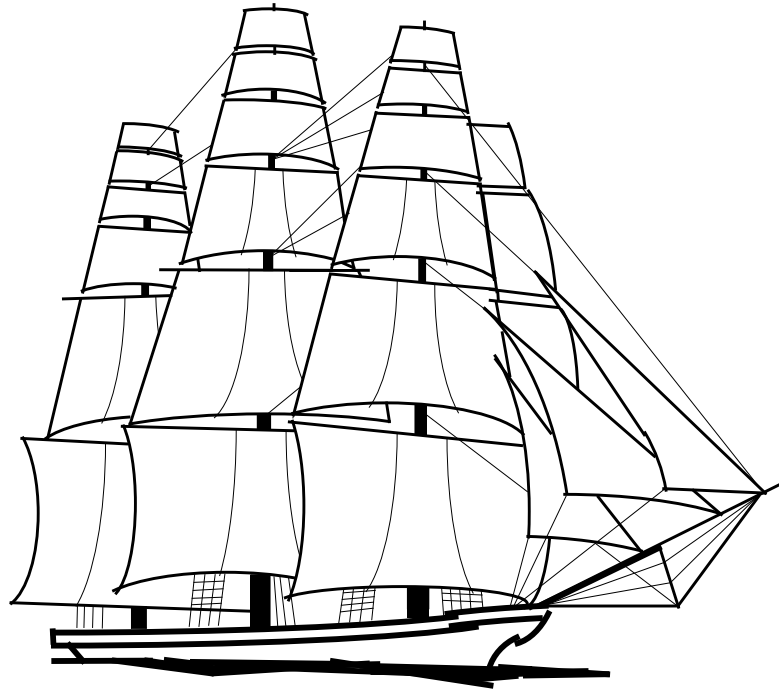


Yankee Clipper Contest Club



1997 Contest Cookbook

Table of Contents

Introduction	<i>Leonard Kay, K1NU</i>	2
Single Op Assisted: Medium to Little Pistol Category	<i>Tony Brock-Fisher, K1KP</i>	2
160 Meters	<i>Carl Huether, KMIH</i>	3
75 & 80 Meters	<i>Brian Szewczyk, NJ1F</i>	4
40 Meters	<i>Randall A. Thompson, K5ZD</i>	5
20 Meters	<i>Dean Straw, N6BV</i>	6
15 Meters	<i>Doug Grant, K1DG</i>	7
10 Meters	<i>Tom Frenaye, K1KI</i>	7
Propagation Predictions	<i>Dean Straw, N6BV</i>	8
Propagation Charts	<i>Dean Straw, N6BV</i>	9-12

Introduction

Leonard Kay, K1NU

Welcome to the 1997-98 YCCC Contest Cookbook and the new contest season! The solar flux is finally increasing, we have FRC in our sights this year, and they know it. They'll be going all out this year just as much (or more) than us.

The message, as always, is *get on the air if you can*. If you can't put in a serious effort, even getting on for 6 hours (and *submitting the log*) can produce 100k points. Multiply that by 100 log entries and that's an extra 10M points for the club!! If you don't have somewhere to operate, talk to your Area Manager. Odds are there's either someone who has a station available or a Multi that would be glad to have another op.

And if for some reason you need that small incentive, our improved 1997-98 awards program should fit the bill. The *Top Gun* pin program will recognize those who make a significant effort for the club— measured in *hours*, not points - 16 hours or more in each of the 4 big weekends. That's easier than you think - 4 hours each on Friday and Saturday night and Saturday and Sunday morning running the boys (and/or girls).

Enjoy the Cookbook, which is a blend of old and new this year. As usual, I have printed N6BV's propagation charts back-to-back for easy removal so you can have them in front of you during the contest. Above all, remember we're doing this because it's **fun**. C u in the pileups. □

Single Op Assisted - Medium to Little Pistol Category

Tony Brock-Fisher, K1KP

No matter what your station set up may be, the most important piece of gear is between your ears! That's right - all other things being equal, operator skill can make a 200% difference in your score. Perhaps a major factor in operator difference comes in the form of attitude. In the weeks before the contest, you should be practicing some 'sports psychology' on yourself. Remember - think loud, be loud! Plan your activities before the contest to tune up the critical station component - you! Here are some things you should be doing before the contest to get yourself in fighting shape!

1. Make sure you operate a lot before the contest. Get on Saturday and Sunday mornings and 'run the boys'. Make lots of DX friends, and ask them all to look for you in the contest. It really works - you remind them that the contest is coming up. And when you do work one of your DX friends in the test, it gives you a real lift when they say hi and call you by name!

2. As far as operating before the contest, make sure you get on 28 days before and 7 days before the contest. Operating 28 days before the contest will give you a forecast of what solar conditions will be like, as solar conditions tend to repeat every 28 days. Operating 7 days before the contest will help you find likely long-path and grey line openings, even though solar conditions may be different from the test weekend.

3. Practice on PED before CW contests. Have you ever noticed how much your CW speed increases during the 48 hours of the

contest? Doing some time on PED can help you get your speed in shape for the opening gun.

4. Get in physical shape. This means regular exercise, which will put your body in good condition for enduring the effects of sleep deprivation. Start a routine of walking or other exercise several weeks before the test.

5. Visualize yourself in a positive way. Place thought patterns in your mind of such events as running the Europeans at a sustained high rate; working rare mults on one call; or making your target number of Q's by Saturday night! Expect to have a great contest! Remember, most of last season's contests were very badly affected by disturbed geomagnetic conditions. This year, I think the contests will miss the monthly visit by the coronal hole. This means this year's contests are going to be much more fun than last year!

6. Prepare yourself mentally for any downers as well. See yourself continuing on in spite of anything that might go wrong. With the poor conditions last year, I got bummed out and slept 7 hours on Saturday night. Turns out that nap probably cost me some wall-paper, as little did I know that my major competition was having their own brand of difficulties, and only beat me by about 100K points. NEVER GIVE UP!

7. Study your results from previous years. Try to prepare some goals based on last year's score, in points/Q's/mults. Look at the rates from previous years, adjusting for propagation differences, to get an idea of what a good rate for you would be. This will help you when you are wondering if you should be running or search and pouncing.

8. Premodify your sleep habits. There are many different approaches to this - try to find one that works well for you. Some folks try to rotate their sleep hours to fit with European sunrise. Others deprive themselves of sleep in mid week, so they can take a nap on Friday. Whatever works for you - do it!

9. Clear the decks of obligations. Let others know how important contest weekend is for you. Make an extra effort to spend time with the family before the contest, so they'll give you a break during. Try to arrange some fun activities for your significant others before the test. My favorite plan is to give 'em a new credit card and send 'em to an outlet mall. Sure it's expensive, but it works!

Operating Techniques: ...in no particular order.

1. If you are less than lightning fast on CW, run more and S&P less. This sounds strange, but it works. Here's why. When you S&P, you have to adjust your sending speed to that of the calling station, often above your comfortable range. But if you're calling CQ, everyone else will be adjusting to you. As a result, you can work people at your maximum comfortable rate - and your accuracy will be at peak.

2. On SSB, use a DVK. You can now build a DVK for less than \$20, so there's no excuse for not having one. It doesn't have to have 4 memories or be controlled from CT. What you'll find is that you will call CQ more. And that's the key to a bigger score.

3. If you must sleep each night, don't sleep at the same time both nights, as that will be a piece of the propagation-go-round you'll miss.

4. Don't waste time going for easy mults, like the big Carribean MM's, early on. They'll be begging on Sunday afternoon. DO work rare Africans when they show up, as they may not hang

Yankee Clipper Contest Club

around Sunday. Try to get the JA mults on Friday night; remember Saturday night for us is Sunday morning for them, and they're sleeping in consideration of work Monday morning.

5. QSO's are KING! Mults happen. Whenever, wherever you can, run, run, run! Running should always be your highest priority, as you will accumulate mults even while running. If you are operating in the little- to medium- pistol category, you may have to try various techniques to get a run going - such as getting on a different band from the big guns, or looking in strange places for run frequencies. Either high in the band, 3 kHz up from a net, or often somewhere between the US big guns at the bottom of the band and the EU big guns 20 KHz higher, running frequencies can be found. Remember - the best indicator of whether you have chosen a good running frequency is the rate. Even if the QRM is S9, if you're working folks a good clip, hang in there. On the other hand, if the frequency is dead quiet but the rate is also dead, you better go find a better spot.

6. As Kenny Rogers sings, "You gotta know when to hold 'em, know when to fold 'em". One of the hardest things to learn in contesting is when to stay with a run frequency that is not really productive, versus going off for S&P. In the medium to little pistol category, I would suggest you use a rate of 60-90 as the break point. If your rate is 60 or better, you should probably stay where you are. A rate of 60 per hour is one QSO per minute. That seems pretty slow, as you will probably call CQ four times for every answer. But a rate of 60/hr for 24 of the 48 hours is over 1400 QSO's - a very respectable total! I have looked the statistics of rate, based on minutes per QSO. 95% of QSO's will be made between .5 and 1.5 times the basic rate. This means that you should be able to tell what your rate will be after just a few QSO's. So don't waste more than about 5-10 minutes trying to establish a run. If after 5 minutes you haven't worked at least 3 stations, try a new frequency or a new band. Run frequencies are not really that hard to find.

7. Try all combinations of phonetics for the call you are using. You should be able to discover which phonetics result in the fewest request for fills. Ask the owner of the call if you are not using your own.

8. Tune quickly. When you first S&P a band, you should be able to get a rate of 90/hr or better. If you are constantly getting beat by the same stateside station as you move up the band, you are losing time by waiting for the other guy at each Q. Try leapfrogging the other stateside station so you won't have to wait.

9. Remember the law of averages. If you have one hour of 300/hr, that's cool, but it won't win the contest by itself. In order to get the numbers up, you need to work on average rate. That means saving a few seconds on each Q adds up to a higher average rate - and a much higher score. Keep this in mind as you make your exchanges and operate your station. Saying '73 and thanks' is polite, but not fast. Keep your words and operating techniques snappy.

10. Packet Tips: Check a spot when it comes in - if you're fast, you may be able to get in and out. Don't call twice though - if you don't get through before the packet pileup, let it wait. Don't let packet mesmerize you - use it more as a guide to who's on, what band is open. If you try to work every packet spot, you're guaranteed to have a lower score than if you just ran G's and DL's all weekend and never got the VK6 mult.

Station Design:

By the time you read this, it will probably be too late and too cold to do much in the way of antenna work, but I can't resist throwing out a few considerations:

Antennas are really simple to understand. When designing antennas, remember the three most important factors:

1. Height.
2. Height.
3. (You guessed it) Height.

Another important point is that any time you have more than one antenna for a certain band, one of them will be better than the rest. What this means is that you should put up some extra antennas for the contest. It doesn't matter how big - just different. If you main antenna is a tribander, you'll be amazed at how well a 20 meter dipole works for the Carribean when the tribander is pointed at Europe. The antenna switch is always faster than the rotator! ☐

160 Meters

Carl Huether, KMIH

[Reprinted from the 1995 Cookbook with appropriate corrections - 'NU]

There are 3 antennas to use in a DX contest, vertical, vertical and vertical. All others will lead to frustration and cause me unnecessary QRM. High angle radiators such as dipoles and inverted vees will work to a degree for DX but are usually preferred for QSO party style contests such as the ARRL 160M contests. In the CQ 160M contests it is highly advantageous to have both vertical (low angle) and horizontal (high angle) polarization available. There are always exceptions to the rules however so don't sue me if you encounter unusual conditions. For that very reason I have both phased verticals and an inverted vee available at the flick of a switch.

Verticals or low angle radiators can take several forms. Naturally the choice will be dictated by your specific circumstances but there are many very successful 160M ops on lots well under an acre. An inverted L is an ideal choice since it can be easily installed. Get at least 60' vertical, with the remainder horizontal or bent however to fit the property. Space at least 10' from tower or metal objects or hang from a rope between trees, etc. A ground system of at least 32 radials with 60+ preferred is required for efficient performance *if* it is ground mounted. By starting the antenna 15' or so *above* ground and using 4 to 6 elevated 1/4 wave radials efficiency can be well over 90%. A 60+ foot tower with one or more HF yagis can be shunt fed. The same ground system caveats apply. The elevated radials can be bent, linear loaded, etc. to fit and can easily and quickly be deployed just for the contest or even after dark to keep wife and neighbors under control. A 100+ foot tower can be used as the basis of an array (or just a single element) by hanging the verticals from the top set of guy wires. Linear or coil load as necessary to get the elements at least 50' apart at the top and 130' at 15' above ground. Add some elevated radials, a 78 degree phasing line per ON4UN's book and two 10Amp DPDT relays and you will have a real pileup buster at almost no cost. The same idea holds true with phased inverted L's. Quarter wave slopers are reputed to be effective performers by some but can be a chore to get functioning properly. Consider one if other options are not feasible.

Yankee Clipper Contest Club

A low noise receiving antenna is a must and can also take many forms. I use "classical" beverages of 500' or more, a Slinky Toy beverage and a full wave loop 10' above ground. The Slinky is my best beverage ever and is my European and African choice due to lot size restrictions in those directions. I've used this antenna since 1986. Call me for detailed info. The EWE and other receive only antennas have been described recently in the magazines and have many fans. A low noise tunable preamp such as the old Ameco series can be quite advantageous. I use the Ameco PLF modified for variable gain; the stock 25dB gain is too much for my antennas; 5-10dB is ideal.

One oft repeated fallacy is that you must operate on 160 only on the hour for 10 minutes or so. This was a fairly accurate statement in the past but no longer. With the proliferation of contest software, rate meters and accurate Sun times even the casual DX station is showing up when *he feels it is necessary*. KM1H is usually at the top of the 160M multipliers and the contest op, KQ2M, abandoned the hourly thing years ago. On the hour checks are still done but only as a part of his strategy. It is almost mandatory to be constantly switching bands particularly as AS/EU/AF sunrise approaches and/or the rates slow on 40/80. If possible have a separate receiver or backup xcvr available for rapid band checks of 160 and 80M while concentrating on other bands. A simple 3dB resistive pad can be used to split the Rx antenna between two radios; just remember not to transmit into it!

Read the DX bulletins before the contest. Make notes of all announced DX activity *and* sunup/sunset times. During the contest is not the right time to be doing a sh/sun on packet; it slows the network down for everybody. Buy and keep a manual DX edge available at all times.

During the various CQ contests it is usually hard to work EU the first night, even for the well-equipped stations as the DX is all working each other. Instead concentrate on other areas and just try EU in small spurts as their sunup approaches. Above all, experiment since 160M propagation is highly variable and erratic.

Use packet spots intelligently, let the big guys get thru first and fast. After a while you will get a feel for your station's capability and maximize your effort instead of just causing QRM. Listening and learning the band and its operators is probably the best advice I can give.

East coast sunrise is usually not a good time to be on 160 for the serious contester. This is an excellent time to pick up some good Pacific DX. Dxing or Contesting?.....it's sometimes a hard decision.

Check WWV for changing conditions. Low A/K indices plus no local storm activity could signify wild 160M condx; I emphasize the word *could*. Check contest results for the past 2 years to get an idea of your potential.

Pay particular attention to the band in the closing hours of the contest, KM1H has picked up as many as 6 multipliers in the last 45 minutes. If conditions warrant it don't be afraid to move a new multiplier from another band. Only dedicated EU contesters are still awake at the end and are usually very receptive to a plea. Get a copy of past Contest Cookbooks. There is lots of good info and no one can cover all the bases. I've deliberately not mentioned what hours to work the band. Some say start at 0300Z. I suggest periodic checks from your sunset on until activity shows; the band is too independent to fit into a must do formula. □

75 and 80 Meters

Brian Szewczyk, NJ1F

My favorite contest band for the past 13+ years is 75 meters. During this time I have become a student of the band. On each contest outing the band reveals something new, not to mention the increase in technology and it's impact on scores! I can remember when N2AA checked into 3830 and announced a 75 meter country total of over 100 for a CQWW contest. That was better than my best band 20 meters' country total for that year. Those were the days BC (Before CT) and BP (Before Packet). The closest thing was a 2 meter repeater where everyone listened and announced DX. We have come a long way. Today 75 meters when it really gets going sounds a lot like 20 meters at least from here on the east coast.

This is a band on which we have a major geographic advantage. However, I think that it is a band that many low power stations spend little time on. I know that it can be tough with all the big stations on the band. But remember from New England even low power stations with a dipole can work Europeans and Caribbean stations easily. This is a band that can yield between 20 to 40 extra multipliers within a few hours of work. In the CQWW contests the second night can be a far easier as the Europeans will have all worked each other and will be begging for calls. The most productive times are between 10:30 PM and 2 AM local time. This is European sunrise and band fills with European and Caribbean stations. Even if you can only operate a few hours you might want to stay up late one night to get the multipliers. This combined with a few hours on 20 and 15 meters makes for a nice score that helps the club beat FRC!

The basics

Most of the DX on phone is worked split frequency. This is also the case of a few big Dxpeditions on CW. However some of the DX stations do have privileges in our phone band as well. Knowing where to look for DX is half the battle, and knowing when to look is the other half. The majority of the DX can be found from 3640 kHz on the low end with some of the Caribbean stations up 3850 kHz. Most of the Europeans will be listening split above 3800 kHz. Other frequencies to check for multipliers:

3640 kHz to 3650 kHz Russian sub band

3675 kHz to 3800 kHz Most of Europe, South America and Caribbean

3790 kHz to 3805 kHz Japan and South Pacific (I have worked VK's on 3680 to 3690 kHz as well)

3800 kHz and up Caribbean, South and Central America, and US possessions KH6, KP4, and KP2

Search and Pounce mode of operation can be highly effective at increasing mults really quickly. I personally like to start at the low end of the band and dial up to the high end of the band. I then dial back down the band. I use a computer controlled radio and the band map feature of CT to speed up the downward tuning process. I will also use my radio's memories to store pileups that I was unable to break quickly. I will usually spot the station even if I can not work it as this will help out the club's score and maybe the packet pile-up will get the DX station's attention. The name of the game is to work as many multipliers and stations as possible quickly. *Don't become a DXer*, spending 45 minutes trying to work some rare DX and miss out on the opportunity of working

Yankee Clipper Contest Club

20 other stations some of which are bound to be mults! Last time I checked CQWW and ARRL DX contests were not won by having the rarest DX in one's log, but rather having the most! On the low bands the band openings are short and you must utilize your time on the band effectively.

Learn the sunrise and sunset times for your QTH as well as major DX locations such as Europe, the Caribbean and the Pacific. From the eastern US the best time to work Europe is from about 0230Z to 0800Z which is their sunrise, with the peak in activity occurring around 0330Z - 0600Z. There are locations such as VK that we have openings to at both our sunrise and our sunset. Which one will yield the best signals is a flip of a coin and largely dependent on conditions. I tend to favor the opening around our sunset as the band is usually a lot quieter and we don't have to compete with the louder west coast stations. If you are a single op your time might be better spent on a higher band than on 80 meters at your sunset to maximize your score, unless you have worked out the other bands.

When spotting DX which is listening split on the cluster, always enter the QSX frequency. If you have a computer controlled radio it will do this automatically. This will help everyone on the cluster with computer controlled radios grab the spot and CT will set the radio on the right frequency. Also please make sure that you verified the call and correctly typed it before you spot it! This will save bandwidth on the cluster by not having it respot with the correct call and all the announcement flames.

Running on 75 meters is a lot like running on 40 meters - the second VFO gets a workout as most contacts are worked split. Most people transmit above 3800 kHz and listen below 3750 kHz. I have found it much easier with lower power to run Europeans on CW than on phone, but if you have worked out the band and can find a clear spot you might want to spend a few minutes CQing. Phone is much harder because of the Pig Farmers net, all the other nets, round tables, and over-the-air meetings which take place nightly above 3800 kHz, not to mention all the other contest stations. Just a little note that below 3800 kHz if you find a frequency that sounds clear it may not be. I have noticed that on both 160 and 80 meters with a low dipole 25 feet high, what sounds like a clear frequency could actually have a DX station on it working split where you can't hear the station or the pileup. If this is the case, you will be told after the first CQ that the frequency is in use by at least 50 stations. If after the second and third CQ nothing like that happens, you probably have a nice clear frequency!

Remember that in Europe, Broadcast and other services are also assigned to the 75 meter phone band. That S1 carrier or RTTY you hear on your transmit frequency could be a short-wave station that is S9+60 dB in Europe. Maybe that is why you aren't working anybody! I have also had great runs dry up because of this. I have noticed that around European sunrise the band changes every half hour with short-wave broadcast stations coming on or changes frequencies. Watch the rate meter and clock on CT. If a run dries up at the top or bottom of an hour you may have to go hunting for a new transmit frequency. I make it a point to ask the stations who call me if my frequency is clear. I have found the DL's and G's to be very helpful in tuning in on a clear frequency. In many cases they will even tell you to move up or down and give you a comparison of your signal to other US stations.

Equally important is a clean receive frequency. I have had great clear receive frequencies turn into HG73DX 's CQ frequency!

1997 Contest Cookbook

There is not much you can do if this happens, especially if the DX station is louder than the stations you were working. You can simply listen for his receive frequency and ask him to move his transmit frequency. Most of the time they will but it helps to do it quickly as the longer he is there the more he feels he owns the frequency. Another common problem is that while listening in the US novice band a novice will begin to call CQ on your frequency. There is no much you can do except find another receive frequency.

Operating points to remember

- 1) The rates on 75 meters are not as high as other bands. Therefore it is quite easy to be CQing and dialing the band on the other VFO between CQ's. This can really help out the rate especially at European sunrise.
- 2) Because some of the DX may call you on your transmit frequency give a listen on it often. Having a radio with dual receive is very handy for this.
- 3) Install a receive antenna such as a beverage or receive loop. These are helpful for two reasons: they reduce noise, and they also tend to reject high angle signals. You may also want to add a pre-amp to the loop or beverage especially if it is short. A word of caution about pre-amps: if you live near a high power AM broadcast station the amp can get overloaded and cause intermod. You might have to build a band pass filter to trap out the broadcast station's signal.
- 4) If you can, put up several transmit antennas. I have noticed that when the band first opens a vertical antenna usually works best. Later in the opening the high dipole or wire beam work better. I switch antennas frequently during the contest to make sure I have selected the best one for the conditions.
- 5) In pileups it is important to let the DX station come-up and work someone. I have heard several DX stations give up because the pile-up got out of control. In one case last year the DX station actually left the frequency and went up the band a few kHz and call CQ again. He was easily worked as the pile-up was still in full swing.

I hope that you will get on and operate during the upcoming contest season. I also hope that you will give 75 meters a try and let it help your score. Lets beat the FRC! ☐

40 Meters

Randall A. Thompson, K5ZD

Forty meters is probably my favorite contesting band. It offers worldwide propagation throughout the sunspot cycle. Openings are every bit as good as 20m, although often not as long. And when one end of the path is at sunrise or sunset, anything is possible!

There's just one little problem... the rest of the world also uses the band for commercial broadcasting. Throw in a mismatch between our allocations on Phone and it also becomes one of the most challenging bands. Unfortunately, many people hurt their contest scores by letting the band intimidate them. Since Phone and CW have completely different "personalities", I will discuss them separately.

Yankee Clipper Contest Club

In a CW DX contest, 40 meters is a 'volume' band. At this point in the sunspot cycle, it offers two opportunities each day for rich European runs. For a single-op, or multi-single, 40m is the band to start the contest. With some luck, we will have excellent propagation for the first hour or more. After this, the MUF to Europe will probably drop below 7 MHz and it is time to start searching for multipliers in the rest of the world.

The band recovers as the sun moves across Europe. The band really quiets down and some good runs can be expected from around 0600z to 0930z. It is amazing how late the UK stations will come in after their sunrise. After this time, it's back to multiplier hunting.

At our sunrise, the band offers a short opening to JA. Sometimes direct path, but more often via skew path beaming west. After sunrise, long path possibilities exist to VS6, YB0, DU, and the rest of Southeast Asia. The multi-multi's and multi-single's will love it, but the competitive single op should keep an eye on 20m for more productive action.

The real advantage for New Englanders occurs in the afternoon well before sunset. European QSOs are possible as early as 1900z, but the real excitement gets underway during the 21z hour. This is still well before our sunset, but the band has lengthened out in Europe so that all they can hear is loud W1's calling CQ. We have an "exclusive" into Europe for awhile and this is the time to secure a good run frequency.

Don't forget to check for long path openings at our sunset. The CQ WW CW often has workable JA's and other Asians mixed in among the loud Europeans and W's calling CQ. This is also the place to find those zone 24, 26 and 29 multipliers.

The big guns always seem to work their way into the bottom 10 kHz of the band. But don't forget about the upper ranges. It's a lot easier to hear, and be heard, if you pick a CQing frequency up above 7030. Plus, when tuning for multipliers, check all the way up to 7070. I found a number of juicy multipliers last year above 7050 (that's the only place the low power DXpeditions can get a spot). I have also had success calling CQ as high as 7060.

For Phone, the propagation is the same, but the broadcast QRM and need for split frequency operation completely changes the game. Forty becomes a band that is more important for multipliers than QSO volume. It tests your ability to tune and react rather than just sit and call CQ. Here are a few tips that will help your Phone score:

- Get a computer controlled radio! Working split is easy when you just have to type in the frequency the DX is saying and then call.
- Make it easy for the DX station to recognize you. I always say the call of the DX station when I am calling. With many stations listening on the same frequency, this will help them lock in on you. With QSOs so difficult to make, you don't want to lose any by misunderstanding.
- Tune slowly and listen carefully. With so little room, there are often stations stacked 2 or 3 deep. Since QSOs often take longer in all the QRM, you are more likely to tune across a needed multiplier while he is listening. Or while covered up by a loud Italian!
- Don't be afraid to call CQ. Pay attention to the frequencies the Europeans are listening on. If you hear one of them clear, try a few CQs listening down. Many Europeans respect the

IARU recommended phone allocation and will not call you below 7040. However, last year in WW Phone many of the USA multi-ops had excellent success listening down as low as 7010 (that was the only place you could hear through the incredible QRM!). If you must listen that low, don't do it any longer than you have to. I have had my best luck CQing early (2200-0000z) and late (after 0700z). CQing is often the only way to get some of the "second tier" multipliers which don't ever call CQ themselves.

- Finally, don't forget to listen up above 7150. A quick scan of the band will sometimes uncover a South American or VK station working transceive. And if all of the bands fold during a solar storm, try 40 meters transceive and beg for VE QSOs (in CQ WW they are worth 2 points each!).

Good luck in your 40 meter contesting efforts this season. Anyone with a 2-element Yagi should be able to take full advantage of the above tips. With less antenna, plan on working a little harder, but with an equally positive impact on your score.

20 Meters

Dean Straw, N6BV

I love 20 meters, to me the queen of the DX bands. For some reason, probably my long love affair with the band, it's the only place where I feel I have some chance keeping up with the multipliers garnered by the really big guys.

The 1997-1998 contesting season promises to show us more sunspots, as we are in the rising portion of Solar Cycle 23. Boy, I sure hope so! Maybe increased activity on 15 or even 10 meters will take some of the extreme pressure off trying to hold a frequency on 20-meter SSB! That has been a drag — a very necessary drag — during the last several years for almost all the daylight hours.

I am hoping that the level of solar activity will be in the "medium" category for this fall and winter contest season. This will make 20 meters into a band where something, somewhere, is workable for 24 hours a day. In fact, for the CQWW SSB contest, Europe on 20 should be available for 17 hours a day with signal levels S5 or better, and for 21 hours with signals at S1 or better. Perhaps that elusive 06 UTC European sunrise opening will happen this year. Take advantage of our "Northeast Advantage" and make lots of European QSOs for YCCC! Africa will be available with reasonable signals for 22 hours a day and South America will be pounding in for 24 hours a day if the predictions hold.

So, my fellow YCCCs, how do you set up a strategy for harvesting all those lovely multipliers (and QSOs) on 20? If you have a second radio, I suggest that much of the time it should be tuned to 20 meters. At the least, as an unassisted single op you can be spinning the dial looking for pileups of multi-operator stations while you are calling CQ on another band, say 15 meters during the day or 40 meters during the night. Even if you are calling CQ on 40 CW and looking for multipliers on 80 or 160 meters with the second radio, don't fail to tune across 20 at least every hour during the night. You may be surprised and delighted at what you hear. (Check 15 meters too during the night — for example, IONCAP predicts a weak opening to southeastern Africa at their sunrise about 04 UTC during October and 05 UTC in March.)

By the way, those who are operating with packet assistance should be sure to spot *everything* onto the network. That will fill up the band maps for everybody else on packet. Our YCCC packet sys-

Yankee Clipper Contest Club

tem has sufficient bandwidth to accommodate spots of anything and everything. However, do make sure that you copy the call signs correctly and that you type them correctly...

If 15 meters is hot into Europe during the day, as expected, almost everyone will be up there working their brains out. You should be too. Multipliers will still show up on 20, however, so keep an eye out. If you've got a dedicated South America Yagi, you can spin through a band picking off loud South Americans on 20 very quickly, anytime during the day, while still running Europeans on 15 with the main antenna. W1WEF is stringing a small tribander in a tree with a rope truss, pointing it to South America for just such a reason!

Toward the last hour of the contest, those South American and African stations who had seemingly been glued to the higher bands will realize that they need Qs and mults on 20, and they'll descend there in droves. Don't miss them. You can easily pick up 10 or more multipliers in the last half hour of the contest.

During the Asian and Far East openings in the morning, there will be a mixture of long-path and short-path propagation. IONCAP doesn't predict long-path openings very well, so be on the alert to point the 20-meter beam over South America looking for Asian multipliers between 11 to 14 UTC — all this while maintaining your 20-meter run frequency and monitoring 15 meters to see when it gets hot, of course. At my station I can switch the rotatable top (120 foot) antenna into the Europe stack at will. That way, I can simultaneously spray RF over Brazil, or any other direction for that matter, as well as to the northeast.

Now, for the station who doesn't have a huge amount of time to operate, but who still wants to make points for YCCC, the key for you should be no surprise — work Europe fast and furious on 20 meters during the morning opening! If you have a tribander at 60 feet and a kW, you should be able to run Europe at 100+ rates (both phone and CW) from about 10 UTC until 15 meters opens solidly at 12 UTC, after which you'd move up to 15 to run Europeans. Stay on 15 until about 17 UTC, when you should come back and capture a 20-meter run frequency for the afternoon runs there, before the herd migrates to 20.

The 20-meter afternoon run into Europe will start to dry up after about 21 to 22 UTC, but then there should be a JA and deep-Asia opening, where you can pick up nice double multipliers. During the CW contests you may well be on 40 meters after 20 UTC, since you'll be able to make plenty of QSOs into Europe there even with wire antennas. Even during the excitement of 100+ hours on 40, however, don't forget to pick off multipliers on 20 into deep Asia.

If you can put in at least 8 hours for a day, you should be able to generate somewhere around 500 to 600 QSOs using this strategy during this portion of the solar cycle. And another thing to remember: YCCC is a big club, with lots and lots of members. Don't get into frequency fights with your YCCC brothers. It's really counterproductive for our goal to squash FRC. Set some goals and go for it! Happy hunting on 20 meters. ☐

15 Meters

Doug Grant, K1DG

[Reprinted from the 1986-87 Cookbook (11 years ago) with appropriate corrections - 'NU]

This band is probably the biggest question mark for CQ WW. It may not open at all. It may open almost as well as 20. Probably the best thing a single op can hope is that he will be there at the right time, and not miss whatever opening occurs.

Check the band every 15 minutes or so, starting a half-hour after 20 opens. Check the band edge - a single-band guy or a multi-multi will be there. If he's getting answered by guys you can hear, it's time for you to be there. If he's not getting answers you can hear go back to 20. This is our best opening, so don't be late.

Propagation to Europe may be skew path this year. Beam East (or even Southeast) and keep moving the beam to peak them up as the band shifts.

If you can sustain 80-100/hr on phone, stay on 15, checking 20 and/or 10 for mults at least once an hour. When Europe goes away, chase multipliers in Africa, then South. Try to get a JA for the double multiplier (in CQ WW).

Here's a checklist of zones you can expect for various levels of propagation:

Very Poor: 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 33, 35, 38

Poor: add 14, 15, 31, 36, 37

Fair: add 1, 2, 16, 20, 21, 22, 32, 39, 40

Good: add 17, 25, 27, 30, 34

Excellent (don't expect these): add 18, 19, 23, 24, 26, 28

In summary, check the band a lot. Run Europe whenever you can; run around and pick off mults otherwise; and have fun. ☐

10 Meters

Tom Frenaye, K1KI

[See my note above at 15 Meters - 'NU]

If your 10m total is bigger than your 160m total you are either lucky or have no 160 meter antenna. If you do nothing else, make sure you work one US station and ask a loud VE1 to QSY to 10 for a sked. With this sunspot level there might or might not be an opening to the Caribbean. South America is a bit more likely. In either case the best bet is from 1700-1900Z. Forget about Europe, West Africa or Australia. Be happy with a KP4 or an LU. You may be the top scorer on 10m with 10 countries! Check for 30 seconds at least once an hour from 1500 to 2000Z. If 15 sounds *really* good, try asking a Caribbean or SA to QSY to 10 meters. ☐

1997-1998 Contest Propagation Predictions

Dean Straw, N6BV

We have finished Cycle 22 and seem to be ramping up Cycle 23, although rather slowly. The daily solar flux numbers have been hovering in the 100 range for several weeks now. I am using an optimistic value of Smoothed Sunspot Number = 40 ("Medium" level) for this season's propagation tables.

The tables list predicted signal strengths in S-units. I have divided the world up into seven geographic areas, as follows:

EU = Europe; zones 14, 15, 16, 20 and 40
FE = Far East; zones 19, 24, 25, 26 and 28
SA = Central/South America/Caribbean;
zones 7, 8, 9, 10, 11, 12 and 13
AF = Africa; zones 33, 34, 35, 36, 37, 38 and 39
AS = Central and South Asia; zones 17, 18, 21, 22 and 23
OC = Oceania; zones 27, 29, 30, 31 and 32
NA = North America; zones 1, 2, 3, 4, 5 and 6.

As usual, the predictions were done using *IONCAP*, and they assume undisturbed geomagnetic conditions. The antennas used at each end of all circuits represent typical good-sized contest stations: 100-foot high dipoles on 80 and 40 meters, a 3-element Yagi at 100 feet on 20 meters, and 4-element Yagis at 60 feet for 15 and 10 meters. The transmitter power at each end of the circuit is assumed to be 1500 W. I am assuming that an S-meter is relatively generous at 4 dB/S-unit. Scale the results for different types of antennas or transmitting power levels according to the following rules of thumb:

- Subtract 2 S units for a dipole instead of a Yagi at the same height
- Subtract 3 S units for a dipole at 50 feet instead of a Yagi at 100 feet
- Subtract 1 S unit for a dipole at 50 feet instead of a dipole at 100 feet
- Subtract 3 S units for 100 W instead of 1500 W
- Subtract 6 S units for 5 W instead of 1500 W

For example, the prediction for the CQWW Phone contest from New England to Oceania on 20 meters at 07 UTC is for S8 signals from a station with 1500 W and a 3-element Yagi at 100 feet. If that station were using 100 W and a dipole at 50 feet, the level would fall to: S8 - S3 (dipole at 50 feet) - S3 (100 W) = S2.

Observations:

Conditions on 10 meters will still not be a lot of fun, although there is a small possibility that Europeans will be available very weakly by direct path. If they're there, however, Europeans will be more likely coming in skew path, with us beaming East towards Africa and them beaming south to Africa. Also watch out for those openings into Oceania late in the afternoon. There will be some nice multipliers there, but the pileups will no doubt be horrendous, just as they will be for the Africans coming through in the morning and afternoon.

15 meters will be very important for multipliers. The European runs should be hot and heavy, better than they have been for the last few years. *IONCAP* predicts that signals will be S9 from 12 to 18 UTC -- six hours for us in the Northeast. If you are running Europeans, you should occasionally ask them to stand by for any

longpath Asian stations that might be in the pileup, especially if you can keep a separate antenna pointed down over South America during the morning runs.

20 meters will be the workhorse band, as usual. Look for Far East stations direct path during the morning European runs, and in the afternoon. Asian signal levels in our morning opening will be moderate (a peak of S7 predicted), but there should be lots of JAs available. In the middle of your 40-meter CW runs, don't forget to catch the 20-meter Southeast Asia opening about 22-23 UTC.

40 meters should be a lot of fun, as usual, on CW anyway. *IONCAP* predicts that signals, albeit very weak, will be available for 23 hours a day on 40 meters. Work your brains out into Europe! Turn your beam to South America to catch long-path Southeast Asians just about our sunset too and don't forget to capture the Oceania stations available in the wee hours before our European runs on 20 meters.

80 meters will be 80 meters. Work all the Europeans you can to get lots of multipliers. The signals from the western Africans will be S9 for much of the evening, while the deep south Africans will only be about S4, about 01-03 UTC. If you're going to get a JA, it will be about 09-10 UTC, but they'll be weak as usual.

Note that the column "NA" (North America) includes all zones in North America. This means that the signals will be very loud on the lower bands, dominated in these computations by signals from Zone 5, of course. On 80 meters you may be able to snag a zone 1 KL7 around 10 UTC, and zone 3 will peak about 09 UTC.

Again, if you are a YCCC member, you can check out predictions for each and every one of the 40 zones for each upcoming contest by e-mailing n6bv@arrl.org or by sending me a diskette with SASE and asking for YCCC9798.ZIP. My home address is Dean Straw, 32 Beacon Hill Road, Windham, NH 03087.

Let's make this the year we whip FRC!! ☐

For YCCC, CQWW Phone, Oct. 1997, for SSN = Medium, Sigs in S-Units. By N6BV, ARRL

UTC	80 Meters							40 Meters							20 Meters							15 Meters							10 Meters							UTC
	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	
0	6	-	9+	9	3	-	9+	9	-	9+	9	7	-	9+	8	6	9+	9	8	7	9+	-	4	9	-	4	5	8	-	-	-	-	-	2	4	0
1	8	-	9+	9	3	-	9+	9	-	9+	9+	7	-	9+	6	5	9+	8	7	8	9+	-	1	6	-	-	3	7	-	-	-	-	-	2	1	
2	8	-	9+	9	3	-	9+	9	-	9+	9+	7	2	9+	5	6	9+	8	8	8	9+	-	-	1	-	-	-	1	-	-	-	-	-	2	2	
3	8	-	9+	9	-	-	9+	9	-	9+	9+	6	5	9+	3	4	9+	9	8	7	9+	-	-	-	-	-	-	-	-	-	-	-	2	3		
4	9	-	9+	9	-	1	9+	9	-	9+	9+	4	6	9+	2	4	9+	9	7	6	9+	-	-	-	2	-	-	-	-	-	-	-	2	4		
5	9+	-	9+	9	-	1	9+	9	-	9+	9+	-	7	9+	1	2	9+	9	4	6	9+	-	-	-	-	-	-	-	-	-	-	-	2	5		
6	9	-	9+	9	-	4	9+	9	1	9+	9+	-	8	9+	-	2	9+	7	2	7	9+	-	-	-	-	-	-	-	-	-	-	-	2	6		
7	9	-	9+	8	-	4	9+	9	4	9+	9	-	8	9+	-	-	9+	1	-	8	9+	-	-	-	-	-	-	-	-	-	-	-	2	7		
8	7	-	9+	6	-	4	9+	8	5	9+	9	1	8	9+	-	-	9	2	-	8	9	-	-	-	-	-	-	-	-	-	-	2	8			
9	3	2	9+	2	-	4	9+	8	5	9+	8	4	8	9+	1	-	8	8	1	6	9	-	-	-	-	-	-	-	-	-	-	2	9			
10	1	2	9+	-	-	4	9+	6	6	9+	5	3	8	9+	9	-	9+	9	5	1	8	-	-	-	6	-	-	-	-	-	-	2	10			
11	-	-	9	-	-	4	9+	5	6	9+	1	2	7	9+	9	6	9+	9	7	2	9	5	-	8	9	5	-	-	-	-	3	-	2	11		
12	-	-	4	-	-	2	9+	3	4	9	-	2	7	9+	9	6	9+	9	8	8	9+	9	-	9+	9	8	-	4	-	-	8	7	2	-	2	12
13	-	-	-	-	-	-	9+	1	3	7	-	1	4	9+	9	7	9+	8	9	9	9+	9	6	9+	9	8	3	7	2	-	9	8	6	-	3	13
14	-	-	-	-	-	-	9	1	-	3	-	-	2	9+	9	6	9+	8	6	8	9+	9	6	9+	8	8	7	9+	3	2	9+	8	6	1	8	14
15	-	-	-	-	-	-	8	-	-	1	-	-	-	9+	8	5	9	8	5	6	9+	9	6	9+	9	8	5	9+	2	-	9	8	5	-	9	15
16	-	-	-	-	-	-	8	1	-	1	-	-	-	9+	9	4	9	8	6	7	9+	9	6	9+	9	8	8	9+	2	-	9	8	1	-	9	16
17	-	-	-	-	-	-	7	1	-	-	-	-	-	9+	9	4	8	9	8	5	9+	9	5	9+	9	5	8	9+	1	-	9	9	-	-	9	17
18	-	-	-	-	-	-	8	3	-	2	2	-	-	9+	9	6	9	9	8	6	9+	9	6	9+	9	5	8	9+	-	-	9	9	-	5	9	18
19	-	-	-	-	-	-	9	5	-	5	5	1	-	9+	9	6	9+	9+	8	6	9+	7	7	9+	9+	2	8	9+	-	4	9+	9	-	6	9	19
20	1	-	1	1	-	-	9+	7	-	8	7	4	-	9+	9	7	9+	9+	8	6	9+	1	3	9+	9	1	8	9+	-	-	9+	7	-	6	8	20
21	2	-	5	4	-	-	9+	8	1	9	9	5	-	9+	9	7	9+	9+	8	8	9+	-	6	9+	9	-	7	9+	-	-	9	3	-	6	8	21
22	4	-	9	7	-	-	9+	8	1	9+	9	6	-	9+	8	7	9+	9+	8	7	9+	1	8	9+	8	-	8	9+	-	-	9	1	-	5	1	22
23	5	-	9+	8	2	-	9+	9	1	9+	9	6	-	9+	8	7	9+	9+	9	6	9+	-	6	9+	5	2	7	9	-	-	7	-	-	2	8	23

For YCCC, CQWW CW, Nov. 1997, for SSN = Medium, Sigs in S-Units. By N6BV, ARRL

UTC	80 Meters							40 Meters							20 Meters							15 Meters							10 Meters							UTC
	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	
0	8	-	9+	9	3	-	9+	9	1	9+	9	7	-	9+	5	7	9+	9	8	7	9+	-	1	6	-	1	5	8	-	-	-	-	-	2	0	
1	8	-	9+	9	3	-	9+	9	-	9+	9	7	1	9+	3	6	9+	8	7	8	9+	-	-	4	-	-	1	5	-	-	-	-	-	2	1	
2	8	-	9+	9	4	-	9+	9	-	9+	9	7	3	9+	2	4	9+	5	5	6	9	-	-	1	-	-	-	1	-	-	-	-	-	2	2	
3	8	-	9+	9	2	-	9+	9	-	9+	9	6	5	9+	1	2	9+	7	6	5	9+	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
4	9	-	9+	9	-	1	9+	9	-	9+	9+	5	6	9+	2	2	9+	9	6	3	9	-	-	-	-	-	-	-	-	-	-	-	-	2	4	
5	9	-	9+	9	-	2	9+	9	-	9+	9+	4	7	9+	2	2	9+	9	4	5	9	-	-	-	-	-	-	-	-	-	-	-	-	2	5	
6	9	-	9+	9	-	3	9+	9	2	9+	9+	1	7	9+	-	4	9+	7	2	4	9	-	-	-	-	-	-	-	-	-	-	-	-	2	6	
7	9	-	9+	9	-	4	9+	9	4	9+	9	1	8	9+	-	3	9+	1	-	8	9+	-	-	-	-	-	-	-	-	-	-	-	-	2	7	
8	8	1	9+	8	-	4	9+	8	5	9+	9	4	8	9+	-	2	9	1	-	8	9	-	-	-	-	-	-	-	-	-	-	-	-	2	8	
9	5	2	9+	4	-	4	9+	8	6	9+	8	5	8	9+	-	-	9	7	-	8	9	-	-	-	-	-	-	-	-	-	-	-	-	2	9	
10	2	3	9+	1	-	4	9+	7	7	9+	7	5	8	9+	6	-	9+	9	5	4	8	-	-	-	4	-	-	-	-	-	-	-	-	2	10	
11	1	2	9	-	1	5	9+	5	7	9+	3	4	8	9+	9	2	9+	9	6	-	8	1	-	5	8	2	-	1	-	-	-	1	-	2	11	
12	-	-	6	-	-	4	9+	4	6	9	-	4	8	9+	9	7	9+	9	8	6	9	9	-	9+	9	8	-	1	-	-	7	6	1	-	2	12
13	-	-	-	-	-	1	9+	3	4	8	-	3	6	9+	9	7	9+	8	8	9	9+	9	5	9+	9	8	1	5	4	-	9+	8	6	-	2	13
14	-	-	-	-	-	-	9+	2	2	4	-	-	4	9+	9	6	9+	8	7	8	9+	9	6	9+	9	8	8	9+	6	-	9+	8	4	1	8	14
15	-	-	-	-	-	-	9	1	-	2	-	-	1	9+	9	6	9	8	6	6	9+	9	6	9+	9	8	7	9+	5	-	9+	8	-	1	5	15
16	-	-	-	-	-	-	8	1	-	1	-	-	-	9+	9	5	9	9	7	7	9+	9	6	9+	9	2	7	9+	1	4	9+	9	-	1	7	16
17	-	-	-	-	-	-	8	2	-	1	1	-	-	9+	9	5	9	9	7	6	9+	9	6	9+	9	-	8	9+	-	2	9+	9	-	1	8	17
18	-	-	-	-	-	-	9	5	-	3	4	1	-	9+	9	6	9	9+	6	6	9+	5	5	9+	9	-	8	9+	-	1	9+	8	-	8	8	18
19	1	-	-	-	-	-	9	6	-	6	6	3	-	9+	9	4	9+	9+	7	6	9+	-	5	9+	9	-	8	9+	-	-	9+	6	-	8	8	19
20	2	-	2	2	-	-	9+	8	-	9	8	4	-	9+	9	7	9+	9+	7	8	9+	-	-	9+	9	-	8	9+	-	-	9+	3	-	8	7	20
21	5	-	7	6	-	-	9+	8	2	9	9	5	1	9+	9	8	9+	9+	7	8	9+	-	4	9+	9	-	8	9+	-	-	9+	-	-	7	5	21
22	6	-	9	8	2	-	9+	9	2	9+	9	6	1	9+	8	8	9+	9+	8	7	9+	-	8	9+	7	-	8	9+	-	-	7	-	-	5	9	22
23	8	-	9+	9	3	-	9+	9	1	9+	9	6	-	9+	7	8	9+	9	8	6	9+	-	5	9	1	-	7	8	-	-	2	-	-	1	4	23

For YCCC, ARRL CW, Feb. 1998, for SSN = Medium, Sigs in S-Units. By N6BV, ARRL

UTC	80 Meters							40 Meters							20 Meters							15 Meters							10 Meters							UTC
	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	
0	8	-	9+	9	4	-	9+	9	1	9+	9+	7	-	9+	4	7	9+	9	8	7	9+	-	4	9	-	1	7	9	-	-	1	-	-	2	4	0
1	8	-	9+	9	3	-	9+	9	-	9+	9+	7	-	9+	4	6	9+	8	6	8	9+	-	-	5	-	-	4	8	-	-	-	-	-	2	1	
2	8	-	9+	9	3	-	9+	9	-	9+	9+	7	2	9+	1	5	9+	6	5	8	9+	-	-	1	-	-	1	2	-	-	-	-	-	2	2	
3	8	-	9+	9	-	-	9+	9	-	9+	9+	6	5	9+	1	4	9+	8	4	7	9+	-	-	-	-	-	-	-	-	-	-	-	2	3		
4	9	-	9+	9	-	1	9+	9	-	9+	9+	5	6	9+	-	2	9+	8	5	5	9+	-	-	-	-	-	-	-	-	-	-	-	2	4		
5	9+	-	9+	9	-	1	9+	9	-	9+	9+	3	7	9+	-	1	9+	7	2	5	9	-	-	-	-	-	-	-	-	-	-	-	2	5		
6	9	-	9+	9+	-	3	9+	8	-	9+	9	1	7	9+	-	2	9+	5	2	6	9	-	-	1	-	-	-	-	-	-	-	-	2	6		
7	9	-	9+	9	-	4	9+	9	3	9+	9	1	8	9+	-	1	9+	-	-	7	9	-	-	1	-	-	-	-	-	-	-	-	2	7		
8	8	-	9+	8	-	4	9+	8	4	9+	9	3	8	9+	-	1	9+	-	-	8	9	-	-	1	-	-	-	1	-	-	-	-	2	8		
9	5	2	9+	4	-	4	9+	8	5	9+	8	4	8	9+	-	-	9	2	-	8	9+	-	-	-	-	-	-	-	-	-	-	2	9			
10	2	3	9+	1	-	4	9+	7	6	9+	7	4	8	9+	3	-	9	9	1	5	9	-	-	-	-	-	-	-	-	-	-	2	10			
11	1	3	9	-	-	5	9+	5	7	9+	3	7	8	9+	9	-	9+	9	5	-	8	-	-	-	7	-	-	-	-	-	-	2	11			
12	-	-	6	-	-	4	9+	4	5	9	-	2	8	9+	9	6	9+	9	8	1	9	6	-	9+	9	4	-	1	-	-	-	2	-	2	12	
13	-	-	-	-	-	-	9+	3	4	7	-	2	5	9+	9	8	9+	8	8	9	9+	9	-	9+	9	8	-	7	-	-	9	6	1	-	2	13
14	-	-	-	-	-	-	9+	2	-	4	-	-	4	9+	9	5	9+	6	7	8	9+	9	4	9+	8	8	5	7	1	-	9+	7	2	-	5	14
15	-	-	-	-	-	-	9	1	-	1	-	-	1	9+	9	6	9	7	6	6	9+	9	6	9+	9	8	5	9+	1	-	9	7	2	-	8	15
16	-	-	-	-	-	-	8	1	-	-	-	-	-	9+	9	5	9	9	6	6	9+	9	8	9+	9	8	8	9+	-	-	9	7	-	-	9	16
17	-	-	-	-	-	-	8	1	-	1	1	-	-	9+	9	5	9	9	7	6	9+	9	7	9+	9	-	6	9+	-	3	9+	8	-	-	9	17
18	-	-	-	-	-	-	8	3	-	2	2	-	-	9+	9	6	9	9	8	5	9+	7	6	9+	9+	1	8	9+	-	1	9+	8	-	4	9	18
19	-	-	-	-	-	-	9	5	-	4	5	1	-	9+	9	6	9+	9+	7	6	9+	-	5	9+	9	-	8	9+	-	-	9+	6	-	6	9	19
20	1	-	-	1	-	-	9+	7	-	8	8	4	-	9+	9+	6	9+	9+	7	6	9+	-	1	9+	9	-	8	9+	-	-	9	1	-	6	9	20
21	4	-	5	5	-	-	9+	8	1	9	9	5	-	9+	8	8	9+	9+	7	8	9+	-	-	9+	9+	-	8	9+	-	-	9	-	-	5	9	21
22	6	-	9	7	-	-	9+	9	2	9+	9	6	1	9+	6	8	9+	9+	8	5	9+	-	6	9+	8	-	8	9+	-	-	9	-	-	4	9	22
23	7	-	9+	8	3	-	9+	9	2	9+	9	7	-	9+	4	8	9+	9+	8	7	9+	-	5	9+	4	-	8	9+	-	-	6	-	-	1	7	23

For YCCC, ARRL Phone, March 1998, for SSN = Medium, Sigs in S-Units. By N6BV, ARRL

UTC	80 Meters							40 Meters							20 Meters							15 Meters							10 Meters							UTC
	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	
0	7	-	9+	9	3	-	9+	9	-	9+	9+	6	-	9+	6	6	9+	9+	8	6	9+	-	3	9+	5	3	6	9	-	-	7	-	-	2	7	0
1	8	-	9+	9	3	-	9+	9	-	9+	9+	7	-	9+	5	5	9+	9	8	8	9+	-	1	9	1	-	6	7	-	-	2	-	-	2	1	
2	9	-	9+	9	4	-	9+	9	-	9+	9+	7	1	9+	3	5	9+	9	7	8	9+	-	-	6	-	-	3	7	-	-	-	-	2	2		
3	9	-	9+	9	-	-	9+	9	-	9+	9+	6	4	9+	2	4	9+	9	5	8	9	-	-	1	-	-	1	-	-	-	-	2	3			
4	9	-	9+	9	-	-	9+	9	-	9+	9+	5	5	9+	-	4	9+	9	6	7	9	-	-	1	-	-	-	-	-	-	-	2	4			
5	9+	-	9+	9	-	1	9+	9	-	9+	9+	1	6	9+	-	2	9+	9	2	7	9	-	-	1	1	-	-	-	-	-	-	2	5			
6	9	-	9+	9	-	4	9+	9	-	9+	9+	1	7	9+	-	1	9+	8	2	7	9	-	-	1	-	-	-	-	-	-	-	2	6			
7	8	-	9+	8	-	4	9+	9	2	9+	9	1	8	9+	-	-	9+	2	-	7	9	-	-	1	-	-	-	-	-	-	-	2	7			
8	7	-	9+	6	-	4	9+	8	4	9+	9	1	8	9+	-	-	9+	2	-	8	9	-	-	-	-	-	-	-	-	-	2	8				
9	3	2	9+	3	-	4	9+	8	5	9+	8	3	8	9+	-	-	9	7	-	7	9	-	-	-	-	-	-	-	-	-	2	9				
10	1	2	9+	-	-	4	9+	6	6	9+	5	3	8	9+	6	-	9	9	4	4	8	-	-	-	3	-	-	-	-	-	2	10				
11	-	-	9	-	-	4	9+	4	5	9+	2	2	7	9+	9	2	9+	9	7	4	9	-	-	3	8	-	-	-	-	-	2	11				
12	-	-	4	-	-	2	9+	3	4	9	-	2	6	9+	9	6	9+	9	8	8	9	5	-	9+	8	4	-	1	-	-	2	3	-	2	12	
13	-	-	-	-	-	-	9+	2	3	7	-	-	4	9+	9	8	9+	8	8	9	9+	6	1	9+	9	8	1	9	-	-	9	4	-	2	13	
14	-	-	-	-	-	-	9	1	-	2	-	-	2	9+	8	7	9	8	7	7	9+	6	3	9+	9	8	5	8	-	-	9	5	-	5	14	
15	-	-	-	-	-	-	8	-	-	1	-	-	-	9+	7	5	9	8	6	6	9+	7	3	9+	9	8	4	9	-	-	9	5	-	8	15	
16	-	-	-	-	-	-	7	-	-	-	-	-	-	9+	8	4	8	8	6	6	9+	7	3	9+	9	8	4	9+	-	1	9	5	-	8	16	
17	-	-	-	-	-	-	6	1	-	-	-	-	-	9+	8	4	8	8	6	5	9+	7	4	9+	9	8	5	9	-	-	9+	6	-	9	17	
18	-	-	-	-	-	-	8	1	-	-	-	-	-	9+	9	5	8	9	8	5	9+	7	5	9+	9	6	7	9	-	-	9+	8	-	4	9	18
19	-	-	-	-	-	-	8	4	-	3	5	-	-	9+	9	6	9	9	8	5	9+	7	6	9+	9	3	6	9	-	-	9+	7	-	5	9	19
20	1	-	-	-	-	-	9	6	-	8	6	1	-	9+	9	7	9+	9+	8	5	9+	3	3	9+	9	1	7	9+	-	-	9+	6	-	4	9	20
21	2	-	2	2	-	-	9+	8	-	9	8	4	-	9+	9	6	9+	9+	8	5	9+	-	2	9+	9	-	7	9+	-	-	9	3	-	2	9	21
22	4	-	8	6	-	-	9+	8	1	9+	9	5	-	9+	8	6	9+	9+	8	6	9+	-	6	9+	9	-	6	9+	-	-	9	3	-	2	9	22
23	6	-	9	8	2	-	9+	8	1	9+	9	6	-	9+	7	7	9+	9+	8	6	9+	-	6	9+	8	1	6	9	-	-	8	-	-	2	8	23