

# JUG

Publication of the  
Northern California  
Contest Club



May  
2011  
Issue 468

NCCC Net  
Thursday 8 PM  
3610+/-

*Guests are always welcome at the NCCC! Please join us.*

**MONDAY, May 9, 2011**

## Program

**TBD**

**Date:** Monday, May 9, 2011

**Time:** 6:00pm schmooz, 7:00pm dinner, 7:30pm  
program

**Location:** Tied House Brewery 954 Villa Street, Mountain  
View, CA

**Dinner:** RSVP to N3ZZ, [nccc.n3zztreasurer@gmail.com](mailto:nccc.n3zztreasurer@gmail.com)

### NCCC Officers

President: [Chris Tate, N6WM](#)

Vice-President and Contest Chairman: [Hank Garretson,  
W6SX](#)

Secretary/Treasurer: [Tom Hutton, N3ZZ](#)

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Director: [John Miller, K6MM](#)

Director: [Bob Vallio, W6RGG](#)

**Webmaster:** John Miller, [John Miller, K6MM](#)

**Acting JUG Editor:** Rob Brownstein, [k6rb@baymoon.com](mailto:k6rb@baymoon.com)



### President's Message

By Chris Tate, N6WM

Greetings KB'ers

First and foremost I would like to thank each and every one of you for giving me the honor of another year in service to the greatest contest club in the world. I will do my best to share all my energy and enthusiasm for this club and contesting with all of you!

I would also like to thank last year's team of club officers for a FB job, it was an honor to work with you all and I learned a tremendous amount from each and every one of you.

I would also like to welcome our new leadership team on board!

Being in service to an organization that you care about can be deeply rewarding. I would definitely recommend it to anyone who truly enjoys being part of this wonderful team we call the NCCC.

On that note I would like to take a moment to honor someone who has been in service to this club for many years, in a lot of different ways but in particular as the editor of this newsletter. Rob, K6RB, has tirelessly and professionally produced this fine newsletter, month after month, administration after administration, contest season after contest season; producing a document that requires continuous content to keep it interesting and engaging. Rob has done an outstanding job of this! His ability to produce content, sometimes when none was apparently available, is a testament to his expertise.

Rob has decided it's time to step down as publisher of the Jug. He has certainly gone above and beyond and I know that I can speak for the entire club in expressing my deepest gratitude for your patience, wisdom and publication knowledge. (Not to mention a KB contester!). So Rob, on behalf of the membership of the NCCC, and from me personally, thank you for your work and your contribution to NCCC history. We can only hope to find a worthy successor, as your work certainly cannot be replaced. KB, Rob, and Thanks, OM.

As most may realize, this is a large club, with many different functions. The new board of directors recently met, and the energy of this team is intoxicating! I am really excited about the upcoming contest year, and hope you will join me in sharing in the enthusiasm that the contesting aspect of the amateur radio hobby can provide. Now, we have a great leadership team, but we cannot do this alone. We will be reaching out to the club membership for leadership and guidance for specific contests, committees and additional opportunities to serve. I hope you will consider one of these positions as they come available. It can be exciting, educational and fun! The next thing you know once you get involved with service to the contesting community, you may find yourself the manager of your favorite contest one day!

Again, I enthusiastically look forward to the upcoming contest year. It is humbling and an honor to serve this great organization as president. I look forward to seeing you all at each meeting, and, of course, working you on the air doing what we all do so well!

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## VP/CC

By: Hank Garretson, W6SX

Hello Fellow Contesters!

I am very honored that you have selected me for your new VP/CC. Thank you. I will do my very best not to disappoint you. I have three goals for my term.

- Increase contest activity by little and medium guns through encouragement, mentoring, and special recognition. We can't all be big guns, but that shouldn't discourage anyone from getting on and having fun.
- Recruit individual members to beat the drum for various contests. I will be asking members to help me with some contests.
- To define contest success as having fun regardless of score. Sometimes we may feel pressure to get on and maximize our points. But maybe on a certain weekend your definition of fun is trying to pick up band-countries, or maybe running QRP. Don't feel compelled to maximize score—that's a sure path to burnout. Do what's fun.

Speaking of fun, WPX CW is coming up Memorial Day weekend. NCCC won the North American club plaque last year (highest combined SSB-CW points). This year we got off to a bit of a slow start in WPX SSB, but we're still in the hunt to two-peat. How might we win? We need a bunch of NCCC'ers getting on for WPX CW and having fun. Why is WPX a fun contest?

- Everyone works everyone—points for both DX and USA contacts.
- Lots of multipliers. There are a gazillion prefixes out there and it's a hoot to see your score increase with each new prefix.
- Extra points on 40, 80, and 160 meters.
- WPX has Rookie and Tribander/Wire overlays. A good opportunity to compete against similar operators and stations.
- The opportunity to be rare by having a rare prefix. If you're a garden-variety W6 or K6 and want to have even more fun, borrow a better call. Post a request on the NCCC list and someone will offer you a good WPX call.
- WPX is a contest that somewhat reduces the east-coast contest advantage.

Let's get on and KB!

**The first rule of contesting is to have fun—Contest Exuberantly**

## Approaching “Full Auto”

By: Rob Brownstein, K6RB

Some years ago when Ken, N6RO, first goaded me into setting up an SO2R station, I sat down and planned it all out. I would have two radios, a pair of switched band pass filter boxes each containing filters for 160, 80, 40, 20, 15 and 10 meters, a pair of band decoders to guide the band pass filters, and separate antennas and feed lines for the six HF contest bands.

But, I had a problem. At that time, the biggest coax switch that allowed multiple antennas to be switched between two radios was the so-called “Six Pak.” It switched up to six feed lines between two radios. I had seven! So, my solution (stealing a page from N6TV’s playbook) was to use a pair of 4x1 switches and divide up the contest bands between radios 1 and 2 (see figure 1). During a contest, radio 1 could switch among 80, 20 and 10; and radio 2 could switch among 160, 40 and 15. But, I could not operate 20 and 10 simultaneously, because they were both assigned to radio 1. Also, for casual operation, neither radio could select among the 9 HF antennas I had available unless I jury-rigged something (which I did do). You’ll note in figure 1 that the 160, 40, 15 meter coax switch can be routed over to radio 1 via the 2x1 switch shown. But, you have to remember to change that switch, and also to switch the tuner’s antenna switch so that radio 1 is routed to the 2x1. Sometimes, I would forget and wonder why 15 sounded so dead on radio 1.

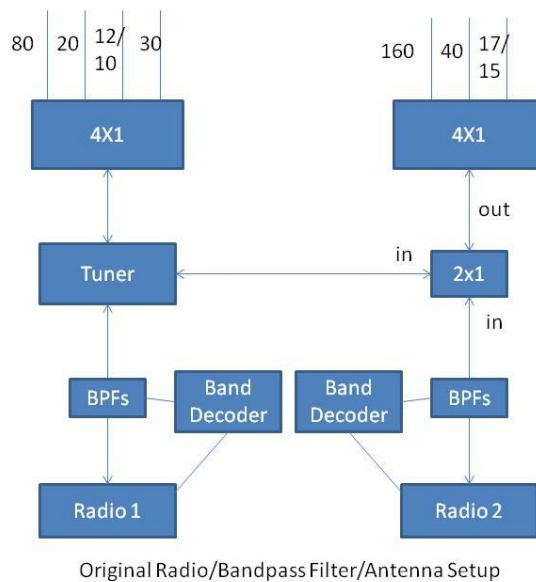


Figure 1

I kept my eyes open for a more elegant solution, and finally, Array Solutions introduced its “Eight Pak.” This was an 8x2 switch that could be mast mounted and would allow two radios to share up to eight feed lines and antennas (see figure 2). But, as long as I was going to do that, I also wanted to make things more automatic. In both cases, the band decoder boxes gather band data from the radios and switch in the appropriate band pass filters. I also wanted the band decoder to communicate with the antenna switch, so that both the band pass filter and the antenna were automatically selected.

Array Solutions had a solution. Its new Bandmaster III band decoder boxes, and the new Eight Pak controller box, all had ShackLAN-4 networking capability. That meant when I changed bands on either K3 or on the logging program, the band decoders would select both the correct band pass filter and let the Eight Pak know which antenna to switch in. What’s more, the ShackLAN-4 network is a parallel network that involves four wires (12 V, ground, A and B). By connecting a single 12 volt supply to the network, everything on it shares the power. And, the A/B lines communicate the band data from the each radio to the Eight Pak allowing it to assign the correct antenna to the proper radio. As a safeguard, you cannot assign both radios to one antenna. If you try to do so, one gets connected, and one does not, and its indicator on the control box flashes to let you know.

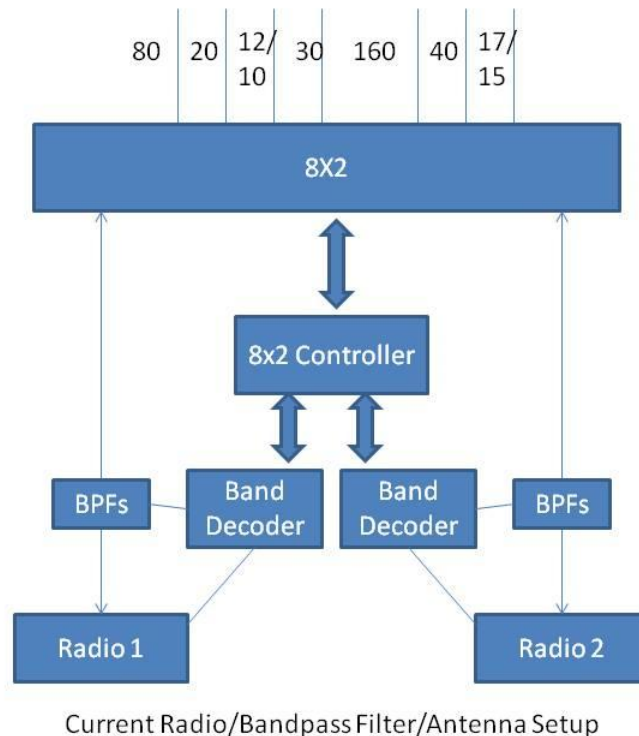


Figure 2

The other problem I had been mulling over was the 80 meter rotary dipole I had sitting up at 90 feet. As shown in figure 3, it is essentially a pair of shortened, top-hat verticals with coils at the feed point, laid feed point to feed point in a horizontal position. When you first put it up, you move the coil end point around to find a suitable position for the center frequency of choice (in my case, it was 3.525 MHz). Then, you screw the end into the element using a stainless steel bolt, washer and nut. This antenna has quite high Q, and, therefore, a relatively narrow 2-to-1 SWR bandwidth. I could operate from 3.50 to 3.535, for example, without the SWR-sensitive Alpha 87A kicking out on me. But, to operate any higher, I had to use a tuner on the end of the feed line, in the shack, to lower the SWR looking in. Of course, the SWR at the feed point, 200 feet away, could be quite high. That, in turn, meant higher SWR-related losses in the coax.

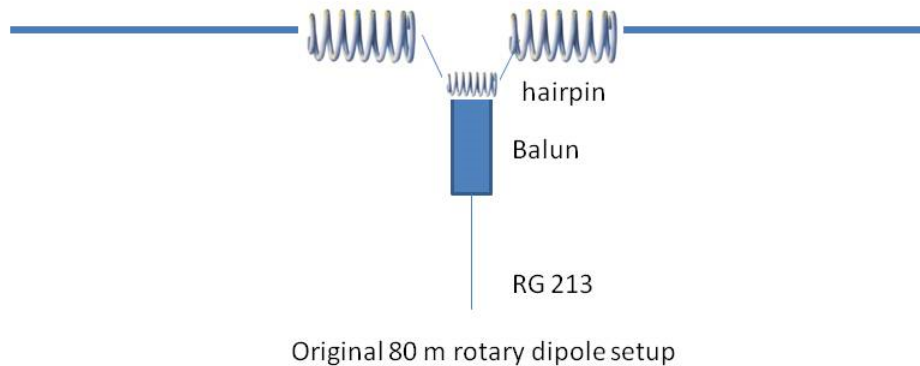


Figure 3

So, I was hoping to come up with a more elegant way to use that antenna. And, again, a solution was found. An enterprising California amateur radio operator had invented something he called a “tornado.” If you look at figure 4, you’ll see two coils inside a cylindrical enclosure. Running axially through both coils are screws turned by a DC motor sitting between the coils. When the motor turns in one direction, the screw will direct the caps on the opposite ends of the coils toward the ends of the cylinder. When reversed, it will compress the two coils toward the center of the cylinder. Since that

compression/decompression changes the number of turns per inch, it also effectively changes the inductance of each coil. It is similar in concept to a motorized screwdriver antenna, but instead of fixed coil and movable tap, it literally changes the turns density of the coil.

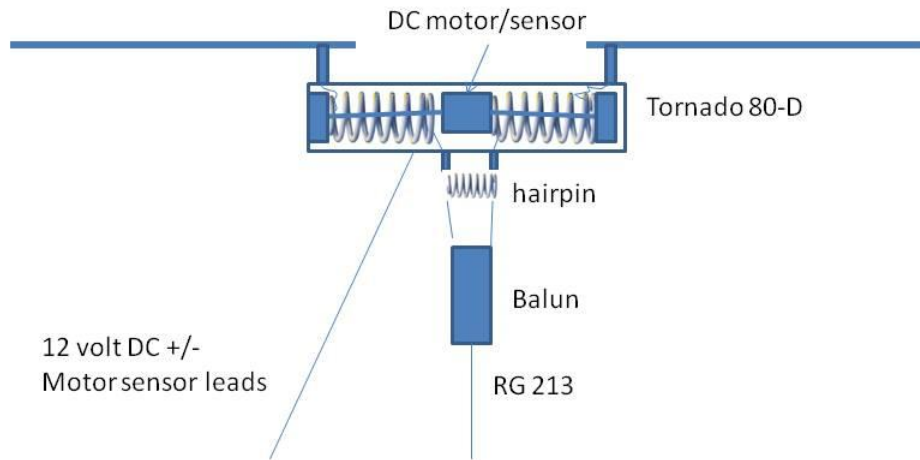


Figure 4

To install the Tornado, one would have to remove the fixed coils from the ends of the dipole elements, and attach the rigid metal contacts located at each end of the cylinder to the antenna elements. It involves marking then drilling a 1/4-inch hole in the element then slipping a bolt through the hole in the metal contact, through the element, and securing it on the other side. The cylinder weighs about 10 pounds, so I also chose to support it using a bungee cord to affix it to the mast, taking its weight off the contacts and antenna elements (see photo 1).



The Eight Pak installed on Sigma 180 S

Both the Eight Pak and the Tornado required me to lower the tower (it's a crank-up that has an electric motor for raising and lowering it); then maneuvering may way around the various elements of the three mounted antennas in order to remove the old 4x1 switches, mount the Eight Pak, then remove the coils from the 80 m antenna, and install the Tornado.

Having made similar changes to the antenna system, before, I knew that I would need what's known as a "boom lift." This is a motorized system that you "drive" from your position in the basket while raising and positioning yourself appropriately for the work at hand. When the tower is fully retracted, the 80 m dipole is still up around 45 feet, so I needed a boom lift that could get up at least 60 feet or more in order to come at it from an angle and avoid damaging the elements of the lower antennas. Photo 2 shows the boom lift I used. This one is called an "articulated" boom lift. Instead of co-linear booms that extend in a line for 60 feet when fully extended, this one has more of a scissor-like structure that allows you to raise a lower arm, and upper arm, and extend a single co-linear arm. As a result, I could get closer to the tower and maneuver myself up without damaging the elements of the 5 BA or the EF230/240.





The 60 foot articulated "boom lift"

Photo 3 shows the view from the boom lift when I was up at 45 feet vertical and nearly 60 feet horizontal. It was a windy day and the basket was swaying quite liberally. Looking down, I felt a bit queasy, so instead I just looked at the Tornado and focused on the work at hand. I was quite thrilled to finish it, check with an antenna analyzer that I had achieved a minimum SWR, as intended, and could maneuver myself away from the antennas and bring myself back down to mother earth.



View from the basket at 45 feet up.

In the first SO2R opportunity after the changes, I operated in the Florida QSO Party. Everything worked exactly as envisioned. The only aspect that is not fully automatic is the Ten Tec Centurion amplifier, which still needs to be tuned manually when changing bands. But, I no longer have to remember the 2x1 switch, the tuner antenna switch, and adjusting the tuner for 80m QSYs. The Tornado can simply be controlled by a DPDT switch which reverses polarity to the motor and, hence, its rotational direction. But, in the interest of elegance, I am using an MFJ screwdriver antenna controller (see photo 3).



This receives sensor input from the Tornado and displays the number of rotations. It also allows you to manually adjust the antenna for various band segments and then set one of ten memory buttons. I find it is amazingly repeatable.

As for the changes in the station, itself, photo 4 shows the setup before and after the changes, and you'll note how much simpler things look, now. That was part of my rationale, too.



Before: note the Ten Tec tuners underneath both K3s, plus the two RCS-4 controllers atop each P3.



After: No more Ten Tec tuners, slimmer band decoders atop the two ICE 419 boxes, and just one antenna controller atop the right-hand P3.



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