

A Tale from the East

By Dave Hepburn

SCROLL BACK 44 YEARS, in a country called Pakistan... Well, actually it was one country divided into two parts: East Pakistan and West Pakistan. Not a very handy arrangement, given the two were some 1,500 km apart. But nevertheless, in those days it was an OK place to live and work. It has gone down hill a bit since then—some would say—unfortunately. Of the two parts, West Pakistan was at that time relatively more advanced and prosperous, while the East lagged behind, more than a bit. Yours truly was one of a team of about 10 Canadians whose assignment it was to help the East Pakistan electric power system catch up with their confreres on the other side. This assignment required a certain amount of commuting between Dacca (as it was then spelled) where we lived, and Lahore, which had the nation's only means of simulating power system flows in an extensively interconnected network. An A.C. network analyzer no less. Computers had not yet arrived in the east at that time—and yes, an ac board still makes an ideal teaching tool.

So it was that on one occasion, I was asked to take two of our East Pakistani trainees to Lahore for a couple of weeks. The only sensible affordable way of getting there was to fly via the national airline Pakistan International Airlines (PIA, which still exists). I say affordable because part of the glue which kept the two parts together was to offer heavily subsidized air fares. For the record, the economy class ticket was \$50, which was a knockout, even 44 years ago. But unfortunately all flights were fully booked for several weeks ahead. But then I had a brainwave: part of my contract as a “foreigner” was permission to travel first class within the country. This was really intended to apply to train travel, where all too often the only alternative was to ride outside on the roof. And anyway, it certainly wasn't possible for Pakistani nationals to travel by train across India. So I reasoned that travel from Dacca to Lahore was also “within the country,” and with the greatest of good luck, I managed to book two first class tickets and one economy ticket. The Canadian government was paying anyway, so what the heck. And symmetry being what it is, it seemed logical that the two trainees should get the first class tickets, while yours truly should get the economy ticket. And, don't be alarmed, even in those days, no one was allowed to ride outside on the roof of a DC 3.

Once in Lahore we encountered another bureaucratic difficulty. Government rules for government employees stated that while the government would pay for their hotel, the employee was expected to pay for his/her own meals. The logic being that since they had to eat at home anyway, why should they not pay when away from home also? The fact that a meal in even a modest hotel probably cost the equivalent of a week's pay seems to have escaped the bean counters. I soon found that they were practically starving. So we struck another deal. People on the sub-continent like to eat late. Really late, like 11.00 p.m. But it was agreed that if they would eat with me at, say 7.30 p.m., all three meals could be booked to my room as a lump sum and no one would be any the wiser. And so we lived happily ever after.

Well, not quite ever after. The whole arrangement of East and West Pakistan dissolved in conflict two years later—East Pakistan became Bangladesh and the Canadian team was disbanded.

But then, some 15 years later, in 1984, the notion of assisting the Bangladesh Power Board was revived and international competitive bids were called for. The prices that came in were close, but it soon became agreed that “if the same gent who treated us so well last time can join us again, that company can have the contract.” And so it came to pass.

And, dear colleague, in case you think this tale is just malarkey, it came to pass that the same process repeated itself yet again ten years later in 1994. By that time of course the trainees of 1969 had become senior people able to make their own decisions and make them stick.

So there must be a moral there somewhere. ■

Dave Hepburn (LSMIEEE, P.Eng.) is an electric power systems specialist who began a 40-year career in managing overseas projects in the late 1960s. After some years with Hydro Quebec, he joined Acres Consulting in 1965 as Chief Electrical Engineer on Churchill Falls in Labrador, then took on international assignments ranging from long-term planning to economic/financial studies, irrigation requirements, environmental appraisal and gender equity considerations. He has worked in 28 countries. In 1995 Dave took early retirement from Acres to continue as an independent consultant for the World Bank, the Asian Development bank, CIDA and the not-for profit Canadian Executive Services Organization (CESO). He is the 2013 recipient of the IEEE Canada M.B. Broughton Central Canada Merit Award for his long-standing IEEE Educational Outreach activities.



In Praise of Vice-Grips

By Miro Forest

I WAS A RELATIVELY YOUNG Engineer, and had worked in the area of long haul analog microwave system design and field operations for a while (late 1970's).

As a result of some miscues in the planning department, there was a microwave path (in the 7 GHz band) that was in the process of being established, but it had taken so long that in the mean time, there had been a high rise apartment building erected in just about the worst spot - right at about mid-path, creating an obstruction.

When this came to light, there was considerable consternation since it implied that towers would have to be modified (i.e. heightened) or (worse yet) moved to new sites. But in this problem I saw an opportunity.

Since the new high-rise was at about mid-path, and we knew the terrain geometry, I thought we could carry out some nifty and usually very impractical propagation measurements. All I needed was about 3-weeks of data. I had to find a spare transmitter, receiver, waveguide components and measuring/recording equipment. So I talked my supervisor into letting me have a go at the project so long as my other design work was completed on time and on budget.

I scrounged the radio equipment temporarily from the group that did remote video pick up feeds for the CBC (e.g., the Grey Cup parade, golf tournaments etc) since I only needed a 1-way link, I dusted off an old (ancient, really) chart recorder to record the received signal level, but I still had to find

the waveguide components to connect everything together. Normally, we would buy the various 7 GHz waveguide bends and components needed, but I did not have this option.

I looked at what was available and found we only had larger 4 GHz waveguide parts - waveguide size is inversely proportional to frequency. I did some calibration checks, and based on the calculations I made, thought that I could get it all to work. In this region of the radio spectrum, size matters a lot.

Aside from the theoretical issues, one of the biggest problems was how to hold all of these waveguide parts together so there wouldn't be much, if any signal leakage or signal loss at the flanges. And because of the different waveguide sizes, the bolt holes on the flanges didn't line up.

I needed a strong, secure joint, so what to do? Ordinary clamps were too clumsy and wouldn't allow good alignment of the waveguides. I ended up using vice-grips to hold the components together - strong, allowed alignment, easy to use. Frankly, it was not a pretty sight but it worked.

I collected the data and found that our propagation models were overly conservative. Sometime later, and partly because I had done this testing, I was asked to head up a new group that was to introduce new long haul digital microwave radio into the Canadian backbone network. That turned out to be a really fascinating assignment, which then led to other assignments overseas to work on “troubled” microwave systems.

In those assignments, I always made sure I had several sets of vice-grips in the toolkits. ■

N.Ed.
“Experiential Learning” shares the real-life lessons of our readers that only experience can teach. If you have a tale to tell, then target it to our managing editor, Bruce Van-Lane, at vanlane@ieee.org. It can be about your “schooling,” or that of a colleague’s – all we ask is that it be true!

Miro Forest (SMIEEE, FEC, P.Eng.) was actively engaged in the design, engineering, installation and operation of long haul microwave radio transmission systems. From 1992 to 2002, he worked in the competitive local and long distance carrier business, as an Engineer, Consultant and eventually Senior Executive. In 2002, he founded a ultra-high reliability and security data centre business in Waterloo Region, which was successfully sold in 2009. He is the founding President of the IEEE Canadian Foundation (ICF), receiving IEEE Canada's Wallace S. Read Outstanding Service Award in 2005 for his work over two decades with the ICF and its predecessor organization, IEEC Inc.