THE WEST RAND AMATEUR RADIO CLUB

September 2004
Volume 5, Issue 3

ANODE

Inside this issue:

Editor's Comments

October 2004
Volume 5 Issue 03

Say HI to the "Muddler's Net"
Frequency: 3,655kHz or 7,095kHz +/- QRM
Time: 17:30 - 18:30
Features: Technical discussions related to QRP/Homebrew construction.

OM Phil in Port Alfred (ZS2PP) started the net in '97.

Iss Repeater On Again

The FM Repeater and BBS on board the International Space Station was again open for general ham radio contacts on September 27th and 28th. During that time voice contacts were available on by transmitting up to the I-S-S on 145.920 MHz with a 67 Hz CTCSS tone while listening for replies on 435.300 MHz. The Bulletin Board used an uplink of 145.860 F-M and a downlink at 435.150 MHz. This operation was followed by a PSK-31 Experimenters Wednesday Test on September 29th.

The system will be on periodically and ARISS will announce the dates and times in advance. Check with the I-S-S Fan Club web page at www.issfanclub.com, to see what the latest

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Aprs Digipeating

Special points of interest:

- Contact details on back page
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Digipeating is much more critical to APRS than to conventional packet because APRS heavily involves packet data transmission to and from moving vehicles. [Traditional packet was overwhelmingly used between fixed locations, typically with better antennas and more power.]

Why Digipeating Is More Essential

Signal levels that you may consider adequate on voice WON'T BE on packet, because data transmission is an all-or-nothing proposition. --ALL-- of a packet has to be received PERFECTLY to recover --ANY-- data from it. The kind of noisy, scratchy, not-completely-hard-quieted, operation so many people inflict on voice repeaters, especially with underpowered handhelds, JUST WONT WORK on data transmissions. A pop, a momentary burst of white noise, flutter, or multipath-induced phase distortion that you don't even notice on voice WILL be fatal to a packet transmission.

With APRS, the problem is even worse than with conventional [connected] packet because it operates in a non-connected mode. With traditional packet, a station receiving a defective packet will automatically send a request for retransmission to the sending station (or the sending station will automatically retry if the receiving

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status is.

Also, keep in mind that the radios on board the space station are not able to correct for Doppler as the frequencies are channelised. It is up to the ground station to do the Doppler correction. For 2 meters, the Doppler shift is about +3kHz at the beginning and goes to about -3kHz at the end. For 70 cm, the Doppler is about +10kHz at the beginning and goes to about -10kHz at the end.

The 70cm Doppler is roughly 3 times the 2m Doppler. Many of the tracking programs have the ability to calculate the frequency shift. (ARISS)

From:
"g3zhi" <g3zhi@hotmail.com>
Subject: the ISS is back in repeater mode 7th Oct 2004
Date: 2004-10-08 10:41

The ISS is back in repeater mode 7th Oct 2004 145.800 downlink 437.800 uplink no ctcss required

Download the 'pcsat' http://www.uiview.com prediction program

73 Ian G3ZHI

http://www.qsl.net/g3zhi - many ham radio links
http://www.ukirlp.co.uk

G4NJI IRLP 5200 Echolink 135909 Rotherham simplex 145.2875mhz

GB3XN IRLP 5708 Echolink 153126 Langold 430.925 Mhz

Ian Abel G3ZHI, 52 Hollytree Ave, Maltby, Rotherham, Yorks hire S66 8DY

Big Database Upgrade At Qrz.com

The QRZ.com website call sign system is running a lot faster these days. This is the result of a major upgrade to a new and more powerful server.

The new database engine is a Sun E280R. This is a 64-bit industrial strength machine with dual 900 MHz processors, 4 GB of RAM, and a pair of 36 gigabyte 10,000 R-P-M Fibre channel disk drives.

Fred Lloyd who runs QRZ.com says that these new disks are really impressive. Fred says that he has clocked them at speeds of up to 64 megabytes per second. That equates to an entire C D ROM's worth of data being moved internally in only 10 seconds.

Lloyd adds that this new server only handles the call sign database. The main QRZ.com web server remains a 450 MHz Sun E420R with 2 gigabytes of RAM. (QRZ.com)

Part Of The Beeb On The Block

And finally this week it look as if a piece of radio history may be up for grabs. This with word that part of the world renowned B-B-C World Service is for sale.

The United Kingdom's publicly funded British Broadcasting Corporation has reportedly approached Germany's Bertelsmann Corporation along with U-S media giants Time Warner and the Walt Disney Company as potential bidders for BBC Worldwide. BBC executives expect the division, which includes BBC America, BBC Prime channels and 26 magazine titles could be worth up to 3.5 billion dollars of needed revenue.

The U.K. government is currently reviewing the BBC's funding and license. One report said that the broadcasters internal review of its options appears to be timed to coincide with the government's evaluation as well. (W8HDU, Bob Ulm, WDOH-FM)

G3yjo Named Visionary And Innovator

And word that Space News International on the Space dot com website has honoured a UK ham. This as it names Professor Martin Sweet-

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ing, G3YJO, as one of the top space visionaries and innovators.

In a recent article the news service said that Sweeting turned Surrey Satellite into the world's micro satellite builder. Also that under his guidance this British company has trained a new generation of spacecraft builders throughout the world helping countries like Turkey, Thailand, Korea and Chile enter the space age. (GB2RS)

Shortwave Vs. Digital Shortwave

Amateur Radio has another friend in its fight to stop the worldwide rollout of Broadband over Power line technology. This, as a European shortwave broadcaster says that B-P-L and digital radio will have a lot of trouble co-existing. Fred Vobbe, W8HDU, is here with an update on digital radio and an explanation of why the two do not mix.

Jacob Freedman, N2MPN, found an interesting story on BBC News Online and thought he would share this news with A.R. Newsline listeners. In the link to the story, titled "Fears for new digital radio system" written by Chris McWhinnie of BBC Monitoring in Amsterdam, the warning came from Peter Senger, the chair of the Digital Radio Mondiale (DRM) at the International Broadcasting Convention in Amsterdam.

DRM is a standard agreed by world broadcasters for a completely new short wave radio system. The new Internet power line distribution system has been evaluated by engineers, including the BBC, and has been found to affect short wave in particular.

Short wave is mainly used to broadcast internationally and the AM bands have been used since radio first started in the 1920s. The DRM system uses existing AM broadcast frequencies to deliver near-FM quality digital sound. It uses compression to squeeze clear digital sound into the narrow radio channels that currently carry crackly analogue signals.

The DRM technology has the potential to make digital radio available in places that Digital Audio Broadcasting (DAB) radio or even FM will probably never reach. As for the hardware required to hear these stations, there will be a new consumer DRM radio in the shops by Christmas 2005 and a tiny PC-only DRM set is already on sale.

Many radio stations are not using DRM yet. However a number of radio stations have seen the potential for new cross-border radio stations.

A Germany-based music station is believed to be in the planning stages. BBC World Service and its counterparts abroad already have some regular DRM programmes and are backing the system.

DRM is being seriously considered in many countries where the FM radio band is full. China sees DRM as the answer to pushing digital radio across its vast territory.

The UK is not planning to use DRM for domestic radio. The UK has pinned its digital hopes instead on DAB, which offers stations like BBC 1Xtra, 6 Music, Oneword and Core. More digital radios have been sold in the UK than any other country.

Switching-off analogue FM and AM may take years and making millions of much-loved analogue radio sets useless will no doubt be controversial. If power line Internet transmission is introduced, then international broadcasting on shortwave may also be consigned to history due to the interference from data travelling over mains electricity cables.

For Amateur Radio Newsline, I'm Fred Vobbe, W8HDU

As we go to air, the proponents of Broadband Over Power line have not yet challenged the Digital Radio Mondiale findings. (W8HDU, N2MPN)

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New Uk Repeater Serves London And Kent

And if you are planning a trip to the UK, don't forget your reciprocal license and your HT. And be sure to try out a new repeater serving the needs of hams in the North Kent and South East London England area.

Its call is GB3OK and the Bromley Repeater Group sponsors it. It went on the air on the 16th of August. It transmits on 145.650 MHz with the standard 600 Kilohertz input offset and requires a 103.5Hz tone to access the receiver. The trustee of GB3OK or repeater keeper as the British call them is Tony Ravelini, G1HIG, in the city of Kent. (GB2RS)

Ham Technology: Ham Dream Digital Voice Qso

What is believed to be the first two-way digital voice contact in South Africa took place between ZS1AN and ZS1AU on August 10th. Contact was made on 15 meters with both amateurs using Ham Dream software for the QSO. Amateur Radio Newsline's Bruce Tennant, K6PZW has the details:

Ham Dream is an open-source version of the Digital Radio Mondiale broadcasting standard. It was adapted for amateur use by HB9TLK and gives hams the ability to talk almost noise free. Here's how.

Speech is converted to digital data using a low-bitrate vocoder analogue to digital converter. The data is then transmitted using a high-speed modem. At the receiving end the data is decoded to recover the audio at the receiver. Although still in the development stages, there is worldwide interest in Digital Voice, which can deliver very high signal-to-noise ratios over medium quality narrowband S-S-B channels.

For those who want to experiment, Ham Dream software can be downloaded free of charge from the South African Radio League's website at **www.sarl.org.za**.

For the Amateur Radio Newsline, I'm Bruce Tennant, K6PZW, reporting.

Further information on digital voice in ham radio is available on HB9TLK's website. Its in cyberspace at www.qsl.net/hb9tlk (GB2RS)

Radio Law: Cellphone Providers Sued Over Locked Phones

A consumer watchdog group sued three cellular telephone companies. This, for "locking" their phones to make it harder for customers to switch carriers.

The Foundation for Taxpayer and Consumer Rights is the group that filed the suit in Los Angeles. It accuses AT&T Wireless Services Inc., T-Mobile USA Inc. and Cingular Wireless, of using software in their handsets that prevents them from being used on a competitors' network.

All phones in question use Global System Mobile communications, or GSM technology, which effectively limits a handset to a specific carrier using a non-interchangeable SIM card. The lawsuit complains that this is an unfair and deceptive business practice under California state law.

The phone companies are defending their policy. They say that they routinely subsidize handset cost and would loose substantial revenue if they allowed customers to easily use those phones with another carrier. (Foundation for Taxpayer and Consumer Rights)

Solar data for the period from 27 September to 3 October, compiled by Neil Clarke, G0CAS.

Solar activity was very low with no solar flares reported at all. Solar flux levels were static and averaged 89 units. The 90-day solar flux average was 112, that's one unit up on last week. X-ray flux levels declined slightly from A8.1 units on the 28th to A3.9 by the 2nd. The average was A5.5 units.

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Geomagnetic activity was quiet; on the 30th and the 1st the Ap index was as low as 4 units. Activity increased to unsettled on the 2nd and 3rd in response to a solar filament centred at N34W47 which disappeared early on the 29th. The average was Ap 8 units. Solar wind speeds at the ACE spacecraft saw a decline from 440 to 320 kilometres per second. Particle densities varied between 4 and 16 particles per cubic centimetre for most of the period. Bz fluctuated minus 8 and plus 10 nanoTeslas.

Aided by benign geomagnetic activity and seasonal factors, HF propagation showed signs of improvement. There were openings to VK, ZL and KL7 around 0800UTC on 14MHz. There were also occasional reports of VK at 21and 24MHz around 0830UTC. At 18MHz USA signals, at times reaching to the West Coast, were reported as late as 2030UTC. On 28MHz, southern Africa and South America were workable during the late afternoon and early evening respectively.

The solar forecast.

This week the active side of the sun is expected to be rotating out of view. Solar activity should be low, although there is a small chance that activity could increase to moderate on the occasional day.

The solar flux should be in the 110s, but a decline could take place later in the week. Due to a small recurring coronal hole, geomagnetic activity could be unsettled till mid-week before declining to quieter levels. MUFs during daylight hours at equal latitudes should be about 22MHz for the south and 19MHz for the north. The darkness hour lows should be around 8MHz. Paths this week to South Africa should have a maximum usable frequency, with a 50 per cent success rate, of about 28MHz. The optimum working frequency, with a 90 per cent success rate, should be around 22MHz. The best time to try this path should be between 1000 and 1700UTC.

The RSGB propagation news is also available in a Saturday update, posted every Saturday evening and for more on propagation generally, see http://www.rsgb.org/society/psc.htm.

From: "Mike Terry" <miketerry73@btinternet.com>
Subject: Propagation News
Date: 2004-10-09 00:30
(RSGB)

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station doesn't acknowledge in a reasonable time). With APRS there is no ACK/NAK (Negative AcKnowledgement) handshaking process. The sending station just blasts out packets at intervals and "hopes" the receiving station(s) get them. The receiving station just ignores the packet if it is defective in anyway. [This is the price you pay for the one-to-many broadcast nature of APRS, compared to the one-on-one nature of traditional connected packet.]

Signals to/from mobile units can and do fluctuate in strength by 15-20 dB as the mobile moves over even a short distance. For reliable data transmission, you must have massively excess signal strength over the intended path. Enough excess signal that even with a 20dB drop, the signal will remain noiseless and hard quieted. [Note that the instruction manual for the Kenwood D700 acknowledges this fact by stating that you can't expect reliable packet operation until the S-meter reads full scale.]

{{ FUNDAMENTAL UNAVOIDABLE FACT OF PACKET LIFE: Roughly speaking, a given antenna installation and transmitter power will produce about 1/2 to 1/3 the RELIABLE range on APRS packet that it produces on FM voice. }}

Aprs Digipeater Usage

To increase the reliability of transmission from mobile units (i.e. likelihood that a packet will "get through"), APRS uses two categories of digipeaters:

1) "Public" digipeaters in high locations (typically hilltops, the tallest building in town, water towers, etc); i.e. similar to the placement one would choose for a voice repeater. This type responds to the alias call sign of "WIDE" .

2) Personal home stations typically running digipeater duty alongside other activities (such as being an APRS client and/or Internet gateway). This type responds to the alias call sign "RELAY".

The assumption is that there are far more home stations then wide-area digis. Therefore a mobile is far more likely to be heard by a nearby home station than by a much more distant WIDE. On the other hand, even a minimal home station is likely to have a better and higher antenna system than anything on a mobile. Thus the home station's likelihood of successfully transmitting to even a fairly distant WIDE is much greater than a mobile's. This is especially true for an area situated in a geographic low spot, or "urban canyons" where mobiles have trouble "getting out".

How Aprs Paths Are Used

PATH settings determine what kind and how many digipeaters will be used to deliver your packets to their destination. Typically the "destination" will be either other stations listening on RF, or a fixed station that will receive your packet and transfer it into the Internet and then onward to findu.com.

A transmission path of "RELAY, WIDE" is requesting the helping hand of nearby cooperating home stations as the first step into the APRS network. [Normally, WIDE digipeaters will also respond to the alias "RELAY" so if a WIDE hears you directly, it can also serve as the first hop.]

If you want multiple digipeat hops, you specify something like "RELAY, WIDE, WIDE". As in conventional packet, each digipeater in the chain "crosses off" the call sign it responded to. This example shows results as a user tries to use three wide area digipeaters in succession. The path string will change like this as the packet propagates from digi to digi:

RELAY,WIDE,WIDE,WIDE {as sent by the user }

*RELAY,WIDE,WIDE,WIDE {after home station first digipeat}

*RELAY,*WIDE,WIDE,WIDE {after first WIDE digipeat}

*RELAY,*WIDE,*WIDE,WIDE {after second WIDE digipeat)

*RELAY,*WIDE,*WIDE,*WIDE

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{after third WIDE digipeat)

The path is now "used up" and no further digis will repeat this packet. This kind of path will work with any kind of TNC pressed into duty as digipeaters. Note that the hops listed in a path are processed SEQUENTIALLY, not in parallel! If you start a path with "RELAY" in an area where digipeaters ignore RELAY completely (such as in Southern California) you won't get digipeated at all, no matter what call signs are in the following positions!

Because all APRS digipeaters use the same generic call signs, the re-transmission process can happen in several geographic directions simultaneously if several digis are within range of the one transmitting. A widening circle of digipeats involving more and more digis on each hop will spread outward from the user in all directions. This phenomenon, known as "UI-FLOOD", is sharply different from the directed linear sequence of digis, each identified by a unique call sign, used in traditional connected packet.

If you know them, you CAN use explicit call signs in APRS paths instead of the generic WIDE. This is one approach to reducing unnecessary retransmissions, especially in your home territory where you likely will know the actual call signs of local digis.

In order to shorten the path strings to allow more packets per minute , APRS introduced a new convention. You add a fake "SSID" to the WIDE "call sign" in the path, indicating the number of hops desired. Each digipeater that processes the packet decrements the value of the "SSID" but doesn't cross it off as "used up". When the SSID decrements to zero, further digipeating stops. This type of "WIDEn-N" digipeating path looks like this for the example above:

RELAY,WIDE3-3 {as the user transmitted it]

*RELAY,WIDE3-3 {after home station RELAY digipeat}

*RELAY,WIDE3-2 {after first WIDE digpeat - note WIDE IS NOT crossed off, just changed}

*RELAY,WIDE3-1 {after second WIDE digipeat - WIDE still not crossed off}

*RELAY,WIDE3 {after third WIDE digipeat -- all used up, no more digipeats}

Note that the path string is half the length of the one before

Sometimes you may want to know what actual digis a signal passed through. The generic call signs conceal the identity of individual digipeaters. To see the actual call signs, you substitute the call sign "TRACE" for "WIDE" Now, each digi will insert it's own (real) call sign in the path before forwarding it. The example now looks like this:

RELAY,TRACE3-3 {as the user transmitted it]

*RELAY,TRACE3-3 {after first RELAY digipeat}

*RELAY,*digicall1,TRACE3-2 {after first WIDE digpeat}

*RELAY,*digicall1,*digicall2, TRACE3-1 {after second WIDE digipeat}

*RELAY,*digicall1,*digicall2, *digicall3,TRACE3 {after third WIDE digipeat -- all used up, no more digipeats}

Note that the path string gets longer after each digipeat. Normally, TRACE is only used for testing and discovering the APRS environment in a given location; not for routine use.

[Actually I have simplified the path examples for purposes of discussion. In reality, the very first WIDEn-N digi (but no subsequent ones) is supposed to insert it's own real call sign (marked as used) into the path in front of the WIDEn-N phrase, before forwarding it. This allows users many WIDEn-N digi hops away to determine the general location the packet originated from.]

Note that these advanced paths require that the "call sign" actually be changed by each digi that processes it. This process

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of "call sign substitution" is unique to APRS and requires special APRS awareness in TNCs. Currently only the Kantronics KPC3+/KPC9612+, and TNC2 clones with UI-DIGI firmware, can do this "standalone" without a computer attached).

Increasingly, as APRS grows, WIDEn-N digipeating is becoming the standard everywhere. However, some areas are still covered by older "dumb" digis using pre-APRS-aware TNCs. [Any 20-year-old junker-clunker hand-me-down TNC can do a simple RELAY or WIDE digipeat if it's "myalias" call sign is set to "RELAY" or "WIDE".] In these areas, you will be forced to use the longer, less-efficient WIDE, WIDE,WIDE type of path.

As a traveller outside of your home area, you may not know whether WIDE or WIDEn-N digipeating is in use in a given area. This is especially true of simple trackers that transmit but don't receive -- you have no way of monitoring what the locals are using. Even if you do know, you may not have the means (computer and configuration program) with you, to reprogram your tracker to the correct path.

A good compromise path for travellers into "terra incognita" is RELAY, WIDE, WIDE2-2. In areas with dumb digis you will get two hops - dumb digis will ignore the "call sign" WIDE2-2. In areas with smart WIDEn-N digis, you get up to 4 hops - smart digis WILL normally respond to the non-SSID'ed "WIDE" as well as to WIDEn-N.

Some other considerations:

1) Normally, you would never put more than one "RELAY" in a path.

2) --NEVER-- put RELAY in a path after WIDE. If you do this, dozens (or hundreds) of home stations within earshot of one or more WIDEs will needlessly clog the channel retransmitting the WIDE's packets for no reason.

3) Paths longer than about WIDE4-4 are almost totally useless. The probability of success goes down exponentially as the area covered by the transmission expands outward, and the packet is exposed to more possibilities of random collisions with users in distant areas. On the other hand, you can create literally thousands of useless packets for every transmission, as the UI-FLOOD spreads outward over hundreds of miles. Indeed, in some areas, intelligent digipeaters are automatically reformatting excessively long paths to something more reasonable such as WIDE2-2 or WIDE3-3.

Questions And Responses From Various Mailing Lists About Aprs Operation

In a message dated 5/11/2003 8:26:55 PM Pacific Daylight Time, jwsteven@concentric.net writes:

> I do have a question about gateways to HF and Internet. I am guessing here, that now and then where ever access is available, one of the RELAYs or WIDE digis will also direct traffic to the Internet.

You've got it! Typically Internet gateways ("Igates") are located at home stations since an effective Igate has to have 24/7 Internet access (i.e. cable, DSL, T1, etc) which is hard to come by on top of a mountain or water tower. In other words, Igates are not typically co-located with WIDES (unless they happen to be located in a tall building in a big city where Internet connectivity WOULD be available) All the standard APRS apps for Windows and Linux can perform the Igate function if desired.

> I haven't thought much about how APRS data enters and exits HF or the Internet for that matter. Is the traffic logged on a server(s) somewhere and a request to findu retrieves it?

Exactly. The APRS Internet System (aka APRServe) is a web of multiple servers around the world cross-connected in two tiers that constantly exchange

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heard data with each other. In turn, hundreds (sometimes thousands) of home stations around the world are logged into these servers (the connections are standard Internet Telnet sessions). The local stations feed packets heard off-the-air into the IS (and under some conditions allowing Internet data to go back to RF).

In turn, Findu.com connects to some of these servers, captures and archives everything the IS hears, and then does huge, fast database queries every time someone hits Findu with a request for a map.

It's not just Findu that can use the data flowing through the APRS IS. Any standard Windows or Linux APRS end-user program can connect to any of the Internet servers in addition to (or instead of) your off-air serial-port-interfaced TNC. That is, you can install an APRS program on your office computer, log into one of the APRS servers via your company broadband connection, and play APRS with no radio at all! The full, unfiltered Internet feed representing heard stations all over the world is a constant non-stop 15-20 KB/sec stream of data. You can not only track mobiles but also send / receive APRS messages to / from mobiles "out there". Many of the servers have "filter" ports that let you specify only certain call prefixes, only within so many miles of a location, etc to reduce the "fire hose" of data to a more manageable trickle, especially if you aren't interested in tracking mobiles in Australia, Western Europe, South Africa, etc

> I have a suspicion that long distance tracking can be rather spotty and > that I might not show up for long stretches.

Again, you have correctly grasped the implications of the APRS architecture. Igates tend to be few and far between, outside of the larger cities, and in the less populated and mountainous areas. The southwest WIDE digipeaters in CA, NV, AZ and NM tend to be really wide since they are on 6000', 7000', 8000' or even higher mountain tops. The trick is to bounce the packet from your mobile through enough (but not too many) digipeaters to finally reach an area where an Igate station is listening.

Normally really long-haul multihop digipeating is doomed to fail because the probability of packet collisions with local activity in the vicinity of each WIDE. The AZ-NM corridor is a rare exception because of the low population density and correspondingly low level of local activity.

Once you leave the densely populated coastal regions or the south-western mountains, APRS coverage tends to be spotty islands around mid-sized or larger towns with huge areas of nothing in-between. Of course the Internet APRS server system acts as a "worm hole" that connects these isolated areas. In this respect, APRS behaves in a manner similar to EchoLink, IRLP, etc.

> NM has an extensive mountaintop APRS system mostly on 144.39 now, I think.

144.390 is THE APRS frequency everywhere in the US and Canada. In Europe, the APRS action takes place on 144.800.

When you get REALLY out in the boondocks, an alternative is the HF APRS system. Virtually all HF APRS in North America is on 30 meters using 300 baud / 200 Hz shift HF packet format on 10.149.200 / 10.149.400 (actual mark and space frequencies). This band is normally open for long-range (500-to-2000 miles) transmission around the clock (and isn't plagued by the massive shortwave broadcast interference that makes 40 meters unusable after dark).

A few stations directly operate on this frequency but the frequency is mostly populated by unattended Igates and Gateways that retransmit HF activity to 2 meters where it can then find it's way to a 2 meter Igate. Normally on HF, you don't digipeat on frequency -- HF propagation is too erratic. The typical path is either: No path at all - You hope to be heard di-

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rectly by an HF igate station or GATE, WIDE2-2 which tells the receiving HF station to retransmit you onto VHF. [The majority of HF gateways are using Kantronics KAM TNCs which are intrinsically capable of cross-gating the separate HF and VHF ports.]

NEVER gate VHF activity the other way to HF!!! HF operates at a mere 300 baud. Even a single moderately active 1200 baud feed from a two meter channel would monopolize the 30M frequency non-stop over half the country!

Note that all this HF activity is on SSB which means your receiver has to be tuned v-e-e-r-r-r-y precisely (typically within 10 Hz) and stay there indefinitely. Often you are shooting in the dark with no received signals to tune in to verify the frequency. Modern transceivers with 10-Hz resolution digital displays and (often optional) high-stability master oscillators can do this, but don't expect the vintage TS-820 or FT-101 VFO rig to be even remotely usable for this application.

Both the current TinyTrak III and the commercially-built TigerTronics TigerTrak transmit-only "trackers" can do 300 baud HF APRS but the TigerTrak lacks the TinyTrack's speed-sensitive smart beaconing. If you run a laptop mobile, an alternative is a software TNC that uses the sound card through a standard sound card interface (the same kind you would use for RTTY, PSK31, etc) . Both the AGW Packet Engine (freeware) and MixW ($60 registerware) can act as HF 300 baud TNCs entirely in software.

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Bulletins (Sundays at …)
11h15 Start call in of stations
11h30 Main bulletin start

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!

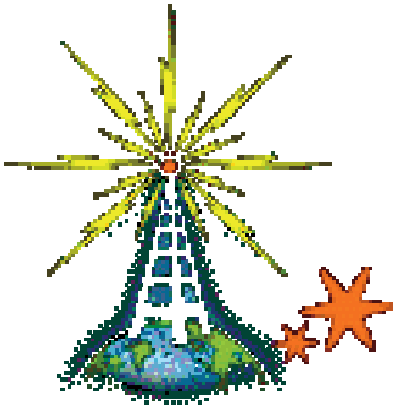
Chairman/Treasurer	Dave	ZR6AOC	475 0566 (H)	zr6aoc@mweb.co.za
Vice Chairman	Keith	ZS6AGF	675 1604 (H)	Mwbronie@iafrica.com
Secretary	John	ZS6FJ	672 4359 (A/H)	
Technical	Phillip	ZS6PVT	083 267 3835	workshop@multisource.co.za
Member	Anton	ZR6OST	953 5564 (H)	
Member	Craig	ZR6CRW	795 1550 (H)	craig.woods@absamail.co.za

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.



We need your input! Email us articles, comments and suggestions please. john.brock@pixie.co.za