

# DX'ing on 160 Meters?

## Part I

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Medium Frequency Sterba Curtain

No way you say! 160 meters is the lowest frequency amateur band located just above the AM broadcast band. The name conjures large antennas, thundering static and gray haired old men from a vanished era chatting about the way things used to be, not DX'ing.

Yet, 160M has shown increasing popularity with younger hams interested in a new challenge – and challenge it is! The traditional utilization of the band has been local daytime chatting with hams less than 100miles away and nighttime contacts out to a thousand or so. Now a younger generation wants to explore 160M as a new DX frontier. Can I work the world on 160M? And in a way, this harks back to the early days of amateur radio during the first part of the 20<sup>th</sup> century. In those days, these wavelengths were considered useless and amateurs were relegated to 200M and below (wavelength wise) to get them out of the way of more serious radio activities. Yet amateurs found that great distances could be worked on these shorter wavelengths. The stampede to shorter wavelengths eventually reached 20M where daytime DX all year long was possible. Now hams are returning to explore 160M as a DX band once again. This is mostly a CW effort (because of the QRN) but some DX'ing using SSB is also possible (I've worked Morocco on SSB). CW on 160M is at a more leisurely pace as are most activities on 160M – it is the 'Gentleman's Band'. One of the big new areas of experimentation is DX'ing using some of the newer digital modes – BPSK and OLIVIA.

But it is a challenge, no doubt about it! If you want to work DX on 160M, a lot of persistence, tenacity, time, and effort will be required. You will listen a lot and only occasionally hear DX. This is not for the faint of heart or those who require instant gratification. It demands a dedicated, long-term effort. What is not required is a super-extraordinary station, as many might think necessary. This is my story of a roughly 10-year effort to achieve DXCC on 160M with a modestly equipped station. More on what I mean by "modest" later.

### Propagation on 160M

One main requirement for success on 160M is an understanding of the propagation on this band. 160M is not considered an HF band (such as 80-10), but as a MF (Medium Frequency) band, similar to the AM broadcast band. The propagation theories so successful on the HF bands don't work well here – they would tell you that contacts over a few thousand miles at night on this band are impossible! The predicted attenuation is way too high. Moreover, the high levels of QRN are always a problem but are somewhat reduced during the winter. On a winter's night we here on the Gulf Coast can reasonably expect to work other amateurs throughout the lower 48, lower Canada, much of the Caribbean and lands adjacent to the Gulf of Mexico on a regular basis. DX to Europe and SA will be rare but a couple openings will occur every week – maybe only for short periods (<1 hour). Africa and Asia will be less frequent and somewhat dependent on the existence of local activity in these DX locations. Japan can usually be worked once or twice a month during our sunrise. Now, I've said it – 'sunrise'. You hear a lot about 'sunrise'

when the discussion of 160M DX gets going. More generally the concept of the “gray-line” is very important on 160M – the “gray-line” is the band that runs all the way around the planet at twilight (during sunrise and sunset). Stations in this gray-line zone have an enhanced likelihood of really long distance contacts especially if the other station is also in the gray-zone. Even so, being in the gray line does not guarantee a contact. Ducting, where the signal propagates along the ionosphere rather than repeated hops between ground and the F layer, appears to be the main mechanism for long distance propagation on 160. And this can be highly selective. I have worked strong DX stations easily but nearby stations more than a couple hundred miles away could not hear the DX at all! Sometimes the strength of these DX signals is almost like a local – hard to believe – but there they are. Most of time though, the signals are weak and undergo long, deep, slow, QSB. This is very distinctive of 160. DX’ing is best at local sunrise or the DX’s sunrise although it can occur at any time of the night. When trying to work the far-east at sunrise the signals will often pop out of the noise around local sun up and persist for 30-45 minutes before fading away as the sun rises. A similar effect, at sunset, is much less obvious and less frequent.

### **The Station at K5LJ**

Initially, I used my 80M inverted-vee for 160M. Its’ center was at 50 feet and the ends drooped to about 20 feet at the ends. For 160M, I tied the feedline together and fed it as a ‘T-antenna’ against ground. In effect, this is a top loaded, short vertical. This was surprisingly effective. Most hams can get an 80M dipole up on a decent city lot. Later, I added elevated radials (at about 1 foot above ground, running 60 feet out either side of the base of the feed line). Finally, I installed a center loaded vertical (52 feet high) with two 65 ft long elevated radials. The center-loaded vertical seemed to work a little better than the 80M inverted-vee configured as a T-antenna. I have always used my transmitting antenna for receiving and I have never run more than 100w transmit power. Certainly running more power on 160M would help, but most of the time, if I can hear them, they can hear me – it just takes a little patience. High power would help in the big pile-ups, no doubt! Thus, a modest station setup can be effective on 160M! For the average ham who wants to get on 160M and try it out, the several wintertime contests are a great way to see how you can do. The ARRL runs a 160M CW contest during the first weekend of December. Generally, I can work all the lower 48 in that test – it is readily possible to work WAS during the contest (Hawaii and Alaska being the toughies). The CQ 160M contest in late January offers a CW and a SSB weekend. These 160M contests are much more relaxed than those on higher frequencies. The big CQ and ARRL DX contests all allow 160M contacts as well.

### **Other Low Band Activity**

Several amateur groups have obtained experimental licenses for 500kHz (600M - ARRL has an experimental license for this frequency) and 137kHz (2200M) and are investigating long-range communications at those frequencies. Intercontinental contacts on 137kHz have been made using QRSS (very slow CW) with effective radiated power levels in the few watt range. A ‘dit’ lasts 1 second and a ‘dash’ lasts 3 seconds – now that’s slow CW. As a matter-of-fact it is usually copied visually on a computer display of a short frequency scan versus time (like the waterfall display on PSK). The signal is a streak amongst the hash from noise. There is a move underway to get a standard amateur assignment at 137 kHz. Thus, there is a growing interest in exploring the lower frequencies. And why should we be surprised? The early experimenters in radio covered large distances with very primitive equipment – why shouldn’t we do much better with our considerably more sophisticated gear?

Part II will continue in next month’s newsletter.