

Chasing DX

DXing from days of old

I've been reading an article from the 'Radio' magazine of America dated 1937, by the then W4DHZ, Dave Evans. Interesting reading these old articles from the days of crystal controlled rigs, AM and CW only. Also interesting is that much of what they said in those days is still relevant in today's world of SSB, CW, RTTY, PSK, ATV etc.

It seems there were then and remains today two types of DXers. Those who practice the 'shotgun' tactics of calling CQ and working all and anyone, picking up the good DX in the process and those, like myself, who practise the 'efficient' method and listen a lot and only call when there is a good chance of a contact. By 'efficient' I mean the ratio of DX stations worked to time spent at the rig. I'm not saying one or the other way is best, just that for my time available and my station, the efficient method is best for me. It does mean I don't get spotted on the cluster much and others hardly ever hear me in pile-ups or working the DX, but then I'm after DX not a reputation.

There were many tips still relevant and some I have said and repeated before in this column. In particular the advice to 'listen, listen, listen'. Dave also stressed that power is not the answer but rather the operator's skills, antennas and receiver are more important.

For personal skills, Dave said 'you must study the gang across the seas' you want to work. Hone your listening skills, work out what they are doing especially if they are working split. Be ready and alert. Think of the times they will be on and which band. They will not be there to suit your schedule. They will be working their schedule to suit the larger ham populations of USA and Europe. This is especially true here in New Zealand. Develop the skill of copying weak stations in the noise. Both QRM and QRN. Be patient.

I agree with him that it is better to put up the most efficient antenna with gain you can, than make do with a compromise antenna. You can not work the DX if you can't hear them. Think about those RA stations you hear in a contest at 20 over 9 but they never come back to you. A ham friend who has worked with them in contests says that they run many kilowatts into a dipole or similar poor antenna. IE they are deaf! Good receivers these days are taken for granted. There is not much to choose between the top manufacturers, only personal preference.

If the DX is working '59 thank you' mode be as efficient as him. Just give your call maybe twice. If he hears you he will respond. He doesn't want to hear his call over and over again. He already knows his call. What he wants is your call to log. Make your reply simple and short. 'ZL2CC also 59 thank you'. In fact if he has your call correct when he replies to you the first time, leave your call off. It may confuse him into thinking that he had your call wrong first time. If he wants more information he will ask for it. Then is the time to give it.

Finally, if you want to work a lot of DX, be prepared for it at any time. It may only be there for a few minutes as propagation changes. You may be the only one to hear him

and possibly work him from your area. Remember, you may be the only example of a ZL DXer he hears. Be polite and efficient. Protect our good reputation.

C U in the pile-ups Mike

Tips from the DX

A friend of mine has moved to St Lucia and is having a ball on ham radio. He is experiencing what it is like to be at the end of a pile up instead of trying to break one. He has asked me to relate his thoughts and comments on what makes things difficult from his end.

“It is really irritating when someone answers me with a call sign and I reply and they send QRS, (slow down). That part is ok, so I slow down and they go on and on and tell me their life story when there is a pile up. Then ask me what my call is!

If you can't send fast, don't! Send your call at your speed. It is frustrating listening to poor CW and trying to figure out the call.

If I say 'W2A?? only', don't reply unless you are W2A something because you will never get a contact.

Another thing I've learned is LISTEN. If your call has a 'C' in it for instance that is all I may have heard. If I ask for C ? respond or you will lose out

Send your whole call, I don't respond to partial calls and I don't respond to people that interfere with the QSO. Ever!

Don't tune up on frequency.

Final tip for DXers is don't send IRC's most of the 3rd world doesn't know what to do with them. I have been stuck with several. Just send 'green stamps' they are cheaper.”

Derek J6/VE3CZF

(Derek is always available for a sked. Just e-mail him)

Thanks Derek

The green stamp/IRC situation is worth looking into. Some countries who are not USA friendly will not accept green stamps. In fact they are illegal in some countries. If in doubt go to QRZ.com and see what the DX asks for.

Forty metre dipole antenna design

Following on from the last Chasing DX column this article gives information on building dipoles. In particular a 40m dipole.

The basic formula for designing any wire dipole is usually given as;

468/MHz to give an answer in feet or

142/MHz to give an answer in metres.

While these formulas seem like they should give the correct dimensions for dipoles they are really more of an approximation. They will give an approximate total length for the antenna and should be on the long side of things. IE two legs of half this size. This is desirable as the real world situation means that the theoretical values will need adjusting. It is easier to shorten an antenna wire by folding back on itself than to

lengthen. If the wire used is insulated this will also effectively lower the resonant frequency making a shortening of the length necessary. See the tables below.

The theory and discussions here are for the 40m band but are similar for any band. The tables are for a 40m dipole antenna for a frequency of 7.150MHz where the formula will give an overall length of 19.86m. With reference below to the table of bandwidth against element diameter, this is a good centre frequency for 1 or 1.5mm wire. These wire thicknesses correspond to easily obtainable insulated electrical cable. Remember to cut it longer initially for the reasons following.

What height do I need to mount my antenna at? There is no optimum height for a horizontally polarized antenna. The more height the better is the usual maxim. However, look at the table below to see how the height above ground affects the impedance and the resonant frequency. Most New Zealand situations will be in the 12m to 20m heights and typical ground conditions. You will see that when in these conditions the resonant frequency has moved up to 7.200MHz. This means the antenna wire is too short and the impedance is 73 to 84 ohms also too high. The impedance can be changed by the angle of the legs into an inverted V configuration but the length will need to be physically changed. Hence cut it long to start with. It can be temporarily shortened by doubling the wire ends back on themselves and hand twisting along the length. Cut off and seal after all adjustments have been completed. Remember to adjust the leg lengths equally both sides.

The radiation pattern off a straight dipole depends on many things but in general if the dipole height is more than one wavelength above good ground it will be predominantly broadside and tending towards omni-directional as the height decreases. In practise if you have the capability to mount a dipole at 40m height a better choice of antenna is required. Maybe a loop but that is another story for later. Therefore, as your antenna is likely to be mounted around 12 to 14 metres high, then go for an inverted V configuration. This only requires a single support point and will improve the impedance as shown in the tables.

Height metres (feet)	Frequency MHz	Typical ground Impedance	Perfect ground impedance
40 (132)	7.175	73.5	72
30 (100)	7.100	75	60
20 (66)	7.200	68	70
12 (40)	7.200	84	92
8 (26)	7.060	73	63
4 (13)	7.080	53	22
Free space	7.150		75

Table of frequencies against height above ground for antenna designed for 7.150MHz

Angle degrees	Frequency MHz	Impedance
180	7.150	73.5
160	7.160	72
140	7.170	67
120	7.200	59.5
100	7.260	49.5

90	7.290	43.5
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Table of frequency and impedance against angle at apex of inverted V wire antenna

Thickness of insulation	Frequency MHz	Impedance
No insulation	7.150	73.5
0.05mm	7.010	71
1.3mm	6.890	69
2.5mm	6.740	66.5

Table of frequency and impedance against insulation thickness of antenna wire

Element diameter	Frequency MHz	Impedance	Bandwidth in kHz
1mm	7.160	74	290
1.6mm	7.150	73.5	310
5mm	7.120	72.5	355
10mm	7.100	72.3	400
25mm	7.055	72	445
50mm	7.010	72	500

Table of bandwidth, frequency and impedance against element diameter

To sum up; use the formula to give you the wire length and cut it a little bit longer. Choose your method of support, hoist it up and adjust as required. This will take several attempts so don't despair. Use an antenna analyser to set the antenna resonant frequency and impedance and start working the DX.

Mike ZL2CC

Power levels

There has been some talk recently about increasing the ZL amateur power output levels from our present 500 watts PEP to 1kW or even 1.5kW PEP output. This would bring us into line with our close Oceania neighbours and most of the rest of the DXing/contesting world. For a DXer or contester power is not the be all and end all. A more important aspect is a good receive antenna system. As has been said "you can't work them if you can't hear them".

Prospective DXers/contesters should first invest in a good antenna system before contemplating an amplifier. An antenna power gain of 3 dB is like doubling your power output. A 6dB antenna power gain is like increasing your power output by **four times**. This means that 100watts into a 3 element monobander is equivalent to 400watts into a dipole. An increase in power output from 100 watts to 400 watts gives an increase of only one S point at the receiving station but the extra gain of an antenna on receive will give you an edge of about an S point over a dipole. You can't work them if you can't hear them!

What ever powers you run remember it is important to run a 'clean' signal. A badly adjusted 100 watts will cause much more mayhem on the bands and to neighbours than a well adjusted 1500 watts. Do not overdrive you rig, amp, speech processor or power supply. All knobs fully clockwise (AKFC) is not the way to get a clean signal.

Good DX and keep it clean ZL2CC

Beacons

Amateur beacons are (in the main) automated low-power transmitting stations belonging to licensed radio amateurs. Most broadcast CW around the clock on specific frequencies within the internationally recognised amateur beacon sub-bands, sending their callsigns periodically. Most also transmit additional information such as their locator and power. Their primary purpose is to indicate open propagation paths and modes.

What does that mean, exactly, to ‘indicate open propagation paths and modes’? Well let me explain with some examples from my systematic monitoring of the 10m beacons for the past few months. The ten metre band particularly interests me because it lies at the boundary between HF and VHF, having characteristics of both. VHF-like line-of-sight ground wave paths are supposedly open most of the time but from my QTH in Hawkes Bay, I can seldom hear any of the ZL beacons via ground wave propagation.

The 10m beacons in VK are beyond normal ground wave distance from me. I heard several VK beacons with good signals most days during our summer (probably via sporadic E), but since about February I have heard them only at lower strengths and less often, maybe once or twice a week (probably by F1 propagation). This is useful information for chatting to my mates in Oz and for contesting on 10m. Openings on 10m may also signal propagation on 12 or 6m, where there are also beacons to monitor for more precise information.

Looking further afield, there are lots of North and South American 10m beacons to watch out for via multi-hop F1 or F1+sporadic E mixed-mode paths. So far this year I have logged over 100 ten metre beacons on the American continent. Not all at the same time mind you: typically I hear about half of them any day the band is open, sometimes a few more but often less and seldom more than about 15 at any one time. Still further away, hearing EA, I or C3 beacons on 10m not long after our dawn, signals long path openings to Europe. Just spotting these beacons on DXcluster is enough to persuade a few of the European who have long since followed the propagation to the lower bands at the end of their daylight hours to come back to 10m and work the South Pacific on a path that we probably would not have known about if it were not for the beacons.

While some beacons may be quite strong at times, most are either weak, very weak or below the noise. Remember they are mostly QRP and some even run indoor antennas. I hope this introductory article is enough to persuade you to take a careful listen to the beacon sub-bands and look up those Internet resources listed below. Maybe one day you’ll get interested enough to want to set up your own beacon station, or to use WSPRnet and the Reverse Beacon Network to explore the fascinating vagaries of HF propagation. Good DXing!

See if you can hear these:

On 14100 kHz is the NCDXF beacon chain’s 20m slot. Listen for at least 3 minutes to hear the complete cycle.

On 28243.9 kHz is WA6APQ/BCN, a Californian beacon heard mid-morning most days from Hawkes Bay at least.

Gary ZL2iFB

<http://tinyurl.com/ZL2iFBeacons>

K4M DXpedition video

James Brooks, 9V1YC is a master at telling a DXpedition story. This latest effort chronicling K4M on Midway Island is an absolute delight to watch. You join the team at the airport waiting for their chartered aircraft which has been delayed with mechanical problems. Eventually the team is on its way to Midway with only the loss of a few days operating time. Their permit is for a specific length of stay and cannot be varied. The theme of the video is the history of the island over the past few hundred years and the wildlife of this environmental gem. James includes historic clips of the island's rich history and how it finally became a US wildlife reserve in 1988. The K4M team had to agree to the rules of the US Forest and Wildlife to use verticals only and no yagis. It is an amazing sight to see these monstrous antennas on the beach festooned with thousands of short pieces of plastic tape to prevent the bird strikes. Spectacular sunsets, pristine beaches, historical abandoned buildings and tons of leftover junk are all documented along with great interviews with the US Forest and Wildlife Service resident manager on the island.

Few camera men can capture pileups like James. His SSB and CW operating clips feature superb quality video and audio feeds. You feel like you are in the chair shovelling out the endless pileups. James is an experienced DXpeditioner himself and he interviews the operators from their point of view and catches their innermost thoughts of DXing and DXpeditions on camera. K4M, unlike many DXpeditions had the luxury of operating from a location with a small resident population of workers. Three meals a day and satellite TV was a bonus to this highly skilled team who managed over 61,000 QSO's and it is interesting to note that nearly 70% was on CW. The video is just as interesting to non amateurs as it is for amateurs and a "must have" in your video library. I rate it 5 stars. It is available online at www.dxvideos.com
<http://www.eham.net/reviews/detail/8894>

73, Lee ZL2AL

DX News from 425 DX NEWS

Until 09/08 VQ9JC and VQ90JC: Diego Garcia (AF-006), Chagos
Until 31/01/11 DT8A: King Sejong Base, South Shetlands (AN-010)
Until March 2011 AT10BP: Maitri Base, Antarctica
05/07-14/07 FP/K9OT and FP/KB9LIE: Miquelon Island (NA-032)
14/07-24/07 FW5M, TO2BNL, FW5FM: Wallis Island (OC-054)
17/07-31/07 S79BWW: Mahe (AF-024), Seychelles
20/07-27/07 CQ8SV: Corvo Island (EU-089)
21/07-26/07 VE3ZZ/VY2 and VY2X: Prince Edward Island (NA-029)
22/07-27/07 OZ/DA0T/p: Mando Island (EU-125)
23/07-25/07 F/OR9W/p: Tombelaine Island (EU-156)
23/07-26/07 F/ON7BT, F/ON7EQ, F/ON7LX, F/ON7TK: Chausey I. (EU-039)
23/07-25/07 XL2I: Isle-aux-Coudres (NA-128)
24/07-26/07 J49A: Gavdos Island (EU-187)
24/07-25/07 MM3T: Isle of Bute (EU-123)
24/07-25/07 TC150SLH: Sile lighthouse
24/07-25/07 TM7T: Chausey Islands (EU-039)
18/08-25/08 KL7RRC: Chirikof Island (NA-235)
21/08-22/08 TC150SLH: Sile lighthouse
26/08-01/09 N6PYN/KL7: Seal Islands (NA-239)

From 1 to 11 June ZS10WCS for those interested in the soccer world cup.

Don't forget to visit DX-News for more morsels and titbits of what is going on in the DX world <425dxn.org>.

Also well worth a read is DX-IS. Go to <<http://dx-is.com/news/>>

Another good source of DX news and interesting antenna information etc. is the HAM MAG. Available from the net published by F5SLD.
<http://www.ham-mag.com>

Yet another good source of DXing tips etc from our own ZL2iFB web site
www.g4ifb.com

Feedback

Thanks for the feedback and please keep it coming. I look forward to it and often it forms the basis for a discussion.

That's it for another edition. Thanks to 425 DX News, kiwidxlist, zldxc, zlhams and the people who have contributed, helped with technical advice and allowed me to include their news. I look forward to your feedback and contributions via e-mail or post.

It is only by disagreement that we learn the strength of each other.

Chase the DX - get it in the log.

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