# PVRC 2015 ARRL DX CONTEST COOKBOOK


*Receipt and use of this document is authorized to all those who agree to therewith be beholden to submit a contest score for the upcoming ARRL DX contests. Failure to do so will cause the wrath of the great god Lightning Strikus to wreak havoc on your expensive new transceiver*

This is the third edition of the PVRC Contest Cookbook (I think – I did the second version back in 1994). It is oriented towards the ARRL DX Contest, and intended to help increase the PVRC total score. PVRC won this contest many times in the past, although recently only in the medium category.

The whole point of being in a contest club is to learn from each other to increase our skills, and to put together humongous club totals to whip other clubs – just like we do in Sweepstakes. To do that we need you. Put in a score. If you can put in a full time effort, great. If you can only make 100 QSOs, fine - send in that log.

Barring geomagnetic storms, the 2015 ARRL DX Contests should set scoring records that may last for thirty years. If you are going to put in a full time effort, this will be the year you can set your all time personal best. If you can only put in a part time effort, any hour during the contest you will be able to run at a high rate or pick up exotic multipliers.

The Cookbook is organized to provide hints and kinks for specific operating periods in the contest. You can pick it up whenever you get a chance to operate, and concentrate your efforts to have the highest score for the time you invest.

For part time efforts, if you want to maximize your score, the East Coast advantage dictates that you get on during prime European run times: Saturday and Sunday mornings from 1100-1600Z or so, and the afternoons for the European sunset opening. If you like to call CQ and run at high rates, the high bands during these times can provide 100+ hours. If you don't enjoy calling CQ and working a few hundred DLs (or your station limitations won't let you), you can maximize your EU country total during these periods by using spotting and the Reverse Beacon Network to search and pounce at high rates – or do some old fashioned knob twiddling and just answering the loud guys. Hit the low bands at night, then concentrate on multiplier prime time during the long path openings on 40 and 20 in the morning. Pick up JAs on 10 or 15 near sunset to pad out your QSO total, work the Pacific multipliers and you will end up with a nice score.

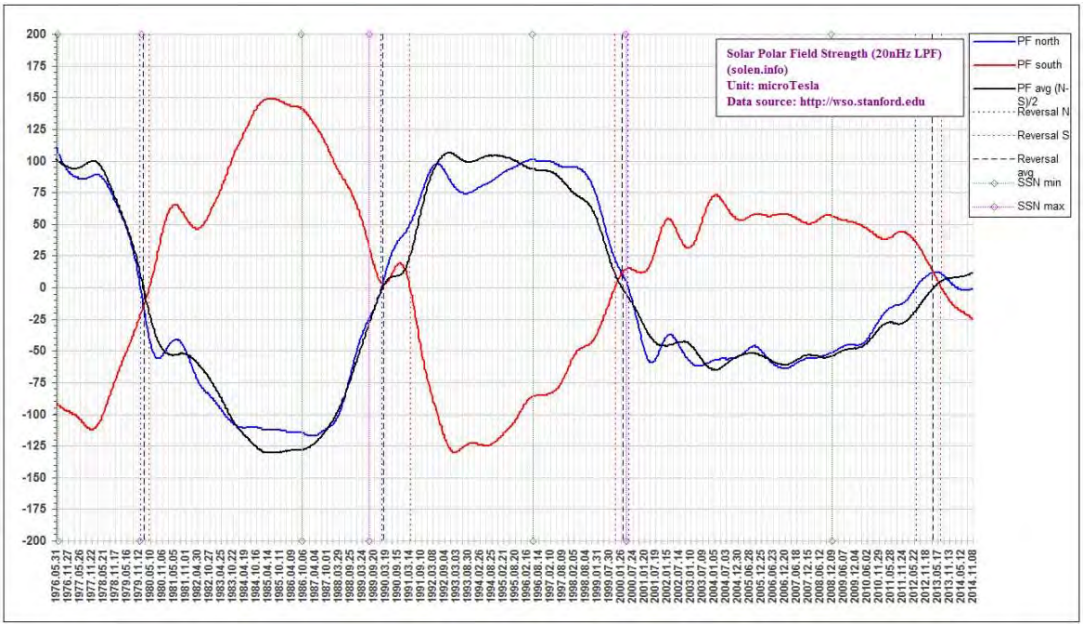
There has been a lot of concentration lately on logging accuracy. Another way to increase your score is to lose fewer QSOs through deletions than other stations. Ask for repeats if you're not sure of the call, send the other station's call every time (especially if he corrects you), and know the callsign structures of the DX countries. The Check Partial Window in N1MM is a great help here. Use the Packetcluster to really give your score a boost. In the CW contest, the skimmers spew out so many spots you can achieve run rates by doing “power S&P” by clicking on spots. The clusters now support spot quality filtering – take advantage of that to reduce the blown spots on Sunday.

The Cookbook is organized to help you do all of the above. There are two ways to get PVRC's club score to be competitive in DX contests: increase the score contributed by each member, and increase the number of members. From March to November let's work on recruiting new members and winning Sweepstakes. For the ARRL DX tests, put in as much time as you can and send in those logs!!

73 - John K3TN, Fred K3ZO, Scott K0DQ, Jim N3JT

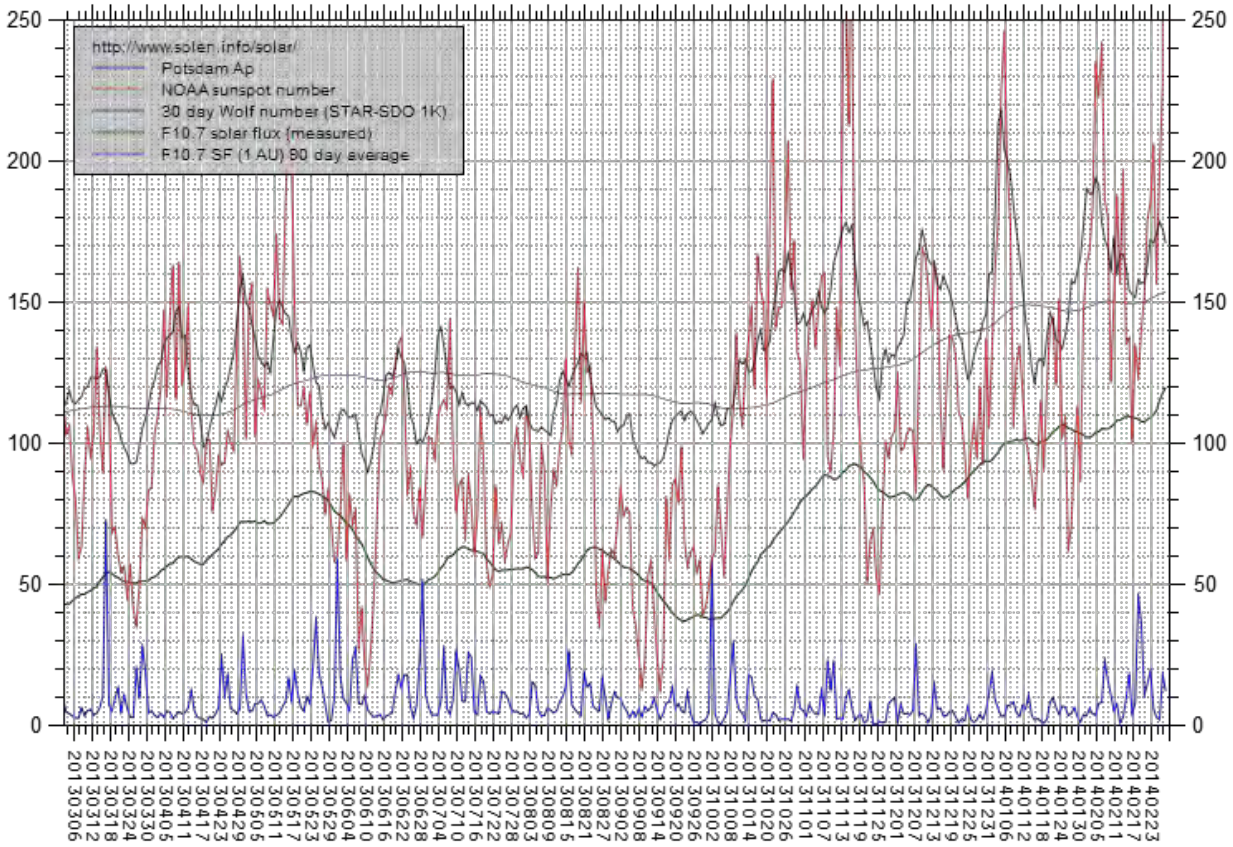
**Understanding Propagation Conditions During the ARRL CW DX Test – Fred K3ZO**

Looking ahead to likely propagation conditions for the 2015 ARRL CW DX Contest, I feel that the conditions which we had during the 2014 contest can be a useful guide as Solar Cycle 24 has been at near-sunspot-peak conditions during the whole period between then and now, and I don't expect much will change before February 2015. Basically, as can be seen here and here the northern polar field of the sun has been trying to decide whether it should definitively shift from negative to positive polarity since June of 2012. At that time it seemed to make a definitive shift to positive, but then it began to back-track and as late as October 19 of 2014 it had slipped back over to negative polarity. Ever since then it has gone back to positive, but the way the sun has been acting it's too soon to say whether it has gone positive for good.




The reason this is important is that by definition until there has been a full polar reversal the peak of the solar cycle has not been reached. The practical effect has been a double peak in the solar cycle which has made it possible for us to enjoy a long plateau of solar-peak type conditions. While this cycle peak has been significantly lower than the last, solar flux numbers in the 150-200 range are plenty good enough to provide excellent propagation conditions for worldwide DX on 10 meters, at least during the September-thru-March time frame. In fact when the MUF is closest to 28 MHz, path absorption is minimized on 10 meters so DX signals are likely to be stronger and clearer on 10 than they would be when the solar flux would be, say, 250, though the geographic extent of the openings would not be as wide.

As can be seen here the solar flux on February 15, 2014 during the 2014 ARRL CW DX Contest was SFI=162. On February 16, 2014 it was SFI=154. In December 2014 we have been seeing the SFI oscillate between SFI=150 to as high as SFI=206, so in February 2015 it is quite likely that SFI values of SFI=150-170 are a reasonable estimate of what to expect.




Another aspect of the current solar conditions as observed is that even when coronal mass ejections (CMEs) have occurred, they have been far less disruptive of DX propagation conditions than what we had observed in previous solar cycles. For whatever reason, the sun seems to have been undergoing a reduction in the strength of its geomagnetic field, which means that it has had a reduced ability to eject masses of charged particles into space even when CMEs have occurred. In fact in some recently observed CMEs the charged particles that were initially launched in our direction were unable to escape the sun's gravity and fell harmlessly back to the sun's surface. What this means is that even when M-flares and X-flares have occurred we have been able to merrily work DX at high QSO rates even when the sun has been trying to throw disruptive particles at us.

So for those of you who have kept your logs from the 2014 contest on file, if you go back and look at them now you will likely get a reasonable idea of what to expect in the 2015 contest.

Since I don't do SO2R I am only on one band at a time and not looking at the other bands, but I see that in the 2014 contest I started on 40 meters and after only two hours I went to 80 where I had a long run. Conditions on 40 for European sunrise were good beginning at 0500 UTC and even at 0900 UTC I was still working some Scandinavian stations on 40 given the long periods of darkness over the north pole at this time of year. It was possible to work VK's and JA's and other Asians on 40 around sunrise, though of course I have a beam.

Fifteen meters was wide open to Europe as early as 1120 UTC and by 1300 UTC ten meters was wide open to all of Europe. Around 1900 UTC I try to make a pass across 10 meters to get all of the Central and South American and Caribbean mults into the log. By 2150 UTC 15 meters is open to Japan, and by 2250 UTC Japan should be rolling in on 10 meters, an opening which could last until 0030 UTC. Twenty meters will be open around the clock to one or another part of the globe, and if you want to pick up some rare Asian mults on 20 it often pays to beam the grey line path at 225 degrees between 1100 and 1300 UTC. You might surprise some Eastern Europeans on long path during that time period as well, such as the Russians who are beaming toward East Asia and Australia.

As for Africa and Oceania, the relatively low numbers of stations in those areas means you don't spend much time beaming their way, but it pays to take a pass thru the bands looking for mults in those directions now and then. Late afternoon works well in both cases on 10-15-20. On 20 it is not unusual to find a long path VK or ZL in the mid to late afternoon coming right across Europe in the midst of all the European signals.

Good luck!

73, Fred, K3ZO

**Run, Johnny, Run** - **Scott, K0DQ**

Elsewhere in this cook book, K3TN gives good summary of the overall considerations for maximizing your score while propagation guru K3ZO provides his famous insights on what to expect in terms of conditions. The following focuses more narrowly on an important aspect of contesting that is often overlooked or underutilized – calling CQ or "running."

To state the obvious, your final score is essentially a combination of quality (multipliers) and quantity (QSO points). Many, if not most contesters started out as DXers and thus have a pretty good sense of how to work multipliers. On the other hand, for a variety of reasons, effective "running" seems to be stumbling block for many, especially new contesters. Often it is the key obstacle which keeps contesters from moving up to the next level of play. Not only does this constrain your and the club's overall score, it also means you're missing out on one of the most fun aspects of contesting.

What follows is a personal "cookbook" for running in DX contests. It is focused primarily on CW for two reasons. First it is easier to run on CW than on phone, especially on the low bands (I sometimes think 40 meter phone should be outlawed at Geneva as cruel and unusual punishment). Second, my naval "artillery ears" don't do as well on phone as they used to.

That said, the strategic principles for phone are pretty much the same for phone. Even with bad ears, I still enjoy running W's from Caribbean on phone. Look for N4OC and me at P49Y in ARRL SSB. The beaches are pretty nice too!

**WHY RUN?**

First, it's fun. There's nothing like the adrenaline surge when the rate meter takes off and the mults start dropping in. And the ARRL DX contests are excellent contests for US stations to run. Unlike the CQ WW and WPX contests, the DX stations are looking for US contacts so you'll be in their sights. Also, as John noted, barring a major geomagnetic disruption, conditions for the 2015 event should be excellent with enough solar flux that we should get substantial 10 meter openings to Europe. That is good news for modest stations which tend to perform well on 10 and it has the additional benefit of spreading out the activity on the other high bands, making it easier to find run frequencies.

Secondly, in addition to improved conditions there has been somewhat of a renaissance in contest activity in last decade, especially in Europe. As a result, the last few years have seen several U.S. single operators break the 5000 QSO barrier with peak rates well over 200 per hour on CW. Indeed, in the 2014 CQWW CW, three of the top ten world claimed single operator scores in both the Unassisted and Assisted categories were from the U.S.

Third, beaming toward Europe is a twofer! Not only is the quantity there, but also the quality. As just one example, in CQWW CW two months ago fully 91% of my 5188 QSO's and 63% of the 552 country multipliers came from beaming within a few degrees of northeast (i.e. Europe and the near Asian / North African countries in the same great circle arc). Virtually all of them were the result of calling CQ. In short, Europe is a very target rich environment for both Q's and multipliers.

Add in another 203 QSOs and 169 multipliers beaming South/Southeast to the Caribbean and South America and you have accounted for 95% of the QSOs and 94% of the multipliers.

From those numbers it is easy to discern the strategy of virtually all the top ten single operator stations: Run Europe almost continuously on one radio while searching for multipliers on the second radio, especially the multiplier rich Caribbean.

**SOME POOR EXCUSES FOR NOT RUNNING**

***We're in the Mid Atlantic. We can't compete with New England***

Someone forgot to tell that to the guy who beat me in CQWW CW 2014. K3CR had the highest SOAB claimed score (and most QSOs) from central Pennsylvania, more than 500 miles southwest of my Maine QTH (@ K8PO) and less than 100 miles north (and a bit west) of W3LPL.

It is true that New England generally gets the openings slightly earlier than the Mid-Atlantic and usually has an advantage on the low bands (that's the reason I've been making the commute). But there's another side to that equation, what I call the New England Nightmare in which the W3's and W4's get propagation to Europe when the W1's don't. That happened in CQWW CW in 2014 in the pre-dawn hours on 20 meters and happens frequently on 10 meters.

***I don't have a big station***

The naval law of gross tonnage also applies in the contesting world. The more and higher aluminum you have, the better. I've had the privilege of operating from some contesting "Battleships" and "cruisers" in the last few years. However, it's not necessary to have a super station to run effectively. As W3LPL once remarked, "you don't have to be the loudest station on the band, you just have to be loud." So, how loud is loud enough?

Remember WRTC last summer? 59 stations were loud enough to make an average of just under 4000 QSOs in 24 hours – that's half the length of the ARRL DX contest. They did that using 100 watts to two element tribanders and inverted V wire antennas, all at 40 feet with summer conditions. At K1C (KE3X and K0DQ), we made 4217 QSOs, over 2000 of which were Europeans. Generally, one of us was running, the other chasing mults.

Similarly, in CQWW CW 2014, K1AR finished 4th in the US claimed scores in the Assisted class with 3400 QSOs using only modest wire antennas (an 80 meter dipole at 60 feet and a 40 meter inverted V at 70 feet). Bottom line, if you have directional antennas, an amplifier, or both, you should be able to do fairly well. If you have a high yagi, a 2 element shorty forty (or better) and an amplifier, you can be very competitive . . . but you have to run.

**HOW TO RUN**

So how do you go about it? Here are several considerations to keep in mind as a single operator all band (SOAB) competitor whose goal is to maximize score (not DXCC count).

The overall guiding principle is “Rate is King!” Work lots of stations as fast as you can and the multipliers will come to you. That’s a simple concept, but figuring out how to do it effectively is part art and part science. Here are some key decision factors.

***Station capability***

Your station capability obviously affects your ability to run. Know your station and its capabilities. If you have a relative advantage on one or more bands (e.g. a killer monoband yagi on 15, a 4 square on 80 or 40) factor that in and take advantage of it.

***Propagation / band selection - general***

Beyond station capability, the main driver in successful running is propagation. The general rule of running is no secret: Follow the MUF and operate on the highest frequency band open to the primary target area - Europe!

However, there are several important caveats and nuances to that rule:

***High band Propagation (10, 15, 20)***

**Not all European openings are equal.** Go to the band that is open to the high activity areas – nominally Central to Eastern Europe (DL east to UA/UR). Remember the K5ZD corollary to the basic rule: Don’t move too early to a new band. Typically at band opening on 10 and 15 you will hear the Mediterranean rim stations first (I, 9A, etc) but don’t move there until you hear the DLs.

**Don’t stay too long**. As the sun moves west so will propagation across Europe. Especially if the MUF is high enough, you may find yourself getting beaten out by stations to the west. If your rate suffers, consider temporarily moving down a band (e.g. from 10 to 15) where the East Coast may still have a relative advantage. Keep checking the higher band and come back if the W0’s have disappeared back into the black hole.

Similarly, toward the end of the opening you will be called by G’s, F’s and EA’s. Work them but watch the rate carefully. Even though you may still hear the bigger stations in central Europe with high power and yagis, the band is dying. Prepare to move down. In fact, going down the MUF ladder before the crowd may bring you some great rates with the added bonus of some distant multipliers.

**Balance**. Don’t be too concerned about equalizing the number of contacts on each band. Once you’ve worked many of the garden variety mults, focus intensely on rate. Go to the band you can run best . . . with one caveat.

**One exception to the rule**. Simply put, don’t miss the 10 meter opening to Europe. 10 meters is the most fragile of the bands and a disruption can wipe it out, and with it 40-60 mults. In marginal conditions (e.g. solar flux Index < 100) you may want to spend enough time early on harvesting easy mults, even at the expense of slower rate.

Even in higher flux times, bad stuff can happen. You can remove some of the uncertainty by checking the NOAA 3 day forecast on Friday afternoon (http://www.swpc.noaa.gov/products/3-

day-forecast) to see whether conditions are expected to improve or deteriorate over the weekend (Thanks W3LPL). Twice in the last few years I've gambled using that info and won.

On the other hand, NOAA isn't infallible. In WRTC, Ken and I missed the 10 meter opening Sunday morning ending up with the lowest 10 meter multiplier and dropping almost 10 places in the standings. It was a fluke opening but a good reminder that 10 meters is a fickle friend.

**Running Japan.** I don't spend a lot of time running JAs. The activity levels in contests are not usually high, although short runs can be helpful to coax a few other Asia/Pacific mults out of the woodwork. Due to the international dateline, the best evenings are Friday and Saturday since Sunday evening here is Monday morning of the work week in Tokyo. This is obviously a tougher path from the East Coast so getting the mults earlier is a good idea.

***Low band Propagation (40, 80, 160)***

40 meters can be a real money band! As with 20, don't forget to check it early in the afternoon (starting after 20Z), especially if you have a high antenna. You may beat the crowd and get a good run going. Later on, remember European sunrise is the sweet spot on the low bands. I try to alternate running on 80 & 40 for geographic coverage as sunrise moves across EU.

Don't give up on 40 too early. It will likely stay open and "runable" well into European daylight. Most of the signals seem to be low angle stuff, but milk it if you can.

You can run on 80, especially higher up in the band. Most of us probably can't run on 160 but if you're getting answers quickly on S&P try a few CQ's. You may be pleasantly surprised and it could save you spending time in the pile up when the lone HB9 calling CQ is spotted later.

***When to move.*** Knowing when to change bands (or run frequencies) is a bit of an art. For me, the decision to move is a function of the band and time of day. I tend to watch the last hour on the rate meter. As a benchmark 5000 QSOs in 44 hours means an average rate of 114 per hour, about two a minute.

I don't have a hard and fast number for moving, but I keep a print out of my previous hourly rates at the operating position for comparison. Barring a major disruption in propagation, I hope to see the rate north of 200 the first 5 hours of the Saturday morning runs on 20, 15, and 10 (roughly 11Z-16Z), then slowly decreasing. The second morning the average rates will be lower, say around 160, mostly due to activity and partially due to cycling from band to band looking for fresh meat. The best hour on 40 is almost always the first hour of the contest. The rest of the night after 01Z through sunrise typically averages about 100 per hour, with the 10Z hour usually the hardest.

***Selecting and maintaining a run frequency***

**Lower vs. higher in the band**

Low is good, but less important these days. Traditionally, the bottom 10 KHz of a band (or phone sub-band) have been considered the prime contesting real estate, occupied by the multi-op behemoths and other super stations. The rationale was that most people will tune a band

from the bottom up. With the advent of spotting - and especially the RBN on CW - many believe that is no longer true or at least not as important as before. As the new logic goes, the RBN network will find you wherever you are and spot you on the cluster.

A minor nuance in selecting run frequency is that some of the RBN spotter stations only spot limited frequency range. The RBN website reveals some stations that do not spot above xx070 on several bands or cover ten meters at all. That's not a fatal flaw. You should still get spotted if you're higher in the band, but perhaps not as often as otherwise.

**Is the frequency in use?**

Probably the key attribute of a run frequency is that it be "relatively" clear. With today's receivers and steep filter skirts, that may mean that a few hundred hertz either side is enough, assuming both you and your neighbors have clean signals. Don't be shy about asking. I typically send several "?" a few seconds apart. If there's no response, I then try a brief "TEST K0DQ." If no one objects, I set up shop and begin running. You may still get a complaint within a few minutes when someone realizes you're there to stay. While you may think you have the moral high ground, I personally will generally move in that circumstance.

*Ed. Note – if you are entering in the Assisted category, one great way I've found to find a good run frequency is to start at the bottom on the band and S&P my way up the band by clicking on spots or using the CTRL DOWN ARROW function in N1MM. If a spot is ready to be worked, work them. If the spot is busy with a QSO, move on. If the frequency is empty (which often happens because someone has QSYed or an SO2R guy isn't defending his 2nd radio frequency) then follow Scott's advice to claim and use the frequency. The added bonus (not so much in ARRL) is that since the frequency has already been spotted (albeit under someone else's call) you will start out with that spotting bump. K3TN*

**Holding on to your turf . . . or not.**

Conversely, once you have established a run frequency and someone comes on near you, be aggressive in defending your turf. I will leave a QSO to get on the offender's frequency and send a long QRL PSE QSY TU. Most will QSY if asked nicely. Some won't. Then you apply the Kenny Rogers rule: "You gotta know when to hold 'em, know when to fold 'em." Your run frequency is not a "until death do us part" deal. If he's getting responses and you're not . . . suck it up and head to greener pastures. Generally, it's easier to find new run frequency in ARRL since you aren't competing with the Asian or African you can't hear who's running Europe on the same frequency.

***"Marketing and Presentation:" Calling CQ***

Like a fast food drive through, your customers want a quick transaction. I've been amazed at the professionalism of the European contesting cadre. They get in and get out quickly and don't mess around.

Here's what works for me:

1. Call short 1X1 CQ's. "TEST KODQ"
2. Set the automatic CQ interval at 2.3 seconds and repeat 4 or 5 times.
3. If no takers, send a longer 2X2 CQ "TEST K0DQ K0DQ TEST" a few times, same interval.
4. Repeat above.

In the best of all worlds you'll have a small but consistent stream of callers – 1 or 2 at a time. That leads to the highest rates. More often it will be aces and spaces - nothing for a minute or two, then 3 or 4 callers (too often, all are zero beat), then silence again.

***Working a pileup***

This is where the rubber meets the road. Everything else is prologue, this is the payoff - and with it a challenge. Elsewhere in the Cookbook, Jim N3JT gives some great pointers and I'll add a few here.

**Who's calling?** Providentially, pileups while operating from the U.S. tend to be less intense than operating from the DX end. But whether the pileups are small affairs of two or three callers or cacophonous walls of zero beat sound, the key concept is rhythm.

There are different views on how to work a pile up. Ideally you can get a whole call and work that station. The trick there is to pick one signal – usually one which stands out in strength, pitch, or speed – and force yourself to focus on it.

So what happens when you only get part of the call? Here there's a bit of art involved. Some runners prefer to wait until they get a complete call. Others will send a partial call, sometimes with a "?" attached ("DL3?"). Both approaches have merit and neither is clearly wrong.

Our local high speed telegraphy (HST) expert and former PVRC Prez, KE3X, is a firm believer in the complete call approach. Ken has an impressive 324 simulator (Morserunner) hour to back up his preference. That makes sense and is clearly the preferred mode, especially when the pile up has a lot of savvy, fast operators. If you drag your feet a second or two, one of them will usually dump his call in again and you're seconds ahead.

On the other hand, in heavy pileups with lots of zero beat callers, I tend to use partial calls in an effort to dilute the pile up and assure people that things are not out of control. I have a key programmed to send either the partial call in the callsign window or a "?". To be clear, I just send a letter or two from a call (or a guess), not the whole exchange. (In a large pile up, sending a simple "?" is usually not helpful since that just starts the messy chorus again.)

As a matter of courtesy and good will, if you sense a station is hanging in there with you while you work several others, it's a nice touch to reward him for his perseverance and work him if you can, even if he (or she) is a bit weaker.

**Finishing well - how to end the QSO and move on.**

First, be consistent in how you say adieu. Some use dit-dit. I use "TU" (you do **not** need to prolong it by adding a "QRZ," "TEST," or "CQ" at the end).

Second, decide how often you will identify. This topic typically generates a lot of heat (and little light) on the contesting reflector after a major contest when someone complains about a rare DX station that doesn't ID for many minutes. At the other end of the spectrum are those for whom it is a matter of high moral principle, written in stone, to ID after every.

I believe there is a balance. If I sense there are several callers waiting I will often omit my call and just send "TU." That rewards the patience of the people who are waiting and speeds the process, particularly at high rates. In fact, the Win-Test software I use can be set to automatically ID after a time period or number of QSOs, depending on the rate. I usually ID at least every other QSO and never more than the third QSO, and that only at very high rates. There's a selfish reason for identifying frequently as well – people don't wait around for Ws the way they do for JT1s and you need to keep the pump primed.

Another reflector perennial topic is duplicate contacts. Bottom line: **work dupes.** Don't even think about it. Sometime in day two, usually on 40 meters, someone will spot me as K0DX - apparent fresh meat. I've tried sending my call more often and more slowly, but it simply hasn't worked. Put 'em in the log and move on.

***Ergonomics***

A key factor in sustaining a high rate is personal comfort. Similarly, minimizing extraneous movement becomes important over time. For example, in running you will use the RIT a lot (amazing how many people call several hundred hertz off your frequency). Instead of reaching for the (generally smaller) RIT knob (in a generally crowded neighborhood), W3LPL recommends putting your transceiver in SPLIT mode, transmitting on VFO B and receiving on VFO A so you can use the big main tuning knob. You may be able to take that a step further if your software has the ability to control the RIT. I operate with Win-Test with K-3's and use the PAGE UP and PAGE DOWN to adjust the RIT without moving my hands from the keyboard.

***Moving Multipliers***

Everyone loves the exciting story of how they moved a double multiplier (in CQWW) to three bands. Hand pump. Ring the bell.

Exciting as those stories may be, there may be fewer of them than you think in the single op world, even if you're SO2R. Some people seem to be especially good at it but I confess I've not had great success moving mults. And, when I ask some of the top single operators, more than a few have similar stories.

Remember the math. For the last two ARRL DX CW contests, my average has been 1 mult = 9.8 QSO's (in CQWW, that decreases to about 7:1 ratio due to added zone multipliers). In either case, each mult equates to 2-4 minutes of running. Except in very rare circumstances (e.g. I'm

about ready to leave anyway), I never abandon a good run frequency to move a mult (in SO2R that's rarely an issue).

When to ask? This is largely a matter of personal preference. Unless it's a close friend who's begging for contacts (or a Jedi like 8P5A who I know is SO2R), I rarely ask people to move if they are running a pile up (borderline rude in my view). If someone calls me in a run, I've programmed a key to automatically send PSE QSY TO (my second radio frequency), but I often forget or can't be bothered. Maybe I'm just addicted to running. (Note to self: Get help. Join Runners Anonymous.)

***The need for speed***

On CW, speed can be an effective way of controlling the pileup size. KE3X likes to work through a large pile up (e.g. after a spot) by speeding up to work the pile up down faster and then slow down. Similarly, working the fastest stations first is usually most efficient (unless you have a very loud and slow caller that's QRMing everyone else).

So how fast is fast enough? One of the interesting sidelights of the RBN data is that it records code speed for the CQing station. A quick analysis of 17 of the top single op scorers reveals an average speed of 33 WPM, ranging from a low of 31.33 (K3WW) to a high of 35.37 (KL2A @ NN3W). I was in second place with 34.67.

My recommendation is to send as fast conditions warrant (and you can copy reliably). I typically try to run at 38 or 40 WPM during the morning runs on the high bands, but slow down on the low bands and later in the contest.

Again, speed itself isn't as critical as the need to sound professional so that callers believe they can get in and out quickly.

On phone, talking fast is definitely an asset as long as you articulate well. As NN3W and others have found, if your brain can process fast enough, it's not necessary to use phonetics in responding to a caller, especially if it's one of the usual suspects. Instead of "Victor Papa Two Mexico Xray" just say "VP2MX" – half the syllables. It all adds up in extra contacts over time.

***SO2R and Assisted***

Without going into great detail, effective use of a second radio is a force multiplier. As noted earlier, it allows virtually continuous running on one radio while searching for multipliers on the second. With practice a skilled operator can interleave a second radio QSO seamlessly into the run with breaking stride, even at rates over 150 per hour. A second radio is also great for checking propagation on other bands and making the transition from running on one band to another as smooth as possible.

The choice to operate as a traditional Unassisted SOAB or in the SOAB Assisted (a.k.a. Unlimited in some contests) category is obviously a personal preference. I've only used spotting networks twice in a contest so I don't have a lot of experience with it. I do know it provides a significant advantage when used properly. As a minimum, it streamlines the second radio S&P

operation, making finding multipliers (and additional QSO's in slower times) much more efficient than having to stop and ID every station as you tune. Used improperly, however, it can actually be a detriment, putting you in the "Single Operator Distracted" category, chasing mults at the expense of running. Note: If you do use the cluster, make sure you clearly mark you entry as being in the Assisted Category.

***Off time selection***

There is a mutant gene which allows some people – the Iron Men - to operate 48 hours straight in a contest. The rest of us need to take time off – some more than others. My personal max is usually between 43 and 45 hours. Without a few hours of rest I lose efficiency and focus on Sunday (I've never seen the pink elephants dancing on my rig and don't want to).

So, if you're making a really serious effort, when do you take a break (assuming your body allows you a choice)? Again, it depends. In the low part of the sunspot cycle, it's usually a safe bet to sleep from the closing of 40 meters to Europe after their sunrise until Europe opens on the high bands before our sunrise. However, when the flux is higher, as it has been recently, you may find you can go directly from 40 meters to run Europe on 20 well before sunrise. The last few years I've started taking three or four hours off Saturday evening between 0100Z and 0500Z, making sure I'm up and back on for European sunrise on the low bands.

On the other hand, if you're contemplating a much shorter operation, what are the peak times for running? Looking at ARRL DX CW last year, it will probably come as no surprise that 10 of the top 11 hours in terms of QSO's came between 6 AM and noon EST on both days. Those 10 hours accounted for 1840 QSOs. The only exception was the first hour of the contest which produced 172 QSOs. Of those, 147 QSOs (and 32 mults) were on 40 meters.

Bottom line: Set your alarm clock and make sure you're awake for the sunrise opening!

**QRU?**

If you're a veteran contester, most of the above will be second nature to you. If it sort of makes sense and you're looking to take your game to the next level, remember that practice makes perfect. As W3LPL reminds, you can learn by using software to practice running at high rates; for example http://www.dxatlas.com/PileupRunner and http://www.dxatlas.com/MorseRunner .
If you're ready to jump in and learn on your own, ARRL DX is a great training ground. If not, it may make sense to join one of the great PVRC multi-ops as an extra operator on a band. That allows you to hear the experts plying their trade and then you can slip into the run seat during the slower periods.

In any event, the amount of time you spend in the contest is your decision but the club hopes you will spend it wisely. In any event, whether you do a marathon or a sprint this year, good hunting . . . and good running!!!

***Get the rate UP!!! – Scott K0DQ***

**HOW TO WORK A DXPEDITION – Jim N3JT**

I first wrote much of what follows 24 years ago but it stands as true now as ever, perhaps even more so. I have been on a number of DXpeditions in the past (HK0, PZ, CP, VP2E), working as many as 5,000 stations in one weekend on CW. From the vantage point of the DX location certain operating practices, good and bad, seem to stand out. You probably know about most of these, but many DX contesters seemingly do not!

The goal of a caller in a pileup is to attract the attention of the DX station and make a contact as soon as possible - ahead of everyone else. Why, then, do so many operators call the DX station on his transmit frequency when he is plainly listening somewhere else? Yes, everyone makes mistakes. Even the best among us has at one time or another inadvertently reversed the VFO split frequencies and called on the DX station's transmit frequency. To avoid this embarrassing error and not be considered a lobotomy gone bad, take the two seconds needed to check your VFO settings before calling.

One of the best approaches to improve your chances of busting a pileup -- used by those who consistently seem to work through large pileups with very modest equipment -- is to determine exactly how the DX station is selecting his callers. Whatever you might think, be assured it is not always the strongest signal that makes it through a pileup, especially if the pileup is large. Normally, more than 2 or 3 stations on the same frequency cannot be separated on CW by the DX station, particularly if the DX station is working them at 180 or more an hour and is listening only a few seconds for each new cailsign.

The answer for you, of course, is to call away from what might be called the locus, the point where all the other guys seem to be calling. This means calling 200 Hz or so up or down. If the pileup is wide, try the edges. If the DX station is listening up or down, find the last station he worked and call there or just above or below that spot. Even for the DX station that hops around, there is usually a pattern of some kind that can be used to increase your calling chances.  Listen for it.

Also, it helps to determine the DX operator’s rhythm. If you let up on the key and hear him answering someone else, send faster. If on SSB he answers a half beat after you let up on the PTT, talk more slowly or leave a pause before you say your call. Sometimes it means delaying your call until just after that critical time when the majority of other callers have paused to breathe. If the DX station is working at a high rate, you can be sure that he is able to pick out a callsign from the mass of callers after hearing it just once. So don't call longer than necessary, especially if it is not a split operation.

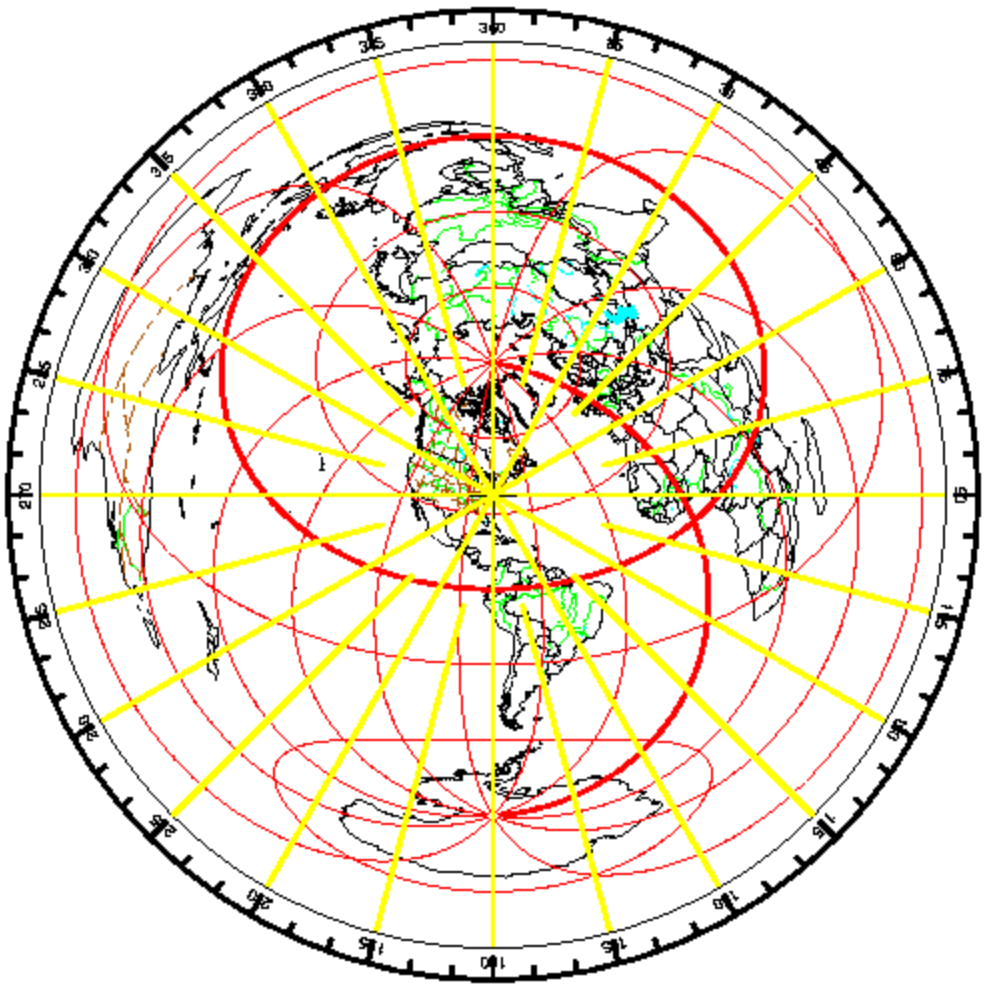
Most contest DXpeditions are staffed by pretty good operators. Have good audio on SSB, clear phonetics, clean CW, an smart approach, and you’ll improve your chances of breaking the pileup more quickly.

73 Jim N3JT

| Advice by band and by time segment | **0000 - 0400Z**<br>**Sunrise Sunset**<br>JT CE0<br>VU KL7<br>UJ<br>5HZ<br>S6 | **0400 - 0800Z**<br>**Sunrise Sunset**<br>4X KH6<br>TA ZL<br>UT UA0<br>DL<br>G | **0800 - 1200Z**<br>**Sunrise Sunset**<br>TF JA<br>VK<br>DU<br>BY<br>YB<br>HS |
|---|---|---|---|
| **160** | • First night OK for Carib mults<br>• SA from 0300 – 0400Check hourly | • Look for EU through 0600<br>• EU has to work you in ARRL – you can run! | • Check on the hour<br>• VK, KH mults |
| **80** | • Not valuable time for 80<br>• After 0300, EU is runnable | • Try to run EU on CW from 0500 – 0800<br>• Look for CA/SA from 3740 - 3750 | • Not much happening here<br>• Maybe a JA or PAC mult |
| **40** | • With a beam, good band to be on.<br>• Run EU!<br>• More EU!<br>• Turn ATT on | • Not a great run time on 40<br>• Try beaming SW | • Check the long path<br>• S&P for mults<br>• Try beam S-SW for JA skew path |
| **20** | • Usually mix of SA/CA and APAC mults<br>• North African mults will be there 2nd day | • With a beam, EU sunrise can provide FB rates<br>• Point 2nd antenna SW | • 10/15 open can suck the life out of EU sunrise on 20<br>• QSY when sigs fluttery |
| **15** | • Run JAs if you can<br>• PAC mults<br>• 2nd night, look high in band | • Unless you are SB 15, QSY!<br>• Might find an Asia/PAC opening | • Be here by 1100<br>• Go for a clear freq over a low freq<br>• Run EU! |
| **10** | • Check SF, JAs may be runnable<br>• PAC mults2nd night, look high in band | • Unless you are SB 10, QSY!<br>• Might have a freak polar opening | • Open to AF before EU<br>• Might be some LP action to APAC |

| Advice by band and by time segment | 1200 - 1600Z<br>Sunrise Sunset<br>W3,4 UJ<br>CE0 VU<br>UT<br>TA<br>5H<br>4X | 1600 - 2000Z<br>Sunrise Sunset<br>KH6 ZS6<br>KL7 DL<br>ZL TL<br>VK G | 2000 - 0000Z<br>Sunrise Sunset<br>JA W3/4<br>DU<br>YB<br>UAO<br>BY<br>HS |
|---|---|---|---|
| **160** | • Don't make me laugh<br>• Ha! | • ZZZZZZZZZZZ | • Possibly some EU towards 2300<br>• Last chance if you missed any of the easy stuff. |
| **80** | • Get real – VEs don't count in the ARRL | • Watch college basketball on TV | • EU may be productive since they can't work each other.<br>• Try to run – even little pistols |
| **40** | • If you're going SB 40, you might make Qs up to 1400 | • Read old NCJs<br>• I guess if it was CQ WW you could work VEs | • EU runnable<br>• LP to VK, VU open<br>• Fresh meat mults on Sunday |
| **20** | • It will be a slog, but EU will be coming through all day | • EU Sunset, good rates possible<br>• Point second beam at JA | • Good EU rates early<br>• LP to VK, VU open<br>• Good African opening |
| **15** | • Run EU!<br>• On Sunday, go slow/high<br>• Bounce between 10/15 | • Run EU | • Mediocre to good EU rates<br>• JA runnable, better on Sat pm<br>• Sweep for mults, move them! |
| **10** | • Run EU!<br>• On Sunday, go slow/high<br>• Bounce between 10/15 | • Try to run EU<br>• Look South for multipliers<br>• Towards 1900 look SW for VK/ZL | • JA runnable, better on Sat pm<br>• Good VK/ZL opening<br>• Try above 28.050 on Sat pm |

# PVRC Azimuth Map




Azimuthal Equidistant Projection
From PVRC
Radial scale: 2500km/cm

**A Pretty Good Function Key File For N1MM in ARRL DX CW**

F1 RUN CQ,CQ K3TN K3TN <test>

F2 {Exch}

F3 TU,TU *{CLEARRIT}

F4 K3TN,*

F5 HIS Call,!

F6 QRL, QRL QRL QSY

F7 SEC, MDC

F8 ?,?

F9 NR?,NR?

F10 CL?,CL?

F11 Swap,{VFO swap macro for your rig here)

F12 Wipe,{wipe}

F1 S&P QRL,? K3TN {CLEARRIT}

F2 {EXCH}

F3 SEC,MDC

F4 K3TN,*

F5 HIS CALL,!

F6 QSY?,QSY?