Technology Inc.
Vicwest Corporation
WaterMark Consulting Ltd.
Wholesale Heating Supplies, A Division of EMCO Limited

In Memoriam

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

Executive Director's Message

D.A. Ennis, P.Eng.

Have You Used Your Seal Lately?

I expect that it may come as a surprise to many members employed outside of the consulting sector that they are often not in compliance with the Act in so far as the use of the seal is concerned.

The operative wording in the Act is "…the member shall validate or impress his or her seal, as prescribed by the by-laws, on every engineering or geoscientific estimate, specification, report, working drawing, plan and other engineering or geoscientific document issued by the member."

My guess is that in many instances, members, in the course of their employment, are producing estimates, specifications, reports or working drawings and/or plans that are of an engineering or geoscientific nature and that go forward unsealed. The typical rationale being used is that it is internal to the organization and, therefore, the seal isn't required. While there may well be some instances when the Act can be interpreted as such, there are many in which the rationale doesn't hold.

The purpose of the seal is to communicate the identity, qualifications, and authority of the person who accepts responsibility for the practice of engineering or geoscience contained in the document to which it is applied. The test as to when it should be applied is whether that communication is important to the safeguarding of life, health, property, economic interests, the public interest, or the environment, and whether others are likely to rely upon it or make decisions based upon its contents. If the answer is yes, then it should, when possible, be sealed. I say when possible because this issue is complicated further by the reality that the transmission of the work produced by members is increasingly in electronic format, and as yet there is no recognized electronic seal. In that case, a notation can be made within the electronic version indicating that the original was sealed by the author on the applicable date.

The electronic seal is an issue that goes well beyond engineering and geoscience. It was the topic of a recent well-attended panel discussion sponsored by the Law Society of Manitoba and APEGM. It included representation from The City of Winnipeg as a regulator that will one day have to accommodate the electronic filing of drawings for building permits. There is an ever-increasing need for an electronic seal and we are not there yet, but when we are, the authentication and non-repudiation capabilities of such a system will be of value to both the practice and business of our professions.

Before leaving the topic of the seal, there are a couple of related stances that I hear from members. The first being, "I am not practicing because I never use my seal." The reality is that regardless of whether the seal has been applied, it is the definition in the legislation that determines whether one is practicing. I won't repeat the definitions - they are available in the Act and on the website - however, I note that when listing the actions that establish the practice, the words include "or managing any of the foregoing."

The second is, "My exposure to liability is reduced if I don't use my seal." Again the reality is that ones exposure to liability in a civil action is unaffected by the presence of the seal, and any lawyer of average ability will find you. The judge will then make a determination based on the standard of care expected of a professional. Separate and apart from the liability in a civil action, one goes back full circle to the requirement in the Act – a requirement for which non-compliance can be a basis for disciplinary action.

Limitations Act

As reported in February of 2003, a group of six organizations has undertaken to jointly pursue amendments to The Limitations Act with a view to have their members on an equal footing with those in other provinces with respect to claims in a civil action and to have the matter determined within a reasonable time when the best possible information is before the court. In December, a letter was forwarded to the Minister of Justice requesting a meeting. The proposal is to modernize and clarify The Limitations Act to ensure that it provides balance between the rights of consumers to have a reasonable opportunity to bring an action and the rights of professionals to be protected from unfair or stale claims, and to treat design professionals and those in the construction industry fairly as compared with other professions. With regard to other professions, the limitation period that applies to physicians, dentists, chiropractors, and naturopaths is two years from the date that services terminated, while for design professionals the clock can start many years after the services were performed depending on when the damage occurred or was discovered. In certain circumstances the ultimate deadline for claims can be extended to 30 years.

Declaration of Compliance

Included with the invoice for the renewal of registration for 2004 was a declaration to be signed by members in the practicing category regarding the ongoing maintenance of their capacity to fulfill their professional responsibilities. There has been some questioning of the purpose for the declaration and suggestions that the requirement is insulting. The submission of the declaration and its wording are a provision of the Association's By-laws. The specific by-law was considered at an Annual General Meeting and subsequently ratified in a letter ballot.

As noted in the December issue of this publication, if members expect the Association to tell the public that they are capable of

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Engineers Without Borders in 2004

By: B. Rådström, VP – Communications, EWB-ISF Manitoba Chapter

For those of you who don't know, a chapter of Engineers Without Borders – Ingénieurs Sans Frontières (EWB-ISF) was initiated at the U of M in the summer of 2002. We are dedicated to providing opportunities for Canadian engineering students and graduates to use their knowledge and skills to assist in overseas development projects. EWB is the fastest growing development organization in Canada, and has so far sent dozens of people overseas to work in countries such as Haiti, India, Nepal, Sri Lanka, Guinea, Zambia, Bolivia, Cameroon, and several others.

At the U of M chapter of EWB, we have had a very busy year so far. The EWB headquarters has initiated a program called Operation 21 that intends to send at least one student from each of the 21 chapters across Canada for an overseas internship. Much of our efforts this past fall have centered around general fundraising for the chapter and selecting the student who will head overseas this coming May. This year, it will be Diana Nicholson, a 4th year student in Bio-Systems Engineering (Environmental Option).

We have some exciting events ahead of us in 2004. At the beginning of February, six delegates from the chapter will be going to Toronto for the EWB National Conference. Those who have gone in past years have come back extremely excited and full of new ideas to assist the growth and development of the local chapter. This year's delegation is very much looking forward to a fun and rewarding week looking at what differences Canadian engineers can make both in developing countries and here in Canada.

The biggest undertaking will be fundraising to send Diana on her internship. By going overseas for the entire summer, she will not be earning money for school like most students. We are hoping to be able to send her on the internship at a minimal personal cost, so this will require quite a bit of fundraising work on the part of the chapter.

Lastly, we are running a series of presentations and discussions on overseas development. So far we have had the ambassador from Mines Action Canada in to speak about the impediments that land

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Discoveries Start Here...

Highlights from the 2003 Manitoba Mining and Minerals Convention

By: M. Lavergne, Manitoba Industry, Economic Development and Mines

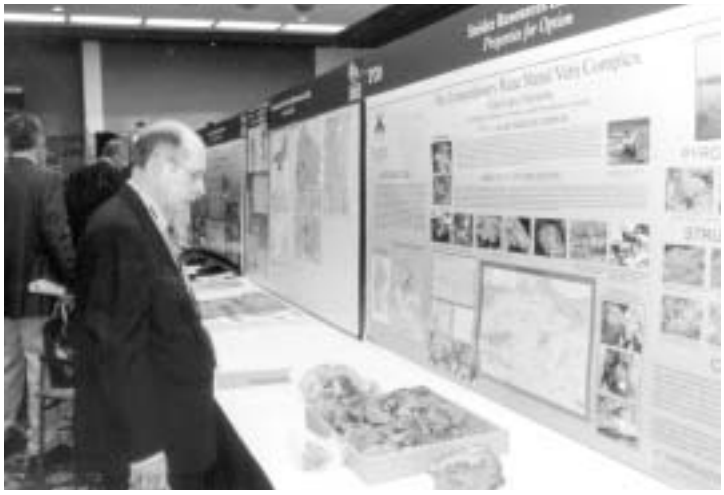
Attendance was up at the 35th annual Manitoba Mining and Minerals Convention, which may be a reflection of an industry on the road to recovery. The convention, held November 13 to 15 in Winnipeg, Manitoba, attracted more than 700 delegates from across the globe to discover the latest on exploration and mining in the 21st century.

As suggested by the convention theme, ***"DISCOVERIES START HERE"***, the event offered delegates the ideal forum to start exploring Manitoba's diverse geology for new mineral investment opportunities. The convention featured 27 presentations and an extensive exhibit area showcasing geoscientific poster presentations, mineral properties available for option, and a wide range of innovative products and services.

Discoveries started right at the convention's Welcoming Reception, where delegates were introduced to the Honourable Scott Smith, newly appointed Minister of Industry, Economic Development and Mines. The Minister's greetings included a warm welcome to delegates from Sagkeeng First Nation, the first graduates of the department's new Prospector Training Program. The community-based program was developed in partnership with Sagkeeng First Nation Employment and Training Services and delivered by departmental staff and industry experts in June 2003. The graduates attended the convention to discover first-hand the marketing and business development side of prospecting. The reception also included greetings from the mayors of Manitoba's mining communities and the Northern Association of Community Councils.

Opening remarks from the Honourable Scott Smith headlined a full slate of technical and business sessions. The Minister reaffirmed the provincial government's commitment to encouraging and sustaining mineral exploration and development in Manitoba, focusing on several key initiatives supporting this end:

- **Exploration incentives:** continued funding for direct financial assistance programs, specifically the Mineral Exploration Assistance Program (MEAP). The April 2003 MEAP offering was oversubscribed, with more than $22 million in proposed exploration expenditures. Of this total, $11 million was for gold exploration and $8 million for nickel, reflecting the recent rise in the prices of these metals;
- **Manitoba's diamond strategy:** providing geoscientific support to assist in the search for diamondiferous kimberlites. Part of the strategy includes the compilation of all existing indicator mineral data for the province. *The Manitoba Kimberlite Indicator Mineral Database,* an interpretative tool to assist explorationists, contains new data from the Hudson Bay Lowland. The database was released for the convention as a free download from the department's Mineral Resources Division web site; and,
- **Internet service delivery:** improved services now offering secure online credit card payment capabilities for publication sales with future expansion of the payment service to include mining recording applications.



Property showcase display.

Delegates mingle at Welcoming Reception.

Ron Aelick, President of Canadian and UK Operations for Inco Limited, provided the Inco perspective on how discoveries "start here". The company's strategy to explore for new nickel deposits near existing operations, including their Manitoba operation, increases the probability of a discovery and lowers the cost to bring the deposit into production. Partnerships with junior exploration companies were presented as win-win relationships. The juniors bring mobility, new ideas, and added funding. Inco provides their extensive knowledge of the regional geology, access to prospective properties, and technical expertise for exploration. Examples of the company's innovative exploration methods were presented including continued application of airborne electromagnetic surveys, new ground-based electromagnetic systems, seismic tomography, and new geological concepts used to find and evaluate deposits.

Ric Syme, P.Geo., Director of the Manitoba Geological Survey (MGS) provided an overview of recent Survey activities including results from major projects and a look at the province's mineral potential. Mr. Syme noted that partnerships, such as the Targeted Geoscience Initiative II, a federal-provincial collaboration that includes two projects with Manitoba components (Trans-Hudson/Superior Margin Metallotect and Williston Basin hydrocarbon potential), play a key role in responding to Manitoba's changing needs for geological information. Continued expansion of partnership programs will provide an additional $1.5 million towards geological investigations in the province in 2003-2004.

Ongoing MGS investigations were discussed including new techniques used to further define the base metal potential of the highly prospective greenstone belts of the Trans-Hudson Orogen. The Survey's work is also helping to unravel the nature and extent of the Thompson Nickel Belt (TNB), determine the potential for nickel, gold, and diamonds in the Superior Boundary Zone as well as the gold potential of the Superior Province and Trans-Hudson Orogen. The overview also discussed platinum group metals, rare earth elements, industrial minerals, and projects in support of diamond exploration. Access to the Survey's work is available online through the GIS Map Gallery, various searchable databases, and free downloads of all new MGS reports and maps from the Mineral Resources Division web site.

Some of the MGS activities discussed in the overview were presented in more detail as part of the technical sessions. The presentations dealt with:

- the use of tracer isotope data and geochemistry in mapping extensions of the TNB;
- the potential for high-grade Ospwagan Group rocks in the

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Manitoba Mining and Minerals Convention

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Pikwitonei Domain of the Superior Province;

- new insights into the tectonic evolution and gold metallogeny of the Lynn Lake greenstone belt; and,
- new information on the geology and structure of the Garner Lake area that is providing important insights on lode-gold mineralization in the southeast Rice Lake greenstone belt.

Technical sessions also offered presentations on the results from the recently completed CAMIRO Project 97E-02, a joint industry/government/university study on the TNB. The study has provided new information on the geology, stratigraphy, petrogenesis, and metallogenesis of ores and host rocks in the TNB. Results can be effectively applied to magmatic sulphide exploration within the Superior Boundary Zone and new geochemical and geological data stemming from the project are currently being used to refine exploration models.

Geological Survey of Canada contributions to the technical sessions included a discussion of new data on the evolution of the La Ronge-Lynn Lake-Rusty Lake belts, providing an improved regional framework for mineral exploration. Results of the Flin Flon Targeted Geoscience Initiative were also presented, focussing on the stratigraphic setting and hydrothermal history of volcanogenic massive sulphide deposits in the Flin Flon area.

Sessions on new discoveries featured presentations on several recent exploration successes. As of August 2003, Bema Gold Corporation had calculated an inferred geologic resource of 639,377 tonnes averaging 20.4 grams/tonne containing 418,371 ounces gold at their Monument Bay Project. Rare Earth Metals Corporation provided an update on the Eden Lake rare metal carbonatite complex and their new South Bay nickel-copper-cobalt-PGE discovery. Further investigations at Eden Lake resulted in the discovery of an extraordinary rare metal vein complex from which thirty-five samples averaged 49,687 ppm (4.97%) rare metals (REE + Y + U + Th). The company has also completed geological mapping, magnetometer, and electromagnetic surveys and geobotanical surveys at their South Bay nickel property northeast of Leaf Rapids.

Jory Capital Inc. caused quite a buzz, forecasting that gold prices will reach $1000 US per ounce in the next two years. Contributing factors for the optimistic forecast included the continuing devaluation of US currency, low investor confidence in US financial instruments and institutions, and increased purchases of the commodity from Asia and the Middle East.

The presentation was a fitting precursor to the Mining Money sessions that focused on the challenges of accessing capital and potential sources of funding. TSX Venture Exchange presented the benefits, costs, and methods of going public and accessing public venture capital, citing flow-through shares, the Manitoba Equity Tax Credit, and Capital Pool Companies as attractive programs to consider. Pitblado Barristers & Solicitors provided an overview of how securities legislation governs and restricts the trading of securities. The session also covered exemptions to the legislative requirements including the Multilateral Instrument 45-103 "Capital Raising Exemptions" that came into effect in Manitoba in June 2003 as well as the "Prospectors" and "Prospecting Syndicate" exemptions. Refco Futures Canada Ltd. informed delegates of renewed investor confidence and how the investment community and government have responded to investor needs through various programs including the federal and Manitoba exploration tax credits. King's Bay Gold Corporation offered delegates an industry perspective on raising money successfully in the private and public domains providing first-hand experience on the options and challenges.

The closing day's sessions on diamond exploration were well-attended as delegates gathered to hear the latest on the search for kimberlites in Manitoba. MGS presentations provided an overview of diamond potential in the province based on kimberlite indicator mineral (KIM) survey results, as well as a talk focussing on kimberlite potential in the northwest Superior craton and Superior Boundary Zone.

Although results from past MGS KIM surveys have been promising, a discovery of diamondiferous kimberlite has yet to be announced in Manitoba. Widespread occurrences of key indicators have been documented, including a potential indicator-mineral train in the Knee Lake area and a single occurrence of kimberlite dike at Wekusko Lake in the Flin Flon Belt. The new KIM database, coupled with ongoing analysis and 3-D modelling of till stratigraphy in the Hudson Bay Lowland, will provide important new information on Manitoba's diamond potential.

Hon. Scott Smith, Minister of Industry, Economic Development and Mines (left) with the Hon. Steve Ashton, Minister of Water Stewardship.

The conference's final slate of sessions dealt with Innovation in Mining where novel approaches to challenges facing the mining industry were demonstrated. The presentations discussed groundwater-modelling applications for acid-mine drainage site mitigation, 3-D magnetic inversion techniques as a new tool to extend geological interpreta-

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The Columbia Space Shuttle

By: P.H. Boge, P.Eng.

There's a pragmatic statement in safety engineering that says accidents are always avoidable. But is that the case in space applications, too?

On February 1, 2003, the space shuttle Columbia broke up over Texas only sixteen minutes away from its landing point at the Kennedy Space Center in Florida. Seven astronauts lost their lives. It's the second space shuttle flight to end in failure in 113 missions. For some, the incident reminds them of the Challenger accident of 1986. For others, it reminds them of the vulnerability of engineered systems despite the best efforts of some of the sharpest minds on the planet.

Early theories of what caused the accident centred on a piece of falling insulation from the external fuel tank. It was thought that the insulation damaged some of the heat protective tiles. But Space Shuttle Program Manager Ron Dittemore said the engineering evaluation teams are now concentrating their efforts on 'something other' than the insulating foam. The real problem, he says, is to determine why there was extreme drag over one of the wings. As the analysis into the accident continues, it's reasonable to believe that a definitive answer from NASA about the accident will not come for many more days.

Nine years ago, Paul Fischbeck, an engineering professor at Carnegie Mellon University conducted a risk analysis that showed the underside of both wings close to the fuselage to be particularly vulnerable to damage from debris. NASA used this information and brought changes to material selection and flight rules. In an interview after the Columbia tragedy Fischbeck said: "There's risk associated with any engineered system, whether it be your school bus or a double-hull tanker or whether it be the space shuttle. There's always a combination of events that can lead to an accident. You cannot make things risk-free."

He raises a critical question about the role of safety in engineering design. Are engineers expected to understand all the possible modes of failure in a system? Should we expect as much success in the design of a house as we do in the design of a space shuttle? Is an accident always evidence that engineers did not design adequately? Fischbeck added that the real question to ask of the engineers at NASA is, "Did they do all they should have done?"

At this point, it's impossible to say.

Everything that mankind makes is subject to failure; and eventually it will. Our only defence against disaster is to understand the forces at work in any engineering application and take engineered systems out of service before they fail. To be able to guarantee safety is to be able to guarantee sufficient knowledge of all the factors involved in a system's operation. This is not to suggest that engineering is guess work. It isn't. It's just that there are some applications, like space, where our knowledge is not at the same level of comfort as other areas. Perhaps this is why some refer to it as the final frontier.

The seven crew members of the ill-fated 28th mission of the Space Shuttle Columbia. Below: The Columbia Orbiter as it hurtles toward space from launch pad 39A at Kennedy Space Center on January 16, 2003.

The shuttle crew consisted of commander Rick Husband, pilot William McCool, payload commander Michael Anderson, mission specialists David Brown, Laurel Clark, and Kalpana Chawla, and Israel's first astronaut, Ilan Ramon. It's uncertain how much warning the astronauts had of their impending danger, but at some point it would have been clear to them. There would have been a moment, perhaps only an instant, when the astronauts would have realized that they were not going to make it back.

On January 16, 2003, Columbia took off from Kennedy Space Center. Its mission was to conduct some 80 research experiments. It started the way every other expedition has ever started: with hope, courage, and anticipation.

And yet, a week after the accident the picture looks much different. Regardless of whether space accidents are truly avoidable there are numerous engineers who (rightly or wrongly) carry the burden of disaster on their minds and in their hearts. There are families who are without their loved ones because (it seems that) our profession may have failed them. And there are additional astronauts now in training who at some point in the future will rely on engineers to guide them safely into space.

And bring them safely home. ■

Sources:

NASA
U.S. Department of State
CNN.com
Canadian Press
Arizona Republic

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.***

Manitoba Mining and Minerals Convention

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tion, innovative techniques in the characterization of mine tailings, and a final session describing an interactive knowledge centre developed for Falconbridge to address the knowledge gap between retiring senior mine hoist operators and their successors.

Panning for gold – always a hit with students.

Keynote speakers included the Honourable Steve Ashton, the first minister of the newly-created Department of Water Stewardship. The Minister underscored Manitoba's commitment to mineral exploration and development and the importance of managing the province's water supply to ensure its quality and the sustainable economic development of a resource that is vital to industry and Manitobans alike.

Alice V. Payne, President of Arctic Enterprises Limited, was the keynote speaker at the Wind-up Luncheon, the convention's closing event. Ms. Payne entertained delegates with the story of Tom Payne, whose prospecting adventures led to a gold discovery at Yellowknife and the formation of Quin Kola Gold Mines Limited. Tom Payne's historic mining deal with Cominco resulted in one of Canada's largest operating gold mines and a special place for Tom Payne in the annals of Canadian mining history.

The 2003 convention also offered two special events, one for delegates interested in high-tech applications for exploration and the other for future delegates…Manitoba's school age children interested in minerals and mining.

More than 250 students participated in the mineral education activities running in concert with the convention for the second year in a row. As always, the highlight of the school tours program proved to be the gold panning. Other activities that included a Rock Doc presentation, mineral and fossil collecting, a lapidary demonstration, and a tour of the exhibit area offered the students a variety of ways to learn about the province's geology and mineral industry.

Demonstrations of 3-D technology at the province's state-of-the-art Virtual Reality Centre by the MGS and Placer Dome were well-attended. The MGS demonstrated a newly-developed 3-D geological model of southern Manitoba. The model includes data from the Shuttle Radar Topography Mission, large lake bathymetry, Lake Winnipeg offshore geology data collected from the Canadian Coast Guard Ship Namao expedition, digital surficial geology maps, and Quaternary stratigraphy data from over 80,000 drillholes. The 3-D modelling technology is currently being used to guide the protection and management of groundwater resources in southern Manitoba.

A virtual reality demonstration by Placer Dome demonstrated how the company synthesized geophysical, drillhole, and mine infrastructure data from their Musselwhite mine site in Ontario to develop a 3-D model that was used to dramatically decrease drilling costs and increase exploration success.

Next year's Manitoba Mining and Minerals Convention will be held November 18-20, 2004. ■

Executive Director's Message

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doing their jobs, the members should also be willing to provide the same assurance to the Association.

Privacy Legislation

In the June and December issues of this publication there has been information on PIPEDA (The Personal Information Protection and Electronic Documents Act), the standard for the protection of personal information. Personal information is defined as "information about an identifiable individual, but does not include the name, title, business address or telephone number of an employee of an organization." As part of its compliance with PIPEDA, APEGM included a "Member Privacy Consent Statement" (yellow sheet) with the mailing for the 2004 renewal invoices. We ask that this statement be completed and returned to the Association office so that the expense of follow up can be kept to a minimum. The Association's Privacy Policy can be viewed on the web site at ***www.apegm.mb.ca.***

Multi-Jurisdictional Registration

A year ago I reported that the associations in Canada were considering the concept of multi-jurisdictional registration (i.e. a national license) to address the issue of professional engineers and geoscientists being highly mobile while operating from a base in one province and still requiring authority (because of the peculiarities of the British North America Act of 1867) in order to practice in other jurisdictions. The sum of the annual dues in the 12 Canadian jurisdictions is in the range of $2,600. The model that is currently under investigation is that of a "one-stop-shop". This would entail a member making application through the home association and then for an annual fee of, for example, $1,000, being also registered in all jurisdictions. The analysis of the effect of such a model on the operation of associations is far from being completed; however, I would be interested in knowing whether members might be interested.

Written observations or comments, preferably by e-mail to ***apegm@apegm.mb.ca,*** on any of the topics raised in this article are welcomed. ■

Engineering and Geoscience Week in Manitoba

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Activities include:

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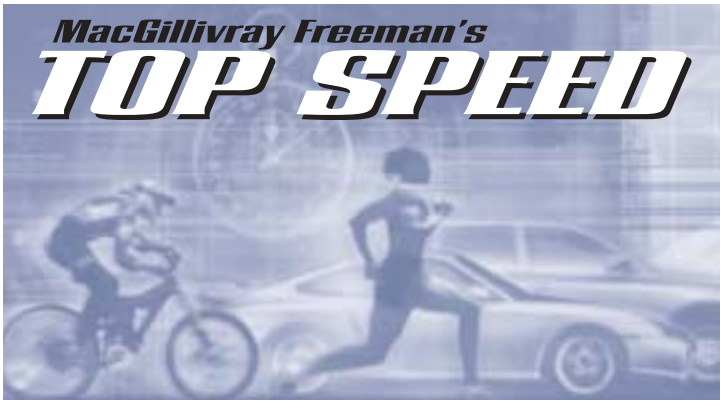

Sunday, March 7th, 2004 at 7 p.m.

Earlybird tickets are $5.00 per person (before February 20th)
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Council Report

Wednesday, January 14, 2004

By: J.A. Blatz, P.Eng.

NEW VICE-PRESIDENT AND EXECUTIVE COMMITTEE MEMBER NAMED

The inaugural 2004 Council meeting was promptly called to order by President Arnold Permut, P.Eng., at 12:40 p.m. Being the first meeting of the year, with many old and new faces seated around the table, the first order of business included introductions by all. Following the introductions, Council hit the ground running with discussion of the monitoring reports presented by the Executive Director.

One of the monitoring reports of note related to the new requirements of the Personal Information Protection and Electronic Documents Act (PIPEDA) that came into effect on January 1, 2004. The Executive Director noted that the Association is actively ensuring compliance with all aspects of the new Act. One immediate step included a declaration form for all APEGM committee members regarding the privacy of information discussed as routine committee business and information regarding the committee members themselves.

Another monitoring report outlined a number of issues that have resulted in delays in the development of new admissions requirements and the accompanying Manual of Admissions. Council discussed the impacts of the delay and agreed that the activity should not be rushed by a false deadline as the focus should be on quality of results. The remaining monitoring reports were accepted with limited discussion.

Randy Herrmann, P.Eng., Director of the Engineering Access Program at the University of Manitoba, then provided a presentation to the Council on the activities and achievements of the ENGAP program. ENGAP provides an opportunity for students of Aboriginal ancestry, who may not have had access to the resources to obtain the normal prerequisites required to get into, prepare for, and succeed in engineering. Randy stressed that it is not a special degree and that there is no difference between the engineering degree of an ENGAP student and any other typical engineering graduate. The program exists to provide a number of custom support mechanisms to help Aboriginal students succeed. The Council members were impressed with the successes outlined in the presentation and agreed that a committee should be struck to help provide direction on how APEGM could provide support and increased interaction with the program.

The next important item for discussion was the election of a Vice-President and Executive Committee member. After all the required formalities were completed, councillor Alan Silk was declared the new Vice-President and incoming President and Ric Syme was appointed as the Executive Committee member. Considerable effort was then spent discussing the membership of the Nominating Committee and names were solicited from Council members. The President stressed the importance of trying to find a representative balance of young and old members, men and women, and engineers and geoscientists. A slate of proposed candidates was tabled for consideration.

The President then presented a topic of considerable importance that appeared in the agenda as 'succession planning'. Although he certainly doesn't look it, the Executive Director is nearing a point where retirement could be a consideration in the not-too-distant future. As a matter of prudence, the President felt even though the Executive Director has not made any formal plans in this regard, it would be in the Association's best interest to begin thinking of how it can prepare for this possibility. The Council agreed that this is a very important consideration and discussed the matter with the Executive Director at length. The Council authorized the Executive Committee to address the matter and report back to Council with a proposed protocol for handling succession when the time arrives.

Coincidentally the next agenda item announced the resignation of Alan Bailes as the representative to the Canadian Council of Professional Geoscientists (CCPG). The President and Council thanked Mr. Bailes for his service to Council as representative to the CCPG.

The final discussion item examined the performance of the Council with respect to following the new governance policy. Coaching reports were reviewed and councillors discussed opportunities to improve performance. Monitoring tasks were assigned and plans for a possible one-day meeting on the governance procedures and policies as a professional development opportunity were outlined.

The meeting adjourned at 5:00 p.m. ■

Engineers Without Borders

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mines pose to developmental work and post-conflict reconstruction, as well as George Roter – the co-founder of EWB – who spoke about the role of Canadian engineers in international development. In January, we hosted Darren Swanson, a specialist with the International Institute for Sustainable Development (IISD) who holds B.Sc. and M.Sc. degrees in Geotechnical and Environmental Engineering as well as an MPA in International Development from the Kennedy School of Government at Harvard University. He has worked in several fields, including water resources, energy sustainability, and climate change. We also held several interesting and well-attended roundtable discussions led by EWB members.

If anyone is interested in helping out EWB, please contact me via email at ***umradstr@cc. umanitoba.ca***. Specifically, we are looking for anyone who can assist with fundraising for Operation 21, or anyone who has overseas experience who would like to come and speak at one our sessions. Information about EWB can be found at ***www.ewb-isf.org***, and information about the U of M chapter can be found at ***umanitoba.ewb.ca.*** ■

News Communiqué for the OBIEC, October 2003

The CSA Technical Committee responsible for the Objective Based Industrial Electrical Code (OBIEC) held its inaugural meeting on October 9 and 10. The committee membership included representatives of industrial users, regulators, contractors, suppliers, manufacturers, designers, teaching institution instructors, and others who collaborated in reaching a good understanding of the task before them, completed a draft of the Vision and Mission Statement, and started developing the content and framework of the new Code.

The Technical Committee commenced work on the Code Structure by setting up a task force responsible for developing an initial Table of Contents. A list of major safety objectives was developed and these safety objectives were discussed with respect to Design, Product Selection, Installation, Operations, and Maintenance. The task force will continue its work and a report will be presented at the next meeting of the Technical Committee.

In addition to developing the structure of the Code itself, the Committee worked on the "Safety Management System" model that will provide guidance to the regulators in each province and territory on the implementation of the Objective Based Industrial Electrical Code. A task force consisting of regulators and users was struck to explore options that could facilitate implementation of the OBIEC.

The OBIEC will be an Objective Based Code that will provide qualified users with an alternative approach to achieve or exceed safety provisions of the Canadian Electrical Code Part 1. Safety objectives will be established in keeping with acceptable worldwide codes and practices and give guidance and direction for suitable designs that fulfill the safety objectives. This code will offer greater flexibility to qualified industrial users by providing the ability to effectively introduce new technologies and installation methods.

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Providing Safe Drinking Water in Manitoba – Changing Legislation and Programs

By: G.S. Lodha, P.Geo..

Don Rocan, P.Eng., Manager, Office of Drinking Water, Manitoba Conservation and James R. Popplow, MD, M.Sc., FACPM, Senior Medical Advisor, Manitoba Health, Public Health Branch gave a breakfast talk on November 12, 2003, for the benefit of APEGM members.

The speakers mentioned that recent human tragedies caused by the polluted drinking water supply in Walkerton, Ontario have raised concerns across all of Canada. In November 2000, the Drinking Water Advisory Committee presented to the Ministers of Health and Conservation, a report containing 29 recommendations relating to the bacterial safety of Manitoba's drinking water supplies. Some of these included: requirements for enhanced sampling of water to satisfy quality assurance, availability of a bacteriological testing laboratory for private and semi-public water supplies, rigorous reporting requirements, and quick follow-up action.

This has been followed by necessary legislative changes and appropriate education of suppliers and end users. The water sources and quality of drinking water are protected under The Manitoba Public Health Act through regulations 326/88R and 330/88R. Water Works, Sewerage and Sewage Disposal regulation 331/88R ensures the adequacy of engineering designs for water supplies, whether surface supplies or wells, the treatment plants, and the distribution systems. Recent regulations under The Environment Act 77/2003 and 83/2003 were implemented to ensure that operators of water and wastewater treatment works are adequately trained and that private sewage disposal systems are protective of the environment (water supplies) and the public health.

To complement these legislative changes, the Manitoba Government created a new Department of Water Stewardship in November 2003, which consists of the Water Branch, a Water Strategy Section, the Water Services Board, and a Fisheries Section. The Department of Health provides expertise to the Department of Water Stewardship by providing requirements for disinfecting water from the presence of harmful infectious disease organisms. The new Drinking Water Safety Act (S.M. 2002, C.36) received Royal Assent on August 09, 2002. When implemented, this legislation will regulate licenses to construct and operate new water treatment facilities, disinfection and water testing criteria, record keeping requirements, and guidelines for closing non-potable water treatment/circulation facilities.

In the opinion of Don Rocan, the cost of drinking water provided by the regular municipal distribution system as tap water in Canada is much cheaper compared to other utilities/services like telephone, electricity, gas, bottled water, pop, beer, etc.

Jim Popplow provided details of an integrated system of procedures, processes, and tools that collectively prevent or reduce the contamination of drinking water from the source to the tap. He also discussed the importance of treating wastewater to reduce contamination risk and thus contribute to the safety of public health. According to Mr. Popplow, a multi-barrier approach is essential to monitor and maintain total coliform content in surface water and E. coli content in drinking water below recommended levels.

Monitoring of E. coli provides the best indicator of fecal contamination in the distribution system. The absence of E. coli, however, does not mean the absence of other, more resistant pathogens like Giardia, Cryptosporidia, Microsporidia, Cyclospora, and Toxplasma. In answering questions from the audience, he noted that stringent requirements for testing bottled water are not in place at this time. As such, the regulated tap water, where available, may be safer than the available bottled water, which may have been on the store shelf for a lengthy period of time.

Mr. Wally Jackson, the chair of the Professional Development Committee, thanked the speakers for an informative and interesting talk. ■

Meet Your New Councillor – Doug Taniguchi, P.Eng.

By: M.E. Baril, P.Eng.

Doug is currently a Vice-President and Technical Practice Leader for Water & Wastewater Treatment for Earth Tech Inc. Although his office is in the same building as the APEGM office, the election to the APEGM Council is Doug's first involvement with the Association in any capacity other than as a dues paying member. When Doug was contacted about having his name stand as candidate for the fall election to Council, one of the items that intrigued him and helped to make up his mind was the Association's implementation and use of the Carver Governance Model. Now that Doug has been elected, he wants to focus his attention on learning the issues facing Council and the Association, meeting the people involved with the Association, and using his strengths in whatever capacity he can to help in the matters presented to Council.

Doug was born and raised in Winnipeg's East Kildonan. He entered the University of Manitoba right out of High School, and graduated with his degree in Civil Engineering in 1977. Upon graduation he joined the Manitoba Water Resources Branch where he worked for 1 1/2 years before moving to Alberta. In Alberta he joined Engineering Canada Associates, a small firm where he worked as a municipal engineer before joining Reid Crowther & Partners in 1980. While in Alberta with RCPL, Doug worked on various water and wastewater projects in Alberta, British Columbia, and Saskatchewan. He also gained experience working on solid and hazardous waste management projects.

In late 1986, Doug transferred to the RCPL Winnipeg office to work on the West End Water Pollution Control Centre (WEWPCC) for the City of Winnipeg, and joined APEGM upon his arrival. Since 1986, Doug has worked on projects in Manitoba, Saskatchewan, Ontario, the Caribbean, and England. In 1987, Doug became a partner and shareholder of Reid Crowther, which is now Earth Tech. Doug is also a member of APEGS and PEO, in addition to various water and environmental organizations. Doug notes that the most significant milestones in his engineering career have been the completion of the WEWPCC and the growth of Reid Crowther and Earth Tech's water and wastewater practice in western Canada and overseas.

Doug celebrated his 24th wedding anniversary just before Christmas with his wife Laurie.

New Councillor Doug Taniguchi

They have three children: Brennan (19) who is attending the U of M, Jeffrey (17) who is in Grade 12, and Kristen (16) who is in Grade 11. Since the children came into their lives, Laurie has been a homemaker and small business owner and has used what spare time she has had to

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THOUGHTS ON

Design

...and another attempt at definition

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

As the 20th century was winding down, the Canadian Engineering Accreditation Board (CEAB) was wrestling with a definition for design to include in their accreditation criteria. The results of their deliberations suggest that design is "...a creative, iterative and often open-ended process subject to constraints which may be governed by standards or legislation to varying degrees depending upon the discipline." Let's assume this definition is acceptably close to correct and see where that takes us.

Invariably when people speak of design they speak of creativity. Most of us seem to accept that suggestion since much of what we do is find solutions to problems. Admittedly, a lot of the problems we address are not earth shaking in nature. In cases where a "canned" solution is available, our design skills aren't needed. Without an "off the shelf" solution however, we must create and/or innovate in a manner that brings something new into existence, even if, as Petroski suggests, the something new is simply "...a rearrangement of what is".

Few would debate with the iterative nature of the design process given that it typically starts with an assumption and proceeds to conclusion through a series of revisions. Each revision is normally founded on an increasing level of "reality" as the process proceeds from concept to conclusion.

"Open-ended" is just another way of saying poorly defined, and that is an issue that deserves a column all its own.

However, the definition speaks to the issue of constraint, specifically legislated constraint. Obviously constraint restricts creativity. Just as obviously, engineers accept the existence of these constraints, and even contribute to their creation. Purists suggest that this acceptance makes "engineering" design something less than "real" design.

"Engineering" design leads to the creation of items or processes that can place the public at risk: bridges, buildings, automobiles, cranes, electrical transformers, household appliances, transmission lines, communication signals, and countless other products of our efforts, the failure of which all have the potential to cause harm. It follows, therefore, that there is a need for guidelines to assure that the risks are minimized. It also follows that there is a need to exercise control over the application of those guidelines. What has emerged in response to these needs is a system of Codes and Standards and, in many cases, "authorities having jurisdiction" to oversee their application.

Codes and Standards have legal or quasi-legal status, and that gives the persons who administer them the potential to be barriers to creativity and innovation. On the other hand, they provide a level of control to assure that we stay within the bounds of what is known and deemed to be safe. The problem becomes one of defining what is known, when it is known, and by whom it is known. Typically, it can take several years to incorporate new knowledge into the written versions of Codes and Standards. It usually takes even longer to reach the stage where the "authorities" fully understand and accept these changes. So there is an unavoidable lack of currency in these documents of "control" as well as their enforcement. Given the rate at which knowledge is expanding, this is an increasingly serious constraint.

As guidelines, rather than restrictions, Codes and Standards serve a very useful purpose. In the more mature areas of engineering they provide what many consider to be an historical backdrop against which current ideas can be assessed. In newer areas of engineering where this historic base is still in active development, engineers are free to exercise their creativity without constraint. But in the absence of order, be it functional or dimensional, they do not have the assurance of compatibility or acceptability. This phenomenon is as old as development itself.

As engineers we are expected to create design solutions to practical problems. As Professional Engineers we are expected to use our knowledge and experience to protect the public. We must make certain that the items we produce, either creative or mundane, will not place the public at risk. We work with what history has taught us to do, what modern developments have shown us we can do, and what current legislation permits us to do. But when all this is said and done, we still must accept the responsibility.

Maybe that is why we seem to be prepared to function within this constrained creative environment we call Engineering Design. ■

New Councillor – Doug Taniguchi, P.Eng.

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volunteer and help at the children's various activities and schools. Now that the children are older, Laurie is a volunteer with the Winnipeg Art Gallery. The family spends much of their spare time at their cottage on the Lake of the Woods, where they fish, water-ski, boat, and hike. As most cottage owners know, there are always continual improvements, repairs, and upgrades to keep them busy between leisure activities. When I asked Doug about any hobbies, he told me he enjoys classic cars. He currently drives a 1967 Mustang, which he enjoys upgrading (more speed???), and is in the process of slowly restoring a 1967 Camaro RS convertible.

When I worked with Doug at RCPL in the late 1990's, it was difficult to know what he was really like as he was always in and out of the office with his various hats and duties; managing projects in Manitoba, in addition to overseeing the entire Environmental Engineering Division within the company for the Head Office in Calgary. One thing that was evident was that there was no one I spoke to who had anything to say about him that was not positive. I think that his election to Council is good for the Association, and I am glad to have had the opportunity to interview Doug and write this article. Good luck in your new role! ■

Communiqué for the OBIEC

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Further, this code will offer the ability to promote more design creativity, and provide the ability to maintain or improve the safety of industrial plants by ensuring the design will address safety objectives that prevent or reduce injuries.

The momentum of activity gathered by the task force since this spring has been very encouraging. Starting as a small industry-specific task force promoting the OBIEC, and progressing to a CSA Technical Committee with representation across Canada has demonstrated that industry sees the need for the OBIEC. The members of the Technical Committee are committed to a successful outcome concerning the OBIEC project.

Fund raising activities that commenced this summer have been very successful to date. Industrial equipment suppliers, service providers, and industrial users will ultimately benefit from the Committee's work and are encouraged to show their financial and moral support for this progressive project.

For more information on the OBIEC initiative and how to contribute, contact John Dickin, OBIEC Stakeholder Advisory Committee, at 403-350-1721 or email: ***jdickininc@shaw.ca.*** ■

Spring Iron Ring Ceremony

March 23, 2004, 8:00 p.m.

See **www.apegm.mb.ca** for further details or contact Bryan Weber at **bweber@umagroup.com**.

Nuclear Power: Yucca Mountain

By: P.H. Boge, P.Eng.

Blackjack, poker, slot machines, and Caesar's Palace. These usually come to mind when people think about the gaming Mecca of Nevada. But if recent nuclear waste legislation carries through, the Silver State may become known for another reason.

As a U.S. garbage dump.

The American government plans to build a nuclear waste repository about 90 miles northwest of Las Vegas at the Yucca Mountain site. Their goal is to centralize the storage of approximately 70,000 metric tons of radioactive material produced by 103 nuclear power plants in America. The Department of Energy maintains that both the idea and location are safe. So why are Nevadans so upset?

Nevada's Republican Governor, Kenny Guinn, doesn't think the project is such a great idea. In his Yucca Mountain address he said: "Yucca Mountain is not safe. It is not suitable... [it] is not only harmful to Nevada, but ... it is also dangerous to virtually every state in this nation."

Guinn and other opponents of the Yucca Mountain project have two main problems with the Nevada site. First, there is concern that the radioactive waste may leak into the ground resulting in health risks. Second, there is fear that the transportation of nuclear waste from every reactor in America to Nevada poses a great and unnecessary danger to Americans.

The Department of Energy (DOE) has been studying Yucca Mountain for 20 years. In that time they have spent US $4 billion to gather large amounts of technical and scientific data on the mountain, such as its geology, hydrology, biology, and climate. The geologic repository at Yucca will include both natural and engineered systems. It is believed that these two systems working together will prevent water from moving through the repository and avoid the most likely scenario in which radioactive materials could escape.

Scientists say three key elements made the natural conditions at the Yucca Mountain site attractive. First, it is a remote location and a significant distance from Las Vegas. Second, it has a dry climate - only six inches of rainfall each year. Third, the water table is between 800 and 1,000 feet below the level of the potential repository. The engineered systems that will be implemented include durable waste packages covered by corrosion-resistant drip shields. The system of controls is further helped by the waste being in solid form.

Before arriving at the conclusion of using the deep geologic disposal method at Yucca Mountain, scientists considered a variety of alternatives. The idea of sending nuclear waste into space was jettisoned because the possibility of an accident during launch proved to be unacceptable - not to mention the impractical burden of the number of launches that would be required. The sub-seabed disposal option, where radioactive waste is buried under the ocean floor, was rejected because of the technical difficulty in constructing an undersea repository. Other options like transmutation or burying the waste 10 kilometres underground, in polar ice caps, or on remote islands, were also turned down.

University of Nevada, Reno political science Professor Eric Herzik says, "Without a viable alternative and with pressure from their own constituents, the proposed Yucca Project solves both a technical and political problem for many Senators."

In effect, Nevada is on the verge of becoming (remaining) a dumping ground for U.S. projects. For 50 years, the government used Nevada for above- and below-ground nuclear testing. For many, it seems that nuclear waste is the next step. While scientists argue that Yucca Mountain is safe, various groups say there is no way the government can guarantee water quality safety. Zack Roth, an activist with the Sierra Club, warns that the mountain leaks, which could result in groundwater becoming contaminated with nuclear waste.

Professor Craig Walton of the University of Nevada, Las Vegas headed a team of faculty and graduate students in an extensive study of the laws concerning high-level waste management and environmental justice issues. He and his team are not convinced that sufficient engineering and technical research was done by the DOE to support the Yucca decision. "The government [has] used computer simulation instead of on-site investigation in many of the areas of geologic, seismic, volcano, or underground water movement controversy," he says. "They say they do not have the money to do actual studies. So no-one believes real investigation has taken place on the seriously dicey issues involved."

On the subject of transportation, even though dissidents of Yucca Mountain point to the dangerous shipping of the spent fuel rods as being a disaster waiting to happen, not all Nevadans believe it's as big an issue as it seems. "High level nuclear waste has been transported for some 40 years without a single accident in which radioactive materials were released," says Herzik. "Tests of prototypes under a variety of accident scenarios indicated the likelihood of canister breakage at 1 in 10 million."

Try as he might, Governor Guinn was unsuccessful at winning the Senate over to his side. He urged Congress to set politics aside and recognize that the project was based on bad science, but his veto was outvoted 60-39. President Bush signed the legislation approving the Yucca project last July. The first shipment to Yucca is slated for 2010.

In the end, the house beat Las Vegas.

Canada's Nuclear Waste

On our side of the border the nuclear waste management issue is coming into focus. The newly formed Nuclear Waste Management Organization (NWMO) has three years to evaluate our waste management options, which include on-site storage, central storage, and deep geologic disposal. The NWMO is established under the Nuclear Fuel Waste Act that just came into force on November 15, 2002. In addition to creating the NWMO, the Act requires electricity-generating companies that produce used nuclear fuel to finance its long-term management through the use of segregated trust funds.

Elizabeth (Liz) Dowdeswell is president of NWMO. Her impressive resume lists her as executive director of the United Nations Environment Program from 1993 to 1998. She has the challenge of investigating long-term solutions for managing Canada's used nuclear fuel. "How we do our work is as important as what we recommend ... We want people to feel our process has been fair and transparent and we want people to have confidence in the recommendation."

Dowdeswell explains her direction at the NWMO. "[We want] to satisfy ourselves that the right technological questions have been asked. We don't want to thrust upon the public a predetermined solution." Dowdeswell maintains she is looking for a holistic approach in providing a recommendation. "The recommendation will not only consider the technological and economic assessments, but the social and ethical issues as well." She says the NWMO will make true dialogue with the public an ongoing goal.

The NWMO is made up of Ontario Power Generation, Hydro Québec and New Brunswick Power. While it's too soon for anyone at the Ministry of Natural Resources or the NMWO to comment on where a central storage or deep geologic deposit might be located – should either approach be chosen – Ontario or Quebec would be likely candidates. ■

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

Youth Internship Program

The Canadian Technology Human Resources Board (CTHRB) has received funding for a Youth Internship Program. This program is open to graduate engineers and technologists/technicians up to the age of 30 across Canada. For more information on the program please visit the CTHRB web site at ***www.cthrb.ca/English/employer.html.***