

HAMS

Keywite

May 2009 NEWS

www.marc.org.za

PO Box 1076, Hilton, 3245

M I D L A N D S A M A T E U R R A D I O C L U B



AFFILIATED TO
THE SARL & IN
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WITH THE NATAL
CARBINEERS

RUMINATIONS

Little to ruminate about this month, in which case this contribution will be brief.

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CLUB EVENTS

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First, your Committee met on the 16th May. Not quite a full house, but the four absences had previously tendered their apologies. Unfortunately the main Conference room was locked so we had to meet in the cramped space of the "shack".

Second, a General meeting followed on - four more members were present, bringing the total attendance to 10. The deficiency of space in the shack was even greater.

Last, but by no means least, Rudi Delport from Port Shepstone sat his Class B ZU radio licence exam. We hope that he was successful, and that he will join the club. Two of our Mikes (ML and BGV) did the invidulation.

Finally, a reminder: the: last meetings before the AGM will take place on Saturday June 20th - at the usual place. Hpe CU.

Best 73
de
Robin (ZS5MRS)

Diary of Events

30 May	Radio Technology in Action - University of KwaZulu Natal
16 June	Youth Sprint
17 June	World QRP Day
17 to 21 June	SARL 160 m QSO Party
20 June	Monthly MARC Meeting, 11h00
18 July	MARC AGM, 11h00
1 August	Stand at the Hobbies Fair at the Model Engineering CLub

The M.A.R.C. Infrastructure

Voice Repeaters (FM)

VHF

Worlds View	145.750 MHz (Tx)	145.150 MHz (Rx)	Emcom SA256 25W
Windy Hill	145.700 MHz (Tx)	145.100 MHz (Rx)	Emcom SA256 25W
Estcourt	145.675 MHz (Tx)	145.075 MHz (Rx)	SCR200 15W
Greytown	145.775 MHz (Tx)	145.175 MHz (Rx)	Storno
Swartberg	145.725 MHz (Tx)	145.125 MHz (Rx)	
Underberg	145.7875MHz (Tx)	145.1875MHz(Rx)	YaesuFTC1525a20W

UHF

Mt Gilboa	439.225 MHz (Tx)	431.625 MHz (Rx)	General Electric MII
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Packet Digipeater

Mt Gilboa	144.800 MHz (Tx & Rx)	Kantronics KPC3 + V9.10 Alinco DJ -135 50W Diamond X-200 Omni 6db
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The PBBS (mailbox) is on ZS0PMB-1. The digi is on ZS0PMB-2. The KA-node is on ZS0PMB-7. Use Winpack on 144.800MHz to connect to the PBBS and leave a message for someone. The packet digi also acts as the aprs digi (ZS0PMB) and will respond to WIDEn-n or TRACEn-n.

APRS

The national APRS frequency is 144.800 MHz (Tx & Rx). The I-Gate is at ZR5S (Polly Shortts). Fixed stations should beacon at approximately 30min intervals with a path of WIDE5-5. Mobile stations should beacon at approximately 1min intervals with a path of WIDE5-5.

ECHO-LINK "voip"

Our node number is 244279 Call Sign ZS5PMB. This Echo-link facility is available on the Midlands linked Repeater network.

E-QSO "voip"

We are in the "101ENGLISH" virtual room, on the "repeater.dns2go.com" server. This is linked to RF at Polly Shortts on 433.400 MHz simplex.

BEACONS

Hilton	50.321 MHz (Tx)	ZS5SIX FSK
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WEB SITE

MARC'S very own website	www.marc.org.za
SARL's website	www.sarl.org.za

Editor's Waffle

I fought with Word Perfect today after helping with comms for Comrades, but eventually managed to persuade it to save this newsletter correctly, without crashing. It is a bit sad that out of the 18 Amateur Radio operators who helped, only 3 came from our club - the rest from Durban, and a number of CB operators. Maybe this poor turnout was due to other prior commitments? The shortage of operators was certainly not due to lack of advertising - as the request for help was made during our last few Sunday morning nets, our last newsletter and on the web. Next year will be an up-run, and the day will be long, as will hopefully be the list of helping members. I also forgot to do the local club bulletin on the same day, which was equally embarrassing - thanks Mickey for covering for me at very short notice!

Alex's article last month was well received, and I've had comments that it was well received and enjoyed by our readers. Today's article by Hartwig, ZS5WA will no doubt be appreciated as well - I enjoyed typing it out for this publication. Please could you all compile something about yourselves. It does not have to be long. We certainly would like to hear your stories!

Gudrun and I took some time off to Namaqualand, where we visited the west coast in the de Beers mining area, Richtersveld and the Orange river between Vioolsdrift and Pofadder.

On the way there we made a detour via Cape Town, visiting family members. What struck us was the poor APRS coverage in SA, or rather, how good the coverage is in KZN. It made me proud to be associated with a club which has it's act together, both voice repeater and APRS wise. Our last beacons were received near Bethlehem - this is how far our network stretches to the NW! I kept my radio on and was expecting some activity in Bloemfontein. But all was quite here on their repeaters, and there was no APRS coverage.

It was only the next day that we entered APRS country again in Cape Town. We heard the signals faintly just before coming to the du Toits Kloof Pass area. We entered the Huguenot Tunnel in clear sunshine, and exited it a few minutes later in pouring rain. But from here we had APRS coverage, and it was quite good where we traveled to the southern suburbs and then to Bloubaaistrand, where we stayed for the night.

The next morning we headed off further north along the west coast, and lost APRS comms in the Darling area, and even managed a beacon from Picketburg, NE of Langebaan. So APRS coverage is quite good down there, basically covering Cape Town and it's surrounding areas.

Unfortunately, I left things too late again and did not manage to get my HF APRS working. I had made up the cables, but the Kenwood TS-50 radio was not listening to the instructions from the OpenTracker, and just transmitted continuously. I tried changing the connections to no avail, and gave it up.

Once home I googled for solutions to no avail, and eventually asked Shaun to have a look at the MIC and to come up with some solutions. On his advice I added a capacitor in the cable and this did the trick. The Cape Town Igate was consistently picking me up. This morning I played around a bit more with different capacitors as I was not happy with the audio, and after much experimentation, I eventually soldered in a ceramic capacitor. Conditions closed yesterday, so I cannot confirm whether this surgery was successful, but will monitor it in the next few weeks and do some tweaking if necessary. Hopefully you will be able to track us in future, wherever we are traveling in Africa.

It was a pleasure to come in to invigilate for a new prospective Ham. I stood in for Shaun who had another commitment. He would however relieve me once he was freed up. Rudi breezed through the examination and was finished before Shaun arrived. Good luck Rudi - hope to hear you on air soon.

The monthly meeting last Saturday was also very productive, even if it was held in our cramped club house. We need to organise a work party to clear out some of the old junk...

And thanks to Shaun, ZR5S for the APRS article.

Happy dxing, Ed

How I became a Radio Ham

by Hartwig Hillermann, ZS5WA

I was working at Comec Minosa Extract factory when we were living in Schroeders ie halfway between Wartburg and New Hanover. The chemist there who was checking each day how the wattle bark extract was, was a radio ham, Basil ZS5IF. I was visiting him one day because I saw a 4 element beam standing in his garden. He showed me his shack. There I saw a huge transmitter he had built himself. There were no transistors in those days, only valves. It was about 1.5m high, with 3 level partitions inside. I said to him I wish I could be every day with him in the shack.

One day I was walking towards him outside the factory when just then I heard another friend say "OK 7pm tonight!" He answered yes. I asked him what's going on. He replied that the other guy is sending him morse code lessons every evening. May I come over. He said of course. I came there and he was busy copying the CW and was receiving 17 words a minute and could also copy by just listening without writing it down. We only had to do 12 words a minute to qualify. He started sending me morse every evening.

One day I said to the chemist that I want to go over to the postmaster in Dalton to make a booking to have my CW test done. He said let me just give you a quick bash of practise. So we did. I got to the postmaster and asked him to book me in 3 weeks time for a test. He said let's do it right now. If you fail it's unofficial. If you pass then it's official. I sent first and after a time he stopped writing. I thought now he does not copy any longer. I just carried on. Then he sent me morse for 3 minutes. When that was over, I had missed 2 letters and he said as long as you can read the message, which I could. He jumped up and said congratulations, you have passed. I was so pleased and kept smiling all the way back to Schroeders to the chemist. He asked me whether I got an appointment for 3 weeks time? I said I have passed my test. He was so pleased and we both could not believe it. He lent me an old transmitter and receiver and I had put on each end of the long antenna wire a 1,4m electric fluorescent globe. When I sent morse these globes would light up and other people in the village remarked that they see I am lighting up the whole village at night.

One day I had some old transmitter parts and took them to him and asked him to build me a transmitter. He said you go right home. I will draw you a nice plan and build it yourself otherwise you will never learn. I built it in 1962. My first contact was Antarctica and I received the Walter Reid Trophy for the best equipment that year. Since then I have received long service award and am pleased that I became a radio ham. My call sign I received was ZS5 wiggle ass (ZS5WA) and I am still wiggling my ass out of pure joy ever since.

73
de
ZS5WA, Hartwig

Ham Bulletin Readers

31 May - Mike Lauterbach, ZS5ML
07 June - Peter du Plessis ZS5PJ
14 June - Mike Boast ZS5BGV
21 June - Robin Seal ZS5MRS
28 June - Mickey Esterhuysen, ZS5QB

An introduction to APRS *compiled by Shaun, ZR5S*

APRS is an abbreviation for Automatic Packet Reporting System, and it is a graphical method of broadcasting positioning information in "real time" from packet radio-equipped stations. It was originally designed by Bob Bruninga WB4APR in the early 90's, but it has seen explosive growth in the last few years due to excellent software such as UI-View and [Kenwood's APRS enabled rigs](#).

People often ask why get involved with using APRS, which I find rather bemusing. I often wonder why we are also not asking each other to justify why we rag-chew while mobile or play with getting signals around the world. At least with APRS you can see other people exist, when calling frequencies are often silent all evening. Whether you get hooked or not will be for your own reasons, all I ask is that you give it a try for a few days and see for yourself. It does not even need to cost anything, presuming that you already have a receiver or transceiver on 2m and a PC.

When APRS equipped stations send latitude and longitude information, their locations are instantly shown on a map on your PC screen. As well as the actual location, the course, speed and altitude of the station can also be included.

Even the US Space Shuttle has used APRS, with stations down here on the ground literally "watching" it, or at least its position, on their PC screen as it goes overhead. Many stations have also used the digipeater on board PCSAT, a purpose built satellite, to relay their APRS positions over a wide area. PCSAT was developed by students from the US Naval Academy and it was built entirely from standard amateur equipment for a total cost of \$30,000 including the launch.

UK emergency groups such as Raynet (HamNet in S.Africa) are a "natural" for APRS and it has been used extensively in Berkshire for support of the user services, such as St. John Ambulance.

I find that APRS provides an excellent indication of changes in radio propagation on VHF and over time you can build up a accurate picture of coverage from your home station.

What do I need?

Probably what you already have! If you're already active on packet radio, say with a transceiver and a packet TNC (Terminal Node Controller), all you need is to run the appropriate APRS software on your PC. If you don't have a TNC, you can use the soundcard on your PC with a simple audio cable to link to your rig. To make the soundcard work as a TNC you will need to use some free software called AGWPE.

There's software readily available for DOS, Windows, Apple and Palm PDAs. Take a look at www.tapr.org/ if you'd like to download the latest versions of APRS and try them out. All the software I've detailed is either shareware, freeware, or public domain, so you can try it out without first putting your hand in your pocket. I would strongly recommend UI-View written by Roger Barker G4IDE. Add-on utilities continue to be written and enhanced, plus the "family of UI-View users" is continuing to support it via the [Yahoo eGroup](#).

To take a look at what's on the air right now, point your browser at www.aprs.fi

Connecting up

To get started on APRS yourself, apart from the software you'll need a packet radio station. The "traditional" way is to use a TNC plugged between your PC and transceiver. This converts the RS-232 (also know as V24) from your PC into small data "packets" and transmits them as audio from your transceiver. On receive, the reverse happens and the TNC decodes the packets into RS-232 strings which are sent to your PC for display. Here you'll just need a suitable TNC, an RS-232 cable, and audio / PTT cables to your transceiver - the TNC's instruction book usually gives plenty of information on connection pins etc.

Running the software (See my other APRS page for how to set up UI-View)

Let's assume you're set up on packet with your PC, TNC and transceiver. Tune your transceiver to 144.800MHz on FM and you may already hear APRS "beacons" being sent. This is the coordinated frequency across much of Europe and Africa for APRS type transmissions. Station icons will then begin appearing on your screen fairly quickly, and you'll typically see stations with different symbols displayed. Most home-based stations will be shown as a small "house" icon, and digipeaters will show up as a star. APRS weather stations will appear as blue dots with white wind barbs or a "WX" indication on the icon. Cars, Trucks and Motorbikes will also pop up within a short while.

Weather reporting

APRS can also be used for weather reporting, as well as just for location information. Click on one of the weather stations and you'll see what the conditions are at that station's location. This is because APRS position reports can also include the wind speed, direction and other important weather conditions. If you look at the screen grabs on this page you will see examples of weather stations.

Do I need a GPS receiver?

APRS can also be used with manually entered positions while you're operating from home or a few fixed positions, for example while helping out on a marathon. The Kenwood [TH-D7E](#) handheld transceiver, or the Kenwood [TM-D700 and TM-D710](#) mobile rig, have a built-in TNC and an APRS-compatible operating mode. With these rigs you can enter your position from the front panel as you move around. However the "easiest" way is of course to plug in a GPS receiver. A GPS connected to your TNC will automatically update your positions as you move.

APRS while you are on the move

Your APRS software will usually have asked you to enter your station details in when you first started it, and it uses this in your packet station's beacon text. Another method typically used by mobile and portable stations, who don't need a PC screen themselves to keep track of others, but do want others to keep track of them, is to connect a GPS receiver directly into the TNC. The TNC uses a special "GPS" mode in its firmware.

The TNC then periodically automatically beacons APRS position reports, at intervals you've set in your TNC, from the virtually continuous NMEA data stream sent by the GPS to the TNC. Such stations are called 'trackers' and many stations around the world have also added such a system to their car. You could of course add one to yours, your partner could then see where you are at any time and get your meal ready when you arrive home from work! One station in the USA even watched his stolen car being driven across town on his APRS map. The police couldn't believe it when he told them his car was still on the move and that he was tracking it! I watched my car being "test driven" by a garage mechanic at 80 mph in a 30 mph limit, past a school. I complained when I collected the car at the end of the day and hence saved the £20 charge for the test.

Any GPS receiver capable of outputting its data in standard NMEA-0183 format can be connected, and the position information sent by the GPS to the computer will automatically place you on the map.

Messaging, position intervals and digipeating

As well as position reports i.e. "one-way" data, APRS also supports two-way messages. You're alerted when there is an incoming message for you, and it is stored for you until you delete it. It's also possible to send short one or two line bulletins in the same way, which everyone sees.

Each new message line is transmitted immediately, then a few seconds later. After every transmission, the period is increased, until an ACKnowledgement message is received.

To get your APRS packets that bit further, many stations have set up specific digipeaters covering given areas. Individual stations can of course also be used as digipeaters and in the United Kingdom they would set their software 'Alias' to 'WIDE1-1'. This way you can set your UNPROTO address to 'APRS via WIDE1-1' for your UI packets to be automatically digipeated. Don't worry about this jargon, or knowing what it means, just have a look at the how to [set up UI-View page](#) on this site and copy what I have done. This will get you started and you can tune your own preferences in the future. In many countries where there is a higher density of stations, for example the USA, there has been a move away from using RELAY, to WIDE1-1. For consistency across national boundaries many are trying to standardise on one set of recommendations, but you will find conflicting guidelines. It is always worth finding out how the majority of local users have set up their stations and digipeaters.

Wide-area digipeaters are normally set to digipeat stations that have "WIDEn-N" as their UNPROTO path (where n and N are a number between 1 and a maximum of 7 e.g. WIDE3-3). In the UK many stations in the past used and alternative to WIDEn-N, called TRACEn-N e.g. TRACE3-3. TRACEn-N was used so that receiving stations can see which digipeaters the beacon has travelled via. However many digipeater owners have now modified their software so that WIDEn-N also traceable. Each digipeater will add its own callsign and decrement the number by one e.g.

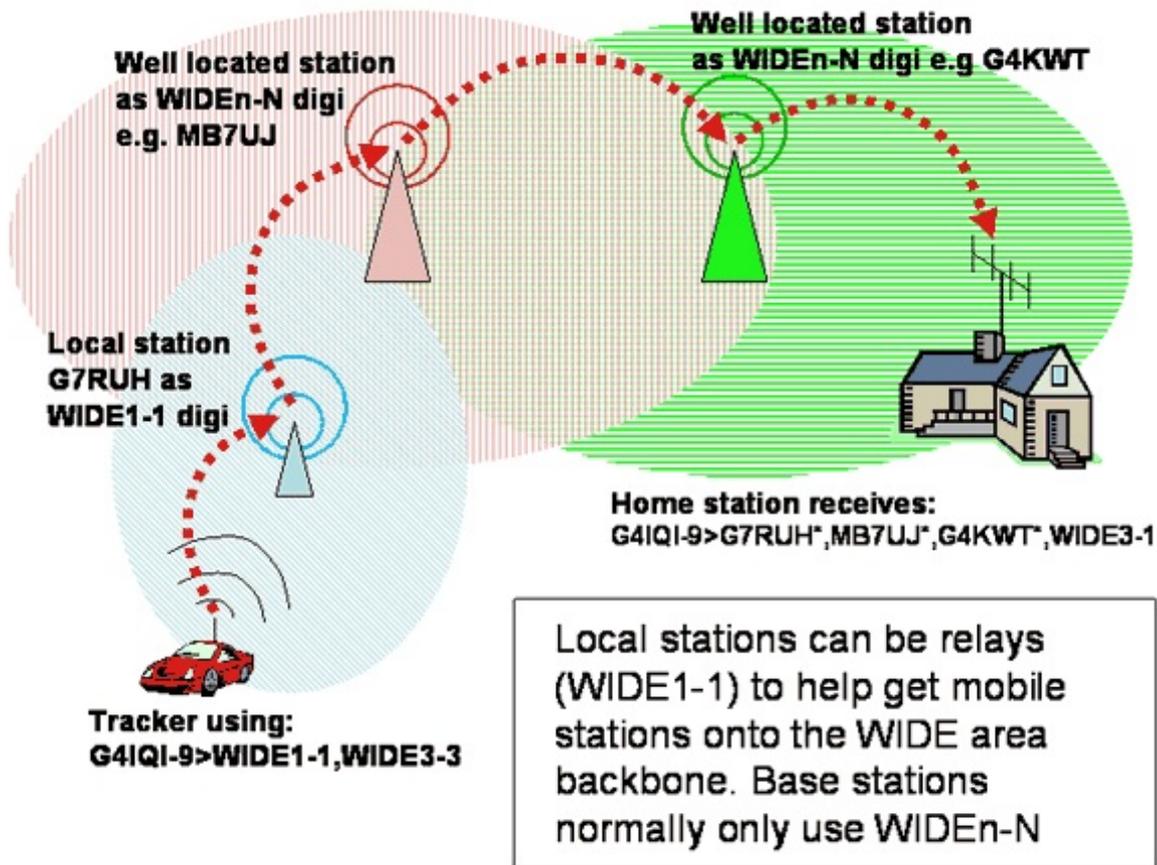
```
12:59:05T G4IQI>APU25J,WIDE3-3,RFONLY <UI C Len=60>:  
=5125.11N\00046.93W-Mac using TM-D700, Datum=OSGB36 {UIV32}
```

12:59:08R G4IQI>APU25J,MB7UJ*,WIDE3-2,RFONLY <UI C Len=60>:
=5125.11N\00046.93W-Mac using TM-D700, Datum=OSGB36 {UIV32}

12:59:10R G4IQI>APU25J,MB7UJ*,G1GQJ*,WIDE3-1,RFONLY <UI C Len=60>:
=5125.11N\00046.93W-Mac using TM-D700, Datum=OSGB36 {UIV32}

This tells me that my home station transmitted a beacon at 12:59 and 5 seconds, it was retransmitted by my local wide area digi MB7UJ, then G1GQJ heard MB7UJ's retransmission.

PLEASE NOTE THAT WIDE4-4 UP TO WIDE7-7 IS COMMONLY USED IN THE UK, HOWEVER IN MORE DENSELY USED AREAS WIDE2-2, OR WIDE3-3 SHOULD BE USED.



It is possible to use WIDEn-N to allow your beacon to go via up to 7 digipeaters. Some digipeaters will not add its callsign to the path. The following example shows a mobile station using an UNPROTO of WIDE1-1,WIDE3-3. It was first digipeated by MB7UJ. However it is not possible to identify all the three WIDE digipeaters.

13:01:01R G3XYZ-9>UP4RVR,MB7UJ*,WIDE3-3 <UI R Len=15>: `x7)!!vv/>"4m}

13:01:02R G3XYZ-9>UP4RVR,MB7UJ*,MB7UG*,WIDE3-2 <UI R Len=15>: `x7)!!vv/>"4m}

13:01:05R G3XYZ-9>UP4RVR,MB7UJ*,MB7UG*,WIDE3-1 <UI R Len=15>: `x7)!!vv/>"4m}

If you compare the example above, you will also notice that the second line is also very different. The beacon from my home location shows the latitude and longitude in an uncompressed format that can be easily read. The beacon from G4XYZ's vehicle is in a compressed format known as MIC-E. With MIC-E transmissions the latitude, longitude, speed direction etc. are contained in both the second line and in UP4RVR (this is called the destination address field). UI-View can also compress its beacons as can be seen in the following examples from my home station. It is worth turning on Compressed beacon as it reduces the amount of data and therefore increases the capacity of the network. It should be noted that this is not the same as MIC-E compression:

Compressed beacon by UI-View:

```
11:27:39T G4IQI>APU25J,WIDE3-3 <UI C Len=54>:  
=\4Ne/N<!u- BMac using TM-D700, Datum=OSGB36 {UIV32}
```

Uncompressed beacon by UI-View:

```
11:28:40T G4IQI>APU25J,WIDE3-3 <UI C Len=60>:  
=5125.11N\00046.93W-Mac using TM-D700, Datum=OSGB36 {UIV32}
```

The destination address field in the above two example beacons is used to identify the software type and version e.g. APU25J is for 32 bit UI-View version 1.99. It is also possible to use another encoding format which uses raw GPS information.

Raw GPS beacon:

```
G4XXX_12>APRS,MB7UP,MB7UW,MB7UG,G4KWT,TRACE7_4:  
$GPRMC,092950,A,5100.615,N,00050.566,W,021.6,353.6,200401,004.1,W*73
```

Internet linking

At the beginning of this page, I gave an Internet web site with "live" APRS data, and it's true to say that the Internet has given APRS a tremendous boost. It is now possible to connect in and have access to APRS in other countries, including trackers, messaging, and weather data.

Within the current UK licence it is permitted for any station to port beacons from radio onto the internet servers, however to transmit information from the internet onto radio requires a Notice of Variation (NoV). It is very easy to overload the radio frequency with the vast amount of beacons on the internet, so this should not even be considered without a lot of experience of local conditions and without the agreement from other local stations. The distance that these internet ported transmissions should always be very limited and not normally sent via the digipeaters.

The best Windows APRS software in the world - UI-View

Its three main features are:

- . It will plot the locations of stations that it hears transmitting beacons, so you can see who is on the air around you.
- . It will show weather reports from any stations sending out weather beacons.
- . It has a casual messaging facility, which is designed to encourage local packet 'chat'. *UI-View screenshot.*

The program can be used with virtually any type of packet hardware, or with AGWPE. This means you can use packet modems, or your sound card running AGWPE software. UI-View's name is derived from the fact that it does everything via UI (Unnumbered Information) frames, e.g. beacons.

What's the difference between UI-View and APRS?

UI-View also has a few specific features which can be used with other UI-View equipped stations. You can "ping" another station, this sends an ASCII character which the other system recognises as a special message and simply replies with a packet "ACK". When your system receives this, it'll show you how many times, with a maximum of five, that the ping was sent. You can also use this "ping" facility via digipeaters if you wish, making it useful for trying different routes. A UI-View "query" can send a message to another station as a different ASCII code, the other system then automatically sends back its station information. A modification of this is a "DX query", which again sends a different ASCII code to which the other system replies with information of the best DX in its current station list, ignoring stations heard via digipeaters.

With that, have fun, and enjoy getting going with APRS

This information was partially based on an article written by G4HCL with additional sections and updates by ZR5S.

As per special request, here is a list of our paid-up members :

Call sign	Name	Surname	Address 1	Address 2	City	Code	Phone	Cell	Email
ZU5ROB	Robert	Billing	P O Box 3		Richmond		083 656 2676		rob.billing AT vodamail.co.za
ZS5BGV	Mike	Boast	30 Valley Vista Rd	Athlone	Pietermaritzburg	3201	033 342 1241	083 292 0021	mboast AT pmbnet.co.za
ZS5NZ	Milne	Buchan	P O Box 100634	Scottsville	Pietermaritzburg	3209			
ZR5HRC	Harry	Chalmers	3 Lymbrook Rd	Scottsville	Pietermaritzburg	3201	033 386 4857		
ZS5MQ	Bert	Cornell	32 Brookby Crescent		Pietermaritzburg	3201	033 344 3659	082 959 2724	
ZS5PJ	Peter	du Plessis	226 Amberglen	P Bag X004	Howick	3290	033 239 4426		petel AT juncapped.co.za
ZS5QB	Mickey	Esterhuysen	P O Box 11253	Dorspruit	Pietermaritzburg	3206	033 897 2332		esterh2 AT telkomsa.net
ZS5ABW	James	Fairlie	30 Simonshof	133 Alexandra Rd	Pietermaritzburg	3201			
ZS5WA	Hartwig	Hillermann	P O Box 197		Wartburg	3233	033 5031129	083 309 7692	Lionel.Hillermann AT za.nampak.com
ZR5RMI	Robin	Inggs	P O Box 243	Uitzoek Farm, Manderston	Umlaas Rd	3730	033 251 0191	031 266 5525(w)	
ZS5ML	Mike	Lauterbach	P O Box 277		Wartburg	3233		082 372 0997	mike AT edelnet.co.za
ZU5GL	Gudrun	Lauterbach	P O Box 277		Wartburg	3233	033 506 0001	082 457 1591	gudrun AT edelnet.co.za
ZS5NL	Mavis	Leonard	37 Rosewood Estate	70 Loop St	Pietermaritzburg	3201	082 376 5654		
ZR5PDL	Phillip	Long	P O Box 48		Franklin	4706	039 747 9012	082 452 1051	philliplong AT telkomsa.net
ZR5BCB	Brian	Lourens	P O Box 915		Hilton	3245		082 690 0156	baprs AT telkomsa.net
ZR5SEM	Stanley	Marx	32 Geekie Rd		Merrivale	3291			zr5sem AT telkomsa.net
ZS5IE	Jan	McAllister	25 Linwood Drive		Pietermaritzburg	3201			
ZS5EV	Roger	O'Neill	17 Kinnoull Rd		Pietermaritzburg	3201			roneillav AT gmail.com
ZS5EFP	Evert	Pieterse	5 Regan place	Chase Valley Heights	Pietermaritzburg	3201	033 3475827	079 498 7273	evertpieterse AT vodamail.co.za
ZS5EM	Fred	Pogierter	PO Box 952		Hilton	3245			frepot AT isaol.com
ZS5MR	Maurice	Rall	94 Langenhoven Rd	Napierville	Pietermaritzburg	3201			
ZR5S	Shaun	Rudling	77 Uplands Rd	Blackridge	Pietermaritzburg	3201	033 342 1609	082 676 1488	shaun AT pmbnet.co.za
ZS5MRS	Robin	Seal	P O Box 427		Hilton	3245	033 343 1942		robin AT planetkzn.co.za
ZS5NG	Rod	Smith	P O Box 463		Ladysmith	3370		073 2437933	rodhs AT telkomsa.net
ZS4L	William	van Coller							vwancoller AT gwisa.com
ZS52012	George	van der Poll	P O Box 233		Howick	3290			
ZS5EGW	Errol	Wilson	P O Box 133		Hillcrest	3650	031 7651489	078 677 9772	ermyrt AT telkomsa.net