



CW Today

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As promised this month we will give space to proven successful techniques for those chasing rare DX in huge pile ups to not only maximise their chances of success in getting through with modest power and antennas but even to succeed often on the very first call.

First however, I'd like to revisit one of the reasons why CW is still popular for chasing DX, SOTA activations and does not require amplifiers and high gain beam antennas for successful DX contacts. To do this, we will compare CW to SSB and examine the claim "*Does CW Really Get Through When Nothing Else Can?*" which was addressed in the ARRL's "*The Doctor is In*" by Joel, W1ZR.

The claim is indeed true and has a good solid basis for it with a number of aspects. Firstly, when things can't get through, it's usually due to not having enough signal compared to the noise, i.e. a poor Signal-to-Noise Ratio (SNR). All things being equal, the noise is proportional to the bandwidth in your receiver. With CW you can cut the bandwidth to 250 Hz, or even down to less than 50 Hz. On SSB assuming a bandwidth of 2 kHz, that is a gain over SSB in SNR of over 10 dB.

Secondly, in SSB you require a stronger signal to be able to understand what someone is saying. You may hear the voice but not be able to understand it, contrary to CW where you can hear a much weaker signal and have full readability. This is due to CW being "on or off" whereas with voice there is much more that needs to be heard to decode it. That advantage

is at least another 3 to 6 dB.

Thirdly, on CW when transmitting say 100 W, you are transmitting 100 W when the key is down. On SSB you may be transmitting on average 25 W depending on compression and how loud you talk into the microphone. That is thus another 6 dB gain. Therefore these three factors combined give an advantage of 20 dB, or a power factor of 100. This means that 10 W of CW would equate to 1 kW of SSB in order to get through in the same conditions.

If it takes 1 kW of CW to get through that would take 100 kW of SSB to get through in the same conditions. So clearly the power factor is a huge advantage in favour of CW. Then, if we consider that a really good antenna would have 6 dB or maybe 12 dB gain, but very rarely more than that within the normal limitations of amateur radio set ups, CW on a dipole would still have an advantage of around 10 dB over SSB on a 10 dB gain antenna, therefore a 100 W CW signal on a dipole would be equivalent to a 1 kW SSB signal on a 10 dB high gain antenna.

The above comparison is between CW and SSB. Naturally, there are digital modes, which can do as well or even better than CW in terms of throughput in marginal conditions. Not including those which partly use the Internet and/or very limited information at slow speed, there is for example PACTOR, developed by German QRQ CW Operators, which achieves astounding results, but is a very expensive mode requiring not only software but special hardware. CW

equipment is cheap, robust and simple and is included by default on even the most expensive of SSB/DATA rigs.

These are all reasons why CW is making a come-back as urban RF noise levels continue to rise, unchecked by governments which are more interested in easing regulations and increasing profits than in the interests of a limited number of radio amateurs, no longer seen as an asset to the nation. If anyone believes CW is dying out, they may like to ask the manufacturers of amateur radio equipment when they plan to stop including CW as a default mode on modern transceivers or what other mode is available to man that allows for sending and receiving information by hand and ear with a greater efficiency than the ancient Morse code.

How to break through the pile-up?

So with the scientific facts before us, showing clear advantages of CW over SSB, how can we compete with those who are chasing that same rare DX but have the advantage of geographic location, higher power and higher gain antennas? How can we get into the DX log with 100 W to a dipole up half a wave length or less above ground?

The mantra often repeated by DX stations giving advice on what to do is "listen, listen, listen." But surely this is not something that many would like to do, as the first instinct may be, how can I contact the DX if I only listen? But it is very important and without regurgitating

DX codes, I will give some practical advice born of experience and I find this works almost every time.

Firstly, work out the available time for the DX. How long are they going to be around, if known, just a few days, or a few weeks? Are they available 24 hours a day? Are they working on all bands in CW? Then decide how much time you have available on various days to make contact with them. You may not be able to do so when you are at work or you may be prepared to take a little time off work. But after calculating the maximum time available to you and having worked out a schedule of possible times that you can sacrifice a little sleep, or are otherwise available, be mindful that you are not going to spend this time calling for hours and hours, hoping for a response. We are going to look at how to just call once, or at most a few times, and get success.

Propagation

Your next mission is to check propagation between your location and the DX. Although shortwave fadeouts as well as enhanced conditions do occur, you can get a good theoretical average prediction that will be close to reality, from www.voacap.com and use this to plan which bands and times match the best with your earlier worked out schedule. Now write down those periods you are prepared to be available to chase the DX, and fill in the bands that are offering the best propagation chances for each hour within that schedule.

Now you know when you will have the best chance of having propagation on your side, you will want to know how to find the DX and if they are on the air at those times on those bands. Nothing is easier than tuning the relevant band at those times, and you will probably find a pile up of other stations calling the DX, without even needing recourse to the Internet. But if you don't consider use of the Internet as spoiling your

achievement, you can set up alerts on DX spotting sites.

Listen to the DX

Now you have located the DX, listen to the DX station for a few minutes on his frequency. How strong is the DX signal? If it is S6 or more you are in with a chance. If it is less than this, your chances are going to be significantly less. Resist temptation to call the DX when you cannot hear it with a full readability of 5, because you will risk transmitting at the wrong time, and if the DX responds to you, you will have problems and maybe not hearing those responses. Don't be one of those that the entire pile up has to listen to your call sign being called 2, 3 or even 4 times!

Now, you are still listening, right? Don't transmit yet! You were listening to see if the signal strength was consistently allowing for full readability and was at a reasonably strong level, generally needing to be stronger for lower frequencies such as 80 m than on say 10 metres, if the DX is far away, because you are competing with others who will have strong signals at the DX location who will likely be nearer than we are down here in Australia. But while listening for those few minutes, you will also be noting the style of the operator: using split? Any instructions? Simple "5NN TU"?

Listen to the callers

Now, switch to your other VFO and look for the pile up and note how wide it is. Tune through the pile up and you will notice that most stations call on a round kHz frequency of i.e. .000 Hz. This may be e.g. 1, 2, 3 or more kHz up, but most of those calling are calling on those exact frequencies and thus, zero beating each other, making it harder for the DX station to pick out anything but the strongest of signals, or, tuning and taking calls from those who are perhaps 1.2 or 1.7 kHz up, rather than 1.0 or 2.0 kHz up.

While tuning through the pile up, look for those stations that

are giving the DX a report, e.g. "5NN" and note down their exact frequency. Here, it is absolutely essential that you understand how to tune in a CW signal and measure its exact frequency. Typically you turn off the transmitter, put your key down, and zero beat the station with your side tone audio frequency, if the offset of your TX to RX on CW is equal (as it should be, ideally) to your side tone AF.

Note how many other stations are also on that same frequency where the last successful station was transmitting. You won't be the only one who knows how to do this properly and you may find suddenly other stations appear on that same frequency and may thus make things again hard by being all zero beat. Still resist the temptation to call, you don't have enough information yet to make your pounce!

Prepare your TX frequency

Listen to a few stations getting through with success, and see if there is any pattern to their frequencies, so that you can see if the DX station is taking calls currently one after the other on the same or very close by frequencies, or is tuning up, down, or randomly through the pile up. Once you see the pattern, or if the DX is taking calls around a particular frequency, and you are ready to make that call, decide if there is stiff competition on that frequency in which case, change the VFO by 0.2 kHz above or below the last successful station, but otherwise just 0.1 kHz if competition isn't too fierce, then switch back to your other VFO and push the SPLIT button and make sure you have full break-in. Do NOT try to call the DX using anything less than **full** break-in (QSK).

Now as soon as the DX is listening again, typically right after "TU" or "UP" send your call sign, and stop sending as soon as you hear the DX between the letters of your call sign, otherwise complete sending your call once, pause a

little, and start sending it a second time, again, stop as soon as you hear the DX transmitting. If still nothing heard, even a third time, but never more than that. Chances are high the DX will come back to you, but if they don't listen to who they call and then push that VFO button to see if you can hear the other station, and if they are near the frequency you are on.

Results

Using all the above methods in combination will usually get a quick result and often on the first call. If you find that you don't have any success after calling with full use of the above methods for even 10 minutes, don't bother trying any longer. Go back to sleep, or spend time with the family, because you are likely wasting your time: give it a shot when the conditions are better – this is why you have many periods on your earlier calculated schedule. When you are calling in the right period using these methods, you truly will get through very quickly.

I've used these methods over the years with consistent success. Naturally, if the operation is a short one and/or you don't have much available time to check and see if signals are good, then you will have to invest more calling time during your more limited listening time, but still resist the temptation to just call and call and call, if you cannot hear that DX station clearly.

I realise that for many of us "wallpaper" (awards, rare DX) isn't our interest, or the lack of satisfaction many feel over getting a "5NN" the same as everyone else, and particularly Old Timers who remember the days when working DX was a real pride and joy and the physical QSL card with honest reports and even a few words in the hand-writing of the DX, meant quality over quantity. But for many others this is a great interest, and if

you engage in it you may as well do it successfully!

CW Contests in June 2016

There are as always many CW mini contests or activities taking place this month, which are regular events and can be found on the web sites of CWOPS, FISTS, SKCC and others, as well as the QTT. Hour activities each month details of which are on VKCW.Net – the points are the actual minutes spent in QSO during QTT Hour each day from 1st to 24th of each month, where CW Club and membership numbers are exchanged, or formerly operated commercial CW callsigns. These events are fun for those who are less into the fully fledged contest style activities.

Larger CW contests which offer great fun during this month include the All Asia DX Contest, the VK Shires Contest, and the SEANET Contest as follows:

Saturday 4th June 2016 1200Z through Sunday 5th June 2016 1200Z the 24 hour SEANET Contest (South East Asia Net) aims to promote two-way amateur radio communications within the SEANET region and between the SEANET region and the rest of the world. All bands 80-10 m except WARC with CW activity centred around 25 kHz from band edge. Single or multi operator categories with modes SSB and CW only being allowed, and without separate categories for each mode. Australia is classed as one of the SEANET region members: **4S, 4W, 8Q, 9M/DX0 (Spratly), 9M2, 9M6/8, 9N, 9V, A5, BS7, BV, BV9P, BY, DU, H4, HL/DS, HS/E2, JA, JD1/M, JD1/O, KH0, KH2, P2, P5, S2, T8, V6, V8, VK, VK9C, VK9X, VR2, VU, VU4, VU7, XU, XV/3W, XW, XX9, XY, YB.**

Only one contact is allowed on each band, irrespective of mode, one point per QSO, serial number starting 001, multiplier for SEANET

stations is one multiplier for each DXCC entity worked on each band, including those in the SEANET region and in their own country, i.e. Australia. Full details at www.seanet2016.com

Saturday 11th June 2016 0600Z through Sunday 12th June 2016 0600Z the 24 hour VK Shires Contest is for amateurs around the world to contact as many VK shires as possible in the contest period. VK amateurs are to work the world including VK, whilst the rest of the world can only work VK.

Bands allowed are 80 metres 3.500 - 3.700 MHz, 40 metres 7.000 - 7.250 MHz, 20 metres 14.000 - 14.300 MHz, 15 metres 21.000 - 21.350 MHz, 10 metres 28.000 - 28.600 MHz. Please note there is no 75 m DX window permitted for VK stations which means the rest of the world can operate above 3.700 MHz i.e. split operation. For details of this contest please see the WIA website.

Saturday 18 June 2016 0000Z through Sunday 19 June 2016 is the 48 hours CW period of the All Asia DX Contest 2016 on all non-WARC bands 160 m – 10 m, organised by the JARL. VK is not an Asian country, and so should QSO only Asian countries. We can operate single operator single band or all band, and multi operator single transmitter or multi TX giving four operating categories.

Call CQ, and for OM give RST and your age in years, YL can either give their age or 00.

Points: each contact completed with an Asian station on 160 m is 3 points, 80 m and 10 m 2 points, other bands 1 point. Multipliers are Asian prefixes following WPX contest rules as to prefixes. It's a fun contest to see the age of operators, for full rules and details please see JARL.org

As always, have fun with CW and your feedback is always welcome!

