Yankee Clipper Contest Club

Scuttlebutt

No. 54 November 1984

Captain's Cabin

Tom Frenaye, K1KI

Just when you thought it was safe to go back in the water, it's happened again. Yes, CQWW II (CW) will be in your neighborhood this month, and you can't ignore it!

From what has been revealed from CQWW I (SSB), no club has a runaway victory in sight -- not even Reagan can influence the outcome of the YCCC-FRC-NCCC battle(s). We still have a good shot at the number 1 position if at least as many people contribute on CW as they did on SSB.

You may find it hard to believe but the following is an unsolicited excerpt from a letter recently received...

"I wasn't going to get on at all for CQWW phone. When I got my copy of the 'Butt, I realized that if I was going to be part of the club I should at least devote some time to an effort. After looking over the different strategies, I decided that I could find between 5 and 15 hours to operate the contest. I ended up putting in 10.5 hours and having a blast. Conditions were superb, and the rates were outstanding."

The letter-writer will remain anonymous (it is a real letter) but it does point out exactly what you should think about for the CW weekend. Put in whatever time you can, whether it is 6 hours or 36 hours, and make some points for the YCCC. The 10.5 hour effort, by the way, made more than 500K points for the club! An effort was made on each band from 160 to 10 meters (to get at least the W and VE multipliers), but the bulk (75%) of the time and QSOs were on 15 and 20 meters. Do what you can: see you at the December meeting!

December YCCC Meeting

The next meeting of the Yankee Clipper Contest Club will be on December 1, 1984, at the Quality Inn, formerly the Roadway Inn, in Springfield Mass. Phone number 413 592-7751. The meeting starts at 1:00 PM.

Directions

Take exit 6 on the Mass Pike. You can't miss it.

See you there!!

Clipper's Log

CQ WW CW

KQ1F (+ K1XM)	787	99	249	681K
W1IHN	588	68	178	426K
K1OX		(30 Hours)		1.5M
K1TR	489	62	150	291.5K
AA2Z/1	764	69	171	523K
K2XA	1567	114	325	1.98M
W2RQ				1.8M
N6BT				1.6M
W0ZV				1.7M

K2VV

160:	34	11	19	
80:	87	15	42	
40:	86	21	49	
20:	1043	32	99	
15:	589	25	95	
10:	57	12	23	
TOTAL:	1896	116	327	= 2.42M

K1AR

160:	29	9	14	
80:	83	18	48	
40:	78	24	51	
20:	834	32	109	
15:	815	27	114	
10:	63	14	29	
TOTAL:	1902	124	365	= 2.68M

VP2VCW (m/m):

160:	960	19	52	
75:	1390	25	91	
40:	2780	28	97	
20:	3850	33	108	
15:	3500	26	90	
10:	1445	19	36	
TOTAL:	13425	150	474	= 18M

PJ2FR (s/o N6KT):

160:	93	7	11	
75:	525	22	55	
40:	1070	27	77	
20:	913	29	75	
15:	1835	27	80	
10:	1501	20	51	
TOTAL:	5737	132	350	= 8.4M

P44A (s/o K1KI):

160:	47	5	12	
75:	607	19	51	
40:	1257	31	84	
20:	948	28	80	
15:	1976	24	90	
10:	730	21	53	
TOTAL:	5565	128	370	= 8.1M

YV5TK (s/o N1GL/4):

160:	20	8	10	
75:	538	22	59	
40:	835	27	68	
20:	732	30	83	
15:	1627	28	84	
10:	603	21	55	
TOTAL:	4355	136	359	= 6.3M

Sweepstakes Rumors

W2RQ 1053/74
K1EA 1123/74
K1XM 669/70
K1AR + K1DG 750/74
K1IU 648/67

Floating

Paul Young, K1XM

I hope you had more fun in the CQ WW phone than I did. The storm broke just in time, and conditions were fantastic! Too bad it was a phone contest. I hope that CW conditions will be that good.

I would like to thank all the people who contributed to the Contest Cookbook, especially Bill, K1GQ, who made up the new dupe and multiplier checkoff sheets. Like all good things, the dupe sheet is undergoing some more work, and there may be an even better one in this issue.

Just a reminder - If you don't pay your dues before it's time to send in the CQ elegibility list, (December 1 deadline!) your score will not count for YCCC. It would be foolish to lose the club competition because someone forgot such a minor thing! And, after you operate a contest, please make sure I hear about your score, so I can put it in the Butt.

Granite Guy Anchors

Bill Myers, K1GQ

Many of us in YCCC territory live in areas dominated by rocks and ledge outcrops. I've yet to dig a hole without hitting an object as large as my dog house, and more often as large as my car. Since I couldn't get them out of the way to build a conventional concrete guy anchor, I decided to try anchoring directly to granite.

The method I used evolved from one I first saw in a commercial installation on a bare hilltop not too far from here. Simply put, I drill a hole in the rock and cement in an eyebolt. The jaw end of an eye-and-jaw turnbuckle attaches directly to the eyebolt, with the other end connected to the guy wire in the usual manner.

Of course, it isn't quite as easily done as described. For example, you don't use ordinary tools to make holes in granite. I learned the hard way, by melting my father's half-inch hand drill! When I explained my problem to the people at Taylor Rental, they taught me how to use a rotary hammer, and gave me a sharp 3/4 inch carbide tipped bit. The rotary hammer is an oversized slow-speed electric drill which automatically pounds on the end of the drill bit as it rotates. The secret is NOT to bear down on the drill, but to let the hammering action do the work. All you need to do is hold the drill in position so the bit doesn't bind in the hole; trying to hurry is what makes the dull bits which the rental place hands out to untutored customers (who make them duller).

I drill a separate anchor hole for each guy wire, in different large boulders or ledge outcroppings whenever possible. For three guy levels, this adds up to nine holes, which takes me about two hours. Since I normally rent the tool late Saturday for Monday return (about $25), I've got all day Sunday to do the job, leaving plenty of time for unanticipated problems.

The holes are drilled at an angle, not straight up-and-down. The angle is set so the drill bit shaft is approximately perpendicular to the guy wire. With this tilt, all of the force in the guy is converted to a shear force on the eyebolt: there is no component along the axis of the eyebolt shaft which would tend to pull the eyebolt out of the hole. Thus, I DO need very strong eyebolts, and I DON'T need a secure means for cementing the bolt into the hole. In fact, once the guy is attached I can't pull the eyebolt out, even with a slack guy and no cement (I tried).

The eyebolts have 2 inch long shafts with an outside diameter of 3/4 inch, which is why the hole is 3/4 inches. This is the largest size that will accept the jaw of the Rohn 1/2 inch eye-and-jaw turnbuckle which attaches to the eye. The eyebolts are drop forged, not the formed type found at the corner hardware. They are typically used as attachment points for lifting heavy machinery and so forth. I get mine (which say "Vulcan EB-28") at an industrial supply outlet (Hammer, in Nashua), for about $6 each. Unless you are lucky, they won't be galvanized. I let mine rust for a year or so then coat them with a chemical protective layer. Spray-on galvanizing works too, if you clean the eyebolt thoroughly first.

I don't believe that using a shaft longer than 2 inches is necessary; however, I've not checked my intuition mathematically. If this point makes you nervous, you may want to consult a qualified mechanical engineer.

There are three things to be careful about. Beware of rocks which aren't as large as they look. Rather than digging up a partially buried hunk of granite to see how big it is, try standing on it and clobbering it with a heavy sledge hammer. If you feel some vibration, or you can't get both feet on it, look for another anchor. Second, look for fresh granite. Exposure to the elements for several hundred years breaks down the surface of granite to the point where it falls apart when you beat on it or drill through it. Also, be sure you are dealing with granite and not some sort of soft rock -- if you can't tell the difference, find a Boy Scout who can.

Finally, the eyebolt should be cemented into the hole. This is necessary to keep water out, not to keep the eyebolt in. If water gets into the hole and freezes, the granite may break apart right at your anchor point! Use hydraulic cement, which expands slightly when it sets, rather than contracting like ordinary cements. Hydraulic cement is the kind used to patch leaky basement walls and is sold in hardware stores in powder form. Mix it with water, fill about 1/4 of the hole (after removing all debris) with the mixture, and screw in the eyebolt. Don't dally -- the cement will set in one to three minutes and if you don't get the eyebolt all the way in you'll have a hell of a time trying to remove it to try again!

I've now got over 20 anchors set this way, and I'll do my next tower the same way. Using separate anchors for each guy isn't really necessary, but it only costs me a little extra time to drill a few more holes, plus $6 for each eyebolt. I like knowing that even if an anchor fails, the tower will probably stay up, since only one guy is loose instead of all of them.

The SS -- Where Is It Headed?

John Hawkins, K5NW
(reprinted from North Texas Contest Club Newsletter)
and Tom Frenaye, K1KI

A couple of years back we took a look at the SS from a W5's point of view and saw how the 5s had stacked up against the pack over the years. This time let us look at scores in general and see if we can deduce just where the SS is heading.

I have long assumed that there must surely be some correlation between sunspots and contest scores. But, while conducting research for another rag that I write for, I was quite surprised to see that the top Radiosport scores over the last five years showed no tendency to decline. So, I thought it might be interesting to see how SS scores compare to the sunspot numbers in the current cycle. Figure 1 shows a plot of the current cycle's smoothed sunspot number. Data prior to the first of this year is actual, and late data is my own prediction.

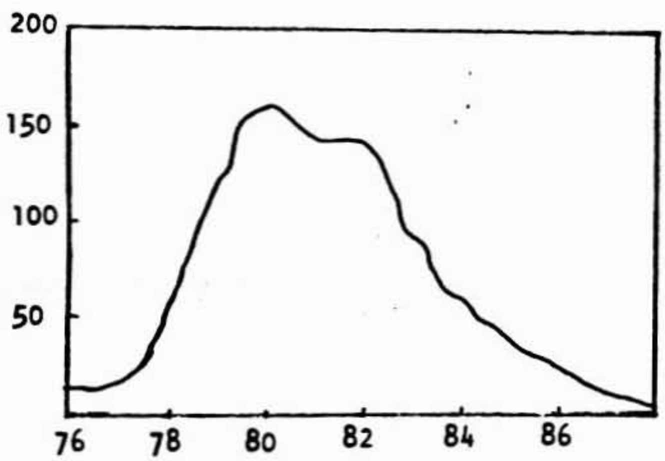


Figure 1: Current Sunspot Cycle

Figure 2 shows the numbers one and ten phone SS scores since 1976 (the vertical axis is in K-points). The trend of the number 1 curve appears to follow the general shape of the sunspot curve except for an apparent perturbation by either the 1980 or the 1982 score.

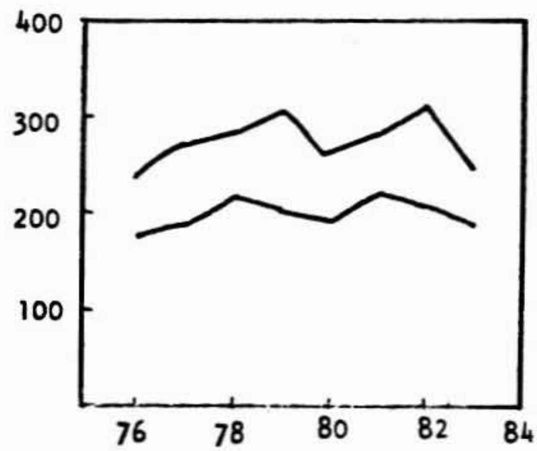


Figure 2: No. 1 and No. 10 Phone SS Scores

As you will see, I believe that the 1982 score is the one that departs from the expected value. The No. 10 curve appears to follow the sunspot curve fairly closely also but with a slight perturbation in 1981. Both curves increase toward the peak years and then begin to decline. However, the percentage change in scores is strikingly small compared to the percentage change in sunspot number.

Figure 3 shows similar data for SS CW scores. These curves appear to show very little variation over the time period and are remarkably close together compared to the phone scores. This leads me to the following conclusion: the contact total on CW has essentially topped out. The top notch CW operators are now limited simply by the amount of time it takes to make the average QSO.

This is further confirmed by the narrow margin between the numbers one and ten stations. No matter how good or poor the conditions, the best that can be done on CW is about 1200 QSOs or one every 1.2 minutes.

On the other hand, the phone scores show a slight tendency to vary with conditions. This indicates that the maximum QSO rate on phone may not have been reached yet. Scores are still being influenced by the operator's individual ability to milk QSOs out of the band. However, the small magnitude of the change in score with conditions implies that the maximum is not far away. Randy may have approached very close to the maximum rate in 1982. His QSO total appears to be about 325 above the expected value.

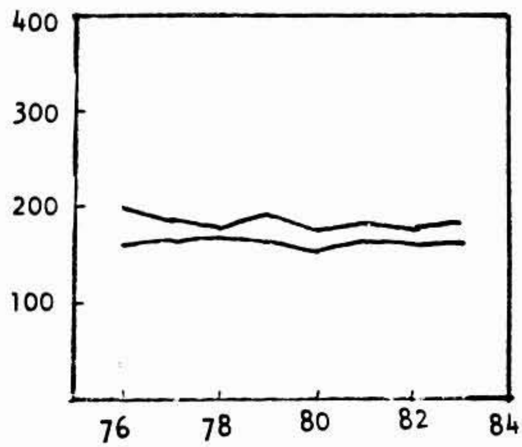


Figure 3. No. 1 and No. 10 CW SS Scores

What about local operators? Figure 4 shows the top North Texas scores for the phone and CW SS over the period of interest.

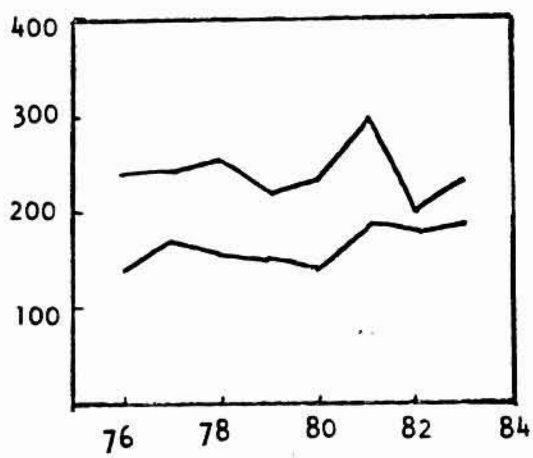


Figure 4. North Texas Phone and CW SS Scores

Both curves vary widely, partly due to Randy's outstanding performance at N5AU in recent years but possibly more significant, both curves dip at the sunspot maximum. This could be due to the fact that at peak conditions, the coasts often work each other with far greater ease then we can work either of them. I'm sure that the data base from North Texas alone is far more subject to perturbation than the nation-wide data due to the small number of individual operators, so I doubt that we can draw any conclusions from it.

As for where the SS is headed? I believe that phone scores still have small growth potential but probably not until the next sunspot maximum. Code scores appear to have just about topped out. Something will have to come along that will allow the top CW operators access to more stations in the late hours of the contest for code scores to show further increase. Maybe it just takes more participants but I think it will take some kind of technological breakthrough. Maybe we should just buy electronic code readers for the masses...

Figure 5, provided by K1KI, shows the top ARRL Sweepstakes single operator scores from W1/W2. The projection for 1984 is 190K on SSB with 1285 QSOs and a sweep, and on CW, Tom projects 150K with 1015 QSOs and a sweep.

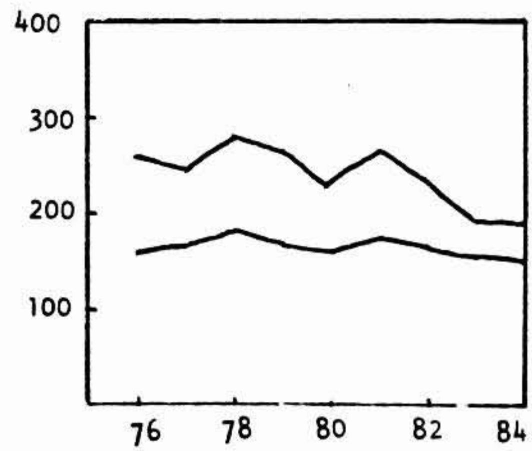


Figure 5. SS single-op scores from W1/W2

Observations on a Kenwood TS930S

Carl Huether, KM1H

Recently, Jim Idelson, K1IR, was kind enough to let me borrow his TS 930S with the intent that I give it a close look.

LAB TESTS

The spectrum analyzer utilized was an HP3585A. The signal generator used for the synthesizer comparisons was an HP 8640B. The first test was to see what the synthesizer noise looked like. Equipment reports in the glossy ham magazines have a tendency to overlook many of the finer points, particularly if the manufacturer does not specify certain parameters.

Photograph 1A is a close in (1kHz/Div) view of the 930 with 1B showing the HP for comparison. (The remaining photographs also show the HP for comparison purposes). Note the two very distinct signals approximately 2.8 kHz either side of the peak. These signals are 63 dB down from the peak. This sounds like a lot of rejection until one considers real world operating conditions.

Consider the 30 to 40 dB over S9 signal from a station 2.8 kHz away while you're trying to dig out that new S3 to S5 multiplier. In photograph 2A, noise sidebands extending over 10 kHz either side of center are 20 dB worse than the synthesizer in the HP. Granted, the HP costs a hell of a lot more than the 930, but it is no big deal to build a clean synthesizer. Frankly, for me it is a pleasure to come across a non-synthesized Drake or Collins S Line.

We decided to run some tests that were not specified in the 930 literature. In addition, we ran the standard tests a bit differently than the manufacturer's methods. All tests were run on 20 meters. The signal generators were HP 8640B's, phase locked together when applicable.

S meter calibration:
Freq: 20 meters
Mode: SSB

Meter Reading:	Input signal:
60 over 9	-25 dBm
50 over 9	-34 dBm
40 over 9	-43 dBm
30 over 9	-52 dBm
20 over 9	-59 dBm
10 over 9	-67 dBm
S9	-77 dBm
S8	-82 dBm
S7	-86 dBm
S6	-89 dBm
S5	-92 dBm
S1	-104 dBm

The S meter readings will likely vary from unit to unit. The levels recorded are for reference only.

The noise floor in the narrow CW mode was -140 dBm, which met published specs.

Simulating two 55 over 9 signals (-30 dBm), one at 14020 and the other at 14030, the third order products in the SSB mode were down 50 dB. With the same level signals at 5 kHz spacing, the receiver completely folded up with motorboating making any measurement impossible. This was really an extreme case, but that is life during contests and in pileups.

Reducing the level of the signals to -63 dBm put the third order products at the noise floor. This equates to a spur-free dynamic range of 77 dB.

The next test was to see how the receiver held up in desensitization. In the narrowed CW position, placing a 30 over 9 signal (-52 dBm) 2 kHz away, the minimum detectable signal was -106 dBm. This is a loss in "available" sensitivity of 34 dB! The signal generator output had to be reduced to 10 over 9 (-67 dBm), before signals at the noise floor became detectable. This is a 15 dB signal reduction for a 34 dB performance improvement.

ANALYSIS

Now comes the hard part. What does it all mean and who is affected? I do not feel completely qualified to answer that. I had been away from ham radio for 13 years prior to relicensing 22 months ago; technology and expectations have changed. In "the old days," I regularly broke a million points in DX contests with what today are considered boat anchors: Central Electronics 100V, Collins 75A4, and National NCL 2000. Could I repeat that today with the latest and greatest? I have no idea. The following paragraphs are more my own interpretations of the issues: others may see it from a different perspective.

Operation at the noise floor is not important on 160 thru 40 meters. It becomes questionable at 20, possible at 15 and important at 10 meters. The crud level on the bands during contests usually precludes any weak signal work.

What will be required from rigs over the next few years? The sunspot cycle is going down. Pretty soon those signals on 10, 15 and even 20 will be WEAK. You will need every dB of performance from your total system. Now what happens with that 30 over 9 fellow contester across town? If you want my opinion, the 930 is so easy to use that it will continue to be the contester's standard of comparison, but it would sure be a good idea to have a properly modified R4C slaved to it.

Unfortunately, there were no contests on during the week that I had the rig, but I did try to give the receiver a good workout. For comparison purposes, the antenna was fed into a splitter and the outputs went to the 930, an R4C with Drake 250 and 500 Hz filters, as well as a Sherwood 600 Hz first IF filter, and a highly modified 75A4 with beam deflection mixers, cascaded filters with 200 and 800 Hz capability, etc. On SSB, the 930 used the stock Kenwood filters, the R4C used the stock SSB and 1.5 kHz filters, and the Collins used cascaded 2.1 kHz mechanical filters. Audio outputs were fed to a homebrew switching and mixing box, there out to headphones.

As expected, the 930 was a joy to operate and to jump around the bands. It did not have the ability to get down to the few really weak signals that were on 10. The Drake was not much better on this band, but the 75A4 really performed, due primarily to the low noise front end that I installed. On 15, all units worked really well for weak signal work but there were no strong signals on the band. On 20 thru 160, the 930 worked great most of the time. It did fall down a few times with strong signals and the attenuator sometimes helped. At other times the attenuator wiped out the desired weak signal as well!

The one place the 930 fell apart was that zoo on the low end of 75. When all those idiots started screaming, in two or more pileups separated by only 3 or 4 kHz, I could copy nothing but the strongest stations for at least 10 kHz on either side. The Drake stood up remarkably well, and with the 75A4 I had trouble only with those select few stations that never learned how to set mike gain and compression levels.

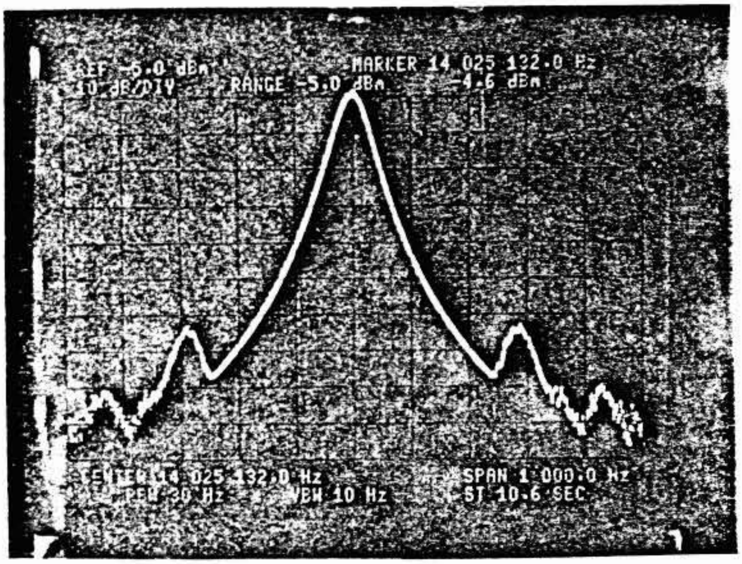
The 73 dB dynamic range in the narrow CW position could definitely use some improvement. The 50 kHz spacings that Kenwood uses for their tests are totally for the birds. In my view, the maximum spacing for any meaningful data should be 10 kHz on SSB and 2 kHz on CW. Cascaded filters are almost a must. Unfortunately, noise sidebands on many signal generators will not permit this type of test.

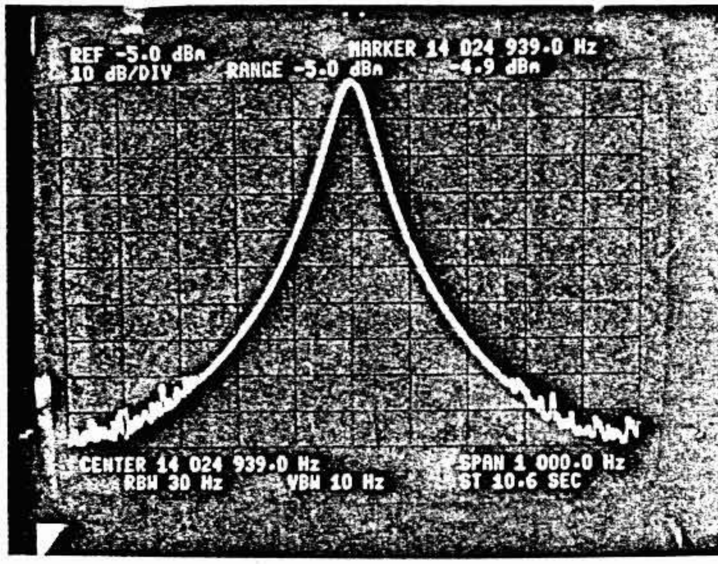
Remember, your 930 is creating the same problems to others that they cause to you. One redeeming point, is that many other synthesized rigs are a lot worse. Higher price does not necessarily mean better performance.

I wish to thank Wang Laboratories, Inc. for the use of their excellent RF lab: Gary Madison, WA2NKL, for running all that fancy Hewlett Packard hardware; and Fred Hopengarten, K1VR, for planting the idea and reviewing the manuscript.

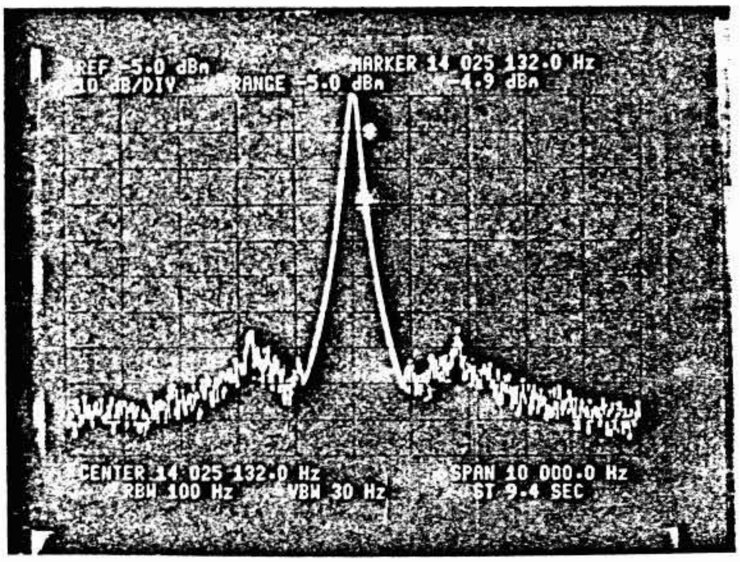
TS 930

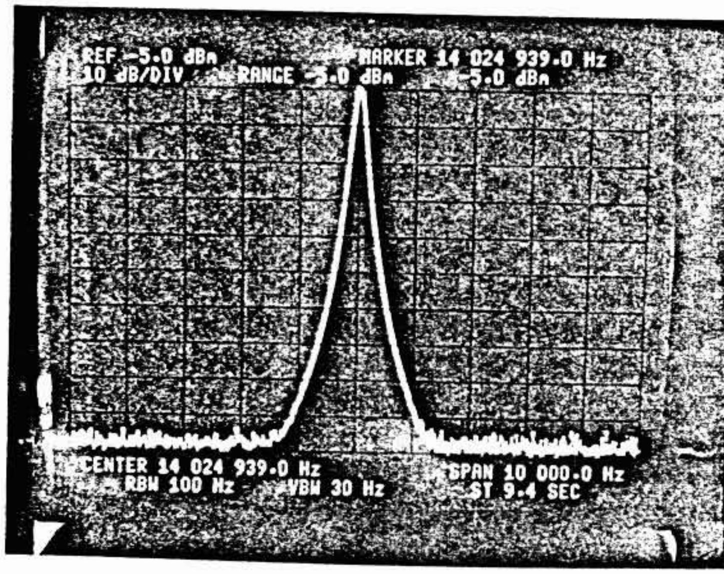
HP 3585A stand alone
(what a good unit should look like)



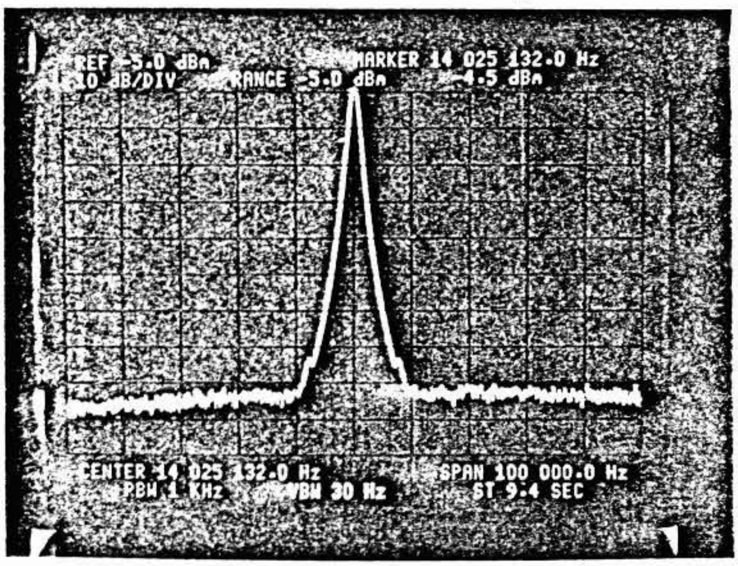


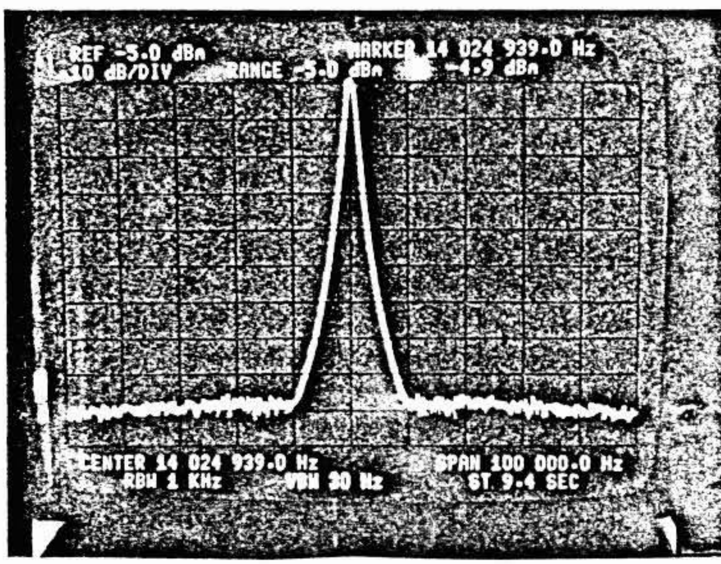
Interpretation: Two pronounced spurs 2.8 kHz either side of the center frequency down 63 dB from peak. This means that a 40 over 9 signal on 80 or 160 will have an S5 spur masking that weak DX.



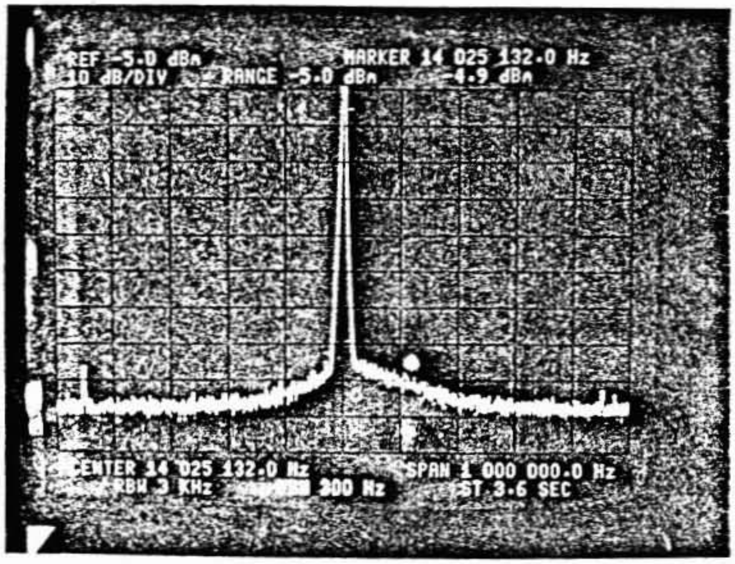


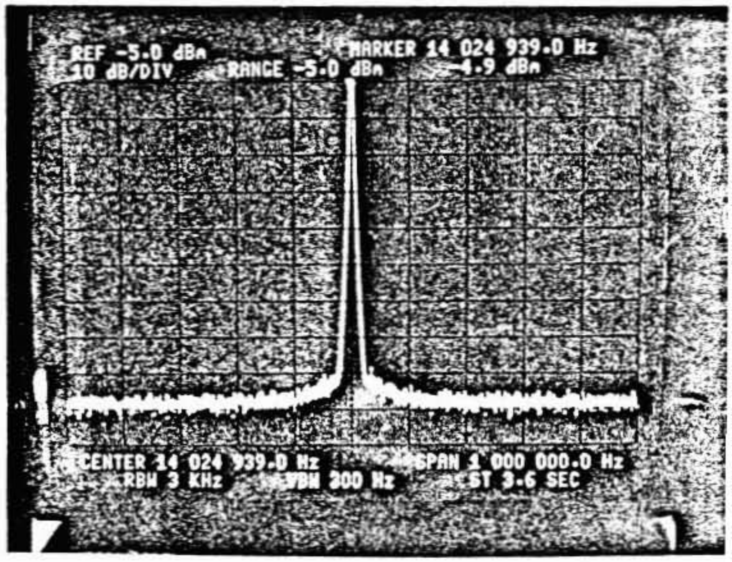
Interpretation: Two noise spurs approximately 18 kHz either side of center down 65 dB from peak. Don't expect to hear that *real* weak 10 or 15 meter signal: there is over a 30 dB difference in noise floor between the TS930 and a good synthesizer or average crystal oscillator such as a Drake R4C. Collins S Line, etc.



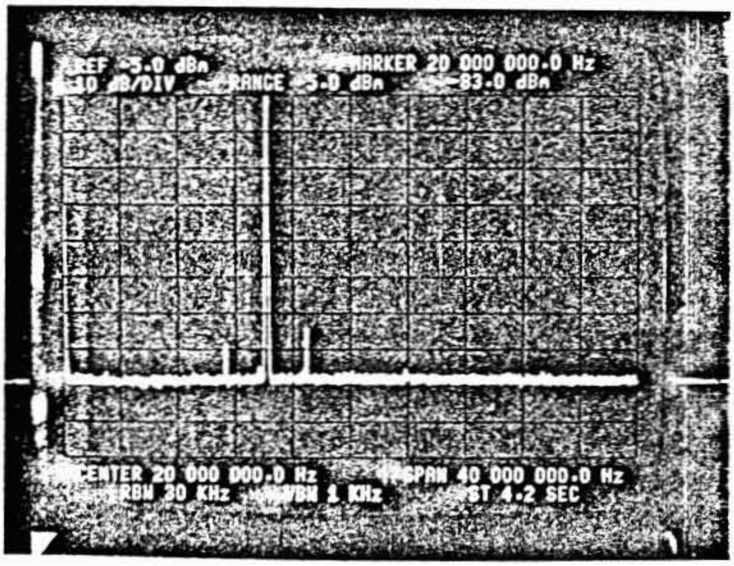


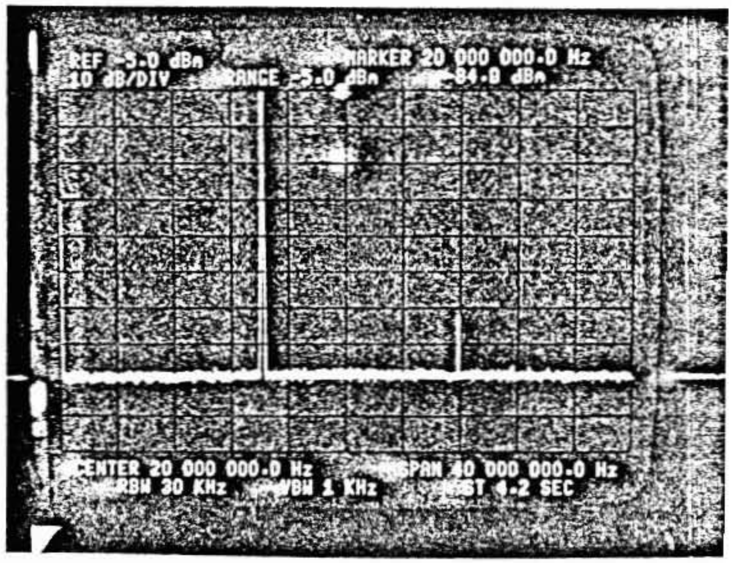
Interpretation: If your real strong neighbor is operating at the other end of the band, you *may not* hear his noise!





Interpretation: Not much on this scale: spur about 4.5 MHz down the band.





Interpretation: A couple of spurs over 65 dB down (out of band). Blip on HP is second harmonic.

It occurred on March 26, 1959, and resulted in a K-index of at least 8. The peak depression of CF, as measured at 52.0 degrees geomagnetic latitude, was -63%. Does anyone recall what conditions were like during the 1959 WPX SSB contest?

It has also been shown that variations in CF depend on local time as well as storm time. In general, the greatest percentage decrease of CF occurs at different local times for different geomagnetic latitudes. For L between 55 and 60, decreases are greatest in the afternoon. For L values between 50 and 55, CF drops the most during the hours around midnight. In the 45 to 50 range, largest drops occur in the early morning. Between 29 and 45, the decrease in most pronounced during the entire morning.

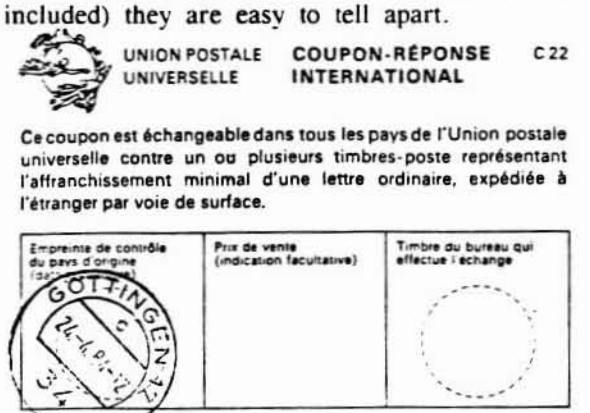
Obviously, these data will not give you an exact "MUF correction factor" for use during any type of disturbed conditions. However, it should give you some feeling for what happens during a typical ionospheric storm. It also helps to confirm the belief that "conditions peak just before a storm" -- actually, the peak is during the storm; the ionosphere is not able to "anticipate" the beginning of a storm. Incidentally, the lowest usable frequency (LUF) is also affected by storms, but that is beyond the scope of this article.

The practical applications of Matsushita's information seems fairly straightforward. Ten and fifteen meters will tend to have improved conditions during the first eight storm hours. Check these bands especially during the fifth to seventh hours, even if these hours fall at times that 10 and 15 aren't always open. The greatest potential for improvement exists for propagation paths to the northwest, north, and northeast. If the storm is scheduled to begin in the morning or afternoon of the first day of the contest, work Europeans on 10 and 15 the first day -- you may be stuck on 20 the second day. If the storm began at least 12 hours before the start of the contest, then you can expect Sunday's conditions on 10 and 15 to be better than Saturday's. However, you should not totally ignore 10 and 15 on Saturday, since a particular storm may last much longer than the average one.

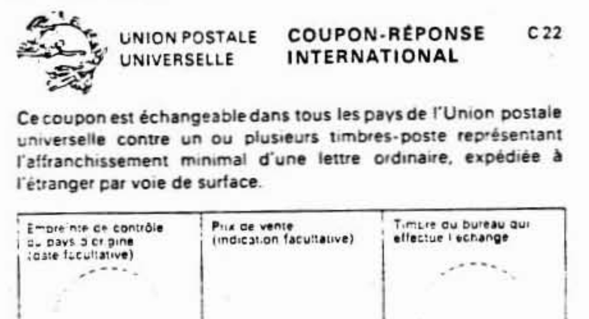
A Tale of Two IRCs

Reprinted from the SFDXA DXTRA

There was once upon a time a good IRC and a bad IRC. Unbeknownst to a lot of people (DXers included) they are easy to tell apart.



The GOOD IRC is stamped **only** on the LEFT side, nowhere else!!



The BAD IRC may not be stamped, may be stamped on just the right side, or may be stamped on both sides!!

So, if you insist on buying IRCs, be sure they are the GOOD type, and return the others.

Variations In MUF F_2 During Ionospheric Storms

Matt Power, KA1R

Even if one has reliable information about the value of F_2 layer maximum usable frequencies that typically occur on a particular propagation path, there is often some confusion about how to interpret this information in light of a WWV forecast of an upcoming storm. One study which uncovered some potentially useful information was conducted by S. Matsushita and completed in 1959. Matsushita's data is based on a study of 51 strong storms and 58 weak ones which took place in the years between 1946 and 1955. He presents information showing the variation of maximum electron densities in the F_2 region, as a function of the amount of time elapsed since the beginning of a storm (i.e. time in "storm hours") and of geomagnetic latitude. Geomagnetic latitude can be defined as latitude with respect to an earth having a north pole at 78.3N, 69W and a south pole at 78.3S, 111E. For a point with geographic coordinates x,y:

$$\text{geo. lat.} = \text{Sin}^{-1}\,(.979 \sin x + .203 \cos x \cos (y-69))$$

For example, the center of YCCC territory is at a geomagnetic latitude of 53.7, but values as high as 56.2 and as low as 51.2 exist within the 175 mile circle.

The source I used (Kenneth Davies's *Ionospheric Radio Propagation*, NBS monograph 80, 1965) shows storm time variations of the maximum electron density, N_{max}, for each of several zones of geomagnetic latitude, and separately for weak storms and strong storms. F_2 critical frequencies are proportional to the square root of N_{max}. Maximum usable frequencies for the F_2 layer are related to the corresponding critical frequencies by a factor (often called the skip frequency factor, M factor, or maximum usable frequency factor) which depends on the height and thickness of the F_2 layer. The occurrence of a storm may have a direct effect on these height and thickness values; thus, N_{max} variations do not fully describe MUF variations. The variations in critical frequency will, however, give a good suggestion of what happens to the MUF during ionospheric storms.

First of all, there are a few generalizations that can be drawn from Matsushita's data. Around the geomagnetic equator, storms tend to increase critical frequencies for the entire course of the storm. For fairly low geomagnetic latitudes, storms have no serious effects on critical frequencies. For higher geomagnetic latitudes, storms tend to increase critical frequencies during the first several hours of the storm, and then reduce critical frequencies thereafter. The amount that the critical frequency changes by becomes larger as the geomagnetic latitude increases. In presenting some numerical data, I'll refer to geomagnetic latitudes as "L", and to the critical frequency as "CF". All percentage changes in critical frequencies are with reference to typical non-storm values.

For values of L between 55 and 60 (which includes the locations of the northernmost YCCC members, as well as most of the W1/W2 to Europe propagation path), a strong storm will increase CF by 5% after 3 storm hours, and by 8% after 7 storm hours. CF will then begin to drop, returning to 0% variation after 9 storm hours. It will then drop rapidly: -5% after 14 storm hours, -16% after 18 storm hours, and -24% after 26 storm hours. CF then recovers slowly, going back to -16% after 29 storm hours, and to -5% after 53 storm hours. As might be expected, the effects of weak storms on CF are not as pronounced. For the same values of L, a weak storm will raise CF by 2.5% after 4 storm hours, return it to 0% after 9 storm hours, and drop it to -5% for about 40 hours starting after 16 storm hours.

For L between 50 and 55, which includes most YCCC stations and much of the easterly and westerly propagation paths, the effects of storms are a bit less severe. A strong storm will bring up CF by 4% after 7 storm hours, then return it to 0% after 9 storm hours. Again, CF dips quickly and recovers slowly, with values of -13%, -21%, and -5% being typical for 16, 28, and 57 storm hours, respectively. Weak storms in this region will raise CF by 6% after 7 storm hours, return it to 0% after 12, and maintain it at -7% for the period from 16 to 27 storm hours.

As we go farther south into the 29 to 40 range of L, we find that the maximum percentage drop of CF due to a strong storm is -8%. Farther still, in the -9 to 9 range, CF is never reduced by a strong storm and instead exhibits a peak rise of 6%. Weak storms in the range -9 to 40 also never reduce CF, but improvements are seldom as much as 5%. For L between 9 and 29, strong storms have no particular effect on CF (actually, there are seasonal variations: CF will go up during some seasons and down during others). In addition to this strong storm/weak storm data, one extremely strong storm is discussed.

The **Scuttlebutt** is the newsletter of the **Yankee Clipper Contest Club** and is mailed about nine times per year to all paid up members. Dues are $10 per year, payable 1 April with a grace period through 30 June. Non-members may subscribe to the **Scuttlebutt** by sending $10 to the Treasurer: Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson, MA 01749. Subscribers who subsequently become members will be credited as having paid dues.

The **Yankee Clipper Contest Club** (an ARRL Affiliated Club) holds four official meetings per year, on Saturday afternoons in March/April, October (at the New England Division Convention when possible), November/December, and January/February. The next meetings will be on Dec. 1, 1984, in Springfield, and on Feb. 9, 1985 and Apr. 6, 1985. Attendance at an official meeting is *required* in order to become a member. Club members congregate on 3830 Khz Monday evenings; many routinely monitor this frequency other evenings as well.

Rosters are mailed to all paid members each summer. For more information and/or assistance, contact the area manager nearest you on the following list:

Area	Call	Name	Home	Work
CT/RI	K1RX	Mark Pride	(203) 271-3096	(203) 265-8825
EMass	W1FJ	Al Rousseau	(617) 598-3744	(617) 599-7500x173
WMass	K1RQ	Dana Cobb	(413) 655-8096	(413) 655-2797
VT/NH	KM1C	Bill Pedersen	(603) 673-1678	
ME	K1SA	Bernie Cohen	(207) 773-6589	(207) 797-3585
NNY	K2RD	Ira Stoler	(518) 439-5804	(518) 445-8474
SNY/NJ	K2EK	Bill Gioia	(914) 221-1672	(212) 888-2102

YCCC
11 Michigan Drive
Hudson MA 01749

FIRST CLASS

Pre-Holiday Rush Issue