THE MANITOBA
Professional Engineer
December, 1996
APEM

Meet Your New President – J.M. (Mal) Symonds, P.Eng.

By W.G. McKay, P.Eng. (Ret.)

After Mal's election in October, 1992, the writer conducted an interview with him as a new councillor (see April, 1993 *Manitoba Professional Engineer*). In October, 1996, it was again the writer's privilege and pleasure to interview him – this time, as the new President of the Association.

Mal was born in Scotland, came to Canada at an early age, and graduated from Mechanical Engineering at the University of Manitoba in 1977. His pre-university time was spent in the Naval services, which introduced him to many parts of Canada from coast to coast, as well as the Arctic.

Mal is married to Margaret-Allison, an infection-control practitioner and nurse. They have two sons in their mid-twenties: one a mechanic, and the other a student in chiropractic training.

At Bristol Aerospace, which he joined upon graduation, he is the Director of Defence Engineering. His professional career there has made Mal a strong proponent of the aircraft industry in Manitoba. In the educational field, he has promoted the teaching of aeronautical subjects both at the University of Manitoba and at the technical college level. He also served, in an advisory capacity, the Southern Alberta Institute of Technology (SAIT). Mal is proud to say that there is now a Chair in Aerospace Materials at the University of Manitoba, and more subjects are being taught at the University in the Aerospace field. This will give the graduates a leg-up upon entrance into the major aerospace industries across the country.

New President J.M. Symonds.

Has there been a trend in Council activities over his past four years as a councillor and Vice-President? He feels there has, mainly due to the

Continued on page 10

McCain Plant in Portage Under Expansion

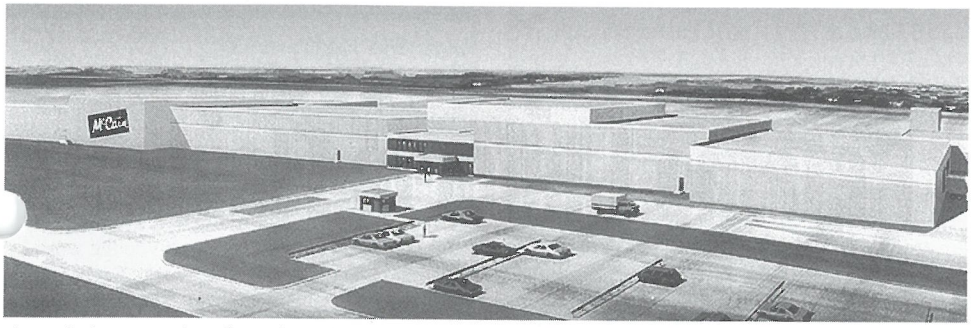
By: J.D. Close, P.Eng.

On April 22, 1996, workers began laying the foundation on the $68.8 million expansion of the McCain Foods (Canada) potato processing plant in Portage La Prairie. Originally announced in September, 1995, by McCain Executive Vice-President and General Manager Arnold Park, as a $55.9 million expansion, additional elements and enhancements have been added to the plan through the summer to bring its value to $68.8 million. The plant is expected to be completed and in production by December.

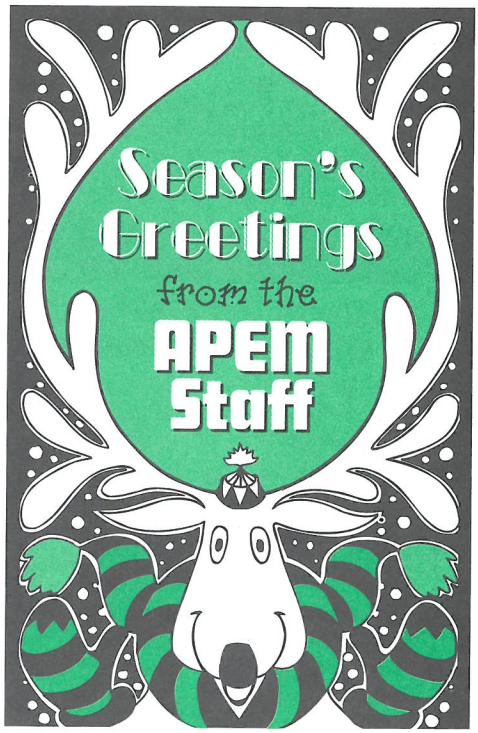
The new plant will double its present capacity to more than 350 million pounds of french fries per year. The plant size will also double to 22,800 square feet and employ an additional 125 to 150 people. The expansion will make the Portage facility the company's most modern processing facility in the world.

All potato requirements for the coming processing year have been met, Mr. Park indicated, with the additional 17,000 acres coming from both new growers and expansion by existing McCain growers.

The construction is a joint venture between the Winnipeg firm of E.K. Construction and Sealand Freezers Limited of Prince Edward Island. □



An artist's conception shows how the Portage La Prairie McCain Foods plant will look , once the expansion project is completed.



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(204) 474-2736 Fax (204) 474-5960
E-Mail: apem@apem.mb.ca

APEM

WE HAVE LOST CONTACT. MAY WE HAVE AN ADDRESS?

M.L. Ayari
G.A. Barnett
G.M. Fagerstron
L.H. Gudbjartson
D.A. Irvine
A.J. Kondel
G.D. Marshall
G.D.M. Michalishen, EIT
G.B. Murray
D.H. Robinson
R.W. Smith
D.L. Surdu-Miller
M.L. Zahn

Engineers in the News

By: S.M. Matile, P. Eng.

Dr. Sami Rizkalla, P. Eng., President of the Canadian Network of Centres of Excellence on Intelligent Sensing for Innovative Structures (ISIS Canada), has received the Canadian Council of Professional Engineers' (CCPE's) Meritorious Service Award for professional service for his outstanding contribution to the engineering profession.

Dr. Rizkalla, who joined the University of Manitoba's engineering faculty as an Associate Professor in 1979, is extremely well known in the civil and structural engineering communities. His services are in great demand, both locally and internationally. He has contributed to numerous committees at the university and for various technical organizations and learned societies, and has authored or co-authored dozens of internationally refereed papers, conference papers and technical reports, as well as five structural engineering books. Dr. Rizkalla has been named a Fellow of each of the American Society of Civil Engineers, Canadian Society of Civil Engineers, and American Concrete Institute. He continues to support the research activities of large numbers of graduate students.

◆ ◆ ◆ ◆

Kathie Gissing, P. Eng., Managing Engineer for the Canadian Portland Cement Association in Vancouver, B. C., has received the Association of Professional Engineers and Geoscientists of British Columbia's (APEGBC's) highest honour: the R. A. McLachlan Memorial Award. (She received the Association's Professional Service Award in 1987.)

Ms. Gissing is a native of Winnipeg who received her B. Sc. in Civil Engineering from the University of Manitoba in 1972, and worked for Underwood McLellan & Associates (now UMA Engineering) before heading west to work for the Portland Cement Association in Edmonton in 1976 and in Vancouver from 1981. Over the years, she has dedicated herself to the cement industry, the engineering profession and the community, serving tirelessly on numerous committees, boards and councils for many technical and learned societies, professional associations and community groups. In 1993, Ms. Gissing, the consummate role model for women in engineering, became the first woman President of APEGBC.

◆ ◆ ◆ ◆

Dr. Valery Venda, P. Eng., is the recipient of the Human Factors and Ergonomics Society's 1996 Distinguished International Colleague award – an award which recognizes the outstanding contributions of a non-U.S. citizen to the human factors/ergonomics field.

Dr. Venda is a Professor of Human Factors Engineering at the University of Manitoba. □

NEW MEMBERS REGISTERED SEPTEMBER & OCTOBER, 1996

P.J. Ashman
J.M. Berg
G. Bizien (PQ)
L.G. Farrant (BC)
R.J.P. Fortier (ON)
T.L. Heisler (SK)
K.S. Jhass (AB)
T.S. Josephson
C.D. Kent (BC)
B.D.P. Koziak (AB)
V.G. Lappi (SK)
S.J. Liao
W.R. Livingstone (AB)
I.C. MacDonald (NB)
D.D. Mann
H.J. Margolis
R.K. McLean
B.A. Miller (SK)
W.W.G. Miller (ON)
G.D. Mills (AB)
M.J. Mitchell (AB)
P.M. O'Hara
L.I. Popescu (ON)
J. Shah (SK)
A.B. Sharratt
B.A. Skalmstad (ON)
K.A. Soudki
M. Sthankiya (AB)
R.J. Swan
L.W.K. Tse (ON)
D. Tuhtar (ON)
J.G. Veilleux
D.K.J. Wainio

LICENCES ISSUED SEPTEMBER & OCTOBER, 1996

D.J. Babala (AB)
R.G. Fleming (ON)
M.D. Gallant (ON)
T.C. Greenlaw (MA)
R.W. Imai (AB)
L.O. LaBere (ND)
T. Leung (AB)
R.B. Lomheim (AB)
R.L. San Giacomo (NY)
A.P. Teasell (AB)

EITs ENROLLED SEPTEMBER & OCTOBER, 1996

R.C. Butler
J.P.H. Chiasson
D.G. Cormier
J.S. Dutchak
D.M. Eddie
D. Knezic
D.E. Lovelace
M.T. Mance
P. Ng
J.M. Paterson
J.S.M. Penner
A. Subramaniam
Z. Teclemariam
B.A. Warkentin
S.A. Witzke
Z. Zhang

REINSTATEMENTS SEPTEMBER & OCTOBER, 1996

K.M. Corbett
E. Hrudko
S.S. Yoshino

Jobs Wanted

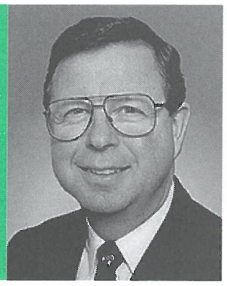
Industrial Engineer EIT

I'm an EIT with a difference! I have nine years work experience before getting my degree and six more after graduating from the U of M. Most of my experience is in manufacturing, from chalkboards to windows.

I'm looking for a position that will help me obtain my P.Eng. and allow me to do the work I love: helping people do a better job, faster and cheaper.

To request a resume, please leave a message at 669-0437. □

President's Message



J.M. Symonds, P.Eng.

Once again, the circle of life here at the APEM is complete. Cathy Stewart has relinquished her position to me after a year of excellent service as your President. Her tenure has been punctuated by a number of significant events that will have far-reaching consequences for the foreseeable future. Such things as the CCPE visioning exercise, the challenge of the Architects regarding their relationship to other professions, and the negotiations with the technologists and technicians are but examples of the issues she has had to face. Of course, one should not forget the precedent she has set as the Association's first woman and first northern president. All these challenges she faced with confidence, poise, and competence; and with a tremendous amount of understanding from her husband, Wayne, and the management at INCO, because it involved a great deal of commuting and numerous long-distance telephone calls from Thompson. I think we all owe her a debt of gratitude for a job well done! Thanks, Cathy.

But life within the engineering profession goes on. We have embarked upon perhaps the most significant voyage in engineering since the first engineers put up Stonehenge or discovered the wheel. With the advent of the new technologies and their exponential growth since the Vietnam war, we are faced with a blurring of the traditional roles and responsibilities of an engineer. These are being challenged by a myriad of other professional groups and it is difficult, if not impossible, to differentiate where our responsibilities and those of other groups begin. This, of course, has far-reaching effects on the traditional views we hold of ourselves, and may cause some engineers to resist or ignore what is going on around them. I think that we ignore these directions and forces at our peril. We must face the issues and deal with them, one by one, in a rational and, hopefully, dispassionate manner. This may require that we reassess our traditional positions and, in some cases, it may mean that our status and rank may not be what it was before. In any event, our position in the technical community will change within the next few years. It is up to all of us to ensure that this transition is worthwhile and smooth.

"...some measure of comfort must be fostered with the public that all registered professional engineers have taken reasonable steps to advance their personal knowledge and experience."

One of the most pertinent aspects of this transition is the necessity for professional development (PD) and continuing competence. There have been many debates as to the requirement for both. The most conservative position on this matter is that the marketplace will take care of competence, and, therefore, PD should be left to the individuals who will live or die (professionally) based upon the extent to which they keep up-to-date with their skills and experience, and the extent to which they can demonstrate this competence to new customers based upon past performance. This is a reasonable position until one considers the ability of the customer public to assess an engineer's past performance. The APEM was formed 77 years ago because the public was not in a position to make this judgement. As a result, and due to the increasing complexity of the technology, some measure of comfort must be fostered with the public that all registered professional engineers have taken reasonable steps to advance their personal knowledge and experience.

Your Association must continue to act to protect the public. At our recent Annual General Meeting, the proposal for a change to the Code of Ethics concerning the mandatory reporting of professional development was defeated. There did not seem to be any objection to the requirement for professional development, but there was some objection regarding implementation. Since the suggested approach seems unacceptable, we will enlist the help of the people who had objections to define a more acceptable course of action. We will continue to monitor the political situation with respect to the Law Reform Commission and will provide proactive leadership to maintain self-governance in support of the profession. There has been a tremendous amount of work done in this area, and we intend to maintain the momentum in spite of this recent reversal. We owe it to the public, the government, and ourselves.

Finally, I would like to say how proud I am to have been chosen to represent you and the Association in 1997, and I will endeavour to do my utmost on your behalf. □

– Notice –

Payment of 1997 Fees

Annual Dues invoices have been mailed to all members and Engineers-In-Training. If you have not received yours, please contact the APEM office. Please be reminded that, according to the By-Laws, THE ANNUAL MEMBERSHIP FEES ARE DUE AND PAYABLE BEFORE JANUARY 1, 1997.

For those members no longer practising in Manitoba, and wishing to resign in good standing, letters of RESIGNATION of membership **MUST BE RECEIVED IN THE ASSOCIATION OFFICE ON OR BEFORE DECEMBER 31, 1996.**

Applications to RENEW NON-RESIDENT membership, or to TRANSFER TO or RENEW RETIRED membership must be received in the Association office ON OR BEFORE DECEMBER 31, 1996.

Those who are unemployed may qualify for deferral of dues. The notice accompanying the invoice provides details of eligibility.

Letter to the Editor

Dear Sir:

The article "Capturing the Changing Face of the Profession" appearing in the October 1996 issue refers to the Canadian Council of Professional Engineers (CCPE) as the "national professional association".

Ask any of the other professions to describe their "professional association", and they will tell you it is the, usually voluntary, association with a mandate to represent the professional interests of its members and the profession. The CCPE exists through funding, provided from compulsory fees, collected in each jurisdiction in Canada as a condition of holding a licence to practise. Since the fees are to be used to implement the provision of a provincial statute, CCPE could hardly qualify as voluntary or representing the interests of professional engineers.

The fact of the matter is that it is The Canadian Society for Professional Engineers (CSPE), The Association of Consulting Engineers of Canada (ACEC) and The Engineering Institute of Canada (EIC) that can truly be said to be "national professional bodies" for professional engineers.

And further, I don't see how the collection of data on the employment, employment skills, and demographics of Canadian engineers will in any way support the regulation of the engineering profession in Canada.

M.J. McInroy, P.Eng., Canadian Society of Professional Engineers

Note: The opinions contained in this letter are not the opinions of the Publication Committee. CCPE is the umbrella organization created by the twelve provincial and territorial associations to provide leadership in the regulation of the practice of engineering. CSPE is an advocacy organization, created to promote the interests of engineers.

Professional Development

Workplace Dispute and Harassment

By: P.C.H. Wong, EIT

On Thursday, September 5, Naomi Levine (M.A., LL.B.), President of Judarb Tribunal, Ltd., discussed Workplace Dispute and Harassment at a breakfast meeting organized by the APEM's Professional Development (PD) Committee. Ms. Levine is a lawyer, mediator, arbitrator, and workplace dispute consultant. She also holds an M.A. in Drama (Irish Theatre), which could explain why her presentation was so interesting.

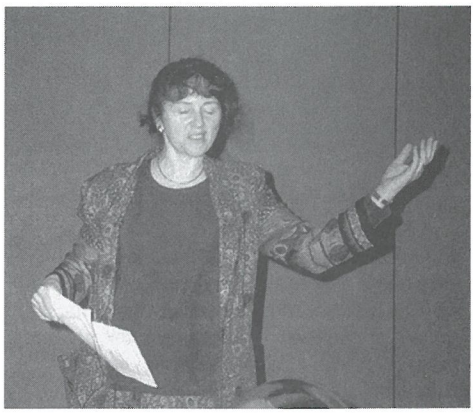
A lawyer since 1975, Ms. Levine acts as the Sexual Harassment Officer for the University of Manitoba, the Harassment Officer for Red River Community College, the sexual abuse and harassment advisor to the Bishop of Rupert's Land Diocese of the Anglican Church and an arbitrator/mediator for the Centre for Sport and Law (Canada). As a lawyer whose practice has specialized in litigation, Ms. Levine is particularly able to address the potential liabilities which may be incurred as a result of harassment complaints. She has acted as a consultant to governments and other organizations.

The costs of workplace dispute have caused employers to consider the implementation of in-house resolution policies, strategies and processes. The nature and degree of the dispute will often determine the appropriate resolution. It is important for management and employees to be aware of the benefits and detriments of the various approaches.

Because many employers refuse to accept, or are unaware of, their responsibilities for implementing and maintaining safe and healthy workplaces, and because Human Rights Commissions are becoming increasingly paralyzed by a lack of political will, parties are turning to the courts to satisfy their workplace disputes. It is often the employer and, in some cases, the unions, who will be forced to pay damages.

The presentation addressed the use and misuse of alternative dispute resolution and the use of civil lawsuits to satisfy workplace concerns. Ms. Levine's eloquent speech contained several interesting examples from her experience across Canada and the United States, several of which represented simple misunderstandings of the situation.

She advised the audience that they should proactively ensure that their workplace has a policy and an education strategy to ensure that those in the workplace know their rights and responsibilities on the topic in order to prevent harassment and dispute.

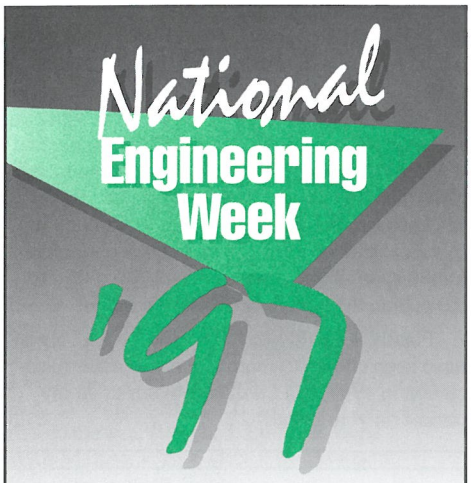


Naomi Levine addresses breakfast meeting.

The Manitoba Human Rights Commission assists employers and organizations in the area of policy development and education on human rights matters. If you would like to discuss this service, please contact Rich Ludwick, Human Rights Officer, at 945-3017 in Winnipeg or contact one of the following:

Manitoba Human Rights Commission

- 301-259 Portage Ave.,
  Winnipeg, Manitoba, R3B 2A9
  Phone: (204) 945-3007 (1-800-282-8069),
  Fax: 945-1292, TTY: 945-3442
- 3rd and Ross Ave.
  (Provincial Government Building),
  The Pas, Manitoba, R9A 1N4
  Phone: (204) 627-8270 & 627-8271,
  TTY: 623-7892
- 340 North Street
  (Provincial Government Building),
  Brandon, Manitoba, R7A 6C2
  Phone: (204) 726-6261 & 726-6262
  (1-800-201-2551), TTY: 726-6261 □



NEW People Wanted

Preparations for National Engineering Week (NEW), March 5-9, 1997, continue. As with any large endeavour undertaken solely by volunteers, extra helping hands are always appreciated. In particular, individuals willing to give approximately three hours of their time during NEW to staff a display area in Polo Park Mall are being sought. Any P.Eng. or EIT is welcome. Retired members willing to share their engineering experiences with the general public are particularly asked to help.

In a related area, individuals or businesses willing to give or lend materials for the display area are also being sought. The desired material includes promotional information (brochures, posters, etc.), tangible items (final products or parts) or VHS videotapes.

If you wish to volunteer your time, or provide display materials please contact Richard Bernhardt at 788-2969 or Caroline Nieuwenburg at 474-3178.

Doug Kramble thanks Naomi Levine.

1996 International Conference on Deep Geological Disposal of Radioactive Waste

By: A.E. Ball, P.Eng.

An International Conference on Deep Geological Disposal of Radioactive Waste, the first in ten years, was held in Winnipeg at the Lombard Hotel in mid-September, 1996. The conference was organized by the Canadian Nuclear Society (CNS) and co-sponsored by the CANDU Owners Group, the American Nuclear Society, the European Nuclear Society, the Atomic Energy Society of Japan, and the Tunnelling Association of Canada. Featuring engineers and scientists from 20 countries that have, or are developing, geological disposal technologies, the conference was designed to provide a global focus on current development and implementation strategies. More than 150 papers about the technical, social, and economic aspects of geological disposal of low-, intermediate-, and high-level radioactive waste were presented. The meeting was supplemented by workshops, discussion groups, and a full day of post-conference technical tours of Manitoba's own nuclear research facilities in the Canadian Nuclear Fuel Waste Management Program.

The conference, attended by over 250 delegates, employed three plenary sessions that had a heavy emphasis on international trends in geological disposal in waste management programs around the world. Attendance from outside of Canada was greater than 50 percent, with the majority coming from Europe and Asia.

With so many prominent engineers and scientists gathered together it proved an opportune time to discuss the social issues and public consultation processes that are being employed by various foreign nuclear agencies and governments. A round-table discussion involving about 50 delegates took a serious look at the social issues surrounding the siting of an underground nuclear waste depository. The most prominent issue raised by this international group of experts was that the public must have all of the facts, whether they are perceived as good or bad, and that honesty and sincerity of the siting task force was the key to confidence-building with the public. **Mutual respect – what a novel idea!**

Other highlights of the conference included a workshop on the Excavation Disturbed Zone (EDZ) and an educators' program. The EDZ was intended to provide a technical opportunity for researchers from many programs to discuss the detailed findings from EDZ work over the past decade, including results from the International Stripa Project, AECL's Mine-by Experiment in the Underground Research Laboratory (URL), SKB Sweden's ASPO-ZEDEZ Experiment, and many related research activities.

As part of the CNS mandate to promote the awareness of nuclear science in public education, a special educators' program was offered, allowing interested teachers to participate in a hands-on science workshop featuring aspects of geological disposal of radioactive waste, instrumentation, and computer modelling.

Post-conference activities included tours of the Underground Research Laboratory (URL) near Lac du Bonnet, and the Whiteshell Laboratories near Pinawa.

The URL was constructed to provide a realistic environment in which to conduct in situ geotechnical experiments in granitic rock. The URL has two major testing levels at depths of 240 and 420 metres. Specific studies include those on groundwater movement and chemistry, in-situ stress conditions, temperature- and time-dependent deformation characteristics and failure behaviour of the granite, colloid migration, the absorption properties of the minerals in the host rock and fractures, development of mining techniques that minimize excavation damage, and tests of the performance of sealing and backfilling materials.

AECL's Whiteshell Laboratories, one of Canada's two national nuclear research laboratories, is the main site of research for the Canadian Nuclear Fuel Waste Management Program. Participants on the tour viewed many of the major R&D operations at Whiteshell, including the Irradiated Fuel Test Facility (long-term experiments with used nuclear fuel), Large Block Radionuclide Migration Facility (transport experiments in large naturally and artificially fractured blocks of granite), Used Fuel Storage Canisters (prolonged dry storage in concrete containers), Containment Test Facility (hydrogen combustion simulating reactor accidents), Hot Cells Facility (remote handling of highly radioactive materials), and Radioactive Test Facility (iodine behaviour during accident conditions).

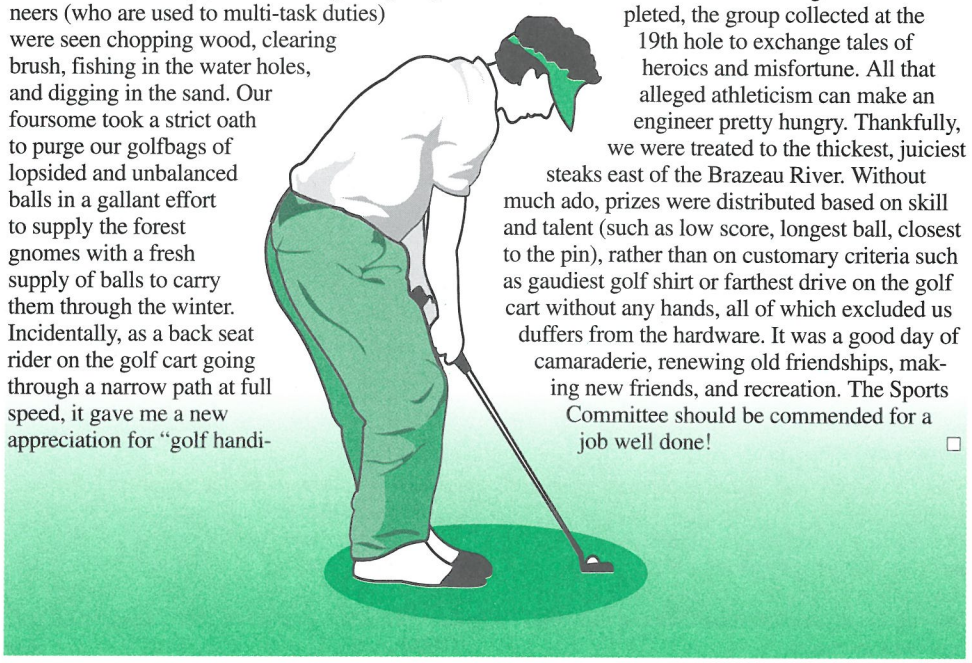
With Canada's Nuclear Fuel Waste Management Program now entering its final stages of review prior to advancing to the siting phase, this conference was timely. It has raised the awareness of stakeholders in the concept of safe, long-term disposal of radioactive nuclear fuel wastes and confirmed that the Canadian program and technologies are among the best in the world.

In January and February of 1997, the federally-commissioned Concept Review Board will be having its last rounds of public hearings, in Winnipeg. The concept is simple, but the technical implications are immense. Watch the papers for locations and times and come out to support the responsible application of science and technology for the betterment of mankind – come and support ENGINEERING. □

Second Annual Fall Golf Tournament

By: C.P. Gray, P.Eng.

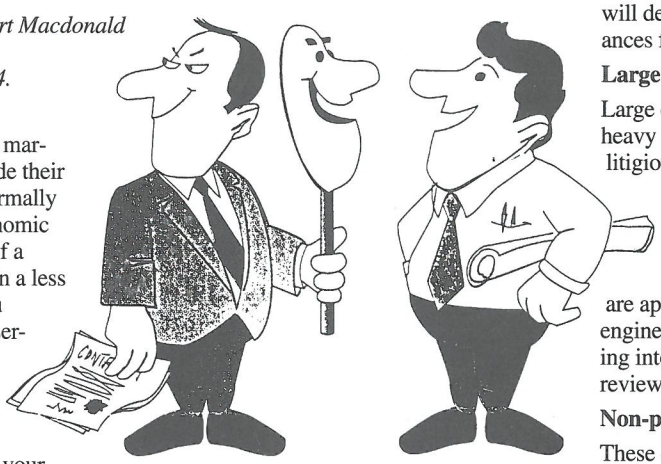
Conditions were ideal for the second annual fall APEM Golf Tourney at the Teulon Golf & Country Club. The fairways were lush, the greens manicured, and not a single mosquito could be found (despite our best efforts to flush them out of the rough). As well as golfing, engineers (who are used to multi-task duties) were seen chopping wood, clearing brush, fishing in the water holes, and digging in the sand. Our foursome took a strict oath to purge our golfbags of lopsided and unbalanced balls in a gallant effort to supply the forest gnomes with a fresh supply of balls to carry them through the winter. Incidentally, as a back seat rider on the golf cart going through a narrow path at full speed, it gave me a new appreciation for "golf handicap". Fortunately, one of the other golfers was a medic and he promptly prescribed painkillers. Later, we concluded that the "90-degree rule" for golf carts is not driving through ditches at 90 degrees to prevent the golf cart from overturning.



After all the sod-busting had been completed, the group collected at the 19th hole to exchange tales of heroics and misfortune. All that alleged athleticism can make an engineer pretty hungry. Thankfully, we were treated to the thickest, juiciest steaks east of the Brazeau River. Without much ado, prizes were distributed based on skill and talent (such as low score, longest ball, closest to the pin), rather than on customary criteria such as gaudiest golf shirt or farthest drive on the golf cart without any hands, all of which excluded us duffers from the hardware. It was a good day of camaraderie, renewing old friendships, making new friends, and recreation. The Sports Committee should be commended for a job well done! □

Dealing With The Bad Client

By: Glenn A. Urquhart, Singleton Urquhart Macdonald
Reprinted with Permission from
The BC Professional Engineer, April, 1994.



One of the dangers inherent in today's marketplace is that engineers may provide their services to clients for whom they normally would not work in a more favourable economic climate. They may also accept mandates of a nature they would consider unacceptable in a less competitive market. As an engineer, if you allow an undesirable client to retain your services, you substantially increase your risk with respect to your professional reputation and the financial outcome of the project. However, several precautionary measures can be followed that will reduce your chances of encountering problems.

The Client/Engineer Relationship

Recent trends in the law have demonstrated the increasing importance of establishing an appropriate relationship between the client and the engineer right at the outset. The best way to do this is to have a properly drafted contract in place that outlines the relationship between the parties and the rights and obligations of each.

Ensure there is a written contract

When dealing with the difficult or bad client, there is sometimes a reluctance to enter into a written agreement, or the client does not want to regulate the relationship with such a document. The standard form between clients and engineers should be used wherever possible.

Define the scope of work

The scope of work to be performed by the engineer should be carefully defined in writing, particularly with a difficult client. If limitations are to be imposed on your services, you should ensure that those limitations are precisely defined. Some examples:

- *Geotechnical services*

  There is a tendency by difficult or bad clients to want to reduce the geotechnical input (design and field services) to the project.

- *Field Services*

  Clients may wish to perform field services themselves or to limit the field services to be performed on the project. The legal responsibilities are generally the same for the engineer who performs limited versus full field services. Thus, if field services are to be limited in any way, the engineer should ensure that provisions in the written contract allocate the design risk back to the client.

Types of Clients

Impecunious clients

Very few professional services can be performed for the client whose financial stability is in question without increasing the engineer's risk, both professionally and financially. If adequate financing is not in place, or if a client is working on a very tight budget, the risk of financial and other problems increases.

When financing or fees become a problem, the impecunious client may allege that the contractors and engineers are at fault. Litigation usually commences at this point. Therefore, if the project is beyond the client's financial reach, avoid the project.

Land developers

There are some very experienced land developers in western Canada – and there are also some very bad ones. Some of these bad developers insist on the most marginal of design and then attempt to convince the engineer to perform limited field services or to abandon them entirely. However, once the project is constructed, these individuals will demand all types of certification and assurances from the engineer.

Large corporate clients

Large corporate clients, particularly those in heavy industry, are generally the fairest and least litigious.

The one problem to recognize is that in many cases these types of clients wish to utilize their own form of contract, as opposed to the standard agreements that are approved by professional associations. The engineer should be extremely careful when entering into this type of contract and should have it reviewed by a legal advisor.

Non-profit organizations

These can be extremely difficult clients to deal with because in most instances they are controlled and managed by groups and committees, as opposed to a single individual who has full authority. Thus, with this type of organization, it is important to enter into a properly drafted contract.

General

In most cases, it can be determined soon after the first meeting with the client whether this is going to be a bad client and whether there may be problems and difficulties throughout the project.

Continued on page 16

Let's Support the Engineering Students

By: G.O. Ouellette, P.Eng.

One of the most anticipated events for third- and fourth-year engineering students at the University of Manitoba is the annual Engineering Student Dinner held in February. The dinner provides an opportunity for the students to mingle with practising engineers and learn about the profession. For those students about to graduate, it is also an excellent opportunity to gauge the job market and employment opportunities for that important first job.

The responsibility for organizing the dinner rotates on a yearly basis among various technical societies, with most of the tasks handled by the students. The students typically are responsible for notifying the student population of, and contacting engineers regarding, the event, whereas the technical societies typically supply the speaker for the evening and make sure the planning stays on schedule and within budget. APEM's role, through the University Liaison Committee, is to act as facilitator between the students and the societies, to ensure a smooth-running program.

The evening starts with a reception where a student is introduced to and matched with an engineer in the field that interests the student. This is followed by the dinner and an after-dinner speech. This simple format has proved successful in the past, and the evening ends at about 9:30 – 10:00 p.m.

The number of technical societies involved in recent years has dwindled and represents only a small number of the active local technical societies. It would be beneficial to all parties if more societies became involved, if only to provide a wider representation of the Manitoba engineering community. The societies would benefit, as there would be increased awareness of the societies, which could translate into new members. The involvement of more technical societies would greatly widen the pool of available speakers. The societies could showcase important developments in their fields and possibly invite nationally prominent speakers. This would enhance the societies' visibility among the profession. The engineering student dinner could become an important function on Manitoba's engineering calendar.

The University Liaison Committee requests that all executives of the various technical groups consider participating, on a rotating basis, in the organization of the annual dinner, thus ensuring that it becomes an annual success. Let's show the students that engineering is a worthwhile, rewarding, challenging and evolving profession which cares about the future. After all, the students are the future. Societies interested in becoming more involved may contact Paul Dalkie, Chair, University Liaison Committee, ph. 775-8161 or fax 783-5653. □

1996 Annual General Meeting

Business Meeting – Saturday, October 26, 1996

By: A.E. Ball, P.Eng., and B.A. Dobran, P.Eng.

The 77th Annual General Meeting of the Association of Professional Engineers of the Province of Manitoba was called to order by President Cathy Stewart. She confirmed that a quorum was present. A moment of silence was then observed for those members deceased during the year. Executive Director and Registrar Dave Ennis then read the Notice of Meeting which had been mailed to the membership. Cathy Stewart introduced the members of Council and the APEM staff at the head table. She recognized the guests in attendance, most of whom were representing other engineering organizations. President Stewart then presented a follow-up to her report which had been published in the October edition of the Manitoba Professional Engineer.

The minutes of the October 21, 1995 Annual General Meeting were adopted. Under Business Arising From the Meeting of October 21, 1995, Don Osman presented a report of the task group on the Memorandum of Understanding with the Manitoba Association of Architects. Dave Ennis presented a report on premises and a report regarding the Manitoba Law Reform Commission.

The three newly-elected councillors were announced: Doug Kramble, Kelly Olischefski and Kathy Pratt. Appointed councillors Ertrice Eddy and Bonnie Thomson are to continue on for another two years. The 1996/97 President, former Vice-President Mal Symonds, was declared.

The Auditor's Report and 1996 Financial Statements were presented, along with the appointment of Auditors. Dave Ennis then presented the 1997 Budget and Schedule of Dues and Fees. The new professional practice dues are $214, including GST. Halina Zbigniewicz, Carl Anderson, and Ed Lach were elected to the Nominating Committee. Amendments to By-Laws 8.2, 9, 16, 36, 41 and 44 were approved. They will only become effective following ratification by a simple majority of those members voting in a let-

Continued on page 9

Wine and Cheese Reception

By: B. Thomson

Friday evening was set aside at the Niakwa Country Club to enjoy an evening of relaxed conversation over a glass of wine. President Cathy Stewart welcomed everyone and expressed APEM's appreciation to the volunteers whose support and efforts make the wheels of APEM run.

One of the highlights of the Annual General Meeting was the presentation of the APEM scholarships. Doug Chapman made presentations to seven engineering students. Each one of these young people has an impressive record of academic achievement and personal and professional accomplishments. Awards were presented to Tyler Dick – 1st year Civil Engineering with a cumulative Grade Point Average of 4.42; Michael Kuusela – 2nd year Engineering with a cumulative Grade Point Average of 4.43; Jennifer Boguski, 4th year Industrial Engineering with a cumulative average of 4.30; Chris Gentile – 4th year Civil Engineering with a cumulative average of 4.29; and Earl Shaw – 4th year Electrical Engineering with a cumulative average of 4.17. Duane Pauls, a 4th year Computer Engineering student with a cumulative average of 3.85, was unable to attend this evening.

Doug Chapman explained the history and criteria for the Canada Northlands Award. This year's winner was Todd Mryglod. Todd worked for Pan-Canadian Petroleum in Elk Point, Alberta as a summer field operator. Todd is finishing his degree in Electrical Engineering at the University of Manitoba.

New members who have been registered since March of 1996 were invited to attend this evening to receive our congratulations. Certificates were presented to seven new members who have registered since July of this year.

Mal Symonds made a presentation to Mr. Wayne Stewart, to thank him for the support, understanding and encouragement he has given to his wife and our president, Cathy Stewart, over the past year. Mal noted that this was the first year this presentation had been made to a husband. Cathy has put in an incredibly busy year and has been away from home and husband frequently. Thanks, Wayne, for sharing your talented wife with us over the past year!

Many thanks to the organizing committee for a very successful and enjoyable evening. □

Mal Symonds (l) thanks Wayne Stewart for his support.

New APEM Members.

1996 Annual General Meeting

Dinner/Dance

By: B. Thomson

The Annual Awards Dinner/Dance was held Saturday evening at the AGM at the Niakwa Country Club.

Honourary Life Membership was presented to Wallace Raymond McQuade, who has been a continuous member of the association for 44 years. Mr. McQuade was unable to attend this evening, and the award was accepted by his very proud daughter. She did mention that even she was surprised at the enormous contributions her father had made.

Edward Albert Speers was presented with a Honorary Life Membership after 36 years of outstanding service to the profession. Mr. Speers was away in the Ukraine on business and his award was accepted by his wife. Mr. Speers had sent a very heart-felt message of appreciation for the honour of receiving this award.

In recognition of 35 years of valuable and dedicated service to the Association, Mr. Edgar Emil Lach received The Outstanding Service Award.

Congratulations to these gentlemen.

As a Lay Councillor for APEM, this was my first AGM dinner/dance. Over the past two years I have obtained some very useful professional information about those who are involved in the Engineering profession in Manitoba. I would like to share some of the newest information I gleaned from this evening. Did you know that:

Melita Ennis and Lynne McKibbin hosted a very successful companions' program? My guest Nancy Malsom from North Dakota had a wonderful afternoon, and both she and her husband Brant were impressed with Winnipeg and the hospitality they received here. Way to go, Melita and Lynne!

Shirley Matile was noted as a frequent visitor to the dance floor. Shirley likes to boogie – who would have guessed?

Engineers and spouses have only a slight preference for white wine – very sophisticated!

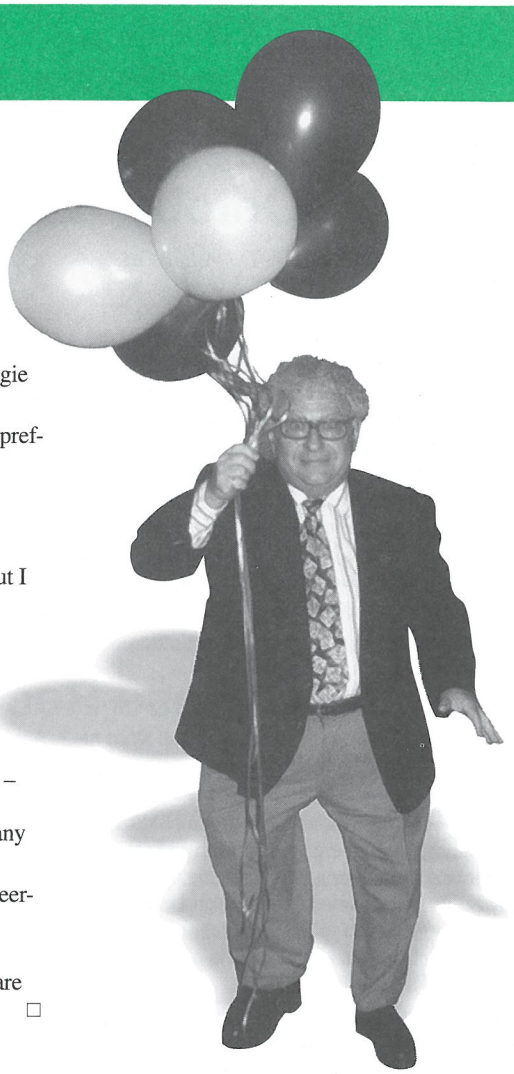
Male engineers (not unlike doctors and lawyers) can find the only television at a dinner/dance and watch the last game of the world series. No names will be mentioned, but I thought you were above this.

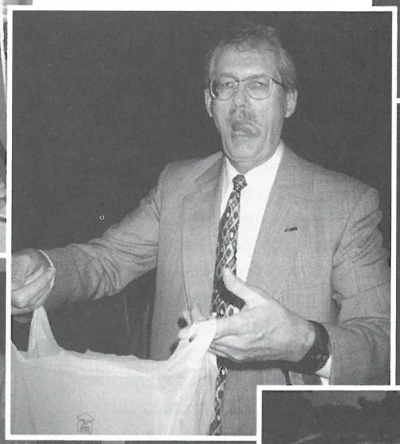
Carol Roberts dances a mean Macherina (I have no idea how to spell this – and I can barely keep my arms from getting tangled up!)

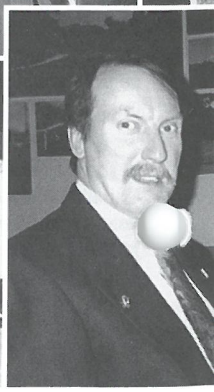
Dean Shields has a tuxedo and best of all he kisses your hand when you are introduced – v-e-r-y nice. I must admit, I only witnessed female hands being kissed – but if you have any further information, you might pass it on!

Disco music is alive and well in the engineering community – is this some sort of a ritual thing?

I had a wonderful time at this event. You are actually quite a fun group – go figure! □







Business Meeting – Saturday, October 26, 1996

(Cont'd from page 7)

ter ballot returnable within 30 days of the meeting.

Doug Kramble, chair of the Professional Development committee, presented the proposed program of mandatory reporting for all Professional Engineers (proposed By-law 46 Amendment). This item was discussed by several members of the Association. The debate ended with a defeated proposal. However, the members present voted unanimously in favour of APEM's pursuing the issue of continuing professional competency in greater detail, and resolving the major concerns voiced over mandatory reporting. The work has just begun on this matter, and all members who have an opinion, concern or question about the overall process are encouraged to write, fax or phone the Association.

Next, Don Spangelo presented the highlights of proposed changes to the Engineering Profession Act to include geologists, geophysicists and geochemists. Bill Brisbin, representing the Geoscientists of Manitoba, advised that the right-to-practise was not desired by a major group of geoscientists practising in the natural geosciences, since their work had no direct impact on public welfare, but that this group wished to retain its rights to the titles "geologist", "geophysicist" and "geochemist". Dr. Brisbin was invited to address Council regarding this issue at its next meeting.

Cathy Stewart then spoke on APEM's relationship with CTTAM (Certified Technicians and Technologists Association of Manitoba), and outlined the Memorandum of Understanding with CTTAM was outlined. The major canons include serving the public welfare, supporting self-governance, supporting the other's legislation and including a provision for a joint board. Council is looking for further direction from members, so if you have comments or concerns, please forward them to Council through the APEM office.

Shirley Matile then provided some of the details of the NAFTA MRD (Mutual Recognition Document). CCPE is urging each constituency to ratify the MRD and begin implementation. APEM has already signed a letter of intent to ratify the MRD, and has commenced with its implementation.

The members present then decided to forego hearing all the committee reports, deferring to those presented in the October MPE.

Retiring Councillors Arnold Permut, Stu Ursel, and Don Osman were presented with ceremonial plaques. Retiring President Cathy Stewart performed the official Gavel Ceremony with incoming President Mal Symonds. Cathy then presented Mal with the President's Certificate. President Symonds spoke to the membership, vowing to address the many important issues before it. □

Council Reports

Tuesday, September 10, 1996

By: B. Thomson

AT WHICH COUNCIL CONSIDERS THE NAFTA MUTUAL RECOGNITION DOCUMENT (MRD)

The councillors arrived at the September meeting loaded down with information and paper and ready to tackle a challenging agenda after a month off.

Cathy Stewart called the meeting to order promptly at 12:30.

The July minutes were adopted and the Council moved on to business arising from the minutes. A lengthy discussion followed on the issue of sanctions for failure to report professional development activities. A motion was made that the Legislation Committee ensure that the Act include a clause which enables Council to impose sanctions for failure to report professional development activities. This was carried.

Shirley Matile had attended the NAFTA Forum on September 4-6 and presented the Council with her report. Negotiations have been proceeding between the CCPE and its U.S. and Mexican counterparts. The objective of these negotiations is to enable procedures for cross-border trade in engineering services between Canada, the U.S., and the United Mexican States. In May, 1996, CCPE unanimously approved the admission prescription prepared by the CEQB for incorporation into the CEQB guideline "Admission to the Practice of Engineering in Canada". The CCPE urged each constituency to ratify the MRD and begin implementation. Ms. Matile informed Council that the Northwest Territories and Quebec had already signed letters of intent to sign the NAFTA MRD. Discussion followed on this issue and it seemed to be the general consensus that it was in the best interest of Manitoba engineers to sign the NAFTA MRD to have the opportunity to practise engineering in Mexico. It was moved and carried that APEM accept the terms of the MRD (Mutual Recognition of Registered/Licensed Engineers by Jurisdictions of Canada, the United States of America and the United Mexican States to Facilitate Mobility in Accordance with the North American Fee Trade Agreement) signed June 5, 1996 in Washington, D.C., agree to implement its provisions in a timely manner, and send a letter of intent to CCPE, requesting inclusion on Schedule A of the MRD.

The Council moved through a heavy agenda from failure to pay annual dues (**please** pay your dues on time), to CCPE recommendations on a revised admissions guidelines, to legal issues protecting both the public and engineers, to a report on meetings with the Certified Technologists and Technicians Association of Manitoba (CTTAM – formerly MANSCETT) – and these were only a few of the issues! There was serious discussion and debate at this meeting. It was not adjourned until after 5:30 p.m., with consideration of some agenda items postponed to the October meeting. □

Tuesday, October 8, 1996

By: W.G. McKay, P.Eng. (Ret.)

AT WHICH COUNCIL MOVES TO CLOSER RELATIONSHIPS WITH CTTAM

With a small margin of attendance over the required quorum, Council agreed to a number of "Consent Agenda Items", thus reducing a lengthy agenda.

De-registration For Late Payment of Fees

Each year Council is faced with a few cases of members who have been de-registered for late payment (that is, payment received after July 1st). Invoices are sent out in the previous November. A change of the member's address, change in the Association address, etc., are some of the arguments made by those appealing their de-registration. To become re-registered involves the completion of a test on the Act, By-laws and Code of Ethics (and completion of the Professional Practice Seminar and Examination, if more than a year elapses between de-registration and re-application), submission of references, and payment of a large de-registration fee.

Lengthy debate surrounded the six cases on hand, and the general principle of a member's responsibility to pay on time or suffer the consequences, as well as advice from legal counsel. As a self-regulatory body, it was questioned whether, despite the lawyer's advice, there should not be some interpretation of the regulations by the "spirit" rather than the "word". Individually, the cases were resolved, and a sub-committee was struck to review the regulations and give some flexibility to the Registration Board to deal with future cases.

Professional Engineers Act

A full-day meeting prior to the Annual General Meeting will be held to discuss the Act. It was felt that a new Act, rather than revisions, is being submitted to the Legislature hence, it should be in the best possible state as to content and legal wording.

CTTAM – A Memorandum of Understanding

The meetings between the Certified Technicians and Technologists Association of Manitoba (CTTAM) and the APEM have progressed to the stage where there is a Memorandum of Understanding (M.O.U.) between the two parties. CTTAM has prepared an Act which, if passed, will give them the right to practise the "technology of applied science". This is distinct from the Engineering Profession Act, which enables the practice of "Professional Engineering". Throughout the meetings there has been an understanding that both parties have a requirement "to protect the public".

Ensuing debate outlined the fields of overlap between the professional engineer and the technician and technologist. Concern was expressed as to how this memorandum of understanding may be regarded at the national level where discussion is taking place between CCPE and the National body of Technologists. Authorization was given to the President to sign the M.O.U. It was also agreed that contact should be made with CCPE and other provincial associations to advise them of this agreement.

It is of interest to note that several members of Council were members of CTTAM prior to their registration as engineers with APEM.

Manitoba Association of Architects

Currently there appears to be a possibility of mediation, subject to the review and acceptance of the credentials of the proposed mediator by both groups. □

Meet Your New President

(Cont'd from page 1)

local and national changes in engineering. Arising from the Provincial Government review of regulatory bodies, a pressure for continuing professional competency is being felt at the provincial and national level.

Mal believes that the competency of the profession must be maintained and must be seen to be maintained, and the professionals themselves must be, and must be seen as being, competent.

Although the mandatory reporting of continuing education/professional development was defeated at the Annual General Meeting, Mal believes that this is not an indication that the members are against the upgrading of competency, professional development or peer review. He pledges that the association will endeavour to maintain the momentum that has been started from the introduction of this aspect of professional life to the membership.

With respect to APEM's relationship with the Certified Technicians and Technologists' Association of Manitoba (CTTAM) and their newly-signed Memorandum of Understanding, Mal notes that, in the practice of engineering, there lies an area that encompasses the professional engineer at one end, and the technician/technologist at the other end with an over-lap in the middle. Through the enactment of each profession's code of ethics, mutual trust of each other's administration, and examination on a case-by-case basis of those incidents where conflict may or does exist, it is hoped that a respectful relationship may continue to exist between engineers and technologists in Manitoba.

The writer thanks the President for an enjoyable interview, and for an interesting quick look at the aircraft on the floor, and wishes him a successful and satisfying term of office. □

Engineering in Manitoba

The First Hundred Years

By: W.G. McKay, P.Eng. (Ret.)

In 1995, APEM marked the 75th Anniversary of the passing, on March 27, 1920, of an act respecting the engineering profession and the creation of APEM. This anniversary was an occasion to recall the growth and stature of the profession down through the years, and to remember the achievements of its many members.

However, it was with some surprise that I recently learned that 1996 marks the 100th Anniversary of the passing of an Act on March 19, 1896, respecting the profession of civil engineering in Manitoba, creating a century of the profession, albeit civil engineering, in this Province.

In reviewing a history of the Dominion Council of Professional Engineers, now CCPE, (see C.C. Kirby, 25th Anniversary of APEM, 1945), it would appear that Manitoba was the first province to pass an act respecting engineering. Quebec followed, in 1898, with a similar Act.

One must step back a bit further in engineering history to see the beginning of the recognition of the profession. In 1887, the Canadian Society of Civil Engineers was created through an Act of the Federal Parliament because of the development of the railroads, canals, highways, ports, cities and towns.

It was not until 21 years later, in 1918, that the Canadian Society of Civil Engineers became the Engineering Institute of Canada (EIC), probably in recognition of the establishment of other disciplines of engineering.

The Manitoba Civil Engineers Act of 1896 made provision to create a Society, with a council, registrar, etc., similar to the structure of the Association today. Quoting from the preface of the Act, "whereas it is deemed expedient for the better protection of the public interests", it is interesting that as early as 1896 the protection of the public was uppermost in the Act. The requirements of the society as to qualification, registration, examinations, discipline, etc., were all included, and the Society was empowered to enact by-laws. In general, the Act appears to have been the basis for the Engineering Profession Act.

In 1913, there was a revision to the Act wherein, as the Society was now established, some of the requirements as to numbers of members for the initial Council were deleted.

In 1920, the Engineering Profession Act, creating the Association of Professional Engineers of the Province of Manitoba, was passed. There is considerable similarity to the previous "Civil Engineers Act" and perhaps this is understandable as some of the provinces were reviewing their legislation and holding discussions with the EIC regarding a "model" Act. It is likely that clauses from existing national and provincial acts would be carried forward into this new Act.

In reviewing the information available, some questions arise as to the administration of the 1896 Civil Engineers Act. C.C. Kirby, in his history, states "because the Acts (Manitoba and Quebec) contained no administrative machinery, they could not be enforced and fell into disuse". It is unfortunate that the records of the Manitoba Society of Civil Engineers cannot be located. Indeed, one might wonder whether they still exist. It would be interesting to understand the basis for Mr. Kirby's statement.

A recent letter from A.H. Wilson, Ottawa, a historian of the EIC, contains the following: "The copy of the Manitoba Act prompted me to read up once again on the early engineering legislation which, as it turned out, was not effective and the regulation of the profession had to wait for the EIC 'Model Act' of 1919-1920. The earlier Acts were not enforced for a variety of reasons. Much of the opposition came from the Mining and non-Civil disciplines, with surveyors watching from the sidelines, and some of it came from within the 'old' CSCE itself."

Another factor that probably influenced the move to the current Act is that, by 1920, the EIC (formerly the CSCE) was establishing branches throughout Canada. Perhaps the Manitoba Society was absorbed into the Winnipeg/Manitoba branch of the EIC, and perhaps there was increasing need for a more encompassing act as the other disciplines of engineering became more predominant.

Despite the current lack of further historical data relating to these early acts, there is cause to recognize 100 years of the engineering profession in Manitoba, and to be aware that the Association is in the unique position of being one of the first, if not the first, provincial engineering associations in Canada.

At the October Council meeting, the 100th Anniversary was celebrated by Council and staff, with President Cathy Stewart cutting the cake. The President insisted that the writer assist in the ceremony. □

Did You Know...

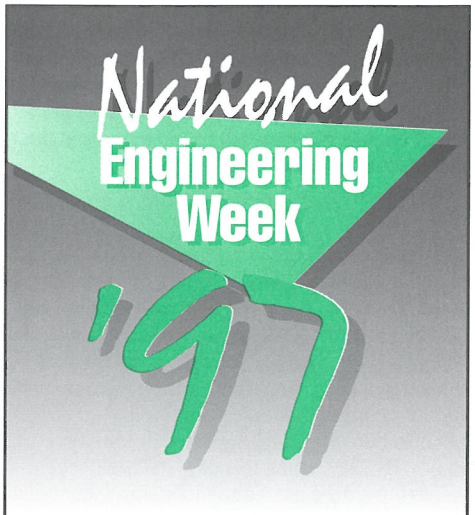
And the METRE became the measure of all things...

1995 was the 200th anniversary of the adoption of the metre as the unit of measurement of length in France. As we know how long it is taking Canadians to adapt to SI, we can appreciate how long it took the scientists – Coulomb, Laplace, Lavosier, to mention but three – to overcome the objections of politicians throughout a country that had only recently come under a single king.

Mechain, starting at Barcelona, and Delambre, working southward from Dunkirque, ran a network of triangles from which the length of the Earth's circumference, and hence the metre, were calculated. This was like running a chain of triangles from Norway House to Fargo with a major mountain barricade thrown in to keep Mechain's crew busy. Having once been involved in measuring a base-line for a triangulation net for mapping part of British Columbia, I was disappointed that the writer made no mention of the base-lines used by the two surveyors. In spite of this, it is a fascinating bit of history.

Insecticides sans frontières

Insecticides are travelling around the globe due to air-currents. The intensive cultivation of rice in Asia is causing the spread of insecticides that are now contaminating the Antarctic. □



Volunteers Wanted For National Engineering Week

By: B. Thomson

In this theatre of women's and men's lives, it is reserved only for God and the angels to be lookers-on.
– Francis Bacon.

On March 5-9, 1996 at Polo Park Shopping Centre, the Association's Public Awareness Committee is planning activities, displays and competitions to celebrate **National Engineering Week**. This is a huge undertaking and we will need your input and help. We need volunteers for judging competitions, prizes suitable for young people, displays to show the public the excellence of engineering in Manitoba today, and volunteers to be available to staff displays and answer questions about engineering. (EITs please note: Professional Service Points will be awarded!) If you can spare some time to give us a hand, please call Shirley at 474-2736 or Caroline at 474-3178.

Don't be an onlooker – get involved in National Engineering Week!

Check out our site:

www.ee.umanitoba.ca/engweek

New ISO Standards

By: S.C. Alford, P.Eng.

You have all probably heard of ISO 9000, the international standard for quality management. A large number of international and Canadian companies embraced the concept in the late 80's and early 90's and sought certification. It has become an important influence in many engineers' workplaces. Whether you like it or not, a new standard is being introduced which will have a similar impact on the way many organizations operate. The International Organization for Standardization is producing a series of standards on environmental management. This will not only affect engineers who do consulting on environmental issues, but it will also affect a large number of engineers who work for companies in the manufacturing or industrial sectors.

The new environmental standards, dubbed the ISO 14000 series, will eventually include standards on a number of environmental topics, including labelling, life-cycle assessment, and auditing. Of particular interest to many engineers will be the ISO 14001 standard on Environmental Management Systems...so, what is an environmental management system (EMS)? It is the procedures, controls and structure that an organization uses to deal with environment issues. By developing this new standard, organizations will have a common model to follow for environmental management, much the same as the way ISO 9000 provided a consistent approach for companies to follow in their pursuit of quality.

Companies will be motivated to follow the new standard for a variety of reasons, including the following:

- desire to save money by lowering inputs of raw materials (energy, water, packaging, etc.) and by reducing the volume of wastes generated (garbage, hazardous wastes);
- improved compliance with environmental regulations which reduces corporate and individual liabilities;
- demand from customers, particularly corporate clients, who may demand ISO 140001 certification as a condition of doing business; and
- lower environmental liability insurance rates.

In organizations which choose to follow the standard, engineers will no doubt have a key role to play. As the technical experts, who manage many of the processes which have the greatest potential to cause environmental damage, engineers will be expected to help lead the charge toward ISO 14001 certification. This responsibility shouldn't be seen as an overwhelming task. In most organizations, implementing the new standard won't mean turning your operation upside-down. Implementing the standard will be a matter of examining the existing management system (procedures, controls, and structure) and comparing it to the requirements outlined in the ISO 14001 standard. Companies can then make the modifications to their existing systems and fill-in the gaps where necessary.

The ISO 14001 standard does not attempt to set numerical parameters or targets that must be met. Instead of setting specific performance criteria, it prescribes management methodology. ISO 14001 sets the standard for your EMS in terms of five components: Policy & Commitment; Planning; Implementation; Measurement & Evaluation; and Review & Improvement. These components correspond very closely to classic management theory of the activity cycle (set goals, plan, act, check, and revise goals/plans). This approach is a sensible one which should receive wide acceptance. The standard seeks to ensure that environment issues are appropriately integrated into the business operation at all stages and provides a framework to continuously improve environmental performance.

Engineers employed with manufacturing or industrial companies can expect to hear a lot more about ISO 14001 and EMS over the next few years. The new standard should not be seen as a necessary evil foisted upon you by senior management, it should be viewed as a useful tool to improve your organization's environmental performance. While the terminology may be new, the concepts and principles are not. They are based on sound management theory and common sense. Engineers have an opportunity to be leaders in this area. It is an opportunity that should not be passed up. □

Letter to the Editor

Dear Sir:

Re: CSA Z768 implementation

When CMHC first introduced its Policy for Managing Environmental Risks, there were no standard procedures in place for environmental site assessments (ESA's). To facilitate the operation of its environmental policy, CMHC developed its own criteria for Phase I ESA's on all applications for mortgage load insurance under the National Housing Act.

In 1994, the Canadian Standards Association (CSA) published standard procedures for Phase I Environmental Site Assessments (ESA's). The Document, known as CSA Standard Z768, is now available in both official languages.

CMHC has amended its procedures to remove the CMHC criteria for environmental site assessments, and instead refers to the CSA Standard Z768 as the only acceptable criteria and standard. This advice was communicated to all approved lenders under the National Housing Act.

It appears that some lenders and many 'environmental consultants' have not heard of the Z768 standard and this is causing some concern in the industry. I would greatly appreciate your consideration of notifying your membership of this changeover so as to avoid difficulties in future mortgage loan insurance applications.

If you have any questions, please call the undersigned at 983-5661.

Denis Chénier
Principal Underwriter

Attention Electrical and Computer Engineers!

The Department of Electrical and Computer Engineering at the University of Manitoba has scheduled the 4th Year Thesis Day for Friday, 14 March 1997. In preparation for this day, we are inviting practising engineers in the community to come and join us in the judging of undergraduate presentations.

If you are interested in taking part as a Second Reader (External Examiner), please contact: Judy Noble at 474-9603, or e-mail: jnoble@ee.umanitoba. □

Wanted:

Engineers employed in flexible working arrangements.

The APEM-WEAC (Women in Engineering Committee) is soliciting for information about flexible working conditions. The committee is in the process of developing a reference document that would be utilized by engineers and employers who want to know more about flexible working conditions. Flexible working arrangements may include:

- telecommuting
- flex hours
- part-time work
- job-sharing
- on-site day care
- others

If you are currently employed in any of the above work arrangements or have other information that may contribute to the document, please call Kim Koshelanyk at 474-4094 or send the information directly to the APEM c/o WEAC, Kim Koshelanyk, P.Eng. Your assistance is greatly appreciated. □

Biosystems Engineer Develops Automated Grain Identification System

A new automated grain identification system developed by a team of University of Manitoba engineers may help the grain industry to monitor the quality of grain being exported. The team consists of Professor Digvir Jayas (leader), Professor Ross Bulley, Dr. Trevor Crowe, Dr. N. Shashidhar, Dr. P. Shattadal, Mr. Samir Majumdar. Mr. X. Luo, Mr. M. Nair, Mr. Andy Eu and many other undergraduate students.

Now in the prototype stage, the machine vision system differentiates between wheat, oats, barley, rye, durum and some dockage components in grain samples, effectively eliminating the potential for costly identification errors, explained biosystems engineer Digvir Jayas.

After further development, the automated system will be able to identify and assist in the grading of grain at several points along the handling process, from delivery by the farmer right to loading onto ships at port, said Jayas.

The system – which consists of a vacuum sampler, a linescan camera and computers – takes about three metres of table space, but Jayas envisions it can become more compact in the manufacturing stage.

Using an automated system has several advantages over the current human inspection process, said Jayas. The system provides consistent and objective analysis of the contents of samples and it can be used to continually monitor the loading of grain onto a ship. Also, if the system is used to unload rail cars, it could cut costs by reducing the number of employees needed to open grain cars and identify the contents.

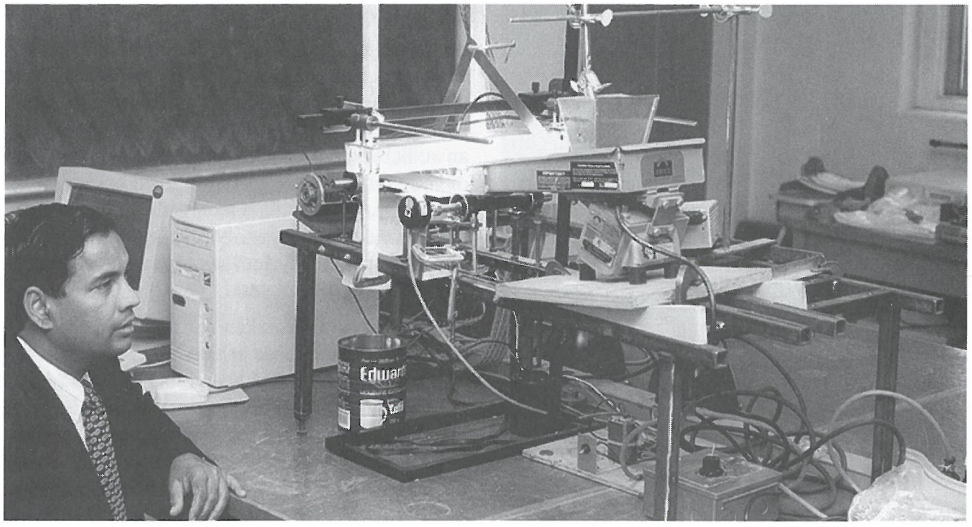
Even though the automated system can assist in the actual grading of the grain (since it does measure some of the variables considered in grading), Jayas noted that it will not in the foreseeable future replace human grain inspectors, who use many fine distinctions for grading grain. Grade is determined by many factors, such as frost damage, fire burn, and the presence of mildewed kernels or fusarium head blight – variables a human eye can detect easily, but for which a machine would require many measurements and computations, said Jayas.

The system was tested this summer in the laboratory and can process a 250 gram sample of grain in about five minutes.

At the receiving stage, the machine vision system can identify the grain and direct it to the proper bin.

Using the system at the ship loading stage could potentially avoid costly errors, added Jayas. Because the system can continuously monitor the grain as it is being loaded on the ship, it can ensure the correct specification of grain is being shipped.

For more information please contact Digvir Jayas 474-6292. □



Digvir Jayas with Prototype Grain Identification System.

The APEM Info Line is On-Line

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

On Friday, October 25, 1996 APEM entered the information age with our new Info Line. This service will allow us to bring up-to-date information to our members and also reduce our postal costs. No longer will your issue of the Manitoba Professional Engineer be in an envelope stuffed with a dozen other sheets of paper. Starting early in 1997, with each issue of the MPE you will receive one page listing the current events (breakfast meetings, luncheon meetings, seminars, etc.) in capsule form. Use the Info Line – 452-0144 – to retrieve the full information by FAX. If you do not have access to a FAX machine, you can listen to the text of the information. You can also use the info line to register for an event or to leave a message for the APEM staff.

To use the Info Line, dial 452-2449 and follow the voice prompts to receive the desired information. You will need a touch-tone telephone to fully use the Info line, but you can leave a message for the APEM staff without touch-tone.

The Info line is available 24 hours a day, 7 days a week, and is updated as soon as new events are planned or confirmed – so please call every few weeks, and see what's new.

APEM Info Line: 452-2449 □

Historical Engineering Landmarks Project: Parks Canada

Call for Nominations

In order to increase public recognition and awareness of Canadian engineering achievement, Parks Canada is seeking nominations of sites to be included in an inventory of outstanding pre-1955 Canadian Historic Engineering Landmarks. Parks Canada has retained Commonwealth Historic Resource Management, in association with Dr. Norman R. Ball, to survey and assess engineering landmarks of national significance for potential commemoration by the federal government. This Association's Public Awareness Committee has agreed to assemble nominations and forward them on behalf of APEM.

To be eligible for consideration, a landmark should be at least one of the following:

- a recognized engineering achievement in itself
- representative of a type of structure or work that played a highly significant role in Canadian engineering
- illustrative of a major technological advance
- associated directly with the work of a renowned Canadian engineer or master builder
- an engineered, clearly defined, geo-cultural area of national importance – a 'cultural landscape' formed (or transformed) by an engineering project

To nominate a landmark, please send its name, a brief description (including its location, relevant dates, and names of engineers involved), a short explanation of why it is an outstanding achievement, a photograph (if available), and any available references to known written material, to the Public Awareness Committee, care of the Association office. □

Limiting Disclosure of Secrets in Environmental Audits

By: B.J. Stammer
Reprinted with permission from Dec./ Jan. 1995 Western Commerce and Industry Magazine

Environmental Audits are now commonly accepted as the first step in environmental due diligence. Their wide use, however, in no way reduces the anxiety created in awaiting the results, for an audit may reveal certain environmental sins of which no one in the world is aware, except those who have seen the report.

To maintain the confidentiality of environmental audits, it is often suggested, most of the time by lawyers themselves, that the environmental audit should be commissioned through a lawyer in order to benefit from the solicitor-client privilege. This article examines the decisions of two recent cases dealing with the solicitor-client privilege as it applies to environmental audits and concludes that the privilege creates a false sense of security for business people.

The challenge: to construct the world's tallest building, 1250 feet, in just 18 months using 1930's technology. Impossible?

In 1931, the Empire State Building was substantially completed after just 18 months of construction. Utilizing nearly 60,000 tonnes of structural steel, its 102 stories were erected incredibly fast. Many of the steel beams members were secured in place only three days after rolling out of the steel mill in Pittsburgh. This is a testament to the ingenuity, precise planning and determination of the engineers and architects who designed and managed the project. It is also an impressive reminder of what can be achieved.

"By asking the impossible, we obtain the best possible"

It is useful to briefly examine the policy reasons behind the solicitor-client privilege. A fundamental principle in the law of evidence is that all relevant proof is admissible. This principle exists to assist the court in ascertaining the truth. One exception to the principle is the solicitor-client privilege. The law understands that a client must be able to communicate freely with his or her lawyer without fear that what is said may later be used in evidence against him or her. However, the privilege applies only to communications in which legal advice is sought. The mere fact that a person is speaking to a lawyer affords no protection in and of itself. In the environmental context, an audit received by a lawyer from the client and directly related to the giving of legal advice is privileged. If the audit is received by a lawyer from a consultant, it is only privilege if it was obtained specifically for the preparation or in contemplation of a court case.

Most environmental audits, however, are carried out for the purpose of obtaining information of a general nature, with the giving of legal advice only an incidental consequence. Whether the audit is requested by a lender, an insurer, a purchaser, a vendor, a director, an officer or an operating business, in the vast majority of cases, the primary objective is to assess the environmental quality of the asset. While it may be that certain legal advice is sought in respect of the results of the audit, rarely is the audit obtained exclusively to allow the lawyer to render a legal opinion or to support the preparation of a court case. For practical purposes, therefore, circumstances will seldom be such as to give rise to the application of the solicitor-client privilege. It is rather through commonsense steps that the confidentiality of an environmental audit may be maintained.

In the August 1992 case of R. v. McCarthy Tetrault, an investigation was undertaken by the Ontario Ministry of the Environment in respect of alleged spills of waste at the Lafarge Canada Inc. cement plant in Bath, Ontario. An environmental inspection officer obtained a search warrant to seize certain documents from McCarthy Tetrault, who were the lawyers of Lafarge Canada. The law firm asserted that the documents were protected from seizure by the solicitor-client privilege based on the circumstances set out below.

In July 1991, a meeting was held at the Bath facility. A lawyer from McCarthy Tetrault was present at the meeting, along with the facility's environmental manager and other senior managers of the Lafarge group of companies. The meeting was referred to in a reminder notice as an "environmental audit" and the lawyer's role was stated as "the recorder and keeper of the information developed". This was an important qualification, for if the lawyer were merely acting as secretary of the meeting, the privilege would not apply. On the other hand, if the purpose of the meeting was for the lawyer to receive confidential information and provide legal advice, the privilege would apply.

The lawyer, of course, insisted that regardless of what was stated in the reminder notice, he attended the meeting for the purpose of giving legal advice on the compliance of the facility with applicable environmental laws and regulations. Consequently, he maintained that his notes and memoranda from the meeting were protected by the privilege. The Ministry, however, argued that the meeting was conducted for internal corporate purposes only. It argued that the results of the meeting were intended to be shared widely both inside and outside the company and were not, therefore, protected by the privilege.

The Ontario Court of Justice noted that it must exercise caution in according privileged status to the lawyer's notes and memoranda. It must, after all, be remembered that the privilege interferes with uncovering the truth. The court, however, found that the lawyer had in fact prepared a written legal opinion which was circulated only to those who had attended the meeting. It was held that the purpose of the meeting was, in fact, to determine the environmental compliance at the Bath facility and that the documents seized from Lafarge's lawyers were protected by the solicitor-client privilege.

Then, in September 1992, a less favorable decision was rendered by the Federal Court of Canada. In the case of Gregory v. Minister of National Revenue, a British Columbia lawyer represented Geddes Contracting Co. Ltd. in connection with an asset acquisition of Grand Bell Property Ltd. The lawyer later received a "Notice to Provide Documents and Information" from the Department of National Revenue. The lawyer claimed the solicitor-client privilege in respect of certain documents, including an environmental audit. In a sworn affidavit, the lawyer stated that the environmental audit report was obtained by him on behalf of his clients in order that he could provide his clients with legal advice.

The environmental audit was carried out in connection with a property located in Surprise, Arizona. The court held that notwithstanding that the audit was conducted at the request of the lawyer and that it may have been partly relied on by the lawyer to prepare a legal opinion, the privilege did not apply to the audit report. The solicitor-client privilege only applies to communications between a client and his or her lawyer wherein a legal opinion is given. However, documents upon which a legal opinion is based, such as an environmental audit prepared by a consultant, are only privileged if they were prepared in contemplation of litigation.

To date, these are the only reported Canadian cases dealing with the solicitor-client privilege as it applies to environmental audits. It can be seen that application of the solicitor-client privilege to environmental audits is extremely limited. The report of an environmental audit should be han-

Continued on page 15

1996 Annual General Meeting

The Engineer as an Employee/ Independent Contractor and Financial Liability Discussed at AGM

By: C.P. Gray, P.Eng.

The Annual General Meeting Committee organized an information session with Mr. Wells Peever, LL.B. and Mr. Richard Swystun, LL.B. Mr. Peever and Mr. Swystun practice law in Winnipeg. Incidentally, both Mr. Peever and Mr. Swystun have degrees in mechanical engineering.

Mr. Peever discussed "The Professional Engineer as a Contract Employee", first defining a "contract employee" and later an "independent contractor". Simply put, contract employees are employees with written contracts stipulating their employment conditions. Mr. Peever stressed that contract employees are still obligated to pay payroll deductions such as employment insurance, CPP and income tax. Contract employees commonly have a specified work term, non-competition agreements, confidentiality agreements and specified fiduciary duties. When the contract expires, there is no obligation for the employer to extend the employment, give notice of termination or pay any severance. (This is unlike a regular employee who, in addition to entitlement to company benefits, is entitled to at least one pay-period of notice for termination of employment without just cause, and perhaps severance pay.) Nevertheless, if a contract employee whose contract has expired continues to be an employee, he or she may have the new status as a regular employee.

The independent contractor is a business entity unto himself or herself. The distinction between an independent contractor and an employee is simply stated as a contract for services as opposed to a contract of services. The traditional tests for determining whether one is an independent contractor is exclusivity of services, ownership of equipment, risk of losses or profit, where and how the services are provided, and who controls the performance of the services. The primary advantage for an engineer to be an independent contractor is to reduce income taxes (income is taxed at a business rate as opposed to a personal income rate), eliminate payroll deductions and claim business expenses. Revenue Canada has challenged the status of "independent contractors"; however, the courts have upheld many independent-contractor arrangements and have established that the fundamental test is whether the contractor is indeed independent from the company with whom he or she is dealing. For example, proof of this independence can be established by illustrating previous business dealings with other businesses. By use of a corporation, business income could be flattened out over the life of the corporation. The biggest disadvantage for an engineer being an independent contractor is that he/she assumes greater liability for his/her work. Secondly, independent contractors tend not to contribute to worker's compensation plans and, as such, have no insurance for work-related injures.

Mr. Swystun discussed "The Employee Engineer and Financial Liability". He pointed out that in civil cases involving professional liability, there are two main causes of action ("the facts which give a person a right to judicial relief"): breach of a contract (dealt with under the Law of Contracts) or negligence (dealt with under the Law of Torts).

Since most employee engineers do not have direct contracts with their employers' customers, they are typically not exposed to actions for breach of contract. Generally speaking, under the Law of Contracts, only the parties to a contract may sue or be sued for breach of contract. Employee engineers are therefore more likely to be sued for negligence, either as a result of negligent acts or negligent advice.

It is quite common for a plaintiff's lawyer to use a "shotgun" approach when naming the parties to an action. This is done to attach liability wherever it may properly stick and to maximize the number of people that the plaintiff's lawyer will be entitled to examine for discovery. As a result, it is quite common for employee engineers to be sued along with corporate employers.

Mr. Swystun pointed out that it is possible for an employee to be found liable under the Law of Torts to his or her employer's customer, even if the employee is merely fulfilling the very actions called for under the employer's contract with the customer. Mr. Swystun explained, however, that in cases involving the liability of employee engineers, the law is less clear. Where the tort of negligent misrepresentation is alleged, the liability of an employee engineer will, to a large extent, be dependent upon the degree to which the plaintiff relied upon the individual engineer. To illustrate these points, Mr. Swystun referred to several recent court decisions.

In his concluding remarks, Mr. Swystun suggested that an employee engineer should investigate the adequacy of any professional liability insurance policy that his or her employer might have in place. Ideally, such insurance should protect the employee engineer from exposure to both the plaintiff's claim for damages and the costs of defending the claim itself.

Despite being a Friday afternoon session, both Mr. Peever and Mr. Swystun kept the audience's attention with their enlightening presentations, wit and humor. The AGM Committee should be commended for a well-organized and informative session. □

Limiting Disclosure of Secrets in Environmental Audits

(Cont'd from page 14)

dled like any other sensitive information in the company. The fewer the people who have knowledge of the results, the less likely there is to be a leak of information to third parties. The following steps might, therefore, be taken to preserve the confidentiality of information contained in an environmental audit:

- Restrict copying and avoid loose distribution of the audit report and related documents.
- Mark the word "confidential" on environmental audit reports, working papers, correspondence, memoranda and related documents in order to avoid inadvertent disclosure.
- Mark the word "confidential" on deeds of sale, deeds of loan, offers to purchase and related contracts which make reference to the environmental audits.
- Require distributed copies of sensitive documents to be returned to a central location once reviewed and analyzed.
- Place all confidential documents in a separate file to be stored in a safe place.
- Limit access to confidential documents.
- Convey the duty of confidentiality to third parties involved in the particular transaction and the audit process.
- Require environmental consultants to sign a confidentiality agreement.
- Do not publicize, whether internally or externally, the fact that an environmental audit is being undertaken.

Of course, the manner in which the results of an environmental audit are handled will vary with the circumstances. Where serious problems are discovered, it may be necessary to divulge the results to a large number of people in order to effect proper remediation. In other cases, however, the audit may reveal minor problems that the parties are willing to live with. In such cases, maintaining confidentiality becomes all important; for while it is not an offence to know of existing contamination, the possibility that a clean-up order will be issued is always present. □

Brian J. Stammer practices environmental law with the firm of Colby, Monet, Demers, Delage & Crevier in Montreal, and is the author of the book entitled Guide to Environmental Due Diligence.

Did You Know...

Sterility: Food in question

Male fertility has been falling for several dozens of years. Researchers at the Medical Research Council, in Edinburgh, have concluded a study indicating that such things as the packaging for food, nipples for baby-bottles, and containers for preserved fruits carry chemicals that reduce the fertility of male rats, even when the concentration of the chemicals is one-third of that permitted for use by the British food-industry. □

Dealing With The Bad Client

(Cont'd from page 6)

Warning Signs

Clients with unrealistic and unalterable expectations

The client has $500,000 yet wishes to construct a $2,000,000 building. There is no point in proceeding until the client recognizes that the expectations are unrealistic.

Highly speculative projects

This relates to the earlier point about the impecunious client. If you are uncertain as to the financial stability of the client, ask for a financial statement and other documentation to support the client's ability to take on a speculative project.

Litigious clients

There are a number of clients who are known to be litigious and these are the types you will want to avoid. Although initially the project may seem profitable, the time you spend attempting to avoid claims and resolve financial disputes will erode your fee to such a degree that the project becomes unprofitable.

Inexperienced clients

There are many clients who are venturing into the development/construction market for the first time. This type of client will require a considerable amount of coaching and communication. It is important that this type of client be given as many choices as possible, along with all the necessary engineering advice.

Partial fees and partial services

This leads to a substantial number of claims. The best situation for any design professional is to undertake full design and field services. By performing full services, the design professional has a better opportunity to remedy and resolve any problems at a reasonable cost and avoid ending up in litigation.

Ill-conceived projects

If you are retained to provide a design on a project that appears to be questionable, it should not surprise you if you are subsequently involved in claims and litigation.

How to Alleviate the Problem of the Bad Client

The engineer's liability to the client and the public arises in two areas: first, through the contract with the client; and second, to third parties in instances where no contract exists. The second category of liability is difficult to control because there is no contract and therefore the claim arises through negligence. Assuming that the aim is to have a properly written contract in place, such a contract should address the following:

Liability

The contract should contain appropriate limitations of liability with respect to:

- *The amount of the claim that can be advanced by the client.* This should be limited to the amount of insurance that is available at the time the claim is made.
- *The time period in which the claim can be advanced.* There are many contracts that contain clauses limiting liability between the client and the engineer to one year from the date of project completion or, alternatively, one year from completion of engineering services.
- *Allocation of risk.* The contract should ensure that risks are appropriately allocated to the party best able to bear that risk. The engineer should not accept risks that are not properly defined.

Design risks

There are many instances when choices arise as to the materials or methods of construction to be used, with the risk of failure decreasing with the use of higher quality products. The client should be informed of the various options and their associated costs and risks so that the client can make an informed choice.

Field services

The extent and amount of field services to be performed by the engineer should be carefully defined. If the field services are to be limited in any way, the client should be advised of the risk, and acceptance of such risk by the client must be confirmed in writing.

Conclusion

The following should be kept in mind when dealing with bad or difficult clients:

- Always establish open lines of communication. Keep the client informed of all options, problems and other factors that affect the project;
- Ensure that the client is fully aware of your mandate and the services that are to be performed pursuant to that mandate;
- If risks are to be allocated to the client, ensure that the client accepts those risks in writing;
- Beware of financially unstable clients and developers;
- If possible, use standard contract documents;
- Obtain independent advice if you are requested to enter into a non-standard form of contact; and
- Ensure that you negotiate reasonable limitation clauses in your contract.

If the above steps are followed, they may well assist you in avoiding the pitfalls of dealing with the difficult or bad client. □

Glenn Urquhart is a partner with Singleton Urquhart Macdonald. He has a degree in Mechanical Engineering and as a lawyer has practised in the field of construction law for approximately 25 years, representing owners, contractors, architects and engineers. Mr. Urquhart is also an adjunct professor at the University British Columbia where he teaches a course in construction law.

Did You Know...

Alcoholism of children makes bubbles

Cola Lips, a drink made by the Lanchester Group, is now on the American market. This cola-based drink contains a semi-sparkling wine that puts the alcohol content of the drink in the neighbourhood of five percent which the article says, is what one would find in a "quite strong beer". The Sunday Times has established that there are children who cannot detect the alcohol because it is masked by the sugar and cola. □

Coming Events

CSCE/ASCE 1997

Environmental Engineering Conference

July 22-25, 1997, Edmonton, Alberta

For more information:
Phone: (403) 487-8102
Fax: (403) 487-2417
E-mail: canaglob@compusmart.ab.ca

Stormwater Management Modeling Retreat

February 17-21, 1997, Toronto, Ontario

(A) three graduated hands-on workshops on the USEPA SWMM model, with PCSWMM for Windows (Feb 17-19), and

(B) conference on Stormwater and Water Quality Management Modeling (Feb 20-21).

For further information and to submit abstracts or displays (deadline Jan. 30), contact:

Lyn James at CHI, 36 Stuart Street, Guelph, ON.
Phone: (519) 767-0197
Fax: (519) 767-2770
E-mail: info@chi.on.ca
Internet: http://www/chi/on.ca

WCWWA Workshop

Design & Construction of Lagoon Liners

February 5-6, 1997, Norwood Hotel, Winnipeg
Cost: $200 (members) and $225 (non-members) plus GST.

To register, contact:
WCWWA, Box 6168, Station A
Calgary, Alberta T2H 2L4
Fax: (403) 258-1631

For information, contact:
Mike Van den Bosch, Manitoba Environment
Phone: (204) 945-7015

Call for Papers

Spring 1997 Conference on Stormwater and Water Quality Management Modeling

Feb. 20-21, 1997, Toronto, Ontario.

Call for Papers: Abstracts for papers are solicited on the use of state-of-the-art computer models for resolving real pollution problems and for eco-restoration and related surface water, stormwater and pollution management modeling etc.

Deadline for abstracts: January 30, 1997.

Call for Displays: Requests to display equipment, instrumentation, publications, and other material should be sent to Lyn James, CHI, 36 Stuart St. Guelph, Ontario N1E 4S5.

Phone: (519) 767-0197
Fax: (519) 767-2770
E-mail: info@chi.on.ca
Internet: http://www.chi.on.ca