LETTERS

Why not nuclear power?

Peter Smith's article in the September/October 2001 issue (pp. 26-28) was well written and worth reading. I agree that the evidence on global warming, though not conclusive, suggests it would be prudent to take action now.

All of the letters and articles that I have read on the subject seem to fail in the end by not making concrete suggestions about what action to take. I'm left with a fuzzy feeling that I should wear a hair shirt and live in the cold and dark.

The interesting thing about Smith's article is that the answer lies on p. 27 in "Table 1. Emissions from fuels burned in 1999," that gives statistics for various fuel sources including nuclear. I note that Smith has a degree in nuclear engineering but does not recommend nuclear power as a solution. Why?

I regularly read a number of publications in the scientific and technical field, and they will not print anything positive about nuclear power. When one looks at the safety record of CANDU reactors and reads AECL reports on waste fuel disposal, I see no technical reason why we should not proceed to building more reactors and give up all other forms of power generation.

The continual suggestion of using renewable sources, i.e. wind, solar, etc., does not stand up to analysis. When the wind doesn't blow and the sun doesn't shine, the system falls back to burning hydrocarbons or nuclear. Renewables may save on burning hydrocarbon but nuclear does that and since there is always a large capital cost to recapture, the capital costs of nuclear should be included in the renewable source costs.

John DeGroot, P.Eng.
Toronto, ON

Successful strategies

I was delighted to read the November/December 2001 issue featuring articles on access to the profession. With respect to the article "Attracting and retaining more women into engineering," (pp. 33-34) I am pleased to note that there are approximately 4000 female professional engineers in Ontario. In my time there were only 200 across Canada, including the illustrious aeronautical engineer, the late Elsie Gregory MacGill.

Examining the emerging technologies, such as software engineering, bioengineering and environmental engineering, and others we have yet to dream of, is a very positive step by CCPE. This will somewhat relieve the engineering academic community, indicating that the governing bodies of the profession are open to new ideas and methods.

Gerry McGee, P.Eng., CAE
Ottawa, ON

Familiar dilemma

Bravo to Didier J. Thevenard for a well written article on A4 paper versus letter size 8 1/2 x 11 inches (Nov./Dec. 2001 issue, pp. 16, 24). Personally, I am only too familiar with this dilemma, with my head office in France, and operating out of my home office in Toronto. I used to curse the A4 paper size as I tried to jam it into the file folders or business envelopes designed for the stubby letter size. However, after spending a couple of months in France, I have grown quite accustomed to A4. So, rather than reformat every electronic message, specification sheet, etc. before printing, I decided to simply purchase some A4 paper for my printer.

As anyone who has gone through this exercise well knows, A4 paper is next to impossible to find in North America. I have resorted to having it sent over by mail. Mr. Thevenard is absolutely right in his view that we should adopt the A4 standard. However, I fear that we will only make progress inch…oops…I mean "centimetre by centimetre."

Andrew MacLeod, MBA, P.Eng.
Toronto, ON

Dr. Thevenard writes with wit and style about a subject close to my heart, namely Canada's great misfortune in having the metric system rammed down its throat by ignorant bureaucrats, instead of being phased in logically by responsible engineers. Why else do you suppose we have to buy 453.6 grams of butter (mercifully rounded up to 454) rather than half-a-kilo?

On metric-day all the gas station tire gauges were reconfirgured to read in kilopascals, causing great confusion until it was altered shortly afterward to pounds per square inch. Weather forecasters, having predicted 2.54 centimetres of snow, are beginning to add coyly, "that's about an inch."

As for Dr. Thevenard's problem with paper, he should think himself lucky. We cannot even find out where to buy A4 paper. Did he bring his own stock with him?

John Tysoe, P.Eng.
Cheltenham, ON

Language lags behind technical expertise

I take my hat off to all five candidates presented in the last issue (pp. 27-29), "Focus on foreign-trained engineers." I too had to acquire my PEO licence coming from a foreign country.

I want to highlight one aspect that is too often overlooked. An indispensable prerequisite for any successful work is the ability to communicate. Many of the engineers coming from countries with a different cultural background and a language that is not based on the Indo-Germanic group of languages are often at a disadvantage. This is not their fault, nor is it the fault of PEO.

The sad fact is that engineers too often consider language as a secondary field of interest. And that is not restricted to immigrants; just read some of the works of "indigenous engineers." But immigrants who, unlike myself, have not left their country of origin voluntarily but under pressure, be it war, racial oppression, etc., are often inclined to make their home in a ghetto of compatriots, thus extending the required time for integration–if it ever takes place, therefore never becoming fully functional to a level commensurate with their technical expertise.

While we should be compassionate and help wherever possible, PEO nevertheless, has obligations that it cannot lightly cast aside. I suppose a solution can only be found if both sides recognize the existing dilemma and contribute, each within their range of possibilities, to overcome this serious impediment.

Dieter S. Liedel, P.Eng.
Barrie, ON

Critical thought processes include math

In extolling the virtues of "gut feeling" –based thinking and simple arithmetic (Nov.-Dec. 2001, pp. 21-22), Frank Gue

appears to believe that the knowledge of mathematics thwarts engineering reasoning, especially in production planning and control.

While it's true that simple arithmetic manipulations often suffice to solve engineering problems, it is equally true that they more often do not. He also seems to bear a grudge against recently graduated engineers on account of their appreciation of mathematics. Modern engineering degree programs aim to sharpen students' logical and critical thought processes, and to foster the search for cause/effect relationships when handling engineering problems. Mathematics plays an important role in this mandate. It's up to the individual graduate engineer to fine-tune this capability provided by formal education with practical experience acquired at the workplace. Failure to do so should not be blamed on mathematics.

Gue also states that according to conventional wisdom, the speed of plant/product delivery depends on how busy the plant is. During my long career I have never encountered, nor been taught in engineering courses, this nonsense parading as wisdom, so I strongly doubt if it is conventional. I'm pleased however, that Mr. Gue invokes the importance of the bell curve in this context, although he might well disdain the mathematics of the Gaussian (normal) probability distribution as unnecessary cluttering of the mind of a "down-to-earth" industrial engineer.

Professor Thomas Z. Fahidy, P.Eng.
Department of Chemical Engineering
University of Waterloo

Dirty taboo

The theme of the November/ December 2001 issue caught my attention. I am not an engineer; however, my daughter is a third-year engineering student at the University of Guelph. I'm proud of her career choice and interested in the gender issues that she may face in the near future.

The statistics on student enrolment now tell me that she is fortunate to be where she is–at Guelph in environmental engineering. It seems the engineering profession she will graduate into is not going to be as gender-balanced as her classes. A concern certainly but hardly a reason to write. What brought me to the keyboard was the quote from Jean Surry in the article, "Breaking Through" (pp. 35-37). Exactly what is wrong with a woman engineer working "out at a muddy construction site or down and dirty in a remote jungle somewhere?" She says, "it's not something [parents] want their daughters doing."

I don't think Ms. Surry's vision of women in engineering quite extends to the horizon of opportunity. If she is an advocate for women in the field, should she not be promoting all kinds of engineering?

In raising our daughter, my spouse and I resisted two clusters of stereotyping that hold girls back. One is the notion so well developed in the article that girls can't do math and science. The other, which Ms. Surry seems still to support, is that girls don't want to sweat or get dirty or cope with any discomfort. Very powerful stereotype and much more of a taboo. But it can be fought.

While it was this one quote that agitated me enough to write, I should finish by saying that the general tone of the articles was encouraging. I felt the assessments of current success and failure were honest and the commitment of the profession to change is real.

Dr. D. Goforth
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Laurentian University

No authority to axe program

I refer to the letter titled "Specialist program strikes chord" by Christopher C. Hart that appeared in the November/December 2001 issue (p. 7), in which Hart refers to "opposition out there that persuaded a former executive director to axe PEO's then Specialist Designation Program."

I have no comment about the need (or not) of a specialist program for professional engineers. Rather, I want to clarify the sometimes misunderstood role of an executive director when such issues come to Council.

Council's role is to set policy. Staff's job, led by the executive director, is to carry out that policy to successful completion. An executive director at PEO has no authority to "axe a program" established by Council. (Though prior to my term I recall that it was Council, not the executive director of the day, that ended the Specialist Designation Program.)

I, along with Mr. Hart, wish Council every success in bringing the recognition of specialist categories to a satisfactory conclusion.

Peter G.S. Large, P.Eng.
former executive director, PEO
Toronto, ON

No peace of mind

The Editor's Note in the November/ December 2001 issue (p. 6) of *Engineering Dimensions* was intended to "set some of our minds at ease." While the note does provide some information to accomplish this, it contains certain aspects that do not set my mind at ease. I am concerned that the role of the engineer, as outlined in the note, does not seem to include the need for fire safety engineering. Let me elaborate:

- The discussion about a reinforced concrete building probably being better able to withstand the Boeing 767 impact and subsequent fire is misleading. Since I am not a structural engineer, I cannot comment on the impact issues. As a fire safety engineer, however, I take issue with the statements that a reinforced concrete building would have better survived the fire. The truth is we don't know and probably will never know for sure. Fire impact on a structure has been studied for nearly a century using both experimental results and modelling. No model or experiment could simulate the more than five floors fully involved in a flammable liquids fire. Since both protected steel and reinforced concrete designs are subjected to the same fire test procedures to determine fire resistance, we really have no idea of whether the inherent fire resistance of concrete would have performed better than surface-protected steel.
- The doors to the exit stairs would have performed the same way in both steel and reinforced concrete construction. Given the impact force of the aircraft, it is unlikely that the shaft doors would have survived–thus rendering the exit shafts unusable–especially above the fire floors.
- No mention is made of the fact that the evacuation plan for the World Trade Center was significantly improved, with the help of fire safety engineering experts (some from Canada), following the 1993 bombing attack. Another panel of experts is hoping to investigate why the September 11 evacuation was so successful given the many stresses on the building and the occupants during the tragic events. Perhaps we should wait rather than speculate. This comment also applies

to the suggestion for wider stairwells or additional stairwells for the exclusive use of firefighters. Was firefighters' counterflow in the stairs really a significant problem?

- Suggesting that high rise stairwells (and buildings) should be designed to withstand a greater impact force (or a greater fire) begs the question "how much greater?" Does this design impact load become a Boeing 767 or possibly a Boeing 747? How much fuel should it contain? Do we really want to go down that road in speculative fire safety design?

I will not comment on the economic feasibility of the upgrades suggested in the note, however, my instinct, based on a knowledge of fire safety engineering, tells me that the increased costs would be significant. Could we afford to build such a building; more importantly, would we appreciably reduce the risk from fire to building occupants by doing so?

Fire safety engineering is a complex field; one major aspect of which is to determine the impact of fire on materials, elements and systems. As engineers, we should wait for the expert fire safety engineers to study and report on the September 11 fire and collapse before we begin offering advice on how to change fire safety design.

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Correction

The author of a letter to the editor was incorrectly identified in the July/August 2001 issue (p. 6). His correct name is Paul Hession, P.Eng. *Engineering Dimensions* regrets the error.

In the article "Breaking Through" (Nov./ Dec. 2001) the percentage of women in the North American engineering profession was incorrectly reported. As of 2000, women comprised 6.7 per cent of PEO's membership and 7 per cent of all licensed engineers in Canada. In 1999, women made up 10.6 per cent of all American professional engineers. In 2000, females comprised 20.3 per cent of undergraduate university engineering enrolment in Canada, and 19.7 per cent of the American engineering student body in 1998. *Engineering Dimensions* regrets the error.