

NAQCC NEWS

ISSUE 260 FEBRUARY 2020




KEY CLICKS

- **WX4RM HITS 100 SPRINTS.** Ron, WX4RM, participated in his 100th regular monthly sprint in January joining 21 other members who have achieved this excellent mark. You can see the complete list on our prizes page at http://www.naqcc.info/main_giveaways.html.
- **A STUDY IN CONTRAST.** Be sure to take a look at the pictures in this issue of the Florida and Long Island chapter outings from last month. How's the weather where you are?
- **CHECK OUT OUR MONTHLY POLLS.** Jerry, VE6CPP, puts up an interesting poll on our club website each month. **This months poll is especially important and actually contains a follow-up 2nd question.** You can cast your vote in the current poll and see past poll results using the links on the main club page <http://www.naqcc.info/>. The more people that cast a vote, the more interesting the results.
- **THANK YOU FOR THE DONATIONS!** A big "THANK YOU" goes out to everyone who has made a recent donation to the NAQCC treasury. The NAQCC has no membership dues and we depend on your generous donations to cover our operating expenses. If others would like to help out with a donation there are two ways that you can do it. The first way is to use *PayPal* to electronically send your contribution to Club Vice President John, N8ZYA, using the email found on the last page of this newsletter. To avoid any additional fees please be sure to check the box that says "I'm sending money to family or friends." Also please add a note indicating that this is a donation to the NAQCC and include your call sign. The second way to make a donation is to mail a check or money order made out to *The North American QRP CW Club* and send it to *John Smithson, 1529 Virginia St E, Charleston, WV 25311*. Assuming that we have your correct email address on file, your contribution will be acknowledged by email with a carbon copy sent to a second club officer as a "check and balance."

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THE PREZ SEZ.....

Greetings NAQCC Members! During the first week of January, I began the tedious task of confirming the various members filling NAQCC "positions" (no small feat - there are currently 35 folks on that list!). I sputter out one excited utterance - **THEY ALL STAYED!!!** I cannot express my thanks enough to these folks. I should have an updated position/contact list ready by next month. I also got an "earful" of many great suggestions and comments - and starting with this Newsletter article, here are some initial announcements based on those suggestions.

On the first day of the month, I will send an abbreviated "Prez Sez" message by the e-mail reflector to all of the membership. It will include some key items highlighting that month's activities. Reminders for those that don't surf the web.

Polls - This month two important questions - about NAQCC and related group activity. **I BEG YOU TO TAKE AND SUBMIT THE MONTHLY POLLS!!** They give us numbers to analyze and let us know - **YOUR** - thoughts! Other monthly polls will follow to gain insight on member interests.

As of a few weeks ago, we established a Twitter Account. Our account address is: <https://twitter.com/NorthQrp>. Special thanks to our new Twitter Manager, Mark Yergin W8EWH #9622 for the suggestion and volunteering to take the helm of our new social media presence on the web! Mark can use an "alternate" to help support him. Interested? Send him a message: mark.yergin@gmail.com.

We also have a Facebook Account - I will get that link on our main page as soon as I figure out how! (I'm still learning this web stuff). Should be up there shortly.

I am also looking for a few "volunteers" - A Sprints Coordinator, and a Webmaster - both of these positions are to be the point of contact for these activities, so when questions arise, we have a single point of contact (and they then forward or refer the issue to the proper person). Streamlines the "Who do I need to ask about this particular stuff?"

I am also looking for someone to lead a Non-Profit Status Committee (maybe we have an attorney or CPA member out there?). Zip me an e-mail if you can assist with this.

Well, that's the start. Basic organizational stuff.

Stay warm, stay safe, and get radio-active!

72/73!

Steve Szabo WB4OMM #5913

NAQCC President



A little bit of QRP on a wire goes a long way!



HARD DRIVE PADDLE

BY HOWARD, K4LXY

I enjoy making paddles out of weird and found materials and over the years have made many variations. Recently I decided to use the fine bearings in old hard drives as the basis for single-lever paddles. I made several variations using the motor and disc (along with some wood parts from a Wurlitzer piano), shown here in Figs. 1-2. They work surprisingly well.

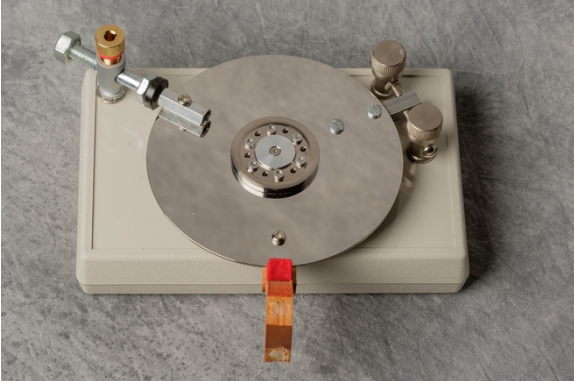


Fig 1

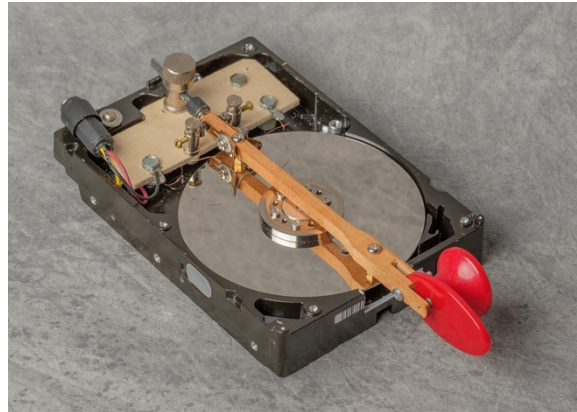


Fig 2

However, the swiper (technically, the “actuator arm”) also has a very nice bearing and can be made into a useable portable paddle for QRP (Fig. 3)

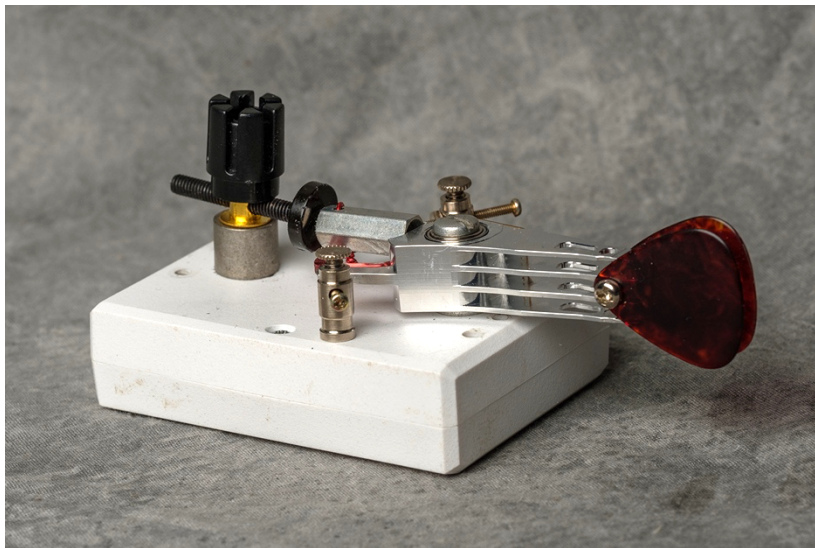


Fig 3: Mini-paddle

The easiest swipers to use for a paddle are entirely made of aluminum because the arms that holds the coil can be used as contact points. (See Fig. 4. In some, the arms holding the copper coil are plastic.) It may be that the metal ones come from older hard drive designs, though I am not sure of this.



Fig. 4: Magnet and contact detail

I bolted the swiper to a 3 x 2 1/4" plastic box with a ground lug under the nut inside the box. This will be the central or ground connection.

Centering and tension are provided by a magnet. I used a banana plug terminal as an adjustable mount by inserting a flat-head screw through the hole in the center post and positioning a small magnet on the head of the screw (Fig. 4). The magnet will stay in place by itself but after testing I glued it in place so that it couldn't be knocked out of position. I glued it a bit off-center so that by rotating it, I could vary the position of the magnet, thus affecting the centering of the paddle.

An alternative is to cut the magnet off a pickup tool, available from hardware stores, as I did in the Fig. 2 paddle. This has a magnet mounted on a shaft, so one can simply snip off the shaft, leaving enough shaft to go through the terminal post. Detail from the Fig. 2 paddle is shown in Fig. 5.

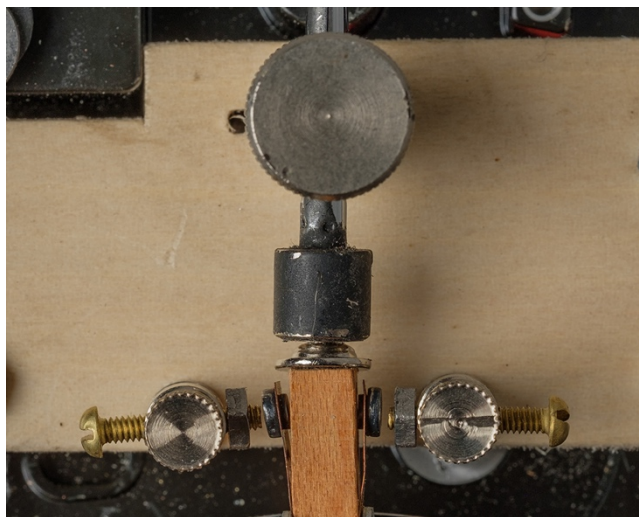


Fig. 5. Magnet detail from Fig. 2.

The swiper needed some iron to attract the magnet, so I glued a piece of metal across the coil (see Fig. 4). A nail with a flat head toward the magnet would also probably work.

Two small terminal posts are mounted on each side of the arm. Small machine screws through the terminal post holes serve as adjustable contacts. Lugs on the bottom side of the box provide connection points for the dash and dot wires.

Guitar picks mounted with a small machine bolt provide finger pieces though they aren't really needed.

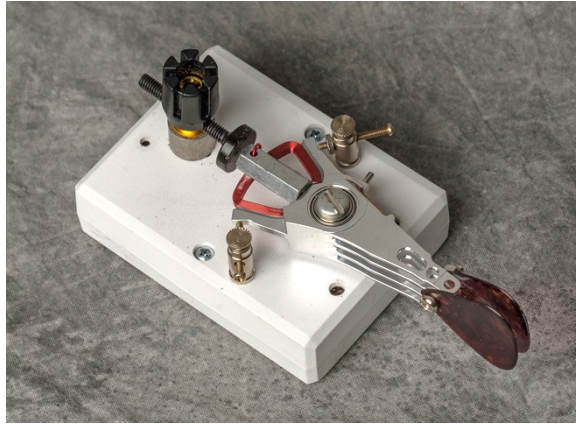


Fig. 6

To provide some weight, I filled the bottom of the box with split fishing sinkers.

I have made a lot of small portable paddles, but this one probably has the best feel.

A COMPARISON OF END FED ANTENNAS

BY ED, K8EK

Over the years I've constructed and purchased a variety of antennas for portable QRP use. Many of these are end-fed antennas, which are probably the simplest to install at a temporary portable location. During the past year I conducted comparative tests of several popular end-feds by compiling data from multiple WSPR mode transmissions. My methodology and the results are described below.

Antenna Setup: The two antennas to be compared were installed as slopers, with their feed points at the same location, about 3' above the ground. The photo shows side-by-side position of the input transformers. One antenna extended south, the other north, in approximately the same plane, to minimize interaction. The end of each antenna was draped over a tree branch about 25' above the ground. A single 50-ohm feedline was manually switched between the antennas during the tests.



Test Methodology: Rapid successive WSPR transmissions using the same antenna can produce widely varying signal strength reports, differing by as much as 10db or more for the same reporting station. This means it is necessary to make numerous test transmissions and aggregate or average the results to get a reasonable sense of how an antenna is performing. There are many ways to collect and analyze the data, with differing degrees of scientific rigor. I used the following process.

- Make successive closely spaced WSPR transmissions, switching from antenna A to B between each transmission
- Test at different times of day, to account for different band conditions
- Test over a period of days, again to account for different band conditions
- Switch the positions of antenna A and B, then conduct another set of tests, to account for any advantage due to antenna orientation
- Aggregate data on the number of hits produced by each antenna and the which antenna received the stronger signal report when the same reporting station heard both antennas

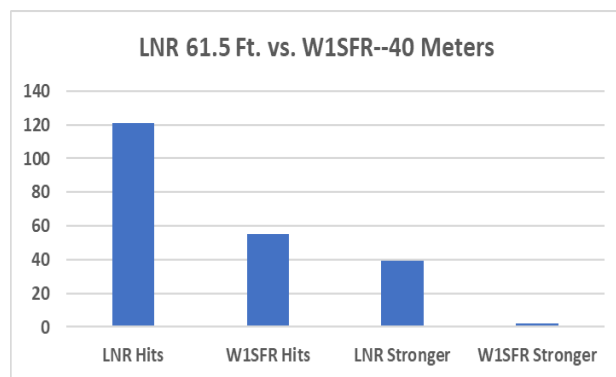
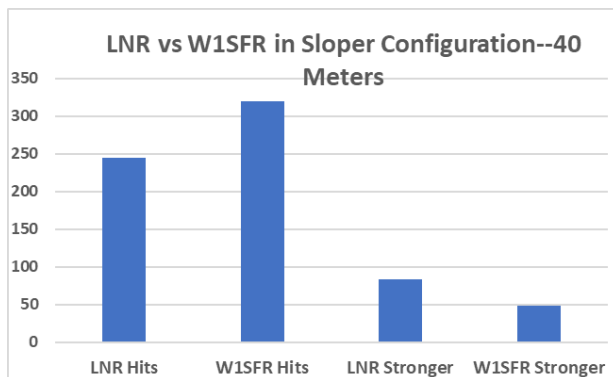
I limited my tests to 40 and 20 meters, since these are the bands currently most popular for portable QRP operation. The antenna tuner in my transceiver was tuned for the best match for each antenna.

Results: The antennas tested included the W1SFR end-fed (39.5'), LNR (PAR) 10/20/40 end-fed (41'), and the QRPGuys no-tune half-wave end-fed (61.5'). A 58' wire length was also tested against the original 39.5' wire length using the W1SFR transformer. I've had good success with the W1SFR over the years, and it became my "reference" antenna in the tests. In some cases, there was no conclusive result from the data, but I think the following results are valid.

- On 40-meters the W1SFR produced 30% more reports than the LNR antenna. The LNR antenna produced a stronger report 60% of the time from the same reporting station, but this may not be statistically significant.

- On 20-meters the LNR produced slightly more reports but the difference was not statistically significant. The LNR produced a stronger signal report 76% of the time on this band. 20-meters might be the best band for this antenna, but it performs adequately on 40-meters.
- Using a 58' wire on the W1SFR transformer produced 12% more reports than the original wire (39.5') on 40-meters, but this difference is probably not statistically significant. No tests were conducted on 20-meters, but a brief series of tests on 30- meters indicated that the original, shorter wire performed better.
- The QRPGuys end fed with 61.5' of wire outperformed the W1SFR on 40-meters, producing 38% more reports and a stronger signal report 88% of the time. No tests were conducted on 20-meters.
- The LNR transformer feeding a 61.5' wire outperformed the W1SFR antenna on both 40 and 20-meters. It produced 120% more reports on 40-meters and 20% more reports on 20-meters. Reports from the LNR were stronger 95% of the time on 40-meters and 64% of the time on 20-meters (which might not be statistically significant).

Below are representative examples of how I compiled the WSPR data. The first chart represents the LNR antenna with its original 41' wire, which can be tuned on 40, 20, and 10 meters. As recommended by LNR, a resonant half wave wire can be used with the same transformer. I found that the same 61.5' wire I used on the QRPGuys end fed worked fine on the LNR transformer. The antenna tuned easily on both 40 and 20 meters with this wire length, and I was very impressed with the results. I later found that a 64' length of wire on the LNR transformer allows tuning on 40, 20, and 15 meters with very low SWR, and tuning on 17 meters with a 3:1 SWR, which most QRP rigs can handle.



For me, the main take-aways from all this are as follows:

1. A half-wave end fed sloper seems to outperform a random wire end fed sloper in most cases. Perhaps this shouldn't be surprising, since the half-wave end fed radiates in the same manner as a half-wave dipole, which is tough to beat with a simple wire antenna.
2. The LNR transformer with a 64' piece of wire is an attractive choice, and provides multiband operation, when there is room. The QRPGuys antenna provides similar performance but is limited to one band unless you change the length of the antenna. Going forward, I'm going to pack the LNR transformer and a half wavelength wire for 40 meters when going portable. If there's room, that's what I'll put up. I need to find the optimum length, which might be longer than the 64' length I tested.

3. The W1SFR can be tuned on all bands from 40-meters up and gives very acceptable performance. It has the advantage of using a comparatively short radiator (the antenna is normally shipped with a 35' wire). I'll also take it along when going portable.
4. There doesn't seem to be much benefit in using a 58' wire with the W1SFR transformer.

I would welcome any questions, observations, or information on similar tests.



MEMBER SPOTLIGHT



Each month one of our members is randomly selected and asked to share their ham radio biography with all of us. Questions or comments should go to Paul, KD2MX.

DISCLAIMER: Any views expressed in this section are those of the submitting member and may or may not be those of the NAQCC or its officers.



HANK RICKS, K5TSK, #10081

Thanks for providing this opportunity to share. Also thanks to all those guys who work in the background to provide the support for the nets, web site, contests, and not in the least, those who get on the air and provide the contacts. Without the CW QRPers, there wouldn't be much point in NAQCC.

I've been in and out of ham radio since junior high school, and although I've dabbled a bit in SSB and digital, CW operation has always been home ground. I had let my last Extra license lapse some years ago, but after my third diagnosis of cancer, I decided ham radio might be a good hobby to keep my mind off of that. It has been very rewarding these last four years, now going on five, with lots to learn and relearn.

One of my first purchases was a Bencher iambic paddle and my first 30 contacts after relicensing as an Extra was with that paddle. I self taught on the paddle years ago thinking the index finger would be the best to form the 'dits' and had never given a 'bug' much thought. An elmer from junior high ham class days had tried to get me to learn his Blue Racer bug many years ago, but because I sent backwards to that bug, it just didn't work.

After joining SKCC this time around, I bought the Vibroplex straight key and played a while on that, then they decided to issue awards for those who made 100 contacts on SK, bug, and cootie. OK, I'm game. Bought a Vibroplex right-handed Original, a Curt Vizkey vertical bug, and a Begali Intrepid. All right-handed bugs that I used left handed. I also got a left-handed Vibroplex Blue Racer, that I learned to use right-handed.

After joining the BUG group, I began thinking about possibly finding an old classic bug, but knew that I probably could not afford a good left-handed classic bug and wanted to send faster with my right hand. So in August 2019, I threw away my FIST and started trying to send with my fingers reversed to fifty years of doing it 'bug backwards'.

Well, it's January 2020 and I can send on my right-handed bugs, right-handed, but I'm telling you, for me, it's not been easy. I still send fragments the old way, usually at the start of a word. Dit when I really need a dah, so please be patient with me on our Sprints. I'm doing a little left-handed iambic paddle with a Begali Leonessa dual paddle, but very seldom, and I've basically lost my iambic fist after making the change.

Was it worth it??? Well, I saw on eBay a while back an old Vibroplex US Army Corp 1940 J-36 and it looked pretty good to me. I paid the price and it is really nice knowing I can finally send on that bug the way it was built to be sent on. Also, my favorite CW elmer from junior high was an Army Corp radio operator, who coincidentally joined in 1940. Who knows, maybe he was in the vicinity of that bug while training. I like to think so.

Three years ago, I decided to buy a KX3/PX3 combo, a Bioenno battery or two, and go to a primitive campground which overlooks the Ouachita River valley at Lake Ouachita for the Arkansas QSO Party. I'm not a 'real' contester by any means, but I had a blast up there for a few hours. I remain amazed at what even a pitiful CW operator can do with QRP on CW. The outstanding operators on the other end with their really neat gear make all the difference. The KX3 and PX3 remain hooked up on the front of my desk as I write this. All it takes is a minor coaxial connector change and suddenly I'm QRP.

I'm not a QRP rig builder and don't work it full time by any means, but after I was asked about the Spotlight, I went back and checked my SKCC QSO log. Turned out that since I became active in SKCC, I've managed enough QRP on that group to get the requirements for QRP1. So maybe I use it more than I think. The December QRPp sprint opened my eyes to the fact that when given a level playing field, and a bunch of good ops on the other end, even a guy like me can have a ball with 900 mw. I wouldn't wish cancer on anyone, but I'm so thankful that because of it, I returned to ham radio, CW, and now a little QRP operating.

I'm retired and tired. Spent my life as a lineman, then meter technician for the old AP&L, now integrated into Entergy Corp. I've climbed 100-foot poles, set steel towers under the old box cranes, and set aluminum towers under helicopters.

Once while hanging off the north side of the old Greenville, MS Mississippi River bridge, I had a transmission power pole set basically in my lap by a helicopter while hanging on the bridge pillar. This while I was safe-tied off to a fiberglass ladder designed to be used on wood poles, and tied to the bridge pillar with polypropylene rope. Did two of those one day. We wore the old Mae West life jackets while we performed that work above the river. No safety ropes or nets. They told us the fall would kill us, but they would get the body thanks to Mae West. That was an interesting day. I spent another ten years as distribution lineman and tasted copper more than once. I can tell you it hurts, all over. Then came twelve interesting, but comparatively boring years in metering.

Proud to be here with you folks. No big plans. I'm enjoying a quiet, mostly sedentary life with my wife and a couple good radios and several nice keys. It's a real blessing being able to be reading the mail, QRP or not. The picture was a selfie, taken at Christmas time after my 73rd birthday. The candles fit right in with the rig at that time. KX3 and PX3 sit just above the writing tablet in the picture and also a Bioenno 20 Amphour LiFePO4. Bugs sit just out of view to the right and a keyboard plus a Vibroplex straight key on the pull out drawer just below. Hope to work you soon, next Sprint. Happy to make a few relaxing contacts and touch base with fellow hams. It's always fun.

73 or 72,
Hank K5TSK



NAQCC SPRINTS

CURRENT MONTH'S SPRINT: Our sprint this month will be on February 12, 0130-0330 UTC. That's the evening of Tuesday the 11th here in North America. Complete information about these sprints can be found at <http://www.naqcc.info/sprint/sprint202002.html>.

Complete sprint rules and instructions on how to submit your log can be found at http://naqcc.info/sprint_rules.html. On that page you will also find information about the different computer loggers that are supported for our sprints. The membership data files for those supported loggers can be downloaded at <http://naqcc.info/contests.html>. **Please be sure to always get the latest membership data for your logger about a day before the sprint.** A complete schedule for our upcoming sprints can be found at http://naqcc.info/sprint_sked.html.

LAST MONTH'S SPRINT RESULTS: We had two sprints last month. Our regular monthly sprint was on January 16 and our annual 160-meter sprint was a week later on the 23rd. Conditions continue to be challenging but the soapbox comments are still filled with statements about how much fun it was! If you haven't tried one of our sprints, you should. Even non-contesters (like me) enjoy them. Complete sprint results, including all of the soapbox comments, can be found at <http://www.naqcc.info/sprint/sprint202001.html> and http://www.naqcc.info/sprint/sprint202001_160.html. High scores can be seen in the tables on the next two pages.

We would especially like to welcome our first-time regular sprint loggers and hope that they will return to participate often: AC4NY AC5BX KX4CX NF1O

SWA STRAIGHT KEY CATEGORY			
Division	1st	2nd	3rd
W1	KN1H	NF1O	W1PQO
W2	KA2KGP	W2JEK	W2SH
W3	KD3CA	WA3FIR	KC3RN
W4	K4KRW	WG8Y	K4JPN
W5	N5GW	W8WEU	K5TSK
W6	W6JIM	-	-
W7	KC7DM	N7YY	K7ZI
W8	AB8RL	WB8LZG	NF8M
W9	WB9HFK	W9CC	KA9FQG
W0	KD0V	N0AR	NN0SS
Canada	VE3SIF	VE3DQN	-
DX	-	-	-

SWA BUG CATEGORY			
Division	1st	2nd	3rd
W1	-	-	-
W2	WB2LQF	-	-
W3	-	-	-
W4	K3RLL	-	-
W5	NF5U	K5IX	-
W6	W6SMF	-	-
W7	-	-	-
W8	N8XMS	K8NGW	-
W9	K9DRP	AA9L	-
W0	W0KFG	-	-
Canada	-	-	-
DX	-	-	-

SWA KEYER/KEYBOARD CATEGORY			
Division	1st	2nd	3rd
W1	KB1M	N2CN	KC1DVT
W2	N2ESE	-	-
W3	-	-	-
W4	K4BAI	N4MJ	KU4A
W5	WI5H	N5AAS	KE5YUM
W6	-	-	-
W7	-	-	-
W8	WI8J	WA8SAN	-
W9	KY0Q	AB9BZ	-
W0	K9OSC	K0EW	WD0K
Canada	-	-	-
DX	-	-	-

GAIN CATEGORY			
KEY	1st	2nd	3rd
SK	-	-	-
BUG	-	-	-
K/K	-	-	-

FIRST TIME ENTRANT HIGH SCORE			
KEY	1st	2nd	3rd
SK	NF1O	AC4NY	AC5BX KX4CK TIE
BUG	-	-	-
K/K	-	-	-
SPRINT PRIZE DRAWING WINNER			
KG4UPO			

160m SWA STRAIGHT KEY CATEGORY			
Division	1st	2nd	3rd
W1	KN1H	W1IR	WB1GYZ
W2	W2SH	W2JEK	KN2G
W3	W3TS	KD3CA	KC3MIO
W4	WG8Y	W4EOP	-
W5	N5NK	KA2KGP	N5GW
W6	-	-	-
W7	KC7DM	KF7WNS	-
W8	NF8M	-	-
W9	WB9HFK	W9CC	-
W0	N0AR	AA0W	KD0V
Canada	-	-	-
DX	-	-	-

160m SWA BUG CATEGORY			
Division	1st	2nd	3rd
W1	-	-	-
W2	-	-	-
W3	-	-	-
W4	KJ4R	-	-
W5	NF5U	K5TSK	-
W6	-	-	-
W7	-	-	-
W8	-	-	-
W9	K9DRP	-	-
W0	-	-	-
Canada	-	-	-
DX	-	-	-

160m SWA KEYER/KEYBOARD CATEGORY			
Division	1st	2nd	3rd
W1	K1WHS	-	-
W2	WA1GWH	-	-
W3	-	-	-
W4	KB9ILT	N4MJ	K4BAI
W5	K5MMH	KE5YUM	-
W6	W6JIM	-	-
W7	-	-	-
W8	N8NK	-	-
W9	NN9K	-	-
W0	-	-	-
Canada	VE3DQN	-	-
DX	-	-	-

160m GAIN CATEGORY			
KEY	1st	2nd	3rd
SK	-	-	-
BUG	-	-	-
K/K	-	-	-

160m SPRINT PRIZE DRAWING WINNER
WB9HFK

	Current Month	Previous Month	All-Time Record	Record Date
Logs	91	90	217	4/17
Participants	115	141	269	2/13
Total QSOs	798	1172	3154	4/17
Hour 1 QSOs	451	634	1704	4/17
Hour 2 QSOs	347	538	1450	4/17
20m QSOs	0	22	1232	8/13
40m QSOs	320	677	2203	4/17
80m QSOs	478	473	1417	2/13
Avg QSOs/Station	8.8	13.0	19.3	9/11

SPRINT HONOR ROLL: We honor the following members for their outstanding participation over the years in our regular sprints. Exact counts can be seen at http://naqcc.info/sprint_dates.html.

NUMBER OF SPRINTS	MEMBERS
50+	KN1H NU7T(SK) KB8FE K9OSC N4MJ KB0ETU N8LA K2YGM AA7CU K9EYT NQ2W KF7WNS KD3CA N2CN N8QY WY3H K6CSL WI5H NF5U KC7DM KC2EGL WK6L WA1GWH K4ORD AB8FJ WB4OMM VE5BCS(SK) AA0W W5UAA WA2FBN KB1M
75+	AK3X K4NVJ KB3AAG K4KRW VE3FUJ WA8SAN NO2D N0TA WG8Y N8BB AA9L NA4O WD0K K6MGO KA9FQG KQ1P N5GW
100+	KE5YUM KD2MX K4JPN K1IEE KD0V WA2JSG N4FI W4DUK N2ESE WB8ENE WX4RM
125+	W9CC WB8LZG N8XMS K4BAI KU4A NF8M K3RLL
150+	W2JEK KA2KGP W2SH
175+	K3WWP



NAQCC CHALLENGES

CURRENT MONTH'S CHALLENGE: Our challenge this month is an alphabet challenge with a word list related to the famous 1940 Tacoma Narrows bridge collapse. To get the list of words and read a little bit about this classic engineering goof go to <http://naqcc.info/challenges/challenges202002.html>.

NEXT MONTH'S CHALLENGE: Chicago is famous for all of the gangster action that it experienced in the 1920's and 30's but did you know that even the Chicago taxi drivers were a part of all that? Learn more in our March alphabet challenge at <http://www.naqcc.info/challenges/challenges202003.html>.

Complete information about our challenges including a helpful tutorial on how to organize your work for an alphabet challenge can be found at <http://naqcc.info/challenges.html>. Detailed general rules for our challenges can be found at http://naqcc.info/challenges_rules.html.

LAST MONTH'S CHALLENGE: The deadline for submissions for our January challenge about how to read the markings on a ships hull is still a few days away. You can see what has been submitted so far at <http://www.naqcc.info/challenges/challenges202001.html> and final results will be posted on that page shortly after the 10th of the month.

CHALLENGE HONOR ROLL: We honor the following members for their outstanding participation over the years in our monthly challenges. Exact counts can be seen at http://www.naqcc.info/challenges_schedule.html.

NUMBER OF CHALLENGES	MEMBERS
25+	W3IQ KU4A K9OSC KD0V WA2FBN WI5H PA9CW NF1U WY3H N1JI VE3HUR G3JFS N1LU KJ4R KD2MX AK3X VE3DQN KA5PVB AH6AX WB4OMM
50+	PA0XAW VE3FUJ NU7T(SK) N9SE
75+	
100+	K1IEE K1YAN
125+	N8XMS W2JEK
150+	K3WWP



NAQCC AWARDS

We have an extensive list of awards that you can earn. Complete details can be found at <http://naqcc.info/awards.html>.

FEATURED AWARD: SUFFIX WORDS AWARD

This month we would like to talk about an award that many of you probably already qualify for - the Suffix Words Award. The idea of this award is simple, just use QRP and CW (duh) to work stations with call signs that spell out words with the letters that are after the number (the suffix). For example K9**IT**, KB5**FOG**, or W1**MOO**. (All of the letters in the suffix must be used - W5ISX would not give the word "IS.") To remove any debate about whether or not something is a real word we use the official list of 2 and 3 letter words from the National Scrabble Association. Collecting 50 such call signs will earn you a certificate. You can find the complete details about this award, along with the list of accepted words, at http://www.naqcc.info/awards_words.html.

RECENTLY ISSUED AWARDS:

2019 PARTICIPATION AWARDS (36 points maximum)

W1	K1IEE	31	01/16/20
W2	W2JEK	36	01/16/20
W3	AK3X	36	01/16/20
W4	WB4OMM	36	01/16/20
W5	WI5H	27	01/16/20
W6	W6JIM	7	01/16/20
W7	KC7DM	12	01/16/20
W8	N8XMS	24	01/16/20
W9	AB9BZ	18	01/16/20
W0	NN0SS	28	01/16/20
VE	VE3DQN	23	01/16/20
DX	G3JFS	12	01/16/20
DX	PA0XAW	12	01/16/20
DX	PA9CW	12	01/16/20



NAQCC QRS/QRQ NETS

We have a number of nets (QRS = slow speed, QRQ = higher speed) designed to help people build up their CW operating skills. Complete information about these nets can be found at http://naqcc.info/cw_nets.html. Questions should be directed to Net Manager Mark, W8EWH.

NAQCC NET SCHEDULE

Net	Local Time	UTC	Freq +/-	Primary NCS
FarnsWord QRQ Round Table Nets (FRN)	Sunday 4:00 PM PST 5:00 PM PST	Monday 0000 Z 0100 Z	5348 KHz ch2 3556 KHz	60m JB, NR5NN (in CA) 80m Rick, N6IET (in CA)
East Texas QRS Net (ETN)	Monday 7 PM CST	Tuesday 0100 Z	3567 KHz	Allen, KA5TJS (in TX)
Midwest QRS Net (MWN)	Monday 7:30 PM CST	Tuesday 0130 Z	7031 KHz	Bob, W0CC (in KS)
Rocky Mtn Regional/Continental QRS Net (RMRc)	Sunday 8 AM MST	Sunday 1500 Z	7062.5 KHz	Dale, WC7S (in WY)
Pacific Northwest 80 m QRS Net (PNW80)	Thursday 4 PM PST	Friday 0000 Z	3556.5 KHz	Stewart, KE7LKW (in WA)
West Coast QRS Net (WCN)	Tuesday 6 PM PST	Wednesday 0200 Z	7062 KHz	Mike, N6MST (in CA)

Note: On the rare occasions that there is a conflict between one of our scheduled nets and one of our regular sprints the sprint will take precedence.

NET CONTROL STATION REPORTS

NAQCC FarnsWord QRQ Round Table Nets (FRN)

Sunday evenings 4:00 PM PST, which is Monday 0000 UTC, on 5348 kHz (Ch 2)

Sunday evenings 5:00 PM PST, which is Monday 0100 UTC, on 3556 kHz +/-

60m NCS - JB NR5NN (CA); 80m NCS - Rick N6IET (CA)

The NAQCC FarnsWord QRQ CW round table nets ...

... promote head copying skills while encouraging participants to send good, properly-spaced code at between 21-25 wpm. We typically go two rounds after check-ins, including signal reports and topical commentary about the weather, recent contests or other CW events, antenna experimentation and/or catastrophes, and HF portable CW operations.

Anybody who can copy and send at least 15 wpm is welcome to participate – you don't have to be a member of NAQCC.

Below are the lists of stations who checked into each net, each week. Dates are UTC.

FRN/60 FarnsWord QRQ Round Table Net QNS - JB NR5NN NCS

Sunday 4pm PST (Monday 0000 UTC) on 5348 kHz (Ch 2)

Jan 06 - QNS (4) NR5NN NCS, N6IET, N6VN, K6GVG
 Jan 13 - QNS (6) NR5NN NCS, KW6G, N6VN, AI6SL, K6GVG, N6IET
 Jan 20 - QNS (6) N6IET NCS, K6JJR, KE6EE, K0DTJ, K6GVG, KW6G
 Jan 27 - QNS (8) NR5NN NCS, KW6G, K6GVG, N6IET, KE6EE, WJ7S, N6VN, VE2MF

FRN/80 FarnsWord QRQ Round Table Net QNS - Rick N6IET NCS
 Sunday 5pm PST (Monday 0100 UTC) on 3556 kHz ±

Jan 06 - QNS (7) N6IET NCS, KW6G, K6GVG, K0DTJ, KE6EE, K6JJR, AI6SL
 Jan 13 - QNS (6) N6IET NCS, K6JJ, K0DTJ, AI6SL, KW6G, K6GVG
 Jan 20 - QNS (6) N6IET NCS, K6JJR, KE6EE, K0DTJ, K6GVG, KW6G
 Jan 27 - QNS (7) N6IET NCS, NR5NN, KW6G, AI6SL, K6JJR, K6GVG, K0DTJ

Commentary

I think we're seeing the very bottom of the 11-year sunspot cycle. Who cares? If you pick the right bands and times to operate, you can still have lots of fun. Most of January's nets started out at or near NVIS conditions but each band would often start to go long halfway through the net, and closer stations stopped being able to copy each other. But the daylight hours are lengthening, so conditions should improve without our having to reschedule either net in February.

In regard to our cruising speed, we usually start out at 21 wpm and gradually QRQ to 23-25 wpm by the third round (or so). But we're always willing to QRS for slower participants. If we didn't rein him in, JB would love to gallop at 30 wpm! Whoa, boy! :-)

NAQCC East Texas QRS Net (ETN)

Monday evenings 7:00 PM CST, which is Tuesday 0100 UTC, on 7068 KHz +/-
 Main NCS - Allen KA5TJS (Texas)

1/7/2020 QNI(3) NCS KA5TJS KE5YUM N4NN

Band was really ruff tonight. N4NN was running 20 watts and 559. I could not hear KE5YUM but Allen reported him to the NCS.

1/14/2020 QNI(2) NCS KA5TJS N4NN

Pretty bad QSB tonight. Allen was NIL to 559. He reported hearing another station but nothing here. We were both running 10 watts tonight.

1/21/2020 QNI(5) NCS KA5TJS N4NN KE5YUM KE5YGA N4OW

Well a little bit of cheating here, Terry and Allen checked in with QSB and some QRM and we had a good QSO. Andy and AI were reported by N4NN but I never heard them but they were logged for the effort anyway!

1/28/2020 QNI(2) NCS KA5TJS KE5YUM

Just me and Terry tonight. He was 339 running 5w and the QSB was very bad. Band conditions very poor tonight.

NAQCC Rocky Mountain Regional/Continental QRS Nets (RMRc)

Sunday mornings 8:00 AM MST, which is 1500 UTC on 7062.5 kHz +/-
 Main NCS - Dale WC7S (Wyoming)

No Report

NAQCC MIDWEST QRS Net (MWN)

Monday evenings 7:30 PM CST, which is Tuesday 0130 UTC, on 7031 kHz +/-
 Main NCS - Bob W0CC

12/30/2019 - QNI W0CC

QRN S-8. Very few stations on the air!

01/06/2020 - Mother-in Law in the Hospital

01/13/2020 - Mother-in Law in the Hospital. Hopefully, she will be home before next Monday!

01/20/2020 - QNI W0CC

Conditions were sooo bad that I could barely hear W1AW! Next week WILL be better!

01/27/2020 QNI W0CC

The Band conditions are very poor; however, they will improve next week!

=====

NAQCC West Coast Net (WCN)

Tuesday evenings 6:00 PM PST, which is Wednesday 0200 UTC on 7062 KHz
Main NCS - Mike N6MST (California)

01/07/2020 – QNI (1) N6MST NCS

01/14/2020 – QNI (0)

01/21/2020 – QNI (2) N6MST NCS, NF6R

01/28/2020 – QNI (2) N6MST NCS, NF6R

I have plenty of noise here but Bill NF6R is consistently there for the WCN. It helps he lives only a few miles away, I'm sure. I put up a new antenna this past weekend, maybe that will help snag a few more check-ins.

=====

NAQCC Pacific Northwest QRS 80 Meter Net (PNW80)

Thursday evenings 4:00 PM PST, which is Friday 0000 UTC on 3556.5 kHz.
Main NCS - Stewart KE7LKW (Washington State)

01/03/2020 PNW QNI (8) NCS KE7LKW, N7KC, WB7WHG, KG7JEB, AD7BP, K7JUV, K7GND, N7TB

01/10/2020 PNW QNI (7) NCS KE7LKW/7, N7KC, WB7WHG, AD7BP, K7JUV, WB4SPB, W7ANM

01/17/2020 PNW QNI (6) NCS KE7LKW, WB7WHG, AD7BP, WB4SPB, W7ANM, KG7JEB

01/24/2020 PNW QNI (10) NCS KE7LKW, WB7WHG, AD7BP, WB4SPB, W7ANM, KG7JEB, K7JUV, N7KC, KJ7GHS, N0DA

01/31/2020 PNW QNI (8) NCS KE7LKW, WB7WHG, AD7BP, WB4SPB, W7ANM, KG7JEB, N7KC, KJ7GHS

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HAM QUIPS



Dick Sylvan, W9CBT, #2062, has been a QRP/CW operator for a long time. He is also a very accomplished ham radio cartoonist and his work has appeared previously in the K9YA Telegraph newsletter. His book "HI HI - A Collection of Ham Radio Cartoons" is available at www.lulu.com.

MORSE TIPS & QUIPS



LISTEN TO MORSE CODE AT EVERY OPPORTUNITY!

NAQCC CHAPTER NEWS

The North American QRP CW Club currently has six local chapters - Western Pennsylvania, West Florida, Illowa, Downeast Maine, Long Island, and Florida - but we would be more than happy to expand on that list. Chapters are more or less independent local gatherings organized by NAQCC members in a geographical area and subject to a list of guidelines from the NAQCC. They provide opportunities to have fun and to promote our parallel passions of QRP and CW. If you are interested in forming a local chapter please contact Club President Paul, N8XMS.

If your chapter is planning a portable operation activity and would like to have it promoted on the club email list or in the newsletter, send an email with the subject "NAQCC Portable Operation" and with the exact wording of the announcement to Vice President John, N8ZYA, at the email address listed on the last page about a week before the operation. Please be sure to include the UTC time for the event and not just the local time.

A report about your chapter activity should appear here. Please send them to KD2MX or N8XMS at the email addresses listed on the last page.

NAQCC chapters located in the United States are welcome to use the NAQCC Club call, N3AQC for their special operations. Please contact call sign trustee Paul, N8XMS, to schedule the use of N3AQC.

Chapter Reports Begin On The Next Page

NAQCC LONG ISLAND CHAPTER



Items in this section are from the Long Island Chapter unless otherwise credited. Questions and comments should go to Howard, WB2UZE.



DE WB2UZE

The weather was an unusual 49F in January so we decided to have our outing. Only 4 of us could show up for lunch but it is still very pleasant to sit around and 'chew the rag'. We then headed out to Captree State Park which is POTA K2028, our new location thanks to Mike N2PPI, and headed out over the Great South Bay bridge. The usual bridge photo was taken to show the WX.



We met some additional members down at Captree and here was the turnout:

Walt W2TE

Peter AA2VG with his IC7300 and buddypole decided to set up at a beach table in the open air working POTA. Peter logged 53 CW POTA QSOs in about a 2 hour run mostly on 40 and 20m, including EU. A very impressive job.

John W2XS set up his KX2 on batteries into a 40m dipole fed with twin lead and worked EU

Bob W2OSR came with his FT 817 5W into a jackite pole vertical. Bob was having some prior issues getting out but that was solved and he worked Quebec on 40m

Mike N2PPI using a FT891 into a wire vertical on jackite pole. Mike's set up and breakdown is remarkably easy/quick and his rear tire holds down the antenna base. Mike worked a few USA contacts including a fellow friend N2VGA on extended vacation in FL.

John K2NY came down with his FT 857 into a 40m ham stick and got out to New England

Howard WB2UZE

We are very comfortable at Captree as its a scenic spot overlooking the bay and bridge. It was remarkable that we could sit outside at a beach table and be comfortable. There are plenty of grills and tables in the area and we are going to have to press Rich K2UPS into cooking service come June for an outdoor early evening BBQ and portable outing there. All in all a fun day and everyone was pleased.

Regards
Howard



AA2VG, W2TE, N2PPI

More photos on the following pages.



**W2TE, K2NY, W2DSR
@ N2PPI's Antenna**



N2PPI



K2NY



W2SX



W2SX



W2OSR



W2OSR Antenna



AA2VG, W2TE

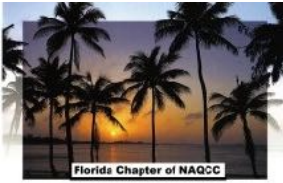


WB2UZE, AA2VG



WB2UZE

NAQCC FLORIDA CHAPTER



Items in this section are from the Florida Chapter unless otherwise credited. Questions and comments should go to Steve, WB4OMM.

The Florida Chapter website is <http://wb4omm.com/naqcc-fl-chapter>.

NAQCC FLORIDA CHAPTER MEMBER NEWS: January 2020

The Favorite Location of all Our Rotations!!



On Friday, January 17, 2020 the Florida Chapter of NAQCC returned to a local park favorite for our monthly adventure. We held our New Year "Parkpedition" at Hontoon Island State Park in DeLand, Florida. This island, located in the St. Johns River in Volusia County, welcomes visitors to enjoy nature and history in quiet solitude. The island is accessible only by private boat or park ferry. Evidence of Native American habitation over thousands of years can be witnessed as visitors' hike through the park. There is an impressive visitor center to learn more about the many inhabitants and uses of Hontoon Island over the years. Boating, canoeing, and fishing are popular activities and canoe rentals are available. Picnic areas include tables, grills, and a playground. Overnight boat slip rentals are also available. The park's ferry operates daily from 8:00 a.m. to one hour before sunset. Located six miles west of DeLand off State Road 44, it's quiet (usually), serene, and not heavily populated. A great ham radio location! The Ferry is operated by a volunteer – Bob W6RWC! (in photo).

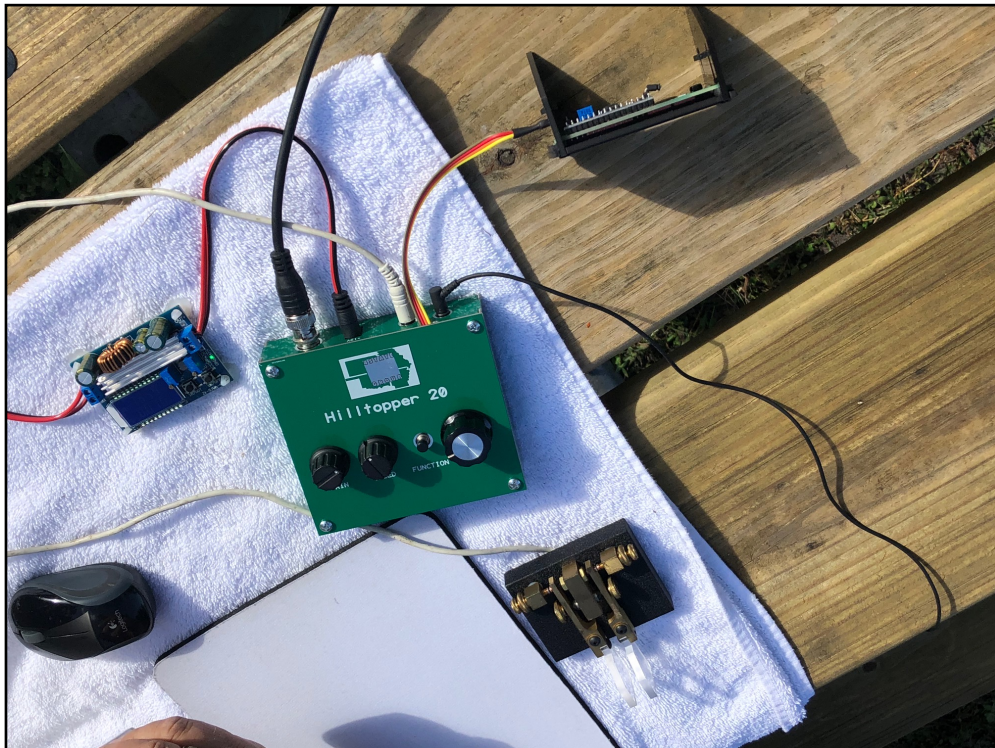
Most of us arrived between 9:30 - 10:00 am (EST local). We quickly set up the equipment in the "reasonable" conditions - it was 65 degrees on arrival with no wind (later, we had a pretty stiff breeze coming off the lake, making it a bit chilly). By 10:30 am we had 2 stations on the air - WB4OMM and KM4JTE. As expected, the signals were not so good, propagation was marginal. But the weather was great!

This trip we had a total of 6 members/operators in our group to include: Steve WB4OMM #5913; Nikki KM4SBQ #8749; John KD4JS #8019; John KM4JTE and his XYL; Bob W2EJG was also present and operating. Thanks to Nikki KM4SBQ for taking most of the pics again!



Steve WB4OMM #5913 and Bob W2EJG

Steve started with a 4SQRP Hilltopper 20 and a Vibroplex Code Warrior Paddle, running 5W to a 31-foot end-fed near the water's edge. He contacted Gary WØITT #9113 in MO (20M) then swapped rigs to an Elecraft KX-3. Bob W2EJG worked 4 members/4 states on 20M - Bob K9OSC #3894 MN; Jim KC0DD #3998 IA; Jerry NF5U #142 TX; and Walt KB1M #8058 in NH.





John KM4JTE #7966 and XYL

Using his KX-2 with a 35-foot end fed antenna with a 9:1 UNUN, he worked one member and one non-member on 40M; Dan KF8R #1337 in OH and non-member Bruce K9OZ in AR both on 40M



***Many thanks to those who listened for us and
helped make this another successful NAQCC-FL event!***

NEXT MONTH'S SCHEDULED EVENT:

Friday, February 21st, 2020 starting at 10:00 AM EST

Gemini Springs Park (37 Dirksen Drive, DeBary, FL 32720)

Park webpage with directions: [DIRECTIONS TO PARK AND INFO](#)

WHO: "The Usual Suspects" – Art WB4MNK, Steve WB4OMM, Rick AA4W, Don K3RLL, Wally KG4LAL, Bob W2EJG, John KM4JTE, John KD4JS, Phil NW4X, Nikki KM4SBQ, John W2IV, Doug W4DBL (and whoever else can make it).

Visit our Web Page:

<http://wb4omm.com/naqcc-fl-chapter/>

Look for our announcement!

72/73 to all – Steve WB4OMM, #5913

NAQCC WEST FLORIDA CHAPTER



Items in this section are from the West Florida Chapter unless otherwise credited. Questions and comments should go to Ron, N9EE.

The chapter's web site is at <https://www.facebook.com/groups/967110089994401/>.

No report available.

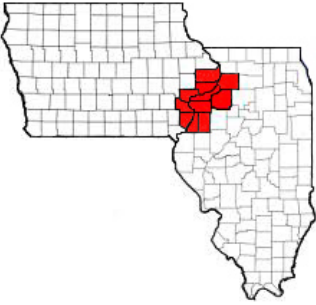
NAQCC WESTERN PENNSYLVANIA CHAPTER



Items in this section are from the Western Pennsylvania Chapter unless otherwise credited. Questions and comments should go to John, K3WWP.

No report available.

NAQCC ILLOWA CHAPTER



Items in this section are from the Illowa Chapter unless otherwise credited. Questions and comments should go to Tim, N9BIL.

The Illowa Chapter operates in the “Quad Cities” area of Davenport, IA / Moline, IL.

The Illowa Chapter website is at <https://sites.google.com/site/naqccillowa2/>.

No report available.

DOWNEAST MAINE CHAPTER



Items in this section are from the Downeast Maine Chapter unless otherwise credited. Questions and comments should be directed to Jeff, KA1DBE.

The chapter is located in the Hancock and Washington counties area of Maine.

No report available.

MEMBER SUBMISSIONS



This section is a forum for you to tell other members what you've been up to on the ham bands or to submit a short article dealing with some aspects of CW and QRP operation or equipment. Just about anything that would be of interest to our members would be welcomed. Send your items to our News Editor Paul, KD2MX.

DISCLAIMER: Any views expressed in this section are those of the submitting member and may or may not be those of the NAQCC or its officers.

From Duane, W8IJ, #10084 —

Duane won the random drawing that was held for all of the participants in our December monthly challenge. He sent this email shortly after being notified of his win (about Jan 12). - Editor

Thank you! My choice is G4.

I've finished January's challenge already! I've had so much fun operating since I have started participating in the NAQCC activities.

73

Duane - W18J

From Wiley, KG4UPO, #5675 —

Wiley won the random drawing held for the participants in our regular January sprint. He sent this email shortly after being notified of his win. - Editor

Thank you for the email notifying me of winning the random drawing. Delighted! This will give me the opportunity to tell my XYL that, finally, I was the one and only winner in a CW Contest! (I don't see the need to mention that it was a "random" drawing. Hi Hi)

I have selected as my prize the K2 Finger Spinner Knob Insert, #50. If #50 is not available it would be fine for Greg, WB8LZG to pick a spinner knob of his choosing. Regardless, upon receipt I will drop him a thank you note.

Thank you for your service to all of us in NAQCC.

Wiley Kling

From Ron, WX4RM, #4597 —

Ron participated in his 100th regular monthly sprint in January and was sent a key fob engraved with his callsign made by WB8LZG as a token for this accomplishment. He sent this in after receiving his prize. - Editor

Thank you for sending the personalized key-chain, which came in yesterdays mail. I have mounted it on my straight key, now I have a personalized key which I really like. I have attached a picture. Thank you so much, I have always enjoyed being in the NAQCC.

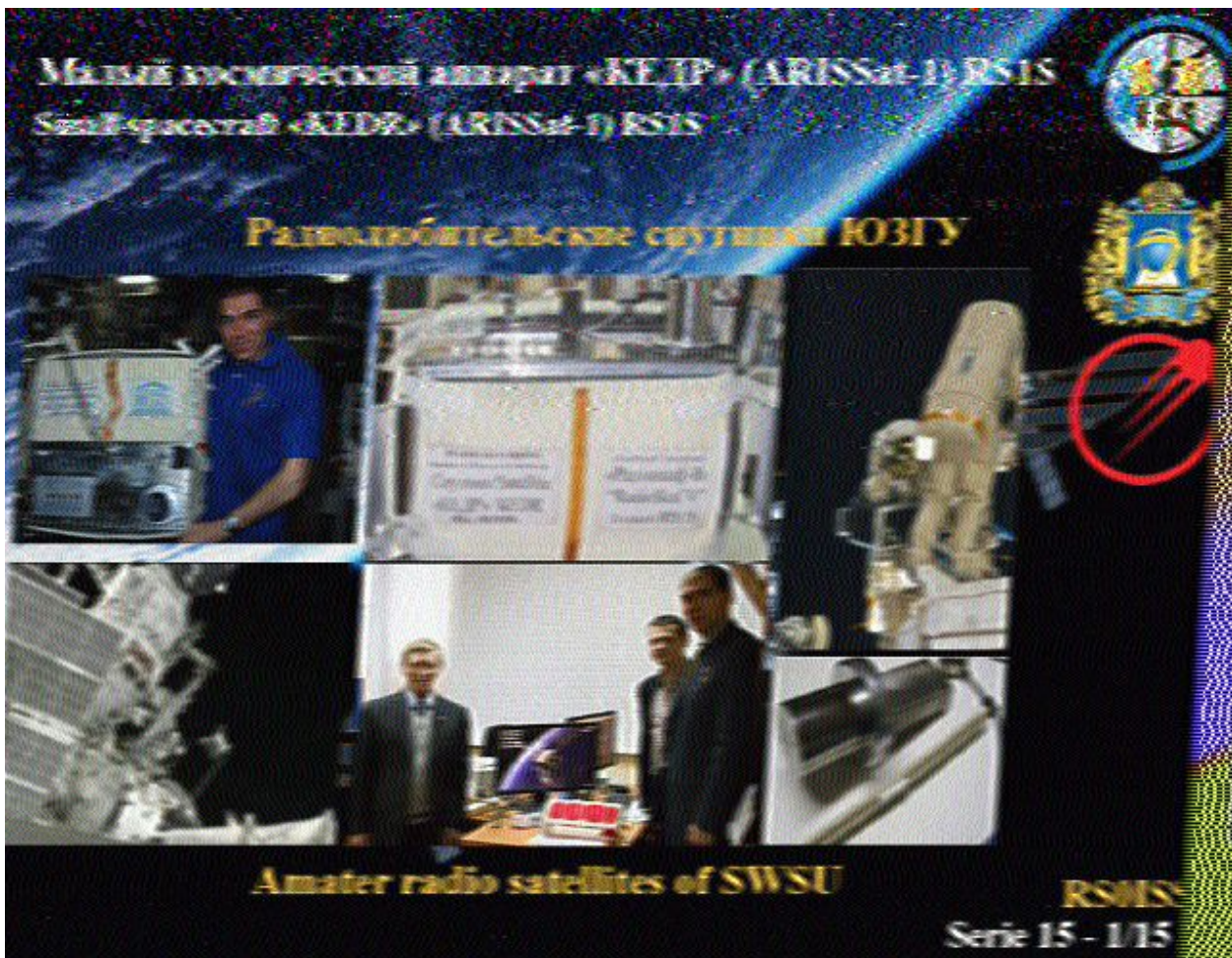


From Gregg, WB8LZG, #1444 —

During the Christmas break I was reading the ARRL Letter and they were telling of an upcoming Special Operation from the International Space Station. They were going to send Slow Scan TV pictures in memory of three Soviet Cosmonauts. I had previously had good luck with many of the FM “birds” in the past, but never thought about SSTV, so I figured why not give it a try.

I had some spare time and wondered if I could receive the pictures on the home station. My station is very spartan. The antenna is a J-Pole mounted on a 2x2 to get it up above the roof line. 70 feet of coax runs to a well-used FT-817, feeding a homebrew RS232 interface to the computer, running MMSSTV (a freeware program).

I went to the AMSAT website to check when the passes would be for that day. I had three possible passes. Sure enough, at the scheduled time, the ISS came into “view”, and the picture started to decode and come in on the screen. Most of the pix were a bit fuzzy on the first pass, but I was surprised I was receiving them as well as I did. I had great luck on the second pass an 90 minutes later. The signal from the ISS was 59+ and the pictures decoded beautifully. The third pass of the day netted me one good pix and two pix that were a bit grainy from lots of noise due to satellite rotation, and my stationary antenna. Here’s a copy of two of the pix that I captured. Nice and clear. They were even dated and timed on the X-mit frame.





Very cool and easy to do. Getting these pix from space was very exciting. I think this would be a great way to “show off” ham radio to scout groups, schools, etc. Hope this gives everyone some inspiration to try this yourself. It doesn’t take a big station with towers and “tracking” antennas to enjoy the pix. The ISS is expected to receive some new and updated ham gear soon too. Don’t miss out on another “pass”.

From Dejan, SA3BOW, #6935 —

One day when granddaughter Alma swooped past me she tapped my wheel chair horn, looked me into my eyes and said: "That is an A." and was again out of sight. That day she was still not 3½ years. I knew I had to get cracking building a code practice oscillator for her 4th birth day.

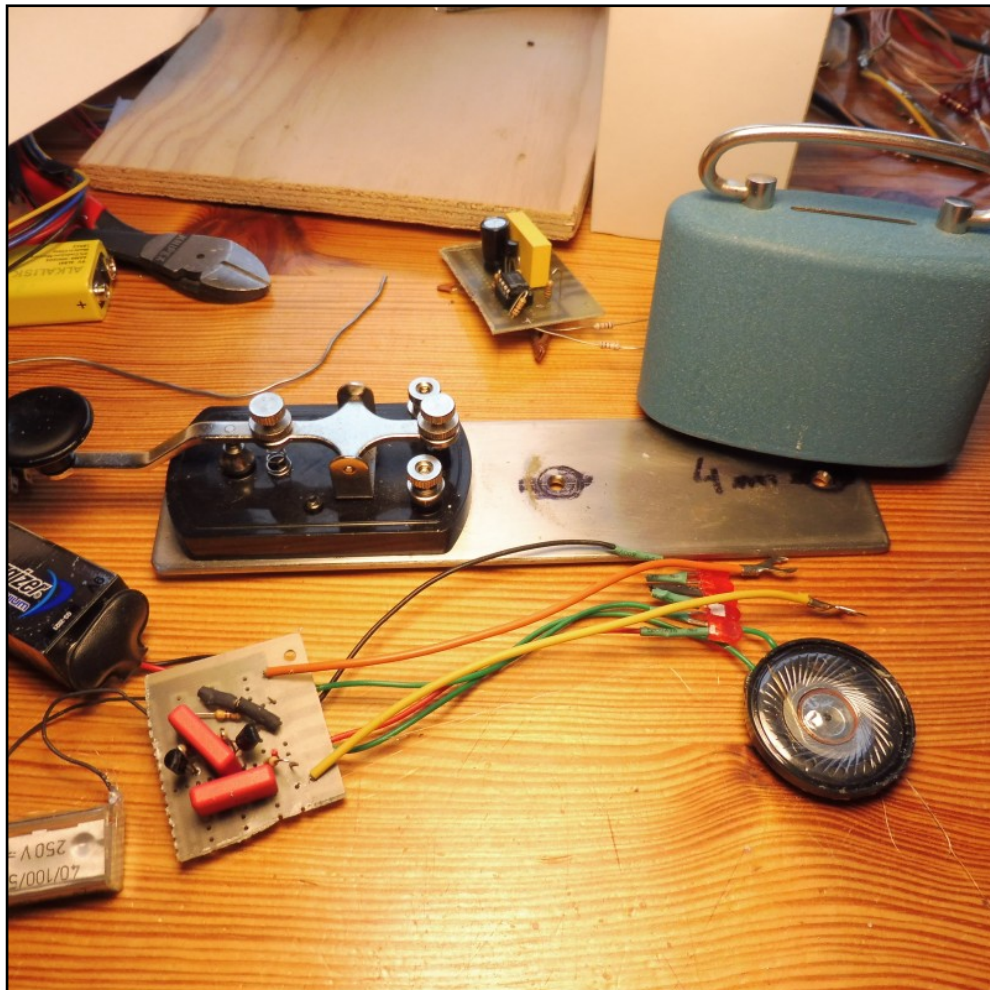
I begun by collecting and printing schematics from old books and internet pages. One can easily get a big pile of schematics! From one internet page, with lots of illustrations, description of working principles, I took a schematic based around a 555 chip and a high part count. Once built it was awful. I just scrapped it. Then I used another but simple two transistor version with a low part count. That one sounded more to my liking. With an extra capacitor across the former head phone capsule the tone was quite OK.

I always find the enclosure to be the tricky part of my simple projects. This time I used a children's moneybox (*piggybank - Editor*) of a Swedish traditional model. Even one-horse-town banks had them. Each year with a new colour. When Alma pick stuff she pick blue. I was lucky there. The coin slot worked nicely for a few flat NOS LED (with gilded legs!) of yesteryear and the hole for rolled bank bills came in handy too. A bit of drilling for the loudspeaker and the job was almost done.

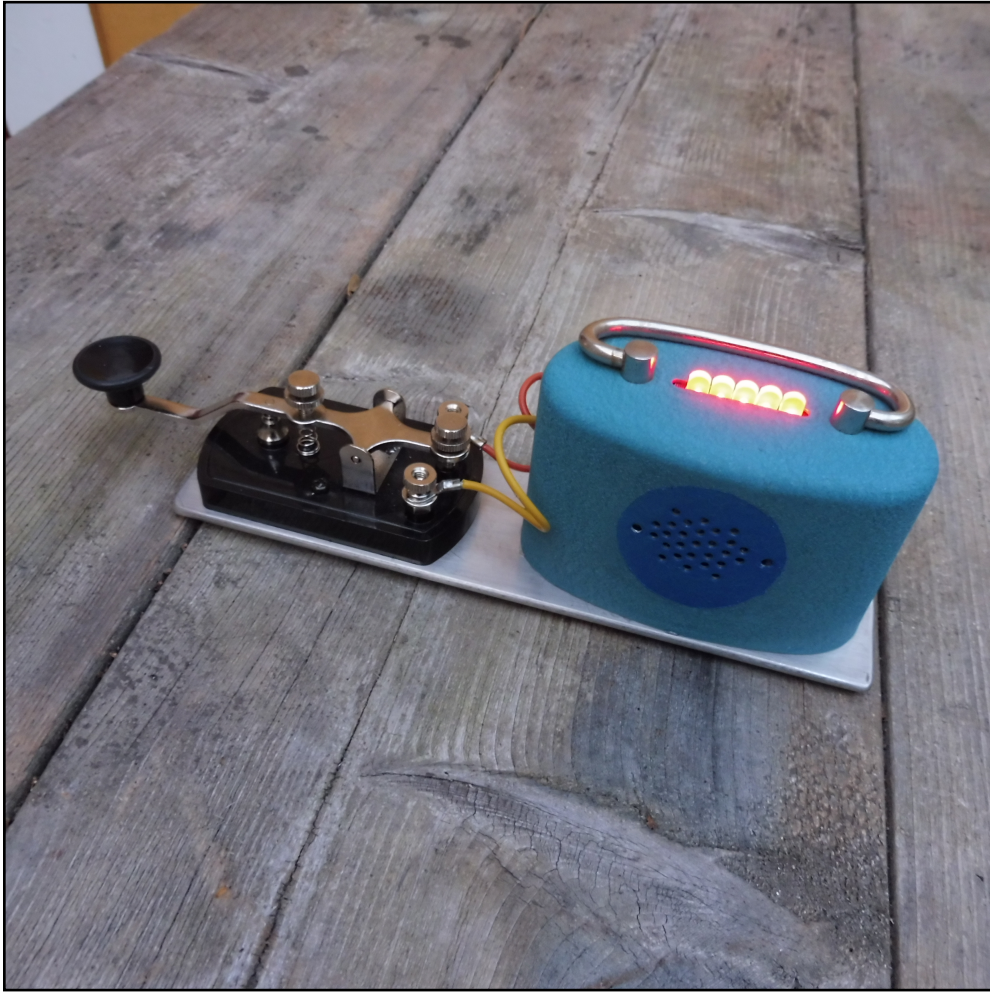
The 18th of January this year Alma turned 4 and got her own CPO. Fun!

Now I am going to build a "hollow state" CPO for myself.

72,
Dejan
de SA3BOW
#6935



continued



NAQCC CLUB INFORMATION

STATEMENT OF PURPOSE

From former NAQCC President Paul Huff, N8XMS

Amateur radio has something for everyone. SSB, FM, AM, the digital modes, and QRO power levels all have their place in this great hobby and we certainly recognize the importance of these modes as well as the enjoyment that they give to many. But for a growing number of hams the challenge of *“doing the most with the least”* makes QRP (and QRPP) CW operating the greatest thrill available in amateur radio, and the North American QRP CW Club exists to promote this exciting facet of the hobby. As part of our focus we also encourage, but do not limit operators to, the use of simple wire antennas.

The NAQCC provides numerous opportunities for hams to enjoy QRP/CW operating. For contest types we have a popular monthly 2-hour sprint that runs at relatively low CW speeds and at a fairly relaxed pace. Three special sprints also take place during the year for 160-meter and QRPP operators. For a month-long activity we offer our members a Monthly Challenge that can be anything from forming a list of words from the calls of stations worked, to making a prescribed number of contacts using home-brew gear. There is also an extensive awards program to recognize the significant QRP/CW accomplishments of our members.

We also serve as a resource for people who are just getting started in QRP and/or CW. Our slow-speed CW nets are a great place for beginners to practice Morse code under real on-air conditions. Beginners will also find a wealth of helpful information on our club website and we are more than willing to try to answer any questions about QRP and CW that you might have. An extensive monthly newsletter is filled with useful projects and news from fellow QRPers.

A number of local NAQCC Chapters offer opportunities to get together for in person socializing and QRP/CW activities. Portable operations are especially popular with the local chapters.

Whether you are a veteran ham radio operator who is looking for a new challenge in the hobby, or a beginner who is intrigued by the possibilities of QRP/CW communication, we cordially invite you to join us. Membership is free and the benefits and fun are significant.

The North American QRP CW Club was founded in 2004 by WY3H and K3WWP and now has over 9500 members world wide. Membership is free and anyone interested in CW/QRP operating is welcome. Complete information about the NAQCC, including a membership application, activities schedule, and useful resources, can be found on our website at <http://www.naqcc.info/>. Inquires can also be sent to

Club President Steve Szabo, WB4OMM
536 Central Park Blvd
Port Orange, FL 32127
USA



Additional contact information can be found on the next page.

NAQCC CONTACTS		
NAQCC President	Steve - WB4OMM	sszabo1@cfl.rr.com
NAQCC Vice President	John - N8ZYA	jspiker58@gmail.com
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Western Pennsylvania Chapter	John - K3WWP	jsk3wwp@windstream.net
Illowa Chapter	Tim - N9BIL	n9bil@arrl.net
West Florida Chapter	Ron - N9EE	n9ee@tampabay.rr.com
Long Island Chapter	Howard - WB2UZE	wb2uze@yahoo.com
Help For Beginners	Brion - VE3FUJ	ve3fuj@wightman.ca
Member Submissions Member Spotlight	Paul - KD2MX	kd2mx@arrl.net
Facebook Page Manager	Jerry - K4KBL	digilink@gmail.com
NAQCC CW Nets	Mark - W8EWH	mark.yergin@gmail.com

NOTE: These email address are not automatic links.
They are given here in graphic form to avoid harvesting by spambots.

REPRINT POLICY

Unless otherwise stated in the article, local clubs and other ham radio organizations are free to reprint featured articles from this newsletter, provided appropriate credit is given to the North American QRP CW Club and the author of the article. If at all possible a link to the club website at <http://www.naqcc.info/> should be included.