NCJ

# NATIONAL CONTEST JOURNAL

$4

January/February 2006

Volume 34 Number 1

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- A Spectator's Guide to WRTC 2006
- September 2005 CW and SSB Sprint Results
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# Editorial

By Carl Luetzelschwab, K9LA

### K8JP's Contest Traveler column

After many years of offering the proverbial hints and kinks about traveling to faraway locations to contest, Joe, K8JP, is retiring. His first column was in the March/April 1997 *NCJ*, and his last one was in the July/August 2002 issue. I want to thank Joe for all the great columns he wrote that enlightened and encouraged people with respect to doing contests away from home. His columns were certainly beneficial to me in my contesting travels in the late 1990s through the early 2000s.

### Remote Contesting

Elsewhere in this issue is an *NCJ* Station Profile (by Mark, N5OT) about Tim, N9IW, and his remote station. I first became aware of Tim's station at the 2004 W9DXCC Convention. I was one of the DXCC card checkers sitting at a table in a room adjacent to the main presentation area, and late Saturday afternoon I noticed Tim showing something on his laptop to John, K9DX. It didn't take me long to find out that Tim had a remote station in Wisconsin, and was running it from his wireless laptop.

I took time out from card checking to get a demo, too. Soon I was working Scandinavian stations in the Scandinavian Activity Contest—the CW event, nonetheless. Even though I was sitting at a table in the Chicago area, I felt as if I was right at the station in Wisconsin. I was smitten by this look at future contesting.

N9IW showed up at the 2005 W9DXCC Convention and again I used his laptop to make Qs from his remote station during a lull in card checking. After this, I encouraged N5OT to do a profile on N9IW.

Now N9IW certainly isn't the first one to have a remote contest station, nor is he the only one (for example, check out K9DX's remote station in the March/April 2003 *NCJ*). I am quite sure we'll see more of them in the future, and this will undoubtedly bring some new issues to the contesting scene with respect to rules. In fact, the NAQP and Sprint contest managers have begun to think about this.

I am sure that someday (if it already hasn't happened!) someone will do a contest from his laptop while sitting on one coast of North America while using a station on the other coast. And that's not too far away from the next step—doing a contest from a foreign country while sitting in North America.

Wouldn't that be neat? Just hire someone to drop your remote contest station (via parachute) into a country with a score and/or propagation advantage (with full permission from the foreign country's authorities, of course), and enjoy the pileups while sitting at home.

Is this far fetched? Yes—for now, at least. But with technology marching forward at its present pace, it may not be as far fetched as we think.

### Errata

Al, K3LC, advises that the captions for the two vertical curves in Figure 4 of his "Verticals by the Sea—Part 3" article in the November/December issue are reversed. The H = 2.5 ft curve is really the H = 5 ft curve, and vice versa.

NCJ

# A 40-Meter Comparison: 4-Square versus Yagi

Al Christman, K3LC
Grove City College
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Grove City, PA 16127-2104

This article compares the performance of a 40-meter 4-square phased-vertical array to that of a two-element "shorty forty" Yagi, when both are installed over several different types of soil. The number of radials in the ground system of the 4-square is varied, as is the height of the Yagi (which should probably be called the "Uda-Yagi array" to give proper credit to its developers).

## Background

Forty meters is the primary night-time band during many contests, and a big signal on 7 MHz is important if an operator wants to be competitive. Both contesters and DXers know that 40 meters is the lowest-frequency band where Yagis are readily available to the average ham. They can be bought with 2, 3, or 4 elements, while the elements themselves may be either full-length, or utilize coils or linear-loading wires. Towers to support these Yagis need not be gargantuan in size, and flashing beacons are not required at normal installation heights.

As an alternative, one might choose to construct a 4-square phased-vertical array for this band. Quarter-wave elements are only about 34 feet long, and can easily be made to be self-supporting. Such an antenna is relatively unobtrusive, and can be erected without violating most zoning ordinances.

But which antenna style is best? One is horizontal, the other is vertical, and both have their adherents. Let's take a closer look and see what we can learn.

## Computer Simulation

Figure 1 shows a plan view of a typical 4-square array. We are looking directly down from above, so the vertical elements are not visible. A "broadcast-style" ground system is used, and none of the radials overlap. Instead, they are truncated at the points where they intersect one another, and are then bonded to bus-wires as shown. Thus, the ground screen of each element is electrically connected to all the others. The number of radials per element was varied from 15 to 30 to 60 to 120, and the maximum radial length was fixed at 0.25 wavelength (WL). The inner end of the first segment of each radial is located at the air/soil interface (H = 0), and the segment slopes downward to a "final" burial depth of 3 inches. All four of the monopoles have a physical height of 0.25 WL, or about 34.39 feet. All elements are fed with equal-amplitude currents,

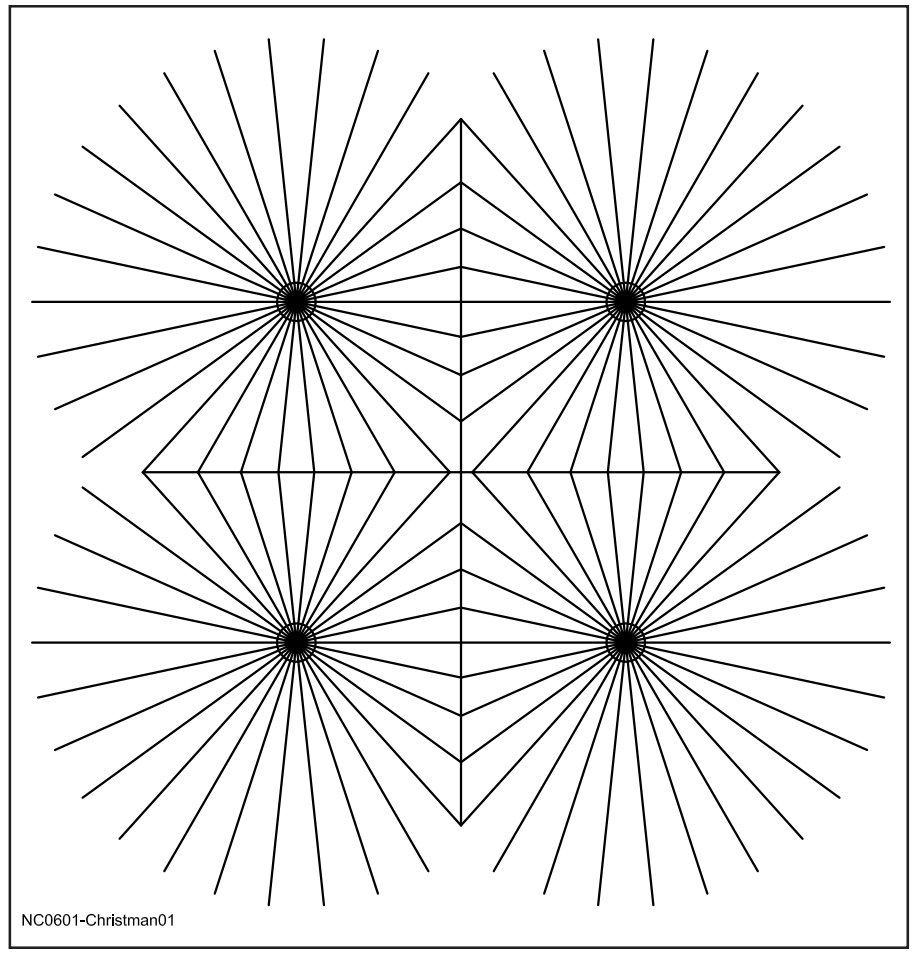


**Figure 1—Computer-generated drawing (plan view) of a 40-meter four-square array using a "broadcast-style" ground screen. Here, each element has 30 buried radials (depth = 3 inches), whose maximum length is 0.25 WL.**

**Table 1**
**Gain of the 4-square phased-vertical array, at various take-off angles, versus the number of radials per element. A "broadcast-style" ground screen is used, and the maximum radial length is 0.25 WL (average soil).**

| *Take-off Angle (deg)* | *Gain (dBi) as a function of Number of radials per element* | | | |
|---|---|---|---|---|
| | *N = 15* | *N = 30* | *N = 60* | *N = 120* |
| 2.5 | -5.99 | -5.36 | -5.07 | -4.96 |
| 5 | -1.26 | -0.64 | -0.34 | -0.23 |
| 7.5 | +1.08 | +1.71 | +2.01 | +2.11 |
| 10 | 2.49 | 3.12 | 3.42 | 3.53 |
| 12.5 | 3.41 | 4.04 | 4.34 | 4.44 |
| 15 | 4.02 | 4.65 | 4.95 | 5.06 |
| 17.5 | 4.42 | 5.06 | 5.36 | 5.47 |
| 20 | 4.67 | 5.31 | 5.62 | 5.73 |
| 22.5 | 4.81 | 5.45 | 5.76 | 5.87 |
| 25 | 4.84 | 5.49 | 5.80 | 5.91 |
| 27.5 | 4.80 | 5.45 | 5.76 | 5.88 |
| 30 | 4.68 | 5.34 | 5.66 | 5.78 |

using progressive 90-degree phase shifts.

Probably the most familiar 40-meter Yagi on the planet is the so-called "shorty forty," which typically employs two coil-loaded elements on a boom whose length is about 24 feet. A computer model of such an antenna was obtained from John Brosnahan, WØUN,[1] for use in this study, and its operational height was varied from 40 to 120 feet in steps of 20 feet.

The antenna models were run using the new *EZNEC Pro* software, version 4.0,[2] with a double-precision *NEC-4* calculating engine. For simplicity, it was assumed that the 4-square was constructed entirely from #12 AWG copper wire, while aluminum was used for the Yagi. The wire segment-lengths for all antenna elements were selected in accordance with the *NEC* guidelines. Three different sets of ground constants were used: "average" soil (conductivity = 0.005 Siemens per meter and dielectric constant = 13), "very good" soil (conductivity = 0.0303 S/m and dielectric constant = 20), and "very poor" soil (conductivity = 0.001 S/m and dielectric constant = 5). A frequency of 7.15 MHz (mid-band) was selected for the analysis, and the terrain is assumed to be flat in all cases.

If our goal is to optimize the DX performance of our antenna system on 40 meters, then it is important to know the range of take-off angles which must be covered. Dean Straw, N6BV, has expended a considerable amount of time and effort to answer this question using a number of software tools, and is an acknowledged expert in this area. Dean has stated that "the vast majority of the time the take-off angles for DX are less than 30 degrees."[3] Therefore, we need to determine which antenna configurations generate the most gain within this span of elevation angles.

### Results for Average Soil

Table 1 lists the detailed results for the

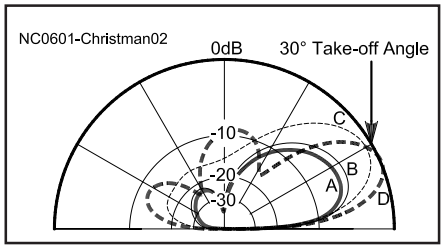


**Figure 2—Elevation-plane radiation patterns for several 40-meter antennas, using "average" soil.**
**A = 4-square with 15 radials per element**
**B = 4-square with 120 radials per element**
**C = 2-el Yagi up 60 feet**
**D = 2-el Yagi up 80 feet.**

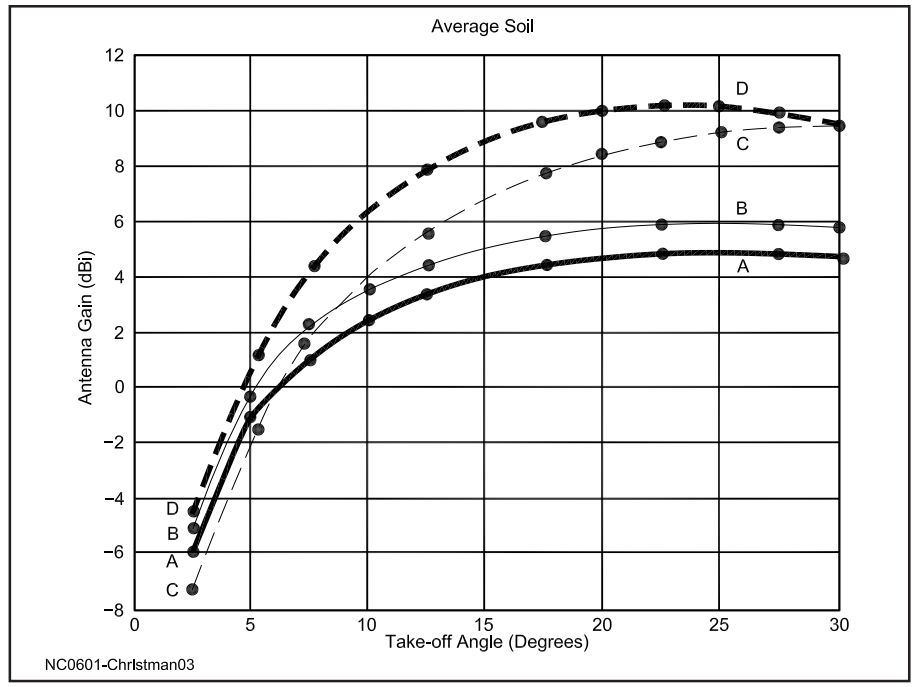


**Figure 3—Elevation-plane radiation patterns for several 40-meter antennas, using "average" soil.**
**A = 4-square with 15 radials per element**
**B = 4-square with 120 radials per element**
**C = 2-el Yagi up 60 feet**
**D = 2-el Yagi up 80 feet.**

**Table 2**
**Gain of the 2-element "shorty-forty" Yagi, at various take-off angles, versus the height of the antenna, over average soil.**

| *Take-off Angle (deg)* | *Gain (dBi) as a function of antenna height* | | | | |
|---|---|---|---|---|---|
| | *H = 40'* | *H = 60'* | *H = 80'* | *H = 100'* | *H = 120'* |
| 2.5 | -10.92 | -7.35 | -4.65 | -3.10 | -1.61 |
| 5 | -5.04 | -1.49 | +1.15 | +2.64 | +4.05 |
| 7.5 | -1.68 | +1.81 | 4.37 | 5.75 | 7.02 |
| 10 | +0.63 | 4.03 | 6.48 | 7.70 | 8.78 |
| 12.5 | 2.34 | 5.64 | 7.94 | 8.95 | 9.76 |
| 15 | 3.66 | 6.83 | 8.95 | 9.70 | 10.17 |
| 17.5 | 4.72 | 7.73 | 9.62 | 10.05 | 10.08 |
| 20 | 5.56 | 8.40 | 10.03 | 10.05 | 9.51 |
| 22.5 | 6.24 | 8.88 | 10.19 | 9.73 | 8.43 |
| 25 | 6.78 | 9.20 | 10.15 | 9.09 | 6.77 |
| 27.5 | 7.20 | 9.38 | 9.92 | 8.12 | 4.32 |
| 30 | 7.53 | 9.43 | 9.50 | 6.78 | 0.63 |

**Table 3**
**Gain of the 4-square phased-vertical array, at various take-off angles, versus the number of radials per element. A "broadcast-style" ground screen is used, and the maximum radial length is 0.25 WL (very good soil).**

| *Take-off Angle (deg)* | *Gain (dBi) as a function of Number of radials per element* | | | |
|---|---|---|---|---|
| | *N = 15* | *N = 30* | *N = 60* | *N = 120* |
| 2.5 | -0.87 | -0.56 | -0.34 | -0.24 |
| 5 | +3.05 | +3.36 | +3.58 | +3.68 |
| 7.5 | 4.78 | 5.10 | 5.31 | 5.41 |
| 10 | 5.72 | 6.04 | 6.25 | 6.35 |
| 12.5 | 6.27 | 6.58 | 6.80 | 6.90 |
| 15 | 6.58 | 6.90 | 7.11 | 7.22 |
| 17.5 | 6.74 | 7.06 | 7.27 | 7.38 |
| 20 | 6.78 | 7.10 | 7.32 | 7.43 |
| 22.5 | 6.74 | 7.07 | 7.28 | 7.39 |
| 25 | 6.63 | 6.95 | 7.17 | 7.28 |
| 27.5 | 6.45 | 6.78 | 7.00 | 7.11 |
| 30 | 6.22 | 6.55 | 6.77 | 6.89 |

4-square array, for take-off angles from 2.5 to 30 degrees, as the number of radials is varied between 15 and 120 per element. We can see that the maximum gain produced by any of these vertical antennas is less than 6 dBi. In a similar fashion, Table 2 displays the outcome for the horizontally-polarized "shorty-forty" Yagi, at heights ranging from 40 to 120 feet. Here, a peak gain of more than 10 dBi is possible. Figure 2 is a complete polar plot of the elevation-plane radiation patterns for several selected antennas of both polarizations. Figure 3 presents the same information in rectangular form, covering only those elevation angles which are important for DX propagation. Note that the "shorty-forty" at a height of 80 feet yields more gain than any of the 4-squares, throughout the range of take-off angles from 2 to 30 degrees. However, if the Yagi height is set at 60 feet, then the 4-square is better at very low elevation angles, even with a sparse ground-screen.

### Results for Very Good Soil

Increasing the conductivity of the soil allows the 4-square array to generate more gain, as is evident from an examination of Table 3. Now the peak gain obtainable from the phased verticals approaches 7.5 dBi, an improvement of slightly more than 1.5 dB when compared to average soil. Table 4 lists the results for the "shorty-forty," and reveals that the gain of the Yagi actually climbs by a few tenths of a decibel when placed over very good soil, reaching a maximum of just over 10.7 dBi. Several examples of the elevation-plane radiation patterns (for both antenna types) are shown in Figure 4. At very low take-off angles, the 4-square is superior, even with only 15 radials per element. To match its performance at elevation angles below about 5 degrees, the Yagi would have to be placed more than 120 feet in the air, although this reduces its gain at take-off angles in the 20-to-30 degree region.

### Results for Very Poor Soil

Conversely, a decrease in the soil conductivity diminishes the gain of the 4-square, as indicated by the data in Table 5. Here the maximum gain produced by the phased verticals is just under 5 dBi, roughly one decibel less than for average soil. Table 6 lists the results for the "shorty-forty," and we see (as expected) that the gain of the Yagi now falls a bit when installed over very poor soil, peaking at slightly less than 9.8 dBi. Figure 5 includes the radiation-pattern plots for a number of antennas, and it can be seen that the "shorty-forty" easily out-performs the 4-square when the Yagi is mounted at a height of just 60 feet.

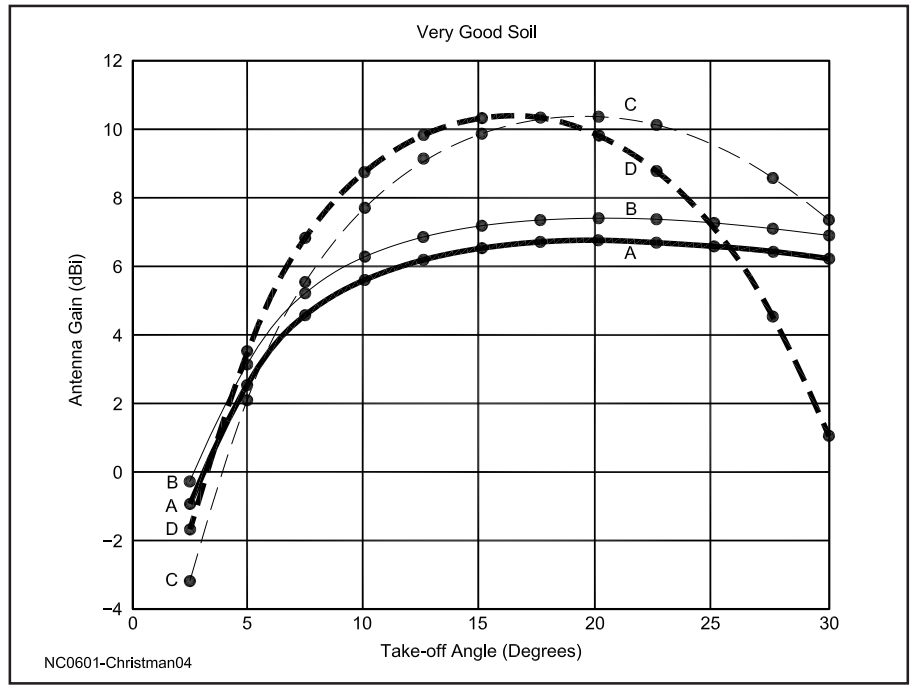


**Figure 4—Elevation-plane radiation patterns for several 40-meter antennas, using "very good" soil.**
**A = 4-square with 15 radials per element C = 2-el Yagi up 100 feet**
**B = 4-square with 120 radials per element D = 2-el Yagi up 120 feet.**

**Table 4**
**Gain of the 2-element "shorty-forty" Yagi, at various take-off angles, versus the height of the antenna, over very good soil.**

| *Take-off Angle (deg)* | *Gain (dBi) as a function of antenna height* | | | | |
|---|---|---|---|---|---|
| | *H = 40'* | *H = 60'* | *H = 80'* | *H = 100'* | *H = 120'* |
| 2.5 | -11.11 | -7.44 | -4.58 | -3.11 | -1.64 |
| 5 | -5.17 | -1.53 | +1.28 | +2.68 | +4.07 |
| 7.5 | -1.76 | +1.82 | 4.55 | 5.84 | 7.10 |
| 10 | +0.59 | 4.09 | 6.71 | 7.84 | 8.91 |
| 12.5 | 2.35 | 5.75 | 8.22 | 9.14 | 9.95 |
| 15 | 3.73 | 7.00 | 9.29 | 9.95 | 10.41 |
| 17.5 | 4.82 | 7.95 | 10.02 | 10.35 | 10.37 |
| 20 | 5.72 | 8.66 | 10.47 | 10.41 | 9.86 |
| 22.5 | 6.44 | 9.19 | 10.70 | 10.14 | 8.84 |
| 25 | 7.03 | 9.56 | 10.71 | 9.56 | 7.24 |
| 27.5 | 7.50 | 9.78 | 10.53 | 8.65 | 4.83 |
| 30 | 7.87 | 9.89 | 10.16 | 7.35 | 1.09 |

**Table 5**
**Gain of the 4-square phased-vertical array, at various take-off angles, versus the number of radials per element. A "broadcast-style" ground screen is used, and the maximum radial length is 0.25 WL (very poor soil).**

| *Take-off Angle (deg)* | *Gain (dBi) as a function of Number of radials per element* | | | |
|---|---|---|---|---|
| | *N = 15* | *N = 30* | *N = 60* | *N = 120* |
| 2.5 | -9.06 | -8.41 | -8.19 | -8.10 |
| 5 | -3.91 | -3.27 | -3.05 | -2.96 |
| 7.5 | -1.23 | -0.58 | -0.36 | -0.27 |
| 10 | +0.47 | +1.11 | +1.33 | +1.43 |
| 12.5 | 1.62 | 2.26 | 2.49 | 2.58 |
| 15 | 2.43 | 3.08 | 3.31 | 3.40 |
| 17.5 | 3.01 | 3.66 | 3.89 | 3.99 |
| 20 | 3.42 | 4.07 | 4.30 | 4.40 |
| 22.5 | 3.69 | 4.35 | 4.58 | 4.68 |
| 25 | 3.84 | 4.51 | 4.74 | 4.84 |
| 27.5 | 3.91 | 4.58 | 4.82 | 4.92 |
| 30 | 3.90 | 4.58 | 4.82 | 4.92 |

## Conclusions

Computer analysis indicates that, under most conditions, a two-element "shorty-forty" Yagi can generate more gain in the range of take-off angles that are useful for DX communications than a conventional 4-square array with an extensive ground system. Over "average" soil, the Yagi must be placed about 80 feet above the ground to achieve superiority at most important elevation angles. For "very poor" soil the required height is roughly 60 feet, while about 120 feet is necessary over "very good" soil.

## Limitations

Computer simulation is a great tool for antenna analysis, but the models are limited in scope, and by no means do they include all of the factors which are present in a real-world environment. For instance, if the "shorty-forty" Yagi is installed at a typical operating height, it is likely to be "in the clear," (relatively speaking) with respect to its surroundings. On the other hand, a four-square phased-vertical array will normally be installed either at or near the earth's surface, making it more difficult for the antenna to "see out," which can be a significant handicap. In addition, this article gives no consideration to wave-propagation phenomena. Because it is immersed in a magnetic field, the ionosphere can give preferential treatment to waves of a specific polarization, but that issue was not addressed here.[4]


## Acknowledgements

The author would like to thank several individuals for their helpful reviews of this article while it was being prepared. Advice, comments, and suggestions were solicited and received from John Brosnahan, W0UN, Carl Luetzelschwab, K9LA, and Dean Straw, N6BV. Thank you gentlemen!


**Notes:**

[1]Private communication with John Brosnahan, W0UN.

[2]Several versions of the *EZNEC* antenna-modeling software are available from Roy Lewallen, W7EL, PO Box 6658, Beaverton, OR 97007.

[3]Private communication with Dean Straw, N6BV.

[4]See the article by K9LA in the Propagation column in this issue.

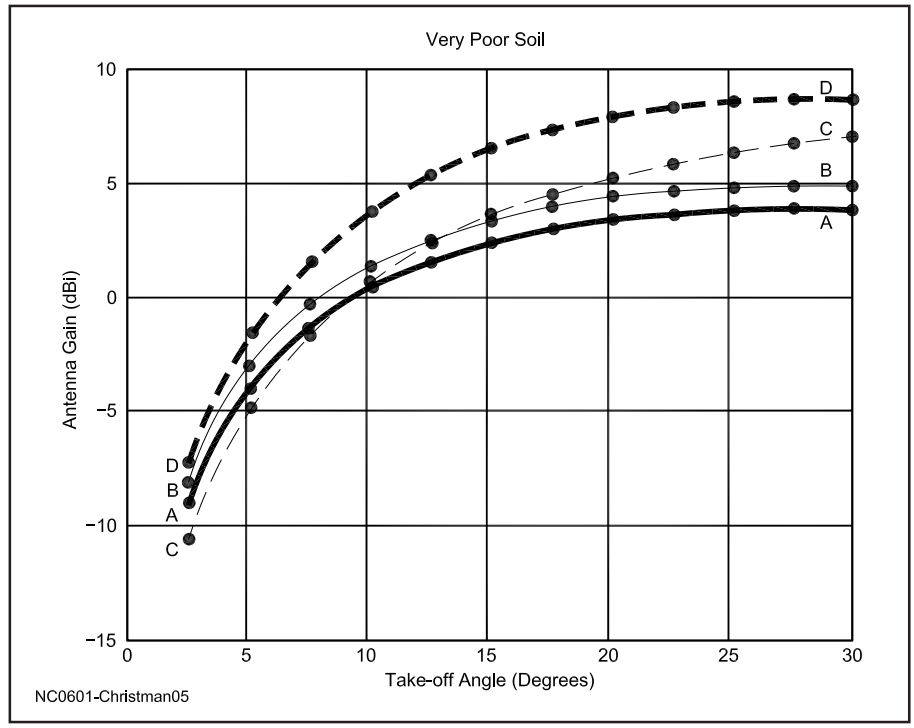


**Figure 5—Elevation-plane radiation patterns for several 40-meter antennas, using "very poor" soil.**
**A = 4-square with 15 radials per element**
**B = 4-square with 120 radials per element**
**C = 2-el Yagi up 40 feet**
**D = 2-el Yagi up 60 feet.**

**Table 6**
**Gain of the 2-element "shorty-forty" Yagi, at various take-off angles, versus the height of the antenna, over very poor soil.**

| *Take-off Angle (deg)* | *Gain (dBi) as a function of antenna height* | | | | |
|---|---|---|---|---|---|
| | *H = 40'* | *H = 60'* | *H = 80'* | *H = 100'* | *H = 120'* |
| 2.5 | -10.60 | -7.22 | -4.71 | -3.07 | -1.58 |
| 5 | -4.80 | -1.45 | +1.01 | +2.58 | +3.99 |
| 7.5 | -1.52 | +1.77 | 4.14 | 5.61 | 6.88 |
| 10 | +0.70 | 3.91 | 6.16 | 7.47 | 8.55 |
| 12.5 | 2.33 | 5.43 | 7.53 | 8.63 | 9.45 |
| 15 | 3.58 | 6.55 | 8.46 | 9.30 | 9.77 |
| 17.5 | 4.55 | 7.37 | 9.05 | 9.56 | 9.59 |
| 20 | 5.32 | 7.96 | 9.37 | 9.49 | 8.95 |
| 22.5 | 5.92 | 8.36 | 9.46 | 9.09 | 7.81 |
| 25 | 6.39 | 8.60 | 9.35 | 8.39 | 6.12 |
| 27.5 | 6.75 | 8.71 | 9.04 | 7.37 | 3.75 |
| 30 | 7.02 | 8.71 | 8.56 | 6.02 | 0.54 |

NCJ

# Building a New Contest Station —Part 2

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Part 1 in the November/December 2005 *NCJ* outlined how I began work on a new contest station in the summer of 2004, and the choices that were made regarding selection of a site, the towers and antennas. This part describes the thinking that went into assembling the rest of the station. Early on it was decided that "multi-two" contesting was as ambitious as I wanted to get. Thus the station should be designed to be operable as "single op" (either assisted or not), "multi-single" or "multi-two". The antenna system described earlier was intended to facilitate all of these contesting modes. For "multi-two" operation there needed to be two independent stations, each of which could access any antenna and control the pointing of any tower. It was also desirable for each of these stations to be configured for SO2R operation.

### Setting up Shop

The master bedroom in the house was selected as the "shack" owing to its size, the fact that it is on the ground floor and has an adjoining bathroom! The master bedroom also has the virtue of being at one end of the house and accessible from the front door by means of corridors that do not traverse other rooms. In the center of this room a wooden console was built that essentially consists of two desks joined in the middle forming a shallow **V**. At the back of each of these desks are four 5-foot high 2 × 4s that support a set of adjustable shelves. Copper strapping was run across the back of this arrangement and connected to a set of ground rods in the soil outside via more copper strapping that exits through three sash windows.

Placing the console in the center of the room allowed plenty of access behind for routing the myriad of interconnecting cables. All antenna coax cables enter the room by coax feed-throughs set in a piece of aluminium **U**-channel placed at the bottom of one of the sash windows. This aluminium channel is well grounded. The control cables enter by holes in this **U**-channel, but are protected in a box outside the window where there are MOVs across each line. The coax cables that are available to bring Beverage antenna signals to the shack have their centers grounded, when not in use, by a set of heavy-duty relays in a box outside the shack. The six main cables to the towers have their centers left open when not in use.

### Major Components

The two stations each occupy one half of the console. Station #1 (on the left) employs a pair of FT1000 MP radios, modified to include the INRAD roofing filters and equipped with extra bandpass filters. Station #2 employs a pair of Ten-Tec Orions. Each radio drives an amplifier—the left one being an Alpha 87a and the right one an Emtron DX-2SP, though the roles can be reversed via a "commutate switch" consisting of back-to-back Top Ten Devices A/B switches. Power from the Alpha is applied to a Ten-Tec 238A tuner and that from the Emtron to a Palstar AT4K tuner. Second-hand Dell Optiplex GX1 computers are used for logging at each station, with the LCD display placed on the desk between the radios.

Control of antenna pointing is by means of four "Green Heron Engineering" control boxes that are connected by long

**Figure 1—View of the front of the two consoles**

**Figure 2—Close-up of the left console.**

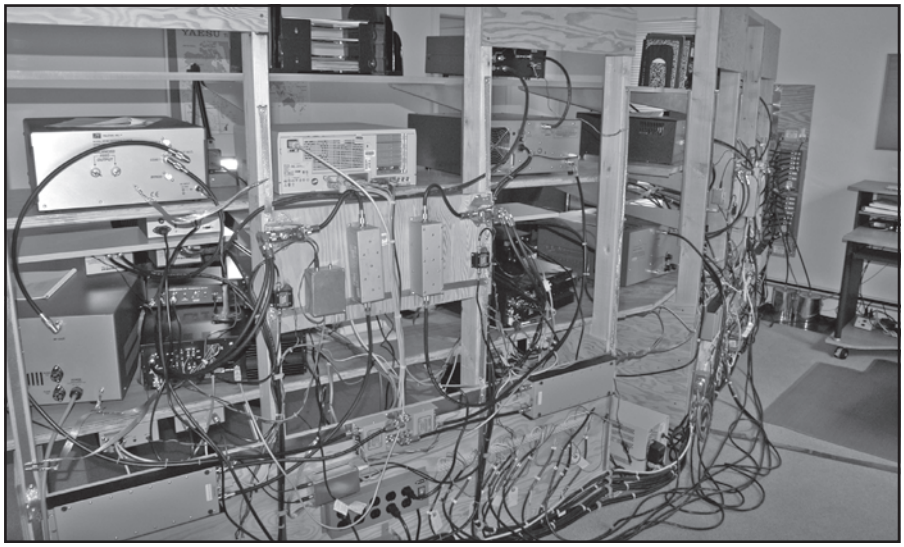


**Figure 3—View of the rear of the consoles.**

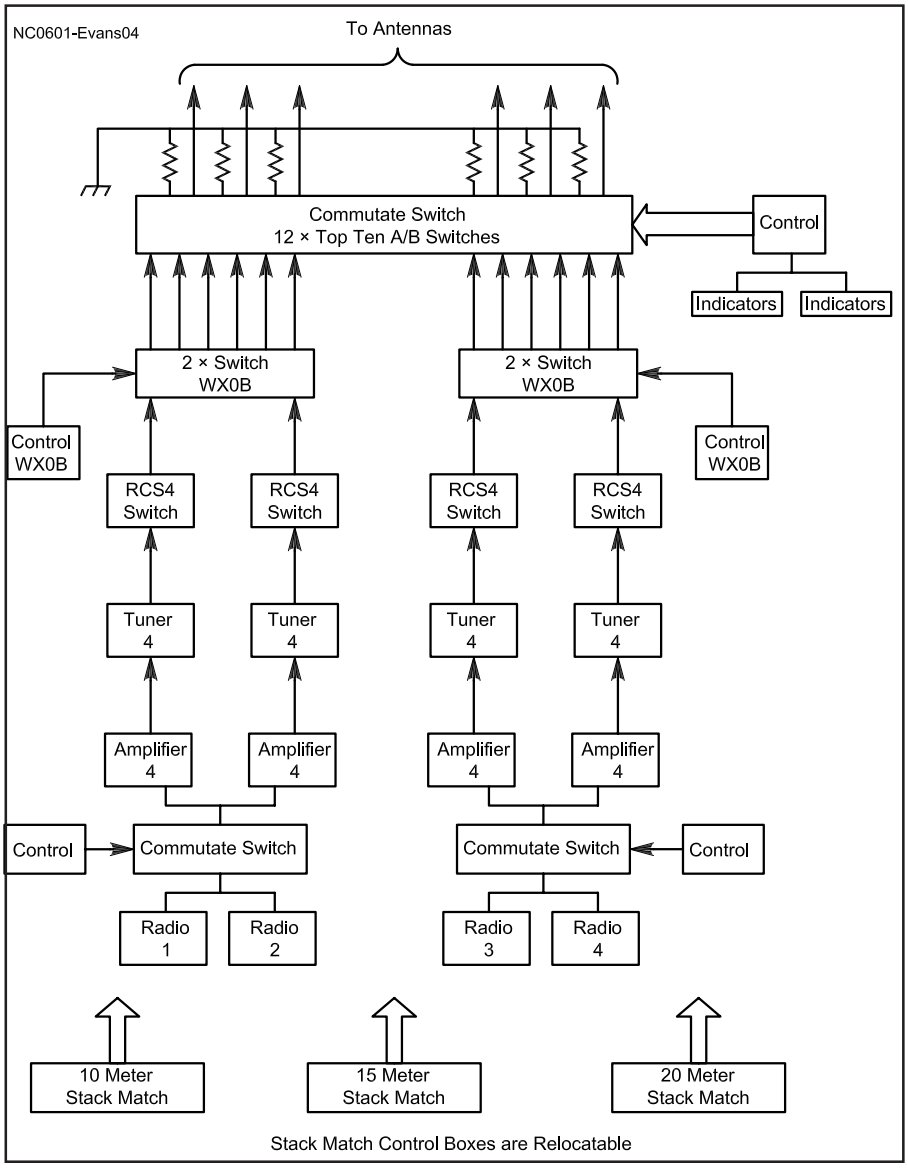



**Figure 4—The antenna selection scheme.**

cables allowing them to be placed on the shelves of either station. The same is true of the WXØB Stackmatch control boxes that control the selection of the antennas in the 10- 15- and 20-meter stacks on the three "run" towers. Other controls (to be discussed) are fastened to the undersides of shelves to securely locate them. Figures 1, 2 and 3 provide some views of the station.

### Antenna Assignment

A major issue to be solved for multi-two operation was how to quickly assign antennas to stations. Figure 4 shows how this is done. The problem is simplified by having only six cables to deal with. These are routed to a set of six commutate switches made up of pairs of Top Ten A/B switches arranged back to back. These assign cables to "stations" under the control of a centrally located switch panel. This also controls a set of status lights in front of each operating position—to show which of the six cables has been assigned to that station. For single operation all six cables would be assigned to the station in use. Selection of which of the assigned cables go to which radio is then made with a WXØB Six-Pack (2 × 6) switchbox.

The unused ports on the input side of the six commutate switches are connected to MFJ 1 kW Versaload dummy loads so that it is not possible for an amplifier to transmit into an open piece of cable. The Top Ten A/B switches, when arranged to provide a commutate function, have the useful property that there is no path through them unless power is applied. Thus they provide some lightning protection when the station is not in use. These six cables are also grounded at the towers where they are protected by lightning arresters.

Selection of which antenna to use on an assigned cable is made with an Ameritron RCS-4 control box inserted at the output of each tuner. Since only two cables can be used by a station at any given time, only two RCS-4 controllers are needed per station. This exploits the fact that an RCS-4 controller does not care which of the switch boxes on the towers it is routed to since the control voltages are sent via the coax.

This scheme means that any of the 16 (and eventually more) antenna systems on the towers can be selected for the two radios at each of the operating positions via just three small control boxes (the WXØB Six-Pack and the two RCS-4 controllers). The objective here is to remove clutter and lessen the chances of cockpit errors.

### Protection and Isolation

For any of the contest modes considered there exists the possibility of sufficient power being coupled from one of the antennas to another to damage an idle

receiver. Protecting all the receivers against this is accomplished by routing the received signals (either from a main antenna or a Beverage antenna) first to an MFJ 1025 Noise Canceling unit and then to the RX port on the radio.

The MFJ units have considerable internal protection against large RF voltages, and are powered to come on once the receiver is turned on (otherwise they would be bypassed). This scheme is shown in Figure 5. A separate external coax relay works as a T/R switch so that unwanted RF voltages cannot reach the normal antenna port on the radio, either. Two Dunestar 600 filter banks under the control of a Top Ten decoder are placed in series in the receive path to achieve over 80 dB of isolation against out-of-band signals. One of the units is also in the transmit path to minimize any harmonics reaching the amplifier.

A bad feature of this approach, however, is that it does not lend itself to the use of coax shorting stubs in the shack on the antenna cables to achieve extra isolation between stations. This is because, with one exception, the cables fed antennas operating at various wavelengths. Stubs could be placed on the lines on the towers going to the antennas, that is, beyond the RCS-4 switches, but this has not yet proved necessary. Some added isolation has been provided by adding two high-power (2 kW) low-pass filters. One with a cut off just above the 20 meter band was inserted in the shack in the cable to the 20 meter stack on tower #4 (there is no RCS-4 switch in this path). A second with a cut-off just above the 40-meter band was placed beyond the RCS-4 switch on Tower #2 in the line going to the 40-meter stack. It is possible that these added filters are "overkill" as early tests showed little interference between stations, so long as they were operating on different bands.

These efforts to isolate the radios from one another could be compromised by some of the transpose switching were this done with open frame relays, for example (as was initially the case). The Top Ten A/B switches, however, allow the creation of a commutate switch that provides over 70 dB of isolation between paths.

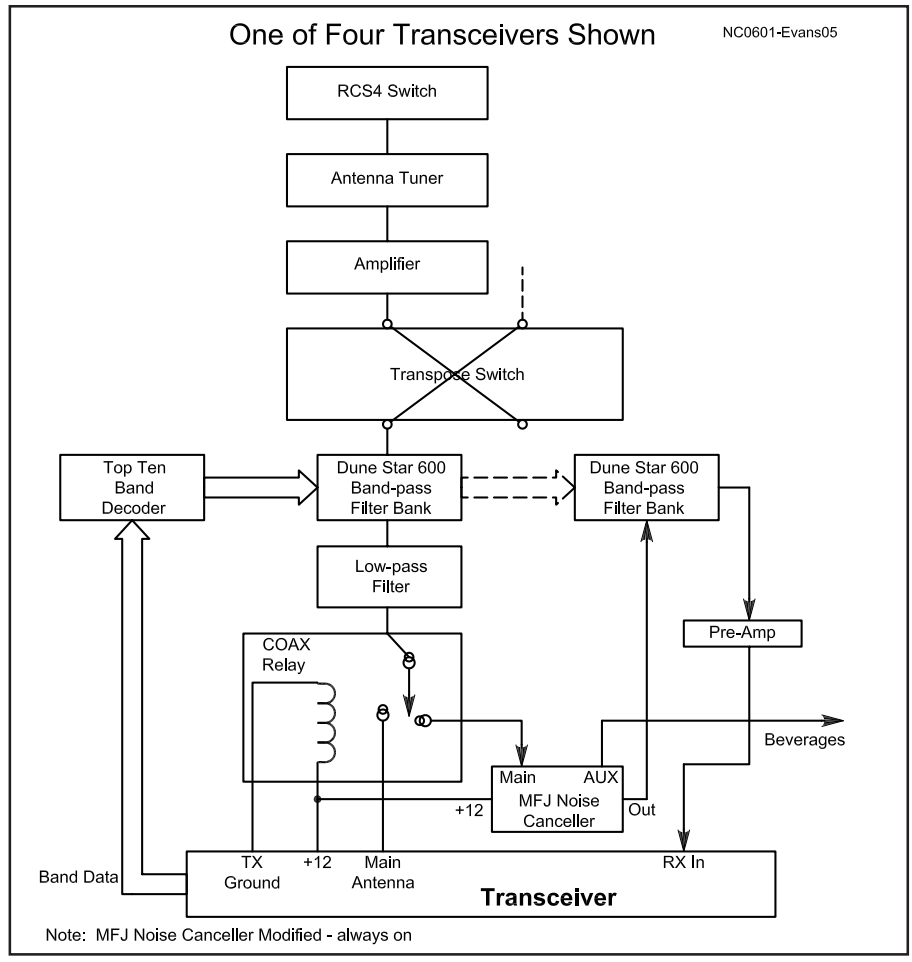



**Figure 5—The arrangements to protect and isolate the receivers.**

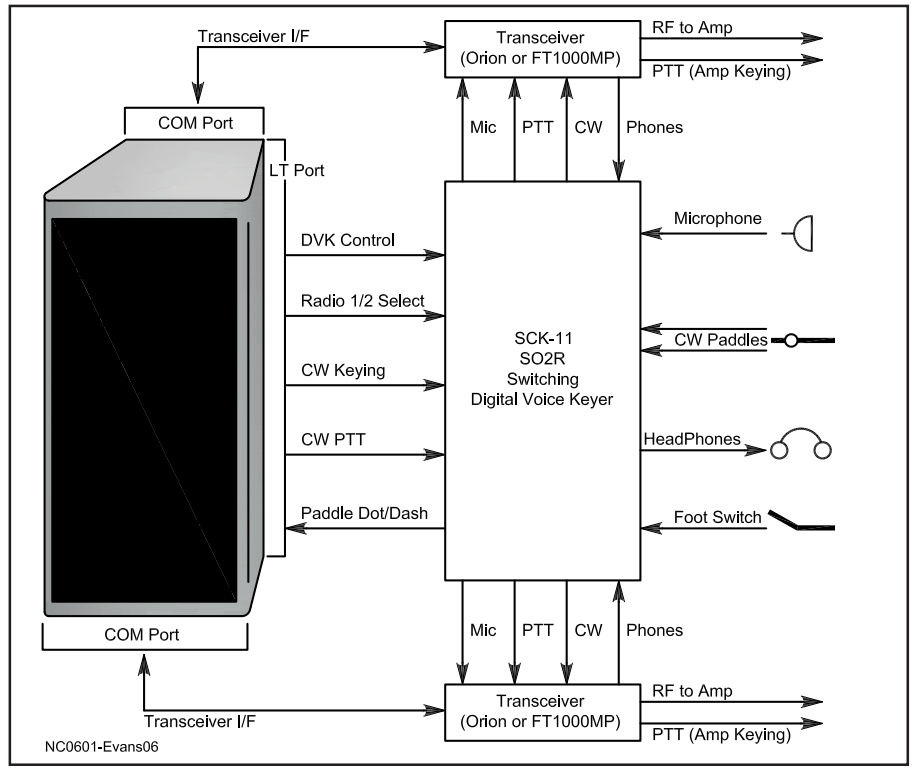



**Figure 6—The radio control arrangements using SCKII SO2R control boxes.**

### Computer Control

Control of the radios is assigned to a ZS4TX Super Combo Keyer II (SCKII) as shown in Figure 6. Not shown in this figure is the extra CAT cable between each radio and a computer serial port that allows the radio frequency to be monitored (or set) by the computer, as well as the band selected. The ZS4TX boxes provide up to six memories for recording a CQ message (either phone or CW), thereby reducing the need for a DVP in each computer. They can be set to switch to the idle radio dur-

ing a CQ transmission (for SO2R), or remain connected to the transmitting radio (to monitor the call). On booting up any of the computers, one is given a choice of operating systems: either *DOS* or *Windows 98*. At least initially we plan to log using *CT 10* running under *DOS* because of our familiarity with it and its many features that support networked computers.

A third Dell Optiplex GX1 Computer supports a 2-meter packet station, as no Internet service is readily available. Packet information can be routed to the two logging computers by a switched Ethernet 10K link, which also allows the two logging computers to communicate with one another during a contest. Mark, KD4D, undertook setting up the computers and loading the software.

**Conclusion**

While the foregoing may create the impression that little more needs to be done in the way of station building, this is not the case. Still to be resolved, for example, is the issue of setting up Beverage antennas (in winter) and assigning these to the two stations. Also, it is possible that further work may be needed to reduce interstation interference to an acceptable level. Meanwhile the station is ready for use and guest operators will be welcome!

**Acknowledgment**

I am grateful to Mark, KD4D, for many useful suggestions, his constant support and encouragement, and for assuming responsibility for setting up the computers and networking them.

NCJ

# A Spectator's Guide to WRTC 2006

**By Jeff Briggs, K1ZM/VY2ZM**
**USA Fundraising Captain**
**For the WRTC Organizing Committee**

*WRTC 2006–Florianopolis, Brazil–July 7 through 10, 2006.*

So you don't think you know what the letters "WRTC" mean? Well, you are not alone. But please read on, and at the end of this article you will not only understand what it all means, you just might want to book a flight to Santa Catarina Island in southern Brazil next summer to be a witness to the most important Amateur Radio contesting event taking place on the planet!

**Amateur Radio Olympics**

Billed as the *"Olympics of Amateur Radio,"* the World Radiosport Team Championship was created in the late 1980s by Danny Eskenazi, K7SS. The event was run by a committee of local Seattle amateurs, including K7SS, NØAX, K7LXC, K7ST and others with integral help from W6OAT, K3EST and OH2BH. WRTC 1990 wanted to create a special contest competition that would test the operating skills of the "best of the best" contest operators from around the world—in an environment that leveled the playing field as much as might be possible.

Now why would anyone want to do that? Well, as most experienced contesters and DXers know, there are enormous geographical disadvantages that exist both here at home and equally abroad which make it all but impossible to compare the Top 10 results in the various major contests. For example, it is unfair to attempt to compare CQWW scores made from New England against those made from say Chicago, Illinois or Dallas, Texas. In Europe, it is also impossible to equate scores made from G, CT1 or EA with those made from LZ or YO. In Asia it is not possible to equate scores made from JA versus those made from 5B4 or 4X. And, in the Pacific, one cannot compare a DX contest score made from KH6 against those made by even the best operators from VK or ZL. It just isn't possible because of the disparity of the various locations involved and their respective distances from the world's major population centers and multiplier-rich zones (read Europe!).

Thus out of this problem came a wonderful opportunity. The amateurs noted above and some of their friends decided in 1990 to host the first WRTC in Seattle, Washington. The plan was to bring the best operators in the world to a common location and then let them operate in national teams of two from various sites around the Seattle suburbs using comparable antennas, the same power level and operating locations chosen as much as was possible in order to level the geographic playing field. In reality, at this first WRTC, the organizers were not successful at equalizing these variables. In the end, operator skill probably outweighed station capabilities with stations in roughly similar classes. In so doing, the organizers hoped at long last to discover which operators were the best of the best from around the world and then award gold, silver and bronze medallions to the winners in much the same way as is done in the real Olympics every four years. As luck would have it, Ted Turner's *Goodwill Games* were also taking place that year in Seattle and the first WRTC 1990 preceded Turner's games as a prelude to the real games that opened that following weekend.

Just over 20 teams were invited to participate, drawn by application, and the games were held on a Thursday afternoon and evening Seattle time as a 10-hour contest of limited duration. Starting in 1996 with the San Francisco games, WRTCs began being conducted as a "contest within a contest"—meaning that from now on WRTCs ran for 24 hours simultaneously within and during the IARU Contest of that summer. In 1990, teams came from as far away as the Soviet Union, Asia, Europe and South America and when the smoke had cleared away, the team of John Dorr, K1AR and Doug Grant K1DG, representing the USA was the winner of the Gold medallion. And that is how it all started.

Perhaps one of the most important benefits of WRTC 1990 was that it served as a setting that brought together many of Amateur Radio's finest operators—both contesters and DXers. From the friendships made in Seattle have grown some of the most significant DXpeditions of the last 15 years. Thus many DXers have the WRTC program to thank for some of their rarer QSL cards (like, for instance, FT5XO, VP8THU, VP8SGI, etc.).

**What's Happened Since?**

Following the Seattle games, subsequent WRTC championships have taken place in 1996 in San Francisco, in 2000 in Slovenia and most recently in 2002 in Helsinki. With each running of the games, the number of teams and countries represented has grown. And so too has the number of WRTC guests and spectators coming to each venue to witness the various competitions making the WRTC games one of the most sought after gatherings of dyed-in-the-wool contesters in the world. Everybody who is anybody in contesting (and many DXers as well) will likely be there as a competitor, judge or spectator just out for an exciting vacation. The early scuttlebutt about WRTC 2006 in Florianopolis, Brazil has it that this event may well turn out to be the best WRTC ever in part because of its wonderful location, the fact that it is being held in a part of the world that is further away from Europe and North America than any past WRTC and because its organizers are introducing some exciting rules changes that are hoped to make the competition more lively than ever before.

For example, in addition to equalized operating locations from a common general theater of southern Brazil, there are some new twists in the rules, such as:

- Competitors will be no longer be limited to 100W output only; small amplifiers

***Making A Contribution To WRTC 2006***

Planning an event like WRTC is a serious financial undertaking as over 750 competitors, spectators and guests are likely to be on hand. Apart from arranging for lodging, 52 identical stations must be assembled by the organizers with identical antennas, rotors and amplifiers. The anticipated budget for WRTC 2006 is expected to be over $300,000 US.

To help offset some of these expenses, the Organizing Committee has put together a global fundraising team to solicit DXers and contesters alike for financial assistance. Any amount is welcome and it is easy to make a contribution.

To donate by check, make it payable to "NCDXF" and write "WRTC 2006 Contribution" in the lower left-hand corner. Mail the check to:

Rusty Epps, W6OAT
651 Handley Trail
Redwood City, CA 94062

To contribute by PayPal, log into **www.wrtc2006.com**. From the homepage, click on one of the PayPal links you will find there and follow the instructions.

Both ways are simple and efficient and donors in the US can deduct the amount of their donation as charitable contributions under current IRS tax law.

Thanks in advance to those who are able to help us offset some of the anticipated expenses of putting on WRTC 2006 in Brazil. Your support is appreciated.

will be allowed for the first time.

• An HF log periodic antenna and a small 40-meter Yagi will be permitted in addition to the Windom that has been *de riguer* at past WRTC competitions.

• A number of multi-operator teams is planned from home stations in Brazil, which may be populated by visiting guest amateurs by application to the organizers.

• Student type teams will be introduced at WRTC as a means of attracting newcomers to contesting and the games.

• Three teams will be drawn by lottery from private bidding by sponsors as a means of securing necessary funding for the games, which is a large sum this time out.

The central site for the games will be located at a 5-star resort on the northeast side of Santa Catarina Island—known as the Costao do Santinho. This complex is located right on the Atlantic Ocean in a magnificent setting with a private beach, multiple pools and restaurants and simply gorgeous, secure grounds. Most everything at the games, except for the WRTC competition itself, will be run out of this complex, making it wonderfully convenient for competitors, judges, guests and spectators alike.

**What Should I Bring? What Will I Do at a WRTC?**

Unless you are coming as a competitor, you should bring sport casual clothes, some shorts and your jeans, a light jacket or windbreaker, your camera and a positive outlook aimed at just having fun! At a WRTC, spectators join in and get to oversee all public events such as the opening and closing/award ceremonies, pileup competitions, WRTC planning sessions, meals and evening beer drinking conversations that often take place all night long until the sun comes up. It is possible to go to bed at midnight and awaken at 7AM and stroll out again only to find many folks still going at it long after daybreak.

On Friday morning, the competitor teams will select their operating locations around Santa Catarina province by lottery, and shortly after that they will leave to set up their stations. Each team will be dreaming of a hilltop location overlooking the sea but, in reality, most will find generally average locations which have been preselected by the organizers to be as competitively equal as is humanly possible. Remember, the winners of the WRTC games are intended to be *the best operators,* not the team that just happens to wind up with a superior location. That is the beauty and fundamental guiding principle behind the WRTC games in the first place: give everyone an equal setting, equal power output and antennas and then let the games begin—and may the most talented and skilled operating team come out the winners. That is the spirit of WRTC and the organizers will be careful to ensure this is again the basis for the competition.

During the games themselves, spectators can stay at the Costao do Santinho and follow the hour-by-hour results of the competition. Or they may go off on a sightseeing trip around the island or take a tour of Florianopolis, the capital city of SC (Santa Catarina) province, which is a beautiful city on a bay just about 25 minutes from the resort. On Sunday afternoon, the various WRTC team competitors will return to the hotel for a hot shower, a nap and then the ubiquitous storytelling about their experiences in the contest, which is always great fun to listen to. The organizers will also host a nice evening meal on Sunday night for all to enjoy, to be followed by the awards ceremony for the winners and then the closing ceremony to bring WRTC 2006 to its close.

**How to Get There? Visa Requirements?**

From the US, several airlines provide daily service to Brazil from major city gateways such as Miami, New York, Chicago and elsewhere. American Airlines and Varig (the national airline of Brazil) are two examples of major carriers serving Brazil. Many flights go into Sao Paulo on the Atlantic coast and a regional carrier called TAM services routes to the south including Florianopolis in Santa Catarina province.

From overseas, Varig serves Brazil from gateways located in many of the major capitals around the world. Once entry into Brazil has been made, a transfer to one of the local carriers such as TAM will get you down to Florianopolis.

US travelers do need a visa for travel to Brazil and these can be obtained in person at Brazilian consular offices in major cities here in the US. Information on visa requirements applicable to other countries is available on the Internet and should be carefully followed. Briefly, here are a few of the high points for US travelers:

• The cost of a visa for travel to Brazil is $100US.

• Entry into Brazil must take place within 90 days following the date of issuance of the visa.

• The visa must be paid for with a money order only.

• Passport photos, airline tickets or proof of an airline travel itinerary to Brazil are required for issuance of a visa.

• A valid US passport is required and it must be valid for 6 months following completion of one's trip to Brazil in order to secure an entry visa.

• The US passport must have an empty visa page available inside it on which the Brazilian consular office authorities will affix the visa.

• A Brazilian visa is good for multiple reentry visits for 5 years following the date of first entry into Brazil.

• A surcharge of $10 per person is required if one applies for a visa for another person.

**So, Are You QRV For The Games?**

Now that you know all about WRTC and the significance and history of the games, are you QRV for a visit to Florianopolis? Atilano de Oms, PY5EG, and the rest of the organizing committee surely hope so and no effort will be spared to ensure you have a wonderful experience should you elect to take some vacation time next summer to join them at the games.

If you wish to stay abreast of up-to-the-minute WRTC 2006 news, there is a website available to follow at **www.wrtc2006.com**. Click on the HTML format for the latest WRTC news, rules, travel and hotel information (coming soon) and competitor information once the final competing teams have been selected. Again, we hope to see you in Florianopolis next summer between July 7 and 10, 2006 for what will surely be one of the most important Amateur Radio gatherings of the year—WRTC 2006. It will be a great place to be for contesters and DXers alike!

NCJ

# ARRL DX Contest Single-Band W/VE Winners

The 2006 ARRL International DX Contests are rapidly approaching. The CW event is the weekend of February 18 and 19, and the Phone event is the weekend of March 4 and 5. Doing a single-band entry in the ARRL DX Contests is a great way for smaller stations to be competitive. You don't need competitive antennas for all the bands, just the band you've decided to concentrate on. Here are the winners from the inception of the single-band categories in 1980 through the 2005 events, with the call, state/province, number of QSOs, and number of multipliers. Although the East Coast is well represented, note that it is very possible to win a single-band category from other geographical areas of W/VE. Study the data, pick your band to give you the best shot, set your Q and mult goals, make sure your antennas are ready, and then have fun!

**W/VE Single Band Winners - ARRL DX CW**

| | *160 Meters* | | *80 Meters* | | *40 Meters* | | *20 Meters* | | *15 Meters* | | *10 Meters* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** |
| 1980 | W8LRL WV | 41 21 | N4AR KY | 205 60 | W5UN TX | 527 77 | K3TW MD | 727 90 | K6LL AZ | 901 78 | N4WW FL | 741 93 |
| 1981 | N4IN FL | 31 23 | W1ZM CT | 234 71 | W5UN TX | 710 77 | K5IY TX | 1076 107 | K1RM CT | 1200 85 | WØZV CO | 1067 83 |
| 1982 | N4WW FL | 44 25 | W1ZM CT | 254 64 | W6XX CA | 655 63 | K1KI CT | 864 111 | K6LL AZ | 1002 84 | N4ZZ TN | 732 77 |
| 1983 | W8LRL WV | 60 35 | K1PT MA | 383 73 | NA5R TX | 604 75 | K8NA MI | 498 80 | WØZV CO | 750 82 | WB4TDH FL | 206 56 |
| 1984 | W1RR NH | 50 32 | W1FV MA | 320 64 | W2YV NY | 796 100 | K3UA PA | 931 108 | WB4TDH FL | 643 88 | W1WEF CT | 359 76 |
| 1985 | W1RR NH | 139 60 | W1FV MA | 640 77 | N4PN GA | 993 96 | N2AA NJ | 1199 94 | K2EK NY | 635 87 | WA7KLK AZ | 18 13 |
| 1986 | K5UR AR | 100 50 | W1FV MA | 454 74 | N6QR CA | 795 76 | K2VV NY | 1813 115 | K3RV VA | 439 82 | KR1R MA | 17 8 |
| 1987 | K1ZM NY | 115 48 | W1FV MA | 728 69 | K4XS FL | 810 80 | K1RM CT | 1123 100 | W5VX TX | 362 72 | K9LA TX | 51 20 |
| 1988 | K1ZM NY | 122 60 | W6RJ CA | 346 68 | K2EK NY | 1102 96 | K2VV NY | 1564 103 | K1RM CT | 961 92 | N4BP FL | 179 45 |
| 1989 | K1ZM NY | 88 35 | W1FV MA | 551 70 | KBØG KS | 910 84 | N2AA NJ | 1944 103 | K2VV NY | 1769 105 | K1RM CT | 1530 98 |
| 1990 | W1NG CT | 60 34 | W1FV MA | 521 81 | WOØG MO | 790 97 | K4VX MO | 1075 104 | WN4KKN TX | 964 104 | K1ZM NY | 631 108 |
| 1991 | W1NG CT | 107 46 | W1FV MA | 729 78 | K1ZM NY | 1312 102 | W1RR NH | 1597 101 | WO0G MO | 1548 103 | KRØY TX | 1410 100 |
| 1992 | K5UR AR | 64 43 | WE3C PA | 307 68 | K8PO MA | 1110 102 | K1TO CT | 1814 112 | K2VV NY | 1529 115 | WØUN CO | 1563 115 |
| 1993 | W1FJH NH | 97 47 | W1FV MA | 746 77 | W6XX CA | 994 103 | KT3Y VA | 1515 109 | KØLUZ FL | 1413 111 | K5MR TX | 421 98 |
| 1994 | K1ZM NY | 85 50 | W1MK MA | 472 80 | K8PO MA | 1075 100 | W3USS DC | 568 92 | N4CT TN | 565 87 | WS1M MA | 118 48 |
| 1995 | W4MYA VA | 154 58 | W1MK MA | 928 89 | W3GH PA | 793 99 | K2SS CT | 1516 112 | W5VX TX | 839 91 | K9OM IL | 73 35 |
| 1996 | K1ZM MA | 303 63 | W1MK MA | 905 79 | N7DD AZ | 1014 92 | K1RM CT | 1450 103 | K9BGL IL | 151 52 | W6KFV CA | 31 8 |
| 1997 | K1ZM NY | 268 70 | W1MK MA | 1021 90 | N7DD AZ | 1182 110 | N8II WV | 1674 110 | N5LT TX | 301 68 | W5AJ TX | 34 16 |
| 1998 | W4ZV NC | 200 71 | W1MK MA | 1018 90 | AD6DO CA | 1006 94 | WØUN CO | 1573 105 | K5TR TX | 1100 104 | K4JYO AL | 97 41 |
| 1999 | WA8GHZ TX | 82 61 | W1MK MA | 645 81 | K8DX MI | 1012 94 | K1TO FL | 1255 103 | K2SS/1 CT | 1905 106 | WC4E FL | 1179 93 |
| 2000 | K3RR PA | 58 41 | W1MK MA | 802 82 | K7EM OR | 1264 88 | K4XS FL | 1666 115 | VE6WQ AB | 2059 113 | K1RM CT | 1766 111 |
| 2001 | WW2Y NJ | 346 61 | W1MK MA | 1099 89 | K8LV MI | 1161 105 | W5WMU LA | 1115 106 | N2MF NY | 1778 121 | K1ZZ CT | 1778 111 |
| 2002 | VY2ZM MAR | 600 71 | W1MK MA | 1013 85 | KT3Y VA | 1334 97 | W7WA WA | 1856 106 | N2MF NY | 1879 112 | W4ZV NC | 2162 108 |
| 2003 | K4TEA GA | 67 42 | W1MK MA | 847 78 | N4PN FL | 1034 99 | N2MF NY | 1464 115 | W4KZ GA | 1486 106 | W4ZV NC | 1306 113 |
| 2004 | VY2ZM MAR | 468 76 | VY2LZ MAR | 1211 98 | N4PN FL | 1351 120 | WE2F NY | 1473 117 | N2MF NY | 1551 111 | K4WI AL | 724 93 |
| 2005 | W4ZV NC | 244 63 | W1MK MA | 1126 88 | KT3Y VA | 1245 94 | N8II WV | 1667 113 | W4NZ TN | 1052 91 | K4WI AL | 96 40 |

## W/VE Single Band Winners - ARRL DX SSB

| | 160 Meters | | 80 Meters | | 40 Meters | | 20 Meters | | 15 Meters | | 10 Meters | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** | **call & state** | **Qs & mults** |
| 1980 | W4PZV FL | 29 24 | WA4SVO FL | 92 55 | WA7ZLC WA | 354 56 | K9DX IL | 1208 123 | N7XX WA | 2313 93 | VE6WQ AB | 2007 108 |
| 1981 | W8LRL WV | 24 20 | W1CF MA | 188 74 | K7UR WA | 408 43 | K3KG GA | 918 123 | K7RI WA | 2391 106 | K1UO ME | 1711 118 |
| 1982 | WA2SPL NY | 15 11 | K1PT MA | 141 65 | N5JJ TX | 293 68 | K1KI CT | 1498 146 | W7RM WA | 2255 103 | WØZV CO | 1910 118 |
| 1983 | VE1YX NFL | 39 28 | KR2N NY | 207 71 | N6BV CA | 629 56 | N2PP NY | 771 118 | WØZV CO | 1343 102 | WA6DBC CA | 1019 66 |
| 1984 | VE1YX NFL | 92 46 | W1FC MA | 272 80 | K8NN IL | 178 76 | K1UO ME | 1569 134 | WØZV CO | 1342 115 | WA6DBC CA | 864 75 |
| 1985 | K1ZM NY | 84 46 | WØMJ LA | 299 87 | KM6B CA | 541 53 | KS8S OH | 745 105 | W5XZ LA | 291 64 | WA3EEE MD | 20 5 |
| 1986 | K1ZM NY | 70 40 | K2EK NY | 255 71 | NZ5I TX | 191 43 | K2VV NY | 1813 115 | K3RV VA | 944 115 | K4JRB GA | 169 37 |
| 1987 | K5UR AR | 90 53 | W5WMU LA | 168 59 | W6AQ CA | 525 45 | VO1SA NFL | 1730 124 | K6SVL CA | 831 62 | KE5FI TX | 189 40 |
| 1988 | WA4SVO FL | 109 54 | N2NT NJ | 330 79 | K6NA CA | 682 61 | KS1L CT | 1487 127 | K4XS FL | 1600 117 | K5UR AR | 343 75 |
| 1989 | K1ZM NY | 50 30 | K4HJJ NC | 151 60 | KVØQ CO | 416 60 | AI7B OR | 731 108 | W7EJ OR | 2052 114 | K4XS FL | 2117 127 |
| 1990 | K1ZM NY | 54 34 | KA1XN MA | 183 76 | K4XS FL | 503 86 | WØZV CO | 1364 133 | W7WA WA | 2123 117 | K3ZJ/8 VA | 1922 126 |
| 1991 | K1ZM NY | 70 39 | K8UR MA | 310 72 | WOØG IL | 476 82 | KS1L CT | 1334 124 | W7WA WA | 2210 122 | N1GLG VT | 1645 144 |
| 1992 | K1ZM NY | 66 33 | K1UO ME | 308 62 | KC7EM OR | 702 69 | KK9A IL | 1649 133 | K2SS CT | 2160 140 | WØUN CO | 2323 125 |
| 1993 | WB9Z IL | 54 33 | WE3C PA | 325 75 | K1UO ME | 503 98 | K5MR TX | 930 129 | WØUN CO | 2204 133 | K4XS FL | 1437 144 |
| 1994 | K5UR AR | 52 35 | K1ZM NY | 483 90 | KC7EM OR | 762 78 | KS1L CT | 1748 137 | K1UO ME | 1273 134 | KE5FI TX | 328 73 |
| 1995 | W0ZV NC | 132 54 | KQ3V PA | 429 91 | K6NA CA | 804 68 | KS1L CT | 1346 121 | K3ZJ WV | 793 112 | K6SVL CA | 244 57 |
| 1996 | K1ZM MA | 191 60 | KQ3V PA | 566 92 | N7DD AZ | 763 86 | NI8L OH | 1416 122 | K5XI TX | 432 97 | KE5FI TX | 104 23 |
| 1997 | W4ZV NC | 90 46 | N1GLG VT | 392 77 | N7DD AZ | 665 66 | VA3MG ON | 1004 94 | W4WA GA | 458 86 | W5AJ TX | 100 23 |
| 1998 | AA1BU MA | 51 38 | K1FZ ME | 575 79 | N7DD AZ | 748 94 | VE6JY AB | 2004 119 | N2IC CO | 1446 125 | KZ5MM TX | 348 60 |
| 1999 | AA1BU MA | 61 40 | K1FZ ME | 419 84 | N5DO TX | 359 63 | K4ZW VA | 1084 117 | WØUN CO | 1766 121 | NA5B OK | 917 110 |
| 2000 | WW2Y NJ | 81 42 | KE1Y MA | 285 68 | K4XS FL | 809 101 | WA2QNW NJ | 1106 118 | K8DX MI | 2830 146 | W4ZV NC | 2577 127 |
| 2001 | WW2Y NJ | 61 38 | AA1BU MA | 232 66 | K9ES FL | 175 67 | W7WA WA | 1493 129 | W2FU NY | 1728 118 | W4ZV NC | 2264 130 |
| 2002 | AA4MM FL | 34 27 | AA1BU MA | 429 72 | K4XS FL | 850 92 | N7DD AZ | 1313 124 | VE6WQ AB | 2552 136 | W4ZV NC | 2205 135 |
| 2003 | K5RX TX | 51 37 | AA1BU MA | 488 83 | N4PN FL | 420 88 | W7WA WA | 1406 137 | N7DD AZ | 1564 121 | W5PR TX | 1302 120 |
| 2004 | KT1V NH | 60 42 | AA1BU MA | 459 89 | K4XS FL | 887 101 | VE6WQ AB | 2305 135 | N7DD AZ | 1884 123 | K5RX TX | 208 58 |
| 2005 | KT1V NH | 127 47 | K5RX TX | 159 62 | K4XS FL | 512 87 | K2XA NY | 1839 127 | WM5R TX | 1339 120 | W5PR TX | 231 53 |

# A Simple Approach to SO2R

Jack Schuster, W1WEF
(*thanks YCCC* Scuttlebutt)

It's not that I never tried SO2R before. I've spent countless hours cutting half an inch at a time off good quality coax, making stubs with deep nulls. I once bought a five-band Dunestar bandpass filter. I had two Yaesu FT-1000D transceivers sitting side by side for a few years waiting to be used in an SO2R setup. In 1997 I actually did operate with two radios, but my station wasn't conducive to using the second radio because I still had irritating CW "buzz saw" QRM between the radios. Nevertheless, I gained a handful of extra Qs on the second radio and had my best CW Sweepstakes score ever.

Despite my efforts to lick the interference between radios well enough to feel comfortable using SO2R, I concluded it was impossible to do it with three TH6s stacked on one tower. Sweepstakes was always the one contest where I would try to make it work, especially on the slow, boring Sunday.


**W1WEF at his SO2R station.**

### A New Idea

SSCW 05 was going to be different. I had a new idea! I started thinking about my plan in May. After visiting Chris, W4/G4BUE, in Florida in January last winter while driving through his town in the RV, I decided I should have a Hustler vertical like the one that Chris used for his second radio. No matter what I wanted it for, it was such a well-built antenna at such a reasonable price that I had to have one. I bought and used a Hustler 6BTV similar to G4BUE's at my summer house with the idea that I could easily take it down and bring it on next winter's RV trip. What I would also do is put it up for a second radio in SS.

By using a separate multiband antenna, I wouldn't have to do any antenna switching on the second radio. I would locate it as far away as I could from my other antennas to minimize QRM between radios. Being vertically polarized would help in minimizing interference with the first radio since it would be on horizontally polarized antennas.

Although I am fortunate to have a lot that allows me to locate the Hustler vertical over 300 feet away from my single tower, I didn't have as much coax left on the spool as I thought. As a result, the Hustler was planted only 100 feet away from the tower. Being only 32 feet high, it was still a good distance from the lowest TH6 at 58 feet.

I put down only two ground radials per band, just as I had this summer. Since I figured I'd only be using the second radio when the rate really slowed (most likely on Sunday), I figured I didn't need 1500W on both rigs and set up a little FL-2100B amplifier to run at 500W on the Kenwood 930S.


**W1WEF's homebrew switch box to control the two radios.**

Finally, it was time to check QRM between the Yaesu FT-1000D and the 930S. First I ran 1500W on the main radio and tuned all the bands with the 930. Unless I was close to the first harmonic, it was amazingly quiet. I tried all band combinations and it was the quietest setup I ever had. I next did the same thing with the 930 and amp, and it too was excellent! The only time I had severe QRM was when I ran 1500W on the main radio to my 4 Squares on 80 meters. With the 4-Square's vertical polarization, and with two of its verticals being closer to the Hustler than the tower, it wasn't doable. But my 80-meter dipole was quiet when used along with the Hustler, so I decided I could live with the dipole.

My hunch that a vertical on one radio and horizontal antennas on the other radio with no stubs or filters was correct. This was going to play!

I spent the next day building a switch box that let me listen to the left radio (1000D) in my left ear, the 930 in my right ear, or either radio in both ears. A toggle switch selected which radio was keyed. It was simple enough to use and I was ready to roll…or so I thought.

### The True Test

I started SS on 20 meters, figuring I could CQ there for at least a few hours at a pretty good rate. It didn't happen. Where was everybody? After a few Qs I decided to scan the bands from the bottom up, working everyone I heard, knowing there were no dupes to worry about in these first few hours. The rate picked up, but it was nowhere near what I had hoped for, looking at Randy, K5ZD's, winning rate sheet from last year.

After a couple of hours, I decided it was slow enough to use the second radio, much earlier than I thought I would. I found big signals easily on the 930, and had no trouble working them with 500 W. I'd go back to the main radio, work some there

and find another on the 930. This might be fun!

Then I realized a mistake I had made—a big mistake. What a dummy! I was so used to operating one radio with computer control and automatic frequency logging, I had forgotten to change bands in the logging program for the 930. Although the 1000D was interfaced for computer control of band changes, the older 930 was not. I thought I remembered who I worked on the second radio, and edited the contacts, but I found I would keep forgetting, or worse yet, I changed the band for the second radio, went back to the first with the second radio band still in the computer, and worked a bunch of guys before realizing it! After doing this about five times I knew it was all over. There was no way I could figure out the correct bands, and I thought I would be penalized severely. Five hours into Sweepstakes, very disappointed, I threw in the towel. The penalties would be so great that it wasn't worth a serious effort.

**Lessons Learned**

Sunday, I decided to get on for some casual operating during the day, without using the second radio. Since the log was so busted, I decided to try the PacketCluster since I had never used it in a contest. I decided to go for a sweep and send in a checklog. To avoid confusion, I continued to send a "B" precedence for the rest of the operating time. I never did get the Sweep, missing NL, but getting a sweep this way would have meant little to me anyway.

What did I learn? I learned that I can set up two radios with almost no interference between them, with no filters or stubs. I also learned that there's no way I'll ever do it again without computer control that will select the radio from the keyboard and log the right frequency! NCJ

As the days get cooler, the Hardware Addict begins to question his choices about what to do at the station; instead of putting up those new Beverages, maybe we should have taken down those monster 40-meter Yagis and replaced them with something more modest. In our amateur world of seat-of-the-pants engineering, we wonder what those 40-meter Yagis will look like after a bad ice storm. Then our minds spin, playing out scenarios of taking them down when they're split in half. There are just not enough hours in a day sometimes. As if Sweepstakes was not enough, Thanksgiving wastes no time in rolling around, and we have to pause to consider what we're thankful for. We're thankful for CQ Worldwide. And I hope there isn't an ice storm during CQ Worldwide.

### Wouldn't You Know

The Hardware Addict and I leave for the Caribbean in 10 hours so that we can make lots of contacts in lots of countries. Before we go, we realize the rest of the contesting world needs to hear about N9IW, the rather spectacular station of Tim Gustafson. Tim has built an off-the-shelf multi-tower station which he can access by remote control over the Internet from his wireless laptop. When I think that N5OT is 16 miles away from where the Hardware Addict and I actually reside, I wonder sometimes if those trips up the hill are really necessary—remote control over the Internet sounds good sometimes!

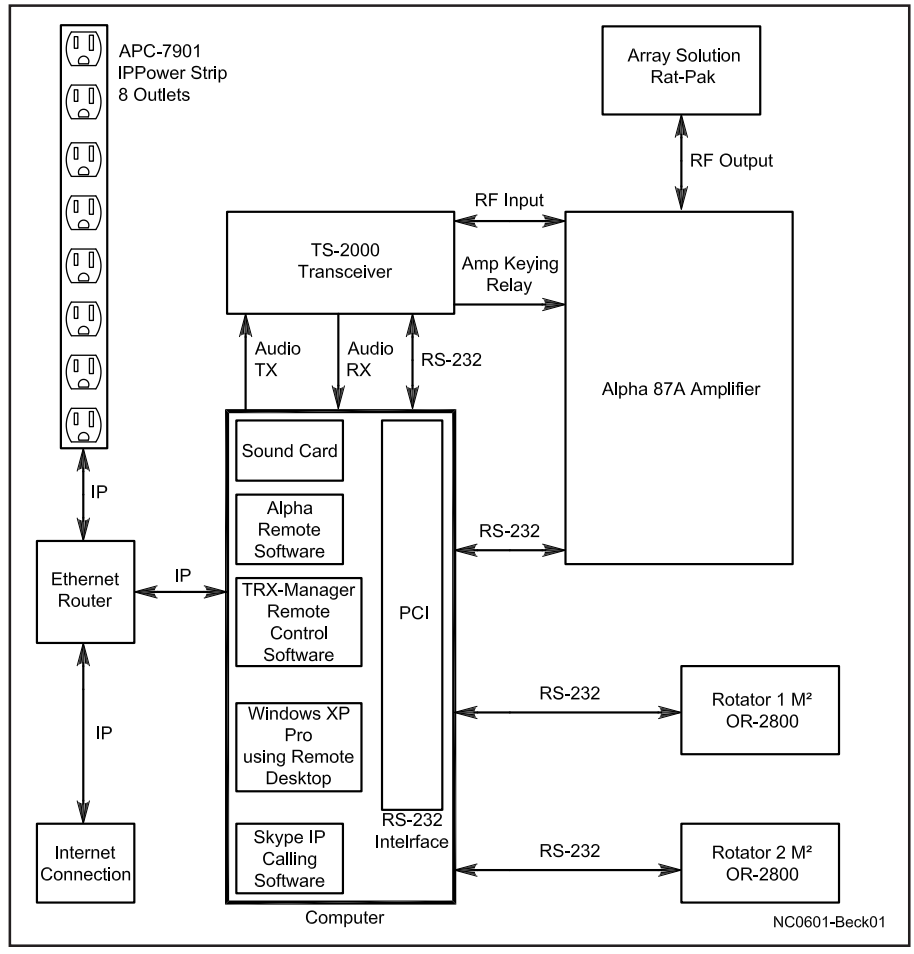
Tim has proven the robustness of N9IW through thousands of HF contest QSOs on phone and CW. Subsequently he has demonstrated it at local and regional contest club meetings. He piqued the interest of *NCJ* Editor Carl, K9LA (see his Editorial)—and the Hardware Addict had his work cut out for him.

### A Normal Guy

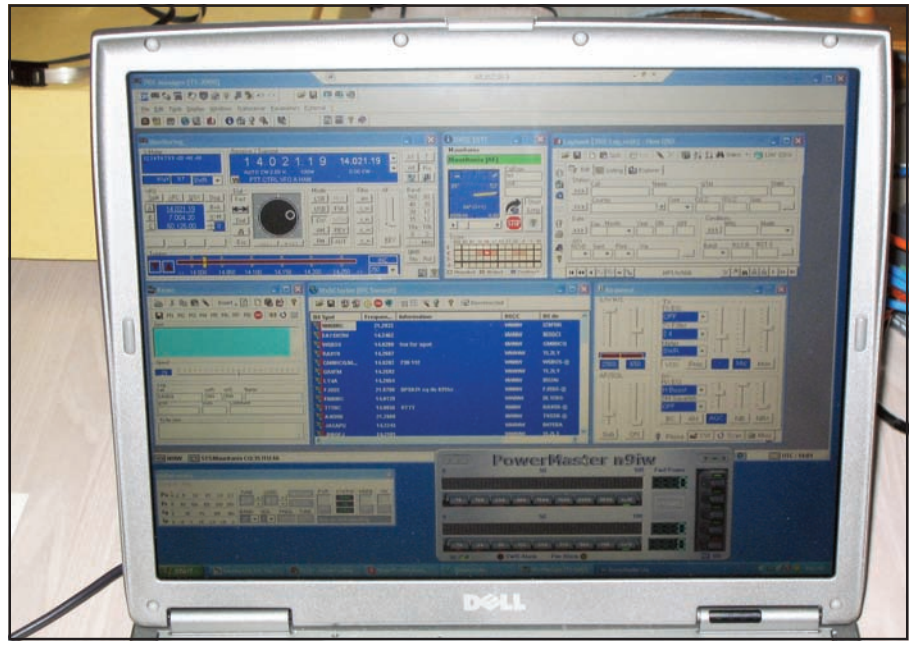
We caught up with Tim and struck up a conversation. Tim is a "normal guy" and confesses that contesting is not his main focus in life. He grew up in Western Springs, Illinois, a suburb of Chicago. At age 13 he built his first ham station. As a married adult he moved into a high rise in downtown Chicago, during which time he would get on the air from his original station at his parent's house.

When mom and dad decided it was time for the antennas to go, Tim built a big station 250 miles north in Sister Bay, Wisconsin. "I would drive up north almost every weekend to enjoy the beauty of Door County where I spent my childhood summers."

…and get on the air, I'm sure.




**Block diagram of the N9IW remote contest station.**




**Screen shot of N9IW's laptop when running the remote station.**

### Another One Bites the Dust

"A few years ago I read an article about remote controlling an HF station," Tim relates. "The article piqued my curiosity. I was currently living in a condo in downtown Chicago, and my station was located 250 miles to the north.

"I was in the process of upgrading the antennas and wanted the opportunity to play radio other than just on the weekends I went north. A remote station fit the bill." Here again, the Hardware Addict and I can only imagine what that would be like. Surely this is not an undertaking for the faint-hearted, or to quote John Battin, K9DX, "If you're controlling your radio directly, and you have a [modem] drop out, you're in deep trouble."

Tim continued, "My first goal was to make sure every piece of equipment I used had the ability to be computer controlled." He e-mailed us a block diagram of the station so I could get an idea of all the various components that had to be drawn together into the system. Our first reaction was how much common sense it made. I asked Tim if one of the design criteria was that it could be duplicated with off-the-shelf components. Tim responded with an emphatic *yes*.

Makes sense, doesn't it?

### No Antenna Slouch

"The antennas consist of a 3 stack of home brew log periodics for 14-30 MHz. Each log is 14 elements on a 40-foot boom, and they were designed using techniques to maximize performance compared to standard designs."

"The design of the logs is a whole 'nother story," Tim said. I bet it is. We hope you tell us sometime, Tim.

"The Logs are on a 125-foot Rohn 55 rotating tower using KØXG's hardware and an M² OR2800 RS232-controllable rotor controller. On a second 100 foot tower is a homebrew full-sized 2 element 40 meter beam with 2 elements for 30 meters interlaced using one 50-Ω feed point for both bands."

Like I said, Tim is no antenna slouch. Anyone who scratch-builds full sized 40-meter Yagis gets our respect.

"I'm also using an M² OR2800 rotor to turn the 30/40 antenna. For 80 I'm using a 2 element K8UR wire array and on 160 meters I'm shunt feeding the 100 foot tower. The station is pretty competitive except for being located in 'The Black Hole.'"

Tim has casually operated his beautiful station in contests by remote control for several years now, and made several thousand contacts.

### RS232 Central

Inside the well-appointed shack, as you can see in the cover photograph, Tim made good on his parameter to seek only hardware that was computer controllable. To interconnect all the serial devices (i.e.

***N9IW Equipment Summary***

*Radios*
Kenwood TS-2000
FT-1000D

*Amps*
Alpha 87A
King Conversions 6M Kilowatt

*Antennas*

| | |
|---|---|
| 160 | Shunt-fed 100 foot tower |
| 80 | 2-element K8UR wire array |
| 30 | 2-element home-brew Yagi (full-sized) |
| 40 | 2-element home-brew Yagi (full-sized) |
| 20–10 | 3 x 14-element home-brew log periodics |
| 6 | 3 x M² 6M7s |

*Antenna Switching*
Array Solutions StackMatchs and RatPaks
APC7901 (to turn on 12V wall warts to activate the selected antenna on the RatPaks)

**The 40/30-meter antenna at N9IW's remote contest station.**

**The 6-meter amp at N9IW's remote contest station**

radios, amps, rotator controls) he relies on a Byterunner PCI to RS232 8-port serial expansion card. Like K9DX, Tim chose to have a PC on-site that does the actual controlling, and uses a wireless laptop to link to the shack computer via the Internet.

"To control the TS-2000, I use *TRX-Manager* software by F6DEX." Tim comments, "Laurent [F6BEX] has been very helpful with his software." Laurent's program is only needed on the actual shack computer. To access the shack computer Tim uses the remote desktop connection feature inside *Windows XP*. "Get the professional version!" he adds quickly.

Tim uses a Dell D610 laptop. "Make sure you get a machine which will do SXGA+ for graphics. This allows the remote computer window to fit on my laptop screen without having to scroll all over the place." I had to agree that the bigger displays are helpful. The Hardware Addict and I don't have a single 15-inch or smaller screen in the place, and there's nothing left that's heavy or uses cathode rays. Flat screens are the best thing to happen to the operating console since SO2R.

**Pesky Details**

Naturally, there are little things here and there that make Tim's installation complete and play like a charm. I asked him about some of the smaller details.

"To remotely control power and relays to switch antennas I use an APC7901 IP-addressable power strip. For audio I use *SKYPE*— you will also need an isolation transformer between the computer sound card line output and the microphone input on the rig to eliminate the ground loop. I also use a backup UPS to keep the computer on at the station if I ever lose power."

Tim heaped praise on *SKYPE* for passing all his audio over the Internet. *SKYPE* results in an approximate 50 millisecond delay in audio in both directions." Tim feels that this is about as good as it gets and is very happy with this figure. "If you set up your own link outside of the Internet you could get the delay down to nothing."

**Just About Ready**

After talking with Tim, the Hardware Addict and I sat and thought about the upcoming cold winter months. "Gotta get those 40s down," he said without a trace of enthusiasm.

"Yep," I curtly replied.

But then we thought about how cool it would be if we could get our station to where we didn't have to bash through the snow and ice to get on the air. "This off-the-shelf remote thing has some promise," I said to him, breaking the silence.

"Yep." he replied curtly. The Hardware Addict is a man of few words. NCJ

# Contesting on a Budget

Paul Schaffenberger, K5AF

## Budgeting and Tracking Contest Expenditures

Over the past six months I had taken receipt of about ten packages that arrived either by mail or UPS for a station project. Watching these packages come in, my wife kept asking me how much I was spending on all this stuff. My response was that I wasn't spending any more money on my station and on contesting this year than any other year. She challenged me to prove it! My rather weak response was that I couldn't, as I had not really tracked my expenses.

This little discourse with my wife fueled the topic for this issue of *NCJ*. I wanted to find out how the rest of you wrestled with budgeting and tracking expenses. I asked if you tracked expenditures and analyzed them for trends. I wondered if you had a budget or did you spend as resources became available. I also asked if you knew how much you were spending on contesting and if that included travel to such events as Visalia or DXpeditions. I further asked how you dealt with unexpected expenses, and if you were able to correlate spending with overall station performance. Finally, I asked for any other insights regarding this topic.

### Tracking and Analyzing Expenses

The responses were interesting and quite varied. Regarding tracking and analyzing expense, some, such as Ethan, K8GU and Billy, AA4NU, had a fairly well developed concept for spending and acquiring contest-related items. As a grad student, Ethan has a modest station with a pair of TS-930 transceivers. He knows what he wants to buy and picks up stuff at attractive prices. He tries to keep backups of critical items and parts, and he never turns down freebies or bartering opportunities. Billy, AA4NU, also tracks his resources carefully. He has realized, based on early trends, that cheap switches, coax and other hardware are not cheaper over the long run. He always considers long-term reliability with his purchases. Randy, K5ZD, tracks all of his expenses, including travel, equipment and even trips to the hardware store.

Others, like George, K5TR and Bill, AA4LR, take a more *ad hoc* approach to spending. George has quite an impressive station, does not track his expenses consciously, but is aware that expenses are not excessive. I've visited George's place, and from the operating positions to the antennas, everything is simple, sturdy and functional. Bill doesn't consciously track expenses either, but does look at failure trends and attempts to determine if the failure is operator-induced or bad design. He strives to replace unreliable equipment with higher-reliability equipment, and strives to maintain commonality between his two operating positions.

Regarding a specific yearly spending target for contest-related activities, most of you responded that you did not have a specific contesting budget, but spend funds as they become available. Some, like Ethan, K8GU, set aside a small portion of the paychecks each month as "hobby money." Fred, WW4LL, uses his other hobby, photography, to help fund his contesting addiction. He will shoot weddings or other photography jobs to raise funds for radio expenditures. While some don't have a specific budget, they have a good idea how much they are spending. Bill, K4XS, estimates his annual budget at about $700 to keep his station going. This excludes any long-term capital items, such as a new radio or amp. Despite his fairly large number of stacks, he keeps these expenses down by spending wisely when good deals come along, and scrounging as much as possible! Likewise, Randy, K5ZD, estimates that he spends about $1000 per year on maintaining his station. Despite not consciously tracking his expenses on a daily or monthly basis, Bill, AA4LR, has used *Quicken* to track his overall spending over the past 17 years and can report on the "radio" category at any time.

### A Radio Budget?

Most everyone didn't have a specific budget with funds earmarked for radio each year. Most spend as money becomes available. As Bill, AA4LR, says, he spends "As funds are available and the need or opportunity strikes." Billy, AA4NU and Eric, K8GU, use the station master plan to drive their expenditures.

It was kind of a mixed bag as far as budgeting for travel was concerned. Many seemed to consider trips to Dayton, Visalia and even to exotic DX locations as an integral part of continually improving our contest capabilities. Exposure to new ideas and technology helps us recalibrate our future needs and expenditures. Operating from desirable locations helps hone operating skills. In either environment, being around other competitors piques our interest and motivation in the sport. Bill, K4XS, considers his annual pilgrimage to Dayton to be an integral part of his annual contest activity. He buys and sells aluminum and towers, and usually includes pickups and/or deliveries on his trip to Dayton.

I was interested if anyone kept a "rainy day" fund to deal with unexpected expenses, such as natural disasters or other unplanned events. The answer was almost universally "no." Some, like Billy, AA4NU, try to keep spares of critical parts and resources to help avoid unexpected expenses. Randy, K5ZD, equates staying on the air to driving a car—if something breaks you've got to get if fixed or stay home, even if it busts the budget. Given recent events, this seemed to be fertile ground to explore for the next issue.

### The Bottom Lines

I posed the question of how the financial bottom line affected the station performance bottom line; in other words, how spending correlated to score. George, K5TR, simply tries to not spend money on things that will not help the score. Bill, K4XS, feels strongly that investments in aluminum will show the biggest payoff. To quote Bill, "Give me a pair of old ICOM 775s and pair of old ratty 1kW amps with stacks, instead of two new $10000 radios, with Alpha amps and a tribander at 50 feet, and I'll kick the crap out of the guy using the fancy rigs. The key to contest station spending is putting the money into the antennas and towers!"

This question also brought some philosophical answers. Fred, WW4LL, summarized these responses very succinctly with "I have correlated some increase in scores to station enhancement but it has been not so much the money and equipment invested, as it has learning from our mistakes, listening to others, playing smarter, and better utilization of the existing station equipment and software." In short, the space between the headphones is really the number one resource for a contester.

Thanks to K1HI, AA4LR, AA4NU, K4XS, WW4L, K5TR, K5ZD and K8GU for their thoughtful responses.

### Topic for Mar/Apr *NCJ*

Contingencies: With the string of natural disasters lately, what is the most cost-effective way to deal with them? Do you purchase insurance, or do you overbuild your station to deal with potential catastrophic events? Once a disaster has happened, what cost-effective workarounds help keep you on the air and in the game? As always, I look forward to your responses.

NCJ

# RTTY Contesting

Bill Turner, W6WRT

## Getting Started in RTTY Contesting – Part 1

The last few columns have been directed to the more experienced RTTY contester who wants to improve his skills and/or equipment. For this issue and next, I'd like to speak to the ham who is already a contester on CW or SSB, but who has never tried RTTY. Let's imagine a conversation that goes like this:

**Q. I've been contesting for years on the other modes, but never on RTTY. What does RTTY have to offer me?**

A. RTTY's appeal is different from CW or SSB. For one thing, there's a lot less racket to listen to. In fact, you can do an entire contest with no audio at all if you like. Surely the spouse would appreciate that!

**Q. So true! What else?**

A. Likewise, you won't wear out your voice talking into a mike or your hand using a key. Much of RTTY contesting is done using pre-recorded macros and software control of your transceiver. You don't even have to press a PTT button.

**Q. Sounds pretty automatic. So what is there for me to do?**

A. Plenty, both before and during the contest. Automating routine tasks reduces fatigue and frees you up to focus on the heart of the contest itself—strategy, propagation, timing, honing your skills, etc. Let the hardware do things like capturing and entering calls while you concentrate elsewhere.

**Q. What do you mean "capturing and entering calls?"**

A. Everything you receive is printed on your computer screen. From there, it only takes a mouse click to capture the other station's call and place it in the entry window of your software. Nothing to type, just click!

**Q. Sounds fast and easy. What's the catch?**

A. There are some definite skills involved. For one, tuning in a station quickly. For another, deciding whether the other guy's call has printed correctly. QRM and QRN can disrupt RTTY just like any other mode.

**Q. How do I do those things under the pressure of a contest?**

A. Experience helps of course, but your software can help, too. Modern software has an Automatic Frequency Control (AFC) feature that helps tune in a station for you. As long as you are tuned reasonably close, AFC will make the final tuning correction for you. If you wish, you can have a setup where AFC moves both your TX and RX right on top of the other guy. Another handy feature of most software is that it will automatically check the call printed on the screen against a database and flag it if has printed correctly. You probably already use this for CW and SSB, but only after you type in the call by hand. With RTTY, the software reads it right off the screen and makes the check for you!

**Q. Let me guess—does it do a dupe check automatically too?**

A. Absolutely.

**Q. So with all this automation, how do I stay awake?**

A. Not to worry. RTTY contesting is highly competitive if you want it to be. Like other contests, there are some participants who put in a casual effort, some who are in it mainly to chase DX and some who pull out all the stops to win. You can play at whatever pace you like and have a lot of fun.

**Q. Sounds good. How do I get started?**

A. First you need a basic understanding of how RTTY works. Unlike CW or SSB, RTTY has some variables like shift and baud rate that must be standardized between stations in order to print correctly. Hams have standardized on a shift of 170 Hz and a baud rate of 45 for example. Some variation is allowed, but if you're very far off, all you'll see on your screen is garbled text. Many commercial and military stations use greatly different parameters and you won't be able to copy them even though they do sound like the RTTY you're used to.

**Q. What else?**

A. One important thing is the "polarity" of your signal. RTTY uses two tones called MARK and SPACE. Your carrier shifts back and forth between the two, giving the familiar "diddle-diddle" sound of RTTY. By convention, MARK is the higher RF frequency and SPACE is the lower. If you accidentally get them reversed (everyone does, sooner or later) you will be "upside down" and will not print on the other guy's screen until he reverses his receiving. All software has, or should have, the capability of doing this reversal just long enough to inform you of the problem so you can correct it. Not a big deal. Like I said, everyone does it sooner or later.

**Q. I see there *are* some things to learn. Where can I get more information?**

A. A few years ago I wrote an article called "RTTY Basics" which is included with the popular software program *MMTTY* (more on *MMTTY* later). If you'd like, you can e-mail me at **dezrat1242 at ispwest.com** and I'll send you the article as an attachment. The article assumes you have some knowledge of radio but none at all of RTTY and starts from the very basics. Another excellent source, especially for more advanced users, is AA5AU's Web site, **www.aa5au.com**. Follow the links to the RTTY section. Don is one of the top RTTY contesters in the world and his advice is well worth taking. I always tell newcomers to listen to Don during a contest and do what he does. You won't go wrong.

**Q. I have a pretty good station for CW and SSB. What do I need for RTTY?**

A. The first thing to consider is something called duty cycle. Unlike CW or SSB, RTTY is a 100% duty cycle mode while transmitting. This means your transmitter, including the amplifier if any, gets no rest between syllables or between dots and dashes. Whenever the transmitter is on, it is cranking out full power. You need to be sure your rig can do this without overheating. Some equipment manufacturers rate their products for a full 100% duty cycle and some do not. That "100 watt" transceiver may only be capable of half power during sustained RTTY operation. Check your owner's manual or call the manufacturer and be absolutely sure. Prolonged RTTY contesting is probably the highest duty cycle operation in ham radio. Be sure your equipment can handle it!

**Q. Okay. What else?**

A. RTTY these days is always done with a computer. In the old days, hams used a mechanical printer, and in fact the earliest RTTY contests were done that way. No longer. Computers have revolutionized the use of RTTY on the ham bands.

**Q. What kind of computer do I need?**

A. Good news in this department. RTTY does not require much computing power and practically any computer made since

the *Windows 95* era will do just fine. If you have a really, really, old computer you may have to use a hardware TNC instead of software. If that is the case, e-mail me directly and I will help you out. Most hams who are running *Windows 95* or later can use software only.

**Q. How much does the software cost?**

A. More good news! You can set up a world-class RTTY station with topnotch software that is completely free. Yes, there are some for-pay programs out there and some hams like them a lot, but to start with, get the free ones and try them out.

**Q. Which ones?**

A. There are two I recommend to begin with: *MMTTY* by JE3HHT and *Logger* by N1MM. *MMTTY* can be downloaded at **mmhamsoft.ham-radio.ch/mmtty/** and *Logger* at **pages.cthome.net/n1mm/**.

**Q. Ok, I have them both. Now what?**

A. Start with *MMTTY* running by itself. *MMTTY* will allow you to transmit and receive RTTY using the soundcard in your computer. *MMTTY* has some limited contest capability, but it is not a true contesting program, and that is where *Logger* comes in. I'll have more on *Logger* in the next issue of *NCJ*.

**Q. What do I have to do to my station to use *MMTTY?***

A. The main things you need are cables to interface *MMTTY* to your transceiver. *MMTTY* includes a very complete help file including schematics, so I'll only cover the basics here. You will need a minimum of two cables: one for the audio output from your transceiver to the computer and one for the RTTY keying signal to the transceiver. Highly recommended but not strictly mandatory is a PTT/VFO cable to the transceiver. You probably already have the VFO cable for your CW/SSB contesting, but you may not have PTT. You could do PTT by hand, but nobody does. Use a cable. As explained in the help files, PTT can be done either by hardware or software. If you transceiver supports software control, use it. If it doesn't, you will need a separate cable.

**Q. The last time I used a soldering iron was on my spark transmitter. Can I buy the cables?**

A. Yes, indeed. Check a recent *QST* for advertisements. At least three companies I know of sell ready-made cables. Once you have *MMTTY* running, get on the air and do some rag chewing and chase some DX. Get a feel for how RTTY tunes. Learn how to use the macros but don't spend a whole lot of time on that unless you want to. Contest macros with *MMTTY* are actually done in *Logger* and have a different format. That's for next time.

**Q. Whew! Anything else I should do between now and then?**

A. Yes. Join the RTTY reflector at **www.contesting.com**. It's one of the oldest ham radio reflectors and has a great bunch of guys, both Old Timers and Newcomers. It is oriented toward all RTTY operation, not just contesting. Jump in, ask questions and have fun! NCJ

Carl Luetzelschwab K9LA

# 40-Meter 4-Square Versus 2-Element Shorty 40

Elsewhere in this issue, Al K3LC compares a 40 meter 4-Square array to a 2 element Shorty 40-meter Yagi. His comparison evaluates 4-Squares with various numbers of radials per element and the Shorty 40 at several different heights above ground. All of these evaluations are done over various soil conditions.

K3LC's article came at a very fortuitous time for me. My 40 meter antenna is an inverted-vee at 50 feet. It's a decent antenna, and has served me well. But I've always wanted to take the next step on 40 meters to be more competitive with the big boys. K3LC's article only addresses gain, so let's take a look at several propagation issues with respect to the 4-Square versus the Shorty 40. I will focus on the 15-radials per element 4-Square and the Shorty 40 at 60 feet, as these are what I would implement at my QTH. Additionally, I will only look at these antennas over average ground.

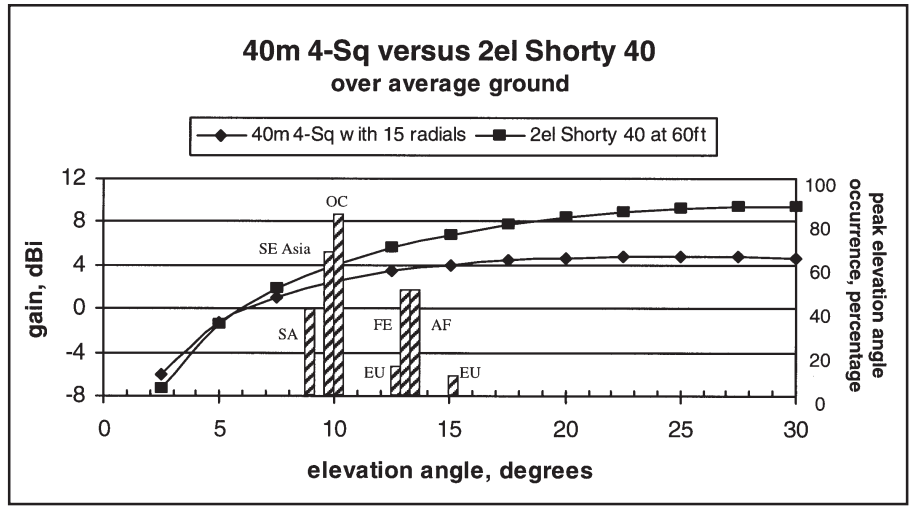



**Figure 1—Gain and elevation angle statistics.**

Figure 1 reproduces K3LC's gain data for the 15-radials per element 4-Square and the Shorty 40 at 60 feet over average ground. I have also added some 40 meter elevation angle data statistics for W9 from the *ARRL Antenna Book* CD 1.0.

The *Antenna Book* elevation angle data is from all ten US call areas on 80 through 10 meters (including the WARC bands) to six general areas of the world: Europe (EU), Far East (FE), Southern Africa (AF), Oceania (OC), South America (SA), and South Asia (SE Asia). The angles over which propagation is predicted to occur 100% and 90% of the time are given, along with the peak elevation angles and their respective percentage of the time occurrence.

Figure 1 indicates that two peak angles are predicted to occur from W9 to Europe on 40 meters: 12 degrees 16% of the time and 15 degrees 9% of the time. The other 75% of the time, elevation angles in the range of 3 to 19 degrees are predicted to occur. Similarly we see that the peak elevation angle to the Far East (JA) is predicted at 12 degrees 48% of the time (the other 52% of the time, elevation angles in the range of 9 to 18 degrees are predicted to occur) and so forth to the other areas of the world. Not shown is the data that says elevation angles from 3 to 19 degrees are predicted to cover all openings to all six areas of the world from W9 (it just so happens that this is the same as the statistics to Europe). To summarize this data, our comparison of the 4-Square to the Shorty 40 should be done from 3 to 19 degrees, with a bit of bias toward the peak angles in Figure 1.

Figure 1 shows that the break-even gain point in the comparison of the 15-radial 4-Square and the Shorty 40 at 60 feet over average ground is at an elevation angle of around 5 degrees. Thus for elevation angles above 5 degrees (which includes all those peak angles), the Shorty 40 at 60 feet is up to 4dB better than the 4-Square, with 2dB probably being a good average value. For elevation angles below 5 degrees, the 4-Square is up to 1.5dB better than the Shorty 40. If only gain and elevation angles are considered, it appears that the Shorty 40 at 60 feet would have a slight advantage over the 15-radials per element 4-Square.

### Polarization

What about polarization? Does a 4-Square being vertically polarized and a Shorty 40 being horizontally polarized have any bearing on the comparison? In a roundabout way it does. But not in the way most people believe. Most people would say that the polarization of an arriving signal is random in nature and thus the antenna's polarization doesn't matter. Yes, the ionosphere does vary and can cause polarization to vary, but there is more order to polarization that most people realize. That's because the ionosphere is immersed in a magnetic field.

When an electromagnetic wave enters the ionosphere, the magnetic field causes it to split into two characteristic waves: the ordinary wave (o-wave) and the extraordinary wave (x-wave). On operating frequencies not near the electron gyro-frequency, the o-wave and x-wave incur a similar amount of absorption. For example, on a three-hop F2 path on 40 meters from a European country (I chose Spain) to my home during a winter month at 0300 UTC around solar minimum, *Proplab* Pro (Solar Terrestrial Dispatch) says the o-wave suffers 2.1dB of absorption and the x-wave suffers 2.7dB of absorption. Although the absorption is very similar for both characteristic waves, it doesn't necessarily mean the signal strength from each will be the same. This is because polarization has to be taken into account.

In addition to splitting our RF into the o-wave and the x-wave, the magnetic field also imparts a limiting polarization to each characteristic wave when entering the ionosphere and when exiting the ionosphere. In general, the o-wave and x-wave are elliptically polarized, with their major axes orthogonal to each other. Additionally, the E-field vector of each characteristic wave rotates in the opposite direction from the other. What all this means is a vertically polarized antenna (like a 4-Square) could couple best to one of the characteristic waves, and a horizontally polarized antenna could couple best to the other characteristic wave.

In a nutshell, for the EA to K9LA path on 40 meters, the 4-Square is best with

the o-wave and the Shorty 40 is best with the x-wave. Either antenna should work similar at my station as long as both characteristic waves are propagating. For some interesting observations with the polarization of arriving waves, especially the effect of limiting polarization, take a look at *The Enhancement of HF Signals by Polarization Control* by B. Sykes, G2HCG. This article appeared in the November 1990 issue of *Communications Quarterly*.

**More Considerations**

There are other considerations in the 4-Square versus Shorty 40 decision. With respect to mechanical issues, a 4-Square on the ground is generally easier to implement than a Shorty 40 high up on a tower (unless you already have a suitable tower up). With respect to pattern rotation issues, a 4-Square can switch directions instantaneously, which is very advantageous for contesting. With respect to noise, the Shorty 40 could have the advantage, as horizontal polarization would offer some immunity to vertically polarized man-made noise (noise can still be the limiting factor on 40 meters). Additionally, K3LC reports that the RDF (receiving directivity factor – the difference between the gain in the favored direction and the average gain—see **www.w8ji.com/receiving_basics.htm**) is 10.46 dB for the 4-Square and 11.36 dB for the Shorty 40—thus the Shorty 40 may offer a slightly better signal-to-noise ratio.

All in all, the Shorty 40 at 60 feet seems to have the edge over the 15-radial 4-Square. Of course the old saying "your mileage may vary" applies here, and different conditions could affect your decision. For example, the Shorty 40 could be even more dominant if it is mounted higher—say at 100 feet or so. On the other hand, the 4-Square could be more dominant if it is mounted over very good soil and compared to a low-height Shorty 40. These comparisons can easily be made with the data in K3LC's article.

One last comment. Although this column focused on 40 meter elevation angle statistics for W9-land, the range of elevation angles cited to cover all openings to all six areas of the world (3 – 19 degrees) is quite similar to the statistics from all the other call areas to all six areas of the world. So if you cover this range of angles on 40 meters, you should pretty much be ok no matter where you are in the continental US.

NCJ

# Workshop Chronicles

Don Daso, K4ZA

## Getting Your Bearing on Bearings

If you stop and consider how many things in our lives turn or rotate, a new appreciation for the humble bearing will likely evolve. Hams, of course, are concerned with turning antennas. And bearings can make such a task easier, or more reliable, more precise, or less limited by size.

Bearings work by using either hard "balls" or "rollers," moving or turning inside smooth inner and outer surfaces (called "races"). These balls or rollers bear or support the load, allowing objects to move smoothly. Ball bearings typically deal with two types of load—radial and thrust, usually one at a time, or a combination of both. The typical tower thrust bearing, as you might imagine, deals with both forces, but we are mostly concerned with the vertical load.

Mention bearings to any active station builder, and you get an opinion or two, perhaps even a horror story. In a word, this is one topic that's not only sure to draw a reaction, but one that is almost guaranteed to be different. Let's try to clear the air, just a bit.

### Lubrication

Should I grease my thrust bearing or not? The typical Rohn bearings (TB-3 and TB-4) are designed to run dry (see Figure 1). Their turning speed is so slow that virtually no heat will be generated. Remember, heat is what lubricants take away. Atop our towers, let's consider some basic physics. When a ball in such a bearing is motionless, the load is distributed symmetrically on the ball and the race. When a tangential load is applied, causing the ball to roll, the material in the race will "bulge" in front of the ball, while "flattening out" behind it. Since not enough heat is generated from sliding friction in a typical thrust bearing, metal pickup or welding does not occur. But the race can show evidence of wear; since it's made from a softer metal than the ball bearings, it will deform first, sometimes to the point of seizure. Lubrication will not solve that problem. Indeed, if the grease holds debris, it could damage the race.

### Two Bearings?

Another common question: what about using two bearings? While it's a good way to easily remove the rotator (the mast/antennas are supported as you take out the rotator), alignment is critical. Indeed, mast alignment inside the tower is one of the more important instances of measurement we hams face, yet nearly everyone takes it for granted—mostly, I believe, because there's simply "so much" room to adjust things. For instance, in 20 years of tower work, I have never encountered one client who's asked about shimming the Hy-Gain/Telex series of rotator mast clamps, even though it's clearly spelled out in the manual if using other than a 2-inch mast. Everyone assumes there won't be a problem; usually they're right, lucky or both. Adding a second bearing magnifies the issue of even slight misalignment, which can cause drastic load concentrations. So those two thrust bearings must be kept square with the shaft. I usually indicate to my clients that two bearings means alignment is twice as critical.

### An Alternative to Rohn Bearings?

What about something other than Rohn bearings? And the immediate answer is, of course, it's certainly possible. Such bearings usually only have one, or at most, two, setscrews—not three evenly spaced ones like the Rohn's have. But the major limitation of such bearings is they're intended for use indoors. They will rust quickly when used outside in the weather. Yet I continue to see them used by clients and supplied by tower manufacturers. Here are some preventative measures I've used with these bearings.

1. Paint the entire bearing, including the flange and bearing surfaces, with Rustoleum Rusty Metal Primer—two coats.

2. Replace the Allen set screws with hex head bolts. These will be fine-thread bolts and will probably require some searching. But replace them, or you'll be climbing up to drill them out one day!

3. Be prepared to climb and grease such bearings, usually twice a year. Remember that water can migrate into the grease and freeze. Remember, too, that this same grease can hold other debris or contaminants, some of which may lead to premature failure. Keep such bearings clean!

4. Try to cover the bearing with a suitable "blanket" or cover of some sort. Each installation will require something different, but the business end of a Plumber's Friend, vent stack covers, or other building parts can and do work. I usually use a large remnant from a truck tire inner tube, cut to shape and held to the mast by a hose clamp.

And finally, you may not need or want a real bearing (supporting vertical loads), but a simple bushing. This works especially well if you remember that you can reduce bending moment forces if your mast extends below the top of your tower about as far as it extends above the top. Most modern rotators can support heavy mast and antenna loads easily. Pictured in Figure 2 is a bushing made at K4VV's station with some Delrin stock and installed on his Pirod tower.

In true ham spirit, when talking about towers and thrust bearings, I'm reminded of K1VR's posting on the YCCC Web page (**www.yccc.org**) and listed under "Articles." It's called, simply: "FAQ: Thrust Bearings." It's filled with neat, often witty but always useful ideas, especially a step-by-step description of how to refurbish a Rohn thrust bearing.

NCJ

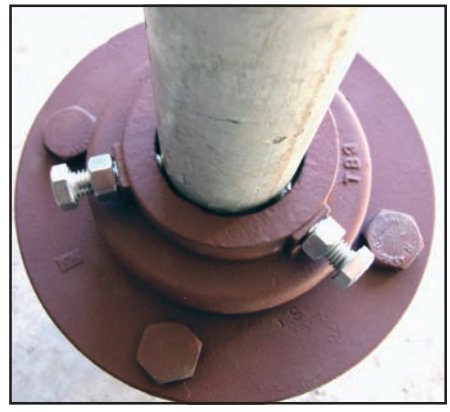


**Figure 1—Probably the most popular and misunderstood bearing in ham radio use: the TB-series from Rohn.**

**Figure 2—A 3-inch bearing/bushing made from DELRIN stock & installed on K4VV's Pirod tower. *K4VV PHOTO***

# Software for Contesters

Pete Smith, N4ZR

## Past and Future

We'll discuss two topics this month: one that may seem like a throwback, and the other very much on the cutting edge. First, let's look at the throwback.

If you're like me, and more than a few years out of high school, a lot of things have fled your brain. For example, the other day I wanted to calculate a table relating antenna height to angle of maximum radiation. I found a simple trig formula in Chapter 10 of Dave Leeson's great book *Physical Design of Yagi Antennas.*

No problem, I thought, just use *Excel*. Imagine my surprise to discover that *Excel* wants you to specify angles in radians when doing any calculation involving trig functions. Radians? I thought that was a company that made towers. Convert degrees to radians? Without trig tables? You must be kidding.

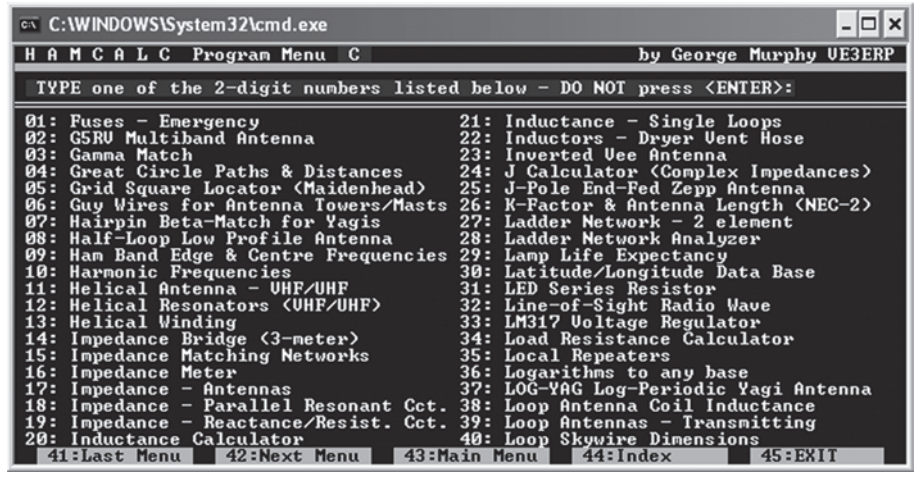



**Figure 1—Screen shot of one of the sub-menus of *Hamcalc.***

This got me thinking about the venerable freeware *Hamcalc*. This true labor of love by George "Murph" Murphy, VE3ERP, available from **www.cq-amateur-radio.com**, was first offered in 1993 and is currently in Version 79, last updated in July 2005. It incorporates over 300 different programs, written in *BASIC*.

It is really hard to adequately capture the sheer breadth of *Hamcalc.* The other day I found myself needing to calculate the value of the series current limiting resistor in an LED indicator circuit. Calling up the main alphabetical menu in *Hamcalc*, I found the Ls, and in a few seconds I had found a dedicated LED series resistor calculator. Figure 1 is a screen shot of one of the sub-menus.

*Hamcalc*'s calculators are impressively refined. For example, in the case of the LED circuit, the calculator gives you several standard values of resistors, and reports what the resulting power dissipation will be for each. Working from the tables in any component catalog, it is easy to come up with a design that meets your criteria for a safety margin. Other calculators, like the RC active audio filter program, give you a choice of optimal or standard resistor and capacitor values. Murph appears to have spent a lot of time and effort consulting with experts in various areas, and he is generous in giving credit to those who helped validate each program.

Is there a downside? *Hamcalc* runs only under *DOS* or in a *DOS* window, with all the limitations that implies, plus some of its own. It *must* be installed in the root directory of your C: drive, and cannot provide printer output to anything but a standard parallel printer—no USB. The program is strictly keyboard-driven—no mouse. It would be terrific if a Visual Basic programmer would get together with Murph and do a port of *Hamcalc* to *Windows*, but for freeware that may be a long shot.

### A Real Time Scoreboard

Now, let's go back to the future and the cutting edge. For a long time, people have wondered what it would be like, not only to gather on 3830 after a contest and swap claimed scores, but actually to know how things were going *during* the contest—a real-time scoreboard.

My research—hopefully more reliable than my memory—suggests that the organizers of WRTC 2002 in Finland were the first to implement a real-time Internet scoreboard. There were some bugs, but it was exciting to hear someone on the air and know that he was leading the pack or closing on the leader.

Next up, probably, was W1VE's plug-in for *Writelog*, which would create a file giving whatever score information you wanted to a Web site, where the information could be displayed. Again, there was a flurry of excitement in the *Writelog* community, and it was tried for a few contests, but critical mass was never achieved, probably because it was a logger-specific solution.

Enter N8VW. I in the fall of 2004 he implemented a real-time Web scoreboard that required manual posting of score data, and attracted only a few enthusiasts. The consensus at the time was that it wasn't realistic to expect serious contesters to take time out to post manually. There was some desultory conversation about possible standards for automated posting, to permit incorporating such routines in contest logging programs, but again, the dust settled and nothing much developed.

This fall, the idea's time may have finally come. Bruce Horn, WA7BNM, is working with N8VW, K1TTT and a small group of knowledgeable contesters and software authors on automated score reporting. It all began during CQWW SSB, when Bruce started aggregating real-time scores that people were posting on various Web pages. Pat, N8VW reactivated his scoreboard experiment. Shortly thereafter, Bruce floated a first draft of a document defining what a common reporting format might look like. He and K1TTT launched a first rough-and-ready test for the CW Sweepstakes, using an add-in to *N1MM Logger*. It worked well.

Discussion of evolving the data format further has been hot and heavy. A second draft is out, and more testing of the real-time scoreboard concept went on during SS SSB. As far as I can tell, all the serious players in this area are currently working on a common approach, which I think is very good news; the last thing we need is a contesting version of the VHS versus Beta death match of the '80s.

So why should you care? Well, once a standard data format is worked out, all the program authors will be easily able to incorporate automatic score reporting capabilities in their software, and the data will be usable by any Web site that wants to display it. For users, it will be as simple as checking a box in the software, or maybe adding a line to an .ini file.

Initially, most of the thinking has been about scoreboard applications, where Web sites could display standings in a contest, or in classes within a contest, or even in multiple contests on a given weekend. But just imagine all the other possibilities. More general-interest ham radio Web sites, like QRZ.COM, could easily incorporate contesting "news feeds" in their offerings, drawing from the more-specialized scoreboard sites.

Figure 2 is a screen shot of N8VW's scoreboard Web site (**scoreboard.oqp.us/**), as a preview of what can be done. WA7BNM's site, **/www.hornucopia.com/xml4contestresults.html**, offers a bird's eye view of the effort to develop a common format for score reporting.

By the time this column comes out, things will be much farther along than they are now, so check those Web sites to find out what is going on currently. I hope you share my excitement about the prospect.

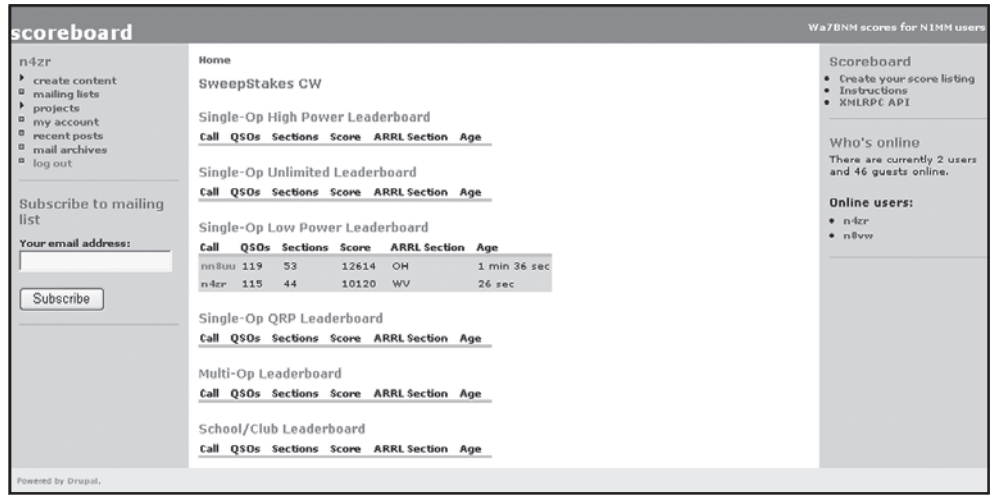



**Figure 2—Screen shot of N8VW's scoreboard Web site.**

# Contest Calendar

**Compiled by Bruce Horn, WA7BNM**

Here's the list of major contests of possible interest to North American contesters to help you plan your contesting activity through April 2006. The web version of this calendar is updated more frequently and lists contests for a 12-month period. It can be found at: **www.hornucopia.com/contestcal/**.

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

### January 2006

| | |
|---|---|
| SARTG New Year RTTY Contest | 0800Z-1100Z, Jan 1 |
| AGCW Happy New Year Contest | 0900Z-1200Z, Jan 1 |
| ARS Spartan Sprint | 0200Z-0400Z, Jan 3 |
| WQF QRP Party | 0000Z-2400Z, Jan 6 |
| Midwinter Contest, CW | 1400Z-2000Z, Jan 7 |
| Original QRP Contest | 1500Z, Jan 7 to 1500Z, Jan 8 |
| ARRL RTTY Roundup | 1800Z, Jan 7 to 2400Z, Jan 8 |
| EUCW 160m Contest | 2000Z-2300Z, Jan 7 and 0400Z-0700Z, Jan 8 |
| Midwinter Contest, Phone | 0800Z-1400Z, Jan 8 |
| DARC 10-Meter Contest | 0900Z-1059Z, Jan 8 |
| Kid's Day Contest | 1800Z-2400Z, Jan 8 |
| Hunting Lions in the Air Contest | 0000Z, Jan 14 to 2400Z, Jan 15 |
| 070 Club PSKFest | 0000Z-2400Z, Jan 14 |
| MI QRP January CW Contest | 1200Z, Jan 14 to 2359Z, Jan 15 |
| North American QSO Party, CW | 1800Z, Jan 14 to 0600Z, Jan 15 |
| NRAU-Baltic Contest, CW | 0530Z-0730Z, Jan 15 |
| NRAU-Baltic Contest, SSB | 0800Z-1000Z, Jan 15 |
| Run for the Bacon QRP Contest | 0200Z-0400Z, Jan 16 |
| NAQCC 80m Straight Key/Bug Sprint | 0130Z-0330Z, Jan 19 |
| LZ Open Contest | 1200Z-2000Z, Jan 21 |
| Hungarian DX Contest | 1200Z, Jan 21 to 1200Z, Jan 22 |
| North American QSO Party, SSB | 1800Z, Jan 21 to 0600Z, Jan 22 |
| ARRL January VHF Sweepstakes | 1900Z, Jan 21 to 0400Z, Jan 23 |
| CQ 160-Meter Contest, CW | 0000Z, Jan 28 to 2359Z, Jan 29 |
| REF Contest, CW | 0600Z, Jan 28 to 1800Z, Jan 29 |
| BARTG RTTY Sprint | 1200Z, Jan 28 to 1200Z, Jan 29 |
| UBA DX Contest, SSB | 1300Z, Jan 28 to 1300Z, Jan 29 |

### February 2006

| | |
|---|---|
| Vermont QSO Party | 0000Z, Feb 4 to 2400Z, Feb 5 |
| YL-ISSB QSO Party | 0000Z, Feb 4 to 2359Z, Feb 5 |
| 10-10 Int. Winter Contest, SSB | 0001Z, Feb 4 to 2359Z, Feb 5 |
| Minnesota QSO Party | 1400Z-2000Z, Feb 4 |
| AGCW Straight Key Party | 1600Z-1900Z, Feb 4 |
| Delaware QSO Party | 1700Z, Feb 4 to 0500Z, Feb 5 and 1300Z, Feb 5 to 0100Z, Feb 6 |
| Mexico RTTY International Contest | 1800Z, Feb 4 to 1759Z, Feb 5 |
| North American Sprint, SSB | 0000Z-0400Z, Feb 5 |
| ARCI Winter Fireside SSB Sprint | 2000Z-2400Z, Feb 6 |
| ARS Spartan Sprint | 0200Z-0400Z, Feb 7 |
| KCJ Topband Contest | 1200Z, Feb 9 to 1200Z, Feb 10 |
| CQ WW RTTY WPX Contest | 0000Z, Feb 11 to 2359Z, Feb 12 |
| New Hampshire QSO Party | 0001Z, Feb 11 to 0001Z, Feb 13 |
| Asia-Pacific Spring Sprint, CW | 1100Z-1300Z, Feb 11 |
| Dutch PACC Contest | 1200Z, Feb 11 to 1200Z, Feb 12 |
| Louisiana QSO Party | 1500Z, Feb 11 to 0300Z, Feb 12 |
| OMISS QSO Party | 1500Z, Feb 11 to 1459Z, Feb 12 |
| FISTS Winter Sprint | 1700Z-2100Z, Feb 11 |
| British Columbia QSO Challenge | 1800Z, Feb 11 to 1800Z, Feb 12 |
| RSGB 1st 1.8 MHz Contest, CW | 2100Z, Feb 11 to 0100Z, Feb 12 |
| North American Sprint, CW | 0000Z-0400Z, Feb 12 |
| ARRL School Club Roundup | 1300Z, Feb 13 to 0100Z, Feb 18 |
| AGCW Semi-Automatic Keying Evening | 1900Z-2030Z, Feb 15 |
| ARRL Inter. DX Contest, CW | 0000Z, Feb 18 to 2400Z, Feb 19 |
| Run for the Bacon QRP Contest | 0200Z-0400Z, Feb 20 |
| Russian PSK WW Contest | 2100Z, Feb 24 to 2100Z, Feb 25 |
| CQ 160-Meter Contest, SSB | 0000Z, Feb 25 to 2359Z, Feb 26 |
| REF Contest, SSB | 0600Z, Feb 25 to 1800Z, Feb 26 |
| UBA DX Contest, CW | 1300Z, Feb 25 to 1300Z, Feb 26 |
| Mississippi QSO Party | 1500Z, Feb 25 to 0300Z, Feb 26 |
| CZEBRIS Contest | 1600Z, Feb 25 to 2400Z, Feb 26 |
| North American QSO Party, RTTY | 1800Z, Feb 25 to 0600Z, Feb 26 |
| High Speed Club CW Contest | 0900Z-1100Z, Feb 26 and 1500Z-1700Z, Feb 26 |
| North Carolina QSO Party | 1700Z, Feb 26 to 0300Z, Feb 27 |

### March 2006

| | |
|---|---|
| ARRL Inter. DX Contest, SSB | 0000Z, Mar 4 to 2400Z, Mar 5 |
| Open Ukraine RTTY Championship | 2200Z-2359Z, Mar 4 (Low Band) and 0000Z-0159Z, Mar 5 (Low Band) and 0800Z-1159Z, Mar 5 (High Band) |
| DARC 10-Meter Digital Contest | 1100Z-1700Z, Mar 5 |
| ARS Spartan Sprint | 0200Z-0400Z, Mar 7 |
| AGCW YL-CW Party | 1900Z-2100Z, Mar 7 |
| Idaho QSO Party | 0000Z, Mar 11 to 2400Z, Mar 12 |
| RSGB Commonwealth Contest | 1000Z, Mar 11 to 1000Z, Mar 12 |
| AGCW QRP Contest | 1400Z-2000Z, Mar 11 |
| Oklahoma QSO Party | 1400Z, Mar 11 to 0200Z, Mar 12 and 1400Z-2000Z, Mar 12 |
| North American Sprint, RTTY | 0000Z-0400Z, Mar 12 |
| UBA Spring Contest, CW | 0700Z-1100Z, Mar 12 |
| NSARA Contest | 1200Z-1600Z, Mar 12 and 1800Z-2200Z, Mar 12 |
| Wisconsin QSO Party | 1800Z, Mar 12 to 0100Z, Mar 13 |
| 10-10 Inter. Mobile Contest | 0001Z-2359Z, Mar 18 |
| BARTG Sprint RTTY Contest | 0200Z, Mar 18 to 0200Z, Mar 20 |
| Russian DX Contest | 1200Z, Mar 18 to 1200Z, Mar 19 |
| CLARA and Family HF Contest | 1700Z, Mar 18 to 1700Z, Mar 19 |
| Virginia QSO Party | 1800Z, Mar 18 to 0200Z, Mar 20 |
| 9K 15-Meter Contest | 1200Z-1600Z, Mar 19 |
| Run for the Bacon QRP Contest | 0200Z-0400Z, Mar 20 |
| CQ WW WPX Contest, SSB | 0000Z, Mar 25 to 2359Z, Mar 26 |
| Spring QRP Homebrew Sprint | 0000Z-0400Z, Mar 27 |

### April 2006

| | |
|---|---|
| Kid's Roundup | 1400Z, Apr 1 to 2200Z, Apr 2 |
| SP DX Contest | 1500Z, Apr 1 to 1500Z, Apr 2 |
| EA RTTY Contest | 1600Z, Apr 1 to 1600Z, Apr 2 |
| Missouri QSO Party | 1800Z, Apr 1 to 0500Z, Apr 2 and 1800Z-2400Z, Apr 2 |
| ARS Spartan Sprint | 0100Z-0300Z, Apr 4 |
| JIDX CW Contest | 0700Z, Apr 8 to 1300Z, Apr 9 |
| ARCI Spring QSO Party | 1200Z, Apr 8 to 2400Z, Apr 9 |
| EU Spring Sprint, SSB | 1500Z-1859Z, Apr 8 |
| Georgia QSO Party | 1800Z, Apr 8 to 0359Z, Apr 9 and 1400Z-2359Z, Apr 9 |
| Yuri Gagarin International DX Contest | 2100Z, Apr 8 to 2100Z, Apr 9 |
| UBA Spring Contest, SSB | 0600Z-1000Z, Apr 9 |
| ES Open HF Championship | 0500Z-0559Z, Apr 15 and 0600Z-0659Z, Apr 15 and 0700Z-0759Z, Apr 15 and 0800Z-0859Z, Apr 15 |
| EU Spring Sprint, CW | 1500Z-1859Z, Apr 15 |
| Michigan QSO Party | 1600Z, Apr 15 to 0400Z, Apr 16 |
| EA-QRP CW Contest | 1700Z-2000Z, Apr 15 (20-10m) and 2000Z-2300Z, Apr 15 (80m) and 0700Z-1000Z, Apr 16 (40m) and 1000Z-1300Z, Apr 16 (20-10m) |
| Ontario QSO Party | 1800Z, Apr 15 to 1800Z, Apr 16 |
| YU DX Contest | 2100Z, Apr 15 to 0500Z, Apr 16 and 0900Z-1700Z, Apr 16 |
| Run for the Bacon QRP Contest | 0100Z-0300Z, Apr 17 |
| Low Power Spring Sprint | 1400Z-2000Z, Apr 17 |
| DX Colombia International Contest | 0000Z, Apr 22 to 2359Z, Apr 23 |
| SP DX RTTY Contest | 1200Z, Apr 22 to 1200Z, Apr 23 |
| Florida QSO Party | 1600Z, Apr 22 to 0159Z, Apr 23 and 1200Z-2159Z, Apr 23 |
| Helvetia Contest | 1300Z, Apr 29 to 1259Z, Apr 30 |

# Contest Tips, Tricks & Techniques

By Gary Sutcliffe, W9XT

## Tactical Decisions—Part 2

Tactical decisions are made continuously during a contest in an effort to maximize your score. Changes in propagation conditions, drops in rate, lower than expected multiplier totals and other factors make it necessary to change what you are doing. In the last installment of CTT&T we looked at what factors affect the decision making of contesters. In particular we looked at the decision to CQ or search and pounce (S&P), band selection, SO2R tactics, and selecting off times. In this installment we take a look at some other tactical decisions.

### Multiplier Hunting

Balancing the number of QSOs with the number of multipliers can have a huge effect on your score. Sometimes it is necessary to hunt for multipliers. Sometimes you may even consider leaving a good run frequency to look for multipliers. The correct decision can be crucial.

Billy, AA4NU, tends to look for multipliers on the low bands around sunrise, and looks for them on the higher bands around sunset. He also mentions looking at times with known special openings, like an Africa to W4 opening that occurs during one part of the sunspot cycle at their sunrise.

The decision to search for multipliers varies for Bill, AA4LR, depending on the contest. In WPX, multipliers just come with rate. Bill does not worry too much about multipliers in SS, and will not really look for them until the last 12 hours of the contest.

As others have mentioned, in contests like SS and WPX, rate is king. K5TR takes it a bit further stating that in DX contests multipliers will call you. George recalls a sign at the N5AU contest station that read "Call CQ. Mults answer CQs". There are a number of rare multipliers that will make close to 1000 QSOs and never make a CQ. You will miss them if you are out S&Ping for multipliers.

Along these lines, I have had good success with power splitting to an antenna pointed to a second location. For example, I might be running Europe but have a second antenna pointed to Africa or South America. From time to time I will switch from CQing into the European antennas only, to transmitting into the African and European antennas at the same time. I will lose 3 dB into Europe (which is probably not too big a deal if the band is really open), but I will go up several S-units into the secondary location. With everyone else concentrating on Europe, my half power signal into Africa will stand out like a beacon to the S&Per in that location.

One way to work multipliers without hunting is to have them call you while CQing, and move them to other bands. K5TR mentions that you have to decide if the disruption is worth it. George notes that it is usually not worthwhile to move a P4Ø since there will probably be several serious operations there for the whole contest. If you get a call from 5Z4/KC4NYU, you should immediately move him to every open band since he may not be on much longer.

Randy, K5ZD, and George, K5TR, note it is important to know how much a multiplier is worth. Many logging programs will give you a number indicating how many regular contacts a new multiplier is worth. Others will give the figure in how many minutes a new multiplier is worth at the current QSO rate. You can use that to judge how long to spend in a pile up. Often there will be other new multipliers available while you waste too much time in a big pileup.

You also need to know what the chances are of finding new multipliers by searching for them. Randy points out that it changes during the course of the contest. That can skew the real value from the number on the computer screen. Early in the contest there will be a large number of easy multipliers that you will work just by keeping the rate up.

If you come across a juicy multiplier that has too big a pile up on the first day, Brian, N9ADG, suggests marking down the time and frequency. There is a chance he will show up again at around the same time and place the next day.

N1UR has goals for band multipliers and will adjust his operating to help make those goals. For example, Ed might note that just before sunrise on Sunday morning during CQWW he does not have VK or ZL on 40. He will take an S&P pass through 40 meters hoping to pick them up. If he is unsuccessful, he will often try some CQs, hoping to pick up some relatively easy double multipliers. He would not do this on Saturday morning since he might work them during other operating. He would also not do this to try to pick up a KH2 because he does not expect to normally work a KH2.

### Mixed Modes

Some contests like the ARRL 10 Meter Contest and some state QSO parties allow you to operate mixed mode. In such cases, CW contacts usually have more point value. In the 10 Meter Contest they are worth twice as much as phone contacts.

W9RE likes to start out on phone in these contests because there is a big surge there at the beginning. He keeps the point differential in mind, but tries to switch at least every couple of hours to avoid missing any part-timers.

For the 10 Meter Contest Paul, EI5DI, feels that about 75% of your contacts should be on CW. He feels that you will not normally be able to work phone contacts at twice the rate as CW. At 75% CW you will average 3.5 points per contact. If you fall below 3.5, you might be having fun, but you may not be optimizing your score. Paul also notes that multipliers count for both modes, so you need to be sure that you keep your phone multipliers in line.

I find that there are normally more multipliers available on phone than on CW in the 10 Meter Contest. I sometimes find that I will have spent a large portion of the European opening on one mode on Saturday, so I make an effort to be on the other mode at that time on Sunday. I doubt there will be such a problem this year since there will probably not be an opening to Europe on 10 meters! On the second day I also make an effort to move new multipliers to the other mode.

### Other Tactics

Zack, W9SZ, notes that he has been upgrading his VHF station for contests by adding more bands, and the result is that he has had to change his tactics. With more bands, there are more stations to work.

K6UFO tries to compare his current rate to similar times in past contests adjusted for current conditions to decide on changing tactics. Before changing, Mark tries to come up with several possible tactics first. These might be to change to S&P, change bands, move to another part of the same band, etc. He might quickly try several tactics before deciding on one. Mark notes that most contesters probably stick with a tactic too long, as opposed to changing too soon.

That is especially true while CQing. If you call CQ four times without an answer, you might feel that is a losing proposition. It will take less than a minute to make

those four CQs. At the same time you might only be able to find a new station to work every few minutes on S&P. You will be more mentally involved in S&P–copying calls, checking for dupes and tuning for the next possible station. It may feel more productive to S&P than CQ because your mind is more actively engaged. Watch the rate meter to be sure.

Sometimes you will find yourself in a frequency fight. Just like deciding how long to stay in a pile up for a new multiplier, K5ZD says you need to know when you are better off just moving on. Past experience and the sound of the band can help you make that decision.

N3BB uses daylight periods to help him make a lot of his decisions. Jim used to make up charts telling when sunrise was happening in a given area, when certain bands would open up, etc. After a lot of experience, Jim uses a Geochron on the wall to keep tabs on what is happening around the world and makes adjustments accordingly. For example, he will notice it is sunrise in Europe and that he should be on 40 or 80 meters as signals will be rising as the target areas reach sunrise. A bit later he will notice that Europe is in full sun and the low bands have dried up to that area, and it will be several hours until local sunrise and better propagation to JA and other parts of the Pacific. This tells Jim it might be a good time to get a few hours of sleep. Jim finds a real time daylight-darkness indicator invaluable. I have found it also to be very valuable, and run the W6EL *Prop* program with the day/night map in a separate window on the PC.

When in S&P mode, NA3V divides up the band into 3 zones. The bottom of the band is the high power, high speed and low turn over portion of the band. Basically the big guns sit out here for most of the contest. The top zone is the area the low power, and slower stations hang out. This area has the highest turnover rates. The middle is a mixture of the high and low power stations, and has moderate turn over. Jim starts at the top because he can usually work these on the first call. Next he moves to the middle zone because this is generally where he finds the most new multipliers. Finally, he works the bottom after the pile ups have thinned, and returns to the top because there will likely be more new stations to work there. If Jim feels there will be a high turnover he will do the middle section again before moving to another band.

N9ADG suggests that just moving from one area of the band to another can help. Brian says people are creatures of habit, and tend to stay where they are more familiar.

Changing CW speeds can have a remarkable effect when the rate slows down. I operated with a different club for Field Day the last couple of years. Bob, W9LO, was my partner. I always kept my speed in the low 20 WPM area because FD operators tend to be less skilled than ops in other contests (or "operating event" as FD is officially known). Bob felt that you should keep the keyer much higher to keep the QSO times short. We decided to agree to disagree that first year. When I started a shift I noticed that Bob had good CQ runs at high speed, but often it slowed down towards the end of his shift. I started out at my lower speed and had a higher initial rate, but after a while would increase, and find a rise in rate. I will now vary my CW rate when my CQ rate slows down. It seems that the change attracts different operators.

W6WRT, K5TR and other mentioned that you learn these things by experience. After you operate enough contests you learn by "feel" when it is time to make a change.

Thanks go out to this topic's contributors: AA4LR, AA4NU, EI5DI, GW4BLE, K5AF, K5TR, K5ZD, K6UFO, K9AY, KJ9C, N1UR, N3BB, N9ADG, NA3V and W9SZ. Thanks guys! CTT&T works because of contesters sharing their experience.

**Topic For Next Time**

**Eliminating Noise (Deadline January 12, 2006)**

"You can't work them if you can't hear them" and noise is the main reason you can't hear them. What noise sources have you had trouble with? How did you track it down and cure it? What antennas and other equipment have you used to reduce natural noise (QRN) on the low bands or other bands?

Send in your ideas on these subjects or suggestions for future topics. You can use the following routes: Postal Mail—3310 Bonnie Lane, Slinger, WI 53086. E-mail—**w9xt@unifiedmicro.com**. Be sure to get them to me by the deadline. NCJ

# September 2005 CW Sprint Results

**Boring Amateur Radio Club**

The fifty-seventh CW Sprint was held on September 11 UTC—a very memorable date in our recent history. We received logs from 174 stations, but our records indicate that 303 stations participated—each making at least two QSOs with stations that submitted logs. While the maximum number of multipliers worked was 49, it appears that at least 55 multipliers were active.

Working multipliers is certainly a hit or miss situation. It takes a certain amount of luck and *je ne sais quoi* to pull off a top multiplier. For an example, K9PG flew down the NP4Z's station for this contest and made 248 QSOs. After the contest, Paul commented that he never heard N6TR—who made 369 QSOs. The fact that these two gentlemen never crossed paths is a testament to the general chaos that the CW Sprint generates for its four-hour duration.

Conditions for the September event are always interesting. In general, the East Coast stations are a bit happier in September because 20 meters tends to stay open longer. The West Coast stations have a hard time QSYing to 40 meters when it is still light outside and always dread having to go to 80 meters where the summer QRN is typically still a factor. The September event seems to have winners spread around the country. Recent winners include N9RV, W4AN, N6TR, K1TO, NN1N at K4VX, K5GA and then of course the string of victories by N5TJ. The northeast has had several showings in the top few scores—with K5ZD, N2NT and K1KI often being in the running.

This year, the northeast got the short end of the conditions. While N2NT and N9RV got off to a blazing start, they were not able to maintain their rates going into the second hour and both missed the Top Ten. Out West, stations like N2IC and N6TR got off to a slow start, but found conditions improving for them as the contest went on and finished strong. This left the stations in Texas with the best of both worlds: a strong start and strong enough finish to put many of them into the Top Ten listing, along with the winning score in the high power and QRP categories.

**QRP Category**

Eight logs were submitted in the QRP category. Dale Martin, KG5U, added another QRP victory to his resume with a strong score over the rest of the pack. Gary, NØSXX, stayed in the chair the whole four hours and made 110 QSOs to come in second. N6WG came in third, over the first time effort from NA4BW.

***Contest Mobile!***

*One of the previous winners of the September CW Sprint decided to try working the contest during the drive home from the Melbourne Hamfest. It seems that this event often conflicts with the September Sprint and has prevented him from doing both. Here is Dan, K1TO's, story.*

The September CW Sprint is held the Saturday evening of the Melbourne Hamfest, a traditional Florida Contest Group gathering spot every year (except last year when one of those huge named storms caused a cancellation). A few times, I've made the 3-plus hour trip each way in the same day followed by the Sprint from home, but in recent years, I've not managed to operate at all in September. This time, George, K5KG, offered to drive and "watch," steadfastly refusing to share the operating, so off we went on our way home to the Sarasota area.

Recalling the fine effort that George and Jim, VE7ZO, posted in the FQP 2004, I figured that George's mobile set-up got out well—and it did. Sure, it wasn't like being at home with Yagis and full power, but the IC-706 and Screwdriver worked surprisingly well. No SO2R capability here, of course, so I started on 20 (which was its typical self—no W4s to work, but everything else was fair game). Finishing the first log page—actually the back of a printed *PowerPoint* presentation—of 27 Qs at 0019Z was very encouraging! With 80 an hour, 300 might be possible! Uh-huh…

Immediately afterward, I was beat out repeatedly and put only one Q in the log in the next 3 minutes, which quickly grounded me in reality. The half-hour ended with 39 in the log. Signals steadily weakened as propagation slowly disappeared. Mark, N5OT, gets the prize for being the most patient as he finally pulled my number through the fading, after which the hour ends with #73. At 0106Z we arrived at Joe, W4SAA's place and dropped him off. After our farewells, I was back on and, except for N2RM, only worked western stations—slowly.

Time for a quick change to 40 meters! George pulled over for a 3-minute band change in the dark. Signals on 40 were generally louder and the '706 struggled with its filter blow-by. I'm pleased that the CA boys were hearing us well on 40. This is a heavily contested period, with multiple callers after most doublets, but we hung in there and beat some folks out. More repeats were needed with loud adjacent signals leaking in.

Thirty-seven Qs went in the log in the first 30 minutes on 40, but the rate slowed. I realized that the antenna was no longer tuned properly and we spent 5 minutes trying to get it resonant again. Those efforts turned the rate from "blah" to "good" again as Trey, N5KO, entered the log. N6TR checked in with a huge number relative to that on 20. Sure enough, he later reported an unusually slow start, then Rate Acceleration Time. At 0230Z, there were 157 Qs in the log, even with 15 minutes off. Soon afterward, it was obvious that the sheep were flocking to 80 right on schedule, as only 11 Qs were made in the next 16 minutes.

Arriving safely back at my place, I thanked George profusely and my mobile effort was over with 168 (claimed) QSOs. Two of my most pleasant 2005 operating experiences, including this one, have been from a mobile. Vic, N4TO, and I have done the FQP each of the last 4 years and we managed over 3000 CW-only QSOs last April in the 20 FQP hours!

Mobiling in the Sprint is a bit masochistic, especially hand-keying and hand-logging (so you can't really Keep Score), but the rush has me looking forward to the next one. I'd say "see you in February", but that conflicts with the Orlando hamfest. Hey, George, I got an idea…

Operating your first ever Sprint in the QRP category sure takes a lot of courage. W4QO, NØQT, KM3T and VE3RKM finish out the top eight.

### Low Power Category

The low power category saw a close finish between two "sevens"—but from different coasts. KM7W, piloted by Chris Hurlbut, KL9A, used a unique QSO number scheme to confuse everyone (including the log checkers), but still ended up beating Larry, K7SV, who operated from his home in Virginia. Chris had trouble in the first hour, but as conditions improved for him, he made up ground. Mel, KJ9C, finished third ahead of a pack of four scores which included sprint founder W6OAT, W4OC, VE3DZ and K9PG at NP4Z. AA5B, N9CK and KU8E/4 finish out the competitive Top Ten. K1HT, who typically shows up near the top of this list, was done in by the bad conditions. He was edged out by N6PN at 12th place and WW2Y at 11th place. N6PN has a special place in my heart—he was on the other end of the radio when I made my first ever QSO in ham radio—almost 40 years ago now. One of the great things about ham radio is keeping tabs on people you have known nearly all your life.

### High Power

There were two distinct rate profiles for the scores making it into the Top Ten. Some stations got off to a fast start, hanging onto their good rate in the second hour, but had a horrible time in the 3rd hour. They recovered enough in the 4th hour to hang onto a spot in the Top Ten. Other stations seemed to be able to string together 4 consecutive hours of good rate and catch up with the other stations during that critical 3rd hour. Take a look at the hourly rates in the Top Ten box to see this.

After the contest was over, four stations had scores within a few QSOs of each other. Dave McCarty, K5GN, produced an almost error-free log and stayed ahead of N5RZ (at K5TR), N6TR/7 and N2IC/5. Steve, N2IC, had a golden log, an impressive accomplishment with 350 QSOs. Steve was limited to one radio due to a lightning strike the week before the contest. Perhaps being able to focus on one radio helped him get that golden log. In fifth place was Dan, N6MJ, operating at the W6YI superstation. Dan has made the move from low power to high power without missing a beat. Howie, N4AF, makes his second Top Ten showing—the first being with his old K4PQL call ten years ago. Next comes Jim George, N3BB/5, whose participation in the NCCC practice Sprints paid off with his first ever Top Ten showing. Rumor also has it that he spent an hour on the phone with his Ssprint mentor just before the contest. K5GA, N6ZZ/5 and W4PA finish out the Top Ten.

In the ten band change or less box,

**Dave, K5GN, smiling after winning the September High Power CW Sprint.**

**TOP 10**

| | *Score* | *Band Changes* | *QSOs Lost* | *00Z* | *01Z* | *02Z* | *03Z* |
|---|---|---|---|---|---|---|---|
| K5GN | 17591 | 144 | 1 | 105 | 88 | 76 | 90 |
| K5TR | 17390 | 146 | 4 | 108 | 92 | 81 | 89 |
| N6TR | 17343 | 96 | 4 | 92 | 91 | 88 | 99 |
| N2IC | 17150 | 4 | 0 | 91 | 93 | 75 | 91 |
| W6YI | 16779 | 70 | 6 | 102 | 89 | 79 | 88 |
| N4AF | 15886 | 2 | 7 | 96 | 85 | 64 | 94 |
| N3BB | 15651 | 142 | 4 | 98 | 88 | 75 | 72 |
| K5GA | 15604 | 100 | 3 | 107 | 77 | 79 | 70 |
| N6ZZ | 15533 | 4 | 5 | 82 | 76 | 80 | 80 |
| W4PA | 15488 | 169 | 7 | 106 | 87 | 81 | 79 |

**Top 10 One Radio**

| | *Score* | *Band Changes* | *QSOs Lost* | *00Z* | *01Z* | *02Z* | *03Z* |
|---|---|---|---|---|---|---|---|
| N2IC | 17150 | 4 | 0 | 91 | 93 | 75 | 91 |
| N4AF | 15886 | 2 | 7 | 96 | 85 | 64 | 94 |
| N6ZZ | 15533 | 4 | 5 | 82 | 76 | 80 | 80 |
| N5OT | 14985 | 2 | 4 | 86 | 93 | 73 | 81 |
| W6YX | 14688 | 2 | 1 | 82 | 68 | 86 | 70 |
| K6NA | 14674 | 8 | 2 | 89 | 81 | 70 | 79 |
| N6AN | 14504 | 8 | 6 | 78 | 79 | 63 | 76 |
| K1KI | 14335 | 6 | 4 | 89 | 86 | 64 | 66 |
| N6TV | 14310 | 2 | 4 | 82 | 80 | 75 | 81 |
| W4EF | 13938 | 2 | 4 | 80 | 71 | 75 | 77 |

**Top 10 QSOs**

| | |
|---|---|
| K5TR | 370 |
| N6TR | 369 |
| K5GN | 359 |
| W6YI | 357 |
| W4PA | 352 |
| N2IC | 350 |
| N2NT | 344 |
| N9RV | 344 |
| N4AF | 338 |
| N2NL | 337 |

**Top 10 Multipliers**

| | |
|---|---|
| K5GN | 49 |
| N2IC | 49 |
| N6AN | 49 |
| N6ZZ | 49 |
| K7NV | 48 |
| KJ9C | 48 |
| N6RO | 48 |
| W6YX | 48 |
| Many | 47 |

**Top 10 Low Power**

| | |
|---|---|
| KM7W | 12604 |
| K7SV | 12236 |
| KJ9C | 11328 |
| W6OAT | 10755 |
| W4OC | 10664 |
| VE3DZ | 10534 |
| NP4Z | 10428 |
| AA5B | 10004 |
| N9CK | 9963 |
| KU8E | 9761 |

**Top 10 QRP**

| | |
|---|---|
| KG5U | 6084 |
| NØSXX | 3740 |
| N6WG | 2212 |
| NA4BW | 1764 |
| W4QO | 1176 |
| NØQT | 455 |
| KM3T | 72 |
| VA3RKM | 1 |

**Top 10 Band Changes**

| | |
|---|---|
| W9RE | 170 |
| W4PA | 169 |
| N9RV | 151 |
| K5TR | 146 |
| K5GN | 144 |
| N3BB | 142 |
| N2NT | 132 |
| AA3B | 100 |
| K5GA | 100 |
| N2NL | 98 |

some very nice scores from N5OT, W6YX, K6NA, N6AN, K1KI, N6RV and W4EF rise up to join N2IC and N4AF.

### Team Competition

The Northern California Contest Club pulled off their third team victory with a comfortable margin over the PVRC/FRC team. Still, we are all very thankful for the efforts by the PVRC/FRC organizers, as Maryland was a perpetual rare multiplier for a long time. The Southern California Contest Team came in third followed by the Society of Midwest Contesters. Overall, 17 teams were registered. If you are interested in helping improve the activity in the contest, sponsoring a team is a proven way to do it.

### Golden Logs

| | |
|---|---|
| N2IC | 350 |
| W2RQ | 315 |
| AA3B | 307 |
| K5OT | 292 |
| K4BAI | 283 |
| N4ZZ | 280 |
| KM7W | 274 |
| K9BGL | 266 |
| W6EEN | 250 |
| N2GC | 226 |
| N4CW | 100 |
| K8BB | 71 |
| N6XI | 58 |
| NE6I | 47 |
| NØQT | 35 |
| K2SX | 30 |
| KZ5OM | 30 |
| KL7WV | 28 |
| N2ZN | 7 |
| W1DY | 4 |

### Records

Four new records were established this time around. Brian, NA4BW, set a new QRP record for Georgia, beating the record set just last year by K4AQ. Gary, NØSXX, bumped up his QRP Colorado record from February by 500 points. Peter, WW2Y, operated from Nebraska and blew away the six-year-old low power record previously held by KA9FOX. Kyle, WA4PGM, operated from VP9 and established the low power record there.

### Next Time

The next *NCJ* CW Sprint will be held on February 12 UTC (Saturday February 11 local time). For team registration, use the NCJ web page at **www.ncjweb.com**. Logs can be submitted via e-mail to **cwsprint@kkn.net** or using the log submission form on the *NCJ* Web site. Logs are due seven days after the contest.

Check out the web resources at **n6tr.jzap.com/sprint.html** and rules, records and previous results at the *NCJ* Web page at **www.ncjweb.com**.

### Soapbox

First time using high-power in the sprint. Had a few problems—after 20 minutes, discovered my garage door was opening and closing when I transmitted on 20m. So I had to drop back to low power. Worked well on 40 meters, though.—AA4LR

First entry in a cw sprint in many years. Used dipoles and vertical on a push up mast. Lots of fun, as always.—AA5B

This was my third Sprint, and it's still a challenge. At least I didn't completely collapse like I did last time an hour into the contest! 40m and 80m were very noisy here—thanks for the patience so many of you had when we were having trouble hearing each other. My peanut whistle vertical on 80m isn't the greatest. Great contest!—AC5AA

Heard but did not work KS. Never heard another MO—KØOU

Just got back from fast trip to WA6BOB's place to pick up some tower sections and arrived home right at the start of the contest. My CW sucked till I had a few 807'S—K0UK

Made a 90-minute appearance. Sheesh, you'd think we were in a sunspot minimum the way the bands sounded.—K1AR

Death in family left only last hour to play but had my best Sprint rate ever.—K1GU

After a decent start on 40, conditions made this a tough contest from the Northeast. Still, I was happy to work N4CW/1 in ME and to hear a number of new call signs.—K1HT

Tnx to K5KG for the ride!—K1TO/M

First time tried low power...missed at least 50 QSOs that did not come back... 73 John—K3MD

Beat my previous best by a factor of two. Next time I hope to break 200. Thanks to all the great CW ops out there.—K3STX

Time out from relaying Katrina H&W traffic.—K4RO

Signals on all bands tested the dynamic range of the operator, from rock-crushing (e.g., W2RQ) to ESP (inside the long skip on 20). Backscatter improved after 0100, but so many had already gone to 40. All bands were noisy with the tropical wx. Congrats to all who braved the protons.—K5GN

Sorry to all for the bad signal in the first half of the contest. I had to open the K2/100 up and tighten screws on the finals to clean up my spark gap note.—K5WA

Tough conditions, so took some time off to watch Texas vs Ohio State. More people got the name Katrina on the first pass than I had expected. Those who asked for repeats usually just wanted to confirm. Then there were those who couldn't figure it out even with mul-

### Team Scores

*Northern California Contest Club #1*

| | |
|---|---|
| N6RO | 15264 |
| N2NL | 15165 |
| W6YX | 14688 |
| K6XX | 14352 |
| N6TV | 14310 |
| K7NV | 13056 |
| AE6Y | 13019 |
| W6RGG | 11421 |
| W6EU | 11308 |
| AJ6V | 9184 |
| | 131767 |

*Potomac and Frankford Radio Clubs #1*

| | |
|---|---|
| N4AF | 15886 |
| N2NT | 15136 |
| N2RM | 14536 |
| AA3B | 14122 |
| W2RQ | 13860 |
| K3WW | 13570 |
| K7SV | 12236 |
| N3AD | 10340 |
| W4AU | 7372 |
| VP9/WA4PGM | 5508 |
| | 122566 |

*Southern California Contest Club #1*

| | |
|---|---|
| W6YI | 16779 |
| K6NA | 14674 |
| N6AN | 14504 |
| K6LA | 14352 |
| W4EF | 13938 |
| W6EEN | 11750 |
| N6VR | 11220 |
| K6NR | 10755 |
| K6XT | 5565 |
| NE6I | 987 |
| | 114524 |

*Society Midwest Contesters #1*

| | |
|---|---|
| N9RV | 15136 |
| W9RE | 13889 |
| K9NW | 13596 |
| KØOU | 11424 |
| WT9U | 10794 |
| NP4Z | 10428 |
| N9CK | 9963 |
| K9MMS | 8694 |
| WI9WI | 8588 |
| | 102512 |

**Guest Ops**
K3CR (LZ4AX)
K5OT (at K5NA)
K5TR (N5RZ)
K5XR (W5ASP)
KL7WV (W3YQ)
KM7W (KL9A)
N2NL (at W6NL)
N6PN (at W6JZH)
N8SR (at N8JI)
NN7ZZ (N5LZ)
NP4Z (K9PG)
W1AW/6 (N6AA)
W4EF (at W6VIO)
W6EEN (N6RT)
W6RGG (at AA6G)
W6YI (N6MJ)
W6YX (at W6YX)
W7RN (K5RC)
W8KW (W8UE)

5. SSC (W4PA, K4RO, K4BAI, W4NZ, W4OC, KU8E, AA4GA, N4GI, AA4LR) ..... 90703
6. YCCC#1 (K1KI, W1WEF, K1DG, N2GC, K5ZD, K1HT, NB1B, W1EBI, WA1Z, W1JQ) ..... 84373
7. Azenmokers (N2IC, N6ZZ, N5OT, K5KA, K5YAA, KY7M, W7YS, KØCIE, NØQT, WØZW) ..... 83231
8. Austin (N3BB, N4OGW, K5OT, KZ5D, K5WA, AC5AA, KG5U) ..... 74120
9. NCCC#2 (W6OAT, K6LRN, K2KW, N6PN, W7RN, N6ZFO, N6WG, N6XI) ..... 60261
10. MWA (KØAD, NØAT, NAØN, KMØO KTØR, WGØM, KEØL) ..... 42825
11. PVRC/FRC #2 (WW2Y, W3YY, N4ZR, K3MD, K3STX) ..... 40366
12. NCC (K3CR, K2UA, VE3EJ, K8NZ, KL7WV) ..... 37226
13. CCO#1 (VE3DZ, VE3JM, VA3NR, VE3RZ, VE3IAY, N2ZO, VE3RCN) ..... 33659
14. SMC #2 (KJ9C, KA9FOX, K8GU, K9KM, WW9R) ..... 32461
15. Corner (KM7W, K4XU, KI7Y, K7WA, AL1G) ..... 31689
16. NCCC#3 (W6RK, K6OWL, N6EM, W6ZZZ) ..... 9549
17. YCCC#2 (K2SX, KM3T) ..... 582

tiple repeats. Makes me wonder if they listen to the news!—K5ZD

GAAAAK! Flares galore!—K6OWL

Well I had a great time. My low power combined with long wire antenna and advanced decrepitude didn't help but had fun getting there.—K6XT

Conditions weren't quite as bad as I expected they would be! Only mult heard but not worked was NV. W7RN and K7NV were zigging while I was zagging!—K7SV

Tough condx.—K9NW

Real antennas still not installed here at new QTH, so I threw up a trap fan dipole at 30ft an hour before the contest. 20 & 40 were OK considering condx, but it was a dummy load on 80. Poor condx here due to flare, but still a great time. So much fun in 4 short hours!—KA9FOX

Not a good idea to party all afternoon before a sprint—KJ9C

Camped in Vermont Saturday night—brought some stuff to play around in the Sprint. Lowest power ever. Lowest antenna ever. Lowest score ever.

| | |
|---|---|
| Transplanted 80m dipole | $10.00 |
| Yaesu FT-817 (2.5W out) | $500.00 |
| 36 "AA" batteries (just in case) | $11.50 |
| No antenna tuner for dipole | $0.00 |
| Twine for dipole support | $5.00 |
| Three nip bottles of single malt Scotch | $10.00 |
| Trying to work guys in the Sprint | Priceless |

Trying to explain to friends why I do this…Impossible!

QRP with crappy propagation + low dipole does not make for a really fun time, but it was fun anyway (for some value of fun)!—KM3T

Thanks to K7MM for use of his fine station! It's too bad 20m was REALLY bad this time.—KM7W

Caught this one at the end, but had a good time for 20 minutes. First sprint—definitely see you all next time.—N2ZN

The pinball wizard sent me a copy of his amazing 123 QSO hour from last February. I was hoping my QSO total would increase by studying the master. Well, maybe next year, hi! But my multiplier skill/luck certainly held up. I worked my last multiplier in the final two minutes!—N6AN

Congrats to N2NL for an outstanding job in his first effort from the West Coast.—N6TV

Well, nothing great was achieved, but I did have my best September Sprint score so far. Only 17% down from my best Sprint score ever last February, so fairly pleased. Made 87 Qs and 29 mults this time as condx were much better than I expected. Next year my goal will be to break 100 QSOs in September Sprint. I've already done that in February Sprint. Biggest mistakes were spending too much time CQing and too much time on 80m. CQing doesn't work well for a QRP Sprint station. My 80m dipole is just my 40m dipole, and it's not really adequate. 20m and 40m were my workhorse bands, with nearly equal Qs. I had fun anyway, with my QRP K2 and wire antennas. Sure got some serious score envy though, hearing those 300+ numbers along the way :-) Still have 5 thumbs on each hand when I get excited, and start smashing keys on the laptop. Gotta get a better handle on this :-) See you all in CQP next month. The Little Station with Attitude—N6WG

Had company; could only spend a few minutes on the air.—N6XI

This was the wrong contest to try SO2R on CW for my first time—my head hurts!—N7VM

This was my second try. The goal was to break 100 Q's. I'm looking forward to Feb. 73's Guy—N7ZG

Some mighty long gaps between QSOs, especially during the last hour. Don't remember a Sprint with so many super weak signals. Gonna take a really good op to have a golden log in this one.—N9RV

Not many replies to CQ so mainly S&P which kinda sucks in Sprints. Still good fun till brain turns to mush. Great to hear all the good ops. Cu in the next one. Tony—VE3RZ

A humbling experience.—W1JQ

Everything went well with single radio, except for amp shutting down around 0310Z. Lost about 8 minutes and my concentration/motivation for a bit afterwards. Great to hear the active LA/MS/AL stations on after hurricane.—W2RQ

DSW-40 at 1.5 watts to 80 meter loop—Y'all have some great receivers!—W4QO

Effort aborted because of computer problems. Thanks for the contacts.—W6ZZZ

The greatest, fastest paced contest of them all!—W9RE

80 almost totally disappeared about 0330, made 3 QSOs in 15 min. When the contest was over took the dog for a walk and the aurora was almost to the zenith at my northern WI QTH.—WI9WI

This was my best effort to date. Thanks for all those that slowed down—WW9R

## CW Sprint Records—Through September 2005

| QTH | Pwr | Date | Call | 20 | 40 | 80 | QSO | Mul | Score |
|---|---|---|---|---|---|---|---|---|---|
| CT | H | Sep-2003 | K1KI | 153 | 132 | 84 | 369 | 50 | 18,450 |
| CT | L | Sep-1999 | NT1N | 122 | 115 | 43 | 280 | 49 | 13,720 |
| CT | Q | | | | | | | | |
| MA | H | Feb-2003 | K5ZD | 136 | 144 | 85 | 365 | 54 | 19,710 |
| MA | L | Feb-2003 | K1HT | 72 | 106 | 114 | 292 | 50 | 14,600 |
| MA | Q | Sep-2003 | NB1B | 75 | 29 | 3 | 107 | 33 | 3,531 |
| ME | H | Sep-2004 | N4CW | 94 | 81 | 44 | 219 | 44 | 9,636 |
| ME | L | Feb-2003 | NY1S | 37 | 42 | 81 | 160 | 43 | 6,880 |
| ME | Q | | | | | | | | |
| NH | H | Feb-2003 | K1DG | 129 | 119 | 83 | 331 | 50 | 16,550 |
| NH | L | Feb-2002 | K1BX | 131 | 76 | 62 | 269 | 47 | 12,643 |
| NH | Q | Feb-2003 | AB1AV | 2 | 0 | 0 | 2 | 2 | 4 |
| RI | H | Feb-2002 | KI1G | 122 | 95 | 93 | 310 | 47 | 14,570 |
| RI | L | Feb-2004 | AJ1M | 7 | 6 | 0 | 13 | 13 | 169 |
| RI | Q | | | | | | | | |
| VT | H | Feb-2004 | NT1Y | 116 | 175 | 47 | 338 | 48 | 16,224 |
| VT | L | Sep-1999 | W1EAT | 38 | 33 | 33 | 104 | 35 | 3,640 |
| VT | Q | Sep-2004 | WT1L | 18 | 2 | 18 | 38 | 21 | 798 |
| NJ | H | Feb-2003 | N2NT | 88 | 158 | 134 | 380 | 51 | 19,380 |
| NJ | L | Feb-1999 | K2SQ | 94 | 101 | 85 | 280 | 46 | 12,880 |
| NJ | Q | | | | | | | | |
| NY | H | Feb-2002 | K2UA | 113 | 123 | 85 | 321 | 50 | 16,050 |
| NY | L | Sep-2004 | K2KQ | 80 | 94 | 56 | 230 | 46 | 10,580 |
| NY | Q | | | | | | | | |
| DE | H | Sep-1989 | KN5H | 98 | 102 | 72 | 272 | 46 | 12,512 |
| DE | L | Feb-2002 | N8NA | 107 | 79 | 76 | 262 | 45 | 11,790 |
| DE | Q | Sep-1999 | N3DEL | 6 | 1 | 0 | 7 | 5 | 35 |
| MD | H | Sep-1989 | W3LPL | 120 | 110 | 80 | 310 | 47 | 14,570 |
| MD | L | Sep-2002 | K3MM | 95 | 95 | 71 | 261 | 40 | 10,440 |
| MD | Q | Sep-2002 | K3ESE | 19 | 35 | 0 | 54 | 17 | 918 |
| PA | H | Sep-2004 | K3NM (N2NC) | 131 | 116 | 91 | 338 | 49 | 16,562 |
| PA | L | Sep-2003 | W1NN | 87 | 83 | 59 | 229 | 46 | 10,534 |
| PA | Q | | | | | | | | |
| AL | H | Feb-2004 | K4NO | 115 | 98 | 67 | 280 | 48 | 13,440 |
| AL | L | Sep-2003 | K4IQJ | 70 | 89 | 60 | 219 | 44 | 9,636 |
| AL | Q | Feb-1998 | KJ3V | 0 | 8 | 0 | 8 | 7 | 56 |
| FL | H | Feb-2003 | N2NL | 151 | 139 | 67 | 357 | 55 | 19,635 |
| FL | L | Sep-2003 | KØLUZ | 118 | 132 | 0 | 250 | 47 | 11,750 |
| FL | Q | Sep-1999 | N4BP | 119 | 51 | 0 | 170 | 34 | 5,780 |
| GA | H | Sep-2003 | K4AAA (W4AN) | 146 | 170 | 88 | 404 | 54 | 21,816 |
| GA | L | Feb-2003 | KU8E | 42 | 124 | 81 | 247 | 48 | 11,856 |
| GA | Q | Sep-2005 | NA4BW | 15 | 28 | 20 | 63 | 28 | 1,764 |
| KY | H | Sep-1998 | K4LT | 82 | 107 | 92 | 281 | 44 | 12,364 |
| KY | L | Feb-2002 | K4FXN | 103 | 98 | 53 | 254 | 45 | 11,430 |
| KY | Q | | | | | | | | |
| NC | H | Sep-2003 | N4AF | 98 | 129 | 115 | 342 | 49 | 16,758 |
| NC | L | Feb-1995 | K7GM | 73 | 101 | 69 | 243 | 45 | 10,935 |
| NC | Q | Feb-1998 | W4WS (N4VHK) | 13 | 23 | 13 | 49 | 24 | 1,176 |
| SC | H | Sep-2003 | W4OC | 108 | 107 | 83 | 298 | 46 | 13,708 |
| SC | L | Sep-2003 | W4OC | 87 | 92 | 116 | 295 | 50 | 14,750 |
| SC | Q | | | | | | | | |
| TN | H | Sep-2003 | W4PA | 134 | 163 | 96 | 393 | 51 | 20,043 |
| TN | L | Sep-2003 | K4AMC | 77 | 127 | 66 | 270 | 47 | 12,690 |
| TN | Q | | | | | | | | |
| VA | H | Sep-1989 | KT3Y | 95 | 122 | 79 | 296 | 48 | 14,208 |
| VA | L | Feb-2003 | K7SV | 84 | 101 | 115 | 300 | 52 | 15,600 |
| VA | Q | | | | | | | | |
| AR | H | Feb-2000 | K5GO | 81 | 117 | 80 | 278 | 50 | 13,900 |
| AR | L | Sep-1995 | N8VV | 49 | 54 | 38 | 141 | 39 | 5,499 |
| AR | Q | | | | | | | | |
| LA | H | Feb-1995 | W5WMU (K5GA) | 105 | 115 | 86 | 306 | 48 | 14,688 |
| LA | L | Feb-2004 | W5EKF | 43 | 67 | 18 | 128 | 40 | 5,120 |
| LA | Q | Feb-2003 | KC5R | 11 | 51 | 49 | 111 | 35 | 3,885 |
| MS | H | Feb-2000 | WQ5L | 123 | 136 | 58 | 317 | 49 | 15,533 |
| MS | L | Feb-2005 | WQ5L | 95 | 101 | 57 | 253 | 40 | 10,120 |
| MS | Q | Feb-2002 | WA2NYR | 30 | 16 | 0 | 46 | 26 | 1,196 |
| NM | H | Feb-2003 | N6ZZ | 133 | 153 | 65 | 351 | 52 | 18,252 |
| NM | L | Feb-1999 | N6ZZ | 99 | 116 | 44 | 259 | 44 | 11,396 |
| NM | Q | Feb-2002 | W5YA | 121 | 75 | 28 | 224 | 42 | 9,408 |
| OK | H | Sep-2003 | K3LR | 131 | 133 | 88 | 352 | 48 | 16,896 |
| OK | L | Sep-1998 | K5KA | 79 | 89 | 62 | 230 | 40 | 9,200 |
| OK | Q | Sep-2004 | K5KA | 91 | 69 | 52 | 212 | 43 | 9,116 |
| TX | H | Feb-2000 | N5TJ | 148 | 137 | 96 | 381 | 52 | 19,812 |
| TX | L | Sep-1998 | N5TJ | 141 | 111 | 80 | 332 | 46 | 15,272 |
| TX | Q | Feb-2000 | KG5U | 122 | 60 | 22 | 204 | 47 | 9,588 |
| CA | H | Feb-2003 | W6EEN (N6RT) | 150 | 147 | 81 | 378 | 54 | 20,412 |
| CA | L | Feb-2004 | N6MJ | 106 | 158 | 77 | 341 | 50 | 17,050 |

| QTH | Pwr | Date | Call | 20 | 40 | 80 | QSO | Mul | Score |
|---|---|---|---|---|---|---|---|---|---|
| CA | Q | Feb-2002 | K6III | 122 | 27 | 4 | 153 | 48 | 7,344 |
| AK | H | Feb-2000 | KL9A | 139 | 63 | 0 | 202 | 47 | 9,494 |
| AK | L | Feb-1995 | KL7FAP | 7 | 0 | 0 | 7 | 6 | 42 |
| AK | Q | Sep-2003 | N6TR/KL7 | 1 | 0 | 0 | 1 | 1 | 1 |
| AZ | H | Feb-2000 | K6LL | 178 | 144 | 42 | 364 | 50 | 18,200 |
| AZ | L | Feb-2002 | K7UAZ (N4OGW) | 126 | 87 | 23 | 236 | 45 | 10,620 |
| AZ | Q | Feb-1998 | NQ7X | 3 | 0 | 0 | 3 | 3 | 9 |
| ID | H | Feb-2000 | W7ZRC | 123 | 107 | 44 | 274 | 45 | 12,330 |
| ID | L | Feb-2001 | W7UQ (KL9A) | 144 | 88 | 44 | 276 | 48 | 13,248 |
| ID | Q | | | | | | | | |
| MT | H | Feb-1996 | AB7BG | 50 | 100 | 88 | 238 | 40 | 9,520 |
| MT | L | Feb-1998 | K7BG | 79 | 105 | 89 | 273 | 43 | 11,739 |
| MT | Q | | | | | | | | |
| NV | H | Feb-2000 | K7BV | 106 | 141 | 43 | 290 | 50 | 14,500 |
| NV | L | Feb-2000 | KU7Y | 88 | 116 | 0 | 204 | 45 | 9,180 |
| NV | Q | Feb-1999 | KU7Y | 59 | 69 | 20 | 148 | 40 | 5,920 |
| OR | H | Feb-2003 | N6TR | 172 | 142 | 79 | 393 | 52 | 20,436 |
| OR | L | Feb-2003 | K4XU | 121 | 110 | 46 | 277 | 47 | 13,019 |
| OR | Q | | | | | | | | |
| UT | H | Sep-1991 | K6XO | 128 | 93 | 42 | 263 | 44 | 11,572 |
| UT | L | Sep-1995 | AH3C | 59 | 91 | 65 | 215 | 38 | 8,170 |
| UT | Q | Feb-2003 | NC7J | 101 | 96 | 38 | 235 | 45 | 10,575 |
| WA | H | Feb-2003 | W7WA | 133 | 113 | 54 | 300 | 49 | 14,700 |
| WA | L | Feb-2003 | K7RI (K7SS) | 149 | 111 | 37 | 297 | 53 | 15,741 |
| WA | Q | Feb-2002 | K7RI (K7SS) | 109 | 112 | 19 | 240 | 45 | 10,800 |
| WY | H | Sep-1999 | K7KU (N2IC) | 132 | 117 | 63 | 312 | 48 | 14,976 |
| WY | L | Feb-2004 | KO7X | 57 | 142 | 28 | 227 | 47 | 10,669 |
| WY | Q | Feb-2003 | WC7S | 26 | 16 | 3 | 45 | 22 | 990 |
| MI | H | Feb-2003 | N8EA | 197 | 124 | 100 | 331 | 52 | 17,212 |
| MI | L | Sep-2004 | N8EA | 59 | 111 | 82 | 252 | 44 | 11,088 |
| MI | Q | Sep-2004 | WA8REI | 32 | 33 | 12 | 77 | 27 | 2,079 |
| OH | H | Feb-2003 | K8MR | 72 | 128 | 109 | 309 | 52 | 16,068 |
| OH | L | Sep-2003 | K8NZ | 78 | 114 | 93 | 285 | 46 | 13,110 |
| OH | Q | Sep-2004 | N8VW | 43 | 86 | 50 | 179 | 42 | 7,518 |
| WV | H | Feb-2002 | N4ZR | 69 | 100 | 117 | 286 | 48 | 13,728 |
| WV | L | Sep-1998 | K3LR | 62 | 93 | 64 | 219 | 39 | 8,541 |
| WV | Q | Sep-2003 | K5IID | 49 | 52 | 42 | 143 | 34 | 4,862 |
| IL | H | Sep-2003 | AG9A | 130 | 162 | 73 | 365 | 52 | 18,980 |
| IL | L | Sep-2003 | K9AA (K9PG) | 112 | 119 | 59 | 290 | 48 | 13,920 |
| IL | Q | Feb-1999 | WO9S | 43 | 66 | 32 | 141 | 41 | 5,781 |
| IN | H | Sep-2003 | N9RV | 134 | 168 | 87 | 389 | 53 | 20,617 |
| IN | L | Feb-2003 | KJ9C | 76 | 95 | 91 | 262 | 48 | 12,576 |
| IN | Q | | | | | | | | |
| WI | H | Feb-2000 | K9AA (K9PG) | 94 | 169 | 69 | 302 | 55 | 16,610 |
| WI | L | Feb-1999 | K9AA (K9PG) | 96 | 109 | 67 | 272 | 47 | 12,784 |
| WI | Q | Feb-2002 | N9NE | 69 | 66 | 21 | 156 | 40 | 6,240 |
| CO | H | Feb-2003 | N2IC | 154 | 151 | 84 | 389 | 52 | 20,228 |
| CO | L | Feb-2002 | WØETT | 122 | 86 | 15 | 223 | 46 | 10,258 |
| CO | Q | Sep-2005 | NØSXX | 30 | 72 | 8 | 110 | 34 | 3,740 |
| IA | H | Sep-2000 | NØNI (AG9A) | 126 | 136 | 89 | 331 | 43 | 15,093 |
| IA | L | Sep-1998 | KØRX | 70 | 84 | 73 | 227 | 43 | 9,761 |
| IA | Q | | | | | | | | |
| KS | H | Sep-1982 | KØVBU | 50 | 103 | 78 | 231 | 42 | 9,702 |
| KS | L | Sep-2004 | K3LR | 95 | 94 | 67 | 256 | 41 | 10,496 |
| KS | Q | | | | | | | | |
| MN | H | Feb-2003 | KØSR | 98 | 127 | 83 | 308 | 50 | 15,400 |
| MN | L | Sep-2003 | NAØN | 112 | 125 | 51 | 288 | 47 | 13,536 |
| MN | Q | Sep-2002 | N0UR | 62 | 44 | 5 | 111 | 32 | 3,552 |
| MO | H | Sep-1996 | K4VX (WX3N) | 104 | 133 | 95 | 332 | 46 | 15,272 |
| MO | L | Feb-2002 | KAØGGI | 74 | 83 | 45 | 202 | 41 | 8,282 |
| MO | Q | Sep-2004 | NJ4X | 61 | 99 | 38 | 198 | 41 | 8,118 |
| ND | H | Feb-2002 | WBØO | 124 | 106 | 88 | 318 | 47 | 14,946 |
| ND | L | Feb-1998 | WØHSC (KBØO) | 49 | 96 | 72 | 217 | 36 | 7,812 |
| ND | Q | | | | | | | | |
| NE | H | Feb-1991 | KVØI | 82 | 62 | 60 | 204 | 34 | 6,936 |
| NE | L | Sep-2005 | WW2Y | 42 | 120 | 67 | 229 | 41 | 9,389 |
| NE | Q | Feb-2003 | W8TM | 0 | 116 | 0 | 116 | 41 | 4,756 |
| SD | H | Feb-2003 | WDØT | 115 | 124 | 108 | 347 | 47 | 16,309 |
| SD | L | Sep-2002 | K7RE | 51 | 37 | 2 | 90 | 24 | 2,160 |
| SD | Q | | | | | | | | |
| VE1 | H | Feb-2004 | VO1AU | 36 | 79 | 0 | 115 | 40 | 4,600 |
| VE1 | L | Sep-2000 | VE9DX (K5NZ) | 99 | 56 | 28 | 183 | 40 | 7,320 |
| VE1 | Q | | | | | | | | |
| VE2 | H | Sep-1988 | VE2ZP | 75 | 98 | 41 | 214 | 41 | 8,774 |
| VE2 | L | Feb-2003 | VE2AWR | 49 | 77 | 26 | 152 | 39 | 5,928 |
| VE2 | Q | | | | | | | | |
| VE3 | H | Feb-2000 | VE3EJ | 90 | 93 | 87 | 270 | 50 | 13,500 |
| VE3 | L | Feb-2003 | VE3NE | 71 | 43 | 108 | 222 | 49 | 10,878 |
| VE3 | Q | | | | | | | | |
| VE4 | H | Sep-2003 | VE4/WBØO | 136 | 130 | 0 | 266 | 45 | 11,970 |
| VE4 | L | Feb-2003 | VE4XT | 38 | 42 | 6 | 86 | 32 | 2,752 |
| VE4 | Q | | | | | | | | |
| VE5 | H | Sep-2000 | VE5DX | 122 | 92 | 50 | 264 | 43 | 11,352 |
| VE5 | L | Feb-2003 | VE5SF | 106 | 119 | 12 | 237 | 49 | 11,613 |
| VE5 | Q | | | | | | | | |
| VE6 | H | Feb-2000 | VE6EX | 228 | 43 | 9,804 | | | |
| VE6 | L | Sep-1999 | VE6EX | 117 | 64 | 14 | 195 | 46 | 8,970 |
| VE6 | Q | | | | | | | | |
| VE7 | H | Feb-2000 | VA7RR | 151 | 128 | 37 | 316 | 48 | 15,168 |
| VE7 | L | Sep-2001 | VE7QO | 87 | 5 | 21 | 113 | 37 | 4,181 |
| VE7 | Q | | | | | | | | |
| VE8 | H | Feb-2000 | VY1JA | 36 | 0 | 0 | 36 | 22 | 792 |
| VE8 | L | | | | | | | | |
| VE8 | Q | | | | | | | | |
| 4U1 | H | Feb-1985 | 4U1UN(W2TO) | 3 | 52 | 15 | 70 | 23 | 1,610 |
| 4U1 | L | | | | | | | | |
| 4U1 | Q | | | | | | | | |
| 8P | H | Sep-2002 | 8P9JG(N5KO) | 164 | 105 | 8 | 277 | 42 | 11,634 |
| 8P | L | | | | | | | | |
| 8P | Q | | | | | | | | |
| C6 | H | | | | | | | | |
| C6 | L | Feb-1999 | C6AKP | 15 | 4 | 2 | 21 | 14 | 294 |
| C6 | Q | | | | | | | | |
| HH | H | Sep-1996 | HH2AW | 48 | 61 | 30 | 139 | 33 | 4,587 |
| HH | L | | | | | | | | |
| HH | Q | | | | | | | | |
| HI | H | Feb-1991 | HI8DMX | 0 | 40 | 0 | 40 | 19 | 2,420 |
| HI | L | | | | | | | | |
| HI | Q | | | | | | | | |
| HP | H | | | | | | | | |
| HP | L | Feb-2000 | HP1AC | 50 | 14 | 0 | 64 | 30 | 1,920 |
| HP | Q | | | | | | | | |
| KP4 | H | | | | | | | | |
| KP4 | L | Feb-2004 | NP4Z | 49 | 150 | 54 | 253 | 48 | 12,144 |
| KP4 | Q | Feb-2004 | K1ZZ/ KP4 | 1 | 18 | 3 | 22 | 14 | 308 |
| TG | H | | | | | | | | |
| TG | L | Sep-2001 | TG9/N5KO | 150 | 0 | 0 | 150 | 42 | 6,300 |
| TG | Q | | | | | | | | |
| V4 | H | Feb-1996 | V4ØZ (AA7VB) | 0 | 21 | 33 | 54 | 23 | 1,242 |
| V4 | L | | | | | | | | |
| V4 | Q | | | | | | | | |
| VP2E | H | Feb-1996 | VP2E/ KJ4HN | 2 | 66 | 0 | 68 | 30 | 2,040 |
| VP2E | L | | | | | | | | |
| VP2E | Q | | | | | | | | |
| VP9 | H | Feb-1985 | W6OAT/VP9 | 43 | 93 | 66 | 202 | 31 | 6,262 |
| VP9 | L | Sep-2005 | WA4PGM/VP9 | 77 | 59 | 17 | 153 | 36 | 5,508 |
| VP9 | Q | | | | | | | | |
| XE | H | Sep-1990 | XE2XA (WN4KKN) | 134 | 127 | 44 | 305 | 47 | 14,335 |
| XE | L | Sep-2003 | XF1K (N6AN) | 113 | 85 | 39 | 237 | 47 | 11,139 |
| XE | Q | | | | | | | | |
| ZF | H | Sep-1992 | ZF2KI (K1KI) | 154 | 90 | 7 | 251 | 49 | 12,299 |
| ZF | L | | | | | | | | |
| ZF | Q | | | | | | | | |
| 9A | H | Sep-2000 | 9A6XX | 29 | 0 | 0 | 29 | 19 | 551 |
| Ct | H | Sep-1998 | CT1BOH | 122 | 76 | 27 | 225 | 40 | 9,000 |
| DL | H | Sep-2004 | DJ1YFK | 0 | 6 | 0 | 6 | 6 | 36 |
| EA8 | H | Feb-1994 | EA1AK/EA8 | 15 | 21 | 0 | 36 | 21 | 756 |
| F | H | Sep-1990 | F/N6TR | 100 | 78 | 18 | 196 | 38 | 7,448 |
| G | H | Feb-2002 | G4BUO | 45 | 84 | 31 | 160 | 40 | 6,400 |
| HC8 | H | Feb-2000 | HC8N (N5KO) | 142 | 121 | 8 | 271 | 52 | 14,092 |
| I | H | Sep-1998 | IKØHBN | 64 | 26 | 10 | 100 | 35 | 3,500 |
| JA | H | Feb-1991 | 7J1AAI | 13 | 0 | 0 | 13 | 9 | 117 |
| KH6 | H | Sep-1981 | KH6NO | 86 | 35 | 0 | 121 | 30 | 3,630 |
| LU | H | Feb-2003 | LU1FAM | 74 | 18 | 0 | 92 | 35 | 3,220 |
| LY | H | Sep-2000 | LY4AA | 107 | 56 | 0 | 163 | 38 | 6,194 |
| Oh | H | Sep-1998 | OH1NOA | 56 | 0 | 0 | 56 | 22 | 1,232 |
| PY | H | Sep-1980 | PY8ZPJ | 28 | 1 | 0 | 29 | 14 | 406 |
| UA9 | H | Feb-2000 | RUØSN | 15 | 0 | 0 | 15 | 13 | 195 |
| UN | H | Sep-2000 | UP6F | 13 | 0 | 0 | 13 | 10 | 130 |
| VK | H | Sep-1994 | VK5GN (N6AA) | 48 | 0 | 0 | 48 | 22 | 1,056 |
| ZD8 | H | Sep-1990 | ZD8Z (N6TJ) | 116 | 93 | 19 | 228 | 43 | 9,804 |
| ZS | H | Feb-2000 | ZS1ESC (N6AA) | 51 | 0 | 0 | 51 | 18 | 918 |

## 2005 September CW Sprint Scores (* indicates low power, ** indicates QRP)

| Call | Name | QTH | 20 | 40 | 80 | QSO | Mlt | Score | Team |
|---|---|---|---|---|---|---|---|---|---|
| K1KI | TOM | CT | 121 | 91 | 93 | 305 | 47 | 14335 | YCCC#1 |
| K1EA | KEN | MA | 80 | 131 | 82 | 293 | 44 | 12892 | |
| W1WEF | JACK | CT | 102 | 113 | 70 | 285 | 42 | 11970 | YCCC#1 |
| K1DG | DOUG | NH | 95 | 102 | 78 | 275 | 42 | 11550 | YCCC#1 |
| K5ZD | KATRINA | MA | 92 | 75 | 58 | 225 | 42 | 9450 | YCCC#1 |
| K1HT | *DAVE | MA | 67 | 104 | 51 | 222 | 40 | 8880 | YCCC#1 |
| NB1B | DENNIS | MA | 60 | 53 | 52 | 165 | 40 | 6600 | YCCC#1 |
| W1EBI | GEO | MA | 41 | 56 | 56 | 153 | 39 | 5967 | YCCC#1 |
| WA1Z | *BOB | NH | 48 | 52 | 31 | 131 | 34 | 4454 | YCCC#1 |
| N4CW | BERT | ME | 46 | 46 | 8 | 100 | 33 | 3300 | |
| K1AR | JOHN | NH | 6 | 45 | 27 | 78 | 33 | 2574 | |
| W1JQ | *MIKE | CT | 33 | 28 | 6 | 67 | 25 | 1675 | YCCC#1 |
| KM3T | **VINO | VT | 0 | 0 | 9 | 9 | 8 | 72 | YCCC#2 |
| N2NT | ANDY | NJ | 115 | 129 | 100 | 344 | 44 | 15136 | PVRC/FRC#1 |
| N2RM | JOHN | NJ | 124 | 91 | 101 | 316 | 46 | 14536 | PVRC/FRC#1 |
| W2RQ | BILL | NJ | 91 | 116 | 108 | 315 | 44 | 13860 | PVRC/FRC#1 |
| K2UA | RUS | NY | 58 | 103 | 85 | 246 | 44 | 10824 | NCC |
| N2GC | MIKE | NY | 54 | 97 | 75 | 226 | 42 | 9492 | YCCC#1 |
| K2SX | DENNIS | NY | 0 | 26 | 4 | 30 | 17 | 510 | YCCC#2 |
| N2ZN | *KEN | NY | 0 | 7 | 0 | 7 | 5 | 35 | |
| AA3B | BUD | PA | 93 | 137 | 77 | 307 | 46 | 14122 | PVRC/FRC#1 |
| K3WW | CHAS | PA | 99 | 116 | 80 | 295 | 46 | 13570 | PVRC/FRC#1 |
| K3CR | ALEX | PA | 104 | 106 | 76 | 286 | 44 | 12584 | NCC |
| N3AD | ALAN | PA | 64 | 95 | 76 | 235 | 44 | 10340 | PVRC/FRC#1 |
| K3MD | *JOHN | PA | 58 | 62 | 61 | 181 | 43 | 7783 | PVRC/FRC#2 |
| K3STX | *PAUL | MD | 48 | 60 | 53 | 161 | 37 | 5957 | PVRC/FRC#2 |
| N4AF | AL | NC | 121 | 123 | 94 | 338 | 47 | 15886 | PVRC/FRC#1 |
| W4PA | SCOTT | TN | 105 | 156 | 91 | 352 | 44 | 15488 | SSC |
| K4RO | KIRK | TN | 74 | 126 | 108 | 308 | 43 | 13244 | SSC |
| K4BAI | JOHN | GA | 68 | 135 | 80 | 283 | 45 | 12735 | SSC |
| N4ZZ | DON | TN | 88 | 110 | 82 | 280 | 44 | 12320 | |
| NA4K | STEVE | TN | 58 | 122 | 99 | 279 | 44 | 12276 | |
| K7SV | *LARRY | VA | 86 | 94 | 86 | 266 | 46 | 12236 | PVRC/FRC#1 |
| W4NZ | TED | TN | 85 | 105 | 80 | 270 | 43 | 11610 | SSC |
| W4OC | *DON | SC | 84 | 95 | 69 | 248 | 43 | 10664 | SSC |
| KU8E | *JEFF | GA | 46 | 122 | 59 | 227 | 43 | 9761 | SSC |
| W3YY | BOB | VA | 58 | 87 | 69 | 214 | 41 | 8774 | PVRC/FRC#2 |
| AD4EB | JIM | TN | 58 | 72 | 66 | 196 | 41 | 8036 | |
| AA4GA | *LEE | GA | 37 | 92 | 50 | 179 | 42 | 7518 | SSC |
| W4AU | JOHN | VA | 49 | 73 | 72 | 194 | 38 | 7372 | PVRC/FRC#1 |
| N4DW | DAVE | TN | 17 | 102 | 49 | 168 | 42 | 7056 | |
| K4MX | *JERI | VA | 10 | 78 | 73 | 161 | 40 | 6440 | |
| N5VI | *VAN | GA | 39 | 83 | 31 | 153 | 40 | 6120 | |
| K1TO | *DAN | FL | 88 | 76 | 0 | 164 | 36 | 5904 | |
| K4IQJ | *DICK | AL | 50 | 66 | 31 | 147 | 40 | 5880 | |
| N4GI | *BLAKE | FL | 49 | 85 | 18 | 152 | 34 | 5168 | SSC |
| AA4LR | BILL | GA | 45 | 60 | 24 | 129 | 35 | 4515 | SSC |
| NA4BW | **BRIAN | GA | 15 | 28 | 20 | 63 | 28 | 1764 | |
| N4GG | HAL | GA | 0 | 30 | 25 | 55 | 27 | 1485 | |
| K4LW | *BOB | GA | 2 | 48 | 6 | 56 | 24 | 1344 | |
| N4LF | LEX | FL | 19 | 33 | 1 | 53 | 25 | 1325 | |
| W4QO | **JIM | GA | 0 | 49 | 0 | 49 | 24 | 1176 | |
| K1GU | *NED | TN | 0 | 0 | 51 | 51 | 23 | 1173 | |
| K5GN | DAVE | TX | 123 | 149 | 87 | 359 | 49 | 17591 | |
| K5TR | GEO | TX | 126 | 150 | 94 | 370 | 47 | 17390 | |
| N2IC | STEVE | NM | 122 | 139 | 89 | 350 | 49 | 17150 | Azenmokers |
| N3BB | JIM | TX | 116 | 152 | 65 | 333 | 47 | 15651 | Austin |
| K5GA | BILL | TX | 109 | 147 | 76 | 332 | 47 | 15604 | |
| N6ZZ | PHIL | NM | 108 | 147 | 62 | 317 | 49 | 15533 | Azenmokers |
| N5OT | MARK | OK | 96 | 140 | 97 | 333 | 45 | 14985 | Azenmokers |
| N4OGW | TOR | MS | 100 | 125 | 87 | 312 | 43 | 13416 | Austin |
| K5KA | KEN | OK | 85 | 116 | 91 | 292 | 44 | 12848 | Azenmokers |
| K5YAA | JERRY | OK | 79 | 130 | 83 | 292 | 44 | 12848 | Azenmokers |
| K5OT | LARRY | TX | 90 | 123 | 79 | 292 | 43 | 12556 | Austin |
| KZ5D | ART | LA | 71 | 104 | 60 | 235 | 43 | 10105 | Austin |
| AA5B | *BRUCE | NM | 82 | 106 | 56 | 244 | 41 | 10004 | |
| K5WA | BOB | TX | 97 | 106 | 33 | 236 | 42 | 9912 | Austin |
| K5XR | JOE | TX | 81 | 79 | 39 | 199 | 43 | 8557 | |
| AC5AA | *DUANE | TX | 57 | 76 | 31 | 164 | 39 | 6396 | Austin |
| KG5U | **DALE | TX | 70 | 60 | 26 | 156 | 39 | 6084 | Austin |
| KØCIE | *KARL | OK | 16 | 55 | 3 | 74 | 31 | 2294 | Azenmokers |
| NØQT | **JAN | NM | 13 | 22 | 0 | 35 | 13 | 455 | Azenmokers |
| WØZW | *WAYNE | NM | 10 | 4 | 3 | 17 | 10 | 170 | Azenmokers |
| W1DY | *WENDY | OK | 4 | 0 | 0 | 4 | 4 | 16 | |
| W6YI | JIM | CA | 116 | 147 | 94 | 357 | 47 | 16779 | SCCC#1 |
| N6RO | KEN | CA | 108 | 135 | 75 | 318 | 48 | 15264 | NCCC#1 |
| N2NL | DAVE | CA | 123 | 137 | 77 | 337 | 45 | 15165 | NCCC#1 |
| W6YX | MIKE | CA | 124 | 116 | 66 | 306 | 48 | 14688 | NCCC#1 |
| K6NA | GLEN | CA | 98 | 148 | 73 | 319 | 46 | 14674 | SCCC#1 |
| N6AN | REX | CA | 98 | 115 | 83 | 296 | 49 | 14504 | SCCC#1 |
| K6LA | KEN | CA | 118 | 127 | 67 | 312 | 46 | 14352 | SCCC#1 |
| K6XX | BOB | CA | 106 | 129 | 77 | 312 | 46 | 14352 | NCCC#1 |
| N6TV | BOB | CA | 99 | 143 | 76 | 318 | 45 | 14310 | NCCC#1 |
| W4EF | MIKE | CA | 108 | 118 | 77 | 303 | 46 | 13938 | SCCC#1 |
| AE6Y | ANDY | CA | 110 | 115 | 52 | 277 | 47 | 13019 | NCCC#1 |
| W6EEN | DOUG | CA | 93 | 157 | 0 | 250 | 47 | 11750 | SCCC#1 |
| W6RGG | BOB | CA | 63 | 116 | 64 | 243 | 47 | 11421 | NCCC#1 |
| W6EU | JIM | CA | 87 | 116 | 54 | 257 | 44 | 11308 | NCCC#1 |
| N6VR | RAY | CA | 108 | 89 | 58 | 255 | 44 | 11220 | SCCC#1 |
| K6NR | DANA | CA | 106 | 91 | 42 | 239 | 45 | 10755 | SCCC#1 |
| W6OAT | *RUSTY | CA | 100 | 103 | 36 | 239 | 45 | 10755 | NCCC#2 |
| K6LRN | DICK | CA | 86 | 88 | 37 | 211 | 46 | 9706 | NCCC#2 |
| K2KW | KEN | CA | 96 | 80 | 45 | 221 | 43 | 9503 | NCCC#2 |
| AJ6V | ED | CA | 74 | 113 | 37 | 224 | 41 | 9184 | NCCC#1 |
| N6PN | *MATT | CA | 67 | 116 | 46 | 229 | 40 | 9160 | NCCC#2 |
| N6ZFO | *BILL | CA | 57 | 94 | 46 | 197 | 41 | 8077 | NCCC#2 |
| W6RK | *RISTO | CA | 48 | 82 | 0 | 130 | 38 | 4940 | NCCC#3 |
| N5KO | TREY | CA | 15 | 97 | 3 | 115 | 35 | 4025 | |
| K6OWL | *MARK | CA | 24 | 60 | 18 | 102 | 34 | 3468 | NCCC#3 |
| W1AW | *DICK | CA | 78 | 0 | 0 | 78 | 36 | 2808 | |
| N6WG | **BOB | CA | 34 | 36 | 9 | 79 | 28 | 2212 | NCCC#2 |
| N6XI | RICK | CA | 58 | 0 | 0 | 58 | 30 | 1740 | NCCC#2 |
| N6EM | *JACK | CA | 24 | 23 | 9 | 56 | 20 | 1120 | NCCC#3 |
| NE6I | *DENNIS | CA | 47 | 0 | 0 | 47 | 21 | 987 | SCCC#1 |
| KZ5OM | JAY | CA | 30 | 0 | 0 | 30 | 17 | 510 | |
| KE6QR | *GARY | CA | 0 | 3 | 18 | 21 | 11 | 231 | |
| W6ZZZ | MARK | CA | 6 | 1 | 0 | 7 | 3 | 21 | NCCC#3 |
| N6TR | TREE | OR | 131 | 147 | 91 | 369 | 47 | 17343 | |
| K7NV | KURT | NV | 95 | 114 | 63 | 272 | 48 | 13056 | NCCC#1 |
| KM7W | *DAN | WA | 95 | 123 | 56 | 274 | 46 | 12604 | Corner |
| K4XU | DICK | OR | 83 | 106 | 76 | 265 | 45 | 11925 | Corner |
| KO7X | AL | WY | 75 | 120 | 83 | 278 | 39 | 10842 | |
| W7RN | TOM | NV | 55 | 87 | 56 | 198 | 46 | 9108 | NCCC#2 |
| NN7ZZ | DON | UT | 53 | 93 | 55 | 201 | 39 | 7839 | |
| N7VM | *BILL | UT | 60 | 71 | 54 | 185 | 37 | 6845 | |
| K7BG | *MATT | MT | 12 | 114 | 38 | 164 | 39 | 6396 | |
| N7WA | *DINK | WA | 58 | 69 | 52 | 179 | 35 | 6265 | |
| KY7M | LEE | AZ | 66 | 48 | 0 | 114 | 35 | 3990 | Azenmokers |
| KI7Y | *JIM | OR | 36 | 56 | 38 | 130 | 29 | 3770 | Corner |
| K7WA | *JIM | WA | 49 | 35 | 29 | 113 | 30 | 3390 | Corner |
| W7YS | *BILL | AZ | 35 | 38 | 14 | 87 | 34 | 2958 | Azenmokers |
| N7ZG | *GUY | WA | 28 | 36 | 26 | 90 | 27 | 2430 | |
| W3CP | *JIM | OR | 18 | 25 | 10 | 53 | 23 | 1219 | |
| KL7WV | TIM | AK | 28 | 0 | 0 | 28 | 6 | 168 | NCC |
| AL1G | KIM | AK | 0 | 0 | 0 | 0 | 0 | 0 | Corner |
| N4ZR | *PETE | WV | 77 | 93 | 47 | 217 | 39 | 8463 | PVRC/FRC#2 |
| N8EA | *JOE | MI | 54 | 77 | 53 | 184 | 40 | 7360 | |
| W8KW | *TED | MI | 72 | 41 | 55 | 168 | 38 | 6384 | |
| W8WTS | *JIM | OH | 24 | 42 | 28 | 94 | 36 | 3384 | |
| K8NZ | *RON | OH | 34 | 36 | 19 | 89 | 35 | 3115 | NCC |
| K8BB | DON | MI | 38 | 33 | 0 | 71 | 29 | 2059 | |
| N8SR | STEVE | MI | 80 | 0 | 0 | 80 | 24 | 1920 | |
| K8MR | *JIM | OH | 1 | 22 | 0 | 23 | 15 | 345 | |
| N9RV | PAT | IN | 106 | 147 | 91 | 344 | 44 | 15136 | SMC#1 |
| W9RE | MIKE | IN | 88 | 142 | 93 | 323 | 43 | 13889 | SMC#1 |
| K9NW | MIKE | IN | 81 | 116 | 112 | 309 | 44 | 13596 | SMC#1 |
| K9BGL | KARL | IL | 64 | 109 | 93 | 266 | 46 | 12236 | |
| KJ9C | *MEL | IN | 41 | 97 | 98 | 236 | 48 | 11328 | SMC#2 |
| WT9U | JIM | IN | 52 | 100 | 105 | 257 | 42 | 10794 | SMC#1 |
| N9CK | *STEVE | WI | 57 | 111 | 75 | 243 | 41 | 9963 | SMC#1 |
| K9MMS | *GARY | IL | 43 | 115 | 49 | 207 | 42 | 8694 | SMC#1 |
| WI9WI | JIM | WI | 79 | 91 | 56 | 226 | 38 | 8588 | SMC#1 |
| KA9FOX | *SCOTT | WI | 50 | 121 | 21 | 192 | 43 | 8256 | SMC#2 |
| N9JF | *POGO | IL | 42 | 87 | 62 | 191 | 42 | 8022 | |
| K8GU | *ETHAN | IL | 25 | 95 | 59 | 179 | 43 | 7697 | SMC#2 |
| K9KM | *HOWIE | IL | 20 | 68 | 42 | 130 | 34 | 4420 | SMC#2 |
| WW9R | *PAT | WI | 3 | 22 | 15 | 40 | 19 | 760 | SMC#2 |
| NA9U | *JOHN | IN | 0 | 0 | 0 | 0 | 0 | 0 | |
| KØOU | STEVE | MO | 58 | 139 | 75 | 272 | 42 | 11424 | SMC#1 |
| KØAD | AL | MN | 73 | 100 | 51 | 224 | 42 | 9408 | MWA |
| WW2Y | *PETER | NE | 42 | 120 | 67 | 229 | 41 | 9389 | PVRC/FRC#2 |
| NØAT | *RON | MN | 55 | 106 | 54 | 215 | 41 | 8815 | MWA |
| WØETT | *KEN | CO | 60 | 86 | 51 | 197 | 43 | 8471 | |
| NAØN | *PAT | MN | 49 | 110 | 49 | 208 | 39 | 8112 | MWA |
| KMØO | *TONY | MN | 57 | 97 | 32 | 186 | 39 | 7254 | MWA |
| KTØR | DAVE | MN | 45 | 83 | 46 | 174 | 37 | 6438 | MWA |
| K6XT | *ART | CO | 48 | 90 | 21 | 159 | 35 | 5565 | SCCC#1 |
| NØSXX | **GARY | CO | 30 | 72 | 8 | 110 | 34 | 3740 | |
| WGØM | *MIKE | MN | 21 | 38 | 14 | 73 | 21 | 1533 | MWA |
| KØUK | *BILL | CO | 13 | 32 | 17 | 62 | 23 | 1426 | |
| KEØL | *JIM | MN | 4 | 35 | 16 | 55 | 23 | 1265 | MWA |
| N2ZO | *VAL | CO | 22 | 21 | 0 | 43 | 22 | 946 | CCO#1 |
| K4IU | *FRED | MN | 14 | 18 | 10 | 42 | 19 | 798 | |
| WØQQS | *BRUCE | MN | 25 | 0 | 0 | 25 | 7 | 175 | |
| VE3EJ | JOHN | VE3 | 69 | 96 | 80 | 245 | 43 | 10535 | NCC |
| VE3DZ | *YURI | VE3 | 60 | 88 | 81 | 229 | 46 | 10534 | CCO#1 |
| VE3JM | VLAD | VE3 | 67 | 80 | 60 | 207 | 41 | 8487 | CCO#1 |
| VA3NR | CHRIS | VE3 | 45 | 84 | 50 | 179 | 38 | 6802 | CCO#1 |
| VE3RZ | *TONY | VE3 | 23 | 46 | 35 | 104 | 35 | 3640 | CCO#1 |
| VE3IAY | *RICH | VE3 | 18 | 48 | 36 | 102 | 30 | 3060 | CCO#1 |
| VE3RCN | *KEVIN | VE3 | 3 | 7 | 9 | 19 | 10 | 190 | CCO#1 |
| VA3RKM | **BOB | VE3 | 1 | 0 | 0 | 1 | 1 | 1 | |
| NP4Z | *PHIL | KP4 | 96 | 115 | 26 | 237 | 44 | 10428 | SMC#1 |
| VP9/WA4PGM | | *KYLE | 77 | 59 | 17 | 153 | 36 | 5508 | PVRC/FRC#1 |

# September 2005 Phone Sprint Results

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The September SSB Sprint had 104 logs submitted, which is about normal for September. K8MJZ operated at WP2Z to provide the first official entry from KP2. The following "rare for Sprint" multipliers were logged by one or more contestants: Kentucky, Nebraska, Utah, Wyoming, VE1, VE4, VE6, KP2, VP9, and XE.

### QRP

Kyle, WA4PGM, picked up his second QRP win by an easy margin. The remaining QRP Top Ten, in order, were KC5R, K6UFO, and VA3RKM. There was some confusion about power levels by several entrants. QRP means 5 W or less.

### Low Power

Jon, KL2A, operating at K7ZSD in Oregon, won his first low power SSB Sprint. Scott, KA9FOX, finished second and

### TOP 10

| | Scores | Band Changes | QSOs Lost | 00Z | 01Z | 02Z | 03Z |
|---|---|---|---|---|---|---|---|
| K7RI (K7SS) | 20007 | 2 | 5 | 99 | 77 | 100 | 89 |
| KW8N | 15463 | 91 | 3 | 100 | 73 | 67 | 89 |
| K9PG | 13904 | 69 | 4 | 91 | 80 | 65 | 80 |
| W7WA | 13892 | 6 | 9 | 87 | 68 | 85 | 63 |
| K6LA | 13616 | 49 | 4 | 86 | 77 | 67 | 66 |
| N6RO | 13489 | 60 | 13 | 75 | 76 | 73 | 63 |
| N6ED | 13005 | 2 | 3 | 93 | 74 | 62 | 61 |
| W6YX | 12814 | 4 | 4 | 77 | 69 | 78 | 74 |
| W6NL | 11660 | 16 | 2 | 73 | 66 | 61 | 65 |
| N4ZZ | 11572 | 64 | 3 | 70 | 60 | 58 | 75 |

### Team Scores

*NCCC #1*

| | |
|---|---|
| N6RO | 13489 |
| W6YX | 12814 |
| W6NL | 11660 |
| K7ZSD | 11475 |
| K6XX | 9912 |
| KJ6RA | 7708 |
| W7RN | 7216 |
| N6NZ | 6747 |
| K6III | 1584 |
| | 82605 |

*Lids from Nine & Zero Land*

| | |
|---|---|
| K9PG | 13904 |
| KA9FOX | 11139 |
| KØOU | 10793 |
| KTØR | 9430 |
| WT9U | 8282 |
| ACØW | 7600 |
| KEØL | 4795 |
| WI9WI | 3737 |
| WGØM | 3135 |
| K9JS | 2816 |
| | 75631 |

*SCCC #1*

| | |
|---|---|
| K6LA | 13616 |
| N6ED | 13005 |
| K6EY | 4371 |
| | 30992 |

*More Lids from Nine & Zero Land*

| | |
|---|---|
| N2BJ | 9348 |
| WW9R | 5832 |
| WE9V | 5254 |
| | 20434 |

5. NCCC #2 (W6OAT, W6FB, N6RCE, K6OWL, W6ZZZ, K6UFO) ..... 13939
6. A Shakespearean Tragedy (N3CA, KC2NMZ, AE6NY, W4UAF, KG4IUM, KB3MME) ..... 11173
7. NCCC #3 (N6ZFO, W6FRH) ..... 9683

### Top 10 QSOS

| | |
|---|---|
| K7RI | 351 |
| KW8N | 329 |
| K9PG | 316 |
| W7WA | 302 |
| W6YX | 298 |
| K6LA | 296 |
| N6ED | 289 |
| N6RO | 287 |
| WØMU | 274 |
| W6NL | 265 |

### Top 10 Mults

| | |
|---|---|
| K7RI | 57 |
| KW8N | 47 |
| N6RO | 47 |
| KA9FOX | 47 |
| W7WA | 46 |
| K6LA | 46 |
| N6ED | 45 |
| K7ZSD | 45 |
| N4PN | 45 |
| K9PG | 44 |
| W6NL | 44 |
| N4ZZ | 44 |
| K4BAI | 44 |
| N5ZK | 44 |
| K5NZ | 44 |

### Top 10 Low Power

| | |
|---|---|
| K7ZSD | 11475 |
| KA9FOX | 11139 |
| N4PN | 10710 |
| KØUK | 9660 |
| K5NZ | 8800 |
| NA4K | 8190 |
| KE5OG | 8096 |
| KU8E | 8077 |
| WØETT | 7600 |
| ACØW | 7600 |

### Top 10 QRP

| | |
|---|---|
| WA4PGM | 4699 |
| KC5R | 3200 |
| K6UFO | 372 |
| VA3RKM | 35 |

### Top 10 Golden (20 or more QSOs)

| | |
|---|---|
| NTØF | 131 |
| K5ZD | 122 |
| WI9WI | 101 |
| W5KI | 51 |
| WA4JA | 49 |
| W6ZZZ | 44 |
| K6UFO | 31 |
| KG9N | 29 |
| AL1G | 22 |

### Top 10 Band Changes

| | |
|---|---|
| KW8N | 91 |
| K9PG | 69 |
| N4ZZ | 64 |
| N6RO | 60 |
| K7ZSD | 50 |
| K6LA | 49 |
| KT0R | 38 |
| KØUK | 35 |
| ACØW | 32 |
| NA4BW | 32 |
| WE9V | 32 |

### Among the Maddening Crowd

By Danny, K7SS, (op at K7RI)

Conditions seemed okay while tuning through 20 meters just before the sprint started, but there were lots of big holes in between loud W9/W8 stations from 14.225 up to 14.275 MHz. The rest of the band was pretty quiet. Taken together, it was an ominous sign.

Of course, when 0000 came around, all hell broke loose and there was nowhere to go. In fact, it was so crowded I had to find semi-empty space by flipping between 14.220 and 14.290. If anyone calling was under an S5, they were swamped anywhere in the middle of the band. A missed call in the noise is a real clock eater, so I stayed on the edges for most of the first hour.

After 0100 it seemed that the band was being abandoned by many of the loud guys and there was actual room to hear low-level signals. The second hour was my slowest, and I would guess for many, it's one of their best. I tried to avoid 40 meters for as long as possible and stay on 20 because the band sometimes stretches out the Caribbean multiplier heaven. Not this time, though. It did, however, clear out well enough to allow for many casual ops to make it into the log.

I heard lots of 1s, 2s and 3s, all the casual ops who were just hanging out on 20 during their evening on the east coast. That's best chance for me to bag mults from Northeast on 20. Once you get to 40 it's a dogfight all over again and QRM makes it very tough to hear the 100-W dipole stations.

Because of the broadcast signals, 40 meters is always a challenge. The few available frequencies are instantly up for grabs. After every QSO there is one winner, and lots of missed QSO opportunities for the rest.

I stayed off 80 meters until the last half hour, hoping to compress what action was there into a tight time segment with good rate. There is nothing worse than working 80 with close-in loud and no where else to go. By that time 20 is dead and 40 is too long. Luckily, it worked and in the last half hour my first "CQ VE7" actually brought home the (Canadian) bacon....with a new mult.

made it close by racking up 2 more multipliers than KL2A despite having a lower QSO total. Also topping the 10K mark in third was Paul, N4PN. Rounding out the Top Ten were KØUK, K5NZ, NA4K, KE5OG, KU8E, WØETT and ACØW.

### High Power

Danny, K7SS, traveled to K7RI again to operate and notched his 7th SSB Sprint win. This win was an easy one since Danny had 32 QSOs and 10 multipliers more than his nearest competitors. See the sidebar for some comments from Danny about this Sprint.

This win ties Danny with K6LL and VA7RR for most high power SSB Sprint wins. It would be great to have K6LL, VA7RR, and K7SS on in February to see if one of them can become the undisputed champion of SSB Sprint. Of course, they will all have to get past Mr February Sprint of late, K9PG. SSB Sprint trivia: K6LL and VA7RR once tied for first with identical scores.

Finishing in second is no stranger to high finishes in the SSB Sprint: KW8N. Bob did his normal great job from Ohio racking up the second most QSOs and tying for second most multipliers.

Rounding out the Top Ten were K9PG, W7WA, K6LA, N6RO, N6ED, W6YX (N6DE), W6NL, and N4ZZ. It was Dave's, W6NL, first time in the Top Ten.

### Golden Logs

The Top Ten Golden Logs were NT0F, K5ZD, WI9WI, W5KI, WA4JA, W6ZZZ, K6UFO, KG9N, and AL1G. Congratulations to all on the accuracy! If you want a copy of your log checking report, please send an e-mail to **ssbsprint@ncjweb.com**.

### Records

In QRP, WA4PGM set a new Virginia mark and VA3RKM established a mark for Ontario. New low power area records are KK1KW in New Hampshire, N4PN in Georgia, K7ZSD (KL2A) in Oregon, and KA9FOX in Wisconsin. WP2Z (K8MJZ) established an initial record for the US Virgin Islands. There were no new high power records. You can view the SSB Sprint records at **www.ncjweb.com/ssbsprintrecords.php**.

### Scores

* denotes Low Power
**denotes QRP

| *Call* | *Name* | *QTH* | *20* | *40* | *80* | *QSO* | *Mlt* | *Score* | *Team* |
|---|---|---|---|---|---|---|---|---|---|
| KK1L | RON | VT | 105 | 77 | 64 | 246 | 42 | 10332 | |
| KK1KW | *FRED | NH | 60 | 54 | 42 | 156 | 36 | 5616 | |
| K5ZD | RANDY | MA | 41 | 50 | 31 | 122 | 33 | 4026 | |
| N4CW | BERT | ME | 77 | 32 | 0 | 109 | 34 | 3706 | |
| W1CRK | *CAL | MA | 8 | 0 | 0 | 8 | 4 | 32 | |
| WA2RY | *RON | NJ | 32 | 51 | 28 | 111 | 34 | 3774 | |
| KC2NMZ | PAUL | NJ | 29 | 61 | 25 | 115 | 31 | 3565 | Shakespeare |
| W2EQ | *TOM | NJ | 36 | 46 | 26 | 108 | 30 | 3240 | |
| KD2HE | VIC | NY | 14 | 17 | 11 | 42 | 24 | 1008 | |
| W5KI | STEVE | NJ | 23 | 28 | 0 | 51 | 18 | 918 | |
| K2RET | *BOB | NJ | 25 | 0 | 0 | 25 | 14 | 350 | |
| W2ARP | *BOB | NJ | 8 | 0 | 0 | 8 | 6 | 48 | |
| N8NA | *KARL | DE | 44 | 51 | 51 | 146 | 41 | 5986 | |
| AJ3M | MASA | MD | 68 | 51 | 31 | 150 | 37 | 5550 | |
| N3CA | *ROMEO | MD | 46 | 73 | 32 | 151 | 35 | 5285 | Shakespeare |
| NF3R | *ANDREW | MD | 39 | 39 | 0 | 78 | 24 | 1872 | |
| KB3MME | *JULIET | MD | 1 | 1 | 0 | 2 | 2 | 4 | Shakespeare |
| N4ZZ | DON | TN | 89 | 100 | 74 | 263 | 44 | 11572 | |
| N4PN | *PAUL | GA | 102 | 103 | 33 | 238 | 45 | 10710 | |
| K4BAI | JOHN | GA | 96 | 95 | 26 | 217 | 44 | 9548 | |
| NX9T | JEFF | NC | 81 | 92 | 55 | 228 | 38 | 8664 | |
| NA4K | *STEVE | TN | 57 | 77 | 61 | 195 | 42 | 8190 | |
| KU8E | *JEFF | GA | 59 | 85 | 53 | 197 | 41 | 8077 | |
| AD4EB | JIM | TN | 59 | 80 | 62 | 201 | 40 | 8040 | |
| NA4BW | *BRIAN | GA | 56 | 77 | 55 | 188 | 39 | 7332 | |
| KA1ARB | ROB | NC | 65 | 58 | 37 | 160 | 36 | 5760 | |
| WA4PGM | **KYLE | VA | 47 | 43 | 37 | 127 | 37 | 4699 | |
| N4GG | HAL | GA | 48 | 72 | 10 | 130 | 34 | 4420 | |
| N4GI | BLAKE | FL | 68 | 66 | 0 | 134 | 32 | 4288 | |
| WA4JA | *JOHN | TN | 11 | 14 | 24 | 49 | 23 | 1127 | |
| W4UAF | *ROMEO | VA | 23 | 16 | 0 | 39 | 16 | 624 | Shakespeare |
| KG4IUM | *JULIET | GA | 0 | 10 | 10 | 20 | 16 | 320 | Shakespeare |
| K4BP | *JEFF | TN | 16 | 0 | 0 | 16 | 9 | 144 | |
| K4TCM | *TOM | VA | 14 | 2 | 0 | 16 | 9 | 144 | |
| K5PTC | BOB | TX | 94 | 96 | 58 | 248 | 43 | 10664 | |
| N5ZK | JOE | TX | 123 | 80 | 0 | 203 | 44 | 8932 | |
| K5NZ | *MIKE | TX | 84 | 97 | 19 | 200 | 44 | 8800 | |
| KE5OG | *BILL | TX | 83 | 69 | 32 | 184 | 44 | 8096 | |
| K5AM | MARK | NM | 56 | 53 | 25 | 134 | 35 | 4690 | |
| W2MN | *TOM | TX | 56 | 31 | 15 | 102 | 37 | 3774 | |
| KC5R | **AL | LA | 43 | 35 | 22 | 100 | 32 | 3200 | |
| K6LA | KEN | CA | 142 | 110 | 44 | 296 | 46 | 13616 | SCCC #1 |
| N6RO | KEN | CA | 120 | 108 | 59 | 287 | 47 | 13489 | NCCC #1 |
| N6ED | ED | CA | 120 | 117 | 52 | 289 | 45 | 13005 | SCCC #1 |
| W6YX | BILL | CA | 131 | 120 | 47 | 298 | 43 | 12814 | NCCC #1 |
| W6NL | DAVE | CA | 116 | 96 | 53 | 265 | 44 | 11660 | NCCC #1 |
| K6XX | BOB | CA | 131 | 68 | 37 | 236 | 42 | 9912 | NCCC #1 |
| N6ZFO | BILL | CA | 95 | 81 | 32 | 208 | 41 | 8528 | NCCC #3 |
| KJ6RA | RICH | CA | 97 | 56 | 35 | 188 | 41 | 7708 | NCCC #1 |
| N6NZ | DAVE | CA | 77 | 59 | 37 | 173 | 39 | 6747 | NCCC #1 |
| W6OAT | *RUSTY | CA | 54 | 42 | 35 | 131 | 37 | 4847 | NCCC #2 |
| K6EY | *BECKY | CA | 59 | 52 | 30 | 141 | 31 | 4371 | SCCC #1 |
| ND6S | *RAY | CA | 71 | 36 | 17 | 124 | 33 | 4092 | |
| W6FB | *JACK | CA | 34 | 52 | 23 | 109 | 31 | 3379 | NCCC #2 |

| *Call* | *Name* | *QTH* | *20* | *40* | *80* | *QSO* | *Mlt* | *Score* | *Team* |
|---|---|---|---|---|---|---|---|---|---|
| N6RCE | *KEVIN | CA | 53 | 22 | 24 | 99 | 31 | 3069 | NCCC #2 |
| NO6X | KEN | CA | 38 | 38 | 0 | 76 | 30 | 2280 | |
| K6OWL | *MARK | CA | 11 | 39 | 19 | 69 | 24 | 1656 | NCCC #2 |
| K6III | JERRY | CA | 0 | 55 | 11 | 66 | 24 | 1584 | NCCC #1 |
| AE6NY | *ROMEO | CA | 41 | 6 | 8 | 55 | 25 | 1375 | Shakespeare |
| W6FRH | BOB | CA | 0 | 26 | 29 | 55 | 21 | 1155 | NCCC #3 |
| W6ZZZ | BERT | CA | 16 | 9 | 3 | 28 | 18 | 504 | |
| K6UFO | **MORK | CA | 14 | 9 | 8 | 31 | 12 | 372 | NCCC #2 |
| K7RI | DAN | WA | 218 | 88 | 45 | 351 | 57 | 20007 | |
| W7WA | DAN | WA | 168 | 80 | 54 | 302 | 46 | 13892 | |
| K7ZSD | *BRAD | OR | 120 | 98 | 37 | 255 | 45 | 11475 | NCCC #1 |
| WØMU | MIKE | MT | 126 | 76 | 72 | 274 | 38 | 10412 | |
| KO7X | ALAN | WY | 94 | 61 | 44 | 199 | 41 | 8159 | |
| W7RN | TOM | NV | 83 | 66 | 27 | 176 | 41 | 7216 | NCCC #1 |
| KI7Y | *JIM | OR | 66 | 39 | 0 | 105 | 33 | 3465 | |
| K7RAT | BERT | OR | 10 | 31 | 57 | 98 | 33 | 3234 | |
| AL9A | GARY | AK | 53 | 22 | 5 | 80 | 23 | 1840 | |
| AL1G | KIM | AK | 22 | 0 | 0 | 22 | 9 | 198 | |
| KW8N | BOB | OH | 118 | 139 | 72 | 329 | 47 | 15463 | |
| K8BB | DON | MI | 49 | 102 | 69 | 220 | 39 | 8580 | |
| K9PG | PAUL | IL | 97 | 145 | 74 | 316 | 44 | 13904 | 9&0 Lids |
| KA9FOX | *SCOTT | WI | 63 | 116 | 58 | 237 | 47 | 11139 | 9&0 Lids |
| N2BJ | BARRY | IL | 67 | 110 | 51 | 228 | 41 | 9348 | More 9&0 Lids |
| K9BGL | KARL | IL | 55 | 98 | 62 | 215 | 40 | 8600 | |
| WT9U | JIM | IN | 63 | 96 | 43 | 202 | 41 | 8282 | 9&0 Lids |
| WW9R | *PAT | WI | 25 | 87 | 50 | 162 | 36 | 5832 | More 9&0 Lids |
| WE9V | CHAD | WI | 53 | 89 | 0 | 142 | 37 | 5254 | More 9&0 Lids |
| WI9WI | JIM | WI | 35 | 45 | 21 | 101 | 37 | 3737 | 9&0 Lids |
| K9JS | *JON | IL | 37 | 51 | 0 | 88 | 32 | 2816 | 9&0 Lids |
| NA9U | *JOHN | IN | 7 | 42 | 0 | 49 | 24 | 1176 | |
| KG9N | *CHUCK | IL | 18 | 11 | 0 | 29 | 20 | 580 | |
| KØOU | STEVE | MO | 72 | 123 | 56 | 251 | 43 | 10793 | 9&0 Lids |
| KØUK | *BILL | CO | 78 | 97 | 55 | 230 | 42 | 9660 | |
| KTØR | DAVE | MN | 63 | 106 | 61 | 230 | 41 | 9430 | 9&0 Lids |
| WØBH | BOB | KS | 80 | 94 | 61 | 235 | 39 | 9165 | |
| WØETT | *KEN | CO | 92 | 90 | 18 | 200 | 38 | 7600 | |
| ACØW | *BILL | MN | 55 | 101 | 44 | 200 | 38 | 7600 | 9&0 Lids |
| KEØL | *JIM | MN | 50 | 54 | 33 | 137 | 35 | 4795 | 9&0 Lids |
| NTØF | *DON | IA | 32 | 60 | 39 | 131 | 33 | 4323 | |
| WW2Y | *PETER | NE | 48 | 33 | 33 | 114 | 33 | 3762 | |
| WGØM | *MIKE | MN | 52 | 43 | 0 | 95 | 33 | 3135 | 9&0 Lids |
| K4IU | *FRED | MN | 4 | 30 | 32 | 66 | 23 | 1518 | |
| VA3NR | CHRIS | VE3 | 63 | 80 | 37 | 180 | 38 | 6840 | |
| VE3RCN | *KEVIN | VE3 | 28 | 18 | 0 | 46 | 26 | 1196 | |
| VE3VMP | *MIKE | VE3 | 30 | 0 | 6 | 36 | 19 | 684 | |
| VA3RKM | **BOB | VE3 | 0 | 7 | 0 | 7 | 5 | 35 | |
| VE4VID | *TEDD | VE4 | 0 | 4 | 0 | 4 | 3 | 12 | |
| WP2Z | *STAN | KP2 | 63 | 0 | 0 | 63 | 28 | 1764 | |

Check Log: HC8N

**Teams**

The team winner was North California Contest Club #1. Second was Lids from Nine & Zero Land. Third was Southern California Contest Club #1 while fourth was More Lids from Nine & Zero Land. Fifth, sixth, and seventh were NCCC #2, A Shakespearean Tragedy, and NCCC #3.

**February Reminder**

The February 2006 Phone Sprint will be held at 0000Z on February 5 (February 4 local time). Get on and join us in the fun!

**Soapbox**

Nice to work familiar calls.—AJ3M.

Conditions to Europe were so bad that 40M had lots of clear frequencies. This band (40M) will be great when we get it exclusively.—K5ZD.

Another character building exercise—QRP with low wires (I'll say—more like some final, rite of passage test for Contesting Monks–*Ed*)—K6UFO.

Wow! Great fun coupled with great luck.—K7RI (K7SS).

Only antenna was an Alpha-Delta DXCC dipole at 30 feet. I was blown away by how well it worked (So am I—*Ed*).—KA9FOX.

My first contest.—KB3MME.

With new operating position in disarray, I had to clip lead some cables together to get the mic wired to the rig.—N8NA.

Out of synch and out of time.—W6ZZZ.

Just checking out the equipment when I noticed the contest. Thought I would give out the VI multiplier.—WP2Z (K8MJZ).

**Guest Ops**

NF3R (K3ASK)
W7RN (K5RC)
K5PTC (N1LN)
KB3MME (at WB3JHG)
W4UAF (KG4USK)
W6YX (N6DE)
K7ZSD (KL2A)
N5ZK (W5ASP)
K7RI (K7SS)
WP2Z (K8MJZ)
K7RAT (N6TR)

NCJ

# March 2005 NA RTTY Sprint Results

Doug McDuff, W4OX

The March 2005 running of the NA RTTY Sprint is history and the results revealed some outstanding efforts. Before getting to the results, however, "ye editor" would like to pass along some observations.

First, and on a positive note, with each successive running of this Sprint fewer logs are encountered that take more than limited "editing" to be readable by the log checking software. Thanks are in order for both the participants and the authors of the various contest programs that support this contest. Second, while the 61 logs that were submitted reflect a good turn-out for this event, ye editor does not believe that the threshold has been reached to eliminate the unique feature of being able to work the same station more than once. While some may disagree, it appears this feature is still necessary to maintain interest for the entire Sprint. Comments on this issue are welcome.

Now for the results…

### High Power

Congratulations are in order for a big score submitted by Charlie, KI5XP, who edged out Ty, K3MM. In turn, Ty led Dave, K6LL, by a small margin. The significance of the scores of these great operators was that they happened to be on the same team (SWACC). As noted later in this write-up, the combined scores of these gentlemen, along with their other team members, blew away the competition.

### Low Power

Of interest, the number of low power logs that were submitted numbered slightly double the number of high power logs. Nevertheless, the top low power scores did not lag that far behind very many of their high power counterparts.

Bob, KI6DY, made a fine showing and took top honors in the low power category with a score of 8,510. A quick check showed that he would have placed a respectable sixth in the high power category. Great effort Bob! Taking second and third place, respectively, in this category were Ron, NØAT, and Jim, KØHW.

### QRP

Despite the claim in his soapbox comments about how slow he started out, Mark, K6UFO, operating at W6YX, ended with a bang. His score of 4,488 in the "peanut whistle" category deserves special recognition. This would not only be for his fantastic score, but also for his patience. Way to go, Mark!

### Operation From Outside North America

Special thanks go to KH6GMP and JA1XRH for their contributions to this event. Gary, KH6GMP, made a FB effort, with a final score of 3,150. Thank you to both gentlemen for their participation.

### Team Competition

Six teams registered and participated in this contest. As noted above, SWACC easily ran away with the "trophy" in this category with a combined score of 73,174. Truly a fantastic finish!

Congratulations to all of the participants and thanks for getting on during this contest. Hope to see you in the next one!

### High Power

| *Call sign* | *Score* |
|---|---|
| KI5XP | 11,581 |
| K3MM | 11,200 |
| K6LL | 10,640 |
| K5AM | 10,027 |
| W7WW | 9,468 |
| K4GMH | 8,547 |
| AD4EB | 8,474 |
| WØETC | 6,984 |
| N2BJ | 5,320 |
| K9DJ | 4,896 |
| K6OWL | 3,720 |
| N1KWF | 3,410 |
| KE6RAD | 3,390 |
| VE6YR | 3,069 |
| KJ6RA | 2,996 |
| W6ZZZ | 2,204 |
| AB9H | 1,100 |
| W4ZE | 1,100 |
| AA5AU | 476 |

| *Call sign* | *Score* |
|---|---|
| KJ7NO | 6,688 |
| WI8W | 6,623 |
| K9WX | 5,610 |
| VE7FO | 5,304 |
| W7TMT | 4,960 |
| W6FFH | 4,860 |
| K9SEX (K5NZ op) | 4,725 |
| NY1S | 4,512 |
| W9WI | 4,384 |
| N9LF | 4,305 |
| VA7ST | 4,060 |
| K3SV | 4,020 |
| WB6TQG | 3,937 |
| NY4N | 3,680 |
| AD4AX | 3,584 |
| K9TR | 3,528 |
| W4OX | 3,520 |
| VE3ESH | 3,444 |
| N6EE | 2,604 |
| KØXU | 2,376 |
| W4BCG | 2,236 |
| VA3PL | 1,846 |
| N1WI | 1,664 |
| XE1NK | 1,500 |
| K5ZD | 1.325 |

| *Call sign* | *Score* |
|---|---|
| N8PUG | 1,166 |
| VE3RCN | 1,100 |
| N4LF | 1,056 |
| K9JS | 1,012 |
| WA4OSD | 987 |
| AI4JW | 833 |
| WAØWHT | 760 |
| W1DY | 595 |
| WA2UET | 330 |

### QRP

| *Call sign* | *Score* |
|---|---|
| W6YX (K6UFO op) | 4,488 |
| WA6BOB | 315 |

### Outside NA

| *Call sign* | *Score* |
|---|---|
| KH6GMP | 3,150 |
| JA1XRH | 4 |

### Teams

| *Team* | *Score* |
|---|---|
| SWACC | 73,174 |
| TCG Volunteers | 32,948 |
| NCCC #1 | 17,345 |
| SMC | 16,247 |
| BRAARC | 7,789 |
| CCO Icebergs | 6,390 |

# July 2005 NAQP RTTY Results

Shelby Summerville, K4WW

I doubt very seriously if anyone of us could have imagined, in July, what would take place on the Gulf Coast in September. The devastation the people living there experienced certainly puts contesting in a very different perspective! Knowing the intensity and competitive nature of some of our Gulf Coast contesting friends, I have no doubt that not only will they survive this devastation, but they'll return bigger and better than ever.

Poor propagation? You bet! As noted in the soapbox, many mentioned the less than favorable band conditions. Single Operator logs (234) were down, while M/2 (10) were up from February. Regardless of the conditions, this may have been the closest finish in NAQP history? Just to confirm that multipliers are very important, AA5AU (86,335) finished with two less contacts than KI5XP (86,086), but Don's multiplier total was one more than Charlie's, giving AA5AU another NAQP RTTY victory. Only 249 points separated these two Louisiana neighbors. K5AM posted another nice score from New Mexico, finishing third. WK6I (CA), K5CM (OK), WX4TM (AL), W1ZT (MA), K9MUG (AL), KI6DY (KS) and AD4EB (TN) round out the top ten for North American stations. YV6BTF posted another first place finish among 22 DX entries.

W6YX (ND2T, W6ZZZ, N7MH, N2YM, N6DE, K6OWL, K6UFO) continue to dominate the multi-operator category, easily out distancing their California neighbors, NN6NN (N6EE, N6TQS, AK6DV, W6KX), 105,570 to 81,760. K9SEX (K5NZ, KU5B), W1SLF (KB1JZU, KT1I, N1MGO) operating from Sugarloaf Mountain, in Vermont, W4GAC (AI4IE, WA4EEZ, KU4BT, KR4U, N4RI, KP2N), W2YC, VE7OGS (VA7RY, VE7KNK, VE7MVF) and IK1PMR (K2LEO, IK1PMR) round out the multi-operator category. Surely one or more contest superstations can put together a multi-operator group to give the West Coast some competition?

SWACC #1, (AA5AU, KI5XP, K5AM, KI6DY, K7WM) with a score of 312,777 easily outdistanced the "radio challenged" SO1R (WX4TM, W1ZT, K9MUG, K4GMH, K4WW) team score of 268,787. TCG Blues (AD4EB, WØETC, N4ZZ, KE4KWE, KI8U), one of five TCG entries, finished third.

DX stations are reminded that only contacts with North American stations will count for points! Several stations were classified as check logs, for varying reasons. Please pay attention to the Cabrillo header when submitting your log. There is no "high power" category in NAQP.

Thanks to Bruce, WA7BNM for the log checking. Bruce will also be making online certificates available to the qualifying winners. Making these certificates available online will save several man-hours spent printing and mailing, as well as the cost to our sponsor, ICOM America. As y'all may or may not be aware, ICOM America, through their general sales manager, Ray Novak, has been the sole sponsor of the NAQP RTTY award program since 1991. Please accept my appreciation for the expressions of gratitude to Ray, and ICOM!

**Top 10**

| *Call* | *Score* | *QSOs/Mults* | *80* | *40* | *20* | *15* | *10* | *Team* |
|---|---|---|---|---|---|---|---|---|
| AA5AU | 86,335 | 557/155 | 81/36 | 215/52 | 225/48 | 36/19 | 0/0 | SWACC #1 |
| KI5XP | 86,086 | 559/154 | 73/34 | 190/52 | 265/53 | 30/14 | 1/1 | SWACC #1 |
| K5AM | 71,820 | 540/133 | 58/30 | 177/44 | 296/53 | 9/6 | 0/0 | SWACC #1 |
| WK6I | 68,256 | 474/144 | 55/18 | 143/50 | 220/49 | 55/26 | 1/1 | NCCC Team 1 |
| K5CM | 63,574 | 478/133 | 57/30 | 192/50 | 209/45 | 20/8 | 0/0 | |
| WX4TM | 61,920 | 480/129 | 90/39 | 153/41 | 208/39 | 29/10 | 0/0 | SO1R |
| W1ZT | 59,250 | 474/125 | 56/29 | 149/43 | 257/44 | 12/9 | 0/0 | SO1R |
| K9MUG | 55,083 | 427/129 | 103/39 | 135/43 | 181/43 | 8/4 | 0/0 | SO1R |
| KI6DY | 54,932 | 443/124 | 85/35 | 171/43 | 175/39 | 12/7 | 0/0 | SWACC #1 |
| AD4EB | 54,864 | 432/127 | 101/38 | 158/47 | 150/34 | 23/8 | 0/0 | TCG Blues |

**Team Scores**

| *Team* | *Score* |
|---|---|
| SWACC #1 (AA5AU, KI5XP, K5AM, KI6DY, K7WM) | 312,777 |
| SO1R (WX4TM, W1ZT, K9MUG, K4GMH, K4WW) | 268,787 |
| TCG Blues (AD4EB, WØETC, N4ZZ, KE4KWE, KI8U) | 191,113 |
| SWACC #2 (AE5AA, W7ZR, AD6WL, N7UVH, WBØDUL, KE5OG) | 173,336 |
| TCG Jazz(W9HLY,W4LC,VA7ST,WA4OSD,W4BCG) | 128,673 |
| NCCC Team 1 (WK6I, N6RCE, KE6RAD, KJ6RA, KO6LU) | 113,896 |
| YCCC Plus (W8BAR, NB1B, WA8SDA, K5ZD) | 113,226 |
| TCG Country (KØIDT, NY4N, WB4YDL, K4HMB, N8PUG) | 84,906 |
| SMC #1 (W9SE, KE9I, N9LF) | 76,257 |
| Acadiana RTTY Cajuns (NA5Q, K5UA, N5RLM) | 73,594 |
| COCOSOLO SIBICHI CLUB (NC2N, K2PAL, N2TA) | 60,485 |
| Misfits (WO4D, KC4HW, W4EIP) | 52,045 |
| TCG Folk (NP4BM, K5ZM, KS0M, N1WI, KA7KUZ) | 51,194 |
| NCCC Team 2 (K6DGW, W6RK, WB6TQG) | 49,136 |
| RTTY RATS (KE7AJ, KH6GMP) | 48,808 |
| CTRI Contest Group North (KO1H, W1HY, WL7Z/1) | 40,837 |
| CTRI Contest Group South (AJ1M) | 27,225 |
| TCG Rock (K3UK/2, KE4OAR, W4TDB, DJ6JH) | 5329 |

**Soapbox:**

AA5AU: Tough conditions!

ABØLR: Had fun!

AC7KY: My first RTTY contest. Had a blast.

ADØEB: Sure like the 10hr and low power format.

IK1PMR: Working 100+ NA stations (low power of course) in NAQP RTTY from EU is really challenging with current propagation conditions.

K4GMH: Good activity considering vacations and not the best band conditions.

K5ZM: First RTTY test. First RTTY anything, actually.

K9MUG: Recent hurricanes limited the antenna preparations.

K9SEX: Well, that was brutal!

KI5XP: Finally learned how to ask people to change bands.

KI6DY: I swear the older I get the stupider I get, or so it seems.

KK5OQ: Conditions did not seem as good as Feb.

KO1H: Fun test. Rough propagation.

KSØM: Great fun. Ready for the next one.

N7MQ: Poor conditions on West Coast, but lots of fun

NA5Q: I love these 10 hour contests. Easy on the body!

NB1B: 10M was almost nonexistent.

NN6NN: With 10M and 15M all but useless, our 2nd radio didn't contribute much for several hours.

VA7ST: High band conditions were lousy here.

WØETC: I sure hope this was the low end of the sun spot cycle!

W1SLF: Too bad about the propagation, but we had a ball.

W1ZT: There were 15% non-North American stations in my log.

W6YX: The level of RTTY operating skill out there is great.

WX4TM: This is really a short, fun contest.

ZL3TE: Nice way to spend a Winter Sunday afternoon.

## Single Op

| Call | Score | QSOs | Mults | State | Team |
|---|---|---|---|---|---|
| W1ZT | 59,250 | 474 | 125 | MA | SO1R |
| W8BAR | 49,140 | 390 | 126 | MA | YCCC Plus |
| NB1B | 45,076 | 382 | 118 | MA | YCCC Plus |
| NY1S | 38,586 | 354 | 109 | ME | |
| K1DAN | 23,688 | 252 | 94 | NH | |
| KO1H * | 21,620 | 235 | 92 | RI | CTRI CONTEST GROUP NORTH |
| W1HY | 13,475 | 175 | 77 | RI | CTRI CONTEST GROUP NORTH |
| KB1HDO | 11,286 | 171 | 66 | MA | |
| K5ZD | 6930 | 110 | 63 | MA | YCCC Plus |
| WL7Z/1 | 5742 | 99 | 58 | RI | CTRI CONTEST GROUP NORTH |
| N1UZ | 3572 | 76 | 47 | MA | |
| N1WAT | 2976 | 93 | 32 | MA | |
| W1AW (WB8IMY) | 2030 | 70 | 29 | CT | |
| N4CW/1 | 1281 | 61 | 21 | ME | |
| W1LZ | 570 | 30 | 19 | NH | |
| NC2N (EW1AR) | 39,480 | 376 | 105 | NY | COCOSOLO SIBICHI CLUB |
| W2RTY (W1TY) | 30,396 | 298 | 102 | NY | |
| NT2A | 28,100 | 281 | 100 | NY | |
| K2PAL | 20,485 | 241 | 85 | NY | COCOSOLO SIBICHI CLUB |
| KA2D | 12,546 | 153 | 82 | NY | |
| KF2XF | 6672 | 139 | 48 | NY | |
| W2NRA | 5096 | 98 | 52 | NY | |
| K3UK/2 | 2457 | 63 | 39 | NY | TCG Rock |
| N2TA (KC2FVN) | 520 | 26 | 20 | NY | COCOSOLO SIBICHI CLUB |
| AB0OX | 56 | 8 | 7 | NJ | |
| W3WKR | 23,760 | 264 | 90 | PA | |
| W4ZE | 19,008 | 216 | 88 | PA | |
| WA3AAN | 18,990 | 211 | 90 | PA | |
| W3KB | 9360 | 144 | 65 | PA | |
| N3XLS | 7749 | 123 | 63 | PA | |
| K3WW | 5088 | 106 | 48 | PA | |
| N3NZ | 4830 | 105 | 46 | PA | |
| W3DQN | 3504 | 73 | 48 | MD | |
| AJ3M | 2490 | 83 | 30 | MD | |
| AB3AI | 1590 | 53 | 30 | PA | |
| N3NR | 522 | 29 | 18 | PA | |
| W3ADX | 450 | 30 | 15 | MD | |
| WX4TM | 61,920 | 480 | 129 | AL | SO1R |
| K9MUG | 55,083 | 427 | 129 | AL | SO1R |
| AD4EB | 54,864 | 432 | 127 | TN | TCG Blues |
| K4GMH | 50,099 | 421 | 119 | VA | SO1R |
| K4WW | 42,435 | 369 | 115 | KY | SO1R |
| N4ZZ | 36,120 | 344 | 105 | TN | TCG Blues |
| W4LC | 35,310 | 321 | 110 | KY | TCG Jazz |
| AF4Z | 34,220 | 295 | 116 | FL | |
| WO4O | 32,865 | 313 | 105 | TN | |
| W9WI | 31,415 | 305 | 103 | TN | |
| KE4KWE | 30,704 | 304 | 101 | AL | TCG Blues |
| WO4D | 29,757 | 273 | 109 | FL | Misfits |
| W4MLB (KG4CZU) | 28,416 | 296 | 96 | FL | |
| AF4OX | 28,222 | 274 | 103 | SC | |
| WB4EQS | 26,829 | 271 | 99 | FL | |
| K4IQJ | 25,652 | 242 | 106 | AL | |
| WB2RHM | 22,407 | 231 | 97 | NC | |
| WA4OSD | 22,119 | 219 | 101 | TN | TCG Jazz |
| KC4HW | 21,984 | 229 | 96 | AL | Misfits |
| NY4N | 20,532 | 236 | 87 | TN | TCG Country |
| NA4K | 19,758 | 222 | 89 | TN | |
| WB4YDL | 18,868 | 212 | 89 | TN | TCG Country |
| AB4GG | 18,786 | 202 | 93 | TN | |
| K4HMB | 17,160 | 195 | 88 | NC | TCG Country |
| KJ4QF | 12,243 | 159 | 77 | VA | |
| W9IXX/4 | 11,690 | 167 | 70 | NC | |
| NX4W | 11,100 | 148 | 75 | FL | |
| W4BCG | 10,080 | 144 | 70 | AL | TCG Jazz |
| K4BX | 9792 | 136 | 72 | TN | |
| K4ZJ | 9310 | 133 | 70 | GA | |
| N1WI | 4002 | 87 | 46 | TN | TCG Folk |
| AI4JW | 3818 | 83 | 46 | VA | |
| AA4LR | 3108 | 74 | 42 | GA | |
| KE4OAR | 1408 | 44 | 32 | TN | TCG Rock |
| KØCOP | 1300 | 50 | 26 | SC | |
| W4TDB | 1160 | 40 | 29 | TN | TCG Rock |
| KE1F | 1080 | 45 | 24 | FL | |
| K4JAF | 1053 | 39 | 27 | FL | |
| NQ4K | 882 | 42 | 21 | VA | |
| K4AQ * | 651 | 31 | 21 | GA | |
| W4EIP | 304 | 19 | 16 | FL | Misfits |
| KV4CN | 288 | 18 | 16 | NC | |
| AA5AU | 86,335 | 557 | 155 | LA | SWACC #1 |
| KI5XP | 86,086 | 559 | 154 | LA | SWACC #1 |
| K5AM | 71,820 | 540 | 133 | NM | SWACC #1 |
| K5CM | 63,574 | 478 | 133 | OK | |
| NA5Q | 48,750 | 390 | 125 | LA | Acadiana RTTY Cajuns |
| AE5AA (N5ZM) | 45,824 | 358 | 128 | AR | SWACC #2 |
| KU5S | 35,280 | 294 | 120 | TX | |
| K5UA | 14,861 | 193 | 77 | LA | Acadiana RTTY Cajuns |
| KE5OG | 10,212 | 148 | 69 | TX | SWACC #2 |
| N5RLM | 9983 | 149 | 67 | LA | Acadiana RTTY Cajuns |
| KS5V | 8607 | 151 | 57 | TX | |
| W5MCK | 6732 | 102 | 66 | TX | |
| KK5CA | 5610 | 102 | 55 | TX | |
| KØCIE | 5252 | 101 | 52 | OK | |
| K5WW | 5152 | 112 | 46 | TX | |
| K5WAL | 4982 | 94 | 53 | TX | |
| KA5EYH | 3420 | 76 | 45 | TX | |
| KE5LQ | 2700 | 75 | 36 | TX | |
| W1DY | 2607 | 79 | 33 | OK | |
| K5WWT * | 960 | 40 | 24 | TX | |
| AC5ZG | 910 | 35 | 26 | TX | |
| AD5BY | 551 | 29 | 19 | TX | |
| W5TB | 49 | 7 | 7 | TX | |
| WB5EXI | 16 | 4 | 4 | TX | |
| WK6I | 68,256 | 474 | 144 | CA | NCCC Team 1 |
| N6OJ | 43,920 | 366 | 120 | CA | |
| AD6WL | 41,685 | 397 | 105 | CA | SWACC #2 |
| K6HGF | 36,708 | 322 | 114 | CA | |
| W6OAT | 23,140 | 260 | 89 | CA | |
| K6DGW | 18,662 | 217 | 86 | CA | NCCC Team 2 |
| N6RCE | 16,646 | 203 | 82 | CA | NCCC Team 1 |
| W6RK | 16,380 | 195 | 84 | CA | NCCC Team 2 |
| WB6TQG | 14,094 | 174 | 81 | CA | NCCC Team 2 |
| KE6RAD | 14,040 | 180 | 78 | CA | NCCC Team 1 |
| KH6GMP | 11,872 | 212 | 56 | KH6 | RTTY RATS |
| KJ6RA | 10,404 | 153 | 68 | CA | NCCC Team 1 |
| W6OQI | 7874 | 127 | 62 | CA | |
| K6XJ | 7085 | 109 | 65 | CA | |
| K6RFA | 6384 | 112 | 57 | CA | |
| WB6JJJ | 6195 | 105 | 59 | CA | |
| KO6LU | 4550 | 91 | 50 | CA | NCCC Team 1 |
| WA6BOB | 3888 | 81 | 48 | CA | |
| K6BIR | 2992 | 68 | 44 | CA | |
| K6XX | 1888 | 59 | 32 | CA | |
| W6ISQ | 1508 | 52 | 29 | CA | |
| W6SJ | 1363 | 47 | 29 | CA | |
| NC6P | 352 | 22 | 16 | CA | |
| N5KO/6 | 247 | 19 | 13 | CA | |
| W7ZR | 45,356 | 391 | 116 | AZ | SWACC #2 |
| WA7LNW | 44,128 | 394 | 112 | UT | |
| KE7AJ | 36,936 | 342 | 108 | WA | RTTY RATS |
| W7CT | 36,120 | 344 | 105 | UT | |
| KJ7NO | 21,168 | 216 | 98 | UT | |
| N7MQ | 17,100 | 225 | 76 | OR | |
| W6RLL | 16,351 | 197 | 83 | AZ | |
| N7UVH | 15,249 | 221 | 69 | ID | SWACC #2 |
| K5ZM | 14,592 | 192 | 76 | OR | TCG Folk |
| K7WM | 13,604 | 179 | 76 | AZ | SWACC #1 |
| N7BF | 13,067 | 179 | 73 | WA | |
| W7TVF | 12,900 | 172 | 75 | NV | |
| K7HBN | 6210 | 115 | 54 | WA | |
| AA7IH | 5141 | 97 | 53 | OR | |
| KR7X | 4600 | 92 | 50 | OR | |
| WG7X | 3815 | 109 | 35 | WA | |
| KA7KUZ | 3471 | 89 | 39 | WA | TCG Folk |
| W7WHY | 3362 | 82 | 41 | OR | |
| W9PL | 1798 | 58 | 31 | WA | |
| W7LD | 1100 | 44 | 25 | WA | |
| AC7KY | 352 | 32 | 11 | WA | |
| KD7EJC | 56 | 8 | 7 | AZ | |
| K8AJS | 35,168 | 314 | 112 | OH | |
| KI8U | 28,140 | 268 | 105 | OH | TCG Blues |
| AJ1M | 27,225 | 275 | 99 | WV | CTRI Contest Group South |
| K5ZG | 12,848 | 176 | 73 | OH | |
| WA8SDA | 12,080 | 151 | 80 | WV | YCCC Plus |
| N8BJQ | 9,045 | 135 | 67 | OH | |
| N8PUG | 4,316 | 83 | 52 | MI | TCG Country |
| KC8NKA | 1,488 | 48 | 31 | MI | |
| N8PVL | 1,316 | 47 | 28 | MI | |
| KE9S | 48,555 | 415 | 117 | WI | |
| W9HLY | 38,416 | 343 | 112 | IN | TCG Jazz |
| W9SE | 32,118 | 303 | 106 | IL | SMC #1 |
| KE9I | 28,392 | 273 | 104 | IN | SMC #1 |
| N9LF | 15,747 | 181 | 87 | IN | SMC #1 |
| W9ILY | 13,667 | 173 | 79 | IL | |

| Call | Score | QSOs | Mults | State | Team |
|---|---|---|---|---|---|
| AA9DY | 7015 | 115 | 61 | IL | |
| AI9T | 5733 | 117 | 49 | IL | |
| K9XL | 3773 | 77 | 49 | IL | |
| KW9L | 1271 | 41 | 31 | IL | |
| KC9DQP | 104 | 13 | 8 | IL | |
| | | | | | |
| KI6DY | 54,932 | 443 | 124 | KS | SWACC #1 |
| AB0LR | 43,290 | 370 | 117 | CO | |
| W0ETC | 41,285 | 359 | 115 | IA | TCG Blues |
| KT0DX | 40,080 | 334 | 120 | CO | |
| K0RFD | 34,155 | 345 | 99 | CO | |
| K0IDT | 24,030 | 267 | 90 | NE | TCG Country |
| K0HW | 23,562 | 238 | 99 | SD | |
| K0JJR | 18,156 | 204 | 89 | MN | |
| N0AT | 16,095 | 185 | 87 | MN | |
| NT0F | 15,484 | 196 | 79 | IA | |
| WB0DUL | 15,010 | 190 | 79 | CO | SWACC #2 |
| N0OBM | 14,499 | 179 | 81 | KS | |
| KS0M | 13,806 | 177 | 78 | MO | TCG Folk |
| K0CF | 9248 | 136 | 68 | IA | |
| K0AD | 5772 | 111 | 52 | MN | |
| N0UX | 5720 | 104 | 55 | CO | |
| WD0M | 3136 | 64 | 49 | CO | |
| K0EFM | 2940 | 70 | 42 | MO | |
| KA0EIC | 2360 | 59 | 40 | KS | |
| K0VG | 1824 | 57 | 32 | MN | |
| | | | | | |
| VE2RYY | 45,465 | 433 | 105 | PQ | |
| VE1OP | 24,186 | 278 | 87 | NS | |
| VE6YR | 23,901 | 257 | 93 | AB | |
| VA7ST | 22,748 | 242 | 94 | BC | TCG Jazz |
| VE9DX | 20,520 | 228 | 90 | NB | |
| VE3HG | 20,086 | 242 | 83 | ON | |
| W1AJT/VE3 | 16,720 | 190 | 88 | ON | |
| VE3FH | 14,365 | 169 | 85 | ON | |
| VE3IAY | 10,191 | 129 | 79 | ON | |
| VE3LFA | 9240 | 132 | 70 | ON | |
| VE3DZ | 8410 | 145 | 58 | ON | |
| VE3GLO | 6976 | 109 | 64 | ON | |
| VE3ESH | 6804 | 108 | 63 | ON | |
| VE6AX | 5200 | 100 | 52 | AB | |
| VE3UKR | 2550 | 75 | 34 | ON | |
| VE3RCN | 2356 | 62 | 38 | ON | |



| Call | Score | QSOs | Mults | State | Team |
|---|---|---|---|---|---|
| VE2FU * | 238 | 17 | 14 | PQ | |
| VA3TTU | 1 | 1 | 1 | ON | |
| | | | | | |
| NP4BM | 15,323 | 199 | 77 | KP4 | TCG Folk |
| HR2/LU1DY | 5814 | 102 | 57 | HR | |
| | | | | | |
| YV6BTF | 33,027 | 303 | 109 | DX | |
| ZL3TE (W3SE) | 2,240 | 64 | 35 | DX | |
| SP6IHE | 1,960 | 56 | 35 | DX | |
| CU2JT | 1,600 | 50 | 32 | DX | |
| G3LHJ | 1,200 | 48 | 25 | DX | |
| UT9FJ | 736 | 32 | 23 | DX | |
| SP3GXH | 560 | 28 | 20 | DX | |
| SP3BGD | 476 | 28 | 17 | DX | |
| SP2HXY | 432 | 24 | 18 | DX | |
| DJ6JH | 304 | 19 | 16 | DX | TCG Rock |
| DC3HB | 294 | 21 | 14 | DX | |
| JA1BHK | 260 | 20 | 13 | DX | |
| OE1KTS | 221 | 17 | 13 | DX | |
| SM6BSK | 208 | 16 | 13 | DX | |
| IY0TC (I0KHP) | 168 | 14 | 12 | DX | |
| MW0CPZ | 88 | 11 | 8 | DX | |
| SP5ECC | 72 | 9 | 8 | DX | |
| YB5BO | 54 | 9 | 6 | DX | |
| OK2SWD/P | 28 | 7 | 4 | DX | |
| JR1BAS | 21 | 7 | 3 | DX | |
| 7L4IOU | 9 | 3 | 3 | DX | |
| YB2ECG | 4 | 2 | 2 | DX | |

* = QRP

The following were treated as check logs either because they submitted their log as a check log, or they indicated that they operated high power: DJ3IW, F5IHP, N0YCY, PA0WRS, SV3EXU, W4DJ.

Logs from the following were not processed because the log contained the wrong contest, the wrong mode, wrong dates/times, insufficient QSO data (complete exchange received was not included) or there was some other problem with the formatting of the log that made it unusable: AI6O, DL1APX, KA1C, KA1VMG, KC7NUP, N3YEA, YU7AM.

### MultiOp

| Call | Score | QSOs | Mults | State |
|---|---|---|---|---|
| W6YX | 105,570 | 621 | 170 | CA |
| (ND2T, W6ZZZ, N7MH, N2YM, N6DE, K6OWL, K6UFO,) | | | | |
| NN6NN | 81,760 | 511 | 160 | CA |
| (N6EE, N6TQS, AK6DV, W6XK,) | | | | |
| K9SEX | 69,412 | 469 | 148 | TX |
| (K5NZ,KU5B,) | | | | |
| W1SLF | 54,808 | 442 | 124 | ME |
| (KB1JZU, KT1I, N1MGO,) | | | | |
| W4GAC | 53,802 | 427 | 126 | FL |
| (AI4IE, WA4EEZ, KU4BT, KR4U, N4RI, KP2N,) | | | | |
| W2YC | 52,700 | 425 | 124 | NJ |
| (W2YC,) | | | | |
| VE7OGO | 11,088 | 198 | 56 | BC |
| (VA7RY, VE7KNK, VE7MVF,) | | | | |
| IK1PMR | 5,243 | 107 | 49 | DX |
| (K2LEO, IK1PMR,) | | | | |

NCJ

# North American QSO Parties (NAQP) CW/SSB/RTTY Rules

**(Revised November 30, 2005)**

**1. Eligibility:** Any licensed radio amateur may enter.

**2. Object:** To work as many North American stations as possible during the contest period.

**3. North American Station:** Defined by the ARRL's DXCC list with the addition of KH6.

**4. Contest periods:**

*January/February 2006 Contests:*

CW: 1800Z January 14 to 0600Z January 15, 2006 (Second full weekend in January)

SSB: 1800Z January 21 to 0600Z January 22, 2006 (Third full weekend in January)

RTTY: 1800Z February 25 to 0600Z February 26, 2006 (Last full weekend in February)

*July/August 2006 Contests:*

RTTY: 1800Z July 15 to 0600Z July 16, 2006 (Third full weekend in July)

CW: 1800Z August 5 to 0600Z August 6, 2006 (First full weekend in August)

SSB: 1800Z August 19 to 0600Z August 20, 2006 (Third full weekend in August)

**5. Entry Classification:**

a) Single Operator:

i) One person performs all transmitting, receiving, spotting, and logging functions as well as equipment and antenna adjustments.

ii) Use of helpers or spotting nets, regardless of the mode of communication (e.g. PacketCluster), is not permitted.

iii) Only one transmitted signal allowed at a time.

iv) May operate 10 out of the 12 hours of the contest. Off times must be at least 30 minutes in length.

b) Multi-Operator Two-Transmitter

i) More than one person performs transmitting, receiving and logging functions, etc.

ii) A maximum of two transmitted signals at any given time, each on a different band. Both transmitters may work any and all stations.

iii) Shall keep a separate log for each transmitter.

iv) Each transmitter must have at least 10 minutes between band changes.

v) May operate for the entire 12 hours of the contest.

**6. Output power must be limited to no more than 100 watts for eligible entries.** Use of external amplifiers capable of more than 100 watts output is not allowed. QRP (5W) entries will be recognized in the results.

**7. Mode:** CW only in CW parties. SSB only in phone parties. RTTY only in RTTY parties.

**8. Bands:** 160, 80, 40, 20, 15, 10 meters only, except no 160 meters for the RTTY contest. You may work a station once per band. Suggested frequencies are 1815, 3535, 7035, 14035, 21035 and 28035 kHz (35 kHz up from band edge for Novice/Tech) on CW; and 1865, 3850, 7225, 14250, 21300, and 28500 kHz (28450 for Novice/Tech) on SSB. When operating on 160-meters, please respect the DX window of 1830-1840 kHz and keep SSB operations above 1840 kHz.

**9. Station:** All radio transmitters, receivers and antennas used by an entrant must be associated with one station, either at a fixed geographical location or as a mobile/portable station. A station may be operated remotely. Use of multiple stations during the contest, whether directly or remotely operated, is prohibited.

**10. Exchange:** Operator name and station location (state, province, or country) for North American stations; operator name only for non-North American stations. If the name sent is changed during the contest, as sometimes happens with multi-operator stations, the name used for each QSO must be clearly identified in the log.

**11. Multipliers:** US states (including KH6 and KL7), 13 Canadian provinces/territories (British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, PEI, Newfoundland/Labrador, Yukon, NWT, and Nunavut) and other North American countries. District of Columbia counts as Maryland. Non-North American countries, maritime mobiles and aeronautical mobiles do not count as multipliers, but may be worked for QSO credit.

**12. Valid Contact:** A valid contact consists of a complete, correctly copied and legibly logged two-way exchange between a North American station and any other station. Proper logging requires including the time in UTC and band for each contact. Regardless of the number of licensed call signs issued to a given operator, one and only one call sign shall be utilized during the contest by that operator.

**13. Scoring:** Multiply total valid contacts by the sum of the number of multipliers worked on each band.

**14. Team Competition:** You may wish to form a team with fellow NAQP participants. If so, your team must consist of 2 to 5 single operator stations whose individual scores are combined to produce a team score. Although clubs or other groups having more than 5 members may form multiple teams, there is no distance or meeting requirements for a team entry.

Teams must be registered prior to the start of the contest. Use one of the following on-line forms to register your team:

CW Team Registration:
**www.ncjweb.com/cwnaqpteamreg.php**

SSB Team Registration:
**www.ncjweb.com/ssbnaqpteamreg.php**

RTTY Team Registration:
**www.ncjweb.com/rttynaqpteamreg.php**

These team registration forms automatically provide confirmation of team registration by returned e-mail.

**15. Log formatting:** All logs containing more than 100 QSOs must be submitted as an ASCII text file, with one line per QSO,. Cabrillo is the standard format for all NAQP logs. For those participants who use paper logging, please use either the *Excel* spreadsheet template (available at **www.ncjweb.com/naqplogtemplate.xls**) or the manual log entry Web-to-Cabrillo on-line forms available at the links given below to submit your logs. Paper log originals will be accepted from those participants who have no other means of submitting their log. Paper log forms are available on the *NCJ* Web site (**www.ncjweb.com/naqpforms.pdf**) for the convenience of those who log on paper during the contest.

For a Cabrillo-formatted log, submit only the log file. Please confirm that your output power is properly stated in the header portion of the Cabrillo log before submission. LOW indicates the use of 100W or less, while QRP indicates 5W or less. Submissions that indicate the use of HIGH power will be used as check logs. For a non-Cabrillo log, a proper entry consists of: (1) a summary sheet showing the number of valid contacts and multipliers by band, total contacts and multipliers, total score, team name (if applicable), power output, name, call sign and address of the operator, station call sign and exchange (name and location) sent during the

contest; and (2) a complete log, including date and time (in UTC), frequency or band, and copied call and exchange for each QSO.

Name your files with your call sign (i.e. yourcall.log). Please do not send binary files produced by a contest logging program (e.g. yourcall.BIN, yourcall.QDF, etc.).

**16. Log submission: Entries must be postmarked no later than 14 days after the contest to be eligible for awards.** Methods of log submission in order of preference are as follows:

a) Upload Cabrillo-formatted log via Web form (preferable):

All modes: **www.ncjweb.com/naqplogsubmit.php**

b) E-mail log (ASCII text file, or Excel file if template used):

CW: **cwnaqp@ncjweb.com**

SSB: **ssbnaqp@ncjweb.com**

RTTY: **rttynaqp@ncjweb.com**

c) Mail 3.5-inch floppy disk, containing log file, to the appropriate address listed below.

d) Manually convert paper log to Cabrillo log using one of the following tools:

CW: **www.b4h.net/cabforms/naqpcw_cab.php**

SSB: **www.b4h.net/cabforms/naqpssb_cab.php**

RTTY: **www.b4h.net/cabforms/naqprtty_cab.php**

e) Mail original paper log to the appropriate address listed below.

CW/SSB: Bruce Horn, WA7BNM
4225 Farmdale Ave
Studio City, CA 91604 USA
CW e-mail: **cwnaqp@ncjweb.com**
SSB e-mail: **ssbnaqp@ncjweb.com**

RTTY: Shelby Summerville, K4WW
6506 Lantana Ct
Louisville, KY 40229-1544 USA
e-mail: **rttynaqp@ncjweb.com**

**17. Disqualifications:** Entries with score reductions greater than 5 percent may be disqualified. Any entry may be disqualified for illegibility, illegal or unethical operation. Such disqualification is at the discretion of the contest manager.

**18. Awards:** Plaques will be awarded for the high score in each of the categories given below, provided there are a minimum of five entries in the category. If a plaque is not sponsored, the winner may purchase it. Certificates of merit will be awarded to the highest scoring entrant with at least 200 QSOs from each state, province, or North American country. Certificates of merit will also be awarded to the overall second and third place finishers in the multi-operator category for each mode.

**Plaques will be awarded as follows:**

| *Mode* | *Category* | *Sponsor* |
|---|---|---|
| CW | Single Op, North America | Florida Contest Group |
| CW | Multi-Op, North America | Texas DX Society |
| SSB | Single Op, North America | South East Contest Club |
| SSB | Multi-Op, North America | Tennessee Contest Group |
| Combined CW/SSB | Single Op, North America | Southern California Contest Club |
| RTTY | Single Op, North America | ICOM |
| RTTY | Single Op, DX | ICOM |
| RTTY | Multi-Op, North America | ICOM |
| RTTY | Multi-Op, DX | ICOM |
| RTTY | Team | ICOM |

# North American Sprint CW/SSB/RTTY Rules

**(Revised November 30, 2005)**

**1. Eligibility:** Any licensed radio amateur may enter.

**2. Object:** For North American stations to contact as many licensed radio amateurs as possible. For non-North American stations to contact as many North American stations as possible.

**3. Entry Classification:** High power, low power (100W) and QRP (5W). Single operator only. Use of helpers, packet or spotting nets is not permitted.

**4. Contest periods:**

*February/March 2006 Contests:*
SSB: 0000Z-0400Z February 5, 2006
(Sunday of first full weekend in February)
CW: 0000Z-0400Z February 12, 2006
RTTY: 0000Z-0400Z March 12, 2006
(Sunday of second full weekend in March)
*September/October 2006 Contests*
CW: 0000Z-0400Z September 10, 2006
(first Sunday following first Monday in September)
SSB: 0000Z-0400Z September 17, 2006
(second Sunday following first Monday in September)
RTTY: 0000Z-0400Z October 15, 2006
(Sunday of second full weekend in October)

These are entirely separate four-hour Sprints. Note that the CW Sprint comes before the SSB Sprint in September, but not in February.

**5. Mode:** CW only in CW Sprints, SSB only in SSB Sprints, RTTY only in RTTY Sprints.

**6. Bands:** 80, 40 and 20 meters only. Suggested frequencies are around 3540, 7040 and 14040 kHz on CW; 3850, 7225 and 14275 kHz on Phone; and 3580, 7080 and 14080 kHz on RTTY. You may work the same station once per band. *Note*: For RTTY only, the same station can be worked multiple times provided 3 contacts separate the contact in both logs, regardless of band.

**7. Exchange:** To have a valid exchange, you must send all of the following information: the other station's call, your call, your serial number, your name and your location (state, province, or country). You may send this information in any order. For example:

N6TR DE K7GM 154 RICK NC K
K7GM NR 122 TREE OR DE N6TR K

**8. Valid Contact:** A valid contact consists of a complete, correctly copied and logged two-way exchange between a North American station and another station. Proper logging requires including the time of each contact. Serial numbers must begin with serial number one and be sequential thereafter.

**9. North American Station:** Defined by the rules of the CQ WW DX Contests. Note that KH6 is not in North America.

**10. Scoring:** Multiply total valid contacts by the sum of the U.S. states, Canadian Provinces and other North American Countries to get final score (do not count USA and Canada as countries). District of Columbia counts as Maryland. KH6 is not counted as a State and is not a North American country (but counts for QSO credit). The eight Canadian multipliers are Maritime (VE1, VE9, VO1, VO2 and VY2), VE2 through VE7, and Yukon-NWT (VY0, VY1 and VE8). Non-North American countries do not count as multipliers, but do count for QSO credit for North American stations.

**11. Special QSY Rule:** If any station solicits a call (by sending CQ, QRZ?, "going up 5 kHz," or any other means of soliciting a response, including completion of a QSO where the frequency was inherited), they are permitted to work only one station in response to that solicitation. They must thereafter move at least 1 kHz before calling another station, or at least 5 kHz before soliciting other calls. Once a station is required to QSY, that station is not allowed to make another QSO on the vacated frequency until or unless at least one subsequent QSO is made on a new frequency.

**12. Additional Rules:** Simultaneous transmission on more than one frequency is prohibited. All contacts must be sent and received using means requiring real-time human intervention, detection and initiation. Each operator must use only one call sign during the contest.

**13. Log Formatting:** All competitive logs (more than 100 QSOs) must be submitted electronically (e-mail, 3.5-inch floppy, etc.). The file format for electronic logs for *NCJ*-sponsored contests is Cabrillo. Entrants who do not use computer logging are encouraged to use the manual Web-to-Cabrillo on-line forms available at the links given below to enter the QSO info from their paper logs.

**14. Log Submission: Entries must be received no later than 7 days after the Sprint**. Methods of log submission in order of preference are as follows:

a. Upload Cabrillo-formatted log via Web form (preferable):
   All modes: **www.ncjweb.com/sprintlogsubmit.php**
b. E-mail log (ASCII text file):
   CW: **cwsprint@ncjweb.com**
   SSB: **ssbsprint@ncjweb.com**
   RTTY: **rttysprint@ncjweb.com**
c. Mail 3.5-inch floppy disk, containing ASCII log file, to the appropriate address listed below.
d. Manually convert paper log to Cabrillo log using one of the following tools:
   CW: **www.b4h.net/cabforms/nasprintcw_cab.php**
   SSB: **www.b4h.net/cabforms/nasprintssb_cab.php**
   RTTY: **www.b4h.net/cabforms/nasprintrtty_cab.php**
e. Mail original paper log to the appropriate address listed below:

Send CW logs to: Boring Amateur Radio Club
15125 Bartell Rd
Boring, OR 97009 USA
E-mail: **cwsprint@ncjweb.com**

Send SSB logs to: Jim Stevens, K4MA
6609 Vardon Ct
Fuquay-Varina, NC 27526 USA
E-mail: **ssbsprint@ncjweb.com**

Send RTTY logs to: Douglas McDuff, W4OX
10380 SW 112th Street
Miami, FL 33176 USA
E-mail: **rttysprint@ncjweb.com**

**15. Team Competition:** Team competition is limited to a maximum of 10 operators as a single entry unit. Groups having more than ten team members may submit more than one team entry. To qualify as a team entry, the team registration form on the *NCJ* Web site must be completed before the contest starts. Use one of the following links:

CW Team Registration:
**www.ncjweb.com/cwsprintteam.html**
SSB Team Registration:
**www.ncjweb.com/ssbsprintteam.html**
RTTY Team Registration:
**www.ncjweb.com/rttysprintteam.html**

**16. Penalties and Disqualification:** Contacts with incorrect received information will be removed. Contacts not found in the other station's log will be removed with a one QSO penalty. Entries with score reductions in excess of 5 percent may be disqualified. Any entry also may be disqualified for illegibility, illegal or unethical operation. NCJ

# SAVE BIG ON ANTENNAS, TOWERS & CABLE

### TELESCOPING ALUMINUM TUBING

**DRAWN 6063-T832**

| | | | |
|---|---|---|---|
| .375" | $.80/ft | 1.375" | $1.85/ft |
| .500" | $.90/ft | 1.500" | $2.05/ft |
| .625" | $1.00/ft | 1.625" | $2.35/ft |
| .750" | $1.10/ft | 1.750" | $2.60/ft |
| .875" | $1.20/ft | 1.875" | $2.85/ft |
| 1.000 | $1.30/ft | 2.000" | $3.10/ft |
| 1.125 | $1.45/ft | 2.125" | $3.60/ft |

**EXTRUDED 6061-T6**

| | | | |
|---|---|---|---|
| | | .188" rod | $.35/ft |
| .250" rod | $.50/ft | 4"x.375" bar | $6.50/ft |
| 2"x.125" | $4.50/ft | 2"x.250" | $8.00/ft |

**6' OR 12' LENGTHS. 6' LENGTHS SHIP UPS.**

### ANTENNA ROTATORS

| | |
|---|---|
| M2 OR-2800PDX | $1279 |
| Hygain HAM IV | $499 |
| Hygain T2X Tailtwister | $569 |
| Yaesu G-450A | $249 |
| Yaesu G-800SA/G-800DXA | $329/409 |
| G-1000DXA | $499 |
| Yaesu G-2800SDX | $1089 |
| Yaesu G-550 | $299 |
| Yaesu G-5500 | $599 |

### ROTATOR CABLE

| | |
|---|---|
| R62 (#18), HD 6 conductor | $.39/ft. |
| R81/82/84, 8 cond. | $.29/ft./.49/ft./.99/ft. |

### ROHN TOWER

| | |
|---|---|
| 25G/45G/55G | $99/209/259 |
| 25AG2/25AG3/25AG4 | $119/149/129 |
| 45AG2/45AG4 | $249/249 |
| AS25G/AS455G | $49/109 |
| BPC25G/BPC45G/BPC55G | $89/119/129 |
| BPL25G/BPL45G/BPL55G | $99/189/219 |
| GA25GD/GA45GD/GA55GD | $99/139/159 |
| GAR30/GAS604 | $39/49 |
| SB25G/45/55 | $59/109/149 |
| SB25G5/SBH25G | $79/139 |
| TB3/TB4 | $139/159 |

**PLEASE CALL FOR MORE ROHN ITEMS.**

### COMET ANTENNAS

| | |
|---|---|
| GP3, 2m/70cm Vertical | $99 |
| GP6, 2m/70cm Vertical | $149 |
| GP9 2m/70cm Vertical | $189 |
| GP15, 6m/2m/70cm Vertical | $159 |
| GP98, 2m/70cm/23cm Vertical | $189 |

### DIAMOND ANTENNAS

| | |
|---|---|
| X50A, 2m/70cm Vertical | $109 |
| X200A, 2m/70cm Vertical | $149 |
| X510MA 2m/70cm Vertical | $195 |
| X500HNA 2m/70cm Vertical | $259 |
| X700HNA 2m/70cm Vertical | $399 |
| V2000A 6m/2m/70cm Vertical | $172 |

### M2 VHF/UHF ANTENNAS

| | |
|---|---|
| 6M5X/6M7JHV | $219/289 |
| 6M2WLC/6M9KHW | $489/529 |
| 2M4/2M7/2M9SSBFM | $105/119/139 |
| 2M12/2M5WL | $179/219 |
| 2M5-440XP, 2m/70cm | $189 |
| 440-470-5W/420-450-11 | $149/105 |
| 432-9WL/432-13WLA | $189/255 |
| 440-18/440-21ATV | $135/159 |

### M2 SATELLITE ANTENNAS

| | |
|---|---|
| 2MCP14/2MCP22 | $189/259 |
| 436CP30/436CP42UG | $255/299 |

**CALL FOR MORE IN-STOCK M2 ITEMS.**

### HYGAIN ANTENNAS

| | |
|---|---|
| AV18HT Hightower | $739 |
| DIS71/72 | $269/569 |
| TH3JRS/TH3MK4 | $319/399 |
| TH5MK2/TH2MK3 | $659/319 |
| TH7DX/TH11DX | $749/995 |

### MFJ

| | |
|---|---|
| 259B/269, Analyzers | $229/319 |
| 948/949E, Tuners | $129/149 |
| 969, HF–6m Tuner | $179 |
| 986, 3kW Tuner | $299 |
| 989D, Deluxe 3kW Tuner | $319 |
| 991/993 Autotuners | $199/229 |

### COAX CABLE

| | |
|---|---|
| RG-213/U, (#8267 Equiv.) | $.45/ft |
| RG-8X, Mini RG-8 Foam | $.25/ft |
| RG-213/U Jumpers | Please Call |
| RG-8X Jumpers | Please Call |

**CALL FOR MORE COAX/CONNECTORS.**

### TIMES MICROWAVE LMR® COAX

| | |
|---|---|
| LMR-400 | $.59/ft |
| LMR-400DB Direct Bury | $.74/ft |
| LMR-400 Ultraflex | $.89/ft |
| LMR-600 | $1.19/ft |
| LMR600 Ultraflex | $1.95/ft |

**CALL FOR MORE SIZES & CONNECTORS.**

### TOWER HARDWARE

| | |
|---|---|
| 3/8"EE/EJ Turnbuckle | $15/16 |
| 1/2"x9"EE/EJ Turnbuckle | $21/23 |
| 1/2"x12"EE/EJ Turnbuckle | $24/26 |
| 3/16"/1/4" Big Grips | $5/6 |
| 3/16"EHS-500'/1/4"EHS-500' | $119/149 |

**PLEASE CALL FOR MORE HARDWARE.**

### HIGH CARBON STEEL MASTS

| | |
|---|---|
| 5 FT x .12" / 5 FT x .18" | $45/59 |
| 11 FT x .12" / 11 FT x .25" | $80/199 |
| 12 FT x .18" / 17 FT x .12" | $159/149 |
| 20 FT x .18" / 22 FT x .12" | $249/199 |
| 23 FT x .25" / 24 FT x .18" | $369/299 |

### PHILLYSTRAN GUY CABLE

| | |
|---|---|
| HPTG1200I | $.45/ft |
| 1200 END KIT | $3.60 |
| HPTG2100I | $.59/ft |
| PLP2738 Big Grip (2100) | $7.00 |
| HPTG4000I | $.89/ft |
| PLP2739 Big Grip (4000) | $9.50 |
| HPTG6700I | $1.29/ft |
| PLP2755 Big Grip (6700) | $13.50 |
| HPTG11200 | $1.89/ft |
| PLP2758 Big Grip (11200) | $16.00 |

**PLEASE CALL FOR HELP SELECTING THE PHILLYSTRAN SIZE FOR YOUR PROJECT.**

### TRYLON "TITAN" TOWERS

**SELF-SUPPORTING STEEL TOWERS**

| | | |
|---|---|---|
| T200-64 | 64', 15 square feet | $1489 |
| T200-72 | 72', 15 square feet | $1819 |
| T200-80 | 80', 15 square feet | $2169 |
| T200-88 | 88', 15 square feet | $2529 |
| T200-96 | 96', 15 square feet | $2969 |
| T300-88 | 88', 22 square feet | $2869 |
| T400-80 | 80', 34 square feet | $2759 |
| T500-72 | 72', 45 square feet | $2629 |
| T600-64 | 64', 60 square feet | $2499 |
| T700-56 | 56', 80 square feet | $2349 |

**MORE TRYLON TOWERS AVAILABLE.**

### UNIVERSAL ALUMINUM TOWERS

| | |
|---|---|
| **4**-40'/50'/60' | $569/809/1149 |
| **7**-50'/60'/70' | $1039/1499/1969 |
| **9**-40'/50'/60' | $809/1149/1619 |
| **12**-30'/40' | $599/949 |
| **15**-40'/50' | $1069/1529 |
| **16**-60'/80' | $2219/3389 |
| **21**-50'/60'/70' | $1759/2339/2929 |
| **23**-30'/40' | $959/1419 |
| **35**-40' | $1649 |

**BOLD IN PART NUMBER SHOWS WIND LOAD CAPACITY. SHIPS DIRECT FROM THE FACTORY TO SAVE YOU MONEY!**

### US TOWER CRANK-UPS

| | |
|---|---|
| MA40/MA550 | $1099/1699 |
| MA770/MA850 | $2799/4349 |
| TMM433SS/HD | $1479/1789 |
| TMM541SS | $1939 |
| TX438, 38' Crankup Tower | $1379 |
| TX455, 55' Crankup Tower | $1899 |
| TX472, 72' Crankup Tower | $3139 |
| TX489MDPL, 89' Motorized HD | $8239 |
| HDX538, 38' Extra Heavy Duty | $1649 |
| HDX555, 55' Extra Heavy Duty | $2889 |
| HDX572MDPL 72' Motorized | $7549 |

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IC-756PROIII

# Did you log K7C?

*DXA allowed DXers, for the first time, to view the current status and activities of the DX'pedition in near real-time. When K7C went QRV, there were 156,000 people logged onto DXA. On the average, during the entire operation, an average of 18,000 hams were watching DXA. By the time K7C went QRT, the DXA Website had sustained 80 million hits!*

The K7C DX'pedition to Kure Atoll is over. Operators logged over 50,000 Q's from all over the world. The radio of choice for this DX'pedition? Icom's '756PROIII. The '756PRO series was the first rig with 32-bit floating point IF-DSP. The first amateur rig with a large, TFT color LCD. In keeping with tradition, the PROIII pushes the envelope, extending receiver performance to a +30dBm third order intercept point (TOI) – a first in this price range! Two new '7800-style preamplifiers maximize sensitivity while minimizing distortion. It's no wonder Icom's PRO series rigs have been a part of some of the best DX'peditions. Find out for yourself from your authorized Icom dealer.

**IC-756PROIII** • **TX**: HF + 6M • 100W, continually adjustable down to 5W • Adjustable SSB TX bandwidth • Digital voice recorder • Auto antenna tuner • **RX**: 30 kHz to 60 MHz • Quiet, triple-conversion receiver • 32 bit IF-DSP with 24-bit A/D D/A converters • 64 MHz roofing filter • 5" TFT color LCD • 8 Channel RTTY TX memory • Digital twin passband tuning • Auto or manual-adjust notch with 70 dB attenuation • 13.4" W x 4.4" H x 11.2" D • 21.1 lb • And much more

"The K7C operation faced two very difficult challenges: weak propagation at the sunspot minimum and marginal propagation to Europe. The 756PROIIIs easily made the difference between success and failure under these marginal conditions, enabling the operators to routinely locate, and work, calls at, and sometimes below, the average noise level. Without the superior capabilities of the 756PROIIIs, the K7C log would undoubtedly have been ten or twenty thousand QSOs shorter."

- Robert Schmieder, KK6EK

Icom Sponsored DX'peditions K7C

"The IC-756PROIIIs proved to be reliable and straightforward to use. The operating positions were frequently over 100 degrees and the radios were often running at maximum power for extended periods of time - yet we had no failures nor did they ever even seem to get hot. The receivers were particularly good at handling a pileup. Instead of turning the many signals into mush, the signals remained distinct and easy to copy." - Ward Silver, NØAX

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