

YANKEE CLIPPER



CONTEST CLUB 1992 Contest Cookbook

Single Op

John Dorr, K1AR

The Single Operator category is the marathon class of contesting. Like a long distance running race, you operate by yourself with the only reward mostly being your ability to finish. In this part of the country, and the YCCC in particular, the Single Operator category has taken on a special position as one of the most popular and competitive entry classes. Most testers, including myself, started out as single operators using whatever equipment and antennas that were available.

Like any operating category, preparation is a key element to maximizing your score. A little common sense and elementary groundwork will increase your results without adding one dB to your signal. The art of single operation

should begin with setting one's goals. This begins with proper motivation. I usually do better in contests when the operation is directly tied to a compelling source of impulsion to achieve a certain goal. The nature of competition at the national level is that there are few winners. However, nothing offers more personal satisfaction that conducting a contest operation by yourself with the final results defined by your own efforts and no one else's. Some common targets might be: 1) Breaking 1M points, 2) Beating a previous personal high score, 3) Local competitions against other friends (or enemies). The list is endless.

Everyone thinks that to be successful as a single operator, you must resign yourself to 48 hours of grueling activity. While there is some truth to this when competing nationally,

the real objective is to have fun. However, even if you plan to operate with a moderate level of commitment take the following tips to heart: 1) Get plenty of sleep the week preceding the contest, 2) Make sure your antenna work is complete well in advance of the contest, 3) Your shack should be completely setup and ready to go before the contest – don't leave the layout for Friday morning. I have long since learned that avoiding the office on the Friday before a contest is a great idea. Constantly keep in mind the preparation you would perform before a big marathon. Remember, there aren't too many successful runners that stay up late the night before the race or go shopping for running shoes that morning!

If you are like most testers (which means you're not crazy like me) then a more casual approach to contesting is the norm. If that describes your operating mode, then there are some operating tips to which you should pay particular attention. For starters, take advantage of the fantastic geographical advantage we enjoy in the Northeast. If you only have a few hours to operate, try to work the European openings in the morning. Most single operator logs in our area are filled with 70-80% Europeans. You'd be surprised how easy it is to build an impressive score by working the European runs each morning combined with an intermittent dose of multiplier chasing during the rest of the contest. Success as a single operator means that you know your station and its limitations. If you are weak on 80 or 40 Meters, don't bang your head against the wall by calling guys that can't hear you. Work a few easy multipliers and move to a more productive band.

So far you may be thinking that everything you've read are things that you have already tried. The fact is that not everyone has a station that can magically carve out a run frequency and fill the log with rates exceeding 150 QSOs/hour. I proved to myself again this past weekend that there can be fantastic results achieved from searching and pouncing in contests. During the SAC Contest I worked 91 Scandinavian stations in one hour by starting at the bottom of the band and working my way up to the top over and over. Another technique is to take advantage of the upper portions of bands. This is especially true of 10 Meters. While you may not be able to hold 14151 (except when the band is dead), you may surprise yourself with the results you obtain on 28800 or 21410.

A common Single Operator trick is to occasionally adjust your strategy to doing something that others are not. Multiplier chasing is an good example of this. So what is the secret to this skill? One of the more important facets of multiplier hunting is knowing when and when not to look for them. Obviously this is a function of the type of station you are using. The bigger stations generally do not emphasize multipliers as much during running periods such as in the early morning. I have always subscribed to the theory that part of the secret to finding multipliers is to look where other guys do not. For example, tuning very high in the band (e.g., above 14300, 21350, etc.), using odd times and beam headings (e.g., Long Path Asia on 15 Meters at

0800Z), specialty net operations (not the DX ones), and so forth can bring rich rewards. I wish I had 25 cents for every time I've found a rare country or zone using this method with few or no one calling the DX station! Again from a small station perspective, think about the complaints that DX stations most often raise – "I called CQ endlessly but everyone's beams were pointed at Europe!" This translates into a multiplier opportunity. Consider taking a few minutes if your run rate is not what you would like it to be and point your beam towards Africa or the South and tune the bands slowly. This is an excellent time to find those 7P8, V5, EL, VP8, CP, HC8 multipliers. And more often than not, they rarely have anyone calling them.

When building multiplier totals, there is another aspect that is a skill onto itself – passing multipliers. The concept is simple to describe but often difficult to implement. Passing a multiplier is nothing more than asking a contest station to move to another band where that multiplier is needed. It sounds simple, but this is an excellent example of how delivery is everything. Most DX testers fit into two categories: the casual operation just "giving out points" or the serious competitor trying to maximize a final score. You will find that the former category are more often than not willing to help you out by moving to another band, if you only ASK! The approach you take is the most important point however. If you say something like, "Can you go to 20 Meters now?", it is very easy for the response to be a quick "NO!" However, if you are a bit more aggressive and say, "I really need to work you on 20 Meters....let's QSY to 14275 and I'll call you NOW, ok?", it requires a different response from the other end and that answer is more often than not the one you want to hear. Obviously you want to make it as easy as possible, so try to make a pass frequency a simple change of the band switch (e.g., move from 21325 to 14325, etc.). Passing multipliers is catching on much to the chagrin of many DX stations who seem to be moved about the bands endlessly by unsuspecting USA competitors. Obviously your success will depend on how convincing you sound and your perceived need by the DX side. Some will say that you have crossed the line of reasonableness when you blast through a 15 Meter DX pileup with 200 people calling and ask the guy to move to 20. This is where you need to decide how much you value your friendships (hi). In any event, remember that you don't have to be using a superstation to achieve success.

The mastery of working multipliers is something that takes practice and skill. You need, over time, to be able to easily recognize stations you have already worked and quickly scan the bands over and over. Keep an ear for weak stations at all times starting at the low end of the band and work your way up to the top.

The real point of Single Operating, and contesting in general, is to have fun at what you do. There have been many operations where I've wondered if I was really having fun. The problem was that I lost sight of my goals and the other motivational factors that I had established for myself. When compared to the Multi Ops, single operating is the

lonely man's sport – yet it offers personal gratification that few other contesting categories can match. Let's show the contest world yet again that YCCC knows this mode better than anyone else. Go get 'em and *kick some butt!*

Ten Ways to Improve Your Single-Op Score

- 1 Always make sure you work W/K and all 3 Zones on all bands.
- 2 Be aware of needed easy multipliers; don't operate 27 hours and find out that you missed PA0 on 15 meters.
- 3 Make sure CT™ is loaded, tested, and running before the contest. Don't discover computer problems on Friday night.
- 4 Be aggressive—don't think that only the big stations have this strategy cornered. If you are 20 dB weaker than K1EA, you are still 59+ into Europe at the peak of the opening!
- 5 Talk smart—say as little as possible to make a QSO. Remember, the other guy already knows his callsign. **Sign your entire callsign!**
- 6 Understand propagation before the contest – check to see when 10/15 Meters is opening in the morning.
- 7 Don't be afraid to tell a station to QSY if he opens up on top of/near you. Most stations will move if you get to them *quickly!*
- 8 Use your RIT liberally—especially on CW. Make sure the guys you work are calling *you!*
- 9 If you are forced to spend most of your time “searching”, always keep moving. Lots of band changes are perfectly acceptable in this mode. Think of workable bands as one *big band*.
- 10 Don't get lulled into “multiplier-only” searching mode. When tuning for needed multipliers, be sure to work needed stations as well (even if they are not new multipliers).

Single-Operator, Assisted

Stuart Santelmann, KC1F

Actually, this article should more properly be called “Assisted with a modest station”, since that is what I have been doing for the last year. Big-time Assisted operation involves having two (or more) radios and amplifiers, multiple single-band antennas, and so forth. I have used a two-radio setup in a contest, but not in the Assisted category, and the techniques involved are probably of limited interest to the beginning- or intermediate-level contesters to whom this Cookbook is directed.

My setup, which may be similar to the reader's is simply a KT34A tribander, and slopers for 40, 80, and 160. A second radio would practically be useless anyway, since I don't have another antenna to listen to a second band on, much less one to be loud enough to work anybody with, although I have given some thought to installing my Butternut as a second antenna. I have a non-computer-controlled radio (TS-930),

and an AL-1200. This setup has worked quite well - my combined score for the ARRL was 4 million points, with over 2.2 million coming on CW!

The Assisted category means that you are using packet to locate DX spots for you, to help increase your score. This means that you either need a packet setup that is integrated with a computer logging program like CT (This is *much* preferred), or you're using a separate setup. The former is preferred because CT will filter out spots for you that you don't need, and will list the ones you do need in a window on the lower right hand part of the screen, available with the “Alt-A” keys (“Alt-Announcements”). If you're not using packet integrated with CT, the spots will go whizzing by (pretty fast, in the major contests), and you won't know which ones you need.

Obviously, the one type of new major decision you'll need to be making in this category is when to go try to work the spots on the screen. From what I've seen in the contest results, the Assisted guys have yet to beat the non-Assisted entrants, primarily because they appear to get too wrapped up in chasing spots. This is plenty of fun to do, especially for people trying to work on DXCC totals, and a high multiplier looks nice, but it won't help your score, as the multipliers mean less. If you don't believe this, check out the “Multipliers/QSO” box in CT on the upper right. You should probably resist the temptation to chase spots if you're having a good run, unless you're absolutely sure you can get in and out of the pileup quickly, because losing your run frequency (especially on phone) will outweigh any benefit you got from the multiplier.

Which brings me to my next point - with a station like mine you will *not* be able to get in and out of pileups quickly, because you're just simply not loud enough to stomp through, unless you *immediately* leave your run frequency. Packet pileups are instantaneous and intense, and if you wait one or two more QSOs before chasing a spot, it'll take you 5 minutes to work the guy, plus you have the added aggravation of getting stomped by the same W1s dozens of times during the weekend. There are *many* YCCCs who jump on the spots instantly. What this means is a computer-controlled radio comes in very handy - I suspect the cheapest and best way to do this now is a used TS-940, which I have been eyeing for a while. This allows you to use the “point and shoot” method described in the CT manual to get CT to set your radio to the proper frequency (what's really neat is on 40 phone and 75, where it will set the proper sideband and split frequency, *very* handy for those sleepy Saturday nights). This helps your score, because it helps you fight the urge to not chase spots because it would be too much trouble to change the radio and amp. This definitely happened to me. Also, obviously it would be great to also have a computer-controlled amplifier for the same reason, but they're pretty darned expensive, and I suspect you could accomplish the same thing a lot cheaper with two SB-220s and some switches. And another thing after you've picked a spot to chase, try calling without the amp in line first, while you're tuning it with your free hand - especially

on CW you can often make your contact low-power if you get there fast! Another habit I got into was not chasing spots at all, and waiting until CT was about to scroll them off the Alt-A screen, and *then* go get them - I found that 75 % of them were still there, and much easier to work, as the pileup had gone away.

I've also noticed that contesting with a small setup is much different from doing it from a big setup. You can forget about running guys on 40 and 80, for the most part, and I've found that it's better to take a lot of breaks in the evening and nighttime (02-08z) to save your strength for the runs. It's also very nice to drop by the shack once in a while and work the spots - maximizes your score with a minimum of time. I've also noticed that it is very possible to hold frequencies and have runs with a small setup like this (I'm 10 dB weaker than K1EA, by the way!), and this largely depends on "acting loud", which took me a whole weekend to figure out. My first hour in the 1992 ARRL SSB was 149 on 20 SSB!! I've also found out that small stations are much more susceptible to bad conditions (my antenna is only at 57 feet), and you can also forget about needing to catch the very beginning of the morning opening - the incoming angles are too low for a low antenna to work - spend a few more minutes working multipliers on 40 and 80. There are times when my antenna really screams, but it means that you have to spend more time figuring out when the peak times are on each band, as you won't be loud at other times. Stations with big antennas are loud all the time, and this matters less!

In all contests, "sleep is your enemy", but in this mode of operation, it's less so, particularly with a modest station. There will be times when you plain and simple can't work people, and at these times you should be resting, and saving your strength. I've found that 38 hours now feels like a "full-time" operation, as opposed to 45 or 46 hours from a good station.

Use packet to talk to people on nearby nodes, to pass info and keep your interest up. Also, watch the incoming spots to see if they slow down drastically - if they do, your local node may have gotten isolated from the network - try a different node!

Finally, there has been a lot of debate about what should and shouldn't be spotted. My feeling is that there are few really good spots that you can make which absolutely everybody will need, but there are plenty that the casual "10-hour-per-weekend" guy will need, and this is where we can increase our score, as Frankford has done. I say make the spots if you're in doubt as to whether someone will need it. CT will filter it out for people who don't need it. K1EA has said that as long as a certain threshold of frequency of spots is not reached, the volume of guys spotted is not that important.

Have fun, happy contesting, and let's stomp Frankford!!! Last year in CQWW we closed the gap from 100 million points to 30 million!! Their recent newsletter shows that we have them scared, and they are taking us *very* seriously this year!!

Multi-Single Tips

Fred Hopengarten K1VR

Let me suggest two ways to look at the multi-single category. You can make a whole lot of points and have a lot of fun, or you can make more points than you would have made loafing by yourself, and have a lot of fun.

I may never win CQWW in this category, so I use it as a tune up for ARRL, where I have a shot. See this year's ARRL DX CW M/S scores to see exactly how close one can come after 48 hours, break a ten year old record, and still lose to W3BGN, for the third year in a row. Apparently we lost by *either* eight QSO's, or 2 multipliers — *ARRRRGH!*

CQ WW

The Second Rig. There is one BIG rule difference between the CQ World Wide and the ARRL DX Contest. In the World Wide contest, a second transmitter can be put on the air to work new multipliers. In other words, although the name of the category is multi-operator, single transmitter, a second station is necessary to win. One consequence: Never put your RUN station on 160, or a dead 10 meters, unless the other guys are asleep at the moment. Another consequence: Computers, and CT, to coordinate the two logs and multiplier hunting, as well as to connect to PacketCluster™, are necessary for a good score. Besides, the Alt-G (gab) function is an inordinate amount of fun. You won't have to rip off your headphones to hear the insult your buddy is tossing at you.

Do It Now. If using two rigs and two computers, *do not wait until Friday afternoon to wire them up together and try it out.* I will not take your call (your problem is probably beyond me — I'm just a humble lawyer), and neither will really knowledgeable people.

The 10 Minute Rule. There is a 10 minute rule in CQWW. When the MULTIPLIER station (or, for that matter, the RUN station) changes bands, that station must remain there for 10 minutes. It is easy to justify a change of bands for the second station, however, especially since single contacts can sometimes be worth two multipliers in CQWW. In other words, the MULTIPLIER station should ALWAYS go to 160 to work a CE for Zone 12, even if the second station operator must twiddle his thumbs for the next nine minutes.

Don't be discouraged if you have only one operating position, just be prepared to change bands — a lot. One other thought: Keep a zone map handy. It will help you remember where to point the beam when you're sleepy. Zone 40 is *not* next to Zone 39. Don't forget to work every Canadian you hear, on every band.

ARRL DX Test

Different 10 Minute Rule. The equipment and station strategy for the ARRL DX Contest is different, because in the ARRL DX contest, only one transmitter may be on the air at a time. Once having changed to a band, you must stay there for 10 minutes. Thus, and this is a very clear distinction, it is highly likely that the leading single-operator

stations will beat the multi-operator/single transmitter scores in ARRL. Furthermore, the single-operator/assisted scores should be significantly higher than a multi-single score.

Here's why. Single operators (assisted or unassisted) can pop down to 160, make one contact, and be back on 40 running people before losing a frequency. This is especially true for advanced operators in the newest form of contesting (single operator, multi-transmitter). In M/S, when you go to 160, you've got to stay there for 10 minutes, even if there was only one contact to be made. So you may decide that it just isn't worth it to go get one multiplier when your rate on your RUN band is 60 per hour. In other words, would you trade one multiplier for 10 Europeans (for the same 10 minute time period)? This dilemma leads to "breakeven rules." W3BGN and others have, I believe, decided that it is better to QSY only if there are two multipliers to be found for that 10 minute period.

Whether WW or ARRL, even without a second transmitter, this category is a whole lot of fun. It is also perfect for training new operators, and trying to finish out WAZ or 5BDXCC, because you can have another operator (you, while others are going for the rate) just searching for those last few zones or countries on a special band. You can also afford to spend time in the packet pileups on the second station.

Don't forget: Canadians don't count in ARRL. Don't waste a moment trying to work one.

Antennas

In this category, you must simply have good antennas on all bands, because you cannot make up for the multipliers with a great rate on your best band. You need great rate, but the other multi-single stations will have that too. Multipliers lost by having rotten antennas on one band are critical in the World Wide. This is due to the existence of double multipliers (SU, CE, TF, JT, and so forth, are all likely to be double multipliers — a country and a zone). Frankly, this is not quite as true in ARRL.

Note that not all multipliers that you needed were pile-ups. As an unlimited (assisted) single op in a recent CQWW Phone contest, I made the top ten. Yet I missed the following easy multipliers, which could be worked by a second station with a triband vertical, during the day, and with only operators of modest talent (no pile ups!):

- 20: 6Y, EA6, FY, GJ, HK, P4
- 15: 4X, EA9, FG, HB, KH6, OE,
SV, V2, YO, ZB

I have installed a separate tribander (a TH7-DXX), on its own 36 foot tower, for my second station, so that I won't have to give up one antenna in my stack (my TH-12DXX!) to the second station. It works a lot of multipliers, and, when 10 is really hot into EU, it is my best antenna (because it is low).

Even an 18AVT, R5, or other multi-band vertical, installed on your garage roof with raised radials, will help you with multipliers. Here's a really inexpensive way to add

multipliers: Erect a triband (10/15/20) single loop quad, aimed South, hanging from two trees.

Start today to wire your station to permit switching antennas between stations. You can't believe how many RG-213 jumpers it will take. Make them up those at leisure, instead of during the contest. PL-259's are no fun when you are in a hurry. I recommend Alpha Delta or Daiwa coax switches, and recommend against MFJ switches, unless they've changed their mechanical design lately.

If you use an ICOM 765 or 781, the FRC (contact N3RD) and LTA Industries (run by K3LR, see ad in NCJ) sell rig interfaces to key antenna switches automatically when you switch bands.

Interstation Interference

Shinwa Filters. Made in Japan, these bandpass filters can be plugged right into the back of a transceiver. They may be designed for only 100 watts (my instructions are in Japanese), and I've heard that they will fry if given 150 watts. Bandpass filters can be helpful, but these are not your best solution, as the curves aren't very good. Besides, Shinwa USA doesn't know they are available, and they can only be bought in Asia.

ICE Filters. Dave Pascoe, KM3T, published curves on these in issue 100 of the YCCC *Scuttlebutt*. The curves look good. The units are physically well built, and designed to handle 300 watts. I've ordered 11 of them (160-10 on the MULT station, and 80-10 on the RUN station). AD1C has promised to build a box for each station to switch bands. By using bandpass filters, we hope to attack the problem of broadband noise, when our TS-930's talk to each other.

Coax Filters. Some years back, Fred Lass, K2TR, wrote a series of articles called "Tricks With Coax." If you don't have a series of those articles, you should start now to go and find them. Ken Wolff has found that while one coax stub is a good rejection filter, two is better. I use them on 80 and 40, leaving them in the line at all times. Made out of .750 inch hardline, they have very low insertion loss. However, due to the width of 80 meters (as a percentage of its frequency), it is necessary to add a tail to the 80 meter phone stub to bring it down to the CW band.

The Johnson KW Matchbox. An antenna tuner can be used as a high pass filter, which is a good idea for listening to 15 or 10 when running 20. It is especially important to know when 10 is open, because 10 meter band openings can be sporadic and unpredictable.

Multipliers

Multipliers taken from a voice repeater on two meters, or 220 MHz, or from PacketCluster, should be handed to the operator on a sheet of paper which resembles a band map. Here's an example:

28 MHz	
13.8	J52US
21.2	LU6ETB
31.1	P40GD

A second operator should write these down, as perfectly good multipliers may have scrolled off the screen while you use up the last minutes of your ten minutes on a different band. This is especially true late Friday night and early Saturday. Consider wiring a monitor in parallel with your computer, for the monitor's 23-25 lines, instead of the eight on the computer, which CT provides.

name.CTY. Have you got the best possible CQWW.CTY, or ARRL.CTY list? Does your countries list know what a 9A2 is? Does it have 4J in Armenia?

Station Set-Up

Hot and Cold Drinks. A confirmed ascetic, I find it hard to believe the level of moaning and groaning that occurs when operators must go upstairs to get a cup of coffee or a soda. The easy way to deal with this is to set up a coffee maker and a refrigerator in or near the shack. No second refrigerator? Yank out that cooler from your camping supplies closet (or is it in the garage?) and keep it cool all weekend with frozen ice packs (fill a used plastic milk bottle with water and freeze - will also provide ice water as it melts).

Sleeping Arrangements. Nail these down before the contest starts, not at 3 AM. No need to startle the wife unit, or the children.

Towels. Guest ops never remember to bring their own towels. Thrust two per operator at them upon arrival.

A Briefing. Before things get hectic, or maybe even in writing in advance, brief everyone on the practicalities of your station and home.

Where should cars be parked? You don't want your hot operator interrupted in the middle of the Saturday morning run to move his car so your kid can go to hockey practice.

Which antenna works best into the South Pacific on 80, the inverted vee or the delta loop? How do you set the modulation to avoid sounding like an Italian station (enough processing to hear his watch ticking - and its digital! Too much to understand a word he says.)?

Who's staying up late? Who's getting up early? Who's staying all weekend? Who has to leave, and when?

Grounding

With toroids on all control lines, rotator lines, beverage feedlines, and with all transmit antenna feedline shields grounded as they enter my shack, my shack is electrically pretty damn "cold." This limits the ability of a computer to talk to a transceiver, and a transceiver to talk to another transceiver. So get to work today to install a grounding bus along your operating desk(s). Check out interstation interference BEFORE the contest weekend.

Electronic Engineering

Now, long before the contest, is the time to obtain a second electronic keyer, and to make sure that it will key your transceiver. Now, long before the contest, is the time to see if the borrowed rig will key the second station amplifier.

Now is the time to install that capacitor in the line between your Heil headset and the ICOM transceiver you are going to borrow.

Now is the time to go out and calibrate your rotator. YOU know that you have to add 37 degrees to whatever the meter says, but you'll be asleep, and will have forgotten to mention this fact to the guest operator who is tearing out his hair as he has problems in pile-ups.

If you've never operated multi-single before, then your station has never been run full blast for 48 hours before. It is going to be stressed. Use an extra fan on an old Heathkit HO-10 Monitorscope, a Heathkit SB-220, a Henry 2K, and anything you have which gets hot. Make sure you have enough air circulation around your transceivers. TS-930's go into thermal shut down when they get too hot (and strike fear into the heart when you immediately assume you've blown it up).

Wise men learn from the mistakes of others. I've made each of the above mistakes.

Fast Hand Offs

The boys at KM1C have discovered that one of their big problems, a cause of significant point loss, occurs when one operator gets up and another sits down. At that moment, there is a great temptation to chat about how things are going. This can be especially true in a computerized station, where there is no fat pile of paper to point at with satisfaction - or lean sheet to moan about. A two minute chat can easily turn into a 10 minute chat.

If you switch every four hours, and operate 48, at ten minutes for each changeover to another operator, 120 minutes, or two full hours can be lost. This is a definite no-no. Hand off fast.

Here's another tip to avoid lost time. In the 1970's, W1ZA (then operated by K1EA, K1VR, K1IR and W1ZA) used to leave one rig on 20 for the whole contest. Any time there was any confusion or pause in the action (today's most common reason: a computer snafu), that rig would go on the air while a feedline or a piece of equipment was moved around at his two other operating positions.

Good Luck!

Multi-Multi

Paul Terwilliger, NX1H

Every year about now, I try to remember why I am so involved with the K1ST (to be NX1H this year) multi-multi operation. While burning vacation time doing antenna work, I came up with the following list of pros and cons for multi-multi operation:

Why operate Multi-Multi?

- You can score more points for the club.
- It keeps your power company profitable.
- It's the best way to train new contesters in 'Big Station' techniques.

- You don't have to have a band-changing strategy - instead you open and close each band.
- The camaraderie of a bunch of unshaven, sleep deprived hams.
- You don't have to schedule bodily functions for low rate times.
- The pizza party afterwards.
- It's just *so much* fun calling CQ Canada all day on 40 and 80.
- That many more QSL cards.
- You can find out how well you know the neighbors and their home entertainment systems.

Why not operate Multi-Multi?

- It's the best way to train new testers in 'Big Station' arrogance.
- You'll probably be the one calling CQ Canada all day on 40 or 80.
- The camaraderie of a bunch of unshaven, sleep deprived hams.
- You want to stay married.
- You'll get stuck with all the last minute projects.
- The second harmonics of the band below you are always right on top of the *<insert rare DX here>*.
- You can find out how well you don't know the neighbors.
- That many more QSL cards.
- Lots more stuff to break.

Entering the multi-multi category to be competitive is not something to do on a whim. It can take several tries, and a few total disasters, before it starts to be a science. Going multi-multi "just because" or to score some extra points for the club, on the other hand, without expecting to win, can be a lot of fun. The extra points that we can score this way could be what it takes to beat FRC this year!

Multi-Multi to Win (or at least try)

The requirements for a competitive multi-multi are extensive: 6 operating positions, each with a computer-interfaced radio. Each position should have a voice keyer/tape loop or computer-CW interface, depending on mode. 6 80286 or better computers with lots of RAM, all networked together and to packet. Multiple antenna choices for each band, especially 20, 15 and 10. Second-harmonic traps on the output of each amplifier (these have been described in past issues of the *'Butt'*). Bandpass filters on the output of each radio - we use a set from ICE¹.

All of this stuff should be set up and checked out well in advance of the contest. Make sure no computer noise is getting into the receivers, that the CW/Voice keyers, packet radio/TNC, etc. are happy with all those kilowatts, that the neighbors aren't going to mount a posse when the football game comes on, etc.

Multi-Multi to Have Fun

A "fun" multi-multi doesn't require six complete stations; it is rare that more than three bands are busy at once. You can actually do quite well as a multi-three or so.

If you are planning to operate multi-single, consider upgrading to a multi-two -three or -four instead. Or if you are going to be on as a not-too-serious single-op, invite some friends and try multi-two or -three. Either way, you'll score a whole bunch more points for the club.

"But I don't have enough antennas/towers/etc. for multi-multi!" Nonsense. A tribander partway up a tower, fixed on Europe, can produce a whole bunch of Q's for a second or third station. Surely there's something in your junk box that could be used!

A fun multi-multi is an ideal way to train beginning testers, and to get non-testers bitten by the bug. With no pressure to win, and enough radios for everyone, just sit 'em down and have 'em "CQ till they drop".

If you have time and motivation, it would still be a good idea to have harmonic traps, voice keyers, networked computers, etc., but the goal is to have fun and score points, not get burned out before the contest starts.

Contest Strategy

Because multi-multi stations can be very complex, it is a good idea to have your station's Director of Engineering free at the contest start so that when 3 radios break between 2330 and 2345Z, or the computer network won't work, or any of about 3 million other things go wrong, they can be fixed quickly. Always have a designated troubleshooter available during the contest, and make sure everyone knows who it is. Also, make sure that the station setups are documented and all relevant cables labeled so that it is easier to remember what is what at 0900Z.

Multi-multis have to act as QSO vacuum cleaners. This usually means CQing whenever a band is even marginally open, but also means tuning the band once in a while to find the DXpeditions and casual CQers who aren't going to come looking for you. For CQWW SSB, it also means having 40 and 80 calling 'CQ Canada' all day long.

Don't just pass multipliers from band to band. When 10 and 15 are both open into Europe, 20 probably is too, but without much activity. Pass the Europeans to 20! In the evening, pass Europeans between 20, 40 and 80. You'll be surprised by how many will willingly go where you ask, even on CW. This is also a good way to perk up the operators on an otherwise slow Sunday afternoon.

Have a 'cheat-sheet' for each station to describe antenna switching arrangements and any quirks that position has. Also describe the computer reboot procedure, just in case.

Make sure that your operators know about and use the advanced features of CT, such as how to grab and put out a packet spot, how to use the Pass, Sked and Multi-Talk functions, and how to get into and out of the various windows.

Make sure everyone knows the ground rules - do they bring their own food, where to sleep, etc. Don't let anyone eat bean dip, nachos or similar foods till after the contest unless you have good ventilation.

After your score has been dumped in to 3830, have a pizza party to unwind, celebrate, relive the best/worst moments, plan for the next one, or whatever.

But most of all: SCORE POINTS!

¹Industrial Communications Engineers, Ltd. P.O. Box 18495 Indianapolis, IN 46218 800-ICE-COMM Available for 160-10, 100W capability. \$26.95 per band (1991 price).

160 Meters

Joe Krone, WA2SPL

With the sunspots heading down down down, 160 can be a fun band for you during a contest and, a place to find a pile of multipliers - even for the modestly equipped station!

First thing you need to do is park your ego out in the driveway with your car!! After one or two pile ups you're going to figure out the "pecking order" for the contest you're operating in! You will not beat out the guy running 5 KW to phased $\frac{1}{4}$ wave verticals! You will not beat out 1 KW stations that are 1,000 miles closer to the DX (known as the "W4 syndrome").

Pretty quick you'll figure out you can get through as the 4th-10th station to work a DX station. Don't waste time. Scan the band fast and see if the folks in the pile up are missing something elsewhere on the band. Nail a few and go back to the first pile up.

Big Guns (multi-multi & multi-single stations)

Ok, you guys were invited to operate at a station that's well equipped because you're good operators and know the ropes by virtue of the fact that you've probably been at this "contest game" for a while!

Even so, there are a few "trix" you can use to max your score.

- 1 I assume that you're going to be connected to a local Packetcluster.
 - A Don't forget the "SHOW/SUN" command! When your hi-band operator is making skeds for 160, try to set the sked for 160 about 30 mins before the DX station's sunrise. The farther away the DX station is, the more critical this time "window" becomes!
 - B Keep an eye on the screen. Traditionally DXpeditions hit 160 "on the hour" for about 15 minutes. Don't get caught in one pile up and loose your shot at something down the band!
 - C Never assume a DX station will "come back later". That could cost you a multiplier.
- 2 You probably will have a good transmit antenna. Either a high dipole or vertical will get out well, but if you can't hear 'em you're dead in the water! A short receiving beverage will do wonders. As a last resort, use a spare 80

meter dipole close to the ground for receiving. It will help kill the QRN and make the weaker DX stations easier to copy.

- 3 Remember there are three nights in a contest. Don't get discouraged if the first night is a bust due to polar absorption or high noise levels.
- 4 "Pair-up" with another station you know. Use the cluster "talk" command and set yourself up with another good 160 station/operator. A second set of ears is helpful on some of your long haul DX skeds!

Medium Guns (multi-single and single ops)

- 1 160 is going to be a tough band for you! Hit the band on the hour. Take a few minutes to make a "road map" of the band (a list of freqs/calls you hear). That way when you do get to be the "run" station, you'll be able to max QSOs and mults in a single 10 minute block!
- 2 Two or more new multipliers make it worth changing to a new band for 10 mins.

Little Guns (single op and/or low power)

160 can work for you too! You won't beat out the high power/big antenna boys, but you can pick up 10-20 mults...even barefoot!

After the initial rush, the bigger DXpeditions often go begging for QSOs on 160. Canada, the Caribbean, North Africa and Western Europe are workable, and places the larger DXpeditions tend to go to. Wait until later in the evening. Avoid the on the hour idea! That's when you'll get a lot of frustration and only a few QSOs through the QRM.

If noise is a problem, try the 80/40 meter receive antenna trick. It works!

General Notes:

- 1 Remember sunrise and sunset are enhanced periods of time to work DX! I often work KH6 around midnight our time and use our sunrise time to chase the VK/ZL/FK/JA stations! If other bands are making skeds for you, remind the op about "SHOW/SUN" and use it!
- 2 Know your band. Many countries do not have full use of the band. So split operation is sometimes a must for them (like JA).
- 3 Figure out where you're falling in the "pecking order" and use the info to allow you to grab other DX stations that are being missed.
- 4 Don't let one night of bad propagation turn you off to the band. It often varies dramatically from night to night.
- 5 Be familiar with the problems out there on the DX station's end of the pileup. If you've ever operated from the Caribbean, you know the QRN is very bad most of the time and that you hear most of the USA all the time (lots of QRM!).
- 6 Watch your radio. Keep your signal clean. No one can copy distorted audio!

- 7 Speak slowly, clearly and use standard phonetics. Don't change phonetics during a call! All that does is confuse the DX station.
- 8 Time your call (tail-ending does work!).
- 9 Make "road maps" before you get on the band.
- 10 If Canadian QSOs are allowed, know that they tend to get on from 8-11PM and then hit the hay.
- 11 Check the band just before your sunset/sunrise - even Sunday night. It's amazing to see what shows up!
- 12 Check the band around 0500Z for enhanced signals during European sunrise.
- 13 TUNE TUNE TUNE! Some DX stations go higher in the band to avoid the QRM. Some Russians and Alaskans hang out 1850-1875. Most European can't go below 1825. South Africans peak between 0130-0145Z!
- 14 Hit the hay after 7AM. And be back ready to go around 5PM.

Good hunting to all!

80 Meters

Charlie Carroll, K1XX

As the sunspot numbers get lower, the low bands begin to play a more significant role for all contesters. For any category of operation, 80 and 75 can be a veritable gold mine of contacts and multipliers. As a multi-multi or single band effort, it's possible to work in excess of 90 countries and 25 zones during the weekend. The multi stations can run 75 for almost the entire contest thanks to our proximity to Canada. A serious effort can yield upwards of 600 contacts with roughly a 50-50 split between Canadian and other contacts. Single ops and multi-singles should be able to work at least 55 countries and 17-18 zones. Depending upon the times that you spend on the band, contacts can range upwards of 175-200, though you probably don't want to waste your time experiencing the thrill of running VEs during the day.

The two most important times, at least for Europe which should be the bulk of your contacts, are our sunset and their sunrise. The single ops and multi-singles should plan to be on the band at these times. Of these two timeframes, I think the best bang-for-buck is European sunrise. Signals will be strong in both directions. Knowledge of gray-line propagation and the judicious use of sunset and sunrise times will enable you to be on the band when the rarer multipliers will be the strongest. You'll be able to work Europe almost any time, 2230-0630Z.

The CIS (new version of USSR) stations seem to like the CQWW contest and for that reason some good multipliers can be found on the band. Quite often some very big signals come from them around 03-04Z. Don't be discouraged the first night when the DX stations are working themselves. US stations are just another multiplier to them and you'll often times find things slow the first night.

The stations in the Caribbean will be available from sunset until about 08Z. At that time propagation should be shifting to the West and it might provide difficult to crack the pileups. It's probably more profitable to work Europe since the Caribbean DXpeditions should be very evident during the contest. South Americans should be in from 03Z to 10Z. The deep Southern countries won't start coming through until the end of this period. These you must catch as soon as possible since propagation will be shifting, giving the W8/W9s a decided advantage.

During the period when activity can be expected from Europe and South America simultaneously, if you have any type of directional antenna, it is a good idea to CQ in different directions. That way you can pick up any random South American or African for that matter. The Africans are generally spotty in their participation. Look for the ZS stations around 00-0430Z.

The Pacific can be a long hard battle for us in the Northeast. Many times the 30-foot high dipole of the W8s will beat you through the pileups. In addition, their very strong signals can make life miserable while listening to the West. Generally, all you can do is keep calling. Our sunrise is the best time to pick up the good multipliers, but the good propagation only lasts for a short period. Work your token ZL, VK, or what ever. When signals peak, you can't waste a lot of time.

Each year the message is somewhat the same, though with a change in sunspots the results can be a lot different - CQ towards Europe and push during sunrise and sunset.

40 Meters

Bill Gioia, K2EK

Forty meters can be a gold mine to the contester with the right tools. To get an idea of the band's potential, take a look at the top multi op and single band results from the past 4 or 5 years. On CW, contact totals can rival the higher bands and in less than peak years, so do the multipliers. With OI' Sol fading fast, this year may be no exception.

Folks whose contesting experience has been limited to 10 and 15, will find forty propagation similar, though shifted by 10 to 12 hours. As on the higher bands, the action starts in Europe, swings through Africa, Central and South America, on through the Pacific, and finally ending with Japan and Southeast Asia. So, where 10 and 15 opens to Europe a little before sunrise, forty opens a little before sunset. Similarly, as sunset brings the JAs (and eventually the end of the day for) 10 and 15, on 40, it's sunrise.

However, working DX on 40 is not quite as easy as on the higher bands. Modestly equipped stations (100 watts to a tribander) can do surprisingly well on 15. The same station is likely to find it rough going on 40. This is particularly true if that 100 watts is feeding an inverted vee cloud warmer at 40 feet. A kilowatt amp will help, but it is only half a solution. That low vee isn't going to be much help digging those

weak Europeans out of that wall of loud US signals. Fortunately there are several quick, cheap remedies.

Unless you already have a good antenna for forty, give serious thought to putting up some kind of low angle array - and preferably something directional. By far, the easiest and least expensive way to do this is hang a wire vertical (aka GP, or ground plane) from a tree limb. Nosebleed heights are not needed either. Try to get the feed point up 15' or more and plan on 6 radials. It will still work with the feedpoint at ground level, but many more radials are needed. For some gain and the benefit of front to back, hang a second ground plane and phase them. 500' of wire is enough for a 2 element system, with 6 radials under each. A relatively simple antenna such as this will produce a low angle signal with gain and knock those loud Ws down by 30 dB or more. I use one as a backup for a 3 element yagi at 90 feet. Interestingly, there are times the ground plane plays as well.

For a little edge on receive try a beverage antenna or two. Beverages are very worthwhile additions to the station with a kw and moderately high vee. Lengths can be anything between 150 and 350 feet and strung just high enough to walk under. They can drape over the shrubs or thumbtacked to convenient trees. Just keep them relatively straight and pointed in the desired direction. A terminated 350 footer produces remarkable front to back.

When to get on 40 depends a lot on conditions and whether it is the phone or CW contest. For phone, consider forty a multiplier band. It takes a huge signal to run stations on forty phone and the rates are always low. Stay on the higher bands until they close, then sweep forty for multipliers. Almost every station called will have a pileup going. But even the biggest pileups thin out after a while. If you don't get through in 2 or 3 calls, write down the frequency and come back in 5 or 10 minutes.

CW is entirely different. Europe can be worked as early as 18Z. Don't bother unless you are a multi/multi or single band entry, since the rates are really slow. As 21Z approaches, rates go up dramatically. Conditions will determine if you are better off running JAs on 15 or Russians on 20. Even if the rates are high on 20 and 15, always keep an eye on the greyline. In other words, look for VU, 3B8, VQ9, S7 and east Africa as sunrise sweeps across those areas. Saturday evening is especially good for running Europe, if you haven't already. There is a noticeable droop in signal strength and activity between 03Z and 06Z. Use this time to chase multipliers on other bands or sleep. 06Z to 08Z brings European sunrise and another burst of activity. Some JAs are also possible, though they are much easier later on. After that it is back to multiplier chasing or sleep until local sunrise. Then go after JA, KH2, UA0 and YB for double multipliers. If conditions are really good, this is also the best time to work 4S7, UM, UJ, UI and UL. But don't stay too long and miss the opening on 15!

20 Meters

Jim Metcalf, NQ2D

Twenty meter operators, start your engines! This is the point in the sunspot cycle we have been waiting for. With the ten and fifteen meter bands fading fast, expect that Europe will be active on 20 all day long.

Propagation and game plan for CW and sideband should be near the same. From the start of the contest until about 0300Z, European runs should be plentiful, while an occasional Asian or African will be heard as the Multi-Multis battle for territory below 14200.

During this time of mass confusion, make a point to check above 14300 for multipliers seeking safe haven from the QRM. In the past an occasional CQ as high as 14330 has netted some fair runs.

Between 0300 and 0600Z, expect Europe to quiet down a bit. This is the time to rack up big country counts. All the contest expeditions will be going strong on the band at this point. Don't stay in one place too long, for the one-night-stand rare multipliers are upon us now.

The European sunrise should be a memorable one indeed. From 0600 until 0900Z all eyes and beams should be pointed at Europe. This is the time to separate the men from the boys. 100+ hours during this entire period will not be unusual. Europe won't be so fast to go to 10 and 15, as those bands will open later and later.

As the sun rises on the East coast, short path JA runs will be on the rise. At this time a fine line separates the short and long path openings to Asia. Work a YB0 short path, switch beams, and a 9M2 is coming in on the long path. Work zones 22, 23, 24, 25, 26, 27, 28, and 29 now until as late as 1400Z.

From 1500 Z to the start of the new day, we turn eyes back on Europe. Although absorption levels will still be rather high, Northeast contesters should fare well in comparison to our southern counterparts.

1900Z should be the time when rates will climb near the 100+ levels again for multiple hours. Get a good soft chair, and a big glass of Coke!

May the Force be with you. See you at the band's edge!

15 Meters

Charles Morrison WZ1R

If you missed the propagation show that was put on for this past year's ARRL DX Phone Contest, you may have missed the last good conditions of this solar cycle. Most of the Multi-op scores show 15 meters as the most productive band that weekend (QSOs and Mults.).

As we ride out this Solar cycle, 15 meters becomes more than just that band you pass thru on the way to 10 meters. You'll be spending more time on 15 meters with the impending lower solar activity.

Knowing what can happen in the best of conditions can help plan your strategy and improve your results. The 1991 ARRL DX Phone weekend was just one such event. 10 and 15 were wide open and absorption was low.

After a successful 'shake down' during ARRL DX CW, the NEW K1DG Multi-single/Multi-2 station was enthusiastically re-activated for the Phone weekend. Charlie Carroll, K1XX, School Board Chairman by day, Big-Gun Contest Phone Op by night, contributed to the operation as well.

0000Z-0400Z

At the start, expect the band to be open to JA, S/A, Asia and Pacific, and possibly for the Northern Europeans, who could be in for an hour or two. Africans are also available throughout the evening and this can be either Long path or short. Saturday night will slow down earlier than Friday. This period on 15 meters may produce up to half of your JA's. Get'em now, because tomorrow could be *dead*!

Our log shows some juicy mults: BY, YB, VS6, UA9-Z18, UL, P29, 5Z, 5U, XT

0400Z-0800Z

This period is extremely variable. Besides the ever present S/A and Pacific. Long path and skew paths can pop up to many areas. This period is also European sunrise, which may or may not affect you. Most of them may be on the Lower Bands.

A VK5 called to say that he'd been listening and that our signal was equal in strength both via Long path and short path. He too was as loud via long path.

From our log: 3B8-L.P, AP-L.P, FK, VK1-9, 9X

0800Z-1600Z

Start listening earlier than Our Sunrise! Our first European on Sunday was heard and worked at 0912z. Once you get running, keep your frequency clear. The deeper you can hear - the greater your audience.

---EUROPE---EUROPE---EUROPE---

Deep Asians are likely and long path openings are possible. These openings can be selective. Our JA opening Saturday morning from 1230Z-1345z did not reach down to NF2L/N2NT in New Jersey. For propagation software try KY1H. Dave has expanded on the work that he displayed at a club meeting last year.

OK3TDU called in - S9+35dB! He gave 59-100watts! The very next caller was OK3TDH - at only S3. Expecting a QRP report, I opened the RF Gain...59 100watts. That's over a 60 dB difference!!!!!! WOW ! (Must have been an attic antenna !)

Logged: UA9/0-z17, 18, 19, UJ, UL, UM, 4K2(FJL), VU2, JT, Long/Skew path- JA(1hr.), HL, YB(All day), P29, VK3, 4, 5, 6, 8, DU, KG6DX, BV, VS6, HS

1600Z-2100Z

High 'D-Layer' absorption will prevent most Long path openings.

---EUROPE---EUROPE---EUROPE---

European sunset. Take more time looking for multipliers - AF/SA/PAC. Start looking *west* beginning 1 hour before KH6 Sunrise. Catch the Pacific mults before the competition does, or you'll have to wait in line.

From the log: YB, DU, VK6

2100Z-0000Z

JA run period. Europeans still strolling by. During Saturday, the last European was logged at 2300Z, Sunday 2340Z! The First JA was logged at 2157z, Sunday's at 2130Z. So, there's a 1 to 2 hour window of propagation from the Northeast to these two continents. How do you get the best of both worlds??? *Stacked yagis!!!* Turn the high, rotatable one to Japan and the lower one(s) towards Europe. Saturday's results-70% Japan/30% Europe. Don't forget fewer Japanese are active Sunday evening.

From the log: Last Europeans/JA + Asia/Pac/SA

This year, even though 15 Meters may seem like a 'Waiting Room', for 10 Meters, it will be *the run band* during the day. Follow K1AR's advice from his column in CQ: '59 ways to Improve Your Contest Score-Without Cheating' Keep checking 15 Meters throughout the night (hourly). The exhilaration of working something WILD may help you get through until sunrise!

10 Meters

Greg Cronin, W1KM

I can picture it now...shortly after sunrise, 15 has gotten a little sluggish, QSY to 10, sign my call once, and BANG, the band explodes with Eastern Europeans. Sounds great...but I don't think it's going to happen this year. After reading KE5FT's excellent propagation column in the latest NCJ, I'm not overly optimistic about healthy openings to Europe on ten. At this point in the sunspot cycle 10 is wildly unpredictable - flexibility will be the key to making the most of what conditions offer.

We can look at the bright side - we're not likely to get pounded with wall-to-wall meter-pinning European QRM. And even with mediocre conditions any opening to Europe should offer a large number of very workable Europeans at excellent rates.

There can be psychological pitfalls in setting goals on ten: counting on good conditions and setting a goal of 1,000 QSO's (or even 500) could lead to a major depression if the band goes bust; setting a low goal could lead to confusion and complacency if things get really hot. I am going to plan and hope for some good runs into Europe, fully realizing that I may not work many stations north of war-torn YU.

If conditions on 15 are good, keep a close ear (eye, for packet users) on ten beginning shortly after sunrise. The

most explosive rates are usually in the first 30-45 minutes after the band opens, before saturation by the rest of the USA. Europeans may not be runnable until 1400Z or later. Since we don't know what ionospheric surprises may be in store for Sunday, it's a good idea to take full advantage of whatever propagation Saturday morning offers. However, if Saturday is really marginal (skew path only to Europe), a strong argument can be made for sticking with the higher rates on 15 and gambling on a better Sunday 10 M opening.

Once the initial euphoria of the high rates starts to slip away (remember, I'm counting on decent runs to Europe!), and the rates return to double digits, the tendency can be to do something else – look for long-path on 20, take a nap, etc. Don't – at least until the rates have really plummeted. TENacity really pays (witness KQ2M) and rates are usually higher than what can be had on the lower bands, at least as long as the DL's (CW) or I's (SSB) are coming through.

The key to our success in YCCC-land is working Europe; but regardless of what propagation is like to Europe, we should plan on taking advantage of the wealth of multipliers available on ten. Most top scorers had over 100 countries in last year's CQWW SSB in spite of mediocre conditions. Some tips on working multipliers: work Southern stations before the huge mid-afternoon pileups, look for the Pacific

shortly after their sunrise (1800-2000), scout the entire band – even above 28.1 on CW and 28.7 on SSB. Packet-users should pounce on new ones immediately because the pileups develop quickly. Look for JA and other Asians after 2100Z, especially if KL7's are thundering in. (I don't expect much JA running this year, but who knows?) Finally, give the rotator a real workout. With the relatively sharp beamwidths on ten it can be easy to miss choice mults off the side and back of the beam.

I compared the CQWW CW ten meter results for the past few years with the Solar Flux and A indices on the test dates. There's not always a strong correlation. For example, in 1988, with the Flux in the 140's and A indices of 18 and 10, the top W1 SO's averaged 375 QSO's. In 1992, with a somewhat lower flux and higher A, the top W1's averaged 671 Q's and had significantly higher mults. While there are some good partial explanations for the disparity, the bottom line is not to rely on WWV numbers to make decisions about ten's potential.

Ten meters may be the most unpredictable band, but it's also the most fun. Remember, everybody loves ten, so with any solar cooperation the band will be enjoyable and highly productive.

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