

Ozark QRP Banner



The Official Newsletter of the Four State QRP Group WQ5RP

August 2021 Edition

In This Edition: Station DC Power Distribution, WAS QRP CW, Thirty Years and 10 Minutes, Stray Cats (A lost art, maybe not), WAS QRP Survey Results. Kit Update and Brutus Bash.

Thanks to everyone who contributed to the QRP Banner this month. Also, Thanks to those who participated in the WAS survey.

Kit update:

- There will be another run of Hilltoppers. They will be sold in 20, 30 or 40 meters versions.
- A 20 meter Cricket is in the works.

Keep an eye on the website for updates, especially pay attention to the kit page.

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

4SQRP Brutus Bash 2021 - September 11, 12: Just in case you missed it on the Home Web page. Join us there on September 11-12, 2021. You can find us at the Big Brutus Shovel located 6 Miles West of Kansas hwy 7 & Kansas hwy 102 Jct and 1/4 Mile South Near West Mineral, Kansas.

<http://www.4sgrp.com/BrutusBash2021.php>

Brutus Bash is a gathering of friendly QRPers. We try different antennas, enjoy fellowship with like-minded members of the hobby, and usually share unique cuisine. The only goal of the event is to have fun. We will be operating as special event station KØB. If you can't make it, please listen for us on the air. More information about Big Brutus, its museum and park can be found [here](#). We're gathering at the shelter house behind the office.



Station DC Power Distribution

By Dr. Donald Sanders W4BWS

I searched QST ads, Internet, and DX Engineering catalog for a solution to my needs for a power distribution system for 12 to 14 volts for my station.

It became unruly to have 6 power cords going from the equipment to the power supply. I wanted both Power Pole and binding posts available for power.

I finally decided to purchase the SOTABEAM Fuser-6 kit available from SOTSBEAM in England and DX Engineering in the USA at \$ 49.95. It compared favorably with the cost of materials and the effort to DIY an enclosure. I did not see specifically a unit that has the features I wanted but I planned to enhance the Fuser-6 after completion.

Initially the parts came packaged very well and even with one corner of the box crushed during shipping, all parts were in new condition.

Individual parts are packed separately in small plastic bags as

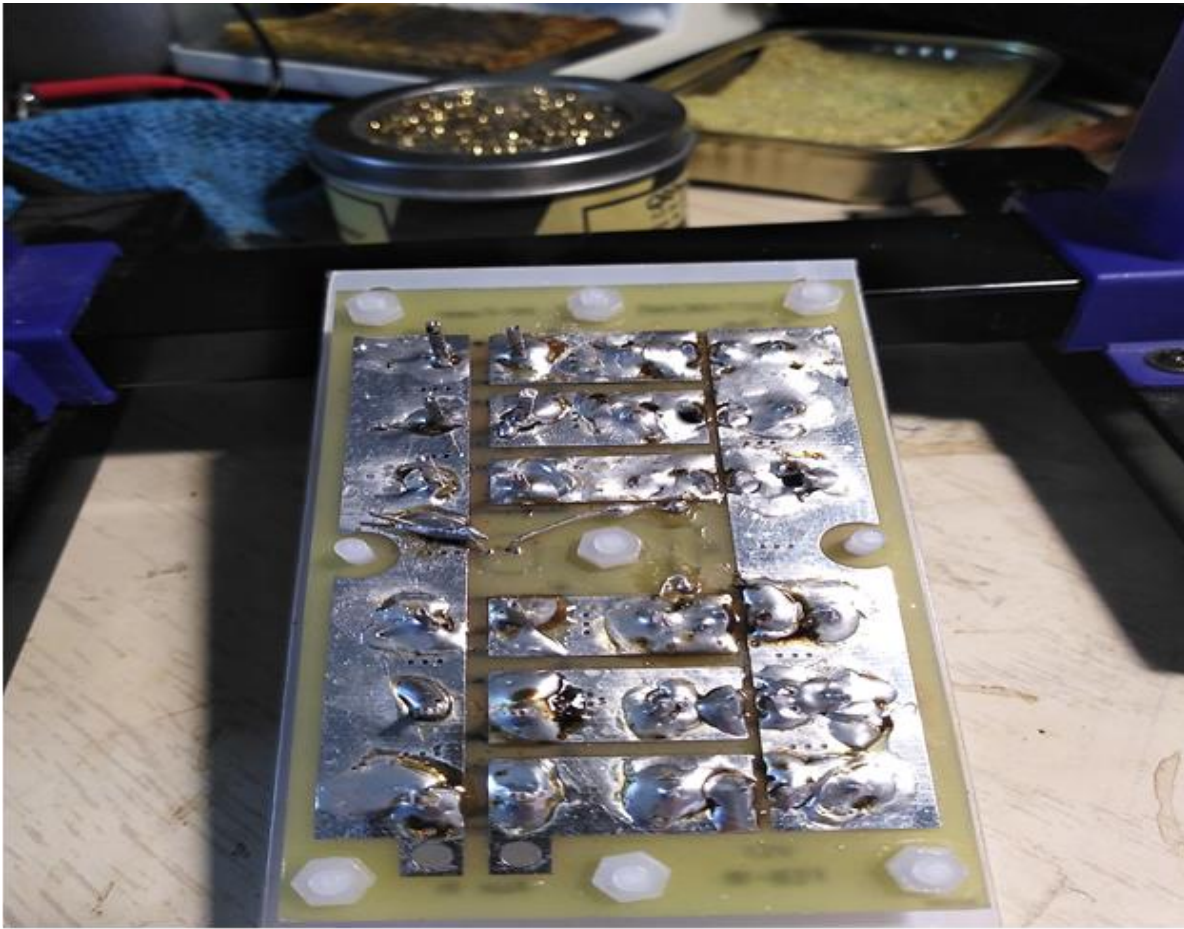
you will need them during assembly. The instructions were downloaded from the SOTA web site and reviewed prior to assembly.

The circuit board is well designed and manufactured for SOTA. The traces are wide, while not specified as to the thickness of the copper, SOTA advised they are 2 ounce copper foil. The circuit is mirror image on both sides and appears adequate for the specified 20-25 amps, 30 amps surge.

The top panel is laser cut for clearance of the Power Poles and fuses and saves a lot of time compared to DIY enclosure. The cutouts provide adequate clearance and allow for my large hands and fingers to change the fuses. Mating Power pole connectors are not supplied with the kit.

I am advised the new board design adds solder mask to the top side so the silk screen is more visible and a little additional spacing from the resistor and LED solder pads to other circuitry.





The first operation is to install the LED power indicator and the series resistor. The solder mask shows the LED with a flat side. The supplied LED part is round and the short lead goes to the flat side connection. Assure the LED is flush with the board as there is very little clearance to the top panel. Be careful soldering the resistor leads as there is very little space to adjacent circuitry. Use of a small tip iron is advised.

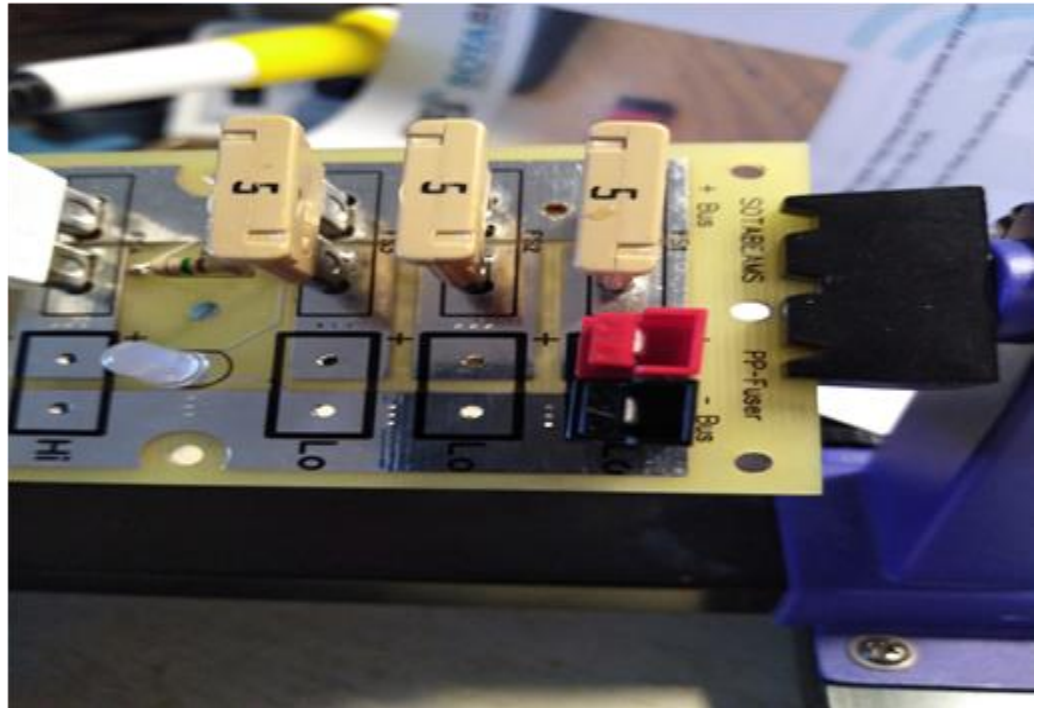
Soldering the fuse holders requires a large tip iron. The wide copper circuit on both sides of the board as well as the fuses makes a very large heat sink. Assure all fuses are vertical, square-parallel to the end of the board and fully seated. This will facilitate the insertion and removal of the fuses. I actually temporarily installed the top panel carefully prior to soldering the fuses to assure alignment. The fuse holders fall out easily and I used a strip of tape to hold them in place until I tack-soldered one contact on each terminal.

Insertion of the pins into the power poles requires special attention. They really only go in one way but can be confusing. The internal contact and the pin to be inserted go on the same side of the housing. The pins will bend easily so care should be used with the pliers during insertion. The pins were a bit stubborn but slid into place with a little rocking motion.

I also gave a lite tap on the end of the pin with the pliers and the open end of the housing flat on the desk. This assures full insertion. The pictures were a little fuzzy, Ok it could be just my old eyes, but I figured the orientation after a little study.

There is actually a special insertion/extraction tool available for Power Pole contacts (Anderson part number 111038G2), but it's not something SOTABEAM currently stocks .

Looking at the open end of the housing you will note the wide or thicker edge of the housing has an "A" in the center. With this wide edge away from your body, the Black housing is on the left and the Red housing on the right. Both wide edges will be side by side. The internal contact will be at the top side with the "A". This is the orientation I found on other cables and power supplies.



While not mentioned in the instructions, I found that mating the housings, Black and Red together, makes it easier to install the contacts on the board. It also helps prevent having the housings turned the wrong way, possibly with the housings on top of each other rather than side by side.

Make sure the housings are flush with the board and straight before soldering. This allows easier installation of the top panel. Actually, I placed the top panel over the fuses and power pole housings prior to soldering the power Pole pins. I taped the top panel to the board to hold the housings while soldering the pins.

The cutouts in the top panel rest on the housings shoulder. Placing the top panel prior to soldering assured the housings were free and helped alignment of the board and top panel after soldering.

After quick testing per the instructions, it's time to install the top panel. Several frustrating minutes passed before I admitted my old arthritic hands and fingers, plus the limited working space on the board, were making it very difficult to install the nylon screws and nuts.

What to do?

I reversed the instructions and installed the spacers on the top panel first with the screws.

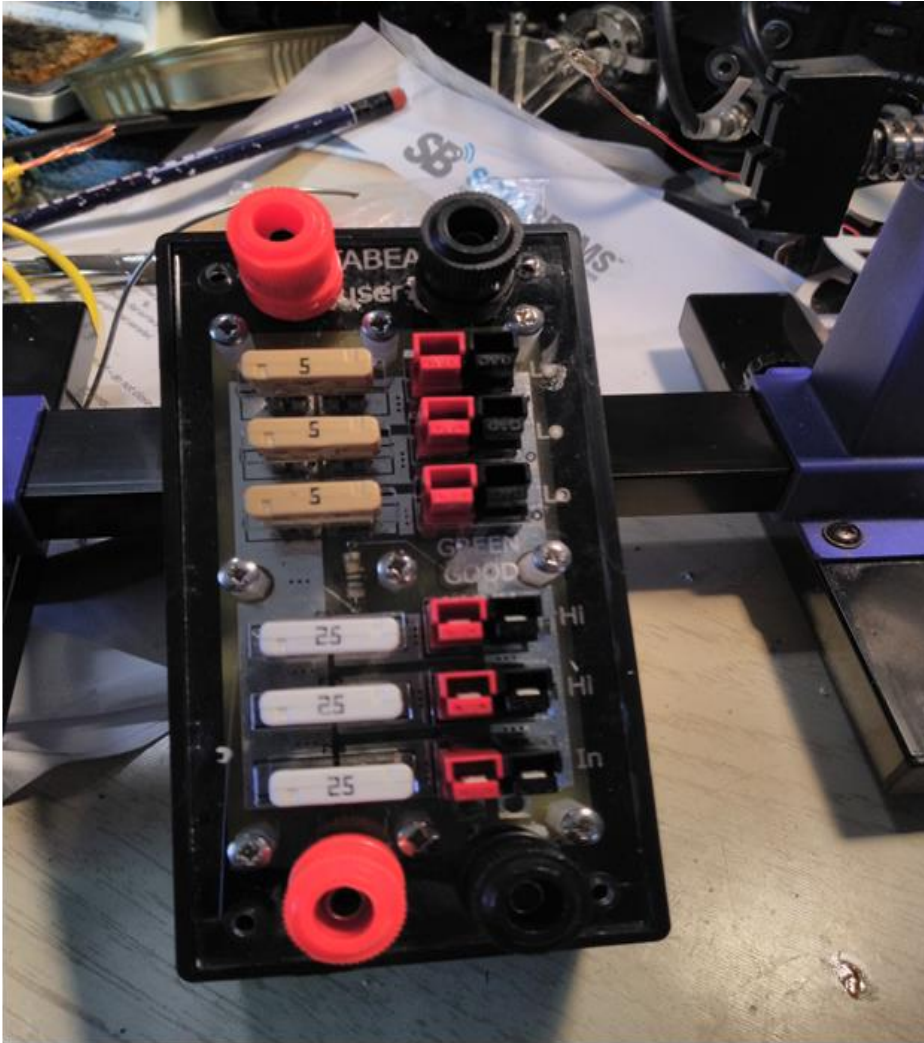
Then I installed the top panel assembly on to the main board. Fortunately the spacers fit into the holes on the main board. The cutouts on the top panel hang up on the Power Pole housings but with a little juggling it was in place in about 5 minutes. The nylon nuts were then easily installed on the spacers.

I am pleased with the total assembly and the function of the distribution panel. If you believe you will have trouble with the assembly, the completely assembled Fuser-6 is available from SOTABEAMS in England. If you do not need the housing, check the SOTABEAM website for the kit, less the housing.

The picture below is the completed unit. The top cover is clear, though in the photo it appears cloudy. My error as I forgot to remove the protective cover on the bottom side prior to mounting the top cover." Haste Makes Waste" as the old adage goes.



Personalization of the SOTSBEAM FUSER-6



As previously stated, I wanted to have Power Pole as well as Binding Posts available for powering equipment. I was pleased to find adequate space for installation of 2 sets of binding posts on the top cover. One set at each end of the top cover would provide power of 10 amps for accessories at the Low end and 15 amps at the HI end.

I wired the Black binding posts to the negative buss circuit. The Red at the top end is wired to one of the Positive 5 amp fuse pads. The Red at the bottom is wired to the positive IN buss. This allows me to input power with a Power Pole cable or to the binding posts. Nice in the field if the power source has no Power Poles but the equipment does.

A Leisurely Stroll to WAS QRP CW

Jeff Logullo NOMII

I got a nice package in the mail last fall. During these days of COVID we're used to US Mail delivery taking a bit longer than usual. This package, however, took over 30 years to arrive... and it's all my fault. I finally got my ARRL Worked All States certificate—obviously I have not been hurrying. What I'm most

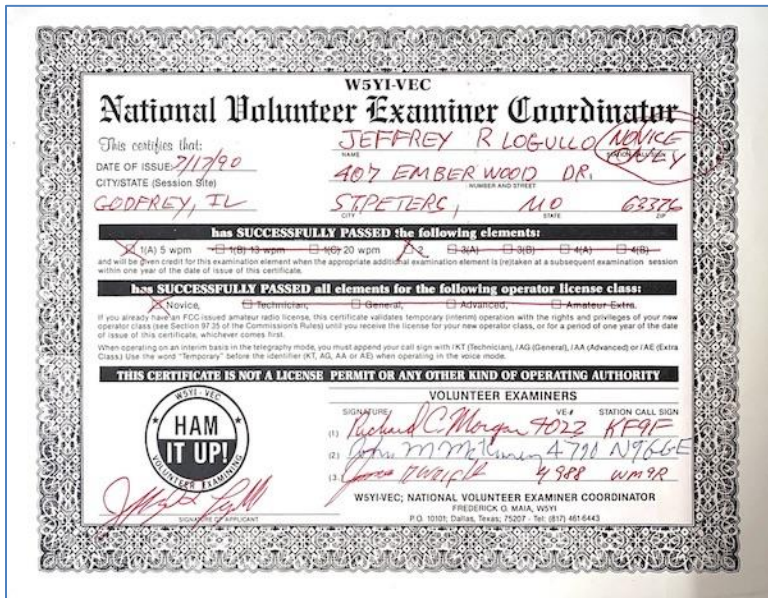


Photo 1: NOMII's VEC certificate after passing both Novice elements in 1990

proud of is that I made all 50 contacts at QRP power levels, using CW only. There's no endorsement showing that, but it doesn't matter. I know I did it and that's enough for me. It's been a fun journey, and I have some things I learned along the way that I figured I'd share. Some of this may be old hat to many, but I hope you find a bit of inspiration and a chuckle or two along the way. Here's the lessons I've learned on this odyssey...

Lesson 1--Get on the air. Ham radio is addictive. The more you operate, the more you want to operate again. The corollary is also true: if you're not operating today, you're not likely to get on the air tomorrow either. My on-the-air time since becoming a ham had been sporadic at times, with work and kids and etc.

ving for attention. Annual Field Day notwithstanding of course! Actually, Field Day was my annual "booster shot" of ham radio, and each year I found myself having more fun. I also realized that after FD, my CW skills had gained a refresher.

Lesson 2--Don't let "perfect" be the enemy of "good enough," especially with regard to antennas. For a long time I wasn't on the air because "my yard's too small," or "I don't have tall enough trees." Gentle nudges and inspiring stories from Dave NFOR got me to put aside such thoughts and keep experimenting with the space I had. Funny that a full-size 40m dipole wouldn't fit my yard... but an inverted V configuration fit just fine. And it worked just fine too! During the last several years (and this spans my entire WAS quest), my only antennas have been an inverted V for 40m (made from enameled magnet wire!), and my Cushcraft R5. The R5 by the way is a trapped end-fed half wave - funny how popular the EFHW has become. So that's the extent of my antenna farm. Would it be enough to earn WAS at QRP levels? Time would tell.

Lesson 3--Computer logging is a gateway drug. For years (decades!) I had been logging the old fashioned way, using the same spiral-bound logbook I'd bought at Gateway while working on my Novice ticket. But at last I decided that it made sense to log via a computer, and I'm so glad I started. There's a lot of different general-purpose logging programs, for all operating systems, from free to inexpensive to rather pricey. In the end I chose [N3FJP AC Log](#). It talks to my radio (Elecraft KX3), and so when I start a contact, all I need to do is enter the other fellow's call sign. The radio tells N3FJP the frequency, mode, and UTC date and time (I still have to make sure the power field reads 5W!). During

the QSO I can add comments in a notes field. At the end I click "log contact" and that's it. Now, here's the key: one day I pulled down a menu and chose "show states" and was presented a map of the USA with all the states that I had-and had not-worked yet. "Ooh... look at that! I've got almost half the US up there!" And that's when I realized that... if I had confirmed all those QSOs, I could really start working toward WAS.

Lesson 4-The [ARRL Logbook of the World](#) (aka LotW) is your friend. Confirming QSOs is quick and free! As it happened, my choice of AC Log was a good one. N3FJP interfaces with LotW. In summary: after a good day of operating (or even after each QSO), I poke a menu in my logger and upload the new QSOs to ARRL. The next day I download "what's changed" from ARRL, and it verifies my uploads... **plus** (hopefully) it downloads a confirmation that the other ham has logged our contact in LotW too. Now I found myself looking at that US map, filtering my log to show only confirmed QSOs at power levels of 5 watts... cool! I started printing that map periodically and pinning the update on the wall at my operating position. Great motivation to keep after it!

Lesson 5-Contesting is fun—and a great CW skill builder. While researching general purpose logbook programs, I also learned a lot about all the many contest loggers out there. That got me thinking it might be fun to try to make a few contacts on a contest weekend. Not to try to win, but simply to use my new radio/computer setup, and get some CW practice in. I had been looking at various CW-based clubs and learned about the [North American QRP CW Club](#). Their [NAQCC monthly sprints](#) sounded fun, and they even had a simple contest logger they recommended. My first attempt was crazy fun... but also a sobering reminder that my CW speed was not great. So that got me thinking...

Lesson 6-CW help is everywhere, but it didn't help until I started using it-regularly. The contest experience made me realize I needed - and wanted - to get better at copying CW at higher speeds. I'd heard about the [CW Ops club](#) and their [CW Academy](#) program. This is a set of free CW courses offered online. Students meet twice a week with an instructor via Zoom (way before Covid!) and practice sending to each other. I signed up and waited for classes to begin. Meanwhile I started using some of their recommended PC-based practice programs. One free app called [Morse Runner](#) simulates real on-the-air contest operation, giving you the chance to copy and send (type, actually) contest-style exchanges. The simulated ops send at various speeds and pitches, complete with static crashes and QRM. When my classes finally started, it was a lot of fun. The students were all ages and from all walks of life, but we were all there for the same reason: to get better at CW operation. In between classes, I did my best to keep to the recommended daily practice schedule, with both sending drills as well as using the CW Academy-recommended apps. And we were encouraged to get on the air and start having more real QSOs. Great advice!

Lesson 7-State QSO parties are casual good fun! With my CW skills improving (slowly but surely) I began to enjoy contest sprints more and more. Heck, I even earned a certificate or two. If you're the only QRP op in Missouri, you have a fair chance of winning that section - ha! But here's the best part: somewhere along the way it dawned on me that State QSO Parties are a wicked cool way to snag a needed state for my WAS quest. Obviously, if I need Idaho, then their state's QSO party weekend would be a smart time to be hunting. And, since it was a contest, the other guy wants to complete an exchange, so he'll listen for weak QRP signals and ask for fills in order to complete an exchange. Lastly, I

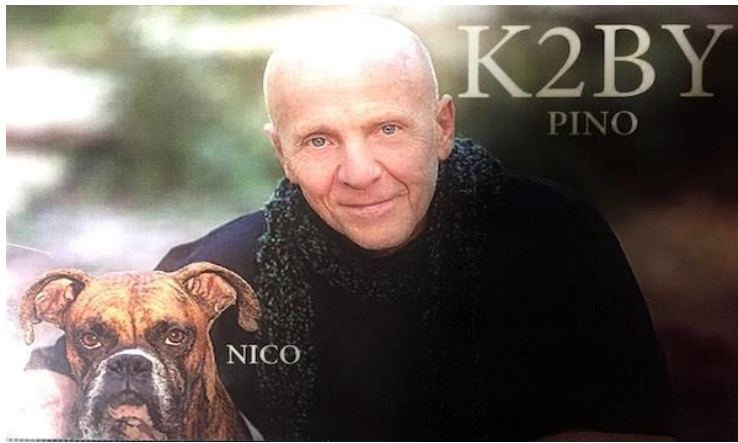


Photo 2: K2BY QSL card with photo of op Pino (and his dog Nico)

learned that it's pretty common that contest ops also use LotW, and upload their contests QSOs. (Bonus: N3FJP has a [lifetime package price for all his contest apps](#)-which includes [state QSO parties](#). I jumped in and have never regretted it.) I marked my calendar with all the upcoming state QSO parties and made sure to make several contacts with ops from needed states. My map on the wall began filling in.

I wish I had thought to keep notes about the last several states in my quest. I've gone back

through my log to remember some highlights. Hawaii was never on my "needed" list - I'd worked HI on 40 several times over the years. Alaska however was another story. But I got [KL7SB](#) in the log in May 2020 during the CQ-WPX. Kentucky came via [WB4IEA](#), also in May 2020, during a "natural" QSO. Kansas (special event call WOL) and [W3PP](#) Delaware had come via the KSQP and DEQP in 2018 and 2019. All that was left was Nebraska.

In the evening of May 14, 2020, I heard [K2BY](#) calling CQ. I entered his call in AC Log, and my heart skipped a beat when I saw he was from Nebraska - my sole remaining state. I told the op, Pino, that he was my last contact for WAS and that I hoped he used LotW. Alas, he did not... but he assured me he'd send a QSL card. I finished the QSO and sprinted upstairs for envelopes and stamps. My QSL card and an SASE for him was in the next morning's mail! I felt like "Ralphie" from *A Christmas Story* movie, checking my mailbox daily for Pino's card. Then one day... it was here! I'd accomplished my goal.

At last it was time to apply for the award. The process is pretty straightforward, especially when LotW already has your data. The wrinkle was that I had to mail in my one paper QSL card. I worried whether I'd ever see it again, but an email to ARRL HQ got a quick answer: yes, they'd be returning my card! So I filled out the web-based form, made payment arrangements, and carefully wrapped my card for mailing. And waited.

And finally, a nice sturdy envelope came in the mail. The certificate had arrived in the fall of 2020 - a year all of us will always remember as a year of COVID lockdowns and mask wearing and toilet paper shortages. But it will also be the year I'll always remember as the one where I finally had applied all the lessons I'd learned and fun I'd had in order to do something challenging yet fun: earning my Worked All States award using only CQ and at QRP power.

What a ride!



Photo 3: N0MII's prized ARRL WAS certificate

Thirty Years and 10 Minutes: One Journey to WAS

de KKØU

I was tired.

I had rolled out of bed at 0500 after minimal sleep, and in the waning hours of the last morning of the CQ 160 contest, I was coming up dry for QSOs. Every call sign I encountered was already in the log, and it had been about 10 minutes since my last contact. The mental and physical fatigue of operating this multi-night marathon had pushed me to wrestling with wanting to throw in the towel while still feebly committed to make the final push to the end.

The towel seemed to be winning.

If you're not familiar with the CQ160, it's a 48-hour contest on 160 meters, and single ops are limited to 30 hours of operation. While it seems like you could get two sessions of 9-hour sleep in there, keep in mind that 160 meters is mainly a night time band. So, if you're going to sleep, it's going to be during daylight hours. Mixing that into normal working/family life isn't always easy, and can make for an exhausting weekend.

But, I enjoy the challenge. Like many other hams, in contesting I strive to improve my score from the previous time, better my CW skills and generally have fun. 160 meters holds a much higher aspiration for me, however: Worked All States (WAS) on 160 meters, all QRP.

To be sure, 160 meters is a tough band to get out on, especially on a suburban lot without much room for aials. It forces one to constantly improve their transmit and receive systems, in an effort to achieve ultimate optimization given the constraints of physical space, radio budget and spousal approval. Top Band also suffers from high levels of atmospheric and man-made static, bizarre propagation and many sources of interference. Add to this, transmit power levels less than the light bulb in your refrigerator, and a clearer picture of the op situation at KKØU begins to emerge - I am a glutton for punishment.

In the roughly 30 years I've been pursuing QRP WAS on 160, I've learned that the bane of most ham radio operators existence - minimums in the 11-year sunspot cycle - are the sweet spot for the 160m operator. Those same factors that inhibit the ability to talk around the world on 10 meters enhance the conditions on 160 - less atmospheric noise, ionospheric signal absorption and better overall conditions.

In the 2019 ARRL and 2020 CQ 160m contests, I was able to knock out many of the remaining few states I needed: OR, UT, ID and even AK. I figured my last two holdouts would be AK and HI, as they are geographically the furthest away from my home station location. As it turns out, going into both the 2020 ARRL and 2021 CQ 160m contests, my last two hold outs were NV and HI.

For this year's 160m contest season, I had downloaded the FCC callsign database of all calls located in NV. I had also downloaded data from the Reverse Beacon Network of all calls originating from NV that

had been on 160m. From these two very large files, I built a database and cross-referenced them against each other to build a list of call signs that might be likely targets for me to work in either

contest. I loaded the handful of calls into my DX cluster commands for each contest (I operated single op assisted just so I could be alerted if any of these ops were on the air).

I came up empty in the 2020 ARRL 160. I heard two different NV stations, and try as I might I just could not get through. I put a lot of effort into finding those NV stations because I knew HI was a pipe dream that would never happen.

The first night of this year's CQ 160, I neither heard any NV stations, nor saw them spotted. I did manage a pretty good rate (for me), so I was pleased with QSO count I was racking up. Saturday night, I finally found an NV station - N7YK. He was mobbed in a bit of a pileup, so I wrote down the frequency and moved on, as my search and pounce rate was still decent. About 20 minutes later I came back to his frequency, and things were much quieter. I called once - no joy. Twice, three times, same result. I tried calling him for 5 minutes, and not even a "KK?" out of him. Reluctantly, I moved on. I tried several more times during the night before he went QRT or propagation changed - either way he disappeared, along with my hopes of getting closer to WAS. I was beginning to think I was going to have to wait another 11 years for a sunspot cycle minimum to get closer to WAS.

It was with these thoughts that I hit the sack at 0100 Sunday morning.

At 0500 I rolled out of bed -- bleary-eyed and fuzzy-headed -- and turned on the red overhead lights, the radio and woke up the computer. I put the headphones on and was greeted with a wall of CW signals. Thinking I'd really be better off back in bed, I scrolled through the DX cluster spots to see if there was anything interesting.

There it was - N7YK, NV.

I tuned to 1815 kHz, and heard his signal clearly. I called him and worked him on the first try. BINGO! I let out a whoop so loud it interrupted my wife's snoring. Now I was awake! Let's get back into this contest!

While I was still pretty jazzed about NV, by 0700 fatigue was clearly winning. As it turned out, I worked two NV stations within 90 minutes of each other, and I was getting ready to pull the plug. A duo of HI stations popped up on the DX cluster, so I figured, "why not?". Tuning to the first, I could tell there was a station there, but could not make out the call sign - there was no way I'd get the exchange. I tuned to the other station, and heard the pileup. I could make out more of this call, but it was still pretty weak. I decided to stick it out for awhile to see if the gray line might help me out. His signal came up - KH7A - and it was solid enough copy. I tailed-ended the next QSO, and he came back with a "KK?".

Oh my.

I went back to him with my call, and he responded with "KK7?". We went back and forth like this for two exchanges, and then he sent "nil". Propagation was fading and his signal disappeared, but having done

this grayline thing before, I stuck with it. In a few minutes, his signal came back up and I sent my call. He worked another call, then I tail-ended him again. He got "KK7A", and I repeated my exchange three

times. He finally came back with "KK7U MO?" to which I sent a string of Rs. He finally ended with an R and I sent three TUs in a row.

I couldn't believe it. I blinked several times and looked at my log twice to be sure it was in there -- 1312Z, 1820 kHz, KH7A, 31. I immediately saved my log and made a copy. I made a few more contacts in the next half hour, and decided to call it quits -- it wasn't worth beating my head against a wall anymore, and besides, I had achieved what I thought was impossible. I had worked HI on 160m QRP. It only took me 30 years and 10 minutes.

While that is all well and good, the work of getting those contacts confirmed was still ahead. I uploaded my log to the LOTW website, and looked for any activity from either of the NV ops or KH7A. The NV folks were active on LOTW, but KH7A was not. So, I looked up their address on qrz.com, and discovered that the call belonged to Akito JA5DQH, with instructions to QSL directly. I sent him an email, and he replied promptly with instructions on how to get my card to him in Japan. He had been operating remotely, but had my call in his log and promised to send a card.

As it turns out, he is active on LOTW under his JA5DQH call, and soon my QSO was processed and I submitted my request for WAS on 160m (ARRL doesn't recognize QRP as an endorsement, but ARCI does). I got my wallpaper in the mail just about the same time I received two QSL cards from Akito (one to submit in case I need to, and one to keep). One card is over my operating position at home, and the other hangs on my wall at work.

So, with skill, good timing a lot of luck and an op from Japan with an 800 foot beverage receiving antenna in HI and fantastic ears, I was finally able to get my WAS certificate. My goal has been achieved, the summit has been reached, the flag has been planted and I am well pleased. Why then, and I already working on antenna improvements for next year's 160m season?

We may never know.

73, Jim KKØU

WAS QRP Survey Results

Thanks to those who responded to the survey. I'm sure there are many more who have WAS QRP. So here are how the responses stacked up.

62% - CW 7% - SSB 31% - Mixed

The tough states to work were reported as RI, SD, AK, HI, WY, ND, NE. It appears to make a difference where in the country the station is located as to what states were difficult to work.

Soapbox:

KK5IB - not only has WAS, but also has WAS 40 Meters, not sure how long it took, maybe a year or longer.

K3RLL - Took many years to get WAS using a Heathkit HW-7

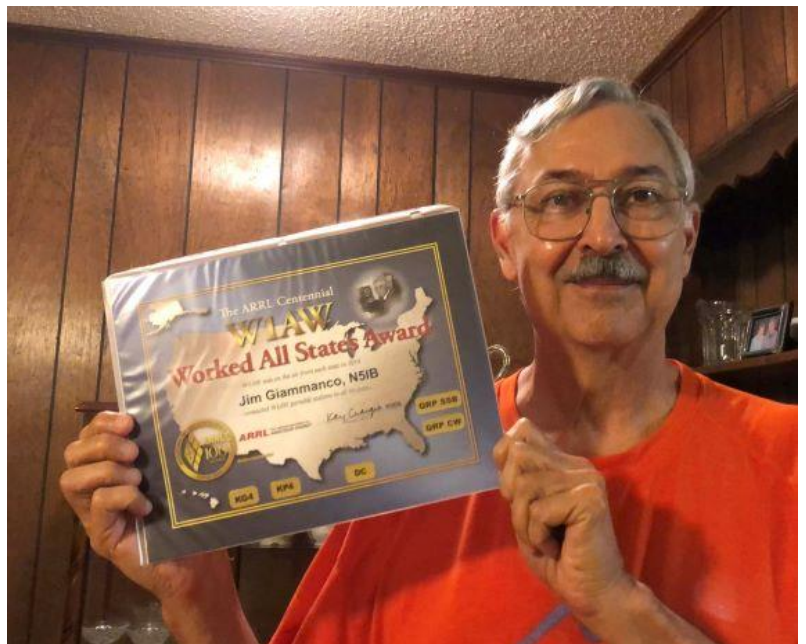
NK8O - Reports not only WAS but has worked over 100 countries

WA9PWP - received WAS in 1983, ARCI WAS in 1993, 2-way QRP WAS 1995.

WB5BKL - Went 100% QRP in 2005, had WAS in 2012, took 7 years.

WA8MCQ - A couple of decades ago I worked all 50 states on CW, on a mixture of bands, during the ARRL Sweepstakes. I was running 4 watts. Sadly, the single contact in Alaska steadfastly refused to QSL despite repeated attempts, including sending an SASE with homemade QSL that he only needed to sign. (Maybe he didn't believe I was only running 4 watts! He was, after all, running a full kilowatt.)

N5IB - Had already worked all states, but I decided to go for and actually apply for the award when ARRL did the centennial W1AW portable operations from all 50 states back in 2014. Since ARRL did not officially endorse the award for QRP CW or QRP SSB, I "rolled my own" QRP endorsement stickers to add to the other endorsements.



Stray Cats

From N5MZX

In the June 2021 I described building the QRPme X-CHECKer. In this issue I'll describe the grinding of a new QRPme 7.015 crystal blank. This is done to change a crystal frequency from one that may be out of band to one you can use. For instance I am a General Class operator and the 40 meter CW portion of the band runs from 7.025,000 to 7.125,000 Hz. I cannot legally operate with the 7.015,000 Hz crystal because that portion of the band is reserved for Extra class operators. The solution is to grind the crystal blank to a frequency that we can use. I have chosen the target for the grind to be 7.040,000 Hz. This being my first attempt at a crystal grind since 1964, I want to keep my goals realistic. Later on the attempt to move a 7.015,000 Hz blank to either 7.110,000 Hz or 7.122,000 Hz which are both well populated QRP frequencies. These grinds will require much more time and effort than I have right now.

WHAT IS A CRYSTAL?

The crystal is a piece of Quartz that is cut in a very thin strip. When placed between two metal plates in its holder and a voltage is applied vibrates. The vibration frequency is dependent on the thickness of the crystal. For instance a 80 meter crystal is much thicker than a 40 meter crystal and vibrates at a much lower frequency. What this suggest is, that you can move a lower frequency crystal up but never down.

THINGS YOU WILL NEED

1. A piece of $\frac{1}{4}$ in. Plate Glass.
2. Donor crystal blanks from a FT-234 or new blanks from QRPme
3. Sand paper I use 500, 1000, and 1200 grit. Comet cleaner or tooth paste can be used for final polishing.
4. Isopropyl Alcohol 91%
5. Micro fiber cloth
6. Q Tips
7. Jewelers' screwdrivers
8. Powder Free Vinyl Disposable Exam Gloves Recommended.
9. X-CHECKer or other frequency counter



OPENING A FT-243 CRYSTAL

An Ft-243 crystal can be opened by removing the three Phillips or flat machine screws from the front cover. The nuts for the screws are counter sunk into the back of the crystal body and the nuts were coated with a drop of paint to lock the threads. Use a good screwdriver with a large diameter handle to keep contact with the screw and get the necessary torque to break them loose. Be careful, the front cover is internally spring loaded and can fly apart so keep some pressure with your finger on the cover. If you don't see the cover start to separate, stop and get a jewelers screw driver to wedge between the cover and the body. Take care to not destroy the rubber seal. Now gently remove the stack as shown in the photo. The crystal element will be sandwiched between the metal plates. You are now ready to start the grind.

GRINDING THE CRYSTAL

Caution: Care must be taken in grinding the crystal or you might just remove your finger prints. After waiting for the skin to heal I decided to use one of the exam gloves on my right hand which gave me a bit of protection. Set your grinding station up to suite your needs. Photo No. ##.

1. Measure the crystal starting frequency and record it. 7,015,000 Hz.
2. Use 1000 grit for course grind and 1200 grit to finish. When you grind a crystal only grind the same face never turn it over.
3. With your finger on the crystal and using light pressure start making figure eights. I chose to do 50 of them, then turned the blank 90 degrees and repeated. Clean the crystal with alcohol and dry with the micro fiber cloth then measure the frequency again. I moved about 2600 Hz. By repeating the steps, the crystal frequency was moved to 7,030,190 Hz.
4. The closer you get to the frequency you require reduce the number of figure eights.
5. Stop grinding when you are a few kHz lower than your goal. Assemble the crystal in its holder and check the frequency again. The crystal frequency will probably rise some and may be close to want.
6. Remember all crystals have a + or - tolerance #### PPM. So do the math.
7. When you are satisfied that you have the frequency you want, pat yourself on the back.

CONCLUSION

This is a good way to recycle FT-243 WWII and commercial ham crystals from the 50's and 60's. Older quartz crystals have a tendency to age and not be as active as new crystal blanks. My experience that the older blanks have worked just fine. Give crystal grinding a try, I think you will enjoy it. My target Frequency was 7,040,000 and my final grind turned out to be 7,041,180 Hz. Not too bad!

New crystal blanks, X-Checker and the crystal grinding accessory pack are available from QRPme. Take a look at the X-CHECKer kit and his numerous other kits at www.QRPme.com. Rex Harper is a one man operation so be patient with your orders. As I have said before, his kits are well worth the wait.

WIREX Comments in EMAIL

"Nice article one comment though: The X-CHECKer was an FDIM2015 Buildathon Project that we built in mass at Dayton. When I design those kits, I do a couple of things differently from "regular kits ". I outline the different sections on the silk screen to facilitate building the kit in sections. I also call out the parts values right on the silk screen instead of using designators like R1, R2, R3ect. That makes the building process go faster because we only have a couple of hours to build the kit. So no flipping pages allowed! A schematic, parts and a board are all you need. I did include an overview which calls out some of the tricky items and any errata. For the X-CHECKer it is there in the docs:

<https://grpme.com/?p=product&id=B17>

I reckon that most builders of this kit are fairly advanced as they are into grinding crystals etc, so I never went back to spend a couple of WEEKS writing a Builder's Guide... REX"

My Final Thoughts

I really have enjoyed building and using this kit. In retrospect I find using his building method, offers a way to understand what is happening in the circuit and make any troubleshooting easier. I want to thank Rex, W1REX, and QRPme for the support he has provided me in writing this article.

I have no monetary interest of any of the companies I review. I purchase the kits just like you. Have fun building kits and 73, Ev Catlin N5MZX P.S. If you took time to read this, come and shake my hand at the next W4GGM club meeting.

Bayou Jumper Transceiver

Designed by
Jim Giammanco N5IB
and David Cripe NMØS

Back by Popular Demand



<http://www.4sqr.com/bayoujumper.php>

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 qrpccontest.com/4sqrp website (compliments of W8DIZ).

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

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

editorqrpbanner@gmail.com

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