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Alberta Clinical Engineering Society Newsletter

23- Nov-98

Volume 6 Number 3

Presidents Letter

A quiet finish to a hectic and taxing year.

by Brandon Beaudry, President

The Y2K deadline has passed. Congratulations all round for a project well done. As a reward ACES invites everyone to a relaxing evening of socializing and dinner. We will start with a little Eggnog to set a festive mood. Then sit back, relax and discuss the past present and future of your Society. Come and experiment with some of the latest technology as we **Video Conference** between Edmonton and Calgary on a 6 channel line on **December 11**.

The past year has been hectic and taxing on everyone working hard to meet the October 31 deadlines. In addition the ACES executive members played host to the National Clinical & Biomedical Community as we joined with CMBES to help make another National event a success. This event proved successful for both groups but perhaps the most exciting and significant event came at the close of the conference as the chairmen of 4 distinct societies sat down together to sign the **"Memorandum of Understanding"**.

The signing ceremony served to demonstrate the common understanding of the importance of cooperation and

improved levels of communication. We recognize that each society whether Provincial or National is here for the same purpose, to serve their members and improve and further the fields of the Medical Technologies. A copy of the "Memorandum of Understanding" has been enclosed.

It has been a pleasure to serve as president for a second year. I look forward to seeing everyone at our final meeting of the year. I hope you will accept our hospitality as we reward you our members for your continued support.

THE FINAL 1998 ACES DINNER MEETING

See the Announcement
Page 3

The CRHA Update

by Denny Mellott

Things are going well in the Calgary Regional Health Authority. Our new regional paging system is now in operation with 3 of our 4 sites now on the system, the fourth site (Foothills) will be on the system in the near future. The Peter Loughheed Centre has received the go ahead to upgrade its nurse call system. The long awaited equipment control program has been decided on, apparently Archibus will be in full use by April of 1999. The Airdrie Regional Health Centre officially opened on November 14, 1998. For details visit the CRHA homepage: <http://www.crha-health.ab.ca/news/airdrie.htm>. On the Year 2000 front we have tested approximately 6000 pieces of equipment please see the accompanying article.

CRHA Year 2000 Update

by Dave Edmonds

Testing of all high risk equipment is complete. Diagnostic imaging equipment testing is also complete. Floor by floor audits have been completed at the Peter Loughheed, and Rockyview. The Foothills

floor by floor audit is 95% complete. Children's is finishing off their first audit and testing of equipment. The number of pieces that are non compliant or waiting for software is approximately 10%. Some companies still haven't decided what they are going to do but decisions are expected in the 4th quarter of 1998. We didn't find any equipment that when tested wasn't able to be reset and put back into operation. Clean management practices are now in place in the hopes of not compromising the testing that has been done.

Days In The Lives of Private Entrepreneurs

by Robin Fair - Innovex

Companies similar to ours are like any living organism. We must constantly find new sources of revenue to replace those that fail to produce. We have no guaranteed revenue base, no guaranteed equipment base. This means we must be selective about what we service-- what will the training cost, will there be sufficient installed base to make revenue to cover the training expenses.

Deciding what we will work on can also be illustrated by an analogy. Biomedics at a hospital or other public institution travel with it-- that is you must learn to support whatever technology and procedures the institution chooses. The common bond is that you are on a team that works toward providing some level of health care and associated procedures. The private company, on the other hand, travels across the variety of companies and institutions, forming partnerships where it can. Here, the common theme is that the work we secure is of a certain type-- produces revenue in excess of expenses, is interesting and/or challenging, utilizes our strengths, where customer quality standards are the same as our own. Our teams deliver service to a standard that is set by our clients in a variety of industry sectors.

Our company, and others similar, provide an array of service -- rehab and physiotherapy compliance checking, rural hospital quality assurance for biomedical

and lab instrumentation, certification to national standards for clients accredited under ISO9000 systems, medical gas systems checking, bulk sterilization systems, agricultural electronics, industrial lab instrumentation, laser (surgical and therapeutic), parts procurement for various hospital and other institutions as well as represent, as service and parts reps, large and small domestic and foreign manufacturers. We deliver this service in many places -- Innovex has serviced from Florida to California to the Arctic Circle, traveling on anything from snowmobiles to client Mercedes to single engine Cessna (the most exciting trip I can recall is 200 feet over the Great Slave River in a light snow storm-- the cracks I heard were chunks of ice falling off the wing and hitting further back on the fuselage!).

As private companies, we take a keen interest in planning for the future, on what is happening south of the border. The current challenge is the merger and acquisition activity that has resulted in some much larger companies -- Beckman Coulter, Ohmeda-Engstrom, Hill Rom Airshields. Two Canadian biomed service companies have been recently purchased by large American entities. Similar changes are happening in the US. Warnings are being published by at least one supplier to the biomed small business community that we better be prepared for changes.

Speaking of teams, there are some possibilities that may soon be considered between private and public employees/service providers--that means "you" and "us". We both have specialties that the other cannot easily match, for many reasons including some stated above. As evolution in the Alberta health care system continues, we expect that you will see us more in your hospitals, not taking work you want to do, but performing work that you no longer can or want provide, due either to response time or cost constraints. We are cruising for opportunities and generally are able to provide "repair shop at your site" style service that is more and more needed with the current Alberta setup. Conversely, to provide support for clinical procedures/systems (patient, practitioner, environment) is not a service we can provide as smoothly or for as low a cost as the in-house service provider.

Yes, some rambling and no predictions for the future. The intent I have is to

suggest that all of us must be prepared for more change. Reducing the stress of change means, as in any area of our lives, we must exercise for it, prepare for it, visualize how things could be with scenes of ourselves in favourable positions to be able to grow career-wise and in job contentment.

I welcome your comments-- you can reach me at innocalg@telusplanet.net, 403-259-4332, Innovex #9 5918 Fifth Street S. E., Calgary, T2H 1L4.

Regards.....

Editors Note: ACES would like to make updates for the private sector a regular part of our newsletter. If you would like to submit an article please contact Denny Mellott by email: denny.mellott@crha-health.ab.ca phone: (403) 670-1419 or Brandon Beaudry email: bbeaudry@cha.ab.ca phone: (403) 492-6711.

Submissions from all ACES members are always welcome !

Naitline

by Ron Van Vliet

Greetings from NAIT's Biomedical Engineering Technology Program. The class of 1998 is out the door and reporting good job hunting, with a real diversity in paths chosen. Two grads are planning careers with our nation's Armed Forces, one is involved in manufacturing within the Rehab Engineering Field, two have joined Red Deer Regional Hospital's Clinical Engineering team, one is with QEII up in Grande Prairie, another is working in a temporary full-time capacity with Gary's group in Calgary, and yet another has targeted (with apparent success) a career down under. One grad has returned to add a Network Engineering Technology diploma to his BET designation, while a couple of students are working to clear up deficiencies remaining from their first two years, in order to receive their diplomas (not unusual considering the pace here at NAIT).

We are undergoing substantial change in curriculum and delivery methods in all

the Electronics Engineering Technologies. Digital Electronics is now being offered in the first semester (used to be second), to allow a PC maintenance course in the second semester, thereby hopefully increasing the marketability of second semester students for summer employment. Meanwhile, both Digital Electronics and Basic Electricity will be offered via Learning Space (computer-based training) to the January intake of Computer Engineering Technology students. Eventually all streams will benefit from this on-line delivery, designed to let students work at their own pace within an interactive learning environment. In January, first year BET students will be receiving a new "250" course (the dreaded assembly language programming), in a format which combines the previous "250" and "350" courses, and minimizes the amount of assembly language programming covered. The course culminates with each student developing a patient simulator on a micro-controller board. This approach will not only provide a more application-friendly approach for our students (which should bolster their practical skills), but it allows us to carve out a bit more time for training in Biomedical Instrumentation, complete with the associated Physics.

In other news, the BET program has a new name: "Biomedical Engineering Technology", instead of the previous "Electronics Engineering Technology-Biomedical". While this change means a grad's diploma will no longer make reference to Electronics Engineering Technology, the higher profile within NAIT which results should help the program continue to develop a unique identity. We will be able to more effectively market our program under its new name, and hope to retain our flexibility with respect to transfers between other electronics streams.

As is the case in health care institutions, post secondary educational organizations must undergo periodic accreditation. NAIT has been working with the Canadian Technology Accreditation Board (CTAB) to coordinate an accreditation visit that allows the five streams within the Electronics Engineering Technologies to be accredited at the same time. This process will be initiated in early 1999, with site

visits to occur in a year's time. In order for grads of our programs to be recognized across Canada (and in other countries), we must satisfy the accreditors that we are teaching the competencies identified as critical to your profession.

As a last note, NAIT continues to be measured by the Key Performance Indicators (KPI's) set forth by the Department of Advanced Education and Career Development (AECD). These measures are being applied at a program level, with each program receiving "report cards" measuring them in the areas of grad satisfaction, grad to quota ratios, student attrition, growth in # of FTE's in program, and graduate placement statistics. We are currently involved in process reviews to determine how best to address our most challenging issue—student attrition. As any of you who completed technical training at NAIT or SAIT are aware, attrition has historically been very high, as a direct result of the quantity of competencies we must deliver and the difficulty of the materials our students must master (I remember attrition rates of 40 percent, even way back when I graduated). If any of you past grads have ideas of how we might lower our attrition rates, while maintaining the standards in our programs, we'd sure welcome your suggestions!

RFP, RFQ, RFI?

by Alexander Sackiw, B.Sc.

What are they?

They make for interesting reading if you are a Biomed Tech, Engineer or Manager. This information was originally presented at the ACES Conference in Calgary (November, 1997) as the do's and don'ts of medical equipment acquisition. The numerous requests for copies of the lecture prompted my attempt to publish the information in three parts in the ACES Newsletters of 1998. However, due to the limited space in the newsletter, I found it impossible to condense without the loss of critical information. You probably read the first article already. You can find the entire document complete with examples on the ACES Homepage: [\[ualberta.ca/~aces/\]\(http://ualberta.ca/~aces/\). This information is based on actual equipment evaluations and purchases and is presented in the hopes that others will benefit from it. Distribute it freely if you find it of value.](http://skynet.uah.</p></div><div data-bbox=)

The Video Conference Experience

ACES Annual General Meeting and Christmas Dinner

Your are cordially invited to:

The Joseph Dvorkin Video Conference Centre

2G2.07

Walter Mackenzie Centre

University of Alberta Hospital Site

8440-112St.

Or

The Astra Video Conference Centre

University of Calgary

Faculty of Medicine

Heritage Medical Research Bldg

Gnd Floor Room 381

1403-29 Street NW.

**Friday December 11
4:45 to 6:30pm
Dinner begins at 5:00pm**

Please RSVP to
bbeaudry@cha.ab.ca
or call Brandon @ 445-6330
or sam_itani@crha-health.ab.ca
call Sam @ 670-1985

Literature Directly Relating to Mercury Spills in Neonatal Incubators

The following is a summary of the literature search completed by Orrin Stephen, Research Assistant for Clinical Engineering Services, CHA.

The object was to determine the acceptable levels and occurrences of Mercury poisoning as it relates to Neonates and Neonatal Incubators.

"The first study, and probably the most scientifically rigorous, was by Waffarn and Hodgman (1979). They sampled mercury vapor levels in 42 infant incubators and found that half of the incubators of that model were contaminated. In 3 of the patient compartments mercury vapor levels were recorded at 50 mg/m³ (which is the current occupational health and safety limit for an adult worker over an eight hour day.

Approximately one year latter, McLaughlin et al published a report of an infant exposed to mercury vapor from an incubator which is the only documented case of an infant acquiring mercury in their system from an incubator. In 1997 Thigpen and Sexson published an article about mercury vapor in incubators due exclusively to thermometers used on the infants and discovered that 2 of the 38 isolettes they tested had detectable levels of mercury vapor above the Environmental protection Agency standard of 1 mg/m.

An important fact that is typically cited is that "approximately 80% of inhaled mercury vapor is retained. The retention occurs almost entirely in the alveoli. Some of the mercury is deposited in the brain; how much

depends on the oxidation rate of the mercury vapor. It also accumulates in the thyroid, pituitary, brain, kidney, liver, pancreas, testes, ovaries, and prostate. Within the organs the distribution is not uniform. The accumulation in the brain and kidney also occurs at chronic low levels of mercury vapor exposure. Dental fillings made of mercury amalgams give off mercury vapor in very small amounts. Exactly how much depends on how many fillings there are, whether they are on a chewing surface or not, and how they are made. The estimated average daily intake of mercury due to amalgam fillings is between 3.8 to 21 mg/day. When exposed to chronic very low levels of mercury, the brain will have about twice the amount of mercury compared to people who are not, and the kidney would have nine time that amount.

The elimination of inorganic mercury follows a complicated pattern with biological half-times that differ according to the tissue and the time after exposure. The best estimate is that after short-term exposure to mercury vapor, the first phase of elimination from blood has a half-time of approximately 2 - 4 days and accounts for about 90% of the mercury.

This is followed by a second phase with a half time of 15 - 30 days. In tracer studies on nine human volunteers ... the half-time for most of the mercury in the brain was 19 (+-1.7) days during the first 35 to 45 days. ... {There is also} a very long half-time for a fraction of the inorganic mercury in the brain. This is in accordance with {autopsy} data from deceased miners and dentists. The half-time in the kidneys... was 64 days ... As in the case of the brain, a fraction of the mercury has a long biological half -time.

The biggest concern about low level exposures to mercury vapor is the neurological effects. The caveat about mercury vapor exposure to pregnant women is an important one, because the baby can accumulate mercury in the

womb. However, the pattern of fetal exposure may not be a simple incremental accumulation. A distinct accumulation of mercury was seen in the fetal tissue from day 12 of gestation with a pronounced uptake in the fetal liver and heart. The mercury concentration in the CNS was rather low in early and mid gestation but increased just prior to birth. ...In two pregnant women who had been accidentally exposed to metallic mercury vapor, the concentration of mercury vapor in the infant blood was similar to that in the maternal blood at the time of delivery. When the child is born exposure may continue, because mercury may be excreted into the mother's milk.

It is important to note that the addition of the methyl group (CH₃) to mercury substantially changes many of its characteristics. For instance, the main route for methyl mercury into the body is through ingestion, while only small amounts of organic mercury are absorbed by the stomach. In the case of mercury salts, (for instance HgCl₂ or Calomel) there have been quite a few exposure incidents in children due to the fact that mercuric salts were once used in teething powders and as an anti-microbial agent in diapers. There is a condition called acrodynia (or pink disease) which can develop in some children chronically exposed to mercury salts.

In relation to mercury vapor exposure itself the ATSDR states that: Children under 30 months of age appear to be at increased risk for pulmonary toxicity, and death may rapidly result due to pulmonary dysfunction. Conjunctivitis and erythematous, puritic rash have been reported with relatively mild exposures to mercury vapor."

Special Recognition

On behalf of Clinical Engineering, CHA, we would like to offer our congratulations to the following staff on their secondments and new careers.

Jeff Foster, BMET

The Renal Program has selected Jeff Foster to be the Project Coordinator-Northern Alberta Renal Program effective June 15, 1998, with the role continuing to March 31, 1999. Congratulations to Jeff on his selection and the continuing recognition of the outstanding skills and expertise we contribute to health care delivery in this region.

Jeromy Froehlich, BMET

The Adult Critical Care / Burn Unit program is undergoing massive construction and has selected Jeromy to be the Project Coordinator. He will be liaising with the Architects, Engineering firms, BMETs, Facilities Mgmt, Project Managers, Clinical users to help insure that this 14 million dollar project is completed on budget, on time, and meets the needs of staff and patients. Congratulations Jeromy.

Hue Quan, BMET

Hue has been employed at the UAH for 11 years working in the Renal Program. Hue has accepted a position to work part-time with the Regional Palliative Care program as a data analyst while he works on his courses and thesis for a graduate degree in Public Health Sciences. We wish him all the best and will miss his enthusiasm and hard work.

Roy Sharplin, BMET

Roy has accepted a teaching position within NAIT's Biomedical Engineering Technology program replacing Dave Burry who has moved into the role of Co-ordinator. As this program continues to change, we know that Roy will excel with the creativity, professionalism, and commitment he has demonstrated as a BMET at the Royal Alexander Hospital (RAH). He will remain on casual at the RAH.

Michael Mah, BMET

Michael was seconded in late 1997 and continues to fulfill the role as Y2k Co-ordinator - Medical Equipment and Systems. He has proved exceptional in his ability to bring together the evaluation and verification of over 30,000 medical devices/systems and the required testing of approximately 2900 of those devices/ systems. At this time, 928 medical devices/systems have failed our Y2k testing protocol. Michael will continue to play a major role in Clean Management, System IDs, Remediation Action, and Contingency planning. Thank you Michael for a job well done!!

Ray Cislo, P Eng.

Ray has accepted an offer from Alberta Labor to be a Safety Engineering Specialist - Ergonomics, allowing him to broaden his experience in at least three main areas of interest - incident investigation, ergonomic design, and writing of standards and policies. In these areas and many others, Ray has been an essential component of the Clinical Engineering team that we will miss. Congratulations Ray!

Newsletter Advertising

Are you interested in advertising your company and services? Then placing an advertisement with the ACES newsletter is an excellent way to reach the Alberta clinical engineering community. In addition, all newsletters are posted to the World Wide Web. Your ad will, therefore, be available to the international clinical community.

Advertising Rates:

One to two lines	\$50.00
Half Business Card 5.0cm x 4.75cm space	\$75.00
Business Card 5.0cm x 9.0cm space	\$100.00
Double Business Card 10.0cm x 9.0cm space	\$175.00

If you would like to advertise on the ACES newsletter or would like more information I can be reached at:

Denny Mellott
Clinical Engineering Department
Foothills Hospital
1403-29 Street NW.
Calgary, Alberta
T2N 2T9
Phone: 403-670-1985
E-mail:
denny_mellott@crha-health.ab.ca

Membership Application

To enjoy the benefits of ACES, and ensure that you continue to receive the ACES newsletter and meeting notices, **Become a Member Today!** Complete the following Information form, and return with payment in the amount \$10.00 to:

**The Alberta Clinical
Engineering Society**
c/o The University of Alberta Hospitals
Clinical Engineering Room 0D1.00
8440-112 Street
Edmonton, Alberta, T6G 2B7
ATTENTION: Brandon Beaudry, President

Name: _____
Hm Address: _____
City/Prov: _____
Postal Code: _____
Ph:() _____ Ext: _____
Email: _____

Business Information:

Company: _____
Position: _____
Department: _____
Room: _____
Address: _____
City/Prov : _____
Postal Code: _____
Ph:() _____ Ext: _____
Email: _____

New members receive a membership card and ACES PIN
Memberships are valid from January 1st to December 31st.
All members receive equal voting rights.

Newsletters by Email

ACES IS NOW SENDING ALL NEWSLETTERS BY EMAIL.

To be sure you are on the ACES E-mail list forward your Email address to bbeaudry@cha.ab.ca

All Newsletters will now be sent in "PDF" format. To Read a PDF file simply download an Adobe Acrobat Reader from <http://www.adobe.com/prodindex/acrobat/readstep.html>.

The Adobe Acrobat Reader soft-ware is free and available for all computer platforms. Use of this reader ensures that the document will print correctly format-ted on every system with no added expense. If you have any comments or questions about receiving or reading ACES E-mail Newsletters please feel free to contact Brandon Beaudry at 492-6711.

Archives of the ACES Newsletters are also available on the **ACES Web** sight listed below.

MEMBER "FEED BACK"

ACES is an organization dedicated to our members and the field of Clinical and Biomedical Engineering. As a member of ACES you are entitled to provide your input into the activities of the committee. Please forward all ideas and comments directly to a member of the ACES Executive. For a list of your executive please see the:

ACES Web Page @

<http://skynet.uah.ualberta.ca/~aces>.

Special Recognition

If someone you know has made an outstanding contribution to the field of Biomedical or Clinical Engineering please nominate that person by sending an email message outlining that contribution to bbeaudry@cha.ab.ca.

MEMORANDUM OF UNDERSTANDING

between
Canadian Medical and Biological Engineering Society
and
Alberta Clinical Engineering Society
and
Institute of Biomedical Engineering Technology
and
Clinical Engineering Committee of British Columbia

Whereas the Canadian Medical and Biological Engineering Society (hereinafter CMBES) and the Alberta Clinical Engineering Society (hereinafter ACES) and the Institute of Biomedical Engineering Technology (hereinafter IBET) and the Clinical Engineering Committee of British Columbia (hereinafter CECBC), recognize the importance of cooperation in working toward common goals and,

whereas the signatories recognize the need for open communication between their organizations,

this agreement is intended to provide a foundation on which the signatories can address issues and develop common solutions relative to professional development, education and public recognition.

By execution of this Memorandum of Understanding, the CMBES, ACES, IBET and CECBC agree to work cooperatively in the following areas:

1. to create links connecting each group's Web page and the posting of information on those Web pages in a common, transferable format,
2. to share each other's newsletters with each interested group,
3. to share updated organization directory information between the signatories,
4. to explore other areas of common interest for which information sharing and cooperation would be beneficial.

Each signatory agrees to put forward the name of one executive member of their respective organization to act as a liaison officer. The liaison officers will then act to represent their group in ongoing communications and in identifying common interests acceptable to all parties.

This agreement does not commit any of the groups to expenditures related to these activities.

Signed: June 30, 1998

CMBEC24, Edmonton, Alberta

Dr. Dennis Lovely, PhD, PEng
President, CMBES

Mr. Brandon Beaudry,
President, ACES

Mr. Alastair MacArthur, ASCT
Chairman, IBET

Mr. Martin Forbes, PEng, MBA
Chairman, CECBC

NOMINATIONS FOR ACES EXECUTIVE AND BOARD OF DIRECTORS 1999

We are soliciting nominations for ACES 1999 Board of Directors. These nine positions are open to anyone with an interest in the field of Clinical or Biomedical Engineering in the province of Alberta. Those who let their names stand for election at our annual general meeting must consider the time commitment necessary to do an effective job in their respective tasks.

The Board of Directors includes the following positions:

PRESIDENT: Chief Executive Officer of the Society. Chairs all meetings of Executive, Annual General Meetings, and General Meetings. Reviews all activities of Society to ensure that Society's policies are being carried out. May appoint committees to carry out the business of the Society. Ensures proper interaction between Society and government agencies. May not chair a committee.

VICE PRESIDENT: Fills in for President when necessary. May not chair or serve on committees.

SECRETARY: Attends all meetings of the Society and Board and keeps minutes. Responsible for sending meeting notices, keeping membership records, etc.

TREASURER: Responsible in handling Society's finances, account for funds of Society, keep books, provide financial statements at the Annual General Meetings or as otherwise required.

CHAIRPERSONS OF:

- **THE PROFESSIONAL DEVELOPMENT COMMITTEE,**
- **COMMUNICATIONS COMMITTEE,**
- **THE MEMBERSHIP COMMITTEE,**
- **THE SOCIAL COMMITTEE,**
- **THE NEWSLETTER/PUBLICATIONS COMMITTEE,**
- **AND THE EDUCATION COMMITTEE:**

These positions are assigned at the first meeting of the new Board from among the Board membership. Each committee chairperson is responsible to recruit a well-rounded committee membership.

In the space provided please provide the necessary information for each nominee. Each nomination should be signed by a member(s) of the Clinical Engineering community. Nominees are eligible to run for more than one office if they state the order of preference of offices. Nomination forms must have a short description of each candidate (no more than four sentences) attached to them. Completed nomination forms should be mailed, faxed or e-mailed to the President, and must be postmarked not later than October 31, 1997:

**The Alberta Clinical Engineering Society
c/o The University of Alberta Hospitals
Clinical Engineering Room 0D1.00
8440-112 Street
Edmonton, Alberta
T6G 2B7**

**ATTENTION: Brandon Beaudry
E-mail: bbeaudry@cha.ab.ca**

Nominee : _____

Organization/Address: _____

Description of Nominee: _____
: _____
: _____

Nominators (names and signatures): _____