

## Alan's (G4TKV) 'Working for BT' Talk



### ***Introduction***

Alan explained that his love of wires, radio and electrical things in general, was pretty much there from birth, his Grandfather and Great uncle had run a garage business in Liskeard Cornwall, and had been involved in wireless from the beginning, latterly they had been selected as one of the prestigious 'Murphy' dealers. Anyway nature or nurture the most wires he had seen were down a GPO manhole and an exchange visit (Bodmin)

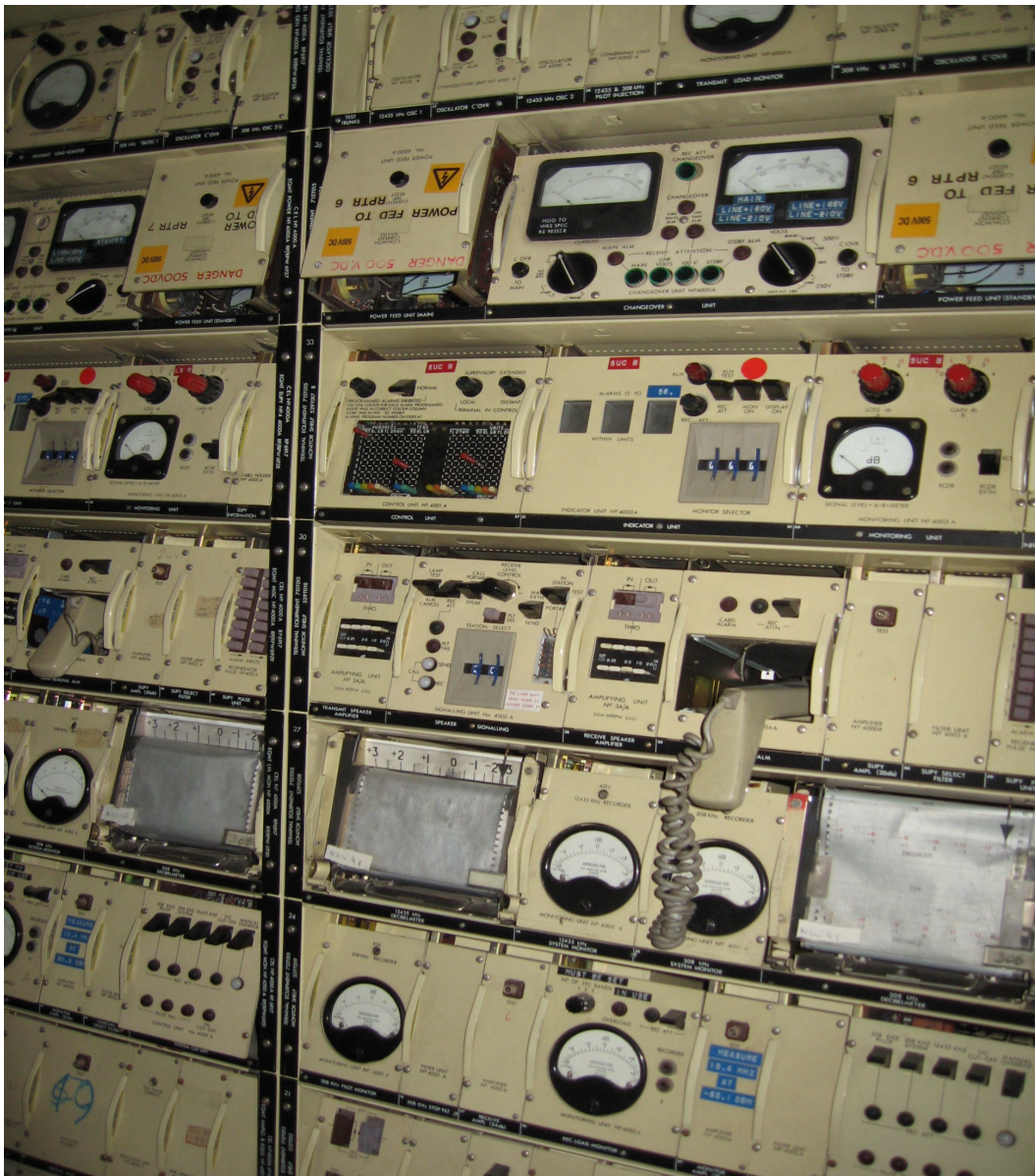
cemented the desire.

Leaving school, a few tests, and interview, where he had to identify wire colours in a large cable, and discuss the differences in Superhet and TRF, secured a job, which turned into a 34 year long career, ended by voluntary early retirement, and hadn't worked since!

Effectively the whole period, apart from about two years at the end, had been spent engineering, though only the first eight years were hands-on after that it was executive roles, meetings, emails and endless spreadsheets and databases. The end time was spent with BT Property mainly because when the 21st Century Network was a gleam in someone's eye and no kit had yet been determined all anyone knew was that something needed to be accommodated and there was a rare opportunity to re-optmise network location.

## **Apprenticeship**

But back to the start, a three year apprenticeship, up poles, down holes, provision and maintenance were all covered. Alan talked about the training courses at Shirehampton Bristol, readjusting 3000 Type relays from a tangled mess with special tools and building a four relay binary counter. In the third year of the apprenticeship Alan specialised in 'transmission' and radio. He explained that transmission involved getting telecoms traffic



from place to place rather than exchange switching. At this time, late 1970s the main transmission technique was FDM Frequency Division Multiplex. Basically 4KHz bandwidth telephone channels would be modulated with different carriers and grouped together for onwards transmission, with demodulation at the far end. 12 channels would be combined to form a 'Group' 5 Groups would make a 'Super Group', 15 Super Groups would form a Hyper Group. Three of these were then combined to make a 12MHz line system running over Coax. It works out to 2700 individual channels on a cable. All this achieved with masses of crystal filters, balanced modulators, and harmonically produced carriers from triplicated stable nationally referenced source.

### ***Telecoms as a Career***

Various audio circuits and broadcast circuits were also provided, equalised, checked for noise etc. Some of these were ad-hoc for a day or so, there was not the ubiquity of the satellite broadcast.

Alan also touched upon a device that amateurs may have found of interest, the "Negative Impedance Amplifier" - imagine a 'T' attenuator formed from three resistances placed in a 2-wire circuit - loss both ways. Make the resistances into negative impedances, voilà gain both ways - an amplified 2-wire circuit rather than the need for 4-wires, hybrids, amps etc. Very clever circuit, wasn't sure how it worked, just two transistors with various transformers.

Alan contrasted the state of telecommunications from the time of joining to that of leaving:-

Not everybody by any stretch had a telephone, 'waiters' the norm, dials (demonstrated the inordinate time to dial a number!), post-dialling-delay, could be 10 seconds before a tone, engaged, start all over again! No international dialling, arranged international calls through operator, ££££s per minute. Data circuits, generally 2400 baud, perhaps 4000 baud (call it bits per second) up to the dizzy heights of 9600 into banks etc., with very specialised testers.

### ***Retirement***

Upon leaving, the world had shrunk, Internet, Mobile, everyone able to send and amount of data to far flung places immediately. Alan had brought along a single fibre patch cable and told members that a single fibre could convey around Terra Bits/second that was around 1000 DVDs per second per fibre and there were at least 64 fibre cables in place!

Alan summarised by saying that he had valued the opportunity to have played a very small part in the communications revolution, and glad to have been present and contributing to working parties/meetings in London looking out to BT Tower shaping the future.