

FALL 2003

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U of A Engineer

Keeping in Touch with Alumni

Hogg Wild
Over Vintacom

A Task of
Titanium
Proportions

The Brooker
Tool Kit

The Charm
of Sharma

Code Name
Habbakuk

Torchinsky

The Geotechnical Torchbearer

Ben Torchinsky
(Civil '47, MSc Civil '49,
DSc [Hon] '03)

Message from the Dean



As we move toward the 100th anniversary of the Faculty of Engineering, I'd like to make a few remarks on the proud legacy of our Faculty and our profession.

When I became acting Dean in 1994 and then Dean in 1995, I took on a proud tradition. I was excited about the responsibility and the potential.

Since then, there has been a watershed—well-respected academic staff members have retired and many new up-and-comers filled the ranks. Our graduates have become leaders in their communities and have made their mark on the economy locally, nationally, and internationally. The most visibly evident changes are in the many new Engineering buildings that set standards in technological sophistication, functionality, and aesthetics.

As this pace of change continues, what will yet be achieved? The future holds bright promise for the Faculty, the profession, and especially for our alumni. Thanks for your ongoing support and commitment to excellence in engineering.

Yours truly,

Dr. David T. Lynch (PhD Chemical '82), PEng
 Dean, Faculty of Engineering

U of A Engineer is the Faculty of Engineering Alumni magazine. It is published three times a year by the Dean's Office and is distributed to Faculty of Engineering alumni, friends, and staff.

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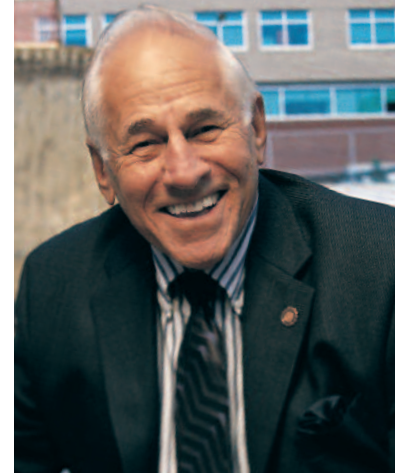
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Message from the Editor

I hope you enjoy the fall issue of U of A Engineer. This is the largest in the history of the magazine.

In this issue it's my pleasure to introduce Charlayne Bozak, an internship student (and now a graduate) of the Journalism program at Grant MacEwan College. I enjoyed her enthusiasm as she learned about the profession and met alumni. Her articles appear on pages 12, 18, and 24 of this magazine.

A new writer, new material... but what continues is the need for input from you, our alumni. Please feel free to call (780) 492-4514 with comments and suggestions. Your feedback to engineer.alum@ualberta.ca will continue to be an asset. Now, enjoy the magazine!

Sherrell Steele
 Publisher/Managing Editor



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A World War II secret project, code named "Habbakuk" got endorsement from high places and became an Alberta prototype.



HOW TO DESCRIBE BEN TORCHINSKY (CIVIL '47, MSc CIVIL '49, DSc [HON] '03)? AN ENGINEER, DEFINITELY. HE PIONEERED NOVEL METHODS OF FOUNDATION ENGINEERING, AND FOCUSED HIS INTEREST IN LEADING-EDGE CANADIAN TECHNOLOGIES INTO THE CREATION OF AGRA INC., ONE OF CANADA'S LARGEST ENGINEERING FIRMS.

by Connie Bryson

Torchin

The Ge

An entrepreneur, for sure. Torchinsky established the first cable television system in Western Canada, developed Canada's first canola crushing plant, and began plastic recycling years before it became an environmental imperative...to name only a few accomplishments.

Business visionary, no doubt. Torchinsky never backed away from tough business decisions including one to refocus AGRA from the diversified company it had become back to its engineering roots.

Not bad for someone who says he "never had a master plan. I just went wherever the winds took me."

Now the winds have brought him back to Alberta, if only briefly. In June, Benjamin B. Torchinsky received an Honourary Doctor of Science Degree from the University of Alberta, his alma mater. "It's an honour to be recognized this way. I have many fond memories of my time at university. Alberta provided a stimulating academic environment that inspired me to follow a certain path, however convoluted it turned out to be."



Sky

otechnical Torchbearer

Ben Torchinsky
(Civil '47, MSc Civil '49,
DSc [Hon] '03)

“You have to be a risk-taker to grow a business like this,” says Torchinsky.

“I stuck my neck out. I could never have done what I did otherwise...”

Although he started at the U of A in 1943, Torchinsky hadn't intended to finish there. He wanted to be a mechanical engineer and, at that time, the U of A did not offer a Mechanical program. Torchinsky decided to take two years of Civil and then transfer to the University of British Columbia or the University of Toronto.

“I finished high school in 1943. I was only 16, too young for the army, so university seemed to be the natural choice. I made my decision to take engineering based largely on what I didn't want to be—doctor, lawyer, accountant—but I was always interested in science. My father had a scrap metal and used auto parts business in Calgary, so there was always stuff to tinker with. I even built a motorized bicycle using a washing machine engine!”

As it turned out, Torchinsky found that he really liked the courses in Civil, and decided to stay at the U of A and finish the program. The subject that particularly interested him was soil mechanics, which at the time was not part of the curriculum in most Canadian and American engineering schools. The U of A had an inside track on this new field of study because two professors, Robert (Bob) Hardy and I.F. Morrison, had taken summer courses at Harvard taught by Karl von Terzaghi, who became known as the father of soil mechanics.

“Terzaghi created this new field of foundation engineering that he called soil mechanics, which eventually became known as geotechnical engineering. It combined concepts from geology, mathematics, and civil engineering,” explains Torchinsky. “Up until the end of the 1930s, engineers used the heel of their boots and the experience in their minds to determine the bearing capacity of soil at a particular site. It was empirical. The U of A was at the forefront of this new and important engineering technology, not only in Canada, but in North America.”

After graduation, Torchinsky married and was ready to embark on an engineering career. “The war had ended and jobs for engineers were everywhere. It was very difficult to decide what to do, where to go. I was busy puzzling this over when Bob Hardy came along and suggested I stay at U of A for one year and teach, at the same time keeping my eyes open for jobs that interested me.”

Since Torchinsky was staying at the university, Leroy (Chick) Thorssen suggested he take some graduate courses in his spare time. “So after I did that for one year, the argument was why not stay for another year and finish your Master's? So my Master's was a sideline to teaching while I tried to decide what job I wanted to take.”

The job turned out to be a position in the University of Saskatchewan's Civil Engineering

department. Torchinsky remained on the faculty for seven years, and during this time he developed a new approach to the design of foundations, which many consider to be his major contribution to geotechnical engineering.

“I got into this as a result of research I was doing for the National Research Council. There were cracking problems in buildings in Western Canada that were built on highly plastic clays. I did a series of studies and determined what the problem was. These clays shrink and swell with changes in moisture content, and the swelling pressures can be very significant. The question was what to do about it. The answer was simple, once you studied it.”

Torchinsky proposed putting an anchor into the ground about 20–30 feet below the surface, where the shrinking-swelling effect is negligible. “My plan was to drill a hole with a bell-shaped bottom, fill it with concrete and reinforcing steel, then build supporting beams across the footings above the soil. There was only one catch: no one had equipment to drill these holes. We needed a fairly big rig.”



Installing anchors on the spillway of a major dam on the Saskatchewan River.

Left: Harbour Square Project in downtown Toronto, showing vibratory hammer setting steel sleeves, power augers drilling out overburden, and a churn drill forming rock sockets.

Right: Driving steel pipe piles for a loading dock at the Yemen Salt Mines in Yemen.



They started off using a converted oil field seismic rig, but later switched to a rig used for setting power poles, which could drill large-diameter holes. “I ordered one with an extended boom from the U.S., sent a guy down to pick it up, and he brought it to the house one weekend. We were having a party and everyone went out front to take a look. It was beautiful—shining, blood-red, the first one in Western Canada. Of course it’s a pipsqueak compared to what is used now.”

Part of the foundation engineering work was done under the auspices of B.B. Torchinsky and Associates Ltd., the consulting engineering firm Torchinsky founded in 1952. Two years later he started the heavy foundation contracting company Western Caissons Ltd. By 1957, he had left the University of Saskatchewan to devote his full energy to his growing businesses. Although the occasion marked the end of his academic career, Torchinsky’s interest in developing and applying leading-edge engineering technologies never flagged. In fact, his commitment to innovation is what ties together his multifaceted business career.

By the mid-1960s, Torchinsky’s businesses were thriving, with offices across Canada. Nonetheless, financing was a yearly challenge. “Engineering is a feast or famine business, especially contracting,” Torchinsky explains. “You only work when you get jobs. If you’re doing piling, you need big, expensive

equipment that has to be paid for before you can really develop any profits. My banker in Saskatoon was a good friend and understood my situation. Each year I’d need more money. I probably started with a \$50,000 loan. By 1965, I needed \$600,000, which was over his limit. I had to go to the Royal Bank headquarters in Montreal to ask for the loan.”

The meeting did not go well. The bank executives focused on the poor performance of the company’s Montreal office; they wanted it closed or the loan would not be approved. Torchinsky countered: what if he moved to Montreal for a year to straighten things out? If he couldn’t turn the office around in a year, then he would shut it down. The bank agreed.

Looking back, Torchinsky sees this move as key to building AGRA as a large public company. “The way I operated in those days was to visit each branch office about once a month. I’d be away 2–3 weeks, and back in our head office in Saskatoon for 1–2 weeks. When I came back to head office, my desk was piled high with work. I’d put in 12-hour days and weekends just so I could clear my desk in order to leave again.

“But when I moved to Montreal, the key head office staff stayed in Saskatoon. They were good people, but I had built my business where I made decisions on anything of consequence. I had to face reality. We had to plan how the office would run without me.

DRIVING A HARD BARGAIN

TIMES WERE GOOD IN 1955 FOR BEN TORCHINSKY. HE WAS ENJOYING THE CHALLENGES OF HIS ACADEMIC CAREER AT THE UNIVERSITY OF SASKATCHEWAN, AND THE CONSULTING BUSINESS THAT HE HAD STARTED THREE YEARS EARLIER WAS DOING VERY WELL. IT WAS TIME TO BUY A NEW CAR.

“I WENT TO THE DEALERSHIP AND THERE WAS THIS WHITE LINCOLN THERE. AS BIG AS A HOUSE, REALLY LUXURIOUS, ONLY CAR OF ITS KIND IN SASKATCHEWAN, LET ALONE SASKATOON. I BOUGHT IT RIGHT THEN. I JUST LOVED IT.

“LATER THAT YEAR, I WENT TO BUY A USED CRANE. WE WERE DICKERING ABOUT THE PRICE, AND THE GUY FINALLY SAID THAT, MONEYWISE, WE WERE TOO FAR APART TO MAKE A DEAL. BUT HE’D MAKE THE DEAL IF I PAID HIM WHAT I WAS OFFERING AND THREW IN THE CAR. I MANAGED TO JIGGLE THE CASH DOWN A BIT, BUT BASICALLY I TRADED MY CAR FOR A CRANE AND I WAS HAPPY TO DO IT. MUCH AS I LOVED MY CAR, THE CRANE WAS MORE IMPORTANT TO ME!”

“So I was forced to delegate and depend on other people. The funny, crazy part is that they did the job better than I did. Things operated more smoothly once I made the break. And it meant that I could concentrate on opportunities that built the business.”

Indeed. In 1966, Torchinsky reckons his sales were probably in the \$500,000/year range. By 1970, he had consolidated his engineering and construction companies into the publicly traded AGRA Inc. In 1999, the last complete

cable television, food processing, container recycling, medical laboratories, insurance brokerage, airport duty-free shops, radio broadcasting, and others. It seemed a natural evolution, as Torchinsky’s interest in, and curiosity about, business ventures was never limited to engineering.

“Through my teaching in Alberta and Saskatchewan, I ended up knowing a lot of young people who went into other businesses,” he explains. “They always needed

they were the ones who would, in the end, make or break the company. Being the human resources administrator was the most important job in my company and that’s what I did.”

In 1988, Torchinsky made a key decision to bring AGRA back to its roots, by focusing on engineering and specialty construction. By the time it merged with U.K.-based AMEC, AGRA employed 6,500 people in 24 countries. The merger of AGRA and AMEC created one of the largest engineering services companies in the world.

Torchinsky’s accomplishments have earned him many awards including the 1997 Sir John Kennedy Medal, the most distinguished award from the Engineering Institute of Canada, and the 2001 Beaubien Award, the highest recognition presented by the Association of Consulting Engineers of Canada.

While Torchinsky retired from AGRA in 2000, he certainly did not retire from business. He maintains an interest in a number of companies in Canada and around the world. One of them is U.K.-based Seacore Ltd., a marine construction company involved in building offshore wind farms in Europe, as well as test drilling and general marine construction all over the world. Torchinsky is Seacore’s major shareholder.

“As far as what is the best or greatest thing I’ve done, the ones that have worked are all pretty good,” he says. “The ones that didn’t work were terrible and I put them out of my mind. Fortunately, things worked out more often than they didn’t.

“The interesting thing is, I didn’t start out to build a big company. I just started out doing a bit of consulting work. I was having a good time, I was making money and enjoyed the challenges. Life was good. Whatever happened, happened. I was prepared to build my business wherever it took me and however it worked.

“Making money was important to me, but it wasn’t only about money. I really got a kick out of helping someone with an idea, who could make it into something worthwhile. If it worked, the whole thing was a lot of fun and very satisfying. And that works out to a good life.”

“...Business is business. It doesn’t matter what kind of business it is because the important thing is the people who are involved.

The quality, intelligence, and hard work of individuals are what counts.”

year of AGRA before its merger with AMEC plc in mid-2000, the company posted \$1.3 billion in sales. And in 2000, the company’s sales approached \$2 billion.

“You have to be a risk-taker to grow a business like this,” says Torchinsky. “I stuck my neck out. I could never have done what I did otherwise. When you’re starting out to do something new or different, and you don’t have a pile of money behind you, the only way you’re going to move ahead is by taking chances.”

As AGRA grew, it expanded from its engineering roots into a diversified public company with branches in many different fields—engineering, specialty construction,

money and I was known as a guy who was doing well. They came to me with ideas. I strongly believe in people more than anything else. Business is business. It doesn’t matter what kind of business it is because the important thing is the people who are involved. The quality, intelligence, and hard work of individuals are what counts.

“In the building of my business, I considered myself to be the human resources officer. As the company got bigger, I really knew only the senior people and I concentrated on them. My main job was to recognize the really good people and bring them along any way I could. Above all, I had to keep them happy, because

Reunion 2003

Welcome to Reunion 2003, October 2–5 at the U of A campus.

We have provided these maps to assist you in locating special activities over the weekend.

Please enjoy your visit to the U of A campus.

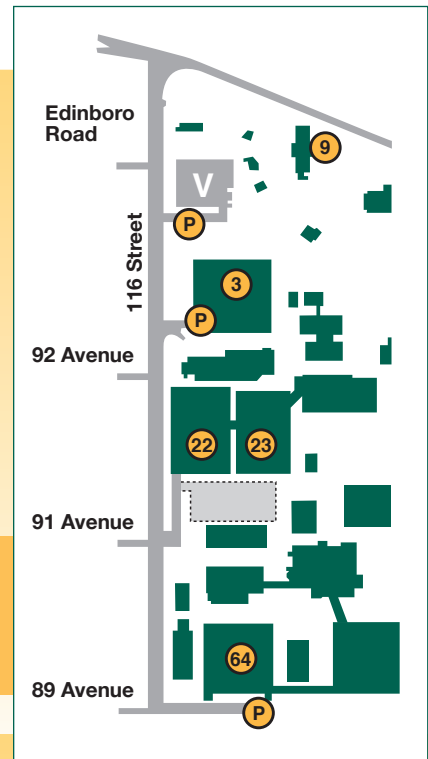
Here is a map of the northwest corner of campus. The Faculty Club, building 9, is the location for the Dean's reception for reunion alumni and guests on Friday, October 3 from 4:00–6:00 p.m. Park in Lot V.

ECERF, building 22, is the location for underground parking. Enter the parkade off 116 St. between 91 and 92 Avenues.

Additional parking is available in Windsor Car Park (location 3) and in Stadium Car Park (64).

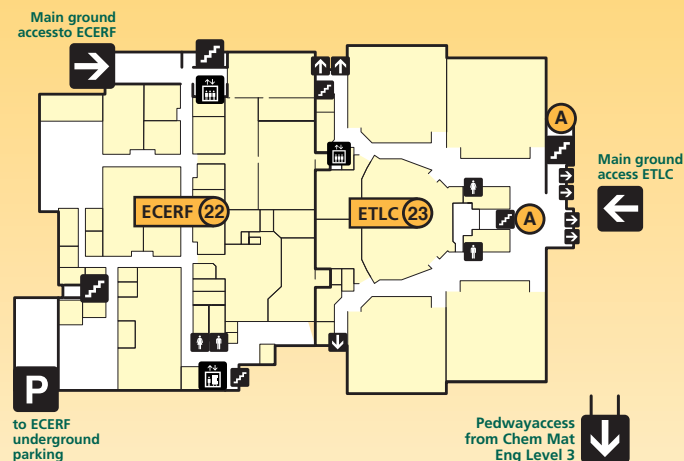
LEGEND

3 – Windsor Car Park	23 – ETLC
9 – Faculty Club	64 – Stadium Car Park
22 – ECERF	V – Parking



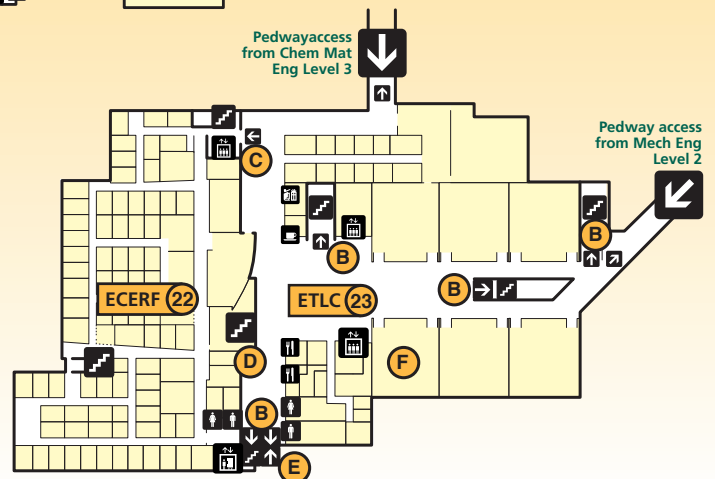
Here is a close look at the ground floor and 2nd floor of the Electrical and Computer Engineering Research Facility (ECERF) and the Engineering Teaching and Learning Complex (ETLC).

ETLC, building 23, is the location for the Engineering Open House (9:00 a.m.–4:00 p.m.), the Dean's brunch for 50+ reunion alumni (9:30–11:00 a.m.) on Saturday, October 4, and the alumni lounge (throughout reunion weekend). The map marks the street level entrances. Site signage will help you find specific room locations once you arrive.



Level 1

Level 2




LEGEND

- A – Level 1 access to and from Level 2
- B – Level 2 access to and from Level 1
- C – Elevator access to and from underground parkade
- D – Stairway access to alumni lounge on the 3rd floor
- E – Access from ETLC Patio, Level 1
- F – Dean's brunch in Colt Engineering Design Lab

Women find . . . exciting c

Women engineers represent a growing source of talent in the consulting sector. Today, one in five undergraduate students at Canadian engineering schools is a woman, and trends point toward more females graduating and working in engineering. Increasingly, consulting is proving the right career choice for many women engineers.



Wendy Mackay
(Civil '96)

by Nordahl Flakstad

Those employed in the sector often are the most persuasive advocates of consulting. No matter the stage of their careers, female engineering consultants talk enthusiastically about how their work affords variety, intellectual and technical challenge, a sense of accomplishment, and opportunities to deal with people.

Certainly Shanon Warner (Mechanical '94), heating, ventilation, and air conditioning (HVAC) specialist, sees variety as a great plus in consulting. A U of A graduate who switched

from pharmacy, she spent four years working mostly on pipeline ventilation systems before moving to her current job with the Cohos Evamy Partners in Edmonton.

"Industrial work is repetitive, and there's not as much design work involved," she explains. "Now things are more exciting—every building and occupant has different requirements. Even two hospital designs are so different." Buildings she's worked on often become landmarks she can point to with pride to friends and family. In the industrial sector, Warner

observes, "I don't think I ever later saw a product I worked on."

For Warner, the "craziness" about consulting makes it a good job. "I think I'd be bored senseless if I weren't working in consulting."

Angela Kupper (PhD Civil '91), a senior geotechnical engineer for 12 years with AMEC Earth Environmental and its predecessor, works on designs for dams, slopes, and mining projects. With two degrees from her native Brazil, and a PhD from the U of A, Kupper similarly enjoys

career paths



Shanon Warner
(Mechanical '94)



Angela Kupper
(PhD Civil '91)

within Consulting Engineering

the diversity as well as “the intellectual challenge of having to remain aware of the state-of-the-art and finding creative solutions.” Few things in consulting, she notes, are “routine”.

Project engineer, Wendy Mackay (Civil '96), has worked her fair share of hours in the field during her six years with Morrison Hershfield. She recalls spending as much as six months away from her Edmonton home in 1998, working on projects such as a huge roller-compacted-concrete sawmill yard in Slave Lake.

That would be more difficult these days, now that she has a child. However, as a manager she now has a choice of staying in Edmonton.

The diversity in consulting provides opportunity for accommodating personal and professional demands.

“To be in consulting and to feel comfortable, you need to be flexible and able to adjust to the challenges of the highs and lows [of activity]. You have to be a good people person because consulting is so people-oriented,” says Mackay.

Not everyone is wired to adapt to consulting’s sometime frenzied pace, deadlines, and continuing search for innovative solutions to meet clients’ requirements. But for those women who thrive on professional stimulation and occupational challenge, consulting engineering is increasingly becoming a rewarding career of choice. Expanding employment prospects will encourage the trend of more female engineers graduating, accepting the opportunity, and successfully filling positions within the field.



WIN

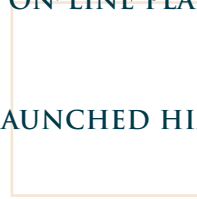
Brad Hogg
(Computer '94)



PRESIDENT AND CEO OF VINTACOM,

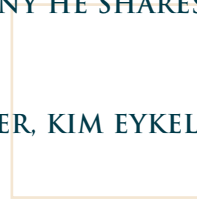


BRAD HOGG (COMPUTER '94),



DESIGNED AN ON-LINE PLATFORM

THAT HAS LAUNCHED HIM AND



THE COMPANY HE SHARES WITH

CO-FOUNDER, KIM EYKELBOOM,



TO THE FOREFRONT OF ALBERTA'S

FASTEST GROWING BUSINESSES.

HOGG WILD OVER

TACOM

BY CHARLAYNE BOZAK



AN odd thing happens when you enter the offices of Vintacom Media Group Inc.: you feel at home. It's not something you can really put your finger on, but there is an energy that fills the space—a buzz, a hum, some sort of reverberation that makes you want to let out a deep sigh and relax.

This is all explained when you meet the company's president and CEO, Brad Hogg (Computer '94), and see the confidence he exudes and the respect with which he treats his employees.

One employee seems to stand out in particular. Adam Elliot, 20, who is primarily self-taught, is one of the company's senior developers. "He's been playing around on computers since he was 14," says Hogg. "He knows what he's doing."

It's a lesson in the value of practical experience Hogg learned the hard way. At the end of his third year of studies at the U of A, Hogg hit the wall—and made one of the most important realizations of his life. "I thought that all I had to do was get my education

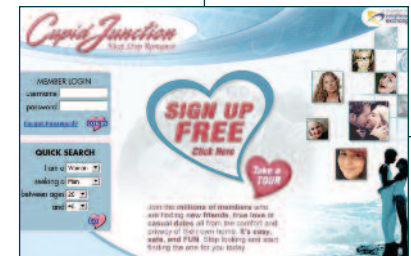


education. "That extra year would have been worth it," he says, relating a story that opened his eyes to the value of learning to apply what you know.

For an in-class assignment, Hogg and a friend who had gone into Co-op had to recreate a circuit design. Hogg found it difficult, but his friend (who usually struggled alongside Hogg) breezed through it because he had worked on something similar. Hogg was amazed. "When he left for his first placement, my grades were better than his. When he came back, he blew me away."

Hogg credits this respect for practical experience, and one's employees, for Vintacom's success—that, and good old-fashioned business sense. That's not to say that Hogg's business is old-fashioned.

Vintacom develops "low maintenance, high traffic, 'rebrandable' e-commerce Internet



entertainment and media networks), and SpecialSomeone.com (a subsidiary of American Greetings, parent company of Canada's Carlton Cards). In total, DreamMates has approximately 3.5 million users, with about 5,000 new members joining every day.

Hogg is not oblivious to the stigma attached to the on-line dating industry. In fact, when co-founder Kim Eykelboom first came to him with the idea in February 1999, Hogg thought his friend had lost his grip on reality.

"VINTACOM WAS VOTED ALBERTA VENTURE MAGAZINE'S 'FASTEST GROWING COMPANY IN ALBERTA,' WITH AN INCREASE IN SALES OF ALMOST 13,000 PER CENT OVER THE PREVIOUS THREE YEARS."

and I would have a job, but I was wrong. I had sent out 80 resumes and got back 80 letters telling me I didn't get the job. I realized that an education didn't mean anything without experience."

Hogg had good grades, but was repeatedly passed over for students from the Co-op program who had lower grades but more developed practical skills. It's the one thing Hogg would change about his

applications and services," specializing in on-line dating. For each new client, Vintacom adds new graphics and particulars to the developed platform—"rebranding" it. Within two days, the client can have a fully operational on-line dating site of any scale.

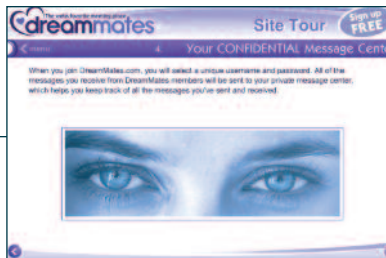
Along with its own site, DreamMates.com, Vintacom has provided platforms for (among others) CupidJunction.com (a subsidiary of eUniverse, one of the Internet's largest

"I literally thought Kim was insane," says Hogg. "I'm not joking. I laughed at him."

But then Hogg started thinking about the numbers, crunching them, turning them over in his head. He realized that Eykelboom had something.

Four years later, Vintacom was voted Alberta Venture Magazine's "Fastest Growing Company in Alberta," with an increase in sales of almost 13,000 per cent

“THE REASON WE ARE SO WELL RESPECTED IN THE INDUSTRY IS BECAUSE WE MAINTAIN HIGH ETHICAL STANDARDS. PEOPLE COME TO US BECAUSE THEY KNOW WE DO OUR JOB WELL...”



over the previous three years. With gross sales of almost \$4 million at the last year's end, that's not bad for a company Hogg and Eykelboom speculated would bring them each about \$500 to \$1,000 a month when they first started.

However, Hogg recognizes that the growth will not always be that extraordinary. He focuses on steady growth, and avoids spreading the company too thin by developing too many products. “Focus on one thing and do it better than anyone else,” he says.

He adds that to be good at business you have to do so not only in word, but also in deed. “The reason we are so well respected in the industry is because we maintain high ethical standards. People come to us because they know we do our job well. We have the partners we have because of our integrity, our ethics. It's common sense. And treat your staff with recognition, not only by saying so, but through pay-offs as well—money. They help you earn it.

“Don't expect success. It's about reality. Assume you're going to be working a lot and that you might not get a paycheck. Short term means nothing; focus on the long term.”

In the future, Hogg sees the company developing a similar on-line platform for community groups. Perhaps he could adapt the approach for firefighters from around the

country, or engineering students and alumni wanting to exchange ideas. With technology developing at the rate it has been, Hogg sees more and more people turning to the Internet as a means of communication.

“Processor speeds are doubling every 18 months,” he says. “That means a lot to our business. Things are happening faster. Long-term objectives are a year now instead of five; short-term is 30-60 days when they used to be about a year.”

The future also means golf and hanging-out in the steam-room of the house he shares with his wife, Jennifer, and their two young daughters. “I'm lucky to have a wife who understands when I have to work a lot,” Hogg says. Life as a new father has also helped put the rest of his life in perspective. “I know it sounds cliché, but having kids really does change your outlook on life. It helps me stay grounded.

“It's about the love for your family and your work. It's about more than money. To me, business is not about building up a company to sell it. Someone could put a pile of money in front of me and I would think, “So what?” It's not about the money—it's being proud of what I do and doing it well. I have too much confidence in myself and the company to sell. That would be coping out.”

BRAD HOGG'S FIVE RULES FOR RUNNING AN ON-LINE COMPANY

- 1 Run your on-line company the same way you would run an off-line company. The same fundamental principles apply. First and foremost, don't treat your customers as numbers. Impersonal service has become too common, and companies that respect and nurture their customers will win in the end.
- 2 Research the trends of your industry and the Internet as a whole; focus on the present and future simultaneously. Internet business is very dynamic, and opportunism is rampant. What appears to be an attractive direction for the company may very well be a short-term revenue booster that will do nothing for you 12 months out.
- 3 The incredibly fast pace of Internet business will force you to think short-term (30-90 days) more often than long-term (6-12 months). Learn to achieve a long-term goal in increments that allow room for change and redirection. Projects must come together quickly. Large projects should be broken up into pieces that can be accomplished in the short-term.
- 4 Specialization is more important than ever. Remember that you are now competing with the rest of the world. Find a niche. Focus on one thing and make it better than anything else available.
- 5 Start locally, and slowly work your way out. It's too easy to get excited about offering your product or service to all of North America or the world. Prove yourself within a market that you know and understand. Measure the results and expand to similar markets. The Internet itself is not a market; it provides access to markets. If you try to tackle it all at once, your venture capital will vanish long before you would have ever expected.

Virtual Engineer



Photos by: Canadian National Railway

UE-1 vessels being shipped to Fort McMurray.



Set exchangers.



Four reactors standing from the Upgrader Expansion.

The Joys of Working in the World's **Biggest Sandbox**

U of A Engineering alumni are making an impact across Canada and around the world. This new column, "Virtual Engineer", features on-line interviews with alumni working outside of Edmonton.

In this, our second column, we meet Murray Smart (Chemical '69), executive vice president, strategic projects, with Syncrude Canada Ltd., in Fort McMurray. Syncrude Canada Ltd. is the world's largest producer of crude oil from oil sands and the largest single source producer in Canada. They currently supply 13 per cent of the nation's petroleum requirements.

We asked him about his career and his role as local alumni host for the April alumni and friends reception in Fort McMurray.

What was your career path from graduation to Syncrude?

I went to Texaco Canada from university and worked at their Edmonton refinery as a process engineer. It was a great place to be as a young engineer. It was complex, but small enough that you got to be involved in all sorts of work and knew almost everyone on a first name basis. I also had a very good boss to mentor me for much of my time there.

After eight years there, I decided to move on like many young professionals do. I went to Syncrude Canada in their Edmonton engineering office as a process engineer. The construction of the original facility was just reaching completion at that time, so I spent the next few years travelling back and forth supporting the start up and ongoing operations of the upgrading plants.

In 1980, I moved to site to take a position as technical manager in the upgrading area. I have been in Fort McMurray ever since, working in a wide variety of operations, management, and executive positions. Currently, I am leading the

work on our major projects—especially our Upgrader Expansion, UE-1, and a new production train, Aurora 2, at our Aurora Mine.

What is it like living in Fort McMurray?

Fort McMurray has been great for us. When we came here, our family was very young. Even though it was relatively small and isolated, it was very cosmopolitan in its own way because folks came from all over Canada and the rest of the world and brought their customs and ideas with them. My friend from Newfoundland asked me where I had tasted my first whole lobster and I had to admit, it wasn't in the Maritimes, it was in Fort McMurray. He then admitted that he had his first real steak when he came here.

Almost everyone here in those days was from somewhere else and did not have any amount of extended family in the city. Your neighbours and co-workers became your family. You worked together, played together, took your kids to the same places together, and just generally had fun together.



Hydrotransport from Aurora.

Coker.

Today, it is somewhat different. Fort McMurray is a lot bigger, and many families here are moving into the next generation and putting down stronger roots. I guess our family fits the mould, as our oldest son has gone off to the University of Alberta, become an engineer, and returned to the community with his spouse.

What has been the most memorable, exciting, disappointing, or challenging point of your career thus far?

A memorable point for me was when I first flew up to the Syncrude plant site in 1977. I remember distinctly seeing for the first time this vast, complex facility seemingly in the middle of the wilderness. It took me weeks to get comfortable with the magnitude of the facility and the effort going into construction and commissioning of Syncrude.

Some years later, I was introduced by a business acquaintance as someone who got to work in “the world’s biggest sandbox”. For an engineer, that is literally and figuratively the case. There are not many places where an engineer gets to work on the breadth and scope of technical, project, and operational challenges that exist at Syncrude. That is especially true today when we are operating our facility and expanding it by 50 per cent at the same time. Either activity is a major engineering undertaking by itself.

What is your proudest achievement, professionally or personally?

Certainly, my proudest professional achievement has been to be part of the leadership team at Syncrude (and the oil sands industry) that has turned what many people perceived to be an interesting but uneconomic business into a major cost-effective source of oil and work for all Canadians. The positive impact of oil sands for Alberta, and the rest of Canada, is just tremendous.

What are your remaining connections with Edmonton or the U of A?

Much of my family and my wife’s family are still in the Edmonton area and we still think of it as our home town. And, of course, Edmonton is on the way to just about everywhere else, when you leave Fort McMurray, so we spend a lot of time there. As far as the U of A goes, one of my classmates lectures on loss management for the Engineering Faculty, and I make a point of being a guest lecturer for him every year. It’s a small way for me to give something back to the school—and besides, it’s fun.

What motivated you to agree to be local alumni host for the Fort McMurray event?

I appreciated the opportunity to host our session in Fort McMurray for a variety of reasons. First, it’s nice to help out with the Faculty’s initiative to stay in touch with its alumni. Second, the

U of A Engineering faculty has close connections with Syncrude in a variety of disciplines, and we appreciate the benefits of being able to access the Faculty’s expertise. And, last but not least, we have many excellent employees that came to us from there, and it’s an opportunity to mix with them.

What emotional, sentimental, or intellectual connections still remain with U of A?

My wife, Marsha, and I are both from the southwest part of Edmonton and attended the U of A at the same time. Our two oldest children have gone there recently, and we have had a lot of other reasons to be around or on campus. Even though things have changed a lot there physically, it is still a familiar and comfortable place to be. When I am there lecturing for my classmate, it feels like I never left—until I look on the wall and see how many classes of graduates have come and gone after my class.

What made your experience at the U of A better/different than your peers or competitors who graduated from other universities? What is your competitive edge?

I would have to say that it gave us what is now called the Alberta Advantage. There was a lot of focus in our studies on Alberta-based industries such as the oil patch that you could not really get anywhere else in Canada. That same situation seems to hold true today if you look at the mining, extraction, and upgrading efforts that are going on at the university. We certainly see it in the expertise that our recent U of A grads bring to Syncrude.

What message do you have for fellow alumni?

If you have the opportunity to get back on campus and meet the students and Faculty or to talk to Dean Lynch and his staff, I would encourage you to do so. The enthusiasm and expertise that you will see is just so refreshing!



Murray Smart
(Chemical '69)



A tiny titanium screw's size is disproportionate to its importance in the advancement of craniofacial prosthesis development. Research being performed by Dr. Gail Thornton (Mechanical '93) at the U of A will help provide users of such prostheses with faster healing times and lower risk of revision surgeries.

A TASK OF

by Charlayne Bozak

Titanium

We've all been there. No matter how mechanically adept we may be, there have been times when we sat staring at a completed project (a swing-set or a piece of IKEA furniture), a sheet of instructions—and one, lonesome screw. That screw consumes our life. Where does it go? How important is it? Will the whole thing fall apart if it's left out? Eventually we give up and throw the screw in the kitchen junk-drawer.

For Dr. Gail M. Thornton (Mechanical '93), there is no junk-drawer. The function of a single, small screw consumes her thoughts almost every day. The small piece of hardware that is Thornton's obsession means a new life for many people who require replacement of absent or lost tissue of the head or neck. Along with the talents of many other specialists and scholars, Thornton's research will improve the treatment of patients at the Misericordia

Hospital's Craniofacial Osseointegration and Maxillofacial Prosthetic Rehabilitation Unit (COMPRU) in Edmonton.

In December 2002, Thornton was named as the first holder of the COMPRU/Westaim/ASRA Chair in Interfacial Biomechanics at the University of Alberta. Her goal is to determine the effects of external loading on a small screw that helps hold a facial prosthesis firmly in place. The screw is implanted into a patient's bone tissue, and then, over time, becomes integrated with the bone, allowing for a prosthesis to be attached. The factors that affect this "osseointegration," however, still remain a bit of a mystery.

To simplify what Thornton is doing, imagine a wall anchor put into a hole filled with plaster. Thornton wants to find out just how long it takes for the plaster to dry, and exactly how dry it has to be before the necessary load can be placed on that anchor.



“This Chair program is unique, providing a dedicated strategic link between COMPRU and the Faculty of Engineering at the U of A,” says Thornton. “The exciting advantage of this linkage is the opportunity for engineering graduate students to train in the clinical setting at COMPRU, and for clinical fellows to train in the research laboratory at the Department of Mechanical Engineering.”

The research combines the efforts of different agencies and specialists to improve the mechanics and medicine involved in facial reconstruction. Thornton’s own specialization and fascination with the human body’s mechanical system has brought her back, full circle, to the U of A. With a BSc in Mechanical Engineering from the U of A, a Master’s from the Massachusetts Institute of Technology (MIT), and a PhD from the

University of Calgary, Thornton has had a varied academic experience.

“When you are doing research or faced with a decision like going to MIT, you have to be willing to leave your comfort zone,” she says. “Seeking out opportunities and accepting challenges expands your experiences and knowledge base. This way you can discover your aptitudes and interests and find a career path that satisfies both.”

This varied experience left her with a large network of mentors and colleagues around the world. It also taught her to work well independently and as part of a group—vital skills for a research Chair.

“As the Chair, I currently have the visibility, but numerous others deserve recognition. At COMPRU, their commitment to their patients is exemplary and their approach is truly

interdisciplinary. They had foresight to bring together all of the specialties that can contribute to improving patient care, including surgeons, prosthodontists [dental specialists], anaplastologists [medical artist clinicians], speech pathologists and psychologists, to name a few.”

Thornton developed an early interest in figuring out the mechanics of the human body. She entered the University’s engineering faculty after discovering her future calling through a Grade 11 summer research session of the WISEST program. WISEST (Women in Scholarship, Engineering, Science and Technology) is a U of A initiative “to encourage young women to consider careers in the field of science, engineering, and technology.”

Thornton was involved in a project looking at the wear and fatigue of oil field components. She found the mechanical aspect

Proportions



Above: Jason Norgard, who lost an eye to cancer, displays the prosthetic device that’s anchored by Dr. Thornton’s titanium screws
Photos by The Edmonton Sun

Thornton Makes the WISEST Move

Before she started as an undergraduate in engineering at the U of A, Dr. Gail Thornton was given the opportunity to explore her career interests through the Women in Scholarship, Engineering, Science and Technology (WISEST) program.

WISEST is a U of A initiative to encourage young women to consider careers in the fields of engineering, science, and technology. Go to www.chem.ualberta.ca/~wisest/ for more information.

interesting, but when she saw a project involving biomechanics, she knew what field she wanted to enter.

“I have always been fascinated by how things work. The human body is an interesting and complex mechanical system, and one that we live with every day. Trying to understand how it works was a natural intellectual curiosity.”

Thornton sees initial projects, like spearheading the development of a new biomechanics course, as only the beginning. In five years, she would like to see the Chair program advance—with more biomechanics courses, more research, and more state-of-the-art research facilities.

She finds herself inspired by the prospect of discovering something new every day. “I am very excited to be back at the U of A. It is an opportunity to take what I have learned and apply it, to take ownership of the new Chair program, and to advance our biomechanics research and curriculum. The trust COMPRU and my colleagues have given me is a great compliment.

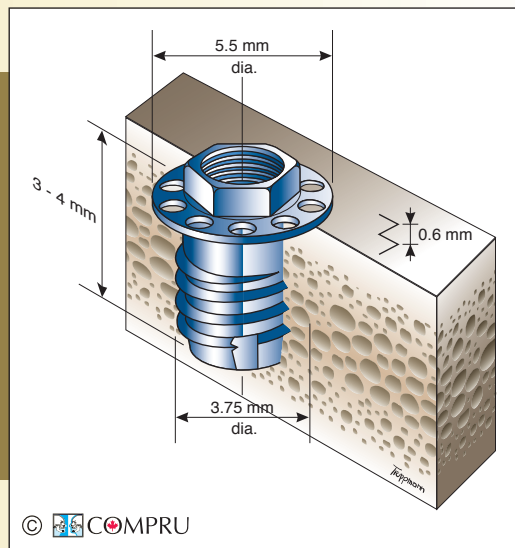
“COMPRU celebrates their 10th anniversary in September 2003, but it remains an undiscovered gem to most Edmontonians. Having a world-class facility like this within the city is something more people should know about and be proud of.”

When Thornton’s career is looked at in its entirety, one word comes to mind—strength. Everything she is involved in seems to revolve around the word, either literally or figuratively—from the real, measurable strength of a small screw, to the personal strength reflected in the courage of craniofacial patients.

She’s also quick to credit the strength of the support she has received. “I want to express my gratitude to the supporters of the Chair—to COMPRU, Westaim/Nucryst, ASRA (Alberta Science and Research Authority), Caritas and Capital Health, Alberta Government Ministries of Health and Wellness, and Innovation and Science, and all the others involved. The unique vision and commitment of all these parties has made this program possible.”

She offers some advice for others, especially students, trying to decide on what to do next. “Don’t be afraid to try something new. Evolve. I’m inspired by asking myself, ‘What are the new things I can learn today? What haven’t I done before?’ Hopefully, seeing a person such as myself in this position opens up the possibility for someone to consider this as a potential career path. It is important to challenge and expand what we think is possible for ourselves. My hope is that everyone can discover their interests and aptitudes and satisfy both.”

A commercially pure titanium implant is installed in bone. The bone adheres to the oxide surface of the titanium. Strain in the surrounding bone during loading is thought to be significant in the long-term survival of the implant. Researchers hope to gain a better understanding of the biomechanics of this interface.



Supporting the Chair

Three partners combined to create the COMPRU/Westaim/ASRA Chair in Interfacial Biomechanics at the University of Alberta:

COMPRU is a highly specialized unit that reconstructs the features of the head and neck. This interdisciplinary team involves a wide range of professions including medicine, surgery, dentistry, rehabilitation medicine, psychology, engineering, basic sciences, and business. COMPRU is purpose-designed to meet special needs, and aims to provide excellence in care, research, and teaching.

COMPRU began as a vision of Drs. John Wolfaardt and Gordon Wilkes. Over the past

10 years, it has become a centre of excellence in the field of head and neck reconstruction.

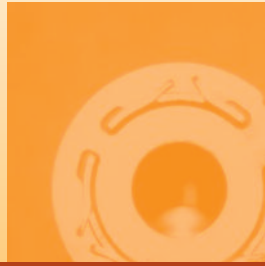
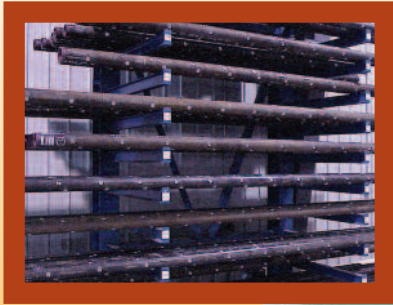
With focused determination, the COMPRU team has worked to provide the highest quality care using an interdisciplinary team model, the ISO 9001 quality system, and a patient-centered approach. Go to www.caritas.ab.ca/compru/home for more information.

To celebrate the 10th anniversary of the establishment of the COMPRU facility, an open house has been planned for September 26, from 2:00–4:00 p.m.

The Westaim Corporation is an Alberta-based company with a portfolio of surface engineered

products, electroluminescent flat panel displays, and biomedical coatings. Go to www.westaim.com for more information.

Created in 1994, the Alberta Science and Research Authority (ASRA) is an independent board of members from Alberta’s academic, business and research communities, appointed by provincial Cabinet. ASRA was established to maximize the effectiveness of science and research as an integral component to the success of the province in the global economy. ASRA’s mission is to enhance the contribution of science and research to the sustainable prosperity and quality of life of all Albertans. Go to www.asra.gov.ab.ca for more information.



the Brooker

by Tom Keyser

TOOLKIT

When he looks back on almost 50 years as an active engineer, Dr. Elmer Brooker (Civil '55, MSc Civil '58) quickly zeroes in on his career's defining moment: the day he walked away from full-time campus life.



By his contribution to the University of Alberta was leaving it," he grins.

Dr. Brooker has done more for Canadian science—and Canadian business—than his self-deprecating joke would indicate. A stubborn idealist who doesn't back down when his convictions are on the line, he made key contributions to oil sands technology during the formative years of Syncrude Canada Ltd.

But that's not all. He worked alongside the pioneers of oil and gas exploration in the Canadian Arctic. He planned tunnels, erected bridges, and designed dams. He is a prolific producer of technical publications and the most frequently referenced author in the Canadian Geotechnical Journal.

While engaged in a 30-year career as an award-winning practicing consultant, he also worked as a land developer—all while serving as a past-president of the Edmonton Chamber of Commerce and past vice-chair of the U of A Board of Governors, among other volunteer chores.

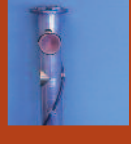
It's a crowded resume. But is he ready to slow down? Not anytime soon. Now in his early seventies, Brooker remains an active partner (with his son, Ian, and a younger colleague) in LRI Oil Tools Inc. and LRI Perforating Systems Inc. of Edmonton. These associated laser tool companies design and produce perforating guns and sub-assemblies for the oil-and-gas completions industry. In 2002, LRI Oil Tools earned a Canadian Innovation Award for New Technology from the Canadian Manufacturers and Exporters.

"You know, it's interesting," Brooker says. "I've used everything anyone has ever attempted to teach me—chemistry, mathematics, physics.... It has all proved to be useful." And his education continues. Brooker says he learns almost daily from brilliant 33-year-old engineer Ralf Bonkowski, a junior partner at LRI.

But... back to that turning point.

In 1968, after finishing his undergraduate and graduate degrees, Brooker and his wife, Marion, were enjoying the salaried stability of campus life. Then, one day, engineering Dean George Govier buttonholed him.

"He said, 'If you're going to make your career here, you're going to have to get a PhD,'" Brooker remembers. "It was the last thing I wanted at that stage of my life." Nevertheless, he registered for post-graduate engineering studies at the University of



“You know, it’s interesting,” Brooker says. attempted to teach me—chemistry, mathe It has all

Illinois, a base for the great Ralph Peck, one of the world’s foremost geotechnical experts, as well as a host of engineering superstars.

At Illinois, Brooker associated with some of the most independent and creative thinkers in North American engineering. Their ideals and professional principles helped him to re-evaluate his own priorities. “All these people gave me a sense of duty to my profession,” he says.

“When I left the University of Illinois, I felt there was nothing I couldn’t do.”

About the same time, he reached the conclusion that working for a university or a large corporation would only cramp his free-wheeling style. “I don’t like constraints,” he explains. Instead, he became founding principal of EBA Engineering Consultants, a company he led for three decades. “I liked my engineers to have latitude and freedom. Yes, it can cause problems when you’re dealing with strong-minded, creative, healthy people. But those are exactly the people you want on your side.”

Back in Alberta, Brooker was retained by Syncrude’s first president, the late Frank Spragins. Brooker joined a battery of consultants trying to agree on optimum methods for extracting raw materials from the Athabasca Oil Sands.

Today, those oil sands account for almost 20 per cent of Canada’s total crude oil production. “But at that time,” recalls Brooker,

“there was Spragins and a staff of about 11, and nothing else up there but bush.”

It was a pioneering effort, because the physical properties of the oil sands were still being defined. Ultimately, Syncrude proposed enormous bucket-wheels, perched on high slopes, with drag-lines drawing raw ore from deep cuts in the landscape.

Unique ground and water pressures in the underlying Devonian materials made this a risky proposition. A successful practical test would be needed before the project could proceed.

“We had to dig a trial mine, because the application of theoretical analysis to the physical properties of soils can be notoriously unreliable.” Brooker explains. “In the end, you have to dig and see whether it works or it doesn’t work. This time it did.”

Before long, EBA Engineering found itself in the midst of more high adventure, in the frozen north. At one time or other, the company became involved with virtually every major Arctic exploration project on both Canadian and Alaskan fronts. These were aggressive, high-energy projects—and thrilling work, according to Brooker.

During these heady days of intense Arctic exploration, Brooker and EBA entered into a consulting contract with Bob Blair, then CEO of Alberta Gas Trunk Lines (later Nova Corp.).

Brooker came to admire Blair’s plain-spoken, get-things-done leadership style. Whereas most large, monolithic corporations relied on a painfully slow method of decision-by-committee, freewheeling operators such as Blair could make important calls in a heartbeat. “We had cryptic meetings,” laughs Brooker. “Brief and to the point. He’d ask if I was sure I knew what I was doing. I’d say I was. Then he’d tell me to get it done.”

Blair faced numerous technical challenges in assuring regulatory authorities that proposed oil and gas pipelines wouldn’t harm northern eco-systems.

Could heat from oil pipelines, built across hundreds of kilometres of permafrost, damage the environment? Conversely, when compressed natural gas is pumped through a pipeline, the temperature can drop well below freezing. Could this potentially freeze or block subterranean groundwater systems?

Brooker and his EBA Engineering team believed they could forecast the environmental impact in both cases through applied mathematics. By using a theoretical model known as finite element analysis, they felt they could acquire an accurate geothermal analysis of local terrain.

But Blair, hedging his bets, demanded a second opinion. He turned to a prestigious North American think tank, the Battelle

Memorial Institute of Columbus, Ohio, global experts in a wide variety of chemical and environmental technologies.

Battelle was home to more than 2,000 PhD scientists. Its engineers had already developed a revolutionary heat shield for NASA, to facilitate

dropped sharply after the Organization of Petroleum Exporting Countries (OPEC) cranked up production. Meanwhile, the National Energy Program, introduced in 1980, contributed to a temporary crippling of the Canadian energy industry.

industry squeeze maximum efficiency from the shaped explosive charges used for oil well completion.

A perforator gun detonates explosives, creating a powerful pressure wave that shoots like a bullet into subterranean rock. These

“I’ve used everything anyone has ever
matics, physics....
proved to be useful.”



space capsule re-entry. They believed that they could solve pipeline problems by applying the same formulaic analysis they used to develop the space shields.

The small Canadian team led by Brooker begged to differ, as did a third team, from Esso Production Research in Houston. Nevertheless, Battelle stood firm in opposition.

“That was a hard tooth to pull,” laughs Brooker. “People at Battelle didn’t like it at all. They were the experts. But nobody had ever heard of us.”

At last, with a shove from Bob Blair, the Brooker theory won the day. “Blair broke the deadlock. He just said, ‘The argument’s over. This is what we’re using.’”

By the early 80s, however, external factors led to dramatic changes in the Canadian oil and gas business. Recommendations by the Berger Commission led to a lengthy moratorium on pipeline construction in the Mackenzie River Valley. Global oil and gas prices

In response, Brooker’s engineering firm moved in new directions. Always receptive to fresh challenges, he agreed in 1989 to chair the Alberta Laser Institute, a provincially subsidized research program owned by the University of Alberta.

When the institute was privatized during the mid-90s, he embarked on the next phase of his personal odyssey. After winding up his association with EBA Engineering, he entered into partnership with his son, Ian. Together, they created LRI. Ralf Bonkowski, a top student at the Institute, joined them as both a third partner and operations VP.

“The use of lasers was well-developed, from a research point of view. We felt the next stage was commercialization,” says Brooker. “Our due diligence studies convinced us to proceed.”

By carving precise, laser-cut patterns in tubular charge-holders (housed within the exterior casing of a perforator gun), LRI helps customers in the oil-servicing

guns can punch holes into rock from 2.54 to 100 cm deep. Prior to the development of laser technology, a saw was used to hack the holes for these charge-holders.

The creation, care, and feeding of the two LRI businesses has been a costly and time-consuming chore. Brooker insists that building these private companies has been the greatest challenge of an eventful life.

Those efforts have paid off. By early 2003, the two companies had gained control of 75 per cent of Alberta’s charge holder/perforator gun production capacity. Revenue projections for the year are encouraging.

Brooker considers himself the most fortunate of men. The winner of The Association of Professional Engineers, Geologists, and Geophysicist of Alberta’s (APEGGA’s) Frank Spragins Technical Award in 1995, he has clearly earned the respect of his peers. The Spragins Award honours APEGGA members for their integrity, expertise and outstanding accomplishments in engineering, geology or geophysics. “That award was particularly flattering. Frank was an excellent man and clearly the ‘King of the Oil Sands,’” says Brooker.

As for lessons learned during an eventful life, two stand out: keep an open mind and keep learning new lessons.

“It’s been a great life,” says Brooker. This time he isn’t joking.

THE CHARM OF Sharma

Researched by Frank Dabbs
Written by Charlayne Bozak

Rohit Sharma (MSc Electrical '91, PhD Electrical '96) was born in Haryana State, India, an ancient and cultured region of art, religion, philosophy, agriculture, and education. His upbringing fostered in him an innovative and creative mind that brought about some of today's most innovative technology.



Rohit Sharma
(MSc Electrical '91,
PhD Electrical '96)

Sharma was among the founders of ONI Systems Corp., the first metro-focused telecom company to go from start-up to IPO during the late 90s. On June 21, 2002 ONI Systems Corp. shook up the communications industry when it merged with CIENA Corp., in a share exchange transaction worth \$900 million.

Nevertheless, Sharma remains unassuming about his success. "Right now, the task at hand is continuing the work we did as ONI and ensuring that CIENA will be a leader in telecommunications technology worldwide. Despite the market downturn, we need to continue the innovation we brought to market and grow the company. CIENA is at the cusp of delivering the next generation of products, and I am engaged in making sure we get this right.

"I don't think I am a typical engineer who wants to take apart things and figure out how they work. I was always, and still am,

immensely fascinated by what else can be created or what further can be done in my field of interest."

Sharma was attracted to the University of Alberta because of its work with TRILabs (then called Alberta Telecommunications Centre). TRILabs offered him the possibility of applied research in communications technology, and the opportunity to interact with industry professionals while working on his Master's thesis. He remained at the U of A and TRILabs to complete his PhD in 1996.

Upon finishing his PhD in 1996, Sharma had a choice to make. Nortel had offered him his choice of two positions in Canada, and

Optivision, in the Silicon Valley, had offered him another. For Sharma the decision wasn't difficult. "Optivision offered me an open slate for optical innovation, and was quite interested in using all aspects of my education.

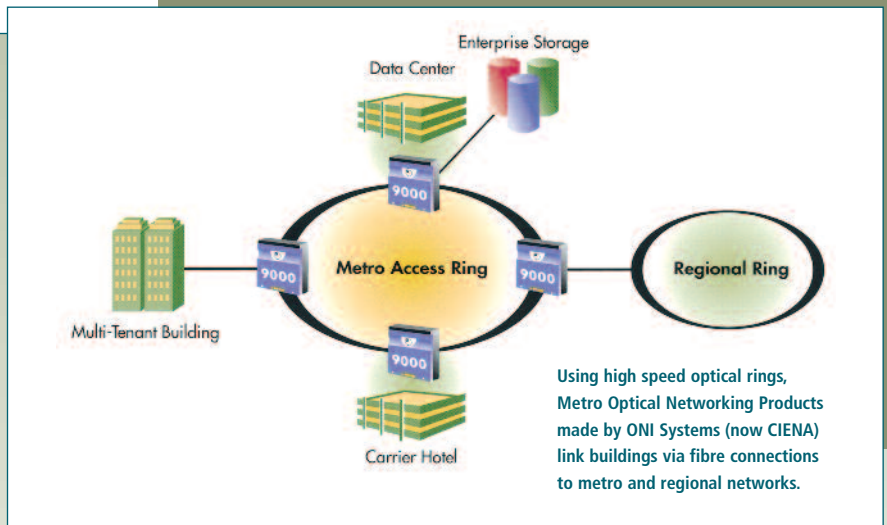
"It gave me a chance to go somewhere I had never been, and to do something that was quite undefined but full of possibilities. In summer of '96, when I was making that decision, it seemed that everything I used had roots going back to Silicon Valley—whether it was computers, or chips, or the Internet itself. So it seemed like the place where ideas matter."

Once at Optivision, Sharma joined the Optics group and quickly took over leadership

of the telecom project division. Within a few weeks, he made an important discovery. He realized that he could apply optical switching research to create resilient optical rings of various kinds. Optical rings, specifically adapted for the metro segment of telecom networks, help provide highly reliable links for carriers linking businesses and residential users to the rest of the network. By utilizing optical switching technology instead of electronics, Sharma's patented research removed the bottlenecks that existed in the metro-area networks. By the end of '96 he had created the basic technology and ideas to route and switch optical streams for metro-area networks.

"Given the high concentration of venture capital in this area, it was natural that we would go seek funding to develop the idea beyond a prototype and that's how ONI was born in October, 1997. By January, 1998, we had closed our first round of funding and we were on our way."

The key idea was an optical switched ring system that could switch and reroute traffic within milliseconds if a fibre cable carrying tens of thousands of voice, data or video connections failed. With the rise in Internet traffic in the late 90s, this technology was sought by carriers worldwide to upgrade their existing metro networks.



The company experienced tremendous growth in a booming tech market, and went public in June 1999. By 2001, ONI had reached \$195 million in sales/shipments and employed 700 people, including seven other U of A grads. One of these, Rainer Iraschko (PhD Electric and Computer '97), was the company's first hire in 1998. He helped shape several technologies in the first two years of the company's existence. Sharma credits the team the company had in place with its success—that, and timing.

With the merger of ONI with CIENA, Sharma assumed the position of senior vice president and CTO, Metro Networking Group, CIENA Corp. The merger has afforded him the opportunity to explore philanthropic work.

He has established an endowment at the U of A for a professorship, the Rohit Sharma

Professorship in Communications and Signal Processing, and a yearly graduate scholarship at the Faculty of Engineering.

"By creating this position, I am trying to contribute in a small way to the Faculty at the U of A. My hope is that this one additional professor's position, and one additional graduate student each year, contribute valuable research and ideas to the U of A, and the engineering community in Canada and beyond. If anything, ONI is a good example of how a simple idea and one person's endeavor can go a long way.

"At a social and sentimental level, U of A, and Edmonton will always be a sort of home for me. Home is where one grows up—physically, emotionally, and professionally—and U of A, as well as Edmonton, certainly provided all of that."

Beyond the Horizon for Sharma

During the 2003 U of A Alumni Reunion, Sharma will be awarded the Alumni Horizon Award, one of the Alumni Pride Awards. The Alumni Horizon Award recognizes outstanding achievements of U of A alumni early in their careers (within 12 years of receiving a bachelor's

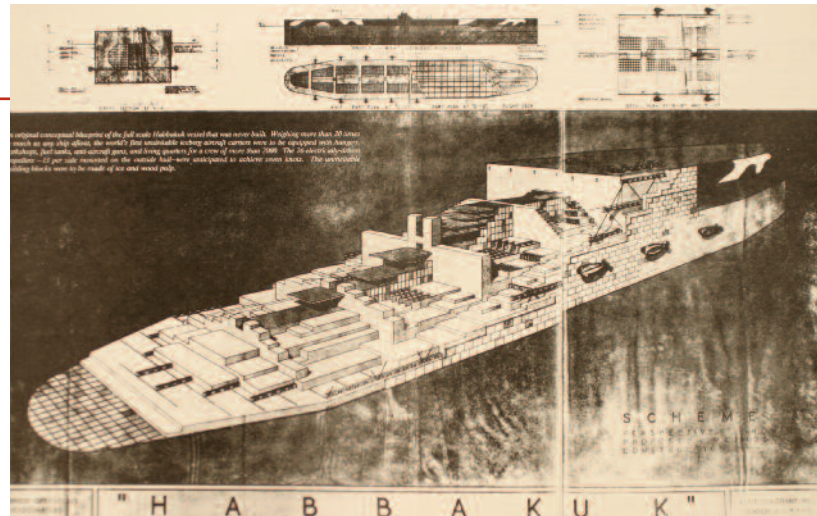
degree, or within 10 years of receiving an advanced degree).

As a sought-after presenter and panel member at technical conferences, Sharma is an excellent ambassador for the U of A, and an example of the high-quality graduates who have studied here. With his significant contribution to

the Department of Electrical and Computer Engineering (an endowed professorship in signal processing and digital communications) Sharma joins a long line of engineering alumni who actively support the next generations of students and graduates.

Code Name Habbakuk

by George Ford (Civil '42, MSc Civil '46, Honorary DSc '88)



Photos by National Research Council

*“Behold ye among the heathen and regard, and wonder marvelously;
for I shall work a work in your days which ye will not believe, though
it be told you.”*

—Habakkuk, Chapter 1, Verse 5; King James Bible

In September 1942, World War II was not progressing very well for the Allied Forces. Desperate times called for desperate actions. Unusual ideas, even crazy ones, were given serious consideration during these tense times. Kooks and crazies capitalized on the instability of the conflict.

One of the strangest ideas of all was a plan from an eccentric British professor, Geoffrey Pyke, to construct immense warships out of ice. This caught the attention of Admiral Lord Mountbatten, then the head of Britain’s Combined Operations, who passed it on to Prime Minister Churchill. It was viewed as a plan of daring, a potent response to troubling circumstances. With enthusiastic backing from high places, how could it fail? The “bergships,” as Pyke called them, were launched... at least on paper.

At the end of September 1942, Pyke sent Mountbatten a memorandum of some 200 pages code named “Habbakuk,” a misspelling of the name of an Old Testament prophet.

Pyke envisioned huge aircraft carriers built entirely of “pykrete” as he named it—unsinkable and invulnerable to attack. He laid plans for using his wonder ships to invade Germany, Italy and even Japan. Was it any wonder that Churchill became an ardent admirer of this wizardly scheme?

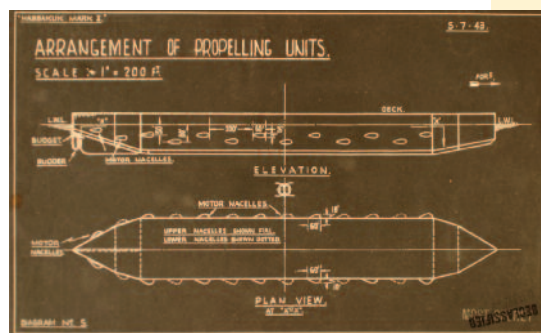
The construction of these glacial aircraft carriers was based on some experiments Pyke

made where he found that wood chips and wood pulp greatly enhanced the strength of ice. Wood pulp also acted as an insulator that inhibited melting so a small amount of energy could keep the ship frozen.

The obvious place to design and construct these bergships was Canada, the land of ice and snow. Two major projects were started in Jasper and Banff, as well as research programs elsewhere in the three Western provinces.

At Patricia Lake in Jasper, large columns and beams of lake ice were tested for destruction. A scaled-down prototype, a model of lake ice 60 by 30 by 20 feet was kept frozen through the summer months. The data collected during the winter and spring of 1943 was sufficient to make a more accurate assessment of the entire scheme.

While it seemed a visionary project to the military, to the scientists it just “didn’t hold water”.



A high-level board of inquiry, convened on October 12, 1943, concluded that the project should go no further without the sanction of the highest authorities. The entire project was put to rest with the official dissolution of the board March 1, 1944. Only Mr. Churchill’s love of the idea had kept the project alive to that date. Professor Pyke lost his support when Lord Mountbatten left Combined Operations in October 1943 and Pyke was transferred to the Admiralty where he had little or no work to do. Five years later, he took his own life.

Thus, the eccentric creator of the secret project with the code name “Habbakuk” met a sad and untimely demise.

Quick facts about Habbakuk

Draught (the depth of water needed to float the ship): 46 metres

Freeboard (the area on the ship’s side between the water-line and the deck): 15 metres

Displacement: 2 million tons

Speed: Seven knots
(12.95 kilometres per hour)

Power source: 26 electrical motors

Formulae for “Pykrete”: 10 per cent wood pulp, 90 per cent water

Original cost estimate: \$70 million
(in 1942 currency)

Workforce: 35,000 people

BROOKER, ELMER
(Civil '55 MSc Civil '58) PEng



is chair of the board of LRI Oil Tools Ltd, a privately held Edmonton-based manufacturer of oil field products and a leader in advanced

materials cutting processes. LRI Oil Tools received the 2002 Canadian Innovation Award in New Technology, presented by the Canadian Manufacturers and Exporters. This award recognizes innovative excellence in the development of a new technology (or the adoption and application of a new technology) in process or new product development. This is the first time a western Canadian firm has received this honour. The Canadian Manufacturers and Exporters is a business network and senior business association.

CAMARTA, NEIL
(Chemical '75)



is senior vice president, oil sands, with Shell Canada Ltd. His company received the Leadership Award in the

Integrated Oil and Gas category at the sixth annual Leadership Awards ceremony, hosted by Canada's Voluntary Challenge and Registry Inc. VCR Inc. is a national non-profit partnership between industry and government to promote, assess, and celebrate the voluntary approach to addressing climate change.

Shell Canada was recognized for its commitment, action, and leadership in the voluntary reduction of greenhouse gas emissions.

A founding member of VCR Inc., Shell Canada filed its first climate change action plan in 1995. Since then, the company has reported annually on its plans for, and progress to, targets to address greenhouse gas emissions.

HAMDON, OMAR
(Petroleum '89) PEng



was recently recognized by Economic Development Edmonton. His company, Hamdon Wellsite Solutions Ltd., was a finalist

for VenturePrize, Alberta's first major business plan competition. VenturePrize included six seminars on business plan preparation, strategy and resources development, and marketing. Hamdon qualified because of his high-growth business concept in petroleum engineering services. Mr. Hamdon is the president.

HOLE, J. H. (JACK)
(Mechanical '78) PEng



is serving the second year of a three-year term on the Council of the Association of Professional Engineers,

Geologists and Geophysicists of Alberta (APEGGA). Mr. Hole is the executive vice president of Lockerbie & Hole, a century-old contracting firm headquartered in Edmonton.

KEENAN, VAUGHN EDWARD
(Electrical '79) PEng



is vice president of product development for SMART Technologies Inc., a Calgary-based company that develops intuitive

and interactive multimedia tools for the office and classroom. SMART was recently recognized as one of Canada's 50 Best Managed Companies. This recognition program pays tribute to companies that embrace new technology and globalization, and recognize the increased importance of leadership, strategy, culture, brand, and knowledge.

KOMEX

Komex, a worldwide environmental, water resources, and engineering company with headquarters in Calgary, was recently recognized as one of Canada's 50 Best Managed Companies. Here is a list of the engineering graduates who are presently working in Komex offices in Canada and internationally as hydrogeologists, engineers, and environmental scientists:

James E. Armstrong
PEng

is currently a PhD student in Civil and Geotechnical Engineering at the Faculty of Engineering at the U of A, under the supervision of Dr. Kevin Biggar. Mr. Armstrong is a senior hydrogeologist with Komex in Edmonton.

Robert C. Armstrong
(MSc Civil '93) PEng

is a senior geotechnical engineer at Komex in Calgary.

Kevin Biggar PHD
(Civil '91) PEng

is senior remediation engineer and also a professor of Civil Engineering at the Faculty of Engineering at the U of A in Edmonton.

Wade R. Major
(Civil '92, MEng Environmental '93)

is senior environmental engineer at Komex in Los Angeles.

Komex is an international, full-service environmental consulting and engineering company. Komex provides leading-edge technology and innovative solutions to industries and governments worldwide. Clients range from small independent owners to multinational corporations, governments, and international development agencies.



The Canada's 50 Best Managed Companies program was created in 1993, during an economic downturn, to pay tribute to companies achieving success in harsh economic conditions. Now in its 10th year, the program recognizes companies growing rapidly and excelling in the global marketplace. Winners were honoured at a gala in Toronto earlier this year.

KOZIOL, MIKE
(BSc Civil '82, MEng Civil '88) PEng



is serving the final year of a two-year term on the Council of the Association of Professional Engineers, Geologists and

Geophysicists of Alberta (APEGGA). Mr. Koziol graduated from the Management Development Certificate Program for Professional Engineering at the U of A, with distinction, in 1992. Currently living in Lethbridge, he is regional manager of southern Alberta with EXH Engineering Services Ltd.

KUCHARSKI, NEIL
(Civil '90) PEng



is manager of the municipal and environmental engineering group with The Focus Corporation. Focus is a winner of Canada's 50 Best

Managed Companies, a national competition that identifies 50 great Canadian businesses that have implemented best business practices. The Focus Corporation is a multi-disciplinary consulting firm providing a range of professional and technical services to clients in the energy, environmental, infrastructure, land development, and resource sectors.

McFARLANE, GRANT
(Chemical '93) PEng



works with Alberta-Pacific Forest Industries (Al-Pac), the recipient of a national award from Canada's Voluntary Challenge

Registry Inc. VCR Inc. is a national non-profit partnership between industry and government to promote, assess, and celebrate the voluntary approach to addressing climate change. Al-Pac produced an action plan and expects to become carbon neutral by 2006.

Al-Pac is an Alberta-based pulp producer. It was recognized at the sixth annual Leadership Awards ceremony, hosted by VCR Inc.

Mr. McFarlane is a member of Al-Pac's Carbon Central Team, a team tasked with identifying and providing expertise to the company's greenhouse gas reduction initiatives.

MOLDON, DR. JOHN
(Chemical '62) PEng



is serving the second year of a three-year term on the Council of the Association of Professional Engineers,

Geologists and Geophysicists of Alberta (APEGGA). Dr. Moldon received master's and doctoral degrees from the Massachusetts

Institute of Technology in electrical engineering in 1966 and 1968, respectively. Retired from the Public Service of Canada, he is currently working with Medicine Hat College, developing a supporting resource network to assist local engineering, science, and technology entrepreneurs.

MONGA, AMIT PHD
(Mechanical '96)



has joined MDS Capital Corporation as vice president of Technology Investing. MDS Capital, with more than \$1 billion

under their management, is a leading North American venture capital company focused exclusively on providing financial support and other services to help build emerging life science companies.

In addition to technology investing duties, Mr. Monga's responsibilities also require monitoring innovations and technologies that result from the convergence of engineering, life sciences, and information technology.

PHILLIPS, J.D.
(Petroleum '91)



represents Hamdon Wellsite Solutions Ltd., a finalist in VenturePrize, a business plan competition that is a new initiative

of the Greater Edmonton Competitiveness Strategy. The competition offered prizes to those with high-growth business plans. Mr. Phillips is a production engineer with Hamdon Wellsite, a service provider of petroleum industry.

PIZZEY, TALMAN B.
(Civil '88) PEng



has been appointed vice-president, operations with Canspec Group Inc. Mr. Pizey has been with the company for 20 years in various technical and management capacities. With a staff of 925 engineers, technologists, and technicians, Pizey will be responsible for all operations in Canada and Alaska.

PLECASH, ROSS
(Mechanical '88) PEng



has been appointed director, corporate and member affairs, with the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). His primary responsibilities include the administration of APEGGA's corporate permit to practice program, various member seminars and communications programs, the APEGGA Education Foundation, and member services.

POON, TIM
(Electrical '01) EIT



attended the European Space Agency/International Space University Summer Session Program. This program took place in Strasbourg, France from July to September this year. Mr. Poon is a MSc candidate under the supervision of Dr. Beaulieu and is working in the iCore Wireless Communications Laboratory in the Department of Electrical and Computer Engineering at the University of Alberta.

SLUPSKY, STEVEN
(BSc Electrical '86, MSc Electrical '88) PEng



was the first place winner of VenturePrize, a newly established \$50,000 award granted by Economic

Development Edmonton. As part of the competition, Mr. Slupsky presented the business plan for Scanimetrics, a technology start-up. Scanimetrics has developed a non-invasive, virtual probe technology for testing integrated circuits and semiconductors. Steven is founder and chief technology officer for the company.

SOMJI, NIZAR J.
(MEng Chemical '85) PEng



was named the 2002 Dr. Charles Allard Chair in Business, an honorary teaching position at Grant MacEwan College.

TENOVE, RON
(BSc Civil '70, MEng Civil '71) PEng



received the Honorary Life Membership award for eminent service allied with the profession from the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). Now completed his term as president, Mr. Tenove has been a member of APEGGA since 1972.

TROVATO, NICK
(BSc Civil '79, MEng Civil '84) PEng



is serving the final year of a three-year term on the Council of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). Mr. Trovato is a partner with Read Jones Christoffersen Ltd., a national consulting firm specializing in structural design, restoration and building sciences.

Call for photos for the 2004 Engineering Perspectives Calendar

We've already received submissions of photos for consideration for the 2004 calendar. But it is not too late to take part. The theme is "Engineering Up Close." Interpret this theme in a creative shot and earn your spot in the 2004 calendar. Please submit digital photos scanned at 300 dpi for 8X10. For further details, contact sherrell.steele@ualberta.ca.

WALKER, IAIN PHD

(BSc Mechanical '86,
MSc Mechanical '89,
PhD Mechanical '93)



will receive an Alumni Pride Award at Reunion 2003. Mr. Walker is recognized internationally for expertise in energy and moisture performance of attics and for leading-edge research in the study of building ventilation.

Walker spent the last eight years with the Lawrence Berkeley Laboratory in the Environmental Energy Technologies Division. He rose through the ranks to the position of staff scientist and principal investigator—the terminal rank for most scientists there (only 10 per cent rise above that level). His work has led to new building codes for ventilation and air conditioning systems—resulting in 10 per cent more energy for heating and cooling.

WEIR, CHARLIE

(BSc Civil '50, MSc Civil '52) PEng



received the APEGGA Honorary Life Membership award for eminent service allied with the profession from the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). Mr. Weir has been a member of APEGGA

for 50 years. He has over 35 years' experience in the practice of engineering, surveying, planning, and consulting and has served on many APEGGA committees over the past three decades.

Faculty Congratulations

FLYNN, PETER PHD PENG



has been asked by the Alberta Minister of Energy to sit on the Council of the Power Pool of Alberta. Dr. Flynn maintains an active research program related to power generation economics. He previously sat on the Board of Directors of EPCOR as the province of Alberta deregulated electrical power. Eventually, he will sit on the Board of the Balancing Pool, which will manage the future of electrical power in the province. Dr. Flynn is Poole Chair in Management for Engineers in the Department of Mechanical Engineering.

received his PhD in Chemical and Materials Engineering from the U of A in 1997. He is now an associate professor in that department. He has produced a book, had 43 journals and 23 papers refereed in conference proceedings, delivered 19 conference presentations, and supervised countless graduate students.

through cheaper systems, better containment reduction, and easier operation.

The APEGGA award recognizes Dr. Smith's contributions to environmental awareness, preservation, and reclamation through education, leadership, and involvement

Dr. Teply is professor emeritus, transportation engineering, in the Department of Civil and Environmental Engineering.

HUANG, BIAO PHD PENG



earned a 2003 Petro-Canada Young Innovator Award for his process control research, which is integral to industry compliance with the Kyoto Protocol. Dr. Huang received his Master's Degree in Science in Automatic Control from the Beijing University of Aeronautics and Astronautics in 1986. He

SMITH, DANIEL W. PHD PENG



received the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) Environmental Excellence Award at this year's Summit gala and ceremony. The award recognizes excellence in the application of engineering, geological, and geophysical methods towards preservation of the environment and the practice of sustainable development.

For more than three decades, Dr. Smith's environmental engineering research has focused on water and cold regions—two topics of vital importance to Canada. His pioneering and multi-faceted research in these areas continues to be translated into practical applications. Some of his best-known work centres on improving water and wastewater treatment,

TEPLY, STAN PHD PENG



received an honorary doctorate from the Czech Technical University in Prague. This university is one of the oldest engineering schools in the world. The citation highlights Dr. Teply's scientific, education, practical, and publication accomplishments in Canada, the U.S., and many other countries. It also recognizes his leadership of the key civil engineering and transportation institutions of the City of Prague in the 1960s, and his leading role in the planning of the Prague subway system.

The ceremony was attended by the Canadian Ambassador to the Czech Republic and by the presidents of all Czech universities and academies.

WANKE, SIEGHARD E. PHD PENG



was awarded the prestigious 2003 Frank Spragins Technical Award by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). Dr. Wanke is recognized by his peers for his integrity, leadership, expertise, and outstanding accomplishments in engineering. The award was named after Frank Spragins, APEGGA President, 1975. Nominees for this award must have a high level of competence in their field and have been APEGGA members for at least ten years.

Dr. Wanke is a professor in Chemical Engineering. His research interests are in catalytic reaction engineering, with emphasis on supported metal catalysts and catalytic olefin polymerization. He has made major contributions in a number of areas in the broad field of catalysis and chemical reaction engineering.

Chemical

Basaraba, John (Chemical '51)

I recently spoke to the Swan Lake Probus Club, a professional/business club in Toronto, on the subject of the Athabasca oil sands, covering the recovery process, the enormous reserves, development history, and its significance in the face of currently faltering world surplus and uncertainty in prices of crude oil. I worked on the original NRC/ARC pilot plant in 1949, 100 kilometres north of Ft. McMurray. On a good day, we made 300 barrels of synthetic crude and enough gasoline to run much of the equipment. The Athabasca oil sands was the subject of my fourth year thesis, and I have maintained a close interest ever since—despite living in Eastern Canada since graduation.

P.S.: The 2001 reunion was a pretty good event. Thanks!

Litchfield, LeRoy (Chemical '51)

I have recently retired in Kelowna, B.C. after a career that included working as a senior economic analyst with Polyson Corp., as a director of management practices with Industry Canada, and as a consultant with E. L. Litchfield & Associates Ltd. in Ottawa.

MacGregor, Rosalynn (MSc Chemical '88)

I left my long-time employer, Shell Canada (after nearly 15 years), in the spring of 2001 to start my own engineering company, of which I am president (that's one way to get to the top, eh?). This allowed my family and me to move to central British Columbia. I work in association with a process hazards analysis company based in Kamloops, B.C. (DeGo Management Services Ltd.). Many of our clients are in Alberta, so I make frequent trips back "home" on business.

I have fond memories of the Chemical Engineering department members and staff.

Keith MacGregor, my husband, is also an alumnus. He got his Forestry degree in the late 80s, as well as a Master of Public Management (MPM) in the mid-90s from U of A. We have two sons, one almost 6 years old and one almost 3 years old. Keith is their full-time caregiver, while I work out of my home office in the top

level of our house. He does woodworking in his spare time, so his knowledge of trees and wood has not gone to waste. He uses his MPM to keep the money and administrative side of my company on track.

McNeill, Janet (Chemical '75)

With more than 28 years with Exxon Mobil Chemical Co. in Baytown, Texas, I now serve as the site manager for the SAP business computing system. SAP is the world's largest inter-enterprise software company, and the world's third-largest independent software supplier overall. I have celebrated my 25th wedding anniversary with my husband, Frank Griffith. I keep busy with my 12th-grade daughter and 9th-grade son.

(Family of) Moore, Allan L. (Chemical '44)

Please be advised that Allan L. Moore passed away February 2, 2003 in West Vancouver. He was 89. He is survived by his wife Winnifred, five children, and four grandchildren.

Civil

Hasham, Faizal (Civil '96, MSc Civil '98)

Sounds like some exciting things on the way for the Alumni Magazine—best of luck! As requested, here's some information on my career path since graduation.

I worked for Stantec Consulting Ltd. from 1998 to 2001 as an environmental engineer. I commenced the Executive MBA program at Queen's University in 2000. I began working for The Focus Corporation in 2001, where I now serve as project manager and environmental engineer. Focus has recently been recognized as one of Canada's 50 best managed firms, and one of Alberta's 30 fastest growing firms. Since I founded an air quality management team at Focus, the team has grown from one to ten in a year and has a wide range of clients and services in ambient air quality monitoring, assessment, air shed management, and technical expert advice.

My wife (Safeena Kherani) and I got married on May 10, 2003 at the Jubilee Auditorium (as the University of Alberta is a very special place for us both). She completed her BSc in

Physical Therapy in 1999 at U of A, and is completing medical school at the U of A this spring. Our wedding website is www.safeenaifaizal.com if you are interested in seeing pictures!

We are relocating to Ottawa in July as she was accepted into a residency program in ear, nose and throat surgery there. I'll be opening an office/starting services for Focus in the Ontario market.

We both have had wonderful experiences at U of A, and we know that our foundation here will be a real asset as we move into married life in a new city with new opportunities!

Lee, Addie (Civil '97)

After graduating from engineering, I worked for a couple of years before deciding to change careers. I traveled to Korea to teach English for two years, and returned to the U of A in the fall of 2001. I am now about to graduate with my BEd with a focus in the middle years, but I would prefer to teach high school math.

I will be getting married in the summer of 2003 to another engineering alumnus, Darren Otto (Civil '97). We will reside in Red Deer, where he has just accepted a position with UMA Engineering. Before that, Darren had been working as a transportation engineer in Chicago, Illinois.

Berry, Lionel (Civil '80)

Since graduation, my career has taken me through two industries (petroleum production, and now the nuclear industry) and to numerous towns and cities (Virden, Manitoba; Red Deer and Calgary, Alberta; Port Elgin, Ontario and now Oshawa, Ontario). Within these industries



I have performed many roles: production, work-over and completion engineering, mechanical project engineering, and now environmental/regulatory compliance engineering.

Like many graduates, I have found the opportunity to travel an exciting one. I have travelled to scores of countries in every continent but Antarctica. Most recently, I travelled to Indochina for five weeks, and I enclose a favourite shot from one of the temples (Ta Prohm) in the Siem Reap, Cambodia area. This picture is given in the spirit of the wonderful calendar that I received from the Faculty of Engineering this year. Let's repeat that calendar format!

My trip to Asia impressed me for many reasons. Aside from the great sites, I was impressed by the political history and how it unfolded over the past hundred years. The leadership parallels in modern Iraq, North Korea, and 20th-century Vietnam have an eerie coincidence, considering the influence of Stalin and his tactics.

Although I still have not married, my wonderful girlfriend, Anne Meany, and I are optimistic about our future. With good fortune, we will be marrying within the year, moving to Pickering, and starting a small family. I say this thinking so many of my friends are seeing their children off to university this year. It has been wonderful seeing these children maturing, and now making fundamental decisions that will forever shape their future careers.



Left: The view from Ta Prohm temple in Cambodia.
Right: A primary school in a village along the Mekong.

If there is one piece of advice I can give to new graduates it is this: be confident in your abilities, they are greater than you think. Be ethical in your business dealings, and seek competent mentors and advice when uncertain. Take calculated risks, but do this early in life, when you have everything to gain and little to lose.

Magyar, Frank (Civil '58)

Thank you for the invitation to the Edmonton Regional Alumni Reception, held on April 15, 2003. I didn't know what to expect when I decided to attend. I had read about big things happening at the U of A Faculty of Engineering, but did not imagine the magnitude of what was really happening until I attended the Alumni Reception.

Dr. David Lynch, Dean of Engineering, gave a superb presentation. The delivery was interesting, informative, stimulating, and pleasant. Time passed very quickly during Dr. Lynch's speech.

My only disappointment was that more of my engineering colleagues were not present. The evening was very pleasant, the food was excellent, with a good variety of beverages provided.

Thank you to Dr. David Lynch, Dean of Engineering, and thanks to David Petis, Assistant Dean, and the rest of the staff involved in putting together this great Alumni Reception.

In view of the prestigious position and rank that the U of A Engineering faculty holds in Canada, North America, and internationally, the alumni and all Albertans can be proud, and rest assured that the Faculty is in good hands.

Once again, thank you for the great evening, and I look forward to the next Alumni Reception, if there will be another one.

(Editor's note: Future receptions are planned for Edmonton and elsewhere. Check the alumni events information on p. 34.)

Soroush, Abbas (PhD Civil '96)

I graduated with a PhD in Geotechnical Engineering from the department of Civil and Environmental Engineering. Recently, I was appointed as the chair of the Department of Civil and Environmental Engineering, Amirkabir University of Technology, Tehran,

Iran. I teach a number of courses at undergraduate and graduate levels. Also, I have been successful in establishing an active relationship with industry while giving consultancy to internal clients involved in hydro-power projects and construction of dams. I have been invited to be a member of four international expert panels reviewing a number of large dams in Iran.

I should say that I never forget the years during which I studied at the U of A and lived in Edmonton.

Electrical

Canning, Tony R. (Electrical '75)

At the time I graduated, I was a Lieutenant in the Canadian Forces. I left the military in 1981 and joined a small company called AMTEK in Ottawa. Two years later, I became one of three owners of AMTEK. We sold the company in 1990 to a U.S. company called Atlantic Research Corporation (ARC). In 1993, ARC was acquired by Computer Sciences Corporation (CSC), the third largest information technology services company in the world. I became the President of CSC Canada in 1993 and recently retired from CSC after nine years as president. During my tenure the company grew from \$4 million in 1994 to \$400 million this year.

I am now CEO and founder of a company called Strategic Outsourcing Services, based here in Ottawa.

Carpenter, George (Electrical '60)

I was so pleased to see the article about Fred Vermeulen in the Winter 2003 magazine. Knowing Fred, I know it is well deserved. Please pass my congratulations on to him for a job well done. It seems like just yesterday that we were the electrical class of 1960. I had a short visit with him in September 2000 at the 40 year reunion.

When I was in my senior year at U of A, I began to realize that people I knew and people in my electrical engineering class were applying to go to graduate school. I had not really thought about going to graduate school, but I figured if they could do it so could I. I applied

to the University of Illinois because my roommate at St. Stephen's College had gone there and to Stanford University because Professor George Ford (Civil '42, MSc Civil '46, Honorary DSc '88) had gone there (I thought very highly of Dr. Ford). In the end, I decided to go to Stanford because I could drive there with Glenn Leckie who had also been accepted at Stanford and Ed Hauptman who had also been accepted at Cal Tech.

Stanford turn out to be a wonderful experience, and they awarded me two graduate degrees. While there I got involved in research into the effects of nuclear detonations. The procedures I developed to process and explain how high-altitude detonations effected radio wave propagation came to the attention of the Stanford Research Institute (SRI), and they offered me a job in their communications department. At that time, SRI was associated with the University, but later became independent and is now called SRI International. I worked full time at SRI for 37 years, the last few as Director of the Radio Propagation Laboratory. That work was very exciting and included travel to many distant locations.

Four years ago I tried to retire, but the government requested that I work part time so I could write a history of the measurement of electromagnetic pulses (EMP) associated with domestic and foreign nuclear tests. I finished that a year ago, but have continued to work part time to support EMP programs at the U.S. nuclear weapons laboratories. With all that is going on in the world, there is renewed interest in that field. I probably will continue to work part time as long as it doesn't interfere with my hobbies and travel.

Goettler, Paul N. (Electrical '74)

I have just received my Winter 2003 issue of U of A Engineer and, looking through it, I read the article about Dr. Fred Vermeulen. He was a professor of mine while I was taking Electrical Engineering during the early 70s. It is somewhat hard to imagine that he has retired—he seemed so enthusiastic about his work—but after 35 years as a professor at U of A, I guess he wanted to do something

else. I count myself lucky that I had Dr. Vermeulen as one of my professors, and there were others like him, in the department of Electrical Engineering during the time that I attended the university.

Thanks for the fine article. These types of articles are a good way for graduates like myself to keep in touch.

Rose, Bob (Electrical '74)

I was delighted to receive the (winter) U of A Engineer magazine! I immediately recognized Fred Vermeulen on the cover. He was one of my favourite professors and I remembered him very well. I believe he taught me four courses. His teaching has always been a great benefit to my work.

Anyway, I just wanted to congratulate you on an excellent publication. I noticed that you are the publisher/managing editor of the magazine and I thought you would appreciate some feedback from one of the typical readers. The articles and photos are great. I think I read every single page, which is rare in these days of too many things to do and not enough time to do them all. I look forward to future issues of the magazine.

Kulshreshtha, Rekha (Electrical '89)

I've been working at IBM for 14 years, now living in Markham, Ontario. During these years, I've worked in many different roles, in many different cities, on many different projects. Life at IBM is never boring. Recently, I joined the strategy and change consulting team in IBM's business consulting services division. I love the opportunity to work with customers in

many different industries to help them achieve higher performance levels.

I'm a soccer fan and a soccer player. I regularly play with three different community soccer leagues.

Maslowski, Richard (Electrical '88, MSc Electrical '91)

I enjoyed the article on Vermeulen. He was my Master's supervisor and this article inspired me to try to keep balance in my own life and go after the things that I really want to do. By the way, I read every edition of your magazine cover-to-cover. Best regards.

Mechanical

Gurjar, Ritu (Mechanical '01)

Here's a quick update on where I am and what I'm doing.

I have been working for Cuthbertson Mechanical Engineers since February 2001. Their head office is located in Thunder Bay, Ontario and they have a branch office in Mesa, Arizona. I took a one-month leave of absence from work in January 2003 and travelled to South America, specifically Peru and Chile, for some exploring and vacation. Upon returning to Canada, I was transferred to the Mesa office where I started working at the beginning of February 2003.

I am really enjoying living in Phoenix and I plan to be down in Arizona for at least a few more years. The winter weather here is great and I can spend my weekends hiking and mountain biking.

Mining

Dimm, Clifford (Mining '91) PEng

I have been employed with Syncrude Canada Ltd. in Fort McMurray for the past 12 years. After six years in mine engineering, I spent three years as a leader in the Mine Operations Division, followed by two years as operations senior leader. I have spent the last year in the Mine Maintenance Division, presently as area supervisor responsible for the drag-line-bucket-wheel-conveyor/hydrotransport maintenance business unit.



**Rekha Kulshreshtha
(Electrical '89)**



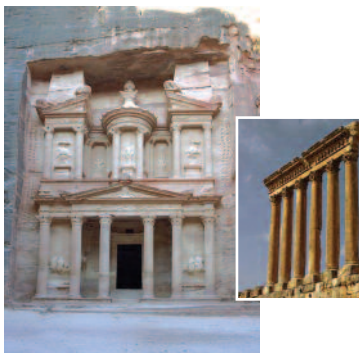
Petroleum

Mogan, Greg (Petroleum '90)

It's so nice to look for familiar names and faces in U of A Engineer. In 1990, the year I graduated, I was Engineering Student Society vice president of social and I was also Engineering Week coordinator.

I worked as a petroleum engineer for seven years in Calgary, then four years in New Zealand. My wife, Briar, and I now have three lovely children. In 2001 we accepted a posting with Shell in Damascus, Syria where I'm now

I have been married 12 years; my wife Ronda and I have a 19-month-old daughter, Madeleine, and our second daughter Holly arrived on March 16th. Ronda and I have enjoyed travelling in our free time, the highlights being the Trinidad Carnival in 1998, Fiji and Australia, and attending the Sydney Olympic Games in 2000. This past year we vacationed in southern Texas and drove the eastern U.S. coast. The picture is of Ronda and me, and our two girls—very recent!



coordinating new wells and oil production of 150,000 barrels per day. With the war in Iraq all expatriate families have been evacuated but are expected to return in summer 2003.

Once things settle down in the region I would highly recommend any and all to visit Syria, Lebanon, and Jordan which have among the best-preserved ancient ruins in the world, and also the friendliest of people. I have such fond memories of the countless friends that U of A provided, and particularly recall the antics of the 1990 Engineering Week! Contact me at g.mogan@afpc.net.sy.

Many thanks and keep up the great work on the magazine.

Thanks to all who contributed to engineer.alum@ualberta.ca. However, I notice an absence of feedback from Computer Engineering, Engineering Physics, and Materials Engineering. Here's your call to action!



Keep in Touch

engineer.alum@ualberta.ca

Graduate's Name _____

Year of Graduation and Degree _____

Do you have a new address?

Home Address _____

Business Address _____

Organization _____

Title _____

Street _____

City _____ Province _____

Postal Code _____ Telephone _____

Fax _____

Preferred E-mail _____

What's New with You?

(Comments for possible publication in a future magazine.)

E-mail, fax or post this information to
engineer.alum@ualberta.ca
 Fax (780) 492-0500
 E6-050 Engineering Teaching & Learning Complex
 Edmonton, Alberta T6G 2V4

The personal information requested on this form is collected and protected under the authority of the Universities Act and Section 32 (c) of the Alberta Freedom of Information and Protection of Privacy Act for the purposes of maintaining up to date records of alumni and friends and obtaining alumni feedback.

Alumni Reunion Days

The University of Alberta will host Reunion Days from October 2-5, 2003. The Dean's reception will be October 3. The Dean's Brunch, Engineering Open House, and Dean's Forum will be October 4.

Edmonton Alumni Reception

Edmonton graduates from Chemical, Materials, Metallurgical and Mineral Process Engineering who reside in the Edmonton area are invited to an alumni reception at the Faculty Club, November 20, from 7:00–9:00 p.m.. Go to www.engineering.ualberta.ca/alumni for further details.

Engineering Open House

The Faculty of Engineering opens its doors to prospective students, their parents, alumni, and the public on Saturday, October 4, from 9:00 a.m.–4:00 p.m. This open house and the Dean's Forum will have even greater appeal this year, with more displays and a draw prize. Join the crowd or escape to the alumni lounge for relaxation and refreshment.

Toronto Regional Alumni and Friends Reception

The Toronto Alumni and Friends reception will be held on Thursday, October 23. Go to www.engineering.ualberta.ca/alumni for further information.

Victoria Regional Alumni Tea

Victoria alumni are invited to a tea on Wednesday, October 29, from 2:00–4:00 p.m. Go to www.engineering.ualberta.ca/alumni for location information.

Vancouver Regional Alumni and Friends Reception

The Vancouver Alumni and Friends Reception will be held Thursday, October 30, from 5:30–7:30 p.m. Go to www.engineering.ualberta.ca/alumni for location information.

Edmonton Reception for Civil, Environmental, Mining, and Petroleum Engineering Alumni

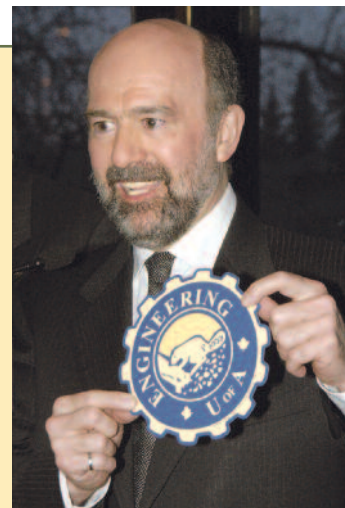


More than 100 alumni and friends gathered at the Faculty Club at the U of A on April 15, 2003 for the inaugural Edmonton alumni reception for Civil, Environmental, Mining, and Petroleum Engineering. Host Dr. Elmer Brooker (Civil '55, MSc '58) marvelled at the many changes on campus and the recent expansion to the Engineering family of buildings. Dr. Brooker credited much of his professional success to the excellent

education he received at the U of A. He then introduced the Dean, Dr. David Lynch, and congratulated him on his vision and leadership.

Dr. Lynch explained that the Faculty has held successful alumni events in other cities, but never before in Edmonton—due to challenges of finding a venue large enough to accommodate the high number of Edmonton alumni. Thus, the decision was made to divide the invitations list by discipline. Civil, along with friends in Environmental, Mining and Petroleum, had the honor of first invitation. Dr. Lynch reviewed recent developments and accomplishments and gave full credit to the support of alumni for much of the recent activity. Dr. Lynch named many individuals in the audience who had left behind a legacy of buildings both on campus and elsewhere in the Edmonton community.

Lynch spoke of U of A alumni as creators of wealth and referred a list of more than 30 alumni who, as CEOs and presidents of



Dr. Lynch demonstrates the many uses of a "generic rodent pad".

major Alberta companies, contributed 38 per cent of the province's GDP in 2001.

A full range of graduate years was represented, from Norman Lawrence (Civil '41) to a number of graduates from 2002. Notable attendees included Harry Hole (Civil '44) and numerous Professors Emeriti.

The formal program concluded with prize draws, and the evening ended with friendship and networking.



in memory of Alex Slukynski

Family, friends, and co-workers of Alex Slukynski (Mechanical '98) are honouring the 26-year-old engineer whose life was lost in a tragic accident on February 19, 2002. The Alex's Playground committee is rebuilding his childhood playground in Fort Saskatchewan. Donations in cash, kind, or services can be made to:

Alex's Playground
#2 Ross Drive
Fort Saskatchewan AB T8L 2M8

Contact Phyllis or Nancy Slukynski at (780) 998-2390.

Any donations of \$50 or more will receive a charitable tax receipt from the City of Fort Saskatchewan. Search news at www.engineering@ualberta.ca for a full story on this undertaking.

in memoriam

The Faculty of Engineering sincerely regrets the passing of the following alumni and friends.

De Graff, Alvan (Civil '62)
McFadyen, Gerald (Civil '57)
Miller, Herbert (Bert) B. (Chemical '42)
Moore, Allan L. (Chemical '44)
Nicholls, John (Chemical '45)
Rubin, Alex (Chemical '45)
Sebzda, Peter (Electrical '58)

for the record (missed memoriams)

The Faculty of Engineering was recently made aware that the following alumnus passed away more than a year ago.

Chizen, Martin (Electrical '45)

Alumni and Friends Receptions

By Rochelle Marshall

Fort McMurray

The second annual Fort McMurray Alumni and Friends Reception was held on April 29. More than 45 people came out to reminisce with engineering alumni and friends.

Host Murray Smart (Chemical '69), executive vice president strategic projects at Syncrude Canada Ltd., spoke about what it means to him to be an engineer and introduced the Dean of Engineering, Dr. David Lynch. Dr. Lynch praised the great students, teachers, and researchers; and the new infrastructure at the U of A; and gave an update on a particularly large hole on campus which will eventually be replaced by the new Natural Resources and Engineering Facility (NREF).

Calgary Regional

Over 200 people joined Dr. David Lynch and host Allan Markin (Chemical '68, LLD [Hon] '02) at the Petroleum Club in Calgary and enjoyed the third annual Calgary Regional Alumni and Friends Reception on Tuesday, May 27.

In addition to updating alumni and guests on recent activities of the Faculty, The Dean made an announcement that Dr. Jim Stanford (Petroleum '60, LLD [Hon] '00) has provided significant support for the James M. Stanford Learning Commons to be housed in the new Natural Resource Engineering Facility (NREF).

D a t e s t o R e m e m b e r

Bulletin Board

Alberta Science and Technology (ASTech) Awards Gala

The ASTech Awards Gala will take place November 7 at 7:00 p.m. For further information, contact Jason Darrah at (780) 492-3129.

Fall Convocation

Fall Convocation for Engineering graduates will take place November 20. For further information, contact Corinne Callihoo at (780) 492-2376.

2003 International Electrotechnical Commission (IEC) Annual General Meeting

The 67th annual general meeting will take place October 12-17 in Montreal. The event will be hosted by the Standards Council of Canada and sponsored by Hydro Quebec. Delegates from the IEC's 55 member-countries

will engage in strategic exchanges and technical discussions on IEC standardization activities. Go to www.iec-2003.org for further information.

National Professional Practice Exams

The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) will administer the national professional practice exam on October 20. Go to www.apegga.org for further information.

University of Alberta Annual General Meeting

The U of A's report to the community/report to the campus will be presented September 25 from 7:30-9:00 a.m. at the Westin Hotel, Edmonton. For further information contact Judy Goldsand at (780) 492-0443.

Engineering Convocation Breakfast

More than 550 proud graduates, their parents, and friends gathered June 11 to enjoy a pancake breakfast and receive congratulations from the Dean, Dr. David Lynch and from Jim Hutton (Chemical '63, MSc Chemical '65), Engineering representative on the U of A alumni council.

Faculty of Engineering
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 & Learning Complex
 Edmonton, AB T6G 2V4

Postmaster: Return Cover only



University of Alberta ENGINEERING

Help support student projects



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 Tel: 780.492.5080
 Fax: 780.492.0500
 E-mail: david.petis@ualberta.ca



FutureTruck is one example of an undergraduate student project you could support as a donor. This project provides students with valuable hands-on experience applying their textbook education to a real-world engineering design problem. The skills

acquired not only include engineering design, drafting, and optimization, but also project administration, communication, team cooperation, problem solving, time management, and international competition. Costs of this project are considerable, thus,

project sponsors become an essential component of the team's success. Sponsors not only provide the team with much-needed funds and mentorship, but also provide product, technical advice, and public support.



I wish to make a gift of:

\$75 \$100 \$500 \$1,000 Other \$ _____

cheque (made payable to the University of Alberta) VISA MasterCard

_____/_____/_____/_____/ expiry date: _____

Name (please print): _____

Signature: _____

I have also enclosed:

a corporate matching gift form from my (or my spouse's) employer

If you are an Alberta resident on December 31, 2002 and have already given \$200 elsewhere, your combined income tax savings will be:

Your donation to the U of A:	\$75.00	\$100.00	\$500.00	\$1,000.00
Your tax savings for your gift:	\$27.00	\$39.00	\$195.00	\$390

I would like my gift to support:

\$ _____ Faculty of Engineering in support of undergraduate student projects, new educational initiatives in all disciplines, and general student life enhancement activities.

\$ _____ Chemical and Materials Engineering

\$ _____ Civil and Environmental Engineering

\$ _____ Electrical and Computer Engineering

\$ _____ Mechanical Engineering

\$ _____ Mining and Petroleum Engineering

\$ _____ Other _____

I would like information on how to make a gift of publicly traded securities to support the Faculty of Engineering at the U of A.

I would like information on how to include the Faculty of Engineering at the U of A as part of a will, life insurance, or other planned gift instrument.

I have provided for the Faculty of Engineering at the U of A in a will or trust agreement.

Please return to: Office of the Dean, Faculty of Engineering, University of Alberta,
 E6-050 Engineering Teaching & Learning Complex, Edmonton, Alberta T6G 2V4