

Ozark QRP Banner



The Official Newsletter of the Four State QRP Group WQ5RP May 2021 Edition

In This Edition: Elmer's, Bayou Jumper Rev. B, Crystal Spotter Transmitter, Coaxial Cable- Why 50Ω, Homebrew Contest Winners, Wacky Key Contest Winner and "The SPATHULA"

OzarkCon 2021 is now history. Congratulations to all of those who made it happen via Zoom. Everything came off without a hitch. The chosen presenters did an outstanding job and all of the slide shows worked as intended. There were 311 registered for the event. So Thank you, Thank you, Thank you for your hard work organizing this event. It certainly paid off. Hopefully we can all be together in 2022.

Prize Winners:

Grand Prize	AG4CC, Karen	Icom IC-705
2 nd Prize	KU5M, Joe	TenTec Argonaut 509 Station w/accessories
3 rd Prize	KE8JWB, Randall	Begali Contour Turtle Key
4 th Prize	W1AFP, Robert	WOLFWAVE Advanced Audio Procesor
5 th Prize	K5KHK, Karl	Nouveau 75A, AM Transceiver

Homebrew Contest Winners:

Group 100	NV5F, Virginia	Pine Board Transmitter
Group 200	WB8YYY, Curtis	Modifications to the uBitx
Group 300	WØEB, Jim	Homebrew Telegraph Key (Bug)

Wacky Key Contest:

ADØYM, Mike	Key made with fishing lures
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KØN Special Event Station Award:

WB4RXS, Al

Congratulations to all!

From the Bench of N5MZX

The Bayou Jumper Rev. B

The 4SQRp, www.4Sgrp.com, group has brought back the Bayou Jumper transceiver by popular demand. This is the new Rev. B, blue face panel kit. This kit was the product of the talents of David Cripe, NMOS and Jim Giammanco, N5IB. It is based on the SOE Paraset Mk. VII used by resistance agents in countries occupied By Nazi Germany in WWII. More information on the Paraset can be found at www.paraset.nl/. This classic update has brought this radio into the modern era and now using solid state parts in place of valves also known as tubes. The bayou Jumper consists of a separate Regen Receiver and class E transmitter with 4-5 watts of output. Now to quote the manual, "The receiver in the Bayou Jumper has been measured to have a Minimum Discernible Signal (MDS) of better than -12 dBm, which is as good as many commercial receivers". The price of this set with shipping is about \$100.00 in the good old USA.

SELLERS REGRET

Many of you have seen my White Face Bayou Jumper at the club meetings. Regretfully in a moment of weakness I sold it and very quickly I regretted it. So when the 4Sgrp club brought it back for a third run I just had to have one. Has anyone else out there had Sellers Regret for selling one of their radios? If so write a paragraph and send it to our editor.

Building the Box

Four corner blocks were properly sized to act as mounts for the front panel, and friend of mine called to inform me that Hobby Lobby had the SKU# 662536S in stock. I made a trip to buy one for \$6.99. The first thing I did was to remove all the hardware from it, sand, pre-stain, sand, and stain with special Walnut 224 stain, sand again and then add another coat. After sanding two coats of Polycrylic protective finish were added. The hardware was then spray painted a bronze color and the box assembled.

Stuffing the Circuit Board

It is imperative that you follow the manual steps in the exact order. This is a well written manual and very easy to follow. This radio has thru the hole components. There are NO Surface mount parts. " YEA" Take your time on the build and take frequent rest stops. If you do too much you might foul something up. I did and I had to remove a couple of components. When you have a PCB that has thru the hole plating it can be difficult to remove the parts and clean out the holes. Trust me it is better not to make mistakes. Go slow and don't get caught up in trying to rush things. Check everything you have done and highlight the part on the parts placement drawing on page 41 of the manual as you install them.

Special Components

As in all modern day kits there are some components that need to be handled with extreme care. In this case they consisted of one 2N700 TO-92 N-Channel Enhancement Mode Power MOSFET (oscillator). Two IFR510's TO-220 N-Channel Enhancement Mode Power MOSFET. The same care should be taken when installing the UJM2113 Audio amp into the socket.

To reduce the chance of destroying the parts a wrist grounding strap and ESD Safe soldering iron was used. I purchased the ESD safe soldering iron for this job. Yes in my previous Bayou Jumper I used a regular soldering iron and got away with it. This radio I decided to build by the book.



Toroid Winding, final assembly, and alignment in Part 2

The Bayou Jumper Rev. B Part 2

Ev. Catlin N5MZX

The day has come to wind the toroid. This process seems to scare folks. It's not hard with a little practice. There are three separate windings of 19 turns, 4 turns, and 2 turns. This toroid is a T-68-2 which is larger than ones I have used in previous kits. I chose the option of mounting it on the bottom side of the PCB. This provides better access for adjusting the turns spacing later. Number 24 AWG magnet wire is used to wind it. Turns are always counted as the number of times the wire passes thru the center of the core. Always leave enough lead length to allow for stripping and soldering of the toroid into the PCB. The wire in this kit can be striped with your soldering iron or gently scraped with a knife. Then solder the toroid into the PCB and check the continuity of each set of turns. If you have a problem with continuity, check the solder joints and if that fails you may have to remove the part and scrape the leads again. Please look at photo No. 1.



Now the build moves on to installing the loops and pins for the Test and instrument points. After completion of this all that is required is building the front panel and installing the hardware. Now go

back and check your work for cold solder joints and solder bridges and any components you might not have installed. Make a power cable with the supplied 2.1mm power jack, include a inline fuse holder. I decided to use a 0.5 amp slow blow fuse based on information supplied by my Elmer.

You have now arrived at the final adjustment and alignment process. The first step is the Receiver Tuning Setup. A frequency counter or oscilloscope can be used, but most of us don't own one of them so a calibrated transceiver or shortwave receiver can be used. I found the frequency range of my BJ to be from about 6750 to almost 7000 kc.

This was way out of the 40 meter band. Note I used 40 meter Ft-243 crystals and my N5IB crystal spotter to do this. Next step was to adjust C30 and L1 and it brought the range up some. Then added a 10 pf cap, C20a, to the bottom of the board. Range went from 7030 to 7200 kc. Now it was just a smidgen too hi. Then I did bump something and radically shifted the range. Now it was totally out of whack. I messed up! I set the radio aside and contacted my Elmer for help.

My Elmer looked at the radio for me and found a couple of problems.

1. A solder joint on the toroid coil was cold. He reheated it and soldered it.
2. He replaced Q2 to be working but replaced it with a more active, J-310, transistor which solved the regeneration problem.
3. Aligned the receiver and it now tunes from 6995 to 7150 Kc.

Now I have a working Bayou Jumper and eager to get it on the air.

London Calling after action report

de Ev. Catlin N5MZX

The London Calling event was fun. However, I was not able to work London. The Bayou Jumper worked as promised. The only London station I heard well enough to work was N4DR. He was 599 into Columbia, Tn. I tried numerous times to contact him with no joy. I did copy a message he sent to another agent at 2213Z. "Le Canari Chante".

This agents' failure was of his own making. My CW skills have seriously deteriorated over time and my antenna system is lacking. The digital QRM made copying difficult even with a good signal from N4DR.

Would I try it again? YES, I would. I will be working to improve my CW skills, operating procedures, and antenna system before the next event.

72 Agent 038

**Check out the new 4State Kits on the website and Standby
for More Kits Coming Out Soon!**



Bayou Jumper



Ozark 17



Crystal Spotter



Nouveau 75A

<http://www.4sqrp.com/kitIndex.php>

4SQRP Elmer's Are There To Help You

Everett Catlin N5MZX

4SQRP No. 1314

One of the most endearing things about this group is the amount of knowledge that our members have and care to share with all of us. They are called Elmer's. An Elmer is a person who is willing to provide help and guidance to persons trying to get into Ham radio or technical assistance to those needing it after they get their license. The origin of the term Elmer is seen, for the first time in the March 1971 issue of QST in the DX Column. The author was Rod Newkirk, W9BRD. Rod was referring to a ham by the name of Elmer P. Frohardt Jr, W9DY, (ex-W9GFF) who had mentored him in his ham radio journey.

Elmer's come from many places such as family, friends, and local ham radio clubs. I want to talk especially about the 4SQRP group. The club provides email reflectors for general QRP topics and reflectors for their kits. These email reflectors are a great source of information which include helpful "Files Section". The answers to many of your commonly asked questions can be found there but if you need help for a specific problem you can also get direct answers from fellow kit builders and the kit designers.

Enjoy your kit building experience and remember you are not alone, there is an Elmer out there to help you. I want to mention my Elmer of many years, Jim Giammanco, N5IB of Baton Rouge, La. Thank you for the help you have provided me and for the help you continually give to the 4SQRP group.

Did You Know?

Johnny Cash, the Man in Black, Was a Morse Code Intercept Operator during the Cold War.

In 1950, at the age of 18, Johnny Cash did what many young men of the time did, he enlisted in the United States military, specifically the Air Force, and was shipped off from his home in Arkansas to Lackland Air Force Base in San Antonio, TX. Johnny received his deployment papers and was shipped off to a base in Landsberg, West Germany for a three-year tour. The base served as one of the forward outposts in the outbreak of the Cold War the world found itself in after World War II in the face of Soviet aggression.

During Johnny's enlistment period, he rose to the rank of Staff Sargent and became a crack *Morse Code Operator* in a Security Service unit. Because Cash showed such skill at deciphering Morse Code, he was put in a prominent seat at his Landsberg post to listen in on Soviet communications. The story continues at <https://stationhypo.com/2018/02/26/johnny-cash-the-man-in-black-was-a-morse-code-intercept-operator/>

COAXIAL Cable = 50 Ohms

Have you ever given some thought as to: Why 50Ω?

Many of use Coaxial cable and most authorities in coax say 50Ω is the best, Or is it?

Belden wire has some thoughts about it. Here:

<https://www.belden.com/blogs/broadcast/50-ohms-the-forgotten-impedance/>

Basically, they say that they are using data from a 90 year old study done by Bell Labs. That study says that 50Ω is better for transmitting the most power through the coax. They also say that for reception you can get a 2-3 db gain by using 75Ω cable on your receiver; I suppose if you matched 50 to 75.

Here is another article on the subject: <https://www.microwaves101.com/encyclopedias/why-fifty-ohms>

Check out the above article or another of the 10,000 articles on the subject here:

<https://duckduckgo.com/?q=why+50+ohms&ia=web&iai=r1-3&page=2&sexp=%7B%22cdrexp%22%3A%22b%22%2C%22prodexp%22%3A%22b%22%2C%22prdsdex%22%3A%22c%22%2C%22biaexp%22%3A%22b%22%2C%22msvrtexp%22%3A%22b%22%7D>

Of course this discussion is centered around the concept of what is cable impedance and why do those graphs from Bell labs do what they do.

But do you know what "**RG**" stands for?

In the 1920-30s, the highest quality electrical parts were: "**RADIO GRADE**". Especially wires, capacitors and cables. So the best radio grade cables were abbreviated RG! RG-8, RG-9, etc.

4SQR Crystal Spotter 10 Meter CW Transmitter

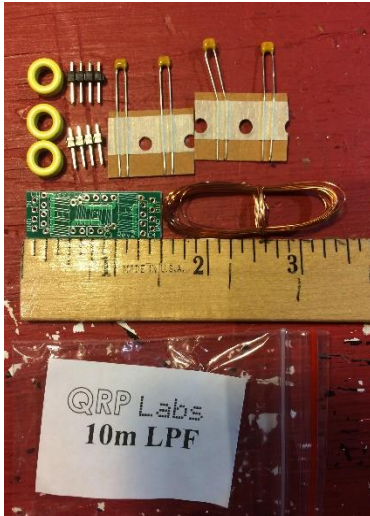
By Griff, NE3I

I initially purchased 4 State QRP Club ("4SQR") Crystal Spotter Kits for each of the two Green Version Bayou Jumpers I had assembled. The first Spotter having gone together and functioning well, I wondered whether a Spotter could be utilized as an oscillator for higher bands. As you may know, the Spotter's design frequency range is from 1-15 MHz. Originally designed and kitted by Jim, N5IB, the Spotter has been made available as an accessory to assist spotting 40 Meter crystals on the Bayou Jumper's vernier dial.

Members of the RF Hill Radio Club have been converting old Citizen Band Radios and Walkie Talkies to 10 Meter AM. (Some examples are available for viewing on the RF Hill Radio Club web site.) Consequently, I wondered if the Spotter could be modified to oscillate on 10. With the advice of RF Hill President, Dan, WA3NFV, I assembled my second Spotter leaving capacitors C2 and C4 out and soldered a 28.030 MHz crystal onto the Spotter's crystal pads. Voila, it worked! Next, using the next larger size Hobby Lobby

box, I installed a coax connector across Resistor R5. In order to have a connection to the antenna, it was necessary to have some capacitor installed at C4, consequently, again with Dan's advice, I tried the lowest value capacitor of the two that came with the kit, (the 150pf intended for C2) into the C4 position. However, the Spotter would not oscillate with a 50 ohm load connected.





We therefore concluded that the load was too great and that a smaller capacitance would be needed. Fortunately, I had purchased a stash of old components at a PackRat (the Mount Airy VHF Radio Club Inc.) White Elephant Sale and, among those found a small trimmer capacitor with the markings "9-35." The Trimmer proved to be a variable capacitor of 9-35pf. I replaced the 150pf guy with the Trimmer at C4. Adjusting the Trimmer's tiny screw, I was able to peak to 10 Milliwatts output into a 50 Ohm load. Finally, in order to minimize spurious harmonic emissions, I assembled and installed a 10 Meter Low Pass Filter obtained from QRP Labs. Tiny work, the LPF is about the size of a thumb drive. (See, Photo 2). Apparently, the Spotter appreciated the addition of the LPF's added inductance/capacitance characteristics because its output rose to 17 Milliwatts.

The resulting 4SQRP Crystal Spotter 10 Meter CW Transmitter is shown in Photo 1. Using the Spotter's underside micro-spring switch as the Key, (just tap on the 9 volt battery), to date, I have worked 6 CW QSOs all with only a vertical antenna. Two of the QSOs from home using an A99 Vertical exceeded 10 Miles in range. Two subsequent QSOs were made from a local park using a 10 Meter "Ham Stick" style mag-mount, one of which was at 5 Miles range. OK, so there is a modest "Chirp." Where can you have more fun learning basic radio for \$15 including shipping? (I subsequently purchased and assembled a third Crystal Spotter for my second Bayou Jumper and now have a fourth on order.) I look forward to Sun Spots that may someday yield 17 Milliwatt 10 Meter DX. My thanks to Jim, N5IB and the 4SQRP Kitting Team for a great kit (and Dan, WA3NFV for his advice).

73. Griff NE3I

Expert Power

Looking for a good source for LifePO4 batteries for your portable operations. Expert Power is another source with good prices on batteries and chargers. These are perfect for portable and backpacking operations.

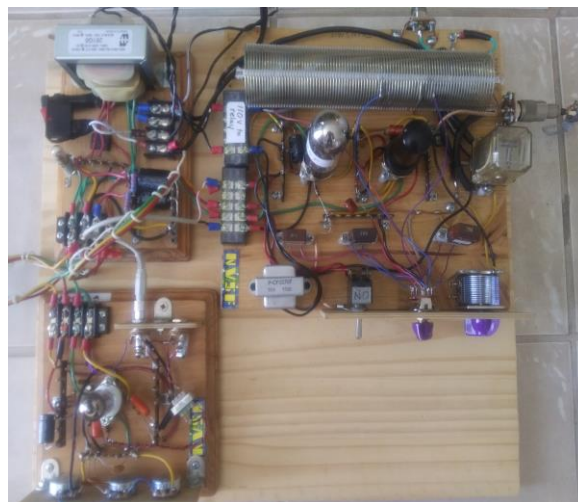
<https://www.expertpower.us/collections/lifepo4-batteries>



Homebrew Contest

Group 100

Pine Board Transmitter



Winner - NV5F, Virginia

Group 200

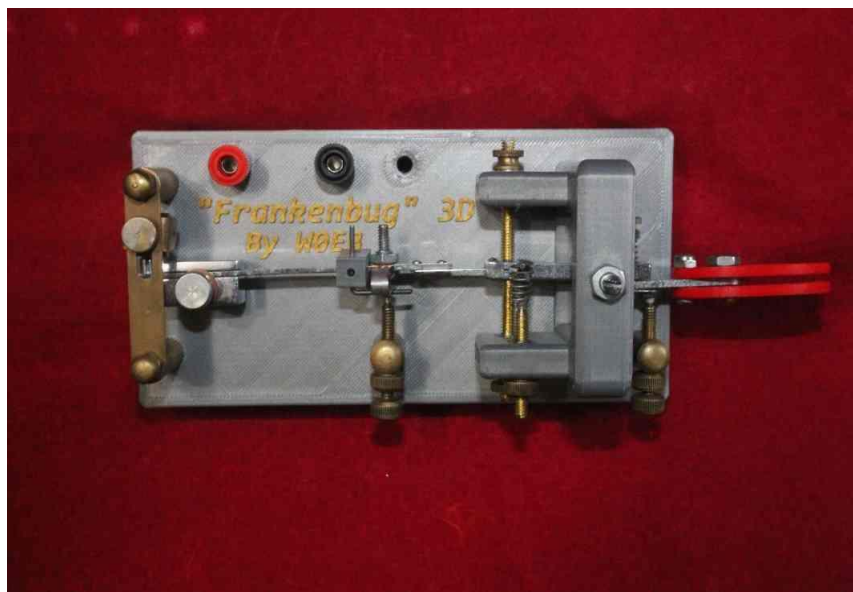
Modifications to the uBitx Transceiver

Winner - WB8YYY, Curtis

Group 300

Homebrew Telegraph Key (Bug)

The FrankenBug



Handmade from Junkbox Parts

Winner - Jim, WØEB

Wacky Key Contest

One of the highlights of OzarkCon has always been the Wacky Key Contest. Well this year was no exception. Below you will see the entries using the imagination of the entrant. It is always amazing how these designs come about.

Here is the Tessa Key Designed and built by Jim, N5IB

This took a lot of thought and engineering. The key has a built-in code oscillator built into the base with speaker and batteries.



Key w/built-in CPO



Complete w/batteries, PCB and speaker



When I think of a straight "key", I thought of a lock and key. That is what this design was all about. I copied a real key using woods of white ash for the two keys and black walnut for the base. All new locks come with two keys. Both woods are from my properties. The key mounts are to resemble small locks with the shackles made from 1/8" diameter brass rods. All wiring is hidden within the assembly and base. This key has all of the same adjustments as all straight keys do. Only items purchased were the brass knurled thumb nuts and hex nuts and Min-wax clear lacquer for the finish. I only made one of these and it is my original idea and design.

This fine design by Karl, KO8S. A lot of hard woodworking went into this key.

First Place - Wacky Key Contest

The "Spathula," the name of my entry
Mike - ADØYM

This key took some real Ozark-Con Engineering - Outstanding!

This innovative key uses two fishing lure crankbaits for the paddles. Follow the string up to the fishing weight that provides the tension. Watch the video demonstration by clicking on the link below.



Click on the link for the video

https://drive.google.com/file/d/1b_rCrwRzRiJjwqHfstdCutanOfTfOcLs/view?usp=sharing

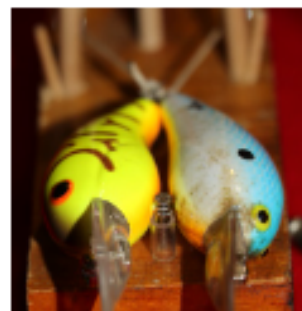
OzarkCon 2021 Wacky Key Entry – AD0YM
"THE SPATHULA"

This is my first attempt and thus entry for the 45 QRP OzarkCon Wacky Key contest. The hardest part was actually coming up with a concept to build upon. I started with one of my junk boxes, a collection of stuff accumulated during my morning walks along a local greenway and park lake. Nothing gelled until I paired some fishing lures in need of repair. It would never occur to me to take a perfectly serviceable fishing lure out of service, but those refugees were fair game. Wow, the intersection of two of my favorite pass times; ham radio and fishing. The result was the birth of my Wacky key entry, the



"Spathula". Spathula comes from the scientific name of the paddlefish. It is Latin for spatula or blade. Yes, a bit of a stretch taking paddlefish to simply paddle, but it was late and I was tired!

My objective was to stay within my newly established theme of paddlefish and to also keep it simple. I started with a scrap piece of wood for the base. The build proceeded from the establishment of the



pivot point for the two lures. The lures were placed on their sides with the bill (paddle) of each extended over the edge of the wood base. A nail passed through the belly hook attachments of the lures. The facing of the paddles was further aligned by the placement of a short length of aquarium hose used as a bushing under the belly hook eyelet. Some trimming was necessary to get a suitable/leveling height.

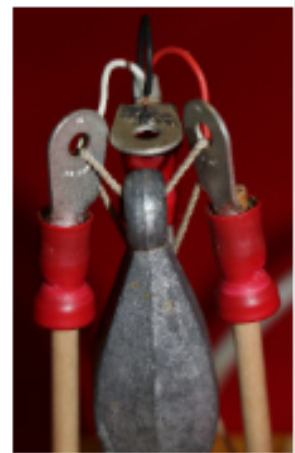
The lure's tail hook eyelets serve as an attachment point for the transfer of motion. In this case, I selected some old braided fishing line to establish a means to transfer the fish

lure paddle motion. The line had to crisscross the board in order to change the direction delivered by the paddle. I used a couple of screw eyes to create the first and last turn. The middle change of direction was obtained by using two four-inch long 3/16-inch diameter dowel rods. The holes in the base for the two dowel rods were slightly over-sized to allow a slight pitch to the center.

Electrical ring terminals were placed on the top ends of the dowels to provide guides for the string. The braided fishing line traveled a single path from one lure, through an eyelet, then the top of the dowels ring terminals, back to the other eyelet, finally returning to the tail of the other lure. A five-ounce snagging weight was suspended on the same line between the front two dowel rods to provide tension to the braided fishing line and the front two ring terminals. A third 3/16 inch dowel rod, long was added. Its' ring degree angle. This dowel centered with the first two bent ring terminal to between the other two key cord from my Novice ring terminals so my concert with any standard secured the cord at the a repurposed staple with a bushing secured the cord



about four and one half inches terminal was bent to a 90- was placed slightly behind but dowels in order to allow the move within a common plane connectors. A three-conductor license days was soldered to the wacky key could be used in Morse code keyer. A zip tie top of the "common" dowel and scrap piece of aquarium hose coming off the base. This



OzarkCon 2021 Wacky Key Entry – AD0YM
"THE SPATHULA"

arrangement provided for a completed electrical connection to the corresponding front ring terminal when tension was increased by pressing its' lure paddle. A slight crimp was used on each ring terminal to keep it in position, but also allowed some adjustment up or down on the dowel rod. The dowels were staked in place using one end of a wood toothpick. This arrangement allowed any needed adjustments for the electrical contact's spacing possible. The terminal rings could be moved up or down the dowel or twisted in or out. The dowels themselves could be staked at different angles. It took minimal effort adjusting ring terminal spacing to make it work.

Initial tests were promising, though one additional enhancement was made. The paper from a wire bread tie was stripped. The exposed wire was used to firmly connect the tail hook connections of the two fishing lures. This eliminated some slop in the paddle movement when using the "Spathula".

Again, the goal was to keep this a minimalist project based on my paddlefish theme. [Paddlefish are usually caught by snagging. Rods are rigged with heavy line, large weights and treble hooks.] I considered including a snagging hook in my design, making a kitchen wrap covered hook umbrella shield for the electrical contacts. I opted out as to again keep it simple, so no trifecta in my use of paddlefish snagging components in this design. Besides, I am notorious for drawing blood before completing any project ... a certainty for me if there were three sharp barbs incorporated into this project. However, as



the lyrics go with apologies to pop music artist Meatloaf, "Now don't be sad 'Cause two out of three ain't bad."

Final thoughts: I was lucky in the placement of the first two dowel rods. The ring terminal idea came after the holes in the base were drilled.

Serendipitously, the spacing was perfect for the triangular arrangement of the paddle's electrical contacts. Also, the dowel diameter allowed just enough rigidity/flex for this application, just as a paddlefish snagging fishing rod would provide to the rest of the gear. I was reminded of the axiom, "Don't let perfect get in the way of way of good enough," so

there are minimal refinements in my workmanship. It was a clean build and turned out well for a prototype project. I resisted sanding, painting or even tidying up my soldering; though I did scrub a lot of dried algae off of one of the lures to enhance its' appearance. Finally, I did not provide any solutions in search of a problem. I originally considered one more turn of the braided fishing line to place electrical connections on the base. Likewise, I also discarded the treble hook dust cover idea. This type of project is ripe for such embellishments. However, I kept it simple. My "Spathula" functioned better than I expected from the start. No special training was needed. This paddle operates with the general feel of any other double paddle design. I used components from my various junk boxes; costing me nothing but time. It was a fun build!

Four State QRP Comfortable Nets

Meet each Wednesday night beginning at 20:00 Central Time. Add anything to the exchange that you wish, temp, rig, ant, etc.

Checking into all sessions is encouraged. We call it the "Clean Sweep".

8:00 pm Central time - 40 Meter Net on 7.122 +/- QRM ACØBQ/NCS

8:30 PM Central time - 80 Meter Net on 3.564 +- QRM ACØBQ/NCS

9:00 pm Central time - DMR Net on Talk Group 31654 NØYJ/NCS

NO dIGITAL Net at this time.

All are welcome!

DMR Voice Net

Wednesday evening DMR Voice Net will be at (Thursday) 0300 UTC (9:00PM Central Time Wednesday/) Four States QRP has a Brandmeister DMR Talk Group (TG31654). Join us to discuss QRP, ask questions, or just ragchew.

The Wednesday net is a directed net but any other time you may use the Talk Group to chat with other QRPers. Net Control operator is Bert NØYJ.

For information and help, check out the DMR subgroup on 4sqrp.groups.io

<https://4sqrp.groups.io/g/DigitalFM>

Second Sunday Sprint

Occurs on the second Sunday of each month, 7 to 9 PM Central

Any mode, any band (except WARC & 60 mtrs) -

- Suggested frequencies: standard calling freq. plus 7122 and 3564 (CW), and 3985, 7285, and 14285 (SSB).
as well as the usual QRP watering holes.

QSO's with the same station on different bands are allowed. CW and SSB portions of a band count as two bands.

- Calling CQ is suggested to be "CQ 4S"
- Exchange is "RST, SPC, member number (power if non-member)"
- 5 Watts max CW, 10 Watts PEP max SSB.

The station with the most contacts each month will be emailed a certificate. Furthermore, the top three stations with the most SSS contacts during the year will also receive certificates via email.

Scores are submitted via the grpcontest.com/4sgrp website (compliments of W8DIZ).

For full details, please download the [complete rules \(PDF\) here](#).

For questions, please contact John (AAØVE): SecondSundaySprint@4sgrp.com

Thursday Morning

The Four State morning net has been convened for members who like to start the day on the air.

We meet each Thursday morning at 8:00 AM Central on 7122 kc.

7122 has become the Four State 40M hangout frequency, and often members can be found there on any morning.

Editor's Note:

Articles are needed to make every Banner issue successful. If you have something of interest, please send it to the editor at the email address below. You do not need to send a finished article. You can send some comments, notes, etc. and I can put it all together for you. Pictures are always of interest. Some of the items of interest would be outings and /or operating events by yourself or a group, construction whether equipment, antennas, accessories, QRP Field Day, SOTA, etc. Anything QRP is welcome.

de KCØPP

editorgrpbanner@gmail.com

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