

# ANODE

## Editors Comments

November 2005 Volume 6 Issue 4

### The Use and abuse of technology

I have been asked recently what is the next "big thing" in computers. Will it be Linux or "cut-price" applications? Unfortunately none of the recent local innovations could have been successfully marketed in our small IT marketplace. However the innovative uses that people locally can invent never ceases to amaze.

It's perhaps here in the 'use of technology' that SA can score. Certainly the crooks and scammers seem to be doing well. And Africa will always be remembered for the 419 scam. Just remember never send your banking details, passwords or pin's via email. We, the radio amateurs are generally more familiar with technology and its use. We should be teaching or mentoring the youngsters in the use of technology.

Technology and innovation don't necessarily go hand-in-hand. Just ask the spammers who use thousands of "Bot" pc's to bombard the rest of us with emails. Most of these are Windows pc's that don't even exhibit any sign of their dark secret. They just run slowly and have done for quite a while so the absence of processing speed goes unnoticed by their operators.

For those who wish to write their own "Killer App", the uphill/learning curve/experience is not for the faint of heart. In fact I am sure a lot of 'youngsters' wanting to write programs are demoralised by the hurdles presented to them these days. Last century it was a simple matter to copy the program and any associated files to a hard disk and then run it. Nowadays for security reasons, the deployment of any application program has become a complex and complicated affair and requires a sophisticated and usually expensive installation program. Not just expensive in money terms but in effort and system efficiency. If you hadn't noticed the MS Installer service by now, maybe its time you took a long and hard look at the services that run in the background on your pc. Also compare the time taken to install a worm or pop-up ad "program" on your system with the twenty minutes or so to install MS Office. There is now no doubt in my mind that the system has become "top-heavy" or bloated. Just the other day a client of mine mentioned that the XP pc at home had been updated with the latest anti-virus definitions. But that when he accepted the insistent message that he do a full system scan, it then took several hours to completely check 192,000 files. His "last century" company system had only seven files on the server and one application on each of the user pc's. It used to take less than a minute to virus scan the pc's.

### Once more unto the breach dear friends.....

Yet again this week another security issue has arrived for the MS Windows system. This time its good old Windows Meta file picture format. This is a vector format for pictures and was native pre Windows 3.x. it allowed a very small sized file to 'draw' the picture. Windows 95/98 bypassed it considering it to be of little use in the Internet world. Unfortunately the NT/2000/XP system just left it in and forgot about it. Have you updated your virus definitions recently? Now is the time for all good people to download their updates.

### System administrators and their "Empires"

See BOFH at the Register for insight into today's IT hierarchy.

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## FEEDBACK

## **Definition**

A "youngster" in our club is generally under 30, definitely under 40.

## **HamComp**

The last meeting was attended by a few more interested members than last time. We managed to resuscitate quite a few machines. Most were of the 80486 variety, which performs very well with Linux. There will be another HamComp meeting at the clubhouse on the 19th of November at 13:00.

For those who wish to read up on Linux and Amateur Radio:-

<http://www.radio.org/linux/HAM-HOWTO.html>

## **Technology that measures and analyses signals**

During the last two weeks, I have downloaded and tried several test and measurement programs. A Fast Fourier Transform (FFT) spectrum analyser and a low frequency oscilloscope were tested. Not unusual you might say for Windows but these are for DOS and Linux. Both used a 16 bit sound card and ran very successfully on an 80486. Both authors (actually most authors) supplied the source files of their program. Which meant that I could adapt or improve them at a later stage.

## **"Flashing", not a crime any more.**

I heard OM Dirk on the bulletin today. He was complaining about his "old" Pentium I pc that couldn't see a new large hard disk. [Rather like the lady who complained that the pc could "see" the printer. So she held the printer up to the screen but to no avail!] So I phoned Dirk and we had a nice chat. I told him that most Pentium's from number one to four have motherboards, which have EEPROM BIOS. Certain 80486 motherboards could also be "flashed" as well. So I said that he could let me know which type and make/model no and I would email him the update. In general most of the makers of Pentium I motherboards are still in business and have web sites. So a quick search, usually on Google, turns up the web site and the downloads page.

Dirk, for the use of flashing the bios on your "veteran" pc: -

<http://www.pcstats.com/articleview.cfm?articleID=1605>

## **The use of 'recent' in articles**

This is a relative term like "just now" and should not be used without a reference date. The article could be dated and thus the word recent would have some meaning.

## **Top**

## **Build the FoxTTL Foxhunt Transmitter**

Simple, inexpensive, and the end of your excuses for not trying T-hunting.

The popularity of high altitude amateur radio balloon launches has increased exponentially within the last seven years. A balloon launch that I organized in 1991 for the Dayton Amateur Radio Association included a veteran recovery team from Indianapolis who volunteered to participate in the chase. As luck would have it, the balloon was hijacked by the jet stream, and in less than 50 minutes, the balloon payload parachuted back to terra firma over 115 miles away in the Wayne National Forest the only part of Ohio where the lines on a topographical map resemble the scan lines on a high-resolution monitor!

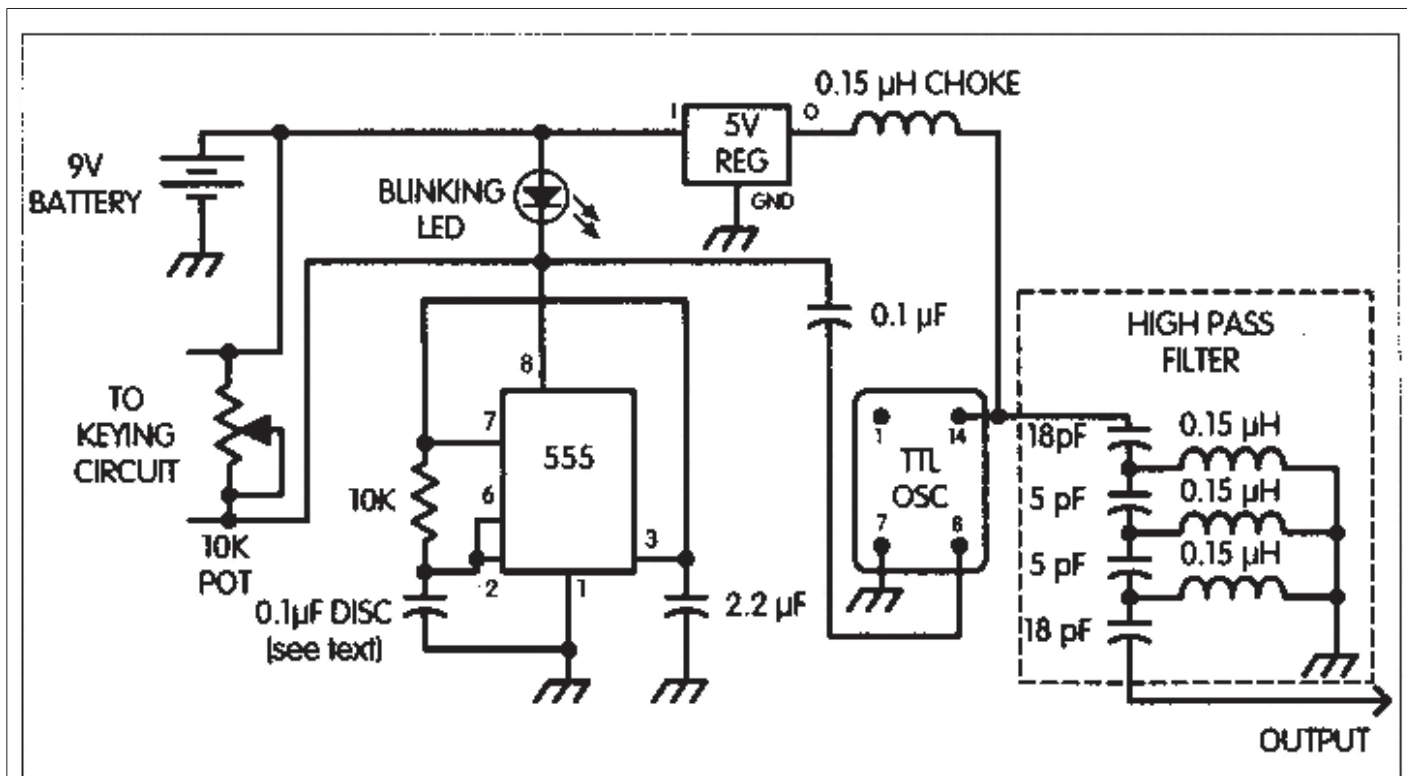
The signal path through the many "hollers" and ridges was so convoluted that it was just about impossible to pick up a signal from the payload resting on the forest floor. By the time a private aircraft flew over the suspected landing area, the batteries had gone dead and the package had fallen silent. For the next eight months, the payload lay undisturbed, until it was found by a turkey hunter, who obligingly called the telephone number on its exterior and claimed the reward. The package did not contain the one feature that would have meant quick retrieval: a long-term beacon operating at low power.

I immediately decided that the next balloon flight would contain an additional low power beacon transmitter that would assist, if needed, in a speedier recovery. After toying with a few ideas, I built a small QRP

transmitter that contained a number of useful features.

The ideal transmitter would have a low parts count and would operate on two meters FM, so almost anyone who owned a two meter radio could participate in the recovery operation. Low power was also a requirement, to ensure that reserve battery capacity would not be a limiting factor. Extra battery time can be the difference between being lost or found. Sturdiness is also a must a balloon payload makes a lousy place to store fragile items!

As a spin off of the balloon recovery transmitter, I designed a similar QRP FM two meter foxhunt transmitter, powered by a standard nine volt battery, that has proven to be an extremely popular item; I made it available at my flea market table at the Dayton Hamvention. Simplicity, ruggedness, low power, small size and low cost are features that make this transmitter a popular choice among fox hunters who are looking for a simple transmitter for newcomer hunts in small areas. The FoxTTL is terrific for teaching foxhunting basics in a small park, or even in an auditorium. Maximum range for the FoxTTL is a half-mile or so. It is easier for an instructor to demonstrate techniques, such as body shielding, and at closer ranges, the transmitter helps to scale down fox hunting to what normally takes several hundred square miles in some Southern California Hunts.



**Fig. 1. Schematic of FoxTTL 2-meter transmitter.**

### About the design

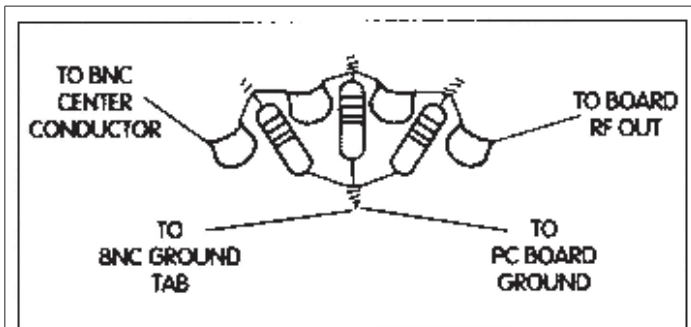
I designed this circuit so an FM signal with a unique stepped audio tone would be produced with an absolutely minimum number of parts. This is possible by employing a TTL clock oscillator, a 555 timer and a flashing LED. The TTL clock oscillator, designed to provide a clock signal to drive computer video displays, is used as the basic transmitter building block. Cut for 48.3 MHz, the clock oscillator used in this article is made by Cal Crystal Labs, Inc., in Anaheim, California. Using a band pass filter consisting of four capacitors.

Later substitutions of this component caused needless hours of head scratching. After assembling the high pass filter and circuit board, I decided to go ahead and "pot" the circuit using automotive Fiberglas E11 resin. Pot the circuit in Fiberglas resin? Think of it this way: You may have seen or heard about insects becoming entrapped in some tree sap that eventually turned into amber. Funny thing is those insects look like they got stuck only yesterday, yet carbon dating indicates that they became entombed, in some cases over 10 million years ago. Carry this idea over to protecting a circuit and who knows? Maybe 50,000 years from now someone will power one of these circuits up and the procedure may create a new form of archaeology called "fossil electronics." All joking aside, this technique will ensure that the circuit really will be indestructible in the worst possible conditions. By mixing the Fiberglas resin with a catalyst, you'll have the material hardening in about half an hour. If you elect to pot your circuit, make sure you conduct this procedure out of doors, as the fumes will spontaneously cause you to start agreeing with everything that Wayne Green writes. Also, make sure that

it is at least 70 degrees Fahrenheit when you mix the material, as cooler temperatures will slow down the curing process. It's imperative you follow the directions listed on the Fiberglass resin container, due to the caustic nature of the material. By adding a little acrylic pigment (about 10 drops per ounce of resin) you can make the completed package look like a commercially manufactured product.

I also elected to bring out the LED in a position such that the potting material would leave it partially uncovered. The flashing LED serves a dual purpose: first, as an indication that the battery and circuit are working; and second, as a means of creating an unusual beacon tone. Also, be aware that Fiberglass resin has a tendency to infiltrate switches and potentiometers prior to curing. When in doubt, cover these components with a little bit of modelling clay to prevent any Fiberglass intrusion on possible entry points.

If your circuit board is mounted in the metal enclosure available from Midwest Surplus (see Sources), make sure that it does not come in contact with the sidewalls of the enclosure. This can be accomplished by taping the interior portion of the enclosure. As the tape is not visible once the Fiberglass is poured in, this is the best means to ensure that shorts do not develop prior to the Fiberglass setting up.



**Fig. 2.** *Layout of the bandpass filter.*

## Operation

When the transmitter is powered up, adjust the potentiometer for the desired cadence/tone. As a side note, when the flashing LED is exposed to bright sunlight, internal resistance changes within the LED and this may speed up the cadence of the tone something to keep in mind if the LED is facing the sun on a partly cloudy day.

FAR Circuits has made available prepared circuit boards (etched, drilled and silk screened). The boards are made of G10 FR4 material, 1 oz. copper, solder coated, and drilled. Included is an LC network (capacitor/coil form combination) etched on this board, but that is not utilized for this particular circuit layout. See Sources below if you are interested in building the project using the available circuit board.

When non-hams see the FoxTTL, I answer inquiries by explaining to them that foxhunting is like trying to find electronic Easter eggs ... but this kind of game becomes serious once the skills are developed and the team is hot on the trail of a lost balloon payload or even a downed plane. It's a skill that just might save a life!

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### Frequencies

439.000MHz 7.6MHz split  
(West Rand Repeater)  
145,625 MHz (West Rand Repeater)  
10,135 MHz (HF Relay)

## Radio Amateurs do it with more frequency!

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## West Rand members - we need your input!

To make this the best ham radio magazine in South Africa we need your input. Please submit articles, comments, suggestions etc.

Please send plain text with no formatting to the email address below.

In July 2003, we re-published an Anode Compendium on CD. It has the issues from July 2000 until June this year. This included the new Adobe reader. It has been updated, check with the chairman for details.



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