NCJ

NATIONAL CONTEST JOURNAL

$4

January/February 2001

Volume 29 Number 1

- Behind the Scenes: Log Checking for the 1999 ARRL 10-Meter Contest
- "Scoring" Your Antenna System
- Contesting in Sweden
- A Contest DXpedition to Iceland
- *NCJ* Profiles—KR6X
- *Results*: September 2000 *NCJ* Sprints and the January 2000 NAQP SSB Contest

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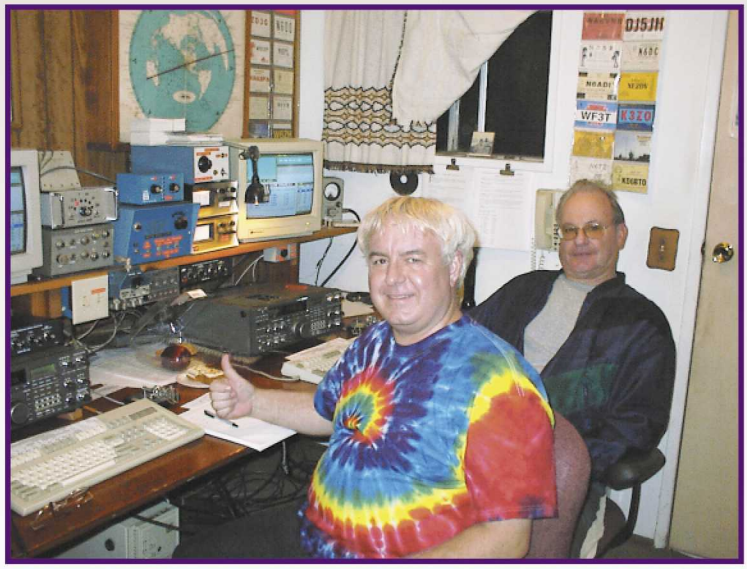

Leigh, KR6X, and Ray, N6VR, teamed up with several other operators for a multi-single effort from N6VR for the 2000 CW Sweeps.

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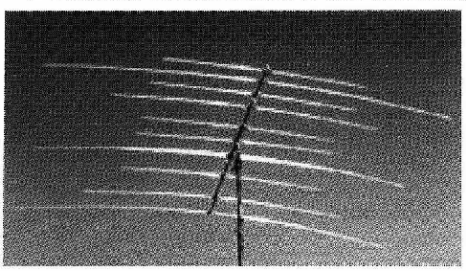

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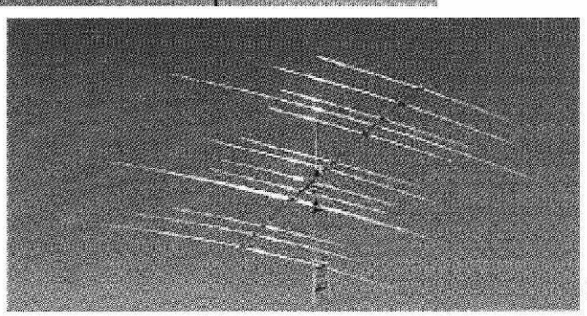

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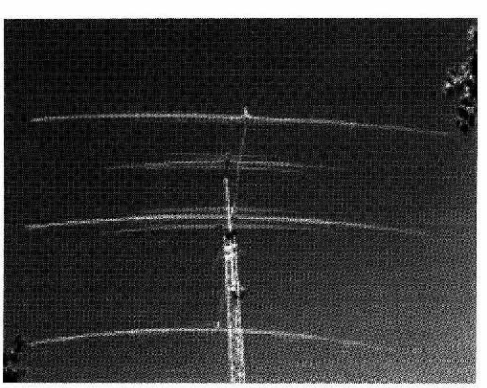

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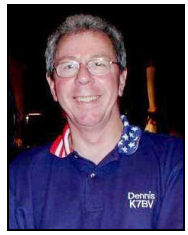
Dennis Motschenbacher, K7BV


K7BV

We, the *NCJ* staff of volunteer Columnists, Contest Managers, our Webmaster and I, hope that you had a pleasant and peaceful 2000 holiday season. We trust that you are as eager as we are to get started with this New Year—2001.

It appears as though the sunspot numbers are going to remain high enough in 2001 to insure some great contest results and new records. Contesters certainly have been tearing up the bands so far in this peak and, with a little cooperation from Mr. Sun, we will continue to do so.

Rick, K7GM

Rick has been taking care of the Phone Sprints result tabulations and reporting for 18 years; he actually started up this contest that same number of years ago. Time challenges have finally compelled him to surrender the reins to an as yet unannounced replacement.

I tried to figure out just how many logs and QSOs he has checked over those 18 years. I estimate that it's way over 7,000 logs and probably nearly 200,000 Qs. How can we possibly show our appreciation for all his efforts? I trust each of you will find a way, even if it's just a quick card or e-mail to him.

You will be dearly missed, Rick, *Thank You* so much!

August NAQP Results Reports Delayed

Our January/February issue has traditionally carried the results of the summer editions of both the Sprints and the NAQPs. Unfortunately, the August NAQP wrap-ups were not completed in time to make the deadline for this issue. We hope to publish them in the March/April *NCJ*.

The Contest Managers tell me that the primary challenges associated with getting results out more quickly revolve around log submittals. They are still receiving quite a few of your log submissions on paper instead of electronically. Some of the electronic logs are not arriving in the proper format. These guys spend an unbelievable number of hours straightening all of this out. Hopefully, we the entrants will do better in the future…

Contesting in Your Area

We hope that you enjoyed the great article in our last issue on the contesters of central Texas. Why not consider putting together the same type of article for your area? Anyone with a camera who's willing to pen a brief description of some local stations can become an instant writer! We are all curious about "the other guy's" hardware—so lets have some fun with this. I eagerly await your submissions.

Contest Clubs

I would also like to receive some information on the history, meeting schedule and location, etc, of all of the various contest clubs. This would be a grand opportunity to plug your club and let the newbies know you are out there ready to help them learn more about our specialty interest within this great hobby of ours. Someone from each club should step forward and let us hear from you, please.

Our Cover

Leigh Jones, KR6X—this issue's NCJ *Profiles* subject, and Ray Benny, N6VR, take a breather shortly after finishing up the 2000 ARRL CW Sweepstakes. Ray hosted a multi-single team that also included AC6T, AD6C and N6DX.

■

A Contest DXpedition to Iceland

Caleb Skurdal, AD7U

Early in April 2000, I received an invitation from Hillar, N6HR, to travel with him to Iceland for the 2000 CQ WPX CW Contest. Iceland sounded like a great place to go to on my first trip outside of North America. I hurriedly got my passport and other things in order. I also enjoy operating RTTY, so I took along my PK-232 so that I could give that mode a try from the "other end of the pileup" as well.

The Adventure Begins

Hillar and I took off from the SeaTac (Seattle/Tacoma) airport for Keflavik, Iceland by way of Minneapolis, Minnesota at noon on May 23rd. Our flight to Minnesota was *supposed* to take 3 hours and 15 minutes. Due to a 180-mph tail wind, however, it took us only 2 1/2 hours. We traveled faster than Mach 1!

In Minneapolis, we boarded an *Iceland Air* jet. We arrived in Keflavik early the following morning. After getting our passports stamped, claiming our luggage and clearing customs, we walked out into the cool Icelandic air. We soon met up with Seli, TF3AO, and packed our bags and ourselves into his glacier truck (the chassis's four feet off the ground!) and motored off towards Reykjavik. During the 30-mile ride we got a great view of the barren, rocky, volcanic landscape. Except for the water in the distance, the landscape looked much like the surface of the moon.

Settling In

In Reykjavik, our lodging was in "university student housing." The room where I stayed had a connection for an inverted-**L** antenna that had been installed by Villi, TF3DX. What great accommodations—I had an antenna!

After setting up the ICOM IC-706, a tuner, a laptop and the PK-232, I was soon on the air as TF/AD7U. My first contact was on 20-meter CW. I worked DL3KVC at 0941Z on May 24th. Conditions weren't very good that morning—I only made two Qs. Later on the conditions got much better. I had several nice runs.

The following evening, Thursday May 25th, we headed over to the TF3IRA club station and toured the facilities, met some of the local hams, and—most importantly—set up a Cushcraft vertical that we brought along to use on 40 meters during the contest. Islenzkir Radioamatorar (IRA) president Halli, TF3HP; Bjarni, TF3GB, and several others welcomed us. After a few trips to the roof, the vertical was up and working great.

Seeing the Sights

The next day was set aside for sightseeing. Hillar and I squeezed into our rental car and headed northeast into the mountains. After driving about 60 miles we arrived at our first stop, the Geysers. On our hike up the 200-foot path to the geyser, we saw a dozen or so small pools of bubbling, boiling water. The geyser spouts every 5 to 7 minutes. We watched it go off a couple of times and then hiked back down to the car.

Our next stop was further north—Gullfoss, the Golden Falls. This huge waterfall consists of three separate falls. The water pours down into a very deep and narrow canyon—the roar was deafening.

After that, we headed back to Reykjavik and got some rest. Later that evening we'd be returning to the TF3IRA club station to get ready for *THE CONTEST!*

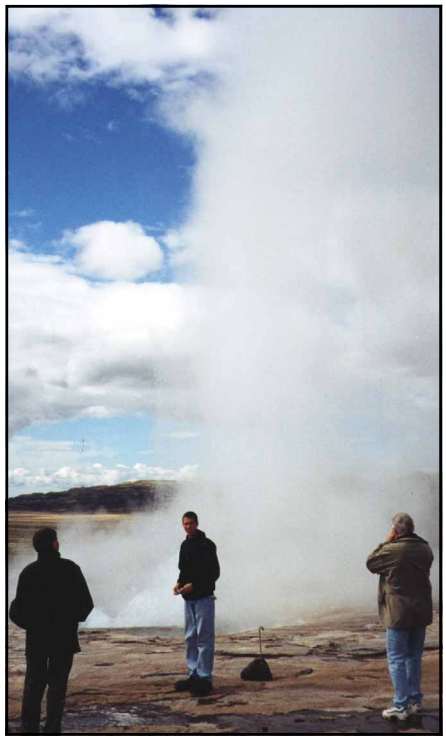
Contest Time

Before the start of the contest, I got on 40, 30, 17 and 15 meters for a couple of hours (just to check propagation) and managed to make about 220 Qs. Rates were VERY good!

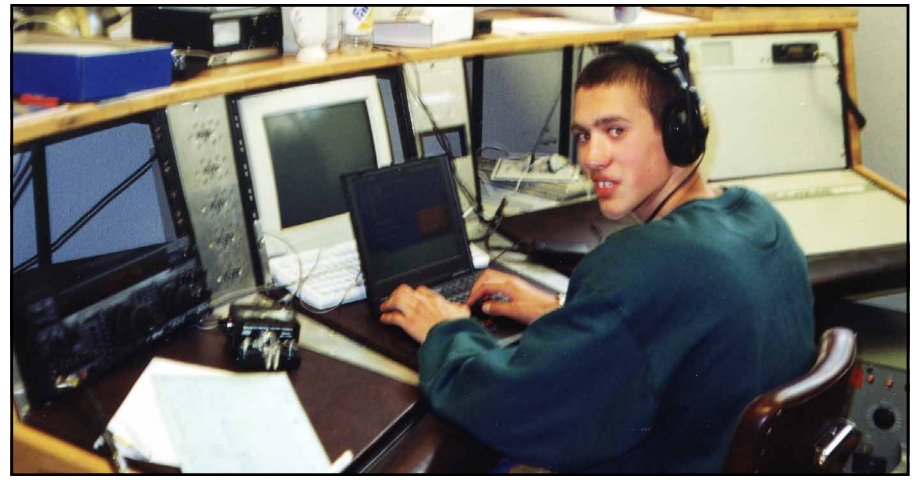
Our station consisted of a Yaesu FT-1000MP driving a modified 2 kW LORAN beacon amplifier. This fed a Force12 C3 at 50 feet for 20, 15 and 10 and our Cushcraft vertical for 40 meters. The 80- and 160-meter bands are basically unusable during the Icelandic summer—*it never gets totally dark!*

Since Iceland time is the same as GMT, the contest began at the stroke of midnight. When operating contests from home I'm used to losing two nights of sleep during a 48-hour contest, but from Iceland you lose *three* nights of sleep. The contest started at midnight Friday night and ended at midnight on Sunday night. It was easy to tell when it was midnight—in Iceland at this time of the year the sun sets at midnight! Sunup is at 3 AM.

TF3GB, TF3DX, N6HR and I shared operator duties. I took the first turn in the chair and ran stations for the first five hours. We began on 15 meters—the rate was amazing. In the first hour we collected 145 Qs. The 1000 QSO mark was passed at 1000Z, 2000 at the 24-hour mark, and 3000 at 1700Z on the second day. Our average rate was 69.8 Qs per hour. In the end, we completed



At the geysers—What a vertical!



AD7U operating TF3IRA.

3350 QSOs for 5.25 million points.

When the contest was over, Hillar and I headed back to our lodging and had dinner. Later, I got on the air again from my room and collected another 90 Qs. After that I packed up my gear.

Heading Home

Monday morning we finished gathering up our personal stuff and loaded it all into the car. It was time for me to return to the States; Hillar was going on to Estonia. I'd be making the trip back to Washington on my own.

On our way to the airport we stopped at the famous Blue Lagoon for a swim. The 100° F water is a byproduct of a volcanic energy plant. The volcanic water is used to heat glacier water that is then piped off to heat city housing. The volcanic water is very rich in minerals and has a milky look. We soaked in it for about an hour and then continued on to the airport.

My long flight back to Minnesota was uneventful, but seemed shorter than the flight to Iceland (perhaps this was because I was enjoying the in-flight movies that they were showing).

The friendly folks at US customs let me back into the country with no problems. From Minnesota I hopped a plane back to SecTac and was soon home.

In my off-contest operating as TF/AD7U, I logged 741 Qs with 619 on CW and 122 on RTTY. It was fun experiencing firsthand what it's like to be on the other end of a pileup. I never had to go tuning around searching for stations to work.

The people I met in Iceland were very friendly. My thanks go to Hall, TF3HP; Sell, TF3AO; Villa, TF3DX; Barn, TF3GB—and of course "Hill," N6HR—and all the other Iceland hams for a great experience.

73, "Kalli," AD7U

(*I* will *be back!*) ■

ARRL Contest Advisory Committee Club Competition Rules Review

Jim Pratt, N6IG
n6ig@hotmail.com

The ARRL Contest Advisory Committee has been asked to look into the rules that relate to club competition participation in ARRL contests. We are taking a top-to-bottom approach, not just tweaking the rules here and there.

Some examples of the questions that are being raised are: "Why is there a club competition category?," "How can the club competition categories be improved?," "Are there enough club categories?," "Should there be teams?," "Should a club have to be ARRL affiliated to compete?," etc.

The CAC has established three subcommittees to investigate these matters. All report to Ned, AA7A—our fearless leader. I have volunteered to serve as the chairman of the group that is discussing "eligibility." The other members of my committee are K1HT, K2WR, K4RF and N0IJ.

I have solicited comments from my Division's contesters, but so far have received very little input. The committees would certainly like to hear from you with your comments on this matter—and, of course, so would your Division's CAC representative!

The committees will be reporting their findings to the ARRL Membership Services Committee in mid-2001, so there is still some time for discussion. Please make your feelings known!

73, Jim, N6IG
CAC Representative, Pacific Division
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Servicing the Yaesu G-1000SDX Rotator

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One of the most popular antenna rotators used by contesters is the Yaesu G-1000SDX. In this article you will learn how to service this rotator—hopefully allowing you to save your money to purchase additional contest toys!

After two recent lightning-induced failures in my G-1000SDX rotators, I decided to learn how to service them myself. In both failures, the symptom was the same; the rotator would turn twice as fast in one direction as the other.

I used to service my TailTwisters before I replaced them with the G-1000SDXs. It didn't take a rocket scientist to work on TailTwisters, and I now think that the G-1000SDX is even easier to service. As Fred Hopengarten, K1VR, once said: "There are two kinds of hams—those who never worked on their own rotators, and those who have chased ball bearings all over the cellar floor." I thought that perhaps by passing along what I have learned, I could persuade a few of you to risk experiencing the thrill of the chase!

Before I go further, I'd like to make it clear that I have no connection with Yaesu, and am just passing along what I figured out for myself. I would, however, like to say that I love this rotator, for the following reasons:

- The control box is very attractive.
- There are easy-to-remove connectors at the control box AND at the rotator.
- You can tell where the antenna is pointed even with the power off.
- There is built-in speed control.
- There is a preset control so you don't have to keep your hand on the switch.
- The rotator requires only a five-conductor cable.
- It is not necessary to shim the mast.

Please note that this article concerns servicing the rotator itself, not the control box. To determine whether you have a problem in the control box or the rotator, swap boxes. The G-800SDX box is identical to that of the G-1000SDX.

Of course, it might be a good idea to eliminate the possibility of a cable failure too. In the case of the failures I've had—that affected rotator speed—I found that I could measure leakage resistance in the shack from either side of the motor to ground. The motor winding and the associated noise filter are floating, so you should measure infinite resistance to ground. Leakage resistance in the order of 2 kΩ to 3 kΩ to ground will reduce the speed to about half.

I also repaired another G-1000SDX that had an apparent lightning-induced failure of the position potentiometer in the rotator. In that one, the pot had opened. After making ohmmeter measurements from the shack end of the cable and eliminating the possibility of a cable failure, I took my multimeter up the tower and confirmed that the problem was indeed in the rotator.

Disassembling the Rotator

1. Remove the mast bracket from the rotator. Turn the rotator upside down and screw in the four mounting bolts with about a half-inch protruding.

2. Using a socket or box wrench, loosen the four bolts that hold the two halves of the housing together. Use a bar or large screwdriver diagonally across two of the mounting bolts to hold the rotator while torquing the bolts. Remove the four bolts with the rotator still upside down.

3. The ring around the lower half of the rotator is a ball bearing retainer and race. (See the assembly drawing in the *Instruction Manual*.) While carefully holding the two halves firmly together with the bearing retainer against the upper housing, turn the whole thing upright. Carefully lower the retainer with the bearings to the workbench surface. (At this point, if you weren't careful enough… it's time to pick up all the bearings!)

Note: I found that there was room for one additional ball in the race, so it is apparently normal not to have it tightly packed. Be careful that no bearings have stuck to the upper side of the housing.

Now, place a piece of tape (like duct tape) on the upper housing above one of the four bolt flanges, and mark it in line with the center of the bolt hole so that you can reassemble it with the same alignment. Place a small piece of tape on the corresponding flange.

4. While carefully holding the two housing halves together (without the bottom race), turn the rotor upside down again. *CAREFULLY* lift the bottom half straight up out of the top, and set it on the bench on the four mounting bolts.

5. Remove all of the ball bearings from the race in the upper half and place them in a clean container.

In the three rotators I have worked on to date, I did not find it necessary to re-grease them. If I did, I would have cleaned the races and bearings with a solvent, and re-greased them using white lithium grease very sparingly (no more than a "thimble full" on the whole rotor). I also have not found it necessary to replace or re-grease the gear train to date, but similarly I would clean it with a solvent, dry it, and sparingly apply white lithium.

6. Using a bar diagonally across the bolts in the bottom, it is now possible to remove the three bolts that hold the gear train and motor in the lower housing. Note the wire dress to the connector. The assembly can be lifted out, but be careful not to break any wires.

Replacing the Potentiometer

1. I suggest drawing a sketch showing the pot assembly orientation and wiring with colors. Note: You can check to see if the pot is open using an ohmmeter without removing it, but you cannot rotate it to see if there is a bad spot.

2. Remove the two Phillips head screws that hold the black plastic mounting bracket. The pot can now be rotated to check for bad spots by measuring the resistance from the wiper to either end while slowly rotating the pot.

3. To replace the pot, use a 1.5-mm Allen wrench to remove the pot gear. Note approximately how far the hub is from the end of the pot shaft. When the pot is reinstalled it may be necessary to readjust the gear to avoid mechanical interference. Remove the white plastic gear, noting that the spur gear faces away from the pot. Remove the nut on the pot bushing to remove it from the bracket.

Removing the Noise Filter Assembly

1. There is a cylindrical shield attached to the rear of the dc motor that houses a filter for brush noise. It contains a few components including two feedthrough capacitors that were the components that failed in my rotators and caused the speed problem. The whole filter assembly is available from Yaesu, but not the individual components.

2. Remove the small Phillips head screw holding the shield module to the motor. Remove the two small Phillips screws holding the filter assembly inside the shield.

3. *CAREFULLY* sketch all wire connections noting colors. Remove and replace as necessary.

4. When reassembling the shield assembly, be sure it is pushed as far onto the motor as possible.

Reassembly

1. Mount the motor and gear train assembly in the lower housing, being careful to properly dress the wires.

2. Connect a short cable between the rotator and control box and run the rota-

tor to ensure proper coverage the entire range.

Note: This may not be necessary if the pot was *NOT* removed. If the pot *WAS* removed, follow step 3. If it was *NOT* removed, skip to step 4.

3. Turn the rotator to full overlap position CW WEST and back off just a few degrees toward south. Carefully lay the ball bearings in the top race of the bottom housing. Observing the position of the "nubbin" inside the top housing that hits the limit switches, carefully place the top housing over the ball bearings so that it is positioned to almost hit the limit switch. Observe that there are lines on the outside of the housing that show where the limit nubbin is. You may have to repeat this step several times until you get proper alignment. With the upper housing in place and while pressing down firmly on the top half of the rotator, run it through the entire range and check stops at both ends of travel.

4. If the pot was not removed, place the bearings in the upper race, and put the top half of the housing on using the tape marks for alignment.

5. Disconnect the cable from the rotator and carefully turn it upside down.

6. Lay the balls carefully in the race, and bolt the retainer in place.

This may sound more difficult than it is, but I can assure you it gives a retired EE a lot of satisfaction to conquer a mechanical job like this! After working on three of them, it has become *REALLY* easy.

(*This article originally appeared in the Yankee Clipper Contest Club's newsletter, the* Scuttlebutt*, issue 151, December 2000. Our thanks to Jack and the gang for allowing us to share this valuable information with the readers of the* NCJ.) ■

"Scoring" Your Antenna System —A Quantitative Evaluation of Changes in Antenna Height and Other Characteristics

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Evaluating prospective changes in your HF antenna system is a difficult challenge, especially before you put up something new. Is it going to be constructive to add 20 feet to your tower, if the antenna stays the same? Should you go from a 2-element Yagi to a 4-element, and stay at the same height? What about tribander stack spacing, which is necessarily a 3-band compromise?

Traditionally, we consider gain first, then maybe front-to-back ratio. We can also consult a lot of rules of thumb, such as "higher is better," or "many antennas at different heights will always be better." If we're really advanced, we model antennas at different heights. With stacks, we look at practical vs ideal stacking distances. With tribander stacks, we ponder the merits of different compromise stacking distances, eyeballing pattern changes and degradation in front-to-back ratios as well as gain.

This article offers another tool for this purpose. I call it "scoring" an antenna, and it makes use of the concept of "effective gain." Effective gain is the mathematical product of two key quantitative measures of HF communications performance—the gain of an antenna or array at a given take-off angle, and the percentage of time that signals arrive from a target area at that angle.

Let's consider an example: say your antenna has 8.5 dBi of gain at 12 degrees above the horizon, and that signals arrive from Europe at that angle 12 percent of the time. As defined, the antenna has an effective gain of 1.02 at that angle (8.5 x 0.12). Conceptually, the effective gain is a measure of how loud your signal will be at the other end of the path when signals are arriving at that angle.

If we compute the effective gain at 1-degree intervals through the useful range of angles, and add all the effective gain figures together, we come up with a weighted average effective gain figure that I call the antenna's "score" for that band and path. The score represents the relative strengths and weaknesses of your antenna (as measured by its pattern) and weights those by importance (the percent of time that signals arrive at a given angle), giving a measure of your average signal strength for a given path, under all conditions. The power of the idea lies in the fact that the score of one antenna can be compared with that of another, giving you a clear idea of *which is better.* As long as you always use the same yardstick when comparing two different antennas or antenna arrays, you can compare a single beam to stacks, higher to lower antennas, or just about any combination. You can even compare two tribanders and evaluate their total performance over all three bands.

In practical application, where do you get the numbers you need? If your station location is on flat terrain, you can derive your antenna pattern using any of the available antenna modeling programs, such as *EZNEC*. In that ideal case, you can compare vertically-polarized antennas with horizontally-polarized ones, quads with Yagis, and so on. But what if your terrain isn't flat? In that case the terrain will modify the antenna's actual pattern through a combination of reflection and refraction. An antenna on a hilltop may have a far different pattern than one in a valley.

The practical answer, for amateurs, is the terrain modeling program *YT*, authored by Dean Straw, N6BV, and supplied free with the *ARRL Antenna Book, 18th Edition*. *YT* is limited to horizontally-polarized antennas only, and doesn't accept actual antenna definition files, but it does offer six different horizontally-polarized Yagis ranging from 2 to 8 elements and 5.5 to 12.5 dBi gain. If your antenna is close to one of *YT*'s standard types, then all you have to do is model your terrain using *YT* and the standard antenna type that approximates your real one.

Arrival angles used to be a mystery to most of us, but N6BV has also addressed this issue by providing a heroic amount of data, in the form of arrival angle tables for each Stateside call area from many

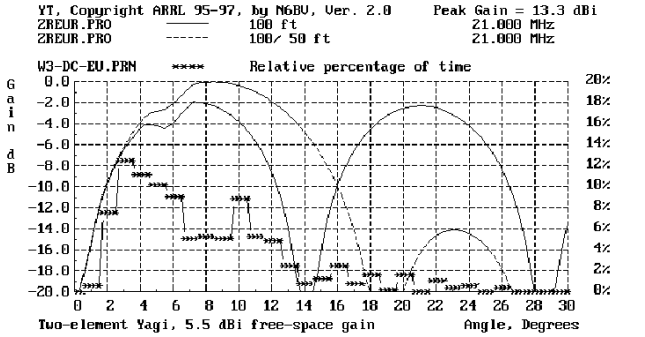

Figure 1—Plots of the performance of a single 2-element 15-meter Yagi located 100 feet and a stack with 2-element Yagis positioned at 50 and 100 feet. The graphs represent the performance over the terrain at N4ZR on the path towards Europe.

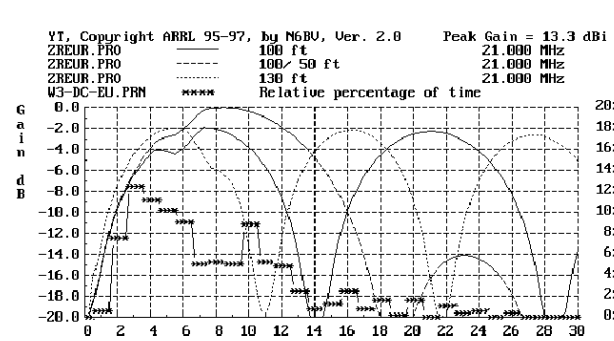

Figure 2—The performance of a single 2-element Yagi located at 130 feet compared to those of the configurations detailed in Figure 1.

foreign areas of interest, computed using the *IONCAP* propagation prediction program. These tables, enclosed with *YT*, encompass all sunspot levels, seasons, and times of day or night, for an entire 11-year sunspot cycle.[1]

Some Examples

The examples that follow have been developed using N6BV's arrival data (see the sidebar for a step-by-step procedure). To begin with, take a look at Chapters 3 and 23 of the *Antenna Book*, which discuss how to use *YT*. A typical *YT* plot looks like **Figure 1**.

This plot reflects the performance of a 2-element Yagi over my terrain on the path to Europe. The key to the analysis is the line marked "***", which reflects the percentage of the time that signals will arrive from the chosen area at a given arrival angle. On this graph, for example, we can see that signals from Europe will arrive at my QTH (using the arrival data for the Washington, DC area) about 12 percent of the time at an angle of three degrees, and that virtually all of the time signals will be arriving at angles between 2 and 20 degrees.

Let's derive the effective gain of an antenna, using the plot in Figure 1. The first choice (represented by the solid line) is a single Yagi at 100 feet above flat ground. The notch in the curve is caused by a small rise in my otherwise flat foreground about 500 feet from my antenna in the direction of Europe.

There is no need to estimate gain from the graph—*YT*'s terrain-corrected gain figures are found in a temporary file in the *YT* directory called OUT.PRN, which reflects the results the *last* time *YT* was run, and only if the file is retrieved from the directory after *YT* is closed and before the program is run again. By inserting the gain and arrival angle percentages into a spreadsheet we can come up with a "score" (see **Table 1**).

So adding all of the individual "effective gains" together gives us a total for this antenna, on this path, on this frequency, of 7.73. I call that this antenna's "score" for this band and path.

Now let's compare the 2-high stack, the dashed-line trace on the graph. Going through the same calculation gives us a "score" of 9.05, or roughly 17 percent better. If you look over either the graph or the spreadsheet, you'll note what this higher number means—at most of the angles where a relatively high percentage of communications occurs—the stack's gain is usefully higher, particularly in the range 10-16 degrees, which account for 26 percent of the propagation. That is the direct result of the stack's broader first lobe, which you can easily see on the *YT* plot.

Table 1

The effective gain is the mathematical product of the gain of an antenna or array at a given take-off angle and the percentage of time that signals arrive from a target area at that angle. The overall "score" is the sum of the effective gains at the take-off angles between 1 and 35 degrees.

Angle	*Gain*	*Percentage of Time*	*Effective Gain*
1	-2.2	0.6	-0.0132
2	3.7	7.6	0.2812
3	6.9	12.5	0.8625
4	8.9	11.2	0.9968
5	9.2	10.2	0.9384
6	9.4	9.1	0.8554
7	11.1	5.1	0.5661
8	11.3	5.3	0.5989
9	10.7	5.1	0.5457
10	9.5	8.9	0.8455
11	7.7	5.3	0.4081
12	4.7	4.9	0.2303
13	-0.6	2.5	-0.015
14	-8.6	0.8	-0.0688
15	-2.8	1.3	-0.0364
16	3.5	2.5	0.0875
17	6.8	0.8	0.0544
18	8.8	1.7	0.1496
19	10.1	0.2	0.0202
20	10.8	1.7	0.1836
21	11.1	0	0
22	10.9	1.1	0.1199
23	10.3	0.4	0.0412
24	9.2	0.6	0.0552
25	7.5	0	0
26	5	0.4	0.02
27	0.8	0	0
28	-7.2	0	0
29	-8.4	0	0
30	0.1	0	0
31	4.1	0	0
32	6.6	0	0
33	8.3	0	0
34	9.3	0	0
35	7.8	0	0
Score			**7.7271**

So now it's trade-off time. Suppose we wonder whether we'd be better off going up another 30 feet instead of adding the second Yagi. **Figure 2** shows the resulting *YT* curve (the dotted line), superimposed over the other two choices.

Chances are, if you were doing this analysis, you wouldn't need to go beyond the graph—it's obvious to the eye that added height helps only a little at low angles, and the first null at 10 degrees coincides with angles that represent a good share of the propagation. If we apply the scoring idea, we get a score of 6.89, which confirms the eyeball conclusion that this is not a good choice.

In fact, for simple antenna analysis, scoring is probably unnecessary. But where I've found it really comes into its own is in working through complicated compromises and trade-offs, of the sort you run into working out the right height and spacing for a tribander stack, for example.

Here's a practical case in point. My Force 12 C-3, which is effectively a 2-element Yagi on each band, is at 97 feet. I've finally found a second C-3, which I plan to mount below the 97-footer. Using *EZNEC*, 28 feet looks to be about the best compromise spacing, so what happens with a 97-/69-foot stack?

At 5.5 dBi forward gain, *YT*'s standard 2-element beam is a fairly good match for the C-3 (about 0.7 dB low). Just taking the European path as an example, the scores for the single 2-element Yagi at 97 feet on 20, 15 and 10 respectively are 7.09, 7.72 and 7.36, a total of 22.17.

The scores for the 2-high stack are 9.58, 10.02 and 10.17, or a 3-band total of 29.77. A 34 percent increment in the stack's score compared with the single high Yagi looks pretty worthwhile.

Suppose we use the traditional tribander spacing of 32 feet or 97/65 feet? The scores then become 9.45, 9.87 and 10.18, or a total of 29.5. If your criterion is total effective gain across the 3 bands, 32 feet appears to be not quite so good overall, though 10-meter performance is slightly better.

I have also been pondering whether to go all the way to a 3-high stack, which certainly has prettier patterns on 20 and 15 because of the cancellation of the second forward lobe. But how much better is it, really? Well, it scores 11.17 on 10, 10.21 on 15, and 9.84 on 20, for a total of 31.22, a further 5.8 percent improvement. Would it be worth the cost and added complexity? I concluded it wasn't.

Possible Refinements

There are a number of possibilities for potential improvements in the scoring process I've described, with varying amounts of additional effort. The first obvious consideration is to use your own antenna rather than what's provided by *YT*. You could model your antenna over flat terrain, using *EZNEC* or another modeling program. Then use *YT* to model the standard antenna closest to yours over both real and flat terrain, and compute the difference in its gain between the two cases. Finally, use that difference to adjust the output of your antenna modeling software. If, for example, *YT* shows a 2 dB "notch" at 4 degrees elevation, and *EZNEC* shows your antenna has a gain of 9.5 dBi at that frequency, you would subtract 2 dB, giving you a corrected gain figure of 7.5 dBi. Once the antenna pattern is corrected in this way, you should have a representation that is fairly close to how your real antenna is operating over real

[1]Notes appear on page 8.

terrain. The downside is that the correction really should be computed fresh for each antenna and antenna height, because the impact of terrain varies.

The resulting scores will be higher, of course, if your real antenna has more gain than the *YT* version, but a sampling suggests that the comparative scores will not change by very much. For example, I modeled a single C-3 over my terrain at 97 feet on 10 meters—its score is 7.90, versus 7.36 for the *YT* standard antenna. For the stack at 97/69 feet, the C-3 score is 10.50 on 10, versus 10.17 for the *YT* standard antenna.

Selection of the DX area of interest is another variable. For us in the eastern USA, the European path is absolutely critical for DX contesting, so I feel comfortable choosing antennas primarily for that path. For people in the western USA, a different approach may be desirable. There's also no reason you couldn't use multiple paths, taking a weighted average based on the percentage of your contest QSOs that each one contributed to last year's score. You can also use this technique to get a feel for how much a low tribander dedicated to South America would be worth over the antenna(s) you now have available.

Arrival angle data might be another area for refinement. To some, a disadvantage of N6BV's data may be that they are so inclusive. While many of us may not make major changes to our antennas from sunspot maximum to sunspot minimum, some do. The effects of the sunspot cycle on arrival angles are complex and vary from band to band.

For those who want to focus on the current (or any particular) state of the sunspot cycle, the ionospheric prediction program *VOACAP* furnishes the means of determining arrival angles for any sunspot number, any time of day, and any month of the year. You could run a new set of arrival angle statistics for the coming fall contest season, approaching the sunspot maximum, to tailor your antenna system more closely to the arrival angle of signals at this point in the cycle. A further development of the technique might be to compute arrival angles for the bands you actually would be on over the course of a 48-hour contest, when you would be on them, and derive your effective gain figures from those numbers. This would correct both for the stage of the solar cycle and for any possible statistical bias introduced in N6BV's numbers by including arrival angles for given bands at times when they are far below the MUF.

W8JI recently suggested another variation on the theme of effective gain—perhaps it should be called "effective coverage." In a message on the Towertalk reflector, he argued that in some cases, contesters give undue emphasis to gain or a sharp pattern, in the process hurting their results by reducing the potential number of stations in the antenna pattern at any given time. If you buy this argument and are truly ambitious, you could use *VOACAP*'s companion program *VOAAREA* to derive figures for signal strength in the major ham population centers in Europe, and weight them by population—in effect, "the most signal to the greatest number."[2]

Thanks to K6LL, W8JI, N6BV and K2AV for their comments on successive drafts of this article. They are obviously not responsible for any errors that remain.

Comments and criticisms welcome, to **n4zr@contesting.com**.

Guidelines for Scoring Your Antennas

Determine your DX area of interest and select the right .PRN elevation file from *YT*. Open the file with a word processor or *Windows Notepad* and transcribe the percentage of signals arriving at each angle into the left column of a table, either on paper or in a spreadsheet program like *Excel*. Generally, you only need to go up to 35 degrees or less.

Model your antenna's performance over the terrain on your path to your DX target, using *YT* and the standard antenna that most nearly matches your own. *YT*'s output data (gain at each degree of elevation, as corrected for terrain effects) are contained in a file called OUT.PRN in the *YT* directory. The values contained in this file are those generated the last time *YT* was run, and are not retrievable until you exit the program. Enter these gain figures in the second column of your table.

For each arrival angle, multiply the test antenna's gain at that angle times the percentage of the time that each signal arrives at that angle, and put the resulting number in the right-most column on your table. That figure is the "effective gain" for that angle. Your table will then look like Table 1.

Add up the effective gain figures over the entire range of angles. The resulting composite number is the antenna's "score" for that path.

You're done!

Footnotes

[1] Be sure to get the latest tables, available on the ARRL Web site (**http://www.arrl.org/notes/antbook/yt-files.html**), and to update your copy of *YT* (from **http://www.arrl.org/notes/antbook/**), if yours came with the first printing of the 18th Edition of the *ARRL Antenna Book*.

[2] To do this you can use the *MAKEVOA* program that is included with *YT*. This will produce an antenna file for use with *VOAAREA*. ■

Contesting in Sweden

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I have been trying to gather first hand information on the state of Amateur Radio contesting in Sweden for several years, but the most active contesters here have invariably turned me away.

Until recently, I thought it was my fault. Swedish psychologists now estimate that about one million of my adopted countrymen are suffering from social phobia. These individuals have a fear of facing others in person. (This actually might be good for Amateur Radio.) Add to this widespread xenophobia, and it becomes easier to understand why I, an immigrant to this country, have had little success in getting close to any Swedish contester—or any Swede in general for that matter.

Therefore, I've decided to turn my focus to the activities of a club that I belong to. It's not the biggest or the best by Swedish standards, but it has potential.

Our unique club station is located about 20 miles north of Stockholm—a city with a population that includes a few thousand hams. It's on a hilltop site known as Kvarnberget—a name that implies that a windmill once stood there. Our club is the Kvarnbergets Amateur Radio Club, SK0UX. For contests we sign SK0X.

The station is located on the grounds of an abandoned microwave research facility that was erected in the early 1960s. Local hams first became curious about gaining access to the site in the early 1980s. The Taby Radio Club (*TSA*) managed to put together the first lease agreement. Taby is a nearby suburb that boasts the most active radio club in the Stockholm area. The group already had a very nice clubhouse and station, SK0MT, but they were looking to expand.

The club station facility.

The present antenna system at SK0UX.

Rolf, SM0COL, at the controls.

Fabian, DJ1YFK, operating from SK0UX.

That organization put up a 100-foot tower and a second slightly shorter one with a log-periodic array. A number of VHF and UHF antennas were also installed.

HF operation from Kvarnberget was sporadic in the beginning. I became a member of the TSA in the '80s and was amazed by the potential of the place, but surprised by the low level of activity. Back then it was used mostly for picnics and Field Day.

In the early '90s I talked Waldemar, SM0TQX (formerly SP5DZJ), into joining the TSA. He convinced Carlos, SM0KCO—a coworker of his—to sign on as well. We put together the first serious HF contest efforts from Kvarnbergets.

In 1993, the TSA turned use of the facilities over to the Kvarnbergets Amateur Radio Club.

At the present time there are nine towers with a wide variety of antennas and a nice shack with running water, electric heat and room for at least a half dozen operating positions.

The antenna landscape at Kvarnberget is constantly changing. Due to the soil conditions—the hilltop is almost entirely rock—we have concentrated mainly on quad designs. In 1995, Waldemar acquired some long fiberglass poles and we put together a quad for 40 meters. Since then, we have added monoband quads for 10, 15 and 20 meters, all on separate towers. There are some Yagis up as well and they work okay, but we believe that quads are a better choice for this site.

Our ambition is to make Kvarnberget a place where anyone with a genuine interest in Amateur Radio can come and experiment with propagation, equipment and antennas; operate casually or participate in contests. We would also like to see this become a popular meeting spot for hams visiting Stockholm.

The Kvarnbergets Amateur Radio Club currently has 35 members. Through a unique arrangement, a few hundred hams from the Stockholm area also are allowed access to the station. We welcome new members and encourage everyone to stop by for a visit and spend some time operating.

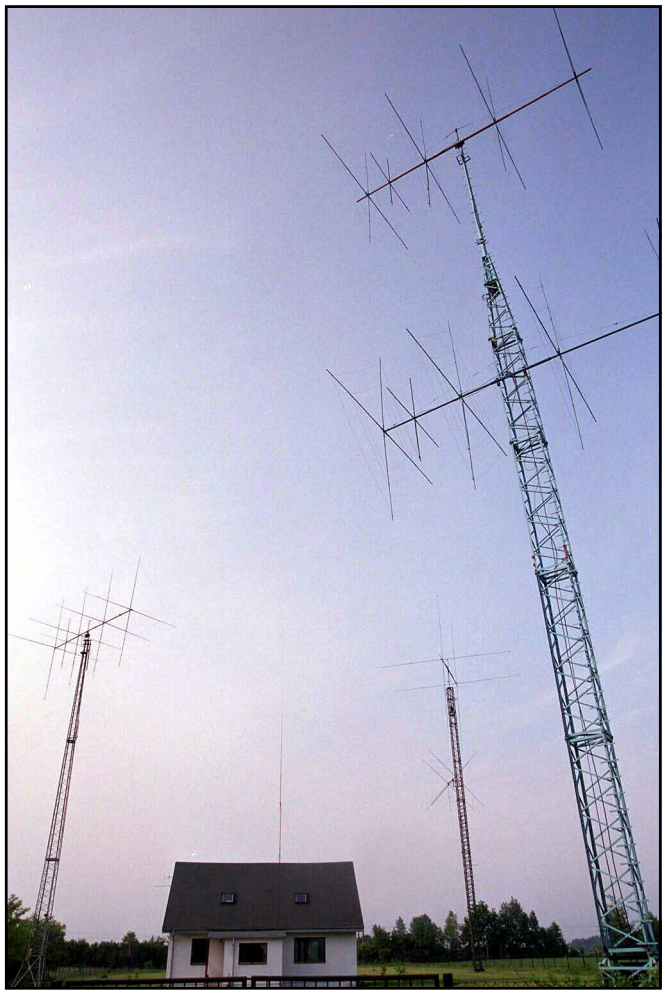
If you happen to be nearby, please give me a call at +46707561493 or e-mail me at **sm0jhf@chello.se**.

Polish Yagis vs Quads Big Gun Shootout Update

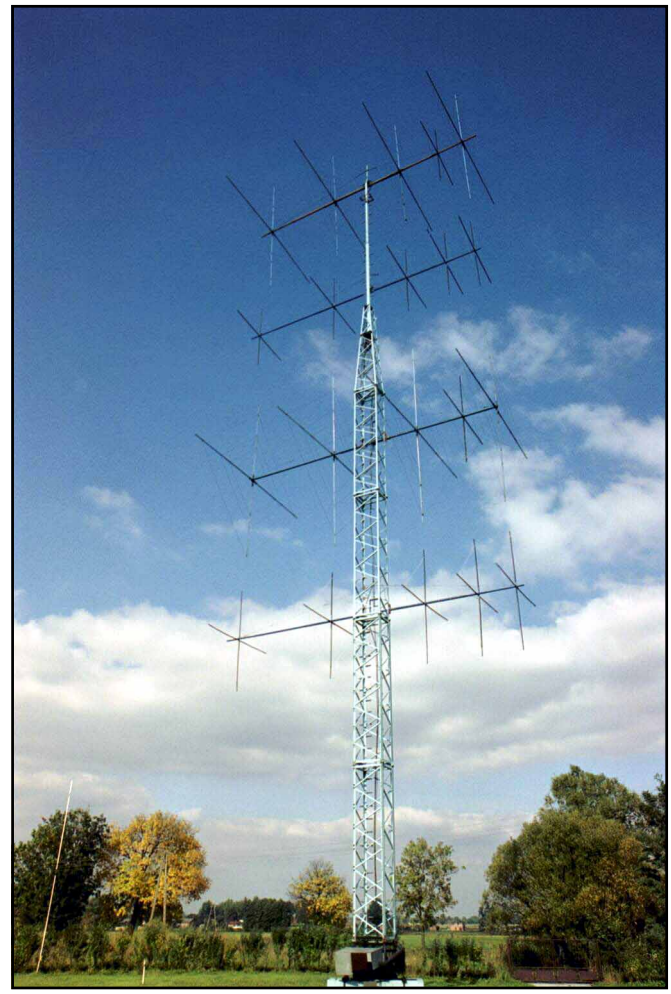
The September/October 2000 issue of the *NCJ* featured my story on two antenna giants located in the center of Europe: Kazimierz, SP2FAX, and Chris, SP7GIQ.

Since then, there have been some changes. SP7GIQ has added a couple of new antennas. His 35-meter tower quad array has been expanded to include two additional 5-element 10-meter quads. This results in a four-high stack of 5-element quads on that band.

Chris reports that the advantage provided by the additional antennas is only noticeable over very long paths. He says



A view of Chris's (SP7GIQ) antenna farm before the two new 10-meter quads were added to the 35-meter tower.



The tower with the new quads installed.

that US East Coast stations are not any stronger on the four antenna stack than they are when using just the top and bottom antenna. Sometimes the lowest antenna alone works best. Performance over a particular path is difficult to predict.

There has also been a change of location for the Polski Zwiûzek Kr¢tkofalowc¢w (*Polish Amateur Radio Union*). They have moved their headquarters to Bydgoszcz. Kazimierz, SP2FAX, works for the organization and lives nearby. I believe he was instrumental in bringing about this relocation. It's good to see that a ham who's active on the air is involved in the Polish national organization. There is an overwhelming tendency, at least in Europe, for administrators to have very little actual on-the-air experience.

Kazimiez's (SP2FAX)Yagi-based antenna systems. ■

Behind the Scenes: Log Checking for the 1999 ARRL 10-Meter Contest

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Contest log checking has been a hot topic among contesters recently. Much has been said on this subject, both in print and on the CQ-Contest reflector. Some entrants applaud log checking, while others seem to resent it. Most would agree, however, that thorough but fair checking is necessary to assure the integrity of the contest and the significance of the results.

However, not much has been said in print about the log checking process itself. It takes a lot of work to check the results of a medium to large contest, and there are good reasons for the submission requirements established by the ARRL and other contest sponsors.

For the past two years, Tim Mitchell, K9TM, and I have been the volunteer team checking logs for the ARRL 160-Meter and 10-Meter contests. We work closely with Dan Henderson, N1ND, of the ARRL Contest Branch, who oversees our work. While discussing the "lessons learned" from log checking the 1999 10-Meter Contest, Dan and I decided that it would be useful to share with the contesting community information on some of the problems that we've encountered.

As a first step, an article was written for the November 2000 issue of *QST* titled "Coping With Cabrillo." This article described the Cabrillo file format, and gave specific instructions on how to generate Cabrillo format logs using the five major contest logging programs. Also explained was how to review the information in the file and how to electronically submit your log to the ARRL. While the article was targeted to all contesters, it was hoped that it would be particularly useful for new contesters not familiar with logging programs and electronic file submittal.

The second step is the article that you are now reading. We expect that *NCJ* readers are, for the most part, pretty well versed in the use of contest logging programs and the submission of electronic contest entries. Nonetheless, this knowledge does not always prevent their logs from presenting problems. Most of these errors appear to be the result of simple mistakes in the operation of the logging software. We think that once the contesting community is made aware of these problems, they will be able to avoid them in their next e-log submittal.

The Task

First, let me give you some statistics to illustrate the task we face. The 1999 ARRL 10-Meter Contest resulted in the largest number of logs ever submitted for a single-weekend ARRL contest. 1,731 electronic logs were processed, containing over 1.27 million QSOs. 526,320 of these QSOs were directly checked (ie, we had the logs for both ends of the QSO). Cross checking the data contained in this pile of logs took over six continuous hours on a 266 MHz Pentium II PC.

The overall time required for checking the contest was well over 100 man-hours. (This does not include the time the computer was running overnight checking logs.) Of this, 80% of the time was spent importing data from the received logs. Think about that figure—the equivalent of more than two regular working weeks was spent just converting the logs into a common format that our checking software could work with. And people wonder why we're so fond of Cabrillo…

Log Format Problems

The lack of data format standardization is our biggest challenge in working with the received entrant files. Of the 1,731 electronic logs received, the majority (715) were the old style ARRL format, followed by 456 printer format (PRN) files, 310 were Cabrillo files and 250 came in other less popular, or unrecognizable, formats.

According to the rules in place at the time of the 1999 10-Meter Contest, electronic logs were to be submitted in either the old ARRL format, or the new Cabrillo format. While Cabrillo is new, the ARRL format has been in place for almost a decade, yet over 40% of the received logs were submitted in an improper format. It's particularly frustrating to the log checkers to receive a log that was obviously created by a logging program that could have generated one of the required formats.

Why are non-standard formats such a problem? Because we either have to write a specific conversion program for them (if there are many logs of a particular format) or else we have to convert them manually, which takes time. Page headings, control characters and such have to be stripped off with a text editor. Also, many of these formats don't include all of the required QSO information—most often left out is the sent exchange.

Even the old ARRL format is vul-nerable to similar problems, primarily because the specification allowed considerable variation in how the QSO data is structured. We have found that we had to write separate conversion programs for the ARRL files generated by each of the major logging programs. On the other hand, the Cabrillo format is much more regimented, so with a few exceptions where the compatibility was not complete, we could handle most Cabrillo files with a single conversion program.

Tim and I both agree that the biggest problem we have reading entrant files is with the format of the exchanged QSO data. You would think this would not be a problem, since the ARRL 10-Meter Contest has a simple exchange. Most logs present the received data in order, but the order of the sent data varies tremendously. We've seen RST/state, state/RST, and even RST/state/RST! Some mixed mode logs have the sent RST as "59(9)", regardless of the mode of the QSO. Some logs omit the sent information entirely. The writers of contest logging programs would save us a lot of work if they would simply ensure that the log file generated by their programs contains valid data in the proper order.

Another file format problem that turned up in more than a few ARRL 10-Meter DX logs is that there was no sent QSO number. You might think that we could generate the sent QSO number; ie, the first QSO is #1, the second is #2, etc. However, this makes the VERY big assumption that the file is intact and no QSOs are missing. For example, in the 1998 ARRL 10-Meter contest, one particular station claimed almost 2,000 QSOs on his summary sheet, yet his electronic log file (lacking sent QSO numbers) contained only 350. If a QSO number had been assumed and we had proceeded with checking, it would have almost certainly been incorrect and all those stations he worked would have lost the QSO due to busted received information.

File Transmission Problems

Every year we receive a few logs which have been cut off, or *truncated* through the process of being submitted electronically. It's not clear what causes this, but it appears to be beyond the control of either the entrant, or the ARRL. With most file formats it can be difficult to detect a truncated file. In this regard, the Cabrillo format is a tremendous improvement. It has an "END-OF-LOG:" keyword on the last line.

This past year we went to great lengths to try to detect truncated files, even to the point of comparing incoming QSO counts to scores reported on the 3830 Internet e-mail reflector. When we found a truncated file, we attempted to contact the entrant and have them send another copy of the file.

Entrant Mistakes

After file formatting problems, the next

biggest challenge we face is when the data in an entrant's log is simply incorrect. Here are a few examples of some mistakes that were fairly easy to detect:

- Log files for the wrong contest.
- Logs where the QSO supposedly took place in the wrong month.
- The DX multi-op log where every sent exchange was either "599 NONE" or "59 NONE."
- The log from a Caribbean station where every sent exchange was allegedly "59 08." (Guess what his CQWW zone is?)

The last example is a case that our log checking software initially did not catch. "08" is a valid QSO number, but not if it's given out to every station. This was a lesson learned for the 2000 contest—for non-W/VE stations, we will check that the sent number is valid, AND that it changes.

Some other types of mistakes cannot be detected based only on the data in the log. Here are a few examples:

- Stations claiming to be operating from a particular state, yet EVERY station claiming a QSO with them shows them in another state.
- Logs where the call sign shown in the log is not the call sign actually used during the contest.
- Logs where the sent serial number in the log is consistently off from what was actually sent.

In these cases, the only way to identify these errors is to check all the logs, then go back and find logs where excessive numbers of errors occurred in the log at the other end. To fix this, we have to go into the problem log, make corrections, then run the cross checking program again. This is very time consuming at six hours per pass.

Some of these problems stem from the design of our logging programs, where defaults can be set up for station information. In some cases these defaults are not always correct—for example a CQWW zone instead of an ITU zone, a state or province where an ARRL section is called for. Maybe the entrant is operating from other than his "home" state, or perhaps the wrong contest type is selected.

Other types of entrant errors are subtle, yet can still affect the score. One problem concerns your computer's time-of-day clock. While we don't use the reported time as part of the checking process, contests such as ARRL 10-Meter Contest that have operating time limits require us to verify that your operating time is under thirty-six hours. Once this limit is exceeded, further QSOs are disallowed.

This past year we had one log obviously generated after the New Year which showed evidence of Y2K date incompatibility. This station already has his entry ready for the 2086 ARRL 10-Meter Contest!

There is one more thing the log checking team would ask of entrants submitting e-logs. PLEASE DO NOT PLACE EXTRANEOUS INFORMATION IN YOUR LOG FILE. Lines other than QSO information can sometimes interfere with the proper operation of our checking software, so these usually have to be removed manually. Regardless of what you've heard, or formerly seen on the ARRL Web site, do not mark off times, total QSO points or multipliers. All these items are re-calculated by our checking software and will be handled automatically.

Logging Software Bugs

We've all come to depend on our contest logging software. We finish the contest, push the button to generate the log, and then e-mail our entry with a sigh of relief. Most of us give nary a thought as to whether our logging software has created our log entry accurately.

We've already described how file formatting errors cause problems in the log checking process. Some of these are actually bugs in our contest logging programs. In some cases, the data itself is bad. There is a known bug in one of the popular logging programs where if you log a station in a mixed mode contest and then go back and change the mode, the RST default is not updated to match. This is tedious for the operator to detect. We are seeing more of this as SO2R (single operator, two radio) setups become more prevalent.

Conclusion

Many of the problems described here can be avoided if the entrant would take the time to review the log file before submitting it. That's the beauty of ASCII files—a few minutes with a simple editor like *DOS*'s *EDIT.EXE* or *Windows NotePad* can detect formatting errors, software bugs, etc.

Some people are under the mistaken impression that the log checkers chortle with glee when finding busted QSOs in entrant's logs. Speaking for Tim, Dan and I, nothing could be further from the truth. We get great satisfaction in seeing QSOs from around the world match up exactly, validating the operators' skill in the contest. Help us help you. Update your logging software to a Cabrillo-compatible version, check your log submission for errors before you submit it, and send it in by the deadline. That's the best way to ensure that you'll get maximum credit for your hours in the operating chair when the results appear in the magazine. ■

NCJ Profiles—By Popular Acclaim —Leigh Jones, KR6X

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I have been privileged to have the opportunity to pen the "profiles" of top contesters from all over the world. Several of these individuals started their contesting careers in Southern California, and in the course of interviewing them they almost universally end up mentioning Leigh Jones, KR6X. *Who is this guy, anyway?*

After the most recent occurrence of a "Leigh reference," I decided that the time had come to track him down. The result is this free-wheeling story—written mostly by Leigh. Leigh has touched the lives of many habitual Top Tenners. They bestow upon him one of the highest honors—the title of Elmer.

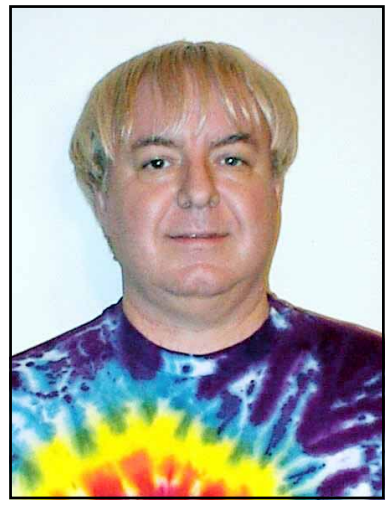
"My first contact with a local Amateur Radio club came when I was still a Novice back in the mid-'60s. Warren, WN6PRX (now K7WX), told me that if I could get a ride to his house that his mother would drive us the rest of the way to a meeting of the West Valley Rag Chewers Association. Matt, WB6KPN (now N6PN), formed this club. Twenty-five teenage hams met monthly in a little A-frame building in Woodland Hills.

"Under Matt's direction, the club soon reformed as the 'West Valley Amateur Radio Club.' Other early club presidents were John, WB6UHF; Joe, WB6YNI; and Marty, WB6VZI (N6VI). There were many fine Elmers in the club. We all worked to increase our membership and further our contesting savvy.

"Some of us rode our bicycles to club meetings. Rarely did anyone arrive alone in a car. Ken, WB6VFJ (now WK6F), and I met in high school—he considered me a 'big signal.' Marty was a box boy at the supermarket where my mother shopped.

"Our club took great pride in its contesting achievements, particularly those on Field Day. Although we were only a small bunch of teenagers, we really did very well. Our mothers would drop us off at the Field Day site and return to pick us up on Sunday afternoon.

"One key to our success was the Drake R4B/T4XB and R4A/T4X radios that we used. The front ends of those receivers had highly selective multi-section filters that provided enough rejection for us to run phone and CW stations on the same band. This capability was unavailable when using any other rig of the day. We kept the stations as physically isolated as possible and soon discovered that a 40-meter phone station could generate almost as many daytime contacts as a second CW station. For about four years we topped the four-transmitter class."



Club members also opened their home stations to other young aspiring hams. "A little boy named Larry, who was not yet a ham, once made a visit to WB6KPN. It was a tense meeting; Larry immediately began turning all of the knobs that he could get his hands on, making it nearly impossible for Matt to demonstrate his station to the visitor. Larry was later licensed as WB6ZVC (now N6TR), put up a 2-element quad and began contesting in earnest."

It was a priority of the club to spot new contesters and to help get them going. "When WN6TLV (now N6TV) turned up on the air operating the Novice Roundup contest, Matt and I went over to his station and visited him—we handed him several donated crystals and an invitation to a club meeting. We may have visited others that night too, but I don't believe any of the others fit the WVARC membership profile as nicely as Bob. Shortly after a tribander (provided for him from our club equipment cache) was in the air at his house."

Along with youthful enthusiasm, the group also exhibited some other youth-related characteristics. "The WVARC was loaded with internal factions, including the bad boys of the group known as 'Bodid Victor.' The 'Bodids' (named for Bo Diddly) were WB6HGU, WB6NWK, WB6YNI, WB6VFJ, WB6WIT, WB6RZH and others. Typically their beams were on towers, rather than TV pushup masts like the rest of the gang, and they built kilowatt amplifiers late in their teen years. [*I'll bet they shaved early, too—N0AX.*]

"The Bodids showed up at meetings and operating events and dished out near-overdose levels of their irreverence. It was their antennas set up at our Field Day sites each year that allowed us to continue to enjoy the thrill of victory.

"They also brought contesting know-how to the group. For instance, Steve, WB6NWK, taught me the technique of using a high-pitched voice in phone contests, demonstrating it to great effect one Field Day."

Traffic handling was also a factor in Leigh's earlier amateur activity. This led to the CD Parties. "I became active in the Southern California Net and got an ORS appointment. This meant that I could operate in the CD parties. I had a number of friends who participated. At that time, Gary Stilwell, W6NJU (now KI6T), was the president of the SCDXC, and that club was turning a friendly face to both newcomers and contesters."

Surviving a lost-log experience in his first CD party, Leigh went on to grow more involved in multiop efforts in Southern California. "K2PHF/6 and K9ELT/6 heard me operating and invited me to join the multiop W6RW CD party effort that July. K9ELT had operated the CW Sweepstakes for two or three years running from W6RW. That particular year's Sweepstakes results showed him as #1. They invited me back for the CD party and a CQWW multioperator effort from W6RW." This started a long history of multioping, most recently from the fine station of W6EEN. Other operators at W6EEN included W6CXW, W6RW, W6GP, K6UYC (now K6RR), W6NJU and W6VSS (now K6UA).

"W6RW's station wasn't really big enough to compete with stations like W2PV or W3MSK, but the crew was probably the finest ever assembled. On one occasion, if I remember correctly, W6DGH (ex-K2PHF, now N6AA), W6BXL, K6SEN (now K0RF), his father K6RF, W6MAR (now K6NA), W6DQX (ex-K9ELT, now N6ZZ), K9LBQ and N6TJ were all in attendance.

"Ted, W6HX, was a professional antenna installer and Tri-ex Tower dealer for Southern California. I worked for Ted for about 7 years and also contested from his station. They were good times; I won a Sweepstakes CW and phone, came in second on CW once and second on phone several times, and won the ARRL International DX Phone Contest the last time that it was won from California. During that time I also continued to participate in the WVARC, up until the club finally folded.

"Being a professional antenna man, I was in a position to help a number of

young hams erect their first beam antennas and operate their first contests. Certainly, however, the owners of small multi- and multi-single stations introduced the real thrill of contesting to more operators than I ever did."

Leigh himself became interested in ham radio and contesting at about the same time—around the tender age of six or seven. "An old, wooden console-style receiver in my family's home had a shortwave band or two on the dial. Phone contests were slower paced in the AM days, but the sound of loud foreign stations booming through the big speaker was compelling. I knew I'd be a ham and operate contests someday, but I had no idea how to start. Oddly, my father had begun to teach me the Morse code years before, but I didn't know until later that he had once been a ham radio operator himself—W6PCL.

"I got a Heathkit receiver for Christmas just before my 8th birthday. I had a key-and-buzzer telegraph set up with a neighbor's son that was hooked together with a couple of wires strung between our bedrooms (about 30 feet apart). That telegraph wire made a better antenna for my receiver than anything I'd used before.

"After years of searching for a Novice tester, on Christmas Day 1964 I called all of the local hams I could find in the Callbook beginning at the top of the 6-land alphabet. I found a willing examiner—Otto Draper, K6ASU. I passed the Novice test within two or three weeks. I was ecstatic—I set my sights on Field Day and started working toward my General Class license.

"That fall, I operated with Harold, WN6MSU, at his station in a CW Sweepstakes multioperator effort. He had an SB300/SB400 combo feeding a 14AVQ trapped vertical and a 40-/80-meter in-

The 1974 ARRL Phone Sweepstakes—and the Lessons I Learned

Before I go on, let me begin by explaining a couple things about the Sweepstakes contests back then—and about my own personal contesting failures. One year after I won the old CW Sweepstakes and came in second on phone, the new Sweepstakes contest suddenly appeared.

The new Sweepstakes has only a moderately long exchange. QSO rates in the old version were lower overall, but higher in the final years than they are under the new format. I understood the old contest very well, but I wasn't prepared for the new one.

The texture of the contest changed dramatically—such as was the case when the "quota" was removed from the ARRL International DX Contest. When the changes were announced, everyone must have been cheering "this is the best SS contest ever!" But by the end of the first running it was clear that incredible regional changes in relative score positions had occurred. The contact rates near the end of the contest had plummeted to new lows. The Midwest and the Northeast suffered most dramatically.

I needed to study the statistics of the contest and propagation characteristics to understand what was going on. The band plan that I had developed during previous runnings wasn't working anymore. The old West Coast strategy of staying close to the MUF was failing. By the end of the contest I realized that I was on bands that were open to the targeted population centers, but the stations in those areas were all operating on other bands that didn't provide useful propagation for me.

I shot myself in the foot on CW. I was convinced that I needed a memory keyer. I designed and built one—finishing it two weeks before the contest. The new keyer was iambic, and I soon discovered that its unfamiliar characteristics resulted in an unacceptably high rate of sending errors.

This worked against me for quite a while. There were other problems too. The front ends in the CX7A transceivers were overloading. On phone this resulted in interference to received signals. On CW there were anywhere from three to five ghost signals present in the receiver passband. Ted's old Collins 75A3 didn't have this problem. My ear flew to these phantom signals. This cost me time and increased fatigue.

During the contest, Ted asked me to move up to 20 meters for a few minutes so that he could repair the feed line on his 40-meter Yagi. It turns out that this was the solution to a problem that had existed for a few years. I remember that moment vividly. Suddenly all of the components of his fine contest station were working properly. That quick repair led to several consecutive victories and near victories.

The 1974 Sweepstakes contest started out, as was typical, with stations to the east leading me. In the past I'd overtaken everyone except W7RM by sometime on Sunday. That year, their leads were a bit larger. The slightly disturbed conditions that had been predicted appeared to be manifesting themselves not as a mild aurora, but as E-layer skip with the attendant absorption. This was disappointing—but I've experienced this often since.

As the first day progressed the effect became more pronounced. Big stations along the Gulf Coast, however (together with W0UA at WA0CVS), appeared to be building greater and greater leads. W7RM had actually fallen behind the pace of the leaders (although not quite as far behind as I had).

I lost track of the relative positions of most of the leaders to the east. I stayed on 20 meters as late as I could. Then 40 meters proved more productive than in recent years—the repaired beam was truly performing better. Not surprisingly, the leaders continued to pull away from me, especially George. When his lead reached 100 QSOs, I began to prepare myself for being well behind by the end of the contest. On a band change to 75 meters, I noticed that it appeared that many of the Gulf Coast leaders were falling behind George. I set my sights on being third behind WA0CVS and W7RM.

Finally, the Saturday evening battle was over for me—my rate had dropped after 11 hours of operation and two half-hour breaks. I wasn't able to continue to hang in there on 75 meters late at night—the absorption was too high.

I took a break from the radio while Ted tuned around. He quickly found W7RM who had perhaps a 40-QSO edge on me. This was actually not too very bad when compared to years past. The Gulf Coast guys appeared to be a little ahead of W7RM, and WA0CVS was sending incredible numbers. He was closing in on 200 QSOs ahead of me. I lay down on the couch and went to sleep. I noticed my throat was hurting when I swallowed.

The alarm clock went off. I found a note from Ted telling me that when he went to bed George was leading me by 275 QSOs. Even though I thought this meant that I'd be third behind W7RM and WA0CVS, I was quite excited that George might be able to defeat K7JA at W7RM (who had a streak of several years of leading the contest on both modes).

Thirteen hours to go—and 20 meters sounded thin and watery. It would be a disappointing morning by the sound of it. I showered and discovered that my vocal chords were bleeding. They might have been bleeding slowly all night from too much high-pitched yelling. With 20 meters sounding the way it did, I had the feeling that I should have stayed up later and accepted whatever poor 75-meter QSO rate I could manage rather than trying to start out on 20 meters too early.

I began operating and was getting weak responses to my CQs. The morning didn't start with a fabulous run, but it was not as bad as I'd expected. My run seemed to be playing out, but I wasn't sure I could keep things going until 15 opened. Then a few loud stations in New England showed up in the mix and my spirits lifted.

The elusive double-hop F_2 skip to the Eastern Seaboard was apparently beginning to play. My contacts with New England, coastal New York, and the Eastern Seaboard were usually limited to forward scatter, double E-layer skip

verted **V** at 30 feet. We finished with a little under 400 QSOs in 20 hours of operating. At that time it would have taken only about 700 QSOs to be in contention for the top spot in this contest. Harold was the main operator for the first six hours. He turned the rig over to me to work the 40-and 80-meter bands at night.

"I did well enough on those bands to feel encouraged. Harold promised to come back in and start operating at 6 AM, so I left the air at an appropriate hour and climbed into my sleeping bag. At that point we were ahead of some locals who led us when we contacted them earlier. Harold overslept several hours, so our effort ended up in the high 300s—a great success in my mind. I had learned that ear-straining, accurate copy with few breaks for fills and relatively error-free transmissions were the key to optimum run rates. For years afterward, the *QST* magazine that contained the results of that particular Sweepstakes was my favorite reading material.

"Later I set up a Hygain 18V vertical—a style of antenna that required that I climb up onto my roof to change bands (I had to move a clip lead on the coil). I had the antenna up in time for ARRL International DX contest. I was running 35 VFO-controlled watts. From California, I worked over 60 stations in Europe, more than 400 stations in all.

"I was unbelievably fortunate. I couldn't afford the wire for radials, so I grounded the antenna to a vent pipe. The pipe traveled down inside a wall and into the slab floor. There it connected to a unique heating and air conditioning system that's called an "air floor." Every square inch of our sprawling, single-story, 6-bedroom house sat atop a layer of galvanized steel ducting. It formed a gigantic ground plane atop a deep layer of hard baked red clay

or some other weak signal mode. The Northeast, with approximately half of the active US contesters concentrated in it, was barely outside of the range of the normal single-hop propagation that made the Midwest and the South my bread and butter regions. Instead of the usual weak signals from this area, suddenly they were all loud, and they were trickling in fast enough to give me a Sunday first-hour QSO rate of 80 QSOs. Similar rates were to follow.

Unknown to me, across the Rockies WA0CVS was having a rough first hour with only 20 QSOs, and later rates of around 40. He was experiencing the opposite of my usual problem—skip was so long for him that he could work only the Eastern Seaboard and the Southeast. The Gulf Coast stations and W7RM weren't doing much better. In a few hours I passed everyone except George. Soon, familiar voices were appearing on my frequency with news of how far ahead of this and that station I was getting. W7RM however, seemed to be catching up with me now, and my vocal chords were still bleeding. I had to push on.

I made the switch to 15 meters and maintained the high rates. One of the very loud Texas stations popped up on my frequency and attempted to steal it. I managed a couple of QSOs with my interloper sliding up a half-kHz—trying to push me off. Stations continued to call me; the intruder was getting no takers. I struggled to persevere through the dogged interference and, oddly enough, the interference stopped. I had successfully defended my frequency against an invader who would normally have dominated.

Fifteen meters was exhibiting the same high signal levels from the Eastern Seaboard that 20 meters had provided. Until that moment, I had no idea that the excellent propagation that I was enjoying wasn't being experienced in the rest of the country. I wondered what was going on. Was I in a propagation sweet spot, with aurora to the north and D-layer absorption to the south? If so, was WA0CVS sharing the same advantage?

But I was still had two multipliers to work. These could be worth almost 50 QSOs at this rate. I pushed on, moving down the bands with sunset approaching. I picked up one multiplier, and then George was suddenly on my frequency saying "Hi, what's your QSO number?" We compared numbers, and I learned that I was nearly 70 contacts ahead of him!

George thought that if I failed to work the Maritime Province that he'd need only about a 40 contact surge to pass me. I realized that was the least of my problems—W7RM was only about 30 contacts behind me when I last heard him. He had a reputation for generating immense QSO rates in the last 6 hours of this contest.

George told me that he had a half-hour break left to take and he was about to take it. My rate was actually climbing. Twenty meters would peak out in a couple of hours and my rates were surging. The VE1 called me, and my contact rate while George was listening was about 90 per hour. I'd pulled off a miracle—I'd managed a 400+ swing in our relative QSO totals in about 8 hours of operating.

The only competition that I had to worry about at that point was W7RM, but in the next few hours it became apparent that propagation was working against him. George, as expected, made a comeback and pulled close to me when I was forced to go to 40 meters in the last few hours.

After my final CQ went unanswered on 40 meters and the contest ended, I fielded questions about my multiplier total; the frequency was filled with contesters who had listened to me finish out the contest so that they could tell me that I'd finished with the high score.

Ted showed up. He had been so anxious to learn where I stood in comparison to the rest of the high scores that he had driven to WB6APX's house to tune around and listen to the contest. On the way home, he bought a bottle of champagne. It hurt to swallow the champagne—but it hurt even more to talk to George.

George and I analyzed the heck out of his logs, and concluded that he'd taken a bad risk on Saturday by staying too close to the MUF to optimize his QSO rates. His rates were great, and on most years he would have won the bet and finished the contest on top.

He hadn't known, however, that the band conditions would be dominated by long skip (mostly F_2 layer) on Sunday. For nearly the entire day on Sunday, 20 meters didn't open—or opened only briefly—between Colorado and California or between Colorado and the Midwest. He'd already worked that area out on Saturday. It was especially apparent that he stayed too close to the MUF on the low bands. He contacted fewer than half as many stations in the W5, W7 and W0 call districts as I had. He stayed on 40 meters rather than moving to 75 long after the skip went long. He switched to 75 meters after many of the W5, W7 and W0 call district operators had gone to bed.

No one would have been able to predict the absence of E-skip on Sunday. In order for George to optimize his score for this specific year, he would have had to move down the spectrum early. My own best efforts as an Elmer had been based on my personal experiences, and I'd been instructing George for about two years to stay close to the MUF. My own advice had inadvertently set George up for a loss—*to me!*

The message in all of this? From any part of the US, remember that Saturday and Sunday in a Sweepstakes contest can be as different as night and day. Choose your bands and operating style (ie, CQ vs search and pounce) with an eye toward maintaining balance from the beginning of the contest. If you're accustomed to getting high rates calling CQ on 40 meters at the start of the contest—and then see your rates plummet on Sunday when you're forced to chase—for instance—W7's on 10 meters, consider working some of them on Saturday (even at slightly reduced rates). Don't waste your time with low rate operating. Try to diversify and maintain balance right from the start of the contest. ■

with the insulating properties of porcelain.

"The antenna was sitting on a nearly perfect ground plane that was effectively high above conductive earth—my signals could be easily heard by DX with anything vertically polarized. Since verticals pick up a lot of radiation from local suburban noise sources, I also learned that it is important to be able to hear as well as be heard."

One of Leigh's longer and most interesting associations started while tuning 40-meter phone one summer night and stumbling on George, WB0DJY (now W0UA). "I immediately noticed this guy's quick wit and quick temper. He wore his emotions on his sleeve, and kept his small audience entertained with a continuous stream of chatter. Our contacts became regular late night fixtures on the summertime 40- and the wintertime 75-meter phone bands. George has a lot of star quality, and our contacts became popular late night listening stops for contesters across the US. I became his usually-inaudible straightman, invoking entertaining and spirited contest-related banter. The 'George and Leg Show' developed quite a following across the country.

Leigh went on to win the Sweepstakes on phone from W0TR and on CW from K0RF. His phone victory was a thrilling come-from-behind win over K7JA operating from KV4FZ, perhaps due in part to the lessons he learned from his experiences in the '74 phone Sweeps (see sidebar).

Contesting started to change, though. "In the latter half of the '70s, there was a sudden and fundamental shift in the way that Japanese operators approached the DX contests. The 75-meter JA DX window opened up—a tragedy for contesting on the West Coast and in Japan. Casual operators on 75- and 40-meters no longer participated in DX contests. The year after I won the ARRL International DX Contest, W3WJD thoroughly trounced me. Although there would be another West Coast winner in the ARRL Phone contest, there has never been another winner from California in any major DX contest on either mode, and there have been few appearing in the Top Ten.

"A gigantic demographic change has taken place—fewer Japanese stations are on the air and more Europeans are active in contests, especially on phone. The shift is continuing. European operations are increasing to the degree that perhaps the only way to win a DX contest (all bands) these days may be to operate from North Africa. Skilled Californian operators now generally travel to DX spots to operate.

"My generation of operators came on the heels of the likes of W4KFC, W9WNV, W9IOP, W1BGD, K2KIR, K2EIU, K6EVR and several others. Many of this earlier generation of operators are now known for their multi-multi stations or for superb results from single op efforts at their stations. Phone contesting took on increasing importance as more and more stations were equipped for SSB, both in the US and abroad. My generation includes K7JA, W0UA, N6AA, AI6V, N6IG, N6TJ, with a definite West Coast flavor due to the demographics of the day.

"The generation of contesters that followed seems once more to be typified by a swing back to CW operators, although there are exceptional phone operators as well. Examples are K5TR, N6TR, W4AN and N5KO. This group typically will operate the Sweepstakes from a big station in Texas then jet off to South America for the CQWW. The operator training grounds that they've been privileged to attend—such as the WRTC—have helped make them the finest high rate operators around. The next generation of operators—I have to give credit where it's due—are coming from places like Finland, Germany and Italy—and they go to Africa to operate.

"Perhaps my last act as an Elmer was to launch the Southern California Contest Club. The negative attitude displayed by the SCDXC toward contesting led to an inevitable push for a new regional contesting club. The Northern California Contest Club had already been created. I arranged for the first meeting of the SCCC. It was held at W6RTT's home in Arcadia. I designed the invitations, created the mailing list, addressed and mailed the envelopes, bought the half keg of Miller High Life, brought the burgers and barbecued them myself." If you want things done right, do them yourself.

"But, having created the club, I soon found myself unable to attend any subsequent meetings. Shortly after the formation of the club, I had an accident at work. A ladder came out from under me, I broke my back, and I was in pain for quite a long time. My entire life changed, my marriage broke up, I stopped contesting completely for a few years, and I lost contact with many of my ham radio buddies. My tower was lowered in Burbank, and now, 20 years later, I'm just beginning to erect it again. I truly hope that the best of my Elmer days are still ahead of me.

"I've set a concrete base for a small guyed tower. I'd like to build up a contest station of my own, but it appears that it can't be at my home, so soon I'll be looking for some very inexpensive property deep in the otherwise useless desert, away from sources of QRN. I'll design and build a small stack of Yagis and see if I can operate without too much of a disadvantage from a station that will be a lot like a Field Day operation. I'm going to win every contest I enter. (I can plan, can't I?)

"If I ever win the lottery, I'll put up a second station like a WP3R, and see if I can win all of the ARRL-sponsored contests in one year. In the meantime, I've been operating from W6RU—Terry and I have been friends since 1965.

"There are lots of new things to be excited about in addition to the familiar ones. Modern transceivers are being produced at prices that would startle anyone who lived in the 1960s vacuum tube days. For one-fifth as many hours of labor I can now afford roughly 5 times the radio. At the same time, the operator skills required are mostly unchanged—a fine 1960s CW operator could sit in at a modern operation and be quite at ease—except, perhaps, for the new emphasis on the typing skills required by logging software.

"Because computers and radio both allow widespread communication (on the air or over the Internet) and are similarly dependent on the magic of technology, both Amateur Radio and computers generally appeal to the same individuals. There should be a sense of pride that Amateur Radio operators have disproportionately contributed to the state of the art of computers.

"The exciting new developments that computers promise for contesting has instilled an awe in me. We all know about digital CW filters—imagine processors for augmenting the signal-to-noise ratio of SSB signals in both white noise environments and in the face of adjacent channel interference. Computer modeling of beam antennas produces more or less miraculous results. Computer-aided logging and dupe checking, digitally-generated CW exchanges, digital voice keyers, etc, are already responsible for increasing scores dramatically. Imagine what innovative improvements are on the horizon.

"Clearly, the trend of the day is the growth of Amateur Radio in Europe, and the new stars of radiosport that have emerged there. International political changes since 1990 have created an atmosphere in which it can be reasonably predicted that there will be a gradual growth of Amateur Radio operators with modern equipment and antennas in Eastern Europe and Russia. Eventually, I hope that poverty in India will be overcome, isolationism in China will be reduced or eliminated, and—in a new atmosphere of international cooperation and peace—that South America and Africa will also become prosperous.

"This would lead to Amateur Radio operations from those now poorly represented areas. Outside of the political boundaries (inside of which church and state are combined) international cooperation and commerce will make the world more prosperous. This can only lead to a golden age of Amateur Radio contesting." And Leigh will be there. ■

RTTY Contesting

Wayne Matlock, K7WM
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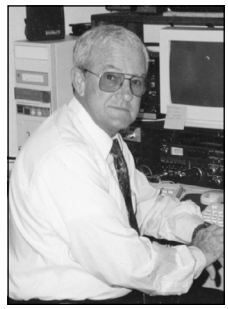
K7WM

Contesters are always looking for an "edge" to make them more competitive. Prior to the advent of the computer, many contesters kept an extremely detailed manual log of each and every contact along with notes on the propagation experienced during the contest. An experienced contester could use that information to tell who was coming on and when, and where to point the antennas.

Most of us are now using computers for logging. The logs have become easier to generate and offer greater complexity. Hourly graphs, rates, band usage, frequencies, etc, are all now easily obtained. At the conclusion of a contest, all of this data can be printed out and filed. I have seen and made good use of these records for my own contest operating.

The Internet has become another valuable tool for contesters. Nearly instantaneous and widespread contesting information has become available. We now know who is going where for a contest and which of them are going to be using unique call signs (contesters will do almost anything to get a unique call sign). We can now get up-to-the-minute propagation forecasts and a whole multitude of additional information that previously was not available to the average contester.

Today we also use our computers and software as voice and CW keyers. This can even make it easy for a single operator to run multiple radios on different bands. Single Operator 2 Radio (SO2R) is a very popular category in RTTY contesting.

We are happy to have Bruce, WT4I, as our guest columnist this month. He'll fill us in on ways to add multiple radios to most existing stations. Try it, you'll like it!

Successful Multiple Radio RTTY Contesting

by Bruce Lifter, WT4I

Every contester is interested in improving his or her score. Whether you are competing against your own personal score from the previous year or are going all out to win a certificate or plaque, the competitive nature of the sport drives us.

Of the hundreds of entrants in a major RTTY contest, only a few have the luxury of piloting a monster contest station with stacks of antennas. The rest of us slowly improve our own stations over time. While maybe not as dramatic of an improvement as upgrading your antenna system to stacked monobanders, adding a second radio to your contest station is one way to improve your contest score, and therefore your enjoyment.

Getting Started

There is a perception that the addition of a second radio is expensive and complicated. Compared to adding a second tower with stacked monobanders, it can be relatively painless. There are just a few things that are required to be successful: a second radio, an extra antenna, some flexible contest software, and finally, patience and consideration for other contest operators.

The Second Radio

Your second radio does not have to be as fancy as your primary radio. Many contesters already have a backup radio from a previous upgrade.

If you are looking to add another radio, consider picking up an older one at a hamfest. Look for a transceiver that allows you to use CW filters in the FSK or SSB mode. In my opinion, a radio without at least a 500-Hz filter is nearly useless in a major RTTY contest. Be careful! Even many modern rigs lack this capability.

Let's look at examples using a couple of radios from the same manufacturer: ICOM. In my opinion the IC-737 is a poor choice. The '737 does not provide FSK. You must use the LSB mode. It also does not allow you to select a CW filter in the SSB modes. The receiver AGC will be swamped by strong near-frequency RTTY signals during a major contest.

A better choice would be the older IC-740. These can be found at US hamfests for around $400. The '740 includes the FSK mode and will allow selection of the CW filter in the RTTY mode. The downside of this radio is that it does not have provisions for computer control and it probably won't survive a RTTY contest running 100 W. You'll have to keep the power at or below 50 W and make sure there is plenty of air circulating. Shop around. There are many suitable older radios available.

An Extra Antenna

The average contester lives on a modest sized lot that is most likely sporting a single tower with a triband beam. In this situation, the biggest bang for the buck for a second antenna is a vertical. While a new vertical can cost hundreds of dollars, used 5-band verticals can be found for less than $50. Granted, a bargain antenna may require some work to get it back in shape.

An advantage of using a vertical in combination with a Yagi antenna is that the interference between the two radios will be reduced. This is because one antenna is horizontally polarized while the other is vertically polarized. If the vertical antenna is situated far enough from the Yagi antenna, you may not need band-pass filters for low power two radio operation.

The key to success with antennas is to make the most with what you have. A simple vertical antenna with a few elevated radials will generally outperform the same vertical mounted on the ground. As you get used to two radio contesting with a vertical as the second antenna, the competitive spirit that got you into contesting will drive you towards making further improvements.

Flexible Contest Software

In the past, this section would be limited to a discussion of a second TNC and computer. Depending on the contest software you select you might be able to get away without a second computer or even a second TNC. There are four major contest programs available for RTTY contesting:

RCKRtty
OH2GI-HAM SYSTEM
RTTY by WF1B
WriteLog for *Windows*

While an entire article could be dedicated to the comparison of these four programs, I will mention a few of the features of each program in regards to multi-radio single operator contesting. If you are in the market for a new RTTY contest software package, you should check out each of their Web sites.

Introduced in 1998, *RCKRtty* by DL4RCK is one of the newest contest software packages that includes RTTY. *RCKRtty* seems to be trying to bridge the gap between a general-purpose logger and full-blown contest software. It

does not appear to support two radio operation other than by running two complete computer/TNC setups and then manually merging the logs. This software may be one to watch, however, as new features and contest support seems to be added monthly.

OH2GI-HAM SYSTEM includes provisions for running two HF radios on the same *DOS* computer. While it is a *DOS* program, it will operate under *Windows 95* and *98*. *OH2GI-HAM SYSTEM* also supports the sound card modems *RITTY* and *BITTY* by K6STI.

RTTY by WF1B software is dedicated to RTTY contesting. This software dates back to 1990 and basically changed RTTY contesting into what it is today. Being the first commercially available RTTY contesting software, it has probably the largest selection of pure RTTY contests and supports many different TNCs—including the sound card modems *RITTY* and *BITTY* by K6STI. *RTTY* by WF1B allows two radio contesting through connection of two separate computers over a com port network.

WriteLog for *Windows* by W5XD is probably the most flexible RTTY contest software for multi-radio RTTY contesting. Like the OH2GI software, it has direct support for two HF radios but in a true *Windows* environment. *WriteLog* also comes off the shelf with a built in sound card TNC for RTTY. It even has a feature that will prevent the two connected radios from transmitting at the same time.

Which contest software you choose will determine how much additional computer and TNC hardware you will have to acquire and maintain. At least two of the packages I've mentioned here will allow you to operate two radios from a single computer.

Patience

The premise behind running multiple radios is that a few extra multipliers or contacts per hour will improve your score. If done wrong, you can actually hurt your score. Early in the contest, a second radio can distract you and reduce your run rate. It requires patience to hold off and bring in the second radio at the appropriate time.

If you are new to multiple radio RTTY contesting, I suggest that you wait until you are a couple hours into the contest before activating the second radio. By this time you will have established a flow with the first radio and the rate will have slowed down. At this point, the second radio can be used to search and pounce on one band while you use the primary radio as the run station. Remember that just a few extra QSOs per hour could significantly increase your score.

As your skill with two radios improves, you will find that you can easily handle two radios and will probably be tempted to introduce a third radio so that you can try operating two run stations and a third for search and pounce. There are diminishing returns as you add more radios though. (It's akin to adding elements to a Yagi antenna.) If your score improved 10% by adding a second radio, it will only improve by perhaps an additional 1% when adding the third.

Considerate Multiple Radio Contesting

Along with the potential for generating extra points with an additional radio comes the responsibility of considerate operating. A successful multiple radio operator should be indistinguishable on the air from a single radio operator. In general, when another station replies to your signal, your response should be just as quick as when you are running a single radio. This applies when both searching and pouncing and running.

While everyone makes mistakes on the air, there are number of things you can do to help synchronize your operation. The first thing to do is to shorten your exchanges. The quicker your exchanges, the quicker you can respond on the other radio. Maximize your message content. Take for example this CQ calling buffer:

"CQ CQ RTTY ROUNDUP DE WT4I WT4I K"

The critical information is your call and the fact you are calling CQ. Shortening the message to the following provides the same information in much less time:

"CQ RR DE WT4I WT4I K"

The next thing to do is to learn how to kill the transmission on one radio so that you can respond more quickly on the other. With the *WriteLog* software, this is as simple as hitting the escape key. Let's say you send your call in response to another's CQ on the second radio. While you are waiting for his exchange, you send CQ on the first radio. If the exchange returned is quick and very short, terminate the CQ on the first radio immediately following the first time your call is sent. You can then respond to the station you are searching and pouncing without that operator noticing any delay.

To become truly successful at multiple radio RTTY contesting, you must learn to juggle exchanges with more than one station at the same time. Real skill is required when working multiple operators with different operating rhythms (short quick responses versus long delayed responses). After much practice I have found that I can now handle two steady run stations at the same time while I am lining up a search and pounce station on a third radio. In getting to this level, I have given up many secondary run frequencies in the hope of not diminishing the operating enjoyment of others.

Some Final Thoughts: PSK31 and Multiple Radio Contesting

Last January, the ARRL RTTY Roundup allowed PSK31 as one of the modes in the contest. The editors of *QST* sponsored a special PSK31 plaque for the 2000 ARRL RTTY Roundup to encourage participation in that mode. The plaque was enough of an incentive that many dedicated their contest efforts just to the PSK31 mode. There were claimed PSK31 QSO counts in excess of 200.

Will PSK31 replace RTTY as the major mode in digital contesting? Even though three of the four mentioned RTTY contest software packages supports the PSK31 mode, I don't think so.

PSK31 could change the outcome of a contest, however. Consider Sunday afternoon when the contest has slowed down and it seems that everyone is a dupe. It might be nice to have a second radio on PSK31 to pick up the QSO rate or even to find a new multiplier. While this might be a tough decision with only a single radio, given a second radio this might make sense.

Will there be more contests that support multiple digital modes? Who can tell? PSK31 has become extremely popular. I believe this is because it works well and because there are a multitude of free applications that support it using the sound card as the TNC.

Having fun and an enjoyable time is the main purpose of contesting. This is why I do it. Operating two radios seems like the way to go and sure keeps you busy when the bands are open—and it gives you something to do when the action slows down. Hope to work you in all the contests.

73, Bruce, WT4I

That's it for this issue. Bruce certainly supplied some food for thought. It's like when my XYL Wilma (KX7LDS) asked where I was going to put up my 100-foot tower. I told her, "down in the wash." She surveyed the very dense mesquite thicket there and asked "Why?" I answered "Because I got to and it's something to do." She responded with "Good luck!" That tower installation is another story—and I have the scars to prove it…

Good contesting, and enjoy whatever else you use your station for—but JUST USE IT!

73, Wayne, K7WM ■

Contesting for Fun

Bob Patten, N4BP
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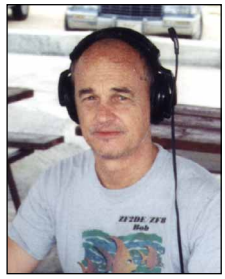
Ever wonder what it would be like to operate Sweepstakes QRP?

My neighbor, Frank, W4FMS, completed building his Elecraft K2 just in time for the 1999 ARRL CW Sweepstakes. Here is his account.



N4BP

A Building Interest in Contesting

Although I've been a ham for many years, the whole concept of contesting had always seemed somewhat foreign to me. I've participated many times in Field Day (which, of course, really isn't a contest) but other than that I've had limited exposure to actual contesting.

All this began to change when I met Bob Patten, N4BP, at a Christmas party several years ago. Bob's enthusiasm for contesting was contagious—he made it sound fun and challenging. Little did I know what this would lead to.

About a year ago, I shared a three-hour car ride with Bob to one of our fall hamfests here in South Florida. During the drive, Bob described his latest project: an Elecraft K2 transceiver kit. At that time, I was still trying to get a handle on contesting—I knew even less about QRP operating.

For the previous few years, my interests had centered around collecting the boatanchors (Collins, Drake, etc) that I had longed to own when I first got my ticket in the '70s. I'd assembled a few small Heathkit accessories years ago and today the K2 kit seemed very interesting. I had always had a desire to build my own transceiver, but after Heathkit's departure from ham radio, I could never find a kit-built radio that would offer the performance available in the commercial gear.

I borrowed Bob's K2 a few times and became very impressed with this radio's capabilities. For those of you who haven't had an opportunity to try one out, it truly is a world-class rig in a small package. This was exactly what I'd been searching for all those years. Finally, I just couldn't put it off any longer—I decided to take the plunge.

I ordered my K2 around Labor Day. My plan was to complete it in time to use it to enter the ARRL Sweepstakes CW Contest as a "Q." After so many years, this would not only fulfill my desire to build my own transceiver but would also be a great opportunity to make my first attempt at QRP contesting. What could be more fun than entering Sweepstakes with a rig that I put together myself?

With a one-year-old daughter at home, needless to say, my personal time is limited. I typically managed to get in about one hour most evenings for building. I'm sure that I'm much slower than the average builder—the assembly phase took me about 60 hours.

The timing couldn't have worked out more perfectly. I put the last screws in the K2's enclosure the night before the contest. I would be ready to go the following afternoon.

As expected, my new transceiver performed flawlessly. I'm not sure if I had more fun contesting or just playing with the new rig. Honestly—it wouldn't have mattered if I had completed 1 contact or 1000. There is something about operating a piece of equipment that you built yourself that instills a real sense of accomplishment.

I found radio conditions during the contest to be fair to average. I could work pretty much anyone I could hear. I've got a long way to go before I'm truly competitive, both in operating technique and equipment (my antenna farm could stand some improvement), but I was genuinely pleased just to be participating with my new rig.

Contesting and QRP operating have really opened up a whole new world of ham radio enjoyment for me. Although I still intend to play with the "heavy metal" from time to time, I'm already looking forward to firing up my K2 for some of the other contests this winter.

In my case, the great thing about being so new to contesting is that it's easy to gauge improvements in performance. I'm already looking forward to the next contest, and I hope to work you.

73, Frank, W4FMS

My Adventure to St Croix for the CW Sweepstakes

Many opportunities arise only once in a lifetime. After talking for years about hiking the Grand Canyon, my wife Juli and I finally got the chance to do so in the spring of 1999. Joe, AB7TT, was instrumental during the planning stages and even accompanied us as our guide for the five-day trip. We didn't bring any radio gear along.

Another once-in-a-lifetime opportunity presented itself early last year. John Ellis, NP2B, travels here to South Florida each February to visit Bruce, W4OV, and to attend the Tropical Hamboree in Miami. During his visit this past year, John offered me the use of his station on St Croix for the November CW Sweepstakes. I eagerly accepted!

In the months between February and November there was much planning and preparation. I purchased my airline tickets fairly early on. With that detail out of the way, it was time to whip the operator into shape.

For our Grand Canyon adventure, I had spent countless hours "hiking" up and down the stairs at work to strengthen my flatlander legs and lungs. But since the time of that trip I spent way too much time only exercising my fingers on a computer keyboard. I had gained considerable weight.

My wife's "South Beach Diet" worked for her. Juli convinced me to try it, and within weeks I had gone from 160 down to 145 pounds and lost most of my protruding gut in the process. Along with the diet, I again started an exercise routine at work, this time doing leg lifts and pushups.

As November approached, I began taking vitamins. Finally, about two weeks before the Sweepstakes, I went for an eye exam and had new glasses made. Having turned 60 this past April, I figured that I could use all the help I could get!

Meanwhile, in St Croix, John was wrestling with some equipment issues. His Kachina developed an intermittent, his Ten-Tec Paragon wouldn't key from the computer CW interface, the tower wouldn't crank up beyond 30 feet, the balun went west on his tribander and the power transformer in his Ten-Tec Titan went up in smoke. John tackled the problems and had nearly everything in fine working order in time for the Sweepstakes weekend. The only exception was the tower. The salt air had taken such a toll on the crank-up mechanism that it was no longer repairable. A replacement tower would have to be considered sometime in the future.

My trip from Fort Lauderdale to St Croix was uneventful except for a last minute change in flights from San Juan to St Croix. It seems that the original plane, a Cessna 402, had too few passengers. They put me on a later flight.

Once on board, there was a moment of panic when the flight attendant tried to squeeze the backpack with my Elecraft K1 and K2 into a compartment that was a bit too small by smashing the lid down on it. Luckily, I rescued the QRP rigs before he could destroy them!

John was waiting for me at the airport when I arrived on St Croix and drove me to his home. The views of the island along the way were incredible!

We were soon setting up the station. I would be using the Paragon at 100 W feeding the tribander at 30 feet and a dipole strung up just below the beam. John's desktop computer running *NA* would be used for logging. I set up *RecPro* on my notebook so that I could

record the entire contest onto hard disk.

Once we had everything pretty much all ready to go, John and Jeanette took me out to dinner. After dinner, John and I returned to the station and spent some time playing with the K1 and K2 QRP rigs. John has his own K2. He wanted to make some A/B comparisons with mine. He was so taken with the smaller two-band K1 that he ordered one for himself early the following week.

Given the low tribander and the expected high MUF, my simple strategy was to always be on the highest frequency band that would produce results. This turned out to be a good plan. My highest rate was on 10 meters and the 20-meter band remained open until almost 3 AM. The little time I spent on 40 meters was frustrating.

The first hour on 10 meters resulted in the best rate of the contest—91 QSOs. For some reason, 15 meters never did seem very productive. Twenty provided the greatest number of QSOs by a wide margin.

The Paragon was unfamiliar to me. I got caught several times by the RIT scheme—it uses the main tuning knob for receiver offset. Fortunately, there were no equipment failures during the entire contest.

When I quit for a 4-hour nap around 3 AM, there were 700 QSOs in the log. At that point I had 77 sections worked; I still needed the Pacific, Alaska and Northwest Territory. On Sunday I worked several Hawaiian stations, and KL7Y and VY1JA eventually made it into the log for the last two.

I found J., VY1JA in a pileup on 10 meters and was quite surprised to get through to him on my first call. I let out a whoop when I logged him—John heard me all the way out in the backyard! At the ending bell, I had 1127 QSOs in the log including all 80 sections—my first CW Sweep in three or four years.

The return flight was scheduled for early Monday morning, so I had very little time to visit after the contest. The flights from St Croix to San Juan, and on to Fort Lauderdale, were both on time. While making the connection through San Juan, my backpack with the two Elecraft rigs fell off the baggage cart onto the tarmac! Only a little paint was scratched—no real damage was done.

All in all, it was quite a successful contest adventure and was definitely fun! I can't thank John, NP2B, and Jeanette enough for their hospitality and generosity.

HELP! I need *your* contest stories. Surely others besides me are having fun while contesting. If you have an interesting experience to relate, whether QRP or QRO, from home or from the field, competitive or strictly for fun, I need to hear from you. You can e-mail me at **0** or write to me. My address is Bob Patten, N4BP, 2841 NW 112 Terrace, Plantation, FL 33323. ■

Contest Tips, Tricks & Techniques

Gary Sutcliffe, W9XT
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Should We Have a Rating System for Contesters?


W9XT

Well! Readers certainly didn't mind stating their views on this controversial topic! Maybe it was because the deadline was around the same time as the Presidential Election and everyone—at least our readers in the United States—was ready to express their opinion.

One side of the argument was that we should not have a rating system. Jean, W4TYU, put it very succinctly: "I completely oppose such a *caste* system for contesting." KE3Q thinks there is already enough politics and cliques in contesting and that a rating system would only increase it. Rich believes some of the ambiguity inherent in contesting might be for the best.

WU4G thinks the only purpose of a rating system would be to build egos. Ron says rating systems are useful when there is a need for attracting advertisers and sponsors, but that is not what we are about. He would rather see any effort for a rating system focused instead on building on the WRTC—where the development of friendships and goodwill has been well documented.

LZ2CJ also opposes a rating system. His argument is that every contest is different, and you can not compare results from different contests. Wally feels that the WAE contest is more difficult than say the CQWW or the WPX, but others will disagree.

K7FR prefers that we don't implement a system. Gary states that we can't even agree on rule changes or entry classes intended to level the playing field. He feels that the WRTC is as close as we will get to this. Gary does not want to slight those who have participated, but other factors are at play. Besides having the contesting skills, a WRTC participant must be able to afford the time and money to attend. There are some qualified operators who have not been able to compete due to those considerations.

Maybe we already have a de facto rating system. Henry, K4TMC, thinks that contestants in the WRTC could easily be considered "Grand Masters," and those who consistently place in the Top Ten of their category are "Masters." Bill, AA4LR, also considered anyone selected for the WRTC to be a Grand Master.

W5ASP gives arguments on both sides of the issue. Arguments against a rating system include shades of elitism and the humiliation of a low rating. On the side for a rating system, Joe mentions that contesting is a sporting competition and that many types of sporting competitions have rating systems that allow peers to compete against themselves.

KI9A mentions that he uses analogies with his other hobby—drag racing—in this type of discussion. They have classes in drag racing. Drivers are either amateur or professional. Basically Chuck describes himself as a little pistol that likes to mix it up with the big boys.

Many responses—including those by Victor, PY2NY, and others—suggested that such a system would have to take a large number of factors into account.

Tom, K1KY, says that as a minimum you would have to break it into three factors. The first would be operator skill. The next involves the station's antenna systems and power level. The final factor would be the effect of the station's location in a particular contest.

W2GD likes the idea of rating systems in principle, but considers implementation problematic. John states that it will not be easy to objectively assign ratings with so many variables. Besides the obvious station and location factors, some of the factors mentioned by John include comparing the various single op classes. What about ops that are almost exclusively CW or phone contesters? Should one be required to be an expert at both to gain a high rating? What about those who do most of their contesting in multi-op efforts? How do you deal with domestic versus international contests? How should error rates be factored in? John concludes that there is no silver bullet and that no system will please everyone.

In setting up a rating system, K2PS suggests we look at the way points are awarded to Bridge players. They are a function of how one does against the level of competition and the number of competitors. Pete says a good parallel would be to award more points for bigger and more important contests. Smaller contests could be worked to gain extra points, but upper level ratings would require a certain number of points from the major contests to qualify.

Another reader used his experience as a former "average serious chess player" to see the advantages of a rating system. Bill, AA4LR, explained that the chess system uses a simple algorithm that is based on the rating of the opponent and the outcome of each game. Bill concedes that it would be very hard to neutralize all the variables in contesting.

Rating systems for other competitive activities work well because the playing field is always the same. The chessboard always has 64 squares and each player has one king and one queen, and the same number of rooks, bishops, knights and pawns. Bridge players always use equivalent decks of cards.

Radio contesters will never have exactly the same station, location or propagation. The WRTC sponsors must be given a lot of credit for how well they level the field for that event, but their methods are not practical on a larger scale—for an entire country or the world.

Ward, N0AX, feels that a rating system could be useful, especially for the newer contester to use as a yardstick for measuring improvement. Acting as Coordinating Author, Ward and a number of well-known contesters came up with a proposal for such a system. It can be found in an article in the May-June 1995 issue of the *NCJ*. Wayne, N7NG, and Art, AB4RL, also made reference to the article.

The article came up with a system for rating contesters on a regional basis. To calculate one's rating, you use the 10 geographically closest entrants in your own class. One neat feature is that you can come up with your own rating by using published results of recent contests using the scores of those you consider your peers. Check out the article if you would like to dive deeper into this subject. If your collection of *NCJ*s does not go that far back, pick up the NCJ *Collection CD-ROM.*

Well, as of the deadline for this column, we still have not decided who our next president will be nor have we settled the issue of a contest rating system. Hopefully we will at least have that presidential thing figured out by the time you read this!

Thanks to AA4LR, AB4RL, K1KY, K2PS, KE3Q, K4TMC, K7FR, KI9A, LZ2CJ, N7NG, N0AX, PY2NY, W2GD, W4TYU, WU4G and W5ASP for their comments on this subject. As always, this column only works because of the contributions of the readers.

Topic For March-April 2001 (deadline January 4, 2001)

Avoiding Fatigue and Maintaining Concentration.

How do you maintain your concentration and avoid fatigue during long contests? What do you eat and drink? How do you maintain the shack environment to stay at your peak? How do you maximize the effectiveness of your rest periods?

Send in your ideas on this subject or suggestions for future topics. You can use the following routes: Mail—3310 Bonnie Lane, Slinger, WI 53086. Internet—**w9xt@qth.com**. Be sure to get them to me by the deadline. ■

Propagation

Carl Luetzelschwab, K9LA
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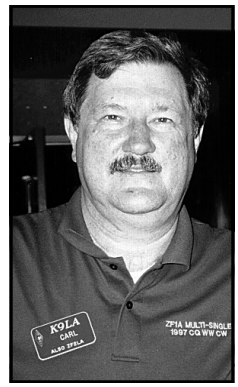
VHF Contesting—6 Meters

At a presentation at last September's W9DXCC Convention, I gave an update on Solar Cycle 23. Bill Smith, W9VA, chairman for the event, asked me to include a few words about what to expect from 6 meters at the peak of Cycle 23. Indeed I spoke only a few words, with my main point being that predicting propagation on 6 meters is essentially an exercise in probabilities. Here's the full story.



K9LA

For VHF contesting (and DXing) on 6, most of the time we will be relying on two propagation modes—sporadic E and F region. Let's take a deeper look at both. Our goal is to come up with some "best times" for these modes.

Sporadic E is well documented. One of the best Amateur Radio studies I've seen is by Pat Dyer, WA5IYX. In 1972 he began a study of sporadic E in the FM broadcast band (88-108 MHz). His data can be reviewed at **home.swbell.net/pjdyer/index.html**. Emil Pocock, W3EP, in his "The World Above 50 MHz" column in the June 2000 issue of *QST*, used Pat's data to create a graph that shows the total number of minutes of 88-MHz sporadic E propagation observed for each year from 1972 to 1999. Looking at that graph, it's interesting to note that there doesn't appear to be a strong correlation between the yearly total minutes of sporadic E and where a year falls in the sunspot cycle.

But this data is for 88-108 MHz—is there any available for 6 meters? After some digging around, I turned up a plot of the probability of 50 MHz sporadic E in the continental US in *The Air Force Handbook of Geophysics*. The graph (reproduced here in **Figure 1**) was generated using two years of data collected near a sunspot maximum. You'll notice some minor variations between the two years. Based on what we saw from Pat's FM broadcast band data, though, in general it should be fairly valid at any point in a sunspot cycle. The data is presented in terms of the percentage of the days of the month that experience 50 MHz sporadic E. For example, at 8 AM local time in August, from what we see in Figure 1, sporadic E on 6 meters would occur 10% of the time (on 3 days). Using this graph, one can estimate the best times for 6-meter sporadic E within the US for each month.

The F region is well documented, too. Maps of worldwide MUFs (maximum usable frequencies) are readily available. **Figure 2** is an example of the 4000 km MUF at 2200Z for the month of March at an SSN (smoothed sunspot number) of 130. This figure was generated using *Proplab Pro* propagation software (Solar Terrestrial Dispatch, Stirling, Alberta,

Table 1

The number of days per month 6 meters is likely to provide sporadic E/ F_2 region propagation between the US Midwest and VK near a sunspot cycle maximum.

	20Z	*21Z*	*22Z*	*23Z*	*00Z*
Feb	0	0	1	0	0
Mar	1	4	6	5	3
Sep	1	2	3	2	1
Oct	0	3	5	3	1

Table 2

The number of days per month 6 meters is likely to provide sporadic E/F_2 region propagation between the US Midwest and South America near a sunspot cycle maximum.

	15Z	*16Z*	*17Z*	*18Z*	*19Z*	*20Z*	*21Z*
Jan	3	6	7	8	7	4	2
Feb	3	5	6	7	6	5	2
Mar	1	2	4	5	5	3	2
Sep	0	0	0	1	0	0	0
Oct	1	2	3	4	4	3	2
Nov	3	6	7	7	5	3	1
Dec	3	7	7	7	6	4	2

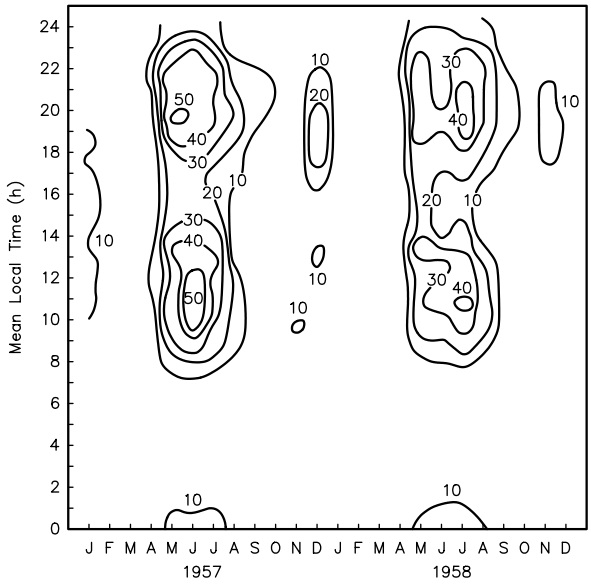


Figure 1—The percentage of occurrence of 50 MHz sporadic E in the continental US. (From *The Air Force Handbook of Geophysics.*)

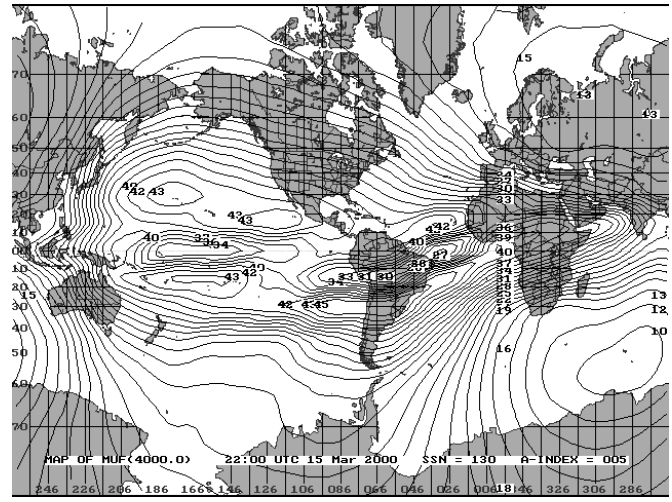


Figure 2—A contour map of the 4000 km MUF at 2200Z for the month of March at a SSN of 130. (Generated using *Proplab Pro.*)

Canada). As an example of how to interpret the data on the map, a 34 MHz contour line is located right over Lake Michigan. That means a 4000 km path with its midpoint right over Lake Michigan has a MUF of 34 MHz.

The *highest* MUF shown in Figure 2 is 45 MHz. That certainly won't support propagation on 6 meters. But this map shows monthly *median* values, so on a couple days of the month the MUF will be higher. How much higher? Using the data from the graph presented in Figure 1 of my July/August 2000 *NCJ* column, we can estimate that on a couple days of the month the MUF will be about 25% higher.

Applying this to Figure 2 says that a contour line with a MUF greater than 40 MHz should offer 6-meter propagation on a couple days of the month. There are several areas on the worldwide map that meet this criteria for the month of March at 2200Z at an SSN of 130, but let's focus on that area along the geographic equator just east of VK. Also note that these areas are relatively small, indicating that 6-meter propagation will be very geographically selective in nature.

From this we see that propagation to VK is possible on the VK end, but we have a problem on the US end—the MUFs aren't high enough even when considering only a couple days of the month. So how would we make a contest QSO with VK on 6 meters? More than likely we'd have to rely on sporadic E to carry our signals into the higher MUF areas. Now we have two probabilities for working VK—one for sporadic E and one for the F_2 region MUF. The specific day that gives an adequate F_2 region MUF must also be the specific day that gives us sporadic E. The overall probability of this happening will be lower than either individual probability. To determine the overall probability, we multiply the two together.

Putting all this together for the VK path results in the probabilities shown in **Table 1** (in terms of the number of days per month—rounded to the nearest whole day). This analysis is most applicable to the Midwest. I would expect the West Coast to have more days and the East Coast to have less days.

I also worked out the probabilities for propagation to South America, seen in **Table 2**. From these tables, it's quite obvious when the best windows of opportunity occur (month and hour) and thus when you should be checking 6 meters. Please realize that there were some simplifying assumptions made along the way, so this data should only be used as a general guideline for your 6-meter contesting (or DXing) efforts. And since the F_2 region probabilities are based on an SSN of 130, this data is probably best only for another year or so. After that, the probabilities will be less (due to the decreased SSN).

A couple of closing comments are in order. First, magnetic storms can sometimes add extra ionization at low latitudes, so keep an eye out for elevated A and K indices that may result in an even higher MUF. Especially check around the equinox months, as the ionosphere is most impacted during these periods. Second, be aware that there are other propagation modes that offer 6-meter openings. W3EP's April 1999 column in *QST* provides a nice list of 6-meter propagation modes, in addition to modes on our other VHF and UHF bands. His November 1999 column discusses 6-meter propagation via scatter.

Armed with the US sporadic E data of Figure 1 and the VK and South America data of Tables 1 and 2, respectively, I hope you have better success with your 6-meter contesting. ■

Contest Expeditions

Kenny Silverman, K2KW
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A Continental Overview


K2KW

I don't know about you, but every fall—as the contest season approaches—I begin to develop this strange feeling that I should be off someplace where I can smell and taste the humidity, and where beer is the safest beverage. I begin to experience irresistible urges to lug heavy bags around and match wits with customs officials. The calling is stronger than any other I've ever known. I'm a textbook example of a pileup junkie.

The opportunities for scoring a pileup "fix" have never been better or easier. It's more just a matter of deciding where you want to go than anything else.

In this installment of *Contest Expeditions* I'll provide a continental overview of some of the Rent-a-QTHs that are available worldwide and furnish a few general comments about the ease of operation from them. *CQ Contest!*

When I began assembling information for my *DX Holiday* Web site, **pages.prodigy.net/k2kw/qthlist/**, I started out by dividing my listings into two location types: "Rent-a-QTH" and "Ham Friendly." I also listed "Club Stations" when information on those was available. For the purpose of this article, however, I will lump Rent-a-QTHs and Club Stations together. Both of these types typically provide fully equipped stations. We'll then touch on some locations that don't fit in either of these categories.

The Rent-a-QTH generally has equipment and antennas already set up and available. All you will need to do is arrange for licensing (the owner of the station will often assist with this), arrive safely and operate! For all other locations, you will need to bring all of your own antennas and equipment with you.

Due to the ever-increasing number of traveling hams, even a first-time contest expeditioner can usually at least make arrangements at a Ham Friendly location. There is a great deal of information available on these and many of them are anxious to accommodate.

The Caribbean and North America

Typically the Caribbean has been the hotbed of Rent-a-QTHs—and with good reason. The Caribbean is a great place to operate from in just about every contest. Even outside of contest periods, there seems to be an insatiable appetite for contacts with stations operating from there. Even modest station setups can do fairly well as they enjoy easy paths to the USA, South and Central America and Europe. A simple trapped vertical near the ocean has even managed to be a sufficient antenna system to earn a win in the ARRL DX contests from here on several occasions.

Here are some of the countries that offer good Rent-a-QTH locations: 8P, C6 (2 locations), FG, HP, HR, J6, KP2, OX, TI, V2, V3, VY1, VP5 (3 places) and ZF. Hams have operated from nearly every island in the Caribbean, and most of the DXpeditioners who have visited them are more than willing to help you out with additional information.

On *DX Holiday*, you'll find a fairly extensive listing of Ham Friendly locations in the Caribbean. If you can't find a place listed that suits your needs, just ask the owner/manager of whatever property you find is available. Many "ham unaware" property managers will not object to a few wires, some verticals or perhaps even a tribander. There's certainly no harm in asking!

South America

In the contesting world, South America—and more specifically the northern tier of South America—is where every contest operator wants to set up shop. Unfortunately, there is only one Rent-a-QTH location that I know of in all of South America! This is in Aruba (P4)—although a new station is being built on Bonaire (PJ) that should be ready for occupancy in 2001.

For individuals staging their own expeditions, the easiest and most tourist-friendly places to go to are referred to as the "A B Cs"—the islands of Aruba, Bonaire and Curacao. There are lots of places on these islands that hams have used before and licensing and customs are easy. Other countries like HK, YV, 9Y, 8R, FY, etc are either dangerous places to travel in, difficult to get to, difficult to get equipment into (due to customs restrictions), devoid of obvious places to operate from (hotels/villas), lack available contest calls or are not tremendous tourist destinations. Any contest operations from these countries by foreigners are usually accomplished by operating from the existing stations of local hams.

Some of the South American countries are part of the IARP agreement. This allows visiting Americans to operate without special licensing arrangements. Be advised that the IARP does not guarantee you customs approval for your equipment—this must be handled directly with the local government. Visit the ARRL Web site (**www.arrl.org/field/regulations/io/**) for more information.

Another possible source of leads for South American destinations is the *Contest Registry* found in *CQ Contest* magazine (this is also accessible through the links section of *DX Holiday*). The Registry is a list of hams who are willing to help mentor new contesters. There are a number of South American hams listed, and they may be willing to help you find a station to operate from.

Oceania

Frankly, I was shocked to find so many Rent-a-QTHs in the Pacific! In fact, Oceania now rivals the Caribbean for the largest number of Rent-a-QTHs! Oceania has historically been where Japanese contesters travel—just as most American contesters tend to travel to the Caribbean.

From a contesting perspective, It seems highly unlikely that you could win a worldwide event from there, since it is far from the major population centers. That said, you could still have a great time, as you would surely generate huge pileups. The Rent-a-QTHs that I know of there are located in 9M6, A3, DU, FO, KH0, KH4, KH6 (3 locations), T8, VK (2 locations) and ZL. Hams have activated most of the other islands, so finding information on Ham Friendly locations should not be difficult. In most cases licensing and customs are not a problem. Bear in mind that small planes serve some of the outer islands, so luggage size and weight may be restricted (check with the airlines). Some islands are protectorates of European countries, and are part of the CEPT agreement, which makes licensing easy. Otherwise, licensing and customs are generally not difficult. Note that some countries have RF power limitations.

Europe

For Americans, Europe is generally not known as a major DXpedition destination—there's plenty of regular activity from most European countries. Considering all the other wonderful things to do, radio is usually not a high priority for Americans traveling to Europe. As a

result of all the resident ham activity from almost any country, the Rent-a-QTH choices are limited, although there are often club stations where visiting hams can put in a few hours of operating time. Many multi-operations would enjoy an extra operator, especially when they are running USA stations on SSB.

The Rent-a-QTHs that I know of in Europe are located in 4U1ITU, G, GM (3 locations), GU, JW, S5, SV9, and UB. US amateurs can get a CEPT license, which allows them to operate in most European countries without prior approval.

Africa

Africa has not traditionally been a destination for contest expeditions. For Americans—especially those living on the West Coast—it's usually a long and expensive trip. Most African countries are not what Americans consider hot tourist destinations. Do not overlook Africa, however, as there are some wonderful places to visit! In most cases, expeditioners will need to bring all their own equipment with them.

That said, the northwest coast of Africa (CN, EA9, EA8, 6W) can provide a location that has the potential to "win it all" in any major DX contest. In the past year or so, contest records have been smashed by some of the larger (private) stations in Zone 33.

There are two Rent-a-QTHs available in southern Africa: 3B8 and ZS. One of the other options (although I don't know anyone who has exercised it) is Africa DX Safaris, which offers a combination safari and radio operating in places like: 3DA0, 7P, A2, C9, V5 and Z2. Though I would not expect that this option would be good for long-duration contest operations.

Asia

Asia also lacks great appeal as a destination for American contest expeditioners. For many—especially those from the East Coast—travel to Asia is a long, expensive trip. In addition, licensing and customs can be a difficult process. Those who travel to Asia are rewarded with a rich cultural experience that cannot be matched. From a contesting perspective, it's near impossible to win a worldwide event from there, but again, the pileups can be large, and great fun can be had attempting to set Continental records. Since the USA and Europe are far away, it can often be hard to establish multiplier-profitable runs when all the strong JAs are calling you simultaneously. You can always run JAs, but they are worth fewer points than Europe and the USA. The only Rent-a-QTHs I have information on are in 3W, A5 and XU.

Go For It!

If you have the inclination, I would strongly suggest taking *any* available opportunity to operate from overseas. The thrill of endless pileups is addictive. Besides the pileups, operating from overseas also teaches you operating strategies that are used in different parts of the world. As you begin to understand what it's like on the other end, your stateside operating strategy will greatly improve as well. I still remember operating from both ON and PA during the 1994 WPX CW Contest, when conditions were pretty bad.

While at PI4COM I was assigned to operate 80 meters at around noontime, and was rather upset, as I didn't think the band would produce anything. During my shift, however, I had the highest rate of any band! Little did I realize that the Europeans would go to 80 meters when the high bands were closed to work each other. It was a very enlightening experience.

Perhaps the most overlooked sources of enjoyment that you'll experience while radio expeditioning overseas is meeting the people, seeing the sights and immersing yourself in the cultures of those exotic locations.

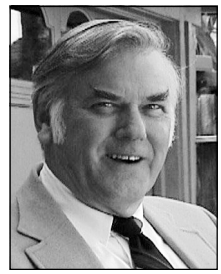
Happy traveling,
Kenny, K2KW

For information on the Rent-a-QTHs and Ham Friendly locations, visit *DX Holiday* at **pages.prodigy.net/k2kw/qthlist/** ■

International Contests

Joe Staples, W5ASP
w5asp@aol.com

Back to the Future


W5ASP

It's 2001… the new millennium is definitely here and contesting is reaching new heights. Increasing interest, new techniques and good propagation are combining to make radiosporting the "in-thing" for the active amateur… both here and abroad. For those who follow this column it should come as no surprise that it's time to look forward into the new year.

By now the antenna work ought to be pretty much done, and the station has already received a good wringing out during the recent major contests. But there are still a few things to get squared away. Let me suggest a couple of ideas that you may find helpful.

If you haven't already done so, make visits to the Internet part of your regular operating practice. The depth and diversity of the information available there is staggering. The trick is to know where to look. One of the really helpful sites for the International Contest aficionado is that run by Jan-Eric Rehn, SM3CER. (Of course there are others of similar stature. Some examples are those developed and maintained by LA9HW, I2UIY, VK4EMM, etc.)

The SM3CER site features a very detailed contest calendar augmented by some really powerful links. Knowing when a contest is scheduled is well enough, but what's even better is knowing the rules, recent claimed and final scores, the contest records and even where to find the sponsoring group's Web site. The Internet can usually provide all of the information you'll need on nearly any contest—and it's typically just a keystroke away.

The other suggestion I'll offer is to keep in tune with the dynamics of contesting, especially those that may affect your contesting software. I guess that by now there are a half-dozen or so contesting software programs in general use. It's important to know when new contest formats have affected the particular software you use, or when support has been added for handling additional foreign contests. Visit your software's Web site often.

There are Internet e-mail reflectors that provide a constant flow of such information. You need to know of them and use them. Though it may be a bit hard to sort out what you want, these can be a priceless resource. Several good Web sites have lists and links to the various Reflectors. Check such sites as **www.contesting.com**, **www.eham.net** and **www.qth.com** (among others). Just about everything that you'll ever need to know about nearly any contest can be found somewhere on the Web.

1999 Helvetia Contest

Call	*QSOs*	*Points*	*Mode*	*Category*
USA				
K1HT	74	10512	SOP	MIX
K5KG	68	9792	SOP	MIX
W4ADP	68	8976	SOP	MIX
ND5S/8	39	3276	SOP	MIX
K4BAI	25	1350	SOP	CW
W8DA	23	966	SOP	CW
N4MM	13	429	SOP	CW
N8WTH	1	3	SOP	SSB
Canada				
VE3QAA	125	23625	SOP	CW
VE3UOL	41	3690	SOP	CW
VA3UZ	17	714	SOP	CW

1999 Scandinavian SAC Contest

Number	*Call*	*QSOs*	*QSO-p*	*Mults*	*Score*
CW					
Single Op/Single Transmitter/Multi Band - High Power					
USA					
1	K3ZO	197	307	92	28244
2	K3WW	109	183	54	9882
3	N6ZZ	93	119	48	5712
4	W7HS	46	74	31	2294
5	W6EUF	60	81	34	2154
6	W7DPW	78	78	15	1170
7	N7DR	43	42	22	924
8	W1FJ	23	51	16	816
9	K1BV	33	33	18	594
10	K4IU	25	25	17	426
Canada					
1	VO1SA	239	343	100	34300
Single Op/Single Transmitter/Multi Band - Low Power					
USA					
1	K7SV	143	205	73	14965
2	K4BAI	61	63	32	2016
3	K5RA	31	53	22	1166
4	K8GT	26	44	20	880
5	W1END	27	27	22	594
Canada					
1	VA3UZ	58	80	42	3360
SSB					
Single Op/Single Transmitter/Multi Band - High Power					
USA					
1	W5FO	130	166	69	11454
2	N1EU	116	150	72	10800
3	N6ZZ	97	123	55	6765
4	W9SS	111	111	52	5772
5	K4IU	84	84	42	3528
6	K1BV	66	66	38	2508
7	K0DAT	54	54	32	1728
8	K4BAI	40	40	27	1080
9	N7DR	48	48	22	1034
10	W4OKY	28	28	19	475
Canada					
1	VE1JX	199	301	112	33712
2	VE3XN	132	162	68	11016
3	VE6JY	77	133	50	6650
4	VE3OBU	84	104	53	5512
5	VE7XB	25	25	13	325
Single Op/Single Transmitter/Multi Band - Low Power					
USA					
1	K3ZO	152	212	80	16960
2	K7SV	154	198	79	15642
3	NY4T	61	75	38	2738
4	W9LYN	49	71	38	2698
5	N4ZDL	51	51	23	1173
6	K1DCB	44	44	23	1012
7	W7HS	33	33	22	726
8	K8GT	27	27	17	459
9	KW7N	20	20	17	340
10	N9HDE	9	9	9	81
Canada					
1	VE2GWL	95	127	59	7493
2	VE6MAA	48	48	31	1488
3	VA3IX	43	43	19	817
4	VE3SYB	12	12	11	132

1999 Croatian CW Contest *(Updated)*

Call	*Category*	*QSOs*	*Mults*	*Score*
USA				
K2SX	SOAB	237	91	81081
K1RO	SOAB	136	56	25312
W1END	SOAB	82	41	15252
K4BAI	SOAB	62	37	7992
N6ZZ	SOAB	46	26	4160
WA2VQV	SOAB	27	15	1485
N4RP	SOAB	5	5	70
KF6YUD	SOAB	8	4	52
K3WWP	QRP	39	20	3680
N2CQ	QRP	11	8	424
N4MM	SO10	52	16	3296
W7/JR1NKN	SO10	2	2	12
W3/VA3UZ	SO40	22	11	1518
Canada				
VE3QAA	SOAB	404	136	225352
VE2AWR	SOAB	104	46	22402
VE4MF	SOAB	26	18	2850
VE4IM	SOAB	22	14	784

1999 OK/OM DX Contest (*Final Results*)

Place	*Call*	*QSOs*	*Points*	*Mults*	*Score*
Single Op/All Band					
5	K3ZO	322	966	254	245364
10	K3WW	173	519	151	78369
11	K4BHI	146	438	122	53436
12	W4OEL	144	432	119	51408
13	W2CVW	129	387	119	46053
14	K4AO	131	393	116	45588
21	N4MM	64	192	55	10560
22	WA1LWS	34	102	27	2754
25	N6ZZ	7	21	7	147
Single Op/Single Band - 10 meters					
3	K6EID	63	189	46	8694
7	W1END	25	75	24	1800
8	VE1KB	24	72	24	1728
10	K9MOT	16	48	16	768
Single Op/Single Band - 15 meters					
6	VA3UZ	50	150	43	6450
10	K9MOT	29	87	27	2349
11	W1END	25	75	23	1725
14	VE4IM	15	45	15	675
17	K8UCL	5	15	5	75
18	VE1KB	3	9	3	27
Single Op/Single Band - 20 meters					
8	K9MOT	13	39	13	507
9	VE1KB	12	36	12	432
10	W1END	12	36	12	432
11	VE4IM	3	9	3	27
Single Op/Single Band - 40 meters					
4	KA7T	18	54	26	1404
5	K9MOT	9	27	9	243
8	VE1KB	2	6	2	12

1999 Ukrainian DX Contest

Call	*Class*	*QSOs*	*Points*	*Mults*	*Score*
USA					
K8UCL	QRP	9	69	8	552
Canada					
VE4IM	SOAB	155	817	64	52288
VA3UZ	SOAB	76	498	42	20916
VE2PIJ	SO10	1	1	1	1

1999 TOEC WW Grid Contest - CW

Place	*Call*	*QSOs*	*Points*	*Fields*	*Score*
Single Operator/All Band					
9	N6ZZ	24	56	15	840

2000 UBA Contest

Call	*Class*	*Band*	*QSOs*	*Points*	*Mults*	*Score*
SSB						
N4MM	A	10	96	455	22	10010
W2UDT	B		18	180	16	2880
CW						
KG4BIG	A	10	93	334	20	6680
N4MM	A	10	4	215	13	2795
K0COP/4	A	10	27	78	9	702
VE4IM	B		131	314	34	10676
VE6JO	B		148	298	34	10132
VA3UZ	B		69	218	25	5450

2000 JIDX High Band CW Contest

Call	*Category*	*QSOs*	*Points*	*Mults*	*Score*
USA (Zone 3)					
N6RO	AB	847	1150	129	148350
K6XX	AB	514	757	114	86298
W7GG	AB	300	448	91	40768
K7AW (K5ZM)	ABL	217	248	85	21080
N7IF	ABL	140	180	63	11340
W7HS	ABL	90	114	55	6270
K8PO	28	419	838	45	37710
WA6FGV	28L	118	236	33	7788
W6/7M1STT	28L	122	244	29	7076
W7/JR1NKN	28L	63	126	27	3402
AK6R	14	110	110	37	4070
USA (Zone 4)					
N6ZZ	AB	380	523	101	52823
N0AC	AB	269	363	77	27951
K5HP	ABL	84	142	42	5964
KG4BIG	ABL	25	36	19	684
K9NW	28L	1	2	1	2
USA (Zone 5)					
K3ZO	AB	325	379	95	36005
N4MM	AB	7	7	6	42
WA2VQV	ABL	10	11	8	88
KG2QH	28L	5	10	4	40
W2YK	21	84	84	31	2604
Canada					
VE4IM	AB	224	305	81	24705
VE5SF	ABL	42	82	19	1558
VA3UZ	21L	47	47	23	1081

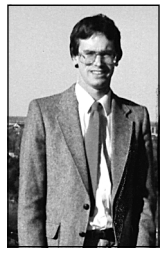
2000 Holyland Contest

Number	*Call*	*Category*	*QSOs*	*Points*	*Mults*	*Score*
USA						
1	AA2KD	MIX	116	116	68	7888
2	K2WE	MIX	95	97	70	6790
3	AA1VA	MIX	75	82	52	4264
4	K9ES	MIX	82	79	45	3555
5	AF4MI	SSB	37	37	30	1110
6	K2DP	SSB	18	18	17	306
7	W5WP	SSB	12	12	12	144
8	K4IU	SSB	10	10	10	100
9	KA2ZJE	SSB	8	8	8	64
10	K8ED	SSB	9	9	6	54
11	K0COP/4	SSB	1	1	1	1
Canada						
1	VE3XN	MIX	51	51	36	1836
2	VA3UZ	SSB	7	7	7	49

VHF-UHF Contesting!

Jon K. Jones, N0JK
n0jk@hotmail.com

The Great 6-Meter DX Contest of the Fall of 2000


N0JK

Fall is an "off season" for domestic VHF contests. It is, however, prime time for our HF colleagues. During the fall 2000 contest season there was an informal "6-Meter DX Contest" held outside of the major HF contests. It began about a week before the CQWW SSB Contest and ended after the ARRL 10-Meter Contest. Entrants included FG/N2WB, HC8N, V26JT, 8P9HT, NH0S, FG/N0JK, FS/W2JJ, AA5B/VP5, VP2MJJ, VP2MJD, FS/W9VHF, C6AIE, KH8/N5OLS, KP2/OK5DX, FY5KE, PY0FF, FY/W7XU, 8R/W7XU, TI5N, S92DX and CN8WW (among others).

The object of this "contest" was to work as many stations in as many countries as possible on 6 meters from a DX location during the peak of solar cycle 23. The contest exchange was up to the entrants—grid squares were optional. Some of the contestants were dedicated to operation on 6 meters alone; others were operating on the band outside of their participation in the HF contests, as time allowed.

Conditions on 6 meters peaked around the time of the CQWW CW and ARRL 160-Meter Contests. Good openings were noted on November 4th, 5th, 6th, 22nd, 24th, 27th, 28th and 29th and December 1st and 2nd. The entrants competed fiercely at times for contacts during these openings. Here's a rundown of some of the contest award categories and the winners.

The "Most 6-Meter QSOs by a Multiop": HC8N

Team Galapagos caught several good openings to Europe, the states and Japan, completing over 700 contacts on 6 meters! Guido, HC8GR must have taught the boys how to handle a 6-meter pileup!

Top Single Op "Operated from Two Countries" Award: W7XU

Arliss, W7XU, earned this award by working hundreds of Europeans from French Guyana—as FY/W7XU—and then flying to Guyana where he made many stateside op's day by handing out 8R/W7XU 50-MHz QSOs.

The "Highest 6-Meter Multiplier Count by a Multiop" Award: VP2MJJ/VP2MJD

Jimmy, W6JKV, and the crew worked over 55 countries on all continents on 6 meters from Montserrat.

The "First Place—Single Op, Caribbean" Award: 8P9HT

John, K4BAI, piloted the 8P9Z contest station in Barbados (signing 8P9HT). He managed around 300 QSOs on the "magic band," and caught several good openings into Europe and the states.

The "Red Eye" Award: V26JT

You know he must have been really tired after working the ARRL 160-Meter Contest all night, yet he still stayed up Sunday morning December 3rd and worked stations on 6 meters across the central US and all the way to Alberta, Canada.

The "Brazil on 2 Meters—You've Got to be Kidding!" Award: FG/N0JK

I worked 16 countries on 6 from Guadeloupe and gathered additional points for style for logging PY5CC on 2 meters! (I celebrated with a bottle of the local "Rhum" at the topless beach just down the hill from the station.)

The "Worked All South America on 6 Meters" Award: KP2/OK1DX and FS/W2JJ

These guys were heard running South Americans on TEP "contest style."

The "Make it Short (Skip) and Sweet" Award: AA5B/VP5 and C6AIE

They worked into the southeastern and northeastern US on sporadic E on December 5th.

Okay, so the "Great 6-Meter DX Contest" is not actually a "real" Amateur Radio contest (duh!). There will be no plaques or fancy wallpaper offered by the ARRL or CQ. The contacts made are real though, and the activity is gratefully appreciated by 6-meter DXers around the world. Everyone who entered this "contest" is a winner though. They made 6-meter DX contacts possible that would not have occurred otherwise.

Many of these countries in the Caribbean and the Pacific, while common on HF, are very rare on VHF. Local activity is often low—the only way these locations can typically be worked on 6 meters is when a visiting ham or DXpedition puts them on the air.

Over the years Jimmy, W6JKV, has operated 6 meters from several different countries (see his Web site: www.w6jkv.com). Jimmy notes that to put together a successful DXpedition on 6 meters you have to plan it for the peak of the solar cycle and at the right time of year.

Announcing the Spring 2001 Running of the Great 6-Meter DX Contest

We are probably at or just off the peak of Cycle 23. Fall and spring are the best times of the year for 6-meter F_2. Each year at those times many US and European contesters travel to exotic destinations to operate in the HF contests.

Some of you may be making plans for just such an operation. The spring of 2001 may be our last chance to take advantage of the high solar flux for worldwide 6-meter DXing for many years. If you are planning to operate from a DX location during one of the spring HF contests, how about participating in the Great 6-Meter DX Contest?

It does not take an elaborate station to make F_2 contacts on 6 meters. A small Yagi and 100 W will do quite well. Many contest ops bring along a compact HF radio as a back-up. A number of these now include the 6-meter band. M^2 (and several of the other manufacturers) make great 3- and 5-element 6-meter Yagis that are easy to package for airline travel, and get out great. A 2- or 3-element quad is another option. Even a simple dipole can be sufficient for DX contacts if it is up in the clear.

The spring months are best for north/south paths on 6. Therefore, stations in South America, the South Atlantic and the South Pacific may have good paths to Europe, the southern tier of the US states, Central America and Japan. Those travelling to the Caribbean may see F_2 into North America or Europe during periods of high solar flux and minor/major geomagnetic storms.

On April 7th, 2000, VP6BR made hundreds of 6-meter contacts into much of the eastern US and then later into Japan after a major solar storm. Operating from a contest site along the equator, where MUFs are high, you may experience some rare long path openings—such as American Samoa to Tanzania or Hawaii to Europe.

From the Caribbean, there are nightly

TEP (trans-equatorial propagation) openings into South America, and sometimes into the South Atlantic and the South Pacific. (I enjoyed strong TEP openings every evening while in Guadeloupe last November.)

If you contest from the Caribbean during the spring of 2001 and operate 6 meters you will have TEP to South America. The South Pacific has a reliable nighttime TEP path to Japan and the Far East. At times TEP contacts on 2 meters are even possible.

Propagation Forecast for the January ARRL VHF Sweepstakes

Solar Cycle 23 seemed to fizzle out in October, and then roared back to life in the first and fourth weeks of November. The 2001 ARRL January VHF Sweepstakes will be from 1900Z, January 20th until 0400Z, January 22nd. This contest will occur near a peak of the 28-day solar flux cycle. (The sun's rotational period is 28 days, and high solar flux and proton events often recur over several consecutive 28-day cycles as active sunspot groups again rotate into position facing the earth.)

The 2001 contest could see "transcon" (transcontinental) F_2 6-meter contacts between the east and west coasts as well as openings into the Caribbean and South America.

F_2 backscatter may make many 6-meter contest QSOs possible. (CW helps on this mode.) The best 6-meter backscatter conditions are often found by pointing your antenna southeast or southwest around noon local time.

E_S has made contest appearances over the last several years, and there may be E_S/F_2 links. High solar flux and a high A-Index increase the probability of F_2 and aurora. Monitor the A- and K-Index numbers. If they rise, look north for aurora. Contacts may be possible via 6- and 2-meter auroral E_S and up through 432 MHz via aurora reflections. The 2001 January VHF Sweepstakes has the potential for major openings—don't miss out!

EME can be used to add contest QSOs. Some of the big contest multi-ops and W5UN may be active on moonrise and set. Depending on conditions during the contest weekend (EME conditions vary with the location of the moon against the stars and its distance from earth) some stations could make 10 to 20 EME contest QSOs. It is a little tougher to complete EME contacts during the VHF Sweepstakes, as you must exchange and confirm grid squares. EME may be a way for you to pick up some additional Qs and new grid squares during a slow contest. It may be worthwhile to check the low end of 2 meters during moonrise and moonset. ■

Contest Calendar

Compiled by Bruce Horn, WA7BNM
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Here's the list of major contests to help you plan your contesting activity through March 2001. The Web version of this calendar is updated more frequently and lists contests for the next 12 months. It can be found at **http://www.hornucopia.com/contestcal**.

As usual, please notify me of any corrections or additions to this calendar. I can be contacted at my callbook address or via e-mail at **bhorn@hornucopia.com**. Good luck and have fun!

January 2001

AGB NYSB Contest	0000Z to 0100Z, Jan 1
Second CCCC Millenium Contest	1200Z, Jan 1 to 1200Z, Jan 2
ARRL RTTY Roundup	1800Z, Jan 6 to 2400Z, Jan 7
Kid's Day Contest	1800Z to 2400Z, Jan 6
Japan Int. DX Contest, 160-40m	2200Z, Jan 12 to 2200Z, Jan 14
Hunting Lions in the Air	0000Z, Jan 13 to 2400Z, Jan 14
Midwinter Contest, CW	1400Z to 2000Z, Jan 13
North American QSO Party, CW	1800Z, Jan 13 to 0600Z, Jan 14
NRAU-Baltic Contest, CW	0530Z to 0730Z, Jan 14
NRAU-Baltic Contest, SSB	0800Z to 1000Z, Jan 14
Midwinter Contest, Phone	0800Z to 1400Z, Jan 14
LZ Open Contest, CW	1200Z to 2000Z, Jan 20
MI QRP CW Contest	1200Z, Jan 20 to 2359Z, Jan 21
North American QSO Party, SSB	1800Z, Jan 20 to 0600Z, Jan 21
ARRL January VHF Sweepstakes	1900Z, Jan 20 to 0400Z, Jan 22
CQ 160-Meter Contest, CW	2200Z, Jan 26 to 1600Z, Jan 28
YL-ISSB QSO Party, CW	0000Z, Jan 27 to 2400Z, Jan 28
REF Contest, CW	0600Z, Jan 27 to 1800Z, Jan 28
BARTG RTTY Sprint	1200Z, Jan 27 to 1159Z, Jan 28
UBA Contest, Phone	1300Z, Jan 27 to 1300Z, Jan 28
Kansas QSO Party	1800Z, Jan 27 to 1800Z, Jan 28

February 2001

Vermont QSO Party	0000Z, Feb 3 to 2400Z, Feb 4
New Hampshire QSO Party	0000Z, Feb 3 to 2400Z, Feb 4
10-10 Inter. Winter Contest, SSB	0001Z, Feb 3 to 2400Z, Feb 4
Minnesota QSO Party	1400Z to 2400Z, Feb 3
YL-OM Contest, CW	1400Z, Feb 3 to 0200Z, Feb 5
Delaware QSO Party	1700Z, Feb 3 to 0500Z, Feb 4 and 1300Z, Feb 4 to 0100Z, Feb 5
Mexico RTTY International Contest	1800Z, Feb 3 to 2400Z, Feb 4
North American Sprint, Phone	0000Z to 0400Z, Feb 4
CQ/RJ WW RTTY WPX Contest	0000Z, Feb 10 to 2400Z, Feb 11
Asia-Pacific Sprint, CW	1100Z to 1300Z, Feb 10
Dutch PACC Contest	1200Z, Feb 10 to 1200Z, Feb 11
YL-OM Contest, SSB	1400Z, Feb 10 to 0200Z, Feb 12
RSGB 1.8 MHz Contest, CW	2100Z, Feb 10 to 0100Z, Feb 11
North American Sprint, CW	0000Z to 0400Z, Feb 11
QRP ARCI Winter Fireside SSB Sprint	2000Z to 2400Z, Feb 11
ARRL School Club Roundup	1300Z, Feb 12 to 0100Z, Feb 16
ARRL Inter. DX Contest, CW	0000Z, Feb 17 to 2400Z, Feb 18
CQ 160-Meter Contest, SSB	2200Z, Feb 23 to 1600Z, Feb 25
YL-ISSB QSO Party, SSB	0000Z, Feb 24 to 2400Z, Feb 25
REF Contest, SSB	0600Z, Feb 24 to 1800Z, Feb 25
North Carolina QSO Party	1200Z to 2359Z, Feb 24 and 1200Z to 2359Z, Feb 25
UBA Contest, CW	1300Z, Feb 24 to 1300Z, Feb 25
RSGB 7 MHz DX Contest, CW	1500Z, Feb 24 to 0900Z, Feb 25
High Speed Club CW Contest	0900Z to 1100Z, Feb 25 and 1500Z to 1700Z, Feb 25
CQC Winter QSO Party	2200Z, Feb 25 to 0359Z, Feb 26

March 2001

ARRL Inter. DX Contest, Phone	0000Z, Mar 3 to 2400Z, Mar 4
World Wide Locator Contest	0000Z, Mar 10 to 2400Z, Mar 11
Southern African HF Field Day	1000Z, Mar 10 to 1000Z, Mar 11
RSGB Commonwealth Contest, CW	1200Z, Mar 10 to 1200Z, Mar 11
North American Sprint, RTTY	0000Z to 0400Z, Mar 11
UBA Spring Contest, CW	0700Z to 1100Z, Mar 11
Bermuda Contest	0001Z, Mar 17 to 2400Z, Mar 18
BARTG WW RTTY Contest	0200Z, Mar 17 to 0200Z, Mar 19
Russian DX Contest	1200Z, Mar 17 to 1200Z, Mar 18
Virginia QSO Party	1800Z, Mar 17 to 0200Z, Mar 19
CQWW WPX Contest, SSB	0000Z, Mar 24 to 2400Z, Mar 25

■

Results, September 2000 *NCJ* CW Sprint

Boring Amateur Radio Club
cwsprint@ncjweb.com

The 47th running of the CW Sprint was held on September 10th, 2000. Conditions were fairly good for almost everyone in the contest. The low bands were noisy in some parts of the country, but many Europeans were able to join in on the fun, as 20 meters was open for them for most of the contest. It takes a lot of dedication to get up at 1 or 2 in the morning to work a contest that you might end up with zero QSOs in.

We received a total of 149 logs—and all but a handful of them were in electronic format. This was a great help in reducing the amount of manual labor required to compile these results.

The WRTC2K champion team of K1TO and N5TJ battled it out for the top score honors. Their claimed scores were only 18 points apart—the equivalent of one-third of a QSO. After several recounts, Dan Street, K1TO, was declared the winner of his third consecutive September CW Sprint. Third place, with the second highest QSO total, was awarded to N6TR. These top three finishers have taken turns holding the scoring record over the past 11 years and together they have won over half of the CW Sprints.

The rest of the Top Ten was rounded out by N9RV, N5KO, N2NT, N0NI (AG9A op), N6ZZ/5, K1KI and W4PA. This is an especially impressive list as most of the areas in the country are represented. All of the top ten finishers have been there at least two times before, and between them they have a total of 132 top ten finishes.

In the low power category, Paul, K9PG, signing K9AA, made 255 QSOs to take first place. N0AX/7, K1HT, N8NA/3 and WT9U all finished above 10k. Once again, there was good distribution around the country for the top ten low power scores. This category appears to be receiving more attention—the competition is pretty stiff.

We only received one QRP log this time—from KG5U. Dale made 176 QSOs and nearly matched the #10 low power score.

In the team competition, the Southern California Contest Club scored its 18th team victory with an impressive total of 128,561, well ahead of second place Austin Powers. The Society of Midwest Contesters was out in full force, just edging out the Northern California Contest Club for third.

After rewriting the record book last February, there were still nine new records set this time. Congratulations to outgoing Sprint Manager AG9A, who piloted N0NI to a new Iowa record. Previous *NCJ* editor K5ZD traveled to Rhode Island and broke K1IU's ten year old mark. VE9DX, piloted by Mike, K5NZ, set a new mark for the "VE1" call area and VE5MX took advantage of the VE5DX station to eclipse his previous high. G4BUO, 9A6XX, LW9EUJ, LY4AA and UP6F all set new records in their countries.

Don't confuse the band change listing with the QSO listing. N2NT actually made 161 band changes—an average of one band change after every two QSOs. With 20 meters open for most of the contest, many operators leveraged their second radio to eke out those extra QSOs and multipliers. However, K1KI proved that you could still make the Top Ten with just two band changes. N6ZZ had only ten.

We are happy to recognize the stations that had perfect logs with no score reductions: W4PA, K8MR, K9BGL, XE1/AA6RX, K8CC and XE1RGL. W4PA and K8MR both had over 300 QSOs. It is interesting that the two Mexican stations that entered had perfect logs. Perhaps it's something in the water?

All logs were fully checked using the N6TR Sprint Log Checking Software. You can receive a report showing how your log faired by sending an e-mail to **n6tr@contesting.com**.

As mentioned previously, Mark Obermann, AG9A, has retired as CW Sprint Contest Manager. We all owe Mark a big *THANK YOU* for his service during the past years.

Since two or three of us were interested in picking up the CW Sprint write-

Top 10 Scores

Call	*Score*	*Band Changes*	*QSOs Lost*	*00Z*	*01Z*	*02Z*	*03Z*
K1TO	16422	43	1	107	80	88	82
N5TJ	16309	93	3	99	89	79	80
N6TR	15885	124	2	92	81	78	102
N9RV	15615	47	4	101	83	71	93
N5KO	15594	33	4	93	86	69	91
N2NT	15226	161	14	100	82	70	80
N0NI	15093	133	2	103	84	75	90
N6ZZ	14985	10	1	94	81	74	84
K1KI	14960	2	2	103	79	80	82
W4PA	14940	145	0	101	79	74	78

Top 10 Low Power Scores

K9AA	11475
N0AX	10912
K1HT	10537
N8NA	10492
WT9U	10320
NA0N	9920
K6AM	9630
KI7Y	8568
W8KIC	8190
AF5Z	7884

Top 10 QRP Scores

KG5U	7216

Top 10 QSOS

K1TO	357
N6TR	353
N0NI	351
N5TJ	347
N9RV	347
K4AAA	340
K1KI	340
N5KO	339
N6ZZ	333
N2RM	333

Top 10 Mults

N2NL	47
W9RE	47
N6CW	47
N5TJ	47
N6AA	47
N5KO	46
AA3B	46
K6LA	46
N2NT	46
K1TO	46
N6TV	46

Top 10 Band Changes

N2NT	161
W4PA	145
N0NI	133
N6TR	124
W9WI	98
N5TJ	93
W5WMU	79
K4AAA	76
N5RZ	64
W6EEN	62

Golden Logs (no QSOs removed)

W4PA	332
K8MR	310
K9BGL	258
XE1/AA6RX	102
K8CC	100
XE1RGL	24

Sprint-Related Web Sites

For Sprint rules and contest dates, visit the *NCJ* Web site: **www.ncjweb.com**. The list of submitted logs is also located there. A wide range of *NCJ* and contesting-related topics are covered on the site.

Seasoned veterans as well as those interested in trying the Sprint for the first time should also check out N6TR's Sprint Survival Web Page at **jzap.com/n6tr/sprint.html**. It explains the exchanges, provides examples and is loaded with good information, advice and contest strategies.

Team Scores

1. Southern California Contest Club #1		*2. Austin Powers*		*3. Society of Midwest Contesters #1*		*4. Northern California Contest Club #1*	
N6ZZ	14985	N6TR	15885	N0NI	15093	N6TV	13938
W6EEN	14300	N5KO	15594	W9RE	14429	N6RO	12100
N6AA	14006	K4AAA	14280	K9NW	13373	N6XI	12012
N6MJ	13948	K5PI	12735	K9AA	11475	K7BV	11792
K6LA	13938	K2UA	12255	K0OU	11340	K6TA	11655
N6CW	12643	K5NA	10105	WT9U	10320	AE6Y	11180
N6VR	12015	K5KA	9880	K9MMS	10234	AJ6V	10780
AC6T	11924	N5CQ	8680	KG9X	8760	W6RGG	10604
W6UE	11172	AF5Z	7884	WI9WI	8446	K6XX	10492
K6AM	9630	VE9DX	7320	K9IG	8260	N6ZFO	6920
	128,561		114,618		111,730		111,473

5.	YCCC (K1KI, K5ZD, NT1N, W1WEF, K1DG, K1HT, NR1DX, W1TO)	89,059
6.	FRC (N2NT, N2RM, AA3B, K3WW, WW2Y, N8NA, N2NU, N2AA)	88,575
7.	TCG (W4PA, W9WI, K4BAI, K4XU, W4AU, N4VI, K0EJ, N9GG)	75,002
8.	NCC #1 (N9RV, K3LR, W8KIC, W8GN, ND8L, N8AA, K8NZ)	56,896
9.	NTCC (N5TJ, N5RZ, W5ER, K5RT, K5WO)	54,012
10.	MRRC (K8MR, KU8E, N8VW, K8JM)	48,362
11.	FCG (K1TO, N2NL, N4BP, N4RP, W4SAA)	40,201
12.	MWA (N0AT, NA0N, K0AD, KT0R, AC0W)	33,425
13.	TDXS (N7FO, N5TU, KG5U, LW9EUJ)	26,394
14.	RDO (N0AX, KI7Y, NW7DX)	22,810
15.	SCCC #2 (N6BM, W6TK, K6RO)	22,744
16.	SMC #2 (KJ9C, K9DX, K9PW)	21,428
17.	NCC #2 (K3CR)	12,780

up duties, we decided to make this a club affair. The Boring Amateur Radio Club is proud to be responsible for the CW Sprint Contest Manager/Editor duties. We will be dividing up the chores among the various members who are best suited for the task.

Past CW Sprint manager Trey, N5KO, will be focusing on the e-mail and the Web log submission process. Another past CW Sprint manager—Tree, N6TR—will continue to improve the Sprint log checking software, which checks the logs and produces the final scores. These two gentlemen will take turns generating the results, except on the rare occasion when one of the more creative members of the club is out on parole.

The next CW Sprint will be held on February 11th, 2001 (UTC) at 0000Z. Will N5TJ get his revenge on his WRTC partner? Can the SCCC pull off another victory? Will Maryland continue to be ten times harder to work than Delaware? Will the court challenges to the presidential election be finished?

Tune in and find out.

Guidelines for Log Submissions

Please carefully read the rules for submission posted on the *NCJ* Web site: **www.ncjweb.com**.

The Cabrillo log format is now preferred and eliminates the need for a summary sheet. Otherwise, submit your ASCII log and a summary sheet via e-mail or diskette. E-mail your logs to **cwsprint@ncjweb.com** or via snail mail to BARC—CW Sprint, 15125 SE Bartell Rd, Boring, OR 97009. Check the received logs list on the *NCJ* Web site to verify that your log has been properly received.

Feedback on log accuracy is available via e-mail (send your request to **cwsprint@ncjweb.com**) or via SASE once the results have been published.

Soapbox

Very nice contest! C ya in SSB/RTTY!—*9A6XX*. After a decent start on 40, I had my best first hour to date, 83 QSOs. But then I stayed too long on 20, hoping to get AZ or ID, and 80 was mediocre. My QSO total wasn't bad, but I came up short on mults (and when I easily worked many of the missing mults the next weekend on SSB, it only added to the frustration!).—*K1HT*. Bad RFI in the computer prevented working 20 meters, so I completed my first Sprint using two bands. Enjoyed the contest and will be back for more next time.—*K4LQ*. Thanks again to N5TW for use of his FB station. I think I'll eat about a pound of sugar before the next one—whew!—*K5PI*. Visited KI1G to give everyone the RI multiplier. But no one gave it to me!—*K5ZD*. First time in this contest. I'd love to see many others featuring the QSY rule. This rule rules! See you in February.—*LW9EUJ*. Sure hit the wall on 80-meters with about 45 minutes to go—what a swamp! Nice to hear a lot of VE activity and to have an appearance from Maine. See you in February when conditions are little better out here, maybe.—*N0AX*. First effort at the CW Sprint. I got the hang of it after awhile. I can't wait for the next one!—*N4VI*. Thanks to all for QSOs. It was my pleasure.—*N5RG*. Glad that the Sprint wasn't 24 hours earlier, lots of thunderstorms the previous evening! Reduced the number of band changes in an attempt to keep focused on a particular band this time. The Sprint makes two-radio operation more than a trivial challenge. Worked two other NM stations... The drought has ended! Probably should have gone to 80 earlier. It was extremely productive.—*N6ZZ*. I continue to wonder about bracket QSOs—where the departing station makes a QSO away from the frequency, and is back to call the new station on frequency. It was a very fine four hours of fun.—*N8NA*. Great fun, but just when I was getting the hang of it, the contest moved to 40. Got to get the 40 and 80 antennas up before the next one.—*NO5W*. Not a serious effort for me this time. Operated 3 out of 4 hours.—*NW7DX*. This was my first Sprint. It took a while to get used to the format, I was way too slow on the uptake. Lost 10 minutes trying to figure out how to enter a DX station. I will enter again.—*W1TO*. Running low power in the Sprint is kind of like entering a NASCAR race on a go cart.—*W4NZ*. Still can't get the swing of this... but always a challenge and fun. Thanks for the Qs... see you next time.—*W6TK*. First shot at SO2R. Probably the wrong contest to start with.—*W9WI*. A tough event for me; I can copy call signs and numbers comfortable at 28 to 30 WPM; but throw a name in there and—I don't know—for some reason I get flustered. I was concentrating so hard I caught myself sweating—in a basement shack that had to be about 60 to 65 degrees.—*WA3SES*. Good reason to unpack the station and get on the air. Starting to get the hang of this format.—*WO1N*. First participation in this contest. Very intimidating at first, but after listening for a long time I got the hang of it. This contest is really fun and challenging, a great motivation to improve my CW copying skills. You can be sure I will participate in future Sprints whenever family and work allows.—*XE1RGL*.

Sprint Tip

It is important that each QSO is confirmed by the other station. It is all too easy to forget this while dumping in your call at the end of another QSO. Please remember to give both stations a chance to make sure they have all the information they need *before* you jump in.

Team Key

AP	Austin Powers
FCG	Florida Contest Group
FRC	Frankford Radio Club
MRRC	Mad River Radio Club
MWA	Minnesota Wireless Association
NCC #1	North Coast Contesters #1
NCC #2	North Coast Contesters #2
NCCC #1	Northern California Contest Club #1
NCCC #2	Northern California Contest Club #2
NTCC	North Texas Contest Club
RDO	Rush Drake Orchestra
SCCC #1	Southern California Contest Club #1
SCCC #2	Southern California Contest Club #2
SECC	South East Contest Club
SMC #1	Society of Midwest Contesters #1
SMC #2	Society of Midwest Contesters #2
TCG	Tennessee Contest Group
TDXS	Texas DX Society
YCCC	Yankee Clipper Contest Club

Scores

Call	*Name*	*QTH*	*20*	*40*	*80*	*QSO*	*Mults*	*Score*	*Team*
K1KI	Tom	CT	142	121	77	340	44	14960	YCCC
K5ZD	Randy	RI	121	120	86	327	43	14061	YCCC
NT1N	Dave	CT	114	122	71	307	44	13508	YCCC
W1WEF	Jack	CT	108	119	69	296	45	13320	YCCC
K1DG	Doug	NH	116	107	78	301	44	13244	YCCC
K1HT	*Dave	MA	97	105	55	257	41	10537	YCCC
NR1DX	Dave	NH	61	62	46	169	38	6422	YCCC
K1PQS	Geo	ME	75	18	30	123	37	4551	
W1TO	Tom	MA	46	23	28	97	31	3007	YCCC
WO1N	*Ken	MA	22	42	0	64	24	1536	
N2NT	Andy	NJ	119	139	73	331	46	15226	FRC
N2RM	John	NJ	126	133	74	333	44	14652	FRC
K2UA	Rus	NY	95	111	79	285	43	12255	AP
WW2Y	Peter	NJ	91	110	60	261	41	10701	FRC
N2NU	John	NJ	95	81	54	230	43	9890	FRC
K2QMF	*Ted	NY	62	70	29	161	39	6279	
N2AA	Gene	NJ	29	42	0	71	29	2059	FRC
AA3B	Bud	PA	101	124	66	291	46	13386	FRC
K3CR	Jim	PA	107	107	70	284	45	12780	NCC #2
K3WW	Chas	PA	111	109	63	283	43	12169	FRC
N8NA	*Karl	DE	91	100	53	244	43	10492	FRC
WA3SES	Ed	PA	33	18	8	59	25	1475	
N9GG	*Bob	DE	22	5	0	27	16	432	TCG
K1TO	Dan	FL	146	139	72	357	46	16422	FCG
W4PA	Scott	TN	113	144	75	332	45	14940	TCG
N2NL	Dave	FL	127	110	76	313	47	14711	FCG
K4AAA	Bill	GA	120	125	95	340	42	14280	AP
W9WI	Doug	TN	102	129	72	303	43	13029	TCG
K4BAI	John	GA	116	100	80	296	44	13024	TCG
N4AF	Al	NC	112	103	81	296	42	12432	
W4AU	John	VA	86	110	60	256	42	10752	TCG
K7SV	Larry	VA	93	98	58	249	43	10707	
N4BP	Bob	FL	109	83	5	197	41	8077	FCG
K4MX	*Jeri	VA	58	74	62	194	40	7760	
W4NZ	*Ted	TN	45	77	44	166	38	6308	
N4DU	Jim	GA	68	73	0	141	39	5499	
N4TO	Vic	FL	69	67	16	152	36	5472	
K4LQ	Fred	FL	0	93	20	113	37	4181	
K0EJ	Mark	TN	31	61	11	103	36	3708	TCG
N4RP	*Dick	FL	31	5	1	37	19	703	FCG
W4SAA	Joe	FL	18	6	0	24	12	288	FCG
N5TJ	Jeff	TX	130	134	83	347	47	16309	NTCC
N5KO	Trey	TX	148	106	85	339	46	15594	AP
N6ZZ	Phil	NM	148	118	67	333	45	14985	SCCC #1
N5RZ	Gator	TX	153	114	47	314	42	13188	NTCC
K3LR	Tim	OK	105	142	55	302	43	12986	NCC #1
K5PI	Rob	TX	113	96	74	283	45	12735	AP
W5ER	Bob	TX	109	108	69	286	40	11440	NTCC
W5WMU	Pat	LA	106	89	60	255	43	10965	
K5NA	Rich	TX	78	96	61	235	43	10105	AP
K5WA	Bob	TX	94	94	58	246	41	10086	
K5KA	Ken	OK	83	102	62	247	40	9880	AP
KZ5D	Art	LA	99	83	49	231	42	9702	
N5DO	Dave	TX	91	85	44	220	41	9020	
N5CQ	John	TX	86	80	51	217	40	8680	AP
WQ5L	Ray	MS	111	104	0	215	40	8600	
N5PO	Lee	TX	75	93	41	209	40	8360	
K5RT	Paul	TX	99	58	46	203	41	8323	NTCC
AF5Z	*Bob	TX	78	84	57	219	36	7884	AP
N5TU	Earl	TX	88	66	32	186	39	7254	TDXS
KG5U	**Dale	TX	99	66	11	176	41	7216	TDXS
N5RG	*Bob	TX	66	42	31	139	38	5282	
K5WO	Bob	TX	72	49	11	132	36	4752	NTCC
NO5W	*Chuck	TX	68	1	0	69	31	2139	
W6EEN	Doug	CA	133	116	76	325	44	14300	SCCC #1
N6AA	Dick	CA	139	113	46	298	47	14006	SCCC #1
N6MJ	Dan	CA	130	118	69	317	44	13948	SCCC #1
K6LA	Ken	CA	151	108	44	303	46	13938	SCCC #1
N6TV	Bob	CA	128	125	50	303	46	13938	NCCC #1
N6CW	Terry	CA	131	100	38	269	47	12643	SCCC #1
N6RO	Ken	CA	112	103	60	275	44	12100	NCCC #1
N6VR	Ray	CA	122	88	57	267	45	12015	SCCC #1
N6XI	Rick	CA	134	93	46	273	44	12012	NCCC #1
AC6T	Steve	CA	124	106	41	271	44	11924	SCCC #1
K6TA	Ken	CA	93	112	54	259	45	11655	NCCC #1
AE6Y	Andy	CA	114	87	59	260	43	11180	NCCC #1
W6UE	Mike	CA	124	97	45	266	42	11172	SCCC #1
AJ6V	Ed	CA	118	82	45	245	44	10780	NCCC #1
W6RGG	Bob	CA	97	102	42	241	44	10604	NCCC #1
K6XX	Bob	CA	109	106	29	244	43	10492	NCCC #1
K6AM	*John	CA	124	54	36	214	45	9630	SCCC #1
N6BM	Don	CA	96	82	25	203	43	8729	SCCC #2
W6TK	Dick	CA	100	80	31	211	41	8651	SCCC #2
N6ZFO	*Bill	CA	96	64	13	173	40	6920	NCCC #1
K6RO	Larry	CA	76	46	27	149	36	5364	SCCC #2
KU6J	*Eric	CA	67	59	15	141	38	5358	
W6MVW	Dick	CA	118	0	0	118	38	4484	
K6LRN	Dick	CA	19	15	27	61	21	1281	
K6CSL	Bert	CA	20	8	13	41	19	779	
N6TR	Tree	OR	153	126	74	353	45	15885	AP
K4XU	Dick	OR	124	102	63	289	44	12716	TCG
K7BV	NCJ	NV	108	109	51	268	44	11792	NCCC #1
N0AX	*Ed	WA	132	90	26	248	44	10912	RDO
N7FO	Oz	AZ	117	70	30	217	44	9548	TDXS
KI7Y	*Jim	OR	105	78	21	204	42	8568	RDO
NG7M	Max	UT	72	82	39	193	36	6948	
N7WA	*Dink	WA	91	63	14	168	35	5880	
WO7Y	Tom	ID	55	79	0	134	36	4824	
NW7DX	Ben	WA	39	65	7	111	30	3330	RDO
WL7E	Joe	WA	47	1	0	48	24	1152	
N7RX	*Neal	OR	6	0	0	6	5	30	
K8MR	Jim	OH	104	131	75	310	43	13330	MRRC
KU8E	Jeff	OH	100	110	82	292	43	12556	MRRC
N8VW	Pat	OH	101	113	77	291	43	12513	MRRC
K8JM	John	MI	69	102	72	243	41	9963	MRRC
WA8WV	Dave	WV	61	99	59	219	40	8760	
W8KIC	*Val	OH	55	96	59	210	39	8190	NCC #1
K9TM	Tim	MI	69	83	61	213	38	8094	
W8GN	Bruce	OH	47	73	47	167	37	6179	NCC #1
ND8L	*Ray	OH	56	58	35	149	36	5364	NCC #1
N8AA	John	OH	31	68	45	144	37	5328	NCC #1
W8UE	Ted	MI	66	40	25	131	37	4847	
K8CC	Dave	MI	40	60	0	100	33	3300	
K8NZ	*Ron	OH	54	44	0	98	33	3234	NCC #1
N9RV	Pat	IN	124	142	81	347	45	15615	NCC #1
W9RE	Mike	IN	99	123	85	307	47	14429	SMC #1
K9NW	Mike	IN	97	128	86	311	43	13373	SMC #1
K9AA	*Paul	IL	87	109	59	255	45	11475	SMC #1
K9BGL	Karl	IL	102	108	48	258	42	10836	
KJ9C	Mel	IN	83	92	71	246	42	10332	SMC #2
WT9U	*Jim	IN	70	108	62	240	43	10320	SMC #1
K9MMS	Gary	IL	88	89	61	238	43	10234	SMC #1
K9DX	John	IL	82	95	67	244	41	10004	SMC #2
KG9X	Fred	IL	76	96	47	219	40	8760	SMC #1
WI9WI	Kieran	WI	82	71	53	206	41	8446	SMC #1
K9IG	Liz	IN	74	83	79	236	35	8260	SMC #1
K9ZO	Raf	IL	24	41	26	91	32	2912	
K9PW	Pete	IL	32	15	5	52	21	1092	SMC #2
N0NI	Ed	IA	126	136	89	351	43	15093	SMC #1
K0OU	Steve	MO	98	105	67	270	42	11340	SMC #1
N0AT	Ron	MN	98	98	39	235	43	10105	MWA
NA0N	*Pat	MN	100	106	42	248	40	9920	MWA
K0AD	Al	MN	89	100	37	226	42	9492	MWA
N4VI	*Chris	CO	69	71	33	173	37	6401	TCG
KT0R	Dave	MN	41	40	7	88	35	3080	MWA
AC0W	*Bill	MN	24	22	0	46	18	828	MWA
VE5DX	Jim	VE5	122	92	50	264	43	11352	
VE9DX	*Mike	VE1	99	56	28	183	40	7320	AP
VE3FU	*Chris	VE3	34	54	59	147	35	5145	
LY4AA	Sam	LY	107	56	0	163	38	6194	
G4BUO	Dave	G	109	46	1	156	39	6084	
LY1DS	Hrle	LY	104	30	0	134	36	4824	
XE1/AA6RX	*Dave	XE	48	43	11	102	30	3060	
LW9EUJ	*Ty	LU	69	3	0	72	33	2376	TDXS
G3SXW	Roger	G	59	0	0	59	30	1770	
9A6XX	Anna	9A	29	0	0	29	19	551	
XE1RGL	Bill	XE	9	15	0	24	14	336	
UP6F	Harry	UN	13	0	0	13	10	130	

Disqualification: KW8N - rule 12.
* Denotes 150 W or less
** Denotes 5 W or less

NCJ CW Sprint Records - Through September 2000

QTH	Date	Call Sign	QSOs	Mults	Score
CO	2/00	N2IC/0	380	51	19,380
IA	9/00	N0NI (AG9A)	331	43	15,093
KS	9/82	K0VBU	231	42	9,702
MN	2/00	N0AT	273	48	13,104
MO	9/96	K4VX/0 (NT1N)	332	46	15,272
NE	2/91	KV0I	204	34	6,936
ND	2/00	WB0O	297	47	13,959
SD	2/00	WD0T	316	48	15,168
CT	2/99	K1KI	362	49	17,738
MA	2/00	K5ZD/1	342	50	17,100
ME	9/88	K1KI	218	41	8,938
NH	2/00	K1DG	294	47	13,818
RI	9/00	K5ZD/1	327	43	14,061
VT	9/99	W2GD/1	258	46	11,868
NJ	2/00	N2NT	337	50	16,850
NY	9/80	N2NT	319	42	13,398
DE	9/89	KN5H/3	272	46	12,512
MD	9/89	W3LPL	310	47	14,570
PA	2/00	K3WW	318	50	15,900
AL	2/00	K4NO	273	47	12,831
FL	9/99	K1TO	354	53	18,762
GA	9/99	K4AAA (W4AN)	353	51	18,003
KY	9/98	K4LT	281	44	12,364
NC	2/99	N4AF	310	46	14,260
SC	9/99	W4OC	255	46	11,730
TN	2/00	W4PA	353	52	18,356
VA	9/89	KT3Y/4	296	48	14,208
AR	2/00	K5GO	278	50	13,900
LA	2/95	W5WMU (K5GA)	306	48	14,688
MS	2/00	WQ5L	317	49	15,533
NM	9/99	N6ZZ	331	51	16,881
OK	9/89	KM5H	289	49	14,161
TX	2/00	N5TJ	381	52	19,812
CA	2/00	W6EEN (N6RT)	377	51	19,227
AK	2/00	KL9A	202	47	9,494
AZ	2/00	K6LL	364	50	18,200
ID	2/00	W7ZRC	274	45	12,330
MT	2/98	K7BG	273	43	11,739
NV	2/00	K7BV	290	50	14,500
OR	2/00	W7AT (N6TR)	370	51	18,870
UT	9/91	K6XO/7	263	44	11,572
WA	2/92	K7SS	329	42	13,818
WY	9/99	K7KU (N2IC)	312	48	14,976
MI	2/00	N8EA	273	48	13,104
OH	9/91	K3UA/8	322	45	14,490
WV	2/00	WA8WV	247	47	11,609
IL	2/00	K9XD (AG9A)	325	52	16,900
IN	2/00	N9RV	350	53	18,550
WI	2/00	K9AA (K9PG)	302	55	16,610
VE1	9/00	VE9DX (K5NZ)	183	40	7,320
VE2	9/88	VE2ZP	214	41	8,774
VE3	2/00	VE3EJ	270	50	13,500
VE4	9/93	VE4VV	237	40	9,480
VE5	2/99	VE5DX (VE5MX)	264	43	11,352
VE6	2/00	VE6EX	228	43	9,804
VE7	2/00	VA7RR	316	48	15,168
VY1	2/00	VY1JA	36	22	792
C6	2/99	C6AKP	21	14	294
HH	9/96	HH2AW	139	33	4,587
HI8	2/91	HI8DMX	40	19	2,430
HP	2/00	HP1AC	64	30	1,920
VP2E	2/96	VP2E/KI4HN	68	30	2,040
VP9	2/85	W6OAT/VP9	202	31	6,262
V4	2/96	V40Z (AA7VB)	54	23	1,242
XE	9/90	XE2XA (WN4KKN)	305	47	14,335
ZF	9/92	ZF2KI (K1KI)	251	49	12,299
4U1	2/85	4U1UN (W2TO)	70	23	1,610
8P	2/96	8P9EN	10	8	80
CT	9/98	CT1BOH	225	40	9,000
EA8	2/94	EA1AK/EA8	36	21	756
F	9/90	F/N6TR	196	38	7,448
G	9/00	G4BUO	156	39	6,084
HC8	2/00	HC8N (N5KO)	271	52	14,092
I	9/98	IK0HBN	100	35	3,500
JA	2/91	7J1AAI	13	9	117
KH6	9/81	KH6NO	121	30	3,630
LU	9/00	LW9EUJ	72	33	2,376
LY	9/99	LY2BTA	59	24	1,416
OH	9/98	OH1NOA	56	22	1,232
PY	9/80	PY8ZPJ	29	14	406
VK	9/94	VK5GN (N6AA)	48	22	1,056
UA9	2/00	RU0SN	15	13	195
UN	9/00	UP6F	13	10	130
ZD8	9/90	ZD8Z (N6TJ)	228	43	9,804
ZS	2/00	ZS1ESC (N6AA)	51	18	918
9A	9/00	9A6XX	29	19	551

Highest score: 2/00, N5TJ, 19,812
Highest multiplier: 2/00, K9AA (K9PG), 55
Highest QSO total: 2/00, N5TJ, 381
Logs received: 2/00, 182
Number of logs >= 300: 2/00, 38
Number of Golden Logs: 2/00, 15
Highest team score: 2/00, SCCC #1, 158,051

Four Laps at the Sprint Track

Dan: "Good evening and welcome to this evening's race. It features some of the most talented Sprinters in the country."

Howard: "This medley sprint is very interesting—each contestant needs to balance their three different gaits to maximize their score."

Dan: "Yes—most of the runners prefer to use the '20-meter' gait during the first part of the race, but there was a rumor in the locker room that a couple of the runners might try the '40-meter' gait first for a short period of time."

Howard: "What is the thinking behind that?"

Dan: "Well, some of the runners believe that it will help them get out of the blocks sooner and perhaps avoid some of the typical congestion during the first turn. Then they can switch to the 20-meter gait in the first corner and improve their chances of winning."

Howard: "Interesting. Well, I don't believe any of the previous winners have used that strategy, so we shall see how it works."

BANG!!

Dan: "And they're off!! And look—TWO of the sprinters have chosen to use the 40-meter gait right out of the chute. It's N9RV and N0NI—both from the Midwest."

Howard: "Yes—the Midwest runners are the ones who came up with this idea."

Dan: "Well—it is slowing N0NI down a little, but N9RV seems to be keeping right up with the front runners… Wait! K1TO is pulling out ahead a little and is leading slightly going into the first turn. Dan has an impressive 31 QSOs during the first 15 minutes—a rate of 124/hour. We'll see if he can keep this up or not."

Howard: "Yes—but the two stations who started with the 40-meter gate might get a bit of an advantage here. Let's see what Bert can tell us from the second turn."

Bert: "Yes—I can see them coming into the second corner. All four runners are sticking to the 20-meter gait now and are pretty even. It looks like N9RV has taken advantage of his bump from his 40-meter start and is now just a nose ahead of K1TO. N5TJ and N0NI are right behind him and N6TR is bringing up the rear. Here they go into the third corner. Can you see them Diane?"

Diane: "Yes—here they come. They are continuing to use the 20-meter gait. N9RV is still ahead of K1TO by a nose, but they have moved ahead of the pack some. N5TJ and N0NI are in a dead heat and N6TR is about 3 steps behind. Wow—K1TO just tried a couple 40-meter gaits—not sure what he is doing—but perhaps he is taunting the other runners with that display. Back to you Dan as they come out of the 4th corner."

Dan: "I have them. N0NI seems to throw in a 40-meter step every so often as well. Perhaps he is trying to keep the other runners off balance. In fact, all of the runners are throwing in a few 40-meter gaits except for N9RV who seems really focused on 20. As they cross the starting line, It's K1TO three steps ahead of N0NI, followed closely by N9RV who is a couple of steps ahead of N5TJ—with N6TR coming up a distant fifth."

Howard: "Yes—it appears that N6TR is having a little trouble keeping up with everyone else. Maybe this two-step is a little hard for him to put up with. He is about 15 steps behind the leader at this point."

Bert: "I have the leaders now—going into the first corner—and LOOK AT THIS!! K1TO, N0NI and N9RV are running exactly even out of the first corner. N5TJ is a couple of steps behind the pace, and N6TR is still in the middle of the turn. Everyone but N9RV is alternating their gaits between 40 and 20 meters. Over to you Diane."

Diane: "I've got them—oh my—K1TO just stumbled slightly and fell back several spots. N0NI seems to have gotten the best position out of it and is now ahead by 5 steps. I wonder if K1TO can regain his composure after that stumble. Bert?"

Bert: "Yes, I can seem them—UH OH! This time, it was N9RV who stumbled. And look at N5TJ take off!!! He looks like the N5TJ of 10 years ago. He's pulling ahead of N0NI heading into the straightaway. K1TO seems to have gotten his rhythm back however."

Dan: "N5TJ is still in the lead, but he looks a little spent after that big push. K1TO continues to have his rhythm and is back in second place, just a step ahead of N0NI. N9RV is close behind after that stumble and N6TR is still bringing up the rear—16 steps behind the pace."

Howard: "At this point in the race all of the runners are alternating between the 20- and 40-meter gaits. It seems they are all comfortable doing that now. I bet we will see this pattern continue until they pull out the stops with the 80-meter gait for the dash to the finish. Keep a close eye on N5TJ—he typically makes the switch to 80 before any of the other runners."

Bert: "Here they come through the first turn. K1TO continues to have a really good rhythm and looks determined to keep it going. In fact, he has stepped it up just a little and has pulled ahead by a couple of steps going into the second turn."

Diane: "Yes—K1TO continues to pull ahead. He is now 6 steps ahead of N5TJ. N0NI and N9RV are falling back a little with N6TR still bringing up the rear. It looks like the WRTC team is headed for a showdown. WHAT'S THIS? It appears that N0NI has switched to the 80-meter gait! Can you confirm that Howard?"

Howard: "Yes—he has clearly switched. This is a little earlier than anyone expected. N5TJ has seen this and has followed suit. The other runners are continuing with their 40- and 20-meter gaits. Dan?"

Dan: "Well, that is quite the gamble, but with K1TO running so strong, maybe they felt they had to change the dynamic in order to catch up. Here they come across the start/finish line for the final lap. K1TO is well ahead now, and changes to the 80-meter gait just before crossing the line. K1TO is looking good with a 7-step lead on N5TJ. N0NI is hanging in there just 3 steps behind N5TJ and—LOOK AT THIS!! N6TR has really picked it up. It appears this 80-meter gait is working well for him. He has quickly made up most of the distance between him and the pack."

Bert: "K1TO is still looking like a winner here coming out of the first corner. He is an easy 10 steps ahead of N5TJ and N0NI who are very close now. N5TJ is looking a little tired as N0NI has just passed him in the turn. N6TR is still behind N9RV however, so it appears he just can't make up any ground."

Diane: "I have K1TO now coming out of the second corner. He is slowing down a little, but this is expected as the Florida sprinters have problems with this 80-meter gait after a half lap. However, he still has a good lead over N0NI who has now moved ahead of N5TJ and N9RV by about 5 steps. N6TR is picking it up a little and has moved to within a few steps of N9RV."

Dan: "K1TO comes out of the third corner looking good. He still has a comfortable lead… wait a minute!! Look at N6TR! He has been behind the whole race, but is making his move. He is throwing quite a number of 40-meter gaits in to confuse the other runners and has pulled up into the pack. Coming out of the last corner—it's K1TO by 5 steps and everyone else has pulled even."

Howard: "It sure looks like K1TO is tired. N6TR has put some pressure on the pack. Can K1TO hold on for the win?"

Dan: "It looks like N0NI and N6TR are making their move at the finish. Here they come —K1TO can see them coming. All the runners are still throwing in a few 40-meter gaits. Here comes K1TO to the finish and he finishes with a 40-meter gait as if to say 'I won!' N6TR stays with the 80-meter gait and pulls ahead of N0NI for 2nd place. N0NI throws in a 40-meter gait at the end for third and N5TJ and N9RV tied for last place just 8 steps off the winning time."

Howard: "What a race!! It appears that N6TR was really waiting for the right time to make his move. Perhaps he waited a little too long."

Dan: "That could be—but what was really impressive was K1TO's steady push in the third lap. It seemed that after that stumble, he really got into this rhythm and kept it going just long enough to hang onto the win."

Howard: "Well, that's it from the Nationals. Hope you enjoyed the race and now back to the studio."

Results, September 2000 *NCJ* Phone Sprint

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I am writing this lead while home from work due to a snowstorm that dumped (I use that word somewhat loosely) about 8 inches on Greenville, North Carolina (90 miles east of Raleigh), and closed the place down. Now I realize that most places accustomed to snow find 8 inches almost laughable. Having lived in Michigan, Connecticut and Idaho, I would concur. However, out here a half-inch is a big deal. There are probably three snowplows in the whole county and they are converted road graters. A few inches brings everything in this area to a grinding halt.

The September 2000 running of the Phone Sprint did not grind to a halt, it went full blast. It would be hard to top last February's record-setting fest, but the September Sprint tried. With the exception of the February 2000 scores, this contest was the best in 7 or 8 years and maybe the second best ever. A total of 113 logs were received from 40 areas, the most since February 1992 and September 1994, respectively (sans seven months ago).

N5KO traveled to his Galapagos home-away-from-home and proved once again that a great operator and a great location can combine to create a great score. This is the first time a non-US/Canadian station won the Phone Sprint. Operating only on 20 meters, Trey recorded the second-highest mark both for QSOs and for overall score. He made more QSOs on 20 than anyone ever (by 83 Qs) and set a new multiplier standard, surpassing the record set just last February. Love that north-south path.

N6MJ set a new California record (again surpassing a February 2000 record) and took second place, his highest finish ever. Sixth to tenth were very tight with just 370 points separating the extremes. The composition of the Top Ten is quite geographically diverse (even without HC8N) with stations from the West Coast (N6MJ, K6LL, VA7RR, N6ED), Midwest (KW8N, N8VW, N9RV), and South (HC8N, K4XS, K5NZ) making their presence known. The 40-meter start by many Midwest and Eastern stations has made that group, as a whole, much more competitive (Top-Ten wise) than in the past. You might want to try a 40-meter start in February—it may be the only time to work close-in stations on that band.

In February, K9PG went to K9XD and took second place overall. This time he ventured to K9AA and won the Low Power category. He was comfortably ahead of K6AM who had a score that would have been good enough to win last February. The Low Power Top Ten is equally as geographically diverse as the high power group, with six call areas represented. Over 35% of logs received were of the low power variety.

New records were set in a few places beyond those mentioned above. N4CW left North Carolina to set a new touchstone from his summer place in Maine,

Top 10 Scores

Call	*Score*	*Qs Lost*
HC8N	23580	7
N6MJ	19656	6
K4XS	18762	3
KW8N	17596	6
K6LL	17350	9
VA7RR	16450	1
N6ED	16366	1
N8VW	16276	8
K5NZ	16218	6
N9RV	16080	6

Top 10 Low Power Scores

Call	*Score*	*Qs Lost*
K9AA	14400	6
K6AM	12643	5
K0EJ	10998	3
K9NW	10810	3
WA7BNM	10277	1
W7UQ	9560	6
ND8L	8976	5
K1HT	8730	0
N6RT	8610	1
WN6K	7954	5

Top 10 QSOs

HC8N	393
N6MJ	364
K4XS	354
K6LL	347
N9RV	335
N6ED	334
KW8N	332
VA7RR	329
K6LA	321
K5NZ	318

Top 10 Mults

HC8N	60
N6MJ	54
K4XS	53
KW8N	53
W1WEF	53
N8VW	52
K5NZ	51
N2NL	51
W5WMU	51
K6LL	50
VA7RR	50
K6LA	50
K9AA	50
K8CC	50

Top 10 Band Changes

KW8N	92
K6LA	59
W9RE	36
W5WMU	29
WE9V	25
K9VV	19
N6MJ	18
KU8E	18
K9AA	17
W1WEF	13
K9NW	13
N6RT	13

Golden Logs (over 50 QSOs)

K3CR	276
K1HT	194
K6III	157
N8AA	150
AC0W	143
NQ4U	140
K6EP	139
NI2P	111
KE0FT	101

A Personal Note

The Phone Sprint has been in existence since September 1982. I started the Phone Sprint when I was the *NCJ* editor and have been the Phone Sprint Editor since its inception, a span of over 18 years. Although I am almost exclusively a CW op, I have continued to be the editor because I believe that the Phone Sprint holds an important place in the contesting spectrum, especially for those who predominately operate that mode. Your comments and encouragement have also helped me keep going.

Being the editor is fun and it is work. It is fun because I can, in a small way, keep in touch with contesting and contesters even though there have been many periods in those 18 years when I have effectively not had a station on the air. It is work because I spend many, many hours checking the logs and preparing the write-up. Although that task has been made easier as of late with the log-checking software developed by N6TR, it is still a significant time-consumer. The CW Sprint (with more entries per contest) has gone through a number of editors in those 18 years, in part because of the time requirements.

It is now time for me to move on. Increased responsibilities at work and a desire to spend some time working on my yet-to-be-developed station in the country mean I need to reduce my commitments.

The February 2001 Phone Sprint will be my last as editor. I have mulled over this decision for a year now and it is a difficult one. I do not yet know who the new editor will be, but I am sure he (or she) will keep the tradition going. Please give the new editor the support you have given me.

It has been a pleasure to be your scribe for almost two decades. Thank you all for your comments and expressions of thanks over the years. They are more important to me than you will ever know. It has been a great run and I would do it over again in a heartbeat. See you on the bands.

breaking a record set in September 1989. He is now back in warmer North Carolina for the winter (in the interests of full-disclosure, see comments in first paragraph in order to discern the full meaning of the word "warmer"). Another even older record (this from September 1984) was broken by K8CC in Michigan. We received first-time entries from HC8, CX and LU. In fact, the CX/LU duo gave us a first-ever team from outside North America.

Speaking of teams, the Southern California Contest Club led the pack for the eighth time in the last nine contests. Their total was the third highest ever recorded. Last February, their winning streak came to an end and I suggested September was a great time to start another. It's nice that someone listens.

The Society of Midwest Contesters (SCCC's streak breaker) fielded three teams in September, one of which (SMC #1) took second place. Time to raise it one notch? NCCC and MRRC were very close behind in third and fourth. Just one more entrant from either of those two teams would have vaulted it into second place. Thanks to all 13 teams, including a first-time entry from south of the equator (the LU Contesters).

Nine logs over 50 QSOs had no score reductions, a new record. For the second time in a row, K3CR had the Golden Log with the highest number of Qs. Congrats to all nine.

Thanks for your participation. Happy hunting in February. Let's make it the best ever.

Soapbox

Getting started in the Sprint still seems like jumping onto a moving train.—*K6EP*. I'm really starting to like these Sprint things, in a twisted sort of way.—*W4NF*. Took a while to feel the rhythm and "belly up."—*W9YS*. Got off to a good first hour but still couldn't break 300.—*W6TK*. First phone Sprint.—*ND8L*. I'll never be able to talk as fast as KW8N.—*N9RV*. Nice to work the gang again after a few years off.—*N6ER*. Low power and no gain antennas is a recipe for frustration. See ya next time.—*N4VI*. I thought that surely I would be making more Qs on 20 now that I'm using a beam and 500 W amp.—*N4CW*. Many nice mults were on this time. I could have used some of them in the CW Sprint.—*K1HT*. Great operators. KW8N seemed to have the fastest brain and tongue.—*LW9EUJ*. The 40-meter start helped, but not as dramatically as last time.—*KW8N*. My first Sprint entry. Great fun.—*KR6RF*. My hat is off to the guys who really do well in this contest.—*K3CR*. Used a hand mike which caused my hand to be permanently welded in position. The things we do for our club.—*K1TO*. Was heading for a record (for me) of 280+ Qs and ran into a wall of s9+20 noise on 80. The last hour was miserable.—*AE6Y*. Really enjoyed this one. It is such a joy to walk downstairs 15 minutes before the contest to sit down and have fun.—*KA9FOX*. Maybe two hours total time on between watching the Olympic events.—*W9SMC*. Fun to have HC8N call me.—*K7ZO*. That 40-meter start is HUGE here! Thanks to everyone who makes it worthwhile.—*K9AA*. First phone Sprint in a while. It confirmed that I like CW better.—*W1WEF*.

Team Scores

1. Southern California Contest Club		*2. Society of Midwest Contesters #1*		*3. Northern California Contest Club*		*4. Mad River Radio Club*	
N6MJ	19656	W9RE	14688	HC8N	23580	KW8N	17596
K6LL	17350	K9AA	14400	VA7RR	16450	N8VW	16276
N6ED	16366	KA9FOX	14352	N6RO	14053	KU8E	13632
K6LA	16050	K9IG	12650	K5RC	12915	K8CC	12900
K6RO	14288	WE9V	12584	AE6Y	12098	K9TM	12314
W6TK	13573	KG9X	11088	KA6BIM	10416	ND8DX	11270
K6AM	12643	K9NW	10810	K6CTA	7544	N8EA	10575
WA7BNM	10277	K9PW	10621	K6TA	6794	N8KR	5434
N6RT	8610	KI9A	10530	K6EP	5143		99,997
WN6K	7954		111,723		108,993		
	136,767						

5. Florida Contest Group (K4XS, WC4E, N2NL, K1TO, W4SAA) 59,777
6. North Coast Contesters (N9RV, K3CR, ND8L, N8AA, K8LN) 47,568
7. Society of Midwest Contesters #2 (K9MMS, K9VV, KE9R, WI9WI, W0UY, K9SD, W9YS, KG9N) 43,742
8. Tennessee Contest Group (K4MA, K0EJ, N4VI, NQ4U, K4BP) 42,278
9. Minnesota Wireless Association (KT0R, AC0W) 14,936
10. Society of Midwest Contesters #3 (K9ZO, W9LYN, NZ8C, K9WX, W9HL) 12,041
11. Texas DX Society (KG5U) 11,160
12. Revenge of the Nerds (W7UQ) 9,560
13. LU Contesters (CX6VM,LW9EUJ) 1,008

Scores

Call	*Name*	*QTH*	*20*	*40*	*80*	*QSO*	*Mults*	*Score*	*Team*
N1TN	Dave	CT	124	117	59	300	52	15600	
W1WEF	Jack	CT	102	114	63	279	53	14787	
K1HT	*Dave	MA	73	81	40	194	45	8730	
N4CW	Bert	ME	55	64	35	154	41	6314	
K5ZD	Randy	MA	61	63	30	154	40	6160	
NI2P	*Leon	NY	15	89	7	111	37	4107	
K3CR	Jim	PA	79	122	75	276	47	12972	N Coast
N8NA	*Karl	DE	22	53	26	101	29	2929	
K4XS	Bill	FL	197	94	63	354	53	18762	FCG
WC4E	Jeff	FL	132	112	60	304	47	14288	FCG
N2NL	Dave	FL	111	115	53	279	51	14229	FCG
K4MA	Jim	NC	78	126	61	265	47	12455	TCG
K1TO	Dan	FL	138	86	22	246	47	11562	FCG
K0EJ	*Mark	TN	59	110	65	234	47	10998	TCG
W4NF	Jack	VA	65	109	49	223	44	9812	
K4BAI	John	GA	101	49	43	193	42	8106	
NQ4U	*Jim	TN	15	78	47	140	41	5699	TCG
K4BP	Jeff	TN	48	76	18	142	37	5254	TCG
K7SV	*Larry	VA	76	51	0	127	38	4826	
K4IU	*Fred	KY	21	63	28	112	37	4144	
W4SAA	*Joe	FL	27	8	4	39	24	936	FCG
KE4VEK	*Bill	FL	23	1	0	24	17	408	
K5NZ	Mike	TX	128	123	67	318	51	16218	
W5WMU	Pat	LA	112	85	72	269	51	13719	
KZ5D	Art	LA	108	124	35	267	49	13083	
KG5U	Dale	TX	133	76	39	248	45	11160	TDXS
N1LN	Bruce	TX	116	75	44	235	44	10340	
K5AM	Mark	NM	120	37	23	180	36	6480	
N5TU	Earl	TX	75	37	18	130	36	4680	
KG5RM	Chris	AR	19	64	23	106	32	3392	
N6ZZ	Phil	NM	87	0	0	87	33	2871	
N6MJ	Dan	CA	185	114	65	364	54	19656	SCCC
N6ED	Ed	CA	191	95	48	334	49	16366	SCCC
K6LA	Ken	CA	156	126	39	321	50	16050	SCCC
K6RO	Larry	CA	164	95	45	304	47	14288	SCCC
N6RO	Ken	CA	147	100	52	299	47	14053	NCCC
W6TK	Dick	CA	138	103	36	277	49	13573	SCCC
K6AM	*John	CA	159	77	33	269	47	12643	SCCC
AE6Y	Andy	CA	134	103	26	263	46	12098	NCCC
KR6RF	Chuck	CA	119	92	40	251	42	10542	
KA6BIM	Dave	CA	127	75	15	217	48	10416	NCCC
WA7BNM	*Bruce	CA	122	86	31	239	43	10277	SCCC
N6RT	*Doug	CA	99	95	16	210	41	8610	SCCC
WN6K	*Paul	CA	95	78	21	194	41	7954	SCCC
K6CTA	Ed	CA	115	64	5	184	41	7544	NCCC
N6ER	Kevin	CA	81	93	1	175	39	6825	
K6TA	Ken	CA	114	12	32	158	43	6794	NCCC
K6III	Jerry	CA	114	27	16	157	43	6751	
K6EP	Eric	CA	84	35	20	139	37	5143	NCCC
K6LL	Dave	AZ	217	88	42	347	50	17350	SCCC
K5RC	Tom	NV	151	90	46	287	45	12915	NCCC
W7UQ	*Dan	ID	124	73	42	239	40	9560	Revenge
W7MT	Russ	OR	112	76	19	207	43	8901	
KI7Y	*Jim	OR	95	57	10	162	40	6480	

Call	Name	QTH	20	40	80	QSO	Mults	Score	Team
N7RX	*Neal	OR	83	54	11	148	35	5180	
KW7N	*Steve	ID	82	49	0	131	34	4454	
K7ZO	Scott	ID	62	46	0	108	33	3564	
KW8N	Bob	OH	107	146	79	332	53	17596	MRRC
N8VW	Pat	OH	104	130	79	313	52	16276	MRRC
KU8E	Jeff	OH	72	140	72	284	48	13632	MRRC
K8CC	Dave	MI	86	141	31	258	50	12900	MRRC
K9TM	Bob	MI	84	116	62	262	47	12314	MRRC
ND8DX	Ed	OH	80	91	74	245	46	11270	MRRC
N8EA	Joe	MI	81	99	55	235	45	10575	MRRC
ND8L	*Ray	OH	74	79	51	204	44	8976	N Coast
N8AA	*John	OH	70	80	0	150	45	6750	N Coast
N8KR	*Ken	MI	48	62	33	143	38	5434	MRRC
K8LN	John	OH	0	44	46	90	31	2790	N Coast
N9RV	Pat	IN	106	125	104	335	48	16080	N Coast
W9RE	Mike	IN	100	120	86	306	48	14688	SMC #1
K9AA	*Paul	IL	72	136	80	288	50	14400	SMC #1
KA9FOX	Scott	WI	87	124	88	299	48	14352	SMC #1
K9IG	Ed	IN	77	114	84	275	46	12650	SMC #1
WE9V	Chad	WI	83	121	82	286	44	12584	SMC #1
KG9X	Fred	IL	71	116	65	252	44	11088	SMC #1
K9NW	*Mike	IN	62	111	62	235	46	10810	SMC #1
K9PW	Peter	IL	68	122	57	247	43	10621	SMC #1
KI9A	Chuck	IL	63	102	72	237	46	10530	SMC #1
K9MMS	Gary	IL	58	85	59	202	42	8484	SMC #2
K9VV	Fubar	IN	28	97	61	186	45	8370	SMC #2
K9ZO	Ralph	IL	55	81	60	196	41	8036	SMC #3
KE9R	*Greg	IN	48	89	48	185	41	7585	SMC #2
WI9WI	Jim	WI	50	77	39	166	39	6474	SMC #2
W9IU	Don	IN	39	88	21	148	40	5800	
W9SMC	Bubba	IN	0	76	48	124	34	4216	
K9SD	Sam	IL	23	62	8	93	32	2976	SMC #2
W9YS	*Mike	IL	12	35	30	77	29	2233	SMC #2
W9LYN	*Bill	IL	3	62	0	65	32	2080	SMC #3

Call	Name	QTH	20	40	80	QSO	Mults	Score	Team
KG9N	Chuck	IL	16	47	0	63	25	1575	SMC #2
NZ8C	*Renee	IL	3	49	0	52	28	1456	SMC #3
K9WX	*Tim	IN	3	25	0	28	16	448	SMC #3
W9HL	Randy	IL	0	0	7	7	3	21	SMC #3
KT0R	Dave	MN	44	126	41	211	43	9073	MWA
WA0SXV	Mike	MO	40	101	63	204	43	8772	
N4VI	*Chris	CO	79	77	36	192	41	7872	TCG
AE9B	Tom	MO	68	107	0	175	39	6825	
W0UY	*Tom	KS	56	98	1	155	39	6045	SMC #2
AC0W	*Bill	MN	24	85	34	143	41	5863	MWA
KE0FT	*John	IA	0	101	0	101	36	3636	
KI0MB	*Brian	MO	37	60	0	97	36	3492	
N0WY	*Steve	NE	56	21	0	77	28	2156	
N0LZ	*John	NE	0	20	9	29	18	522	
VE9WH	*Jim	VE1	22	49	35	106	29	3074	
VE3YQY	*Gord	VE3	23	0	1	24	9	216	
VE5SF	*Sam	VE5	74	84	19	177	38	6726	
VE5CPU	*Bart	VE5	50	66	3	119	32	3808	
VA7RR	Gary	VE7	166	112	51	329	50	16450	NCCC
VE7IN	Earl	VE7	103	86	16	205	44	9020	
HC8N	Trey	HC8	393	0	0	393	60	23580	NCCC
XE1RGL	*Bill	XE	55	0	0	55	25	1300	
LW9EUJ	*Martin	LU	32	0	0	32	16	512	LU Cont
CX6VM	Geo	CX	31	0	0	31	16	496	LU Cont

*Denotes a Low Power entry.

Checklogs: W4NTI and KC7WUE
Operators: HC8N by N5KO, K3CR by WA3FET, KR6RF by W6XK, W7UQ by KL9A, K9AA by K9PG, W9SMC by KJ9C
Stations: KG5U from W5RRR, K6EP from N6IJ, N6MJ from KG6OK, K9PW from K9MOT

Results, January 2000 NAQP SSB Contest

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Although the January 2000 NAQP SSB Contest did not produce as many record-breaking scores as the January 1999 running, 15 new single-op records were set while a record number of participants took advantage of great band conditions. Activity remained high throughout most of the contest, with the low bands providing good rates in the last third of the contest after the high bands dried up. As in January 1999, 10 meters was the place to start for most ops.

Once again K6LL was the Single Op winner with the second highest score ever posted in the NAQP SSB. (Dave's January 1999 score is the all-time record score.) K4XS's single-op-leading 258 multipliers produced the third highest all-time score, a new Florida record and a second place finish. W7GG took third while using 10 meters to log more than half of his single-op-leading 1,404 QSOs, shattering AI7B's Oregon record. VE5MX operated VE5DX to an outstanding fourth place finish, while smashing VE5SF's old Saskatchewan record by almost 90k points. W7NN took back the Washington record from W7WA for fifth place. K9PG piloted K9XD to a sixth-place finish, and broke W9RM's year-old Illinois record. N6MJ (ex-AD6DO) continued his string of Top-Ten finishes with seventh, while fellow SCCCer, K6RO, captured ninth. VE6JY almost doubled VE6FU's year-old Alberta record in another outstanding

Top Ten Combined CW/SSB Scores

Call	CW Points	SSB Points	Total Points
K6LL	413	500	913
N6RT	500	356	856
N6MJ	432	401	833
VE5MX	325	463	788
KB3AFT	336	338	673
W5AO	291	367	658
K9PG	252	404	656
VE4VV	286	366	652
K4WX	314	284	597
N6NF	248	330	578

Team Scores

1. Southern California Contest Club #1		*2. Team (Way) Sub-Zero*		*3. Mad River Radio Club #1*	
K6LL	313,720	VE5DX (VE5MX)	290,624	K9TM	176,513
N6MJ	251,712	VE6JY	237,575	KU8E	166,844
K6RO	234,432	CG4VV	229,770	W8MJ	166,800
W6EEN (N6RT)	223,110	VE5SF	196,386	ND8DX	148,200
N6ED	217,413	VA3UZ	53,841	AA8U	139,748
Total	1,240,387	*Total*	1,008,196	*Total*	798,105

4. North Texas Contest Club (AA5NT, W5GN, N6ZZ, K5OT, K5RX) 753,177
5. SCCC #2 (W7WW, N6KI, W6AQ, WA7BNM, K6AM) 706,420
6. Tennessee Contest Group #1 (K4WX, W4CAT, K5IID, K1VUT, N4VI) 651,619
7. Society of Midwest Contesters #1 (K9XD, W9RE, KI9A, KE9I) 649,005
8. South East Contest Club #1 (W4OC, K4NR, K4OGG, K4MA, W4NTI) 589,854
9. Weekend Warriors (K3CR, W4WS, WA3HAE, WA3SES) 516,043
10. Minnesota Wireless Association #1 (WR0DK, AC0W, KT0R, N0IJ) 477,294
11. Society of Midwest Contesters #2 (WT9Q, K0OU, WT9U, KJ9C, WD0T) 453,631
12. Order of Boiled Owls (KS2G, N2GA, K2DO, WM2V, N2FF) 376,189
13. Ozark Contest Club (W5RZ, AB5SE, W5YM) 333,368
14. Team Zero (N0WE, N0QKG, KF0UK, KI0F, K0NY) 326,006
15. Tennessee Contest Group #4 (W9WI, KF4ZR, NN4T, W4PA) 298,632
16. VE No Names (VE6EX, VE6FU) 289,238
17. Tennessee Contest Group #2 (W0ETC, AK4ST, K4OOO, K4BEV, KE4OAR) . 283,230
18. Society of Midwest Contesters #3 (K9JE, WO9S, WE9V) 277,228
19. Yegua Valley Contest Club (NX5M, KM5VU) 211,918
20. Mad River Radio Club #2 (K8MR, NU8Z, N8ET, KC8FXR, AF8A) 208,177
21. SCCC #3 (KF6HAM, KQ6VQ, KQ6ES, K6NA) 193,602
22. Dixie Amateur Radio Club (W8EQA, K7XE, WA7LNW) 189,663
23. Tennessee Contest Group #5 (K0EJ, AC4ZD, AF4QB, WO4O, KI0ND) 179,166
24. Connecticut Radio Society (W1RPG, W1QB, W1CRS, W1JON) 178,005
25. Southwest Virginia Contest Conspiracy (K4IQ, KC9LC, N4GU) 122,463
26. Twin City Hams ARC (K5JRY, N5MYH, K5QK) 94,569
27. Minnesota Wireless Association #2 (K0AD, K0DMR) 80,445
28. Tennessee Contest Group #3 (KE4YBS, K4AMC, N4ZI) 79,144
29. Green River Valley ARS (W6YV, NE0P, KE0FT) 75,887
30. Society of Midwest Contesters #5 (K9IG, KB9THU) 3,601

Single Op Top Ten Breakdowns

Call	Score	QSOs	Mults	160	80	40	20	15	10	Team
K6LL	313,720	1265	248	28/14	84/38	204/47	335/56	261/49	351/44	SCCC #1
K4XS	306,504	1188	258	43/21	197/47	275/54	307/57	261/51	96/28	
W7GG	303,264	1404	216	54/23	74/29	185/49	304/55	14/10	765/50	
VE5DX (VE5MX)	290,624	1216	239	35/23	106/39	70/32	368/58	239/49	393/38	Sub-Zero
W7NN	260,559	1179	221	16/9	95/33	124/37	244/50	314/51	383/41	
K9XD (K9PG)	253,506	1002	253	144/39	227/50	267/53	167/49	114/37	79/25	SMC #1
N6MJ	251,712	1104	228	33/13	61/30	155/45	322/57	194/49	338/34	SCCC #1
VE6JY	237,575	1105	215	6/5	68/35	52/27	289/53	297/53	391/42	Sub-Zero
K6RO	234,432	1056	222	15/6	46/21	152/51	269/58	112/44	461/42	SCCC #1
NA5B (W5AO)	230,204	988	233	130/39	208/47	162/41	254/41	168/37	66/28	

Multi-Two Breakdowns

Call	Score	QSOs	Mults	160	80	40	20	15	10
K5KA	458,012	1709	268	155/43	303/53	388/57	559/55	220/41	79/19
K9NS	446,406	1583	282	209/45	294/52	351/56	306/55	170/38	244/36
N5TW	418,816	1636	256	97/32	133/41	303/53	547/58	405/48	145/24

Canadian effort for eighth. W5AO made the Top Ten by piloting NA5B to tenth place and a new Oklahoma record (breaking N5CG's 1992 record).

The K5KA crew used their QSO advantage to take first place in the Multi-Two category by less than 12k points over K9NS. N5TW couldn't overcome K9NS's multiplier advantage and took third. This edition of the NAQP SSB Contest produced one of the most competitive multi-two categories ever, with eight entrants scoring more than 300k points.

In the team competition, the Southern California Contest Club #1 team, with three Top-Ten single-op finishers, nipped the old all-time team record (also by an SCCC team) to take first place. Team (Way) Sub-Zero, an all-Canadian team, became only the fourth team in history to break the million-point mark and took second by more than 200k points over third-place finisher, the Mad River Radio Club #1 team. The team competition remains highly popular, with members of 30 teams submitting logs. Thanks to the Tennessee Contest Group for continuing its great support of the NAQPs by fielding five teams and to the Society of Midwest Contesters for fielding four teams.

K6LL won the CW/SSB combined plaque with his fourth place finish in NAQP CW and his first place in NAQP SSB. Fellow SCCCers, N6RT and N6MJ, reversed their August 1999 combined finish, for second and third, respectively. Notably, VE5MX took fourth place.

In addition to these top scores, there were many other record-setting performances. W1CRS broke K8HVT/1's 1993 Connecticut record, while W5WMU broke AE5T's two year old Louisiana record. WQ5L set a new Mississippi record by surpassing W5XX's two year old mark. Rod, W7ZRC, more than doubled his own Idaho record score, while W7CT did the same to WE7B's 1992 Utah record. KT0R added almost 70k points to AA0SQ's 1996 Minnesota record score. In addition to the two new Canadian province records noted earlier, CG4VV barely missed a top-ten score, but broke his own year old Manitoba record. VE2AWR and VY1JA each smashed their own Quebec and Yukon records, respectively.

Although I often mention the importance of knowing the standard abbreviations for states and provinces, many contesters, both top ten and part-time, continue to lose points during log checking because of improper logging of the QTH portion of the exchange. Even though the location of a Canadian station can be directly determined from its prefix (unlike US stations), many Canadian QTHs are improperly logged. Make sure your contest logging software properly logs the NAQP multipliers before submitting your log.

Single Operator Scores

Call	*Score*	*QSOs*	*Mults*	*Section*	*Team*
K1VUT	126,896	721	176	MA	TCG #1
W1RZF	120,802	646	187	MA	
W1CRS	112,320	585	192	CT	CT Radio Society
N1ND	57,486	429	134	CT	
KU4BP	45,671	419	109	MA	
K5ZD	40,468	302	134	MA	
W1RPG	39,368	296	133	CT	CT Radio Society
W1QB	23,157	249	93	CT	CT Radio Society
K1TS	7,865	121	65	MA	
K1RO	7,839	117	67	CT	
N1MD	6,649	109	61	CT	
K1PLX	5,600	100	56	MA	
K1HT	3,198	82	39	MA	
W1JON	3,160	79	40	CT	CT Radio Society
N1XS	1,645	47	35	CT	
N2GA	116,232	668	174	NY	Order of Boiled Owls
WM2V	98,226	642	153	NY	Order of Boiled Owls
N2LH	82,350	549	150	NY	
KS2G	70,242	509	138	NY	Order of Boiled Owls
N2FF	59,345	415	143	NY	Order of Boiled Owls
NI2P	39,390	303	130	NY	
K2DO	32,144	328	98	NY	Order of Boiled Owls
N2CU	12,300	164	75	NY	
WB2BAU	1,350	54	25	NY	
WA2BMH	646	38	17	NJ	
K3CR (KB3AFT)	211,806	861	246	PA	Weekend Warriors
WA3HAE	94,300	575	164	PA	Weekend Warriors
WA3SES	85,162	539	158	PA	Weekend Warriors
N3PUR	60,345	447	135	PA	
WF3M	36,790	283	130	PA	
N8NA	29,000	250	116	DE	
NY3C	14,060	190	74	DE	
K3CKO	3,479	71	49	PA	
N3IKO	2,784	87	32	PA	
K4XS	306,504	1188	258	FL	
KT4ZX	182,280	868	210	KY	
K4WX	178,086	886	201	TN	TCG #1
K4MA	166,050	810	205	NC	SECC #1
NN4T	163,800	780	210	TN	TCG #4
W4OC	147,920	688	215	SC	SECC #1
K4WI	144,474	726	199	AL	
W4CAT (K1KY)	135,024	696	194	TN	TCG #1
W4WS (N4VHK)	124,775	713	175	NC	Weekend Warriors
KF4ZR	108,472	596	182	TN	TCG #4
K0EJ	106,020	620	171	TN	TCG #5
N4CW	104,718	563	186	NC	
NT4D	95,654	566	169	NC	
K4OGG	91,160	530	172	GA	SECC #1
K4IQ	70,785	495	143	VA	SWVCC
AB4EJ	65,790	430	153	AL	
K7SV	64,896	416	156	VA	
KE4OAR	61,919	433	143	TN	TCG #2
W4NTI	56,280	402	140	AL	SECC #1
AK4ST	55,342	413	134	TN	TCG #2
N4GU	49,125	393	125	VA	SWVCC
K4BEV	47,214	366	129	TN	TCG #2
WO4O	41,574	338	123	TN	TCG #5
N4ZI	40,598	383	106	TN	TCG #3
K4OOO	24,768	258	96	TN	TCG #2
KE4YBS	23,540	214	110	TN	TCG #3
AF4QB	17,290	182	95	TN	TCG #5
KG4BIG	17,170	202	85	KY	
W4PA	15,272	184	83	TN	TCG #4
K4AMC	15,006	183	82	TN	TCG #3
WB4SQQ	14,592	192	76	GA	
W0EBA	11,248	148	76	FL	
W9WI	11,088	154	72	TN	TCG #4
W4AU	7,998	129	62	VA	
WB2NYM	7,038	102	69	GA	
N4IOZ	4,000	100	40	NC	
KF4OAD	3,920	80	49	NC	
WA2CPP	3,910	85	46	FL	
KV4DJ	2,964	78	38	VA	
KC9LC	2,553	69	37	VA	SWVCC
AC4ZD	1,568	49	32	TN	TCG #5
N3ZYU	945	35	27	VA	
KR4QI	684	36	19	AL	
N4JN	600	30	20	TN	
KF4ZEO	370	37	10	TN	
W4OGG	368	23	16	TN	
W9CNF	56	14	4	FL	
NA5B (W5AO)	230,204	988	233	OK	
N6ZZ	215,136	996	216	NM	NTCC
NX5M	210,490	970	217	TX	Yegua Valley CC
AB5SE	189,210	901	210	AR	Ozark CC
K5OT	173,768	812	214	TX	NTCC
K5RX	158,930	691	230	TX	NTCC
W5WMU	154,660	740	209	LA	
WQ5L	146,174	742	197	MS	
W5YM (AC5RR)	133,385	721	185	AR	Ozark CC
K4NR	128,444	652	197	TX	SECC #1
K5WA	126,252	668	189	TX	
W5GN	122,077	731	167	TX	NTCC
KZ5MM	91,620	509	180	TX	
AA5NT	83,266	527	158	TX	NTCC
W5HNS	50,264	412	122	TX	
K5JRY	32,472	264	123	LA	Twin City Hams ARC
N5MYH	31,752	252	126	LA	Twin City Hams ARC
WK5K	30,744	244	126	TX	
KJ5WX	30,734	242	127	AR	
K5QK	30,345	255	119	LA	Twin City Hams ARC
K0CIE	18,792	216	87	OK	
KB5FET	17,533	197	89	MS	

Call	Score	QSOs	Mults	Section	Team
WA5SAJ	17,088	178	96	TX	
KM5NQ	14,018	163	86	MS	
WA9AFM	11,316	164	69	OK	
W5RZ	10,773	133	81	AR	Ozark CC
KK5CA	8,901	129	69	TX	
WD9FJL	6,762	98	69	NM	
KJ5CI	6,435	99	65	OK	
K5RA	4,606	98	47	TX	
N5NJ	2,925	65	45	TX	
WA5AU	1,786	47	38	TX	
KM5VU	1,428	42	34	TX	Yegau Valley CC
KD5EDO	940	38	25	TX	
KD5GXS	68	17	4	MS	
N6MJ	251,712	1104	228	CA	SCCC #1
K6RO	234,432	1056	222	CA	SCCC #1
W6EEN (N6RT)	223,110	1005	222	CA	SCCC #1
N6ED	217,413	1071	203	CA	SCCC #1
N6NF	206,752	994	208	CA	
WA7BNM	170,720	880	194	CA	SCCC #2
N6KI	161,896	826	196	CA	SCCC #2
W6TK	149,523	759	197	CA	
K6AM	126,016	716	176	CA	SCCC #2
K6NA	123,000	615	200	CA	SCCC #3
W6AQ	94,584	563	168	CA	SCCC #2
N6JS	78,000	500	156	CA	
N6HC	67,564	508	133	CA	
K6EP	45,758	334	137	CA	
WB6NFO	38,610	297	130	CA	
KQ6ES	32,760	280	117	CA	SCCC #3
W6YV (K9AKS)	30,849	339	91	CA	Green River Valley ARS
KB6OQJ	25,636	221	116	CA	
KQ6MU	24,930	277	90	CA	
N6UUG	23,320	220	106	CA	
KF6HAM	22,736	232	98	CA	SCCC #3
WA6DLM	19,065	205	93	CA	
W6ESJ	17,019	183	93	CA	
KQ6VQ	15,106	166	91	CA	SCCC #3
K6DB	12,638	178	71	CA	
W6AFA	12,520	313	40	CA	
N6TW	9,125	125	73	CA	
KF6BIR	8,320	128	65	CA	
KQ6XL	6,996	106	66	CA	
KE6QR	4,368	78	56	CA	
K6ZCL	4,312	98	44	CA	
W6RKC	2,200	55	40	CA	
N2ALE	1,421	49	29	CA	
N6ER	117	13	9	CA	
K6LL	313,720	1265	248	AZ	SCCC #1
W7GG	303,264	1404	216	OR	
W7NN	260,559	1179	221	WA	
W7ZRC	205,176	996	206	ID	
W7CT	204,352	992	206	UT	
WA7LNW	173,316	858	202	UT	Dixie ARC
K7AW (K5ZM)	158,130	753	210	OR	
W7WW	153,204	751	204	AZ	SCCC #2
N3HXQ/KL7	72,644	572	127	AK	
K4XU	67,137	483	139	OR	
KI7Y	63,294	411	154	OR	
KW7N	45,981	351	131	ID	
W0ETT	20,582	251	82	WY	
KD7CB	16,608	173	96	ID	
AB7RW	13,692	163	84	WA	
K7XE	8,742	141	62	UT	Dixie ARC
W8EQA	7,605	117	65	UT	Dixie ARC
KC7WDL	1,600	50	32	WA	
W7/JR1NKN	418	22	19	WA	
K9TM	176,513	887	199	OH	MRRC #1
KU8E	166,844	787	212	OH	MRRC #1
W8MJ	166,800	834	200	MI	MRRC #1
ND8DX	148,200	741	200	OH	MRRC #1
AA8U	139,748	713	196	MI	MRRC #1
K8IR	73,248	436	168	MI	
N8ET	69,806	418	167	OH	MRRC #2
NU8Z	63,650	475	134	MI	MRRC #2
K8MR	49,368	363	136	OH	MRRC #2
K5IID	34,013	301	113	WV	TCG #1
AF8A	19,596	213	92	OH	MRRC #2
KI8CS	19,136	208	92	OH	
W8DD	14,740	220	67	OH	
WT8P	9,522	138	69	OH	
WB8T	6,480	120	54	MI	
KC8JHX	6,206	107	58	MI	
KC8FXR	5,757	101	57	MI	MRRC #2
W8MHB	2,964	78	38	OH	
N8KZG	2,457	63	39	MI	
K9NW	720	48	15	OH	
N8UXK	91	13	7	OH	
W8IQ	81	9	9	OH	
K9XD (K9PG)	253,506	1002	253	IL	SMC #1
KI9A	170,066	806	211	IL	SMC #1
WE9V	165,690	789	210	WI	SMC #3
KE9I	145,957	719	203	IN	SMC #1
N9VVV	137,685	685	201	IL	
N9PQU	119,637	633	189	WI	
N9RV	105,492	596	177	IN	
WT9U	104,922	603	174	IN	SMC #2
WO9S	102,648	564	182	IL	SMC #3
K0SN	87,720	516	170	WI	
WA9TPQ	82,546	554	149	IL	
W9RE	79,476	444	179	IN	SMC #1
WA9Z	50,616	333	152	IL	
KJ9C	47,311	391	121	IN	SMC #2
AA9QT	40,548	327	124	IL	
K9WX	33,915	285	119	IN	
W9YS	27,911	247	113	IL	
N9CK	26,400	240	110	WI	
KB9LIE	19,594	194	101	WI	
K9USA (KA6A)	15,548	169	92	IL	
WT9Q	13,561	191	71	WI	SMC #2
K9JE	8,890	127	70	IL	SMC #3
KF9YR	6,032	104	58	WI	
KB9S	4,800	100	48	WI	
K9IG	3,150	75	42	IN	SMC #5
AF9J	2,590	70	37	WI	
KB9THU	451	41	11	IN	SMC #5
WD0T	215,460	945	228	SD	SMC #2
KT0R	194,260	883	220	MN	MWA #1
AC0W	186,525	829	225	MN	MWA #1
N4VI	177,600	888	200	CO	TCG #1
W0ETC	93,987	531	177	IA	TCG #2
N0WE	91,217	581	157	MN	Team Zero
KI0F	82,650	475	174	MN	Team Zero
WR0DK	76,586	514	149	MN	MWA #1
K0AD	76,121	467	163	MN	MWA #2
K0OU	72,377	461	157	MO	SMC #2
K0NY	62,300	445	140	MN	Team Zero
KF0UK	48,511	349	139	MN	Team Zero
KE0FT	43,566	318	137	IA	Green River Valley ARS
N0QKG	41,328	336	123	MN	Team Zero
K0XM	33,276	282	118	KS	
K0RI	21,500	215	100	CO	
N0IJ	19,923	229	87	MN	MWA #1
KB0WHY	18,480	210	88	NE	
KC0FUD	18,430	190	97	NE	
K0DAT	13,770	170	81	MO	
KI0ND	12,714	163	78	CO	TCG #5
KB0WPY	8,777	131	67	KS	
K0DMR	4,324	92	47	MN	MWA #2
WB0VBW	4,235	121	35	SD	
NE0P	1,472	46	32	IA	Green River Valley ARS
AB0GO	550	25	22	CO	
VE5DX (VE5MX)	290,624	1216	239	SK	Team (Way) Sub-Zero
VE6JY	237,575	1105	215	AB	Team (Way) Sub-Zero
CG4VV	229,770	999	230	MB	Team (Way) Sub-Zero
VE5SF	196,386	922	213	SK	Team (Way) Sub-Zero
VE6EX	168,618	942	179	AB	VE No Names
CG7CFD	141,556	823	172	BC	
VE6FU	120,620	740	163	AB	VE No Names
VE3ZT	73,017	427	171	ON	
VE2AWR	59,830	386	155	PQ	
VE7FO	59,748	383	156	BC	
VA3UZ	53,841	393	137	ON	Team (Way) Sub-Zero
VE7XB	46,900	350	134	BC	
VA3SWG	45,012	372	121	ON	
VE3BUC	36,531	297	123	ON	
VY1JA	24,824	232	107	YT	
VE3KP	24,804	212	117	ON	
VE9WH	24,057	243	99	NB	
CG9MY	11,718	186	63	NB	
VE2GWL	9,108	132	69	PQ	
VE7TLL	8,174	134	61	BC	
VE3WZ	6,380	110	58	ON	
VA3IX	5,600	140	40	ON	
VE3RLX	3,444	82	42	ON	
VE7ZEP/VE6	950	50	19	AB	
VA3KOC	598	26	23	ON	
CG2PIJ	308	28	11	PQ	
WP4LNY	3,990	95	42	KP4	
LW9DAH	8,517	167	51	DX	

Multi-Two Scores

Call	*Score*	*QSOs*	*Mults*	*State*
K5KA (+ N5RZ)	458,012	1709	268	OK
K9NS (K9PW, WV9T)	446,406	1583	282	IL
N5TW (+ K5TR, NA4M, W5TD)	418,816	1636	256	TX
W4WA (+ AA4GA, K4IDX)	406,771	1501	271	GA
KK1L (+ AB1T, N1MEZ)	398,547	1527	261	VT
W4AN (K4BAI, K6LA)	387,180	1434	270	GA
W5NN (K5NZ, W5BAK)	371,778	1419	262	TX
W4MR (AA4NC, KI7WX)	328,848	1326	248	NC
W6YX (N6DE, N7MH, W6KNS, W6LD)	285,664	1264	226	CA
W9SMC (N9FH, N9SD)	247,470	1130	219	WI
N5YA (+ K5WO, KM5UB, W5IUA)	234,037	1031	227	TX
N1TB (+ N1UJV)	217,350	1035	210	MA
W5SB (+ KF5SB, KJ5X, KK5LD, W5IDX)	199,199	1001	199	TX
KB3B (+ K3LD, KB3A, KB3ELE, W3BBO, W3KHQ)	125,454	721	174	PA
NY4T (+ KF4GNV, N4PQV, W1ADE)	119,070	735	162	TN
N5KB (+ KD5HPS)	61,701	393	157	TX
N1XL (+ K2GH)	45,073	329	137	NY
AE9D	35,784	284	126	IL
W0EEE (KC0CDG, KC0EWD, KC0FRI, KC0HBM, KC9UMR, KI0PX)	32,780	298	110	MO
K5BSA (KC5PWN, KC5YSL, KD5CTT, KD5HDR, KD5HDS, KD5HHZ, KD5IQO, KR1ZAN)	20,604	202	102	TX
KH6J (AH6OZ, AH7R, WH6CLZ, WH7E)	12,096	144	84	HI

VE5AAD, W9GIGCheck Logs

Relative Band Activity

This table shows the relative activity, based on submitted logs, for each band during each hour of the contest. A score of 100 is assigned to the most active band-hour, in this case 10 meters during the 18Z hour. As an example, 80 meters/2Z had 58 percent of the activity of 10 meters/18Z.
Similarly, the All Bands column shows the relative total activity for all bands during each hour. For example, the 0Z hour had 89 percent of the activity of the 18Z hour.

Hour/Band	*160m*	*80m*	*40m*	*20m*	*15m*	*10m*	*All Bands*
18Z	—	—	1	12	45	100	100
19Z	—	—	1	27	59	68	98
20Z	—	—	1	40	59	52	96
21Z	—	1	3	55	54	39	96
22Z	1	—	15	66	41	27	95
23Z	—	1	43	79	18	8	95
0Z	—	4	59	73	6	—	89
1Z	1	19	73	44	—	—	87
2Z	9	58	63	16	—	—	92
3Z	27	65	32	—	—	—	79
4Z	33	67	10	—	—	—	69
5Z	30	49	3	—	—	—	52

Letters

Dear *NCJ*,

I read W9XT's *Contest Tips, Tricks and Techniques* column in the November/December 2000 issue of the *NCJ* with interest, as I myself am probably what most people would consider a "young contester."

Most of the discussion in that column seemed to be directed towards attracting high school students, or even younger operators. I think this neglects an important group of young hams: college students. Almost every college or university has a ham radio club of one form or another. Some are dynamic, growing and active, and others are lone faculty advisors hanging on waiting for another student ham to come along. But they're there, and I think contesting is an activity that matches well with the typical college club.

The vast majority of college student hams live in dormitories or small apartments, and either cannot afford their own gear or have no practical way to put up an antenna. They move year to year or even semester to semester. Fortunately, on-campus club stations fill this need and provide a place to operate.

Contesting is "high performance" ham radio. For a typical college student's schedule, getting together for a multi-op contest weekend a few times a semester is a great way to focus the pursuit of ham radio. College clubs and club stations can be a tremendous asset to developing or maintaining student ham interest in radio contesting.

A contesting tradition at a college club isn't something that just happens, though. It requires active engagement by longer-term "members"—alumni, faculty, staff and the occasional graduate student. The most fortunate clubs enjoy both hands-on mentorship in radio contesting and strong financial support for club station hardware.

Here is what I think contesters interested in reaching out to college students can do. First, get involved with your alma mater's club, even if you were not licensed as a student yourself. If you happen to live nearby, attend meetings, make a contesting presentation, offer to "anchor" a contest effort from campus in something like the NAQPs, the ARRL 10-Meter Contest or the Collegiate Championship. Donate your copies of the *NCJ* to the college club "library." If you don't live near your alma mater, consider getting involved with the local college or university club in the same way.

Second, I think it would be great if contest clubs established relationships with their local college clubs. Let the college students know that there is a resource where they can find answers to their questions about contesting. Direct members' contest stories and tips to their newsletters, e-mail reflectors or meetings to help spark interest. Encourage members to donate their spare gear and computers to the college club station. Suggest that the contest club sponsor the purchase of contest logging software and CW keying interfaces for the college club station. Think about how many new contesters there would be if every contest club "adopted" their local college club and got just one new young contester out of it!

It's great if a 10-year-old gets into Kid's Day. It's even better if they stay a little bit interested all the way through high school. Let's not lose student hams, and contesters in particular, as they go through college. The best way to encourage college student contesters is through active engagement, primarily through the college ham radio club. I think that a large percentage of college student contesters remain contesters after college, and that the time and effort directed their way will be a solid investment in the future of the sport.

73, Ken Harker, WM5R

President, University of Texas Amateur Radio Club

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- *ARRL 160-Meter Contest*
- *WAE European DX Contest (Europe & DX)*
- *CQ WW DX Contest*
- *CQ WPX Contests*
- *CQ 160-Meter Contests*
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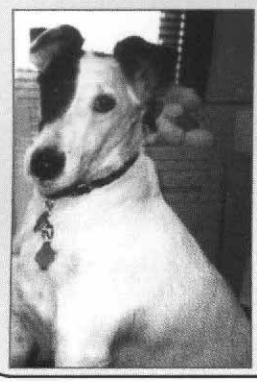

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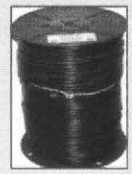

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"FLEXIBLE" 9913 STRD BC CNTR FOIL + 95% BRAID 2.7dB@ 400MHz NC/DB/UV JKT	.60/FT	.58/FT	.56/FT
LMR 400 SOLID CCA CNTR FOIL + BRAID 2.7dB @ 450MHz WP/UV JKT	.64/FT	.62/FT	.60/FT
LMR 400 "ULTRA-FLEX" STRD BC CNTR FOIL + BRAID 3.1dB @ 450 MHz TPE JKT	.89/FT	.87/FT	.85/FT
LMR 600 (OD.590") SOLID CCA CNTR FOIL + BRAID 1.72dB @ 450 MHz WP/UV JKT	1.27/FT	1.25/FT	1.23/FT
LMR 600 "ULTRA-FLEX" STRD BC CNTR FOIL + BRAID 2.1dB @ 450MHz TPE JKT	1.95/FT	1.93/FT	1.90/FT

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	100FT/UP	500FT	1000FT
RG213/U STRD BC MIL-SPEC NC/DB/UV JACKET 1.2 dB/2500WATTS @ 30MHz	.40/FT	.38/FT	.36/FT
RG8/U STRD BC FOAM 95% BRAID UV RESISTANT JKT 0.9dB/1350WATTS @ 30MHz	.34/FT	.32/FT	.30/FT
RG8 MINI(X)95% BRAID UV RESISTANT JACKET 2.0dB/875 WATTS @ 30MHz	.18/FT	.16/FT	.14/FT
RG58/U 95% BRAID UV RESISTANT JACKET 2.5dB/400 WATTS@ 30MHz	.18/FT	.16/FT	.14/FT
RG58A/U STRD CENTER 95% TC BRD UV RESISTANT JKT 2.6dB/350 WATTS @ 30MHz	.19/FT	.17/FT	.15/FT
RG214/U STRD SC 2 95% BRD NC/DB/UV JKT 1.2dB/1800WATTS @ 30MHz	.25FT/UP	1.75/FT.	
RG142/U SOLID SCCS 2-95% SILVER BRAIDS *Teflon®* JKT 8.2dB/1100WATTS @ 400MHz	.25FT/UP	1.50/FT.	

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	100FT/UP	500FT	1000FT
RG11A/U STRD BC (VP-66%) 95% BRAID NC/DB/UV JKT 1.3dB/1000WATTS	.44/FT	.42/FT	.40/FT
RG6/U CATV FOAM 18GA CW FOIL + 60% ALUM BRAID	.20/FT	.13/FT	.11/FT
RG6/U CATV FOAM 18GA CW FOIL *QUAD SHIELD*	.25/FT	.18/FT	.16/FT

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	100FT/UP	500FT	1000FT
"FLEXIBLE" 450 OHM 16GA COMPRESSED STRD CCS(PWR-FULL LEGAL LIMIT+)	.23/FT	.21/FT	.19/FT
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	100FT/UP	500FT	1000FT
5971 8/COND (2/18 6/22) BLK UV RES JKT. Recommended up to 125ft	.22/FT	.20/FT	.18/FT
1618 8/COND (2/16 6/18) BLK UV RES JKT. Recommended up to 200ft	.37/FT	.36/FT	.34/FT
1418 8/COND (2/14 6/18) BLK UV RES JKT. Recommended up to 300ft	.49/FT	.47/FT	.45/FT
1216 8/COND (2/12 6/16) BLK UV RES JKT. Recommended up to 500ft	.80/FT	.76/FT	.72/FT
1806 18GA STRD 6/COND PVC JACKET Recommended for Yaesu Rotors	.25/FT	.23/FT	.21/FT

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14GA SOLID *"COPPERWELD" (for long spans etc.)*	15.00ea	36.00ea	40.00ea	60.00ea
14GA SOLID *"SOFT DRAWN" (for ground radials etc.)*	15.00ea	36.00ea	40.00ea	60.00ea

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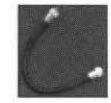

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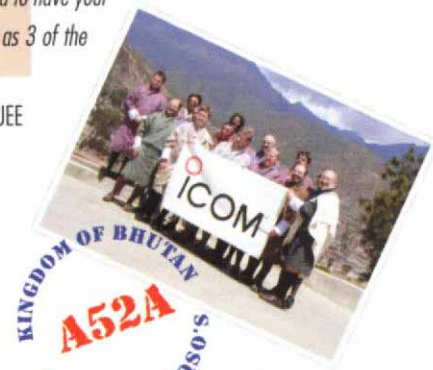
- K5K member, Bob Allphin, K4UEE



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"All seven of the '756PROs worked flawlessly. We ran RTTY perhaps more than 50% duty cycle, and the radios never even got warm at maximum output. The digital filter controls were so easy to adjust and switch...a contester's dream! We had seven radios, most of the time with three modes at once on any given band. There was NO interstation interference. All of our antennas (except for the 160M & 80M verticals) were within a 75 meter circle."

- A52A member Glenn Johnson, WØGJ

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- FØAAA member Mike Goode, N9NS.

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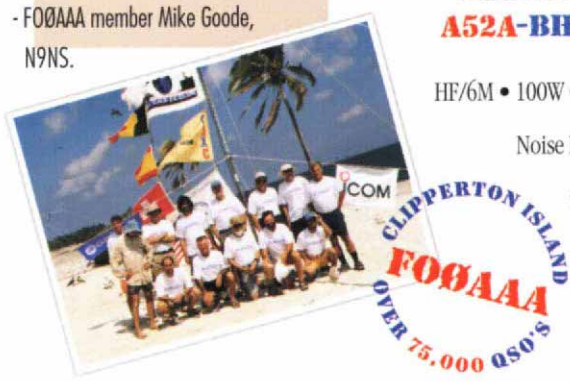

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