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[www.4sgrp.com](http://www.4sgrp.com)

Group callsign WQ5RP

Ozark QRP **BANNER**



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### **Index**

Gluing Pads & Making Labels...pg 2.....Quest for a Camping Antenna...pg 5  
Quickie: Battery Preservation...pg 6.....Ham Hijinks...pg 7  
KB6NU's Column...pg 7.....From The Editor...pg 8  
SSS Standings...pg 9

## **Gluing Pads & Making Labels**

### **Terry Fletcher, WA0ITP**

**Ed. Note** – Our own Terry Fletcher (the “godfather” of 4SQRP) has graciously allowed us to reprint some of his past articles. This article, from 2005, still contains a lot of good stuff for the novice and experienced builder alike!

Scratch building projects can be very satisfying. However I see two things as deterrents to us average hams. Getting started on the project, and making it look good when its finished. If you’re an above average ham, read no further (you know who you are).

I’ve become a fan of the Manhattan style of building from scratch. Nothing seems to get me started on a project as quickly as gluing a few pads and melting some solder. The actual gluing process has been described in print often, but how does one decide where to put them? There are many ways, here’s mine..

I like to pick the enclosure first, that’s right, before building the board.. This may seem like getting the cart before the horse , but this allows me to place it on a piece of paper and trace a line around the bottom, outlining the amount of space in which the board must fit.. Then by referring to the schematic, pads and components can be sketched on the board outline. It won’t look beautiful but it will get you started. One of my favorite sayings is “Getting started is half done”. Besides, beauty is in the eye of the beholder.

Once the layout with the pad locations is finalized, cut around the outline of the enclosure bottom, allowing for wall thickness. This will become the dimensions of your board. Then punch holes in the centers of the pad locations with a pin. I use a bulletin board style straight pin with the little plastic gripper button. Place what has now become a template over the board and mark the pad locations with a fine point marker. Then trace around the outline and cut out the board and glue your pads on the marks. The board is now sized for your chosen enclosure and the pads are glued. You’re already “half done” - quick and easy... From this point on, it’s place and solder the parts, but you have used an organized approach which will speed up the whole building process..

Nothing finishes off a good homebrew project like a good label. My step by step process is pretty simple, but works for me. Some of this information was presented last April at OzarkCon, and some of our local club members have duplicated it successfully. See Fig 3, for some typical labels made using this process..

First you'll need some Tools of the Trade. Software is very useful but not absolutely necessary. Manual printing, calligraphy, label makers, and typed labels are all useful here. Having said that, I have to say that I use Microsoft Publisher. It makes all the shapes I need, and has very accurate vertical and horizontal scales. If you draw a 2"x2" square on the monitor, when it's printed it will be 2"x2" on the paper. That transfer of accuracy to the printed page is a very important requirement of any software you might use.

The first step is to draw a rectangle the same size as the front panel of your enclosure. Then print it out and doodle around (in pencil) with the placement of switches, leds, knobs, jacks, etc. Just rough it in so as to get some idea as to what you want the panel to look like. Do the same for the rear panel, locating any power cord grommets, switches, fuses, etc.

Then make up the final label. Make sure to account for not only the centers of pot, led, switch holes – but also the diameters of the knobs, leds, etc.. I also use a copy of the final label as a drilling template to mark hole locations on the face of the enclosure. The procedure is the same as the one used to locate Manhattan pads noted above, punch with a pin and mark through the hole with a fine tip marker.

After drilling or punching the front panel of the enclosure, print out another copy of the final label. This one we'll finish off and apply to the face of the enclosure. Cover the face side with clear shelf contact paper to protect the printing. Strip off the protective cover and make a bow in the film when you place it on the label. Smooth it down working from the center out so as to avoid air bubbles. Don't cut it out of the paper yet. I print the final label on yellow paper, plain white seems pretty plain to me. Use a color you like, it adds some pizzazz to your project.

Next apply double stick tape to the backside in as many strips as necessary to cover the whole backside. I use 1.5" wide tape. Just butt the strips against each other running in the long direction. Some of my labels have had 3 strips on them. Don't worry too much about the joints between the strips, they won't show through. I use tape sold as carpet tape, and it works very well for this application. It's thin and has a fairly high tack so the labels stay put. In fact they're quite difficult to remove up after they've been applied.

Turn the label over and cut the whole sandwich out, carefully. I like to go fairly slow with sharp scissors, and use strong lighting. Especially go slow around the radii...The older I get, the stronger the lighting requirement. The trick is to cut as smoothly as possible along the outside edge of the border.

After cutting, I pass a marker around the edge of the label sandwich Use a color that matches the color of the enclosure, and the border. I attribute this great tip to Chuck Carpenter, W5USJ (QQ Fall 2003 p 18) and George Baker, W5YR (SK). My favorite colors are black enclosure, yellow label, black text and black outline, so I color the edges with a black Sharpie. If you have different color enclosure, color the border and edge to match it. The edges of the label will disappear, and when you look at the front you see the sharp printed inside edge of the border, minor outside edge imperfections won't show..

Next is a critical step, but its not difficult at all. Attach 2 pieces of "magic" tape to the top edge of the label. Position the label on the enclosure panel, holding it firmly in place with your thumbs while smoothing the tape over the edge of the panel with your index fingers. These will be hinges to maintain the position while attaching the double stick tape. Lift the label up and remove the protective covering from one of the carpet tape strips. Lay it back down, smoothing from the center out, sticking the label down. Remove the 2 pieces of "magic" tape (hinges) and then stick down the remaining part of the label. There, you're nearly done! It takes more time to read this than it will to do it after you've had some experience with a few. Try it out on 1 or 2 samples before tackling a real panel. Just stick 'em down on a piece of cardboard for practice.

We still have to mount the components on the panel. I use the hobby knife with the triangular blade to cut out the little disks of label material in the component holes. A sawing action from the front of the panel works best here. When I install the pots, switches, LEDs, etc., I tighten them from the backside of the panel, that prevents the clear covering from wrinkling. I ground some small open end wrenches thin for just this purpose. A trick to use for tightening BNC and RCA phono jacks is to first finger tighten the jack Then install the plug on the front, and grip it with a pair of pliers while tightening up the nut on the backside. This allows you to tighten it nice and snug without scarring the exposed part of the jack.

In Conclusion Installing a project in an enclosure was the least enjoyable part of a project for me. I far more enjoyed building the printed circuit boards. However that pretty much limited me to building kits, or doing my own boards, which I viewed as too time consuming and less successful than I care to admit...

Now I can build from a schematic fairly quickly using Manhattan pads, look forward to installing the board in an enclosure, and making a good looking label to put the finishing touches on it.

I hope you will find these tips to be useful in your building process, from the schematic to a great looking finished project.

## Quest for a Camping Antenna

### Jeremy Utley, NQ0M

WA6CML and I like to go out to the lake and camp at least once each year. I find that a weekend at the lake really relaxes me, and even she has remarked that after some time spent at the lake, I'm like a totally different person when we get back! I always thought it would be fun to integrate ham radio into our time at the lake, so I started on a quest to find the ideal camping antenna for us!

The first time I decided to take a radio to the lake, it was a spur of the moment decision. We were on a planned 5-day trip to John Redmond Lake, near Burlington, KS (about 40 mins from home). We'd been there one night already, and I remarked to her that it would be fun if I had my radios with me – we're not fishing types at all, so sometimes the extended trips can get a little TOO laid-back. Robin is happy with a book in her hand and some music in her ears, but I kind of wanted a little more. So, we jumped in the car, came back home, grabbed my old backup radio (at the time an IC-730), a power supply, my MFJ manual tuner, and a hunk of 14ga stranded wire. I set it up as a random wire antenna using the banana jack and grounding lug on the back of the tuner. This setup proved to be rather noisy and difficult to tune, so I did not get much operating done that weekend. But the seed was planted.

The next attempt at a camping antenna was sort of a clone of an antenna I used at home for a number of years. The first antenna I set up when I moved back to Kansas was a S9V Jr vertical antenna. This antenna was a simple 18ft fiberglass pole, with a piece of wire running up the center of it as a radiator. It worked very well, getting me most states in the US and probably 50 DXCC entities with only a 100w radio. So, I ended up purchasing a 31ft telescoping "Jackite" pole, and running a wire up the center of it. This antenna was never actually deployed, and in fact, Terry Fletcher, WA0ITP, now has the pole – I traded it to him at Brutus 2014 for an Icom 2m Mobile radio. I wanted something a little more sturdy than this was – something that could hold up a 2m copper J-Pole antenna as well as a HF wire antenna.

I toyed around for a year with a end-fed wire antenna I picked up off E-Bay – an Ultimax-100, but never really liked it either – again it was too noisy. Then I ran across a post on the QRZ forums by KC8VWM of a "Clothesline Dipole" antenna. The theory behind it looked sound, so I built one, and it worked wonderfully, and has now become my primary portable antenna. Here's how I did it:

Parts needed: 2 Coleman clothesline reels, 1 Dipole Center Insulator, around 140ft of small-gauge wire. I used 26ga "Silky" wire from The Wireman for mine.



Each of the clothesline reels has approximately 70ft of wire spooled up inside it. The end of each wire is connected to the center insulator, and the clothesline spool itself acts as an end insulator. To use, I simply spool out enough wire to make one leg of the dipole – for example, for 40m I spool out around 32ft of wire. Usually, I will measure the length of the picnic table, and use that as a guide. For a 6ft picnic table, I will spool out 5 ½ lengths. It doesn't have to be exact – I have autotuners for my portable gear which can take care of the small mismatch that could occur. The remaining wire looks like a big metal “blob” at the end of the antenna. I use paracord to tie off the reels to tent stakes driven into the ground. The first deployment of this antenna was at Brutus 2013, and it worked like a charm! With my FT-817, I was able to work a number of the Route66 special event stations with 5W SSB – I'm still working to rebuild my CW skills.

For a mast, I went to Home Depot during one of our many trips to the city. I found a 20ft telescoping metal pole meant to be used for pool cleaning. Near the top, I used a hose clamp to attach 3 carabiner clips which are used to guy the pole. The base is usually attached to the electric box at the campsite with Bungee cords. A fourth carabiner clip acts sort of like a pulley to raise up the center insulator, and above this I usually mount my homebrew copper J-Pole antenna.

This antenna will probably be deployed at Brutus 2015 coming in a couple of months, so if you want to see it in action, make sure to be there!

## **Quickie: Battery Preservation**

### **Jim Davidson, KC0DD**

I thought you might like to know a little tip for saving batteries. I use hot glue on the button of them. Seems like I am always having them rolling around, like taking them out then trying them but not really needing them in that particular situation. The glue pops off easy when you need them again!

## **Ham Buys Last Rig He'll Ever Need...Again**

### **By the HamHijinks Staff**

Aleksander Horvat, Chief Technical Officer and CW Coach for the Lower Sava Valley Radio Club, was excited to announce to club members last week that he had just purchased "the last ham radio he'll ever buy," the venerable Kenwood TS-990S.

Mr. Hovart noted that though the rig was "a bit above my budget" that the quality and sheer longevity of future ownership would make it value.

"As much as I'll use this rig over the next 30-40 years, I can't imagine it not being worthwhile. And when you consider all the radios I won't be buying because I own this one... it almost pays for itself!"

Club President Anton Novak said this isn't the first time he's heard this from Hovart. "I think this would be his six or seventh 'last rig he'll buy' in the past three years. We've stopped trying to talk him out of them at this point. We're just happy when he sells the nearly unused last radio to a fellow club member at a deep discount."

"I'll probably never use another radio again," said Mr. Hovart as he stared at the large glossy pictures of the Elecraft K4A brochure that arrived in the mail Wednesday afternoon.

At press time, Mr. Hovart had exchanged a series of emails with an Elecraft sales representative.

## **Dan – KB6NU's Column**

### **HamShield turns an Arduino into a transceiver**

#### **Dan Romanchik, KB6NU**

The Arduino seems to be making a big splash in ham radio circles these days. The ARRL has recently published a couple of books about the Arduino and Arduino-based amateur radio projects. And, recently, I purchased a NanoKeyer ([nanokeyer.wordpress.com](http://nanokeyer.wordpress.com)), which is a CW keyer powered by an Arduino Nano.

Now, a couple of enterprising young hams have built the HamShield (<https://www.kickstarter.com/projects/749835103/hamshield-for-arduino-vhf-uhf-transceiver>). It's an Arduino shield that turns an Arduino into a VHF/UHF transceiver. With the HamShield, you can transmit and receive on the 2 m, 220 MHz, and 440 MHz bands.

According to Casey, KC7IBT, one of the project leaders, "We have both voice and data working on the shield right now and also have a powerful library to control it."

"We also have it talking to the Chrome browser, so any computer that can run a web browser can operate a packet radio station or voice station. We also have another piece of chrome software called "APRS Messenger", a text messaging app for APRS. One of our prototypes is in a neat little case that clips right to the back of your laptop (shown in the video). I will launch these apps in the Chrome Store once we get closer to completion.

"We have 10 working prototypes currently, but need to raise money to fund the production cost and get the unit prices down to acceptable levels. This means buying parts in bulk and reducing production costs."

I think this is a very cool project, and I hope that you'll consider supporting the HamShield Kickstarter project. I plan to get one and see what I can do with it.

## **From the Editor One Month with the KX3**

So, as many of you know, last month I took the plunge and finally purchased the radio I've been drooling over since my first Ozarkcon – the Elecraft KX3 + KXPA100 amplifier. I took it with me to Field Day this year and put it thru it's paces, and let me say, I was not disappointed! The radio is just a dream to use, and the integration with the amplifier was wonderful. I think I worked about 40-50 CW contacts this year in just a few hours on the air. This rig is going to provide many years of enjoyment. Now, I just need to get on the air more, and get my CW skills back – SSB has been getting a little boring lately!



## **Second Sunday Sprint (SSS) Standings**

### **As published by John Lonigro, AA0VE**

Here are the current standings for the Second Sunday Sprints, as published by John on July 14, 2015. As you know, the station with the most contacts over the course of the year gets the coveted use of the 4SQRP club call, WQ5RP, for the October 4x4 Sprint! The current top 5 are:

<b>Call</b>	<b>QSOs</b>
KV6Z	62
WA0ITP	41
W2SH	36
AC0BQ	22
KF7WNS	19



## Four State QRP Group

is meeting at the Country Cupboard Restaurant in downtown Seneca, Mo. This is one of the locations that 4SQRP folks gather.

The Country Cupboard has a nice menu and they have a separate meeting room we can use.



The Country Cupboard restaurant is located in the first block north of the blinker light in downtown Seneca. From Barney's, head north on Cherokee Street (that's the main street of town). Go across the railroad tracks and keep going past the blinker light stop. The restaurant is located at 1038 Cherokee street, on the west side of the street.

Caution: If you are headed north, do not make a left "J turn" into a parking spot. "J turns" are illegal in the downtown area. Keep going north past the restaurant till you reach the residential area north of downtown where a "U turn" is permitted. Make a U turn there (it's a wide street) and come back to the parking in front of the restaurant.

Our group is an informal organization with no dues or any other things to get in the way of having fun with QRP. **We get-together monthly for lunch and the sharing of ideas and information, parts swapping and just plain fun on our normal third Saturday of a month.**

All ham radio amateurs (or prospective hams) are invited to participate.



The Four State QRP Comfortable nets meet each Wednesday night beginning at 7:30 PM CDT, 0030z.

If we have to QSY, I like to move up, Wayne likes to move down, and Dick doesn't have to move much at all.

Add anything to the exchange that you wish, temp rig, ant, etc. Checking into all sessions is encouraged.

7:30 CDT 0030z ... 40M CW Net on 7122, KCØPMH NCS  
8:00 CDT 0100z ... 80M CW Net on 3564, WAØITP NCS.  
8:30 CDT 0130z ... 40M CW Net on 7122, KCØPMH NCS  
9:00 CDT 0200z ... 80M PSK Net on 3580.5, NØTGR

**Thursday mornings ~ 8 to 8:30am**  
**A gathering of CW ops are having fun on**  
**7.122 MHz**  
**....and you are invited!**

**Join us on the air on the second Sunday of each month for the 4SQRP "SSS" – Second Sunday Sprint – 7-9PM Central time**

**See: <http://www.4sgrp.com/4sgrpOnTheAir.php> for rules and log submission!**

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