

Solid Copy

The CW Operators Club Newsletter

April 2021 — Issue 135



Up In Arms



What subject inflames the passion of the CWops membership? Membership! [See story by Stew GW0ETF on page 4.](#)

President's Message

In the 11 years that I've been a member of CWops one thing that has always impressed me is the willingness of rank and file members to be part of running the club by happily stepping forward when the call goes out. This is true whether the task in hand is one stretching out over the years like the small army of our CW Academy Advisors and managers, the regional



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CWops "CWT" Every Wednesday

Start: 13Z, 19Z, 03Z (+1), 1 hour each session

Exchange: name/number (members)
name/SPC (non-members)

Avoid DX pileups!

US Vanity Callsign web site:

<http://cwomc.org>

CWops "neighborhood": Look for CWops on 1.818, 3.528, 7.028, 10.118, 14.028, 18.078, 21.028, 24.908, 28.028, 50.098 "and up"

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President: Stew Rolfe, [GW0ETF](#)

Vice President: Peter Butler, [W1UU](#)

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Newsletter Editor: Tim Gennett [K9WX](#)

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Ambassadors and the crew skilfully editing and collating this newsletter each month, to one-off needs such as last year's 10th Anniversary and the recent [QSO Today HamExpo](#) involvement. CWops is certainly not one of those clubs run by a small committee purely for the entertainment of the paying membership; furthermore we've always been fortunate to benefit from the array of skills and experience possessed by so many of our members from past or present working careers. You'll realise I haven't mentioned the likes of CWT and Open organisers, QTX program and awards – the list goes on. I wouldn't even attempt to list everyone involved but would simply like to give a big shout-out to all those members who help make this club what it is. Thanks....!!

The HamExpo that took place last month is a great case study. I don't really like listing individuals like this but I'm going to here just to illustrate how many members came forward to prepare the CWops presence in terms of the 2 presentations, videos and booth design and installation; I apologise profusely if I forgot anyone. The list I have is W1UU, AC6ZM, W3LPL, K1JD, K1ESE, 3D2AG, AA3B, N3JT, W5LA, N5OT, NM5M. There was also a whole bunch of other members who volunteered to man the tables at the booth where visitors came to find out about CWops and ask their questions throughout the weekend. There were 6 tables covering different topics and you may have seen some graphics showing just how busy we were at times. As expected we were particularly busy following the excellent talks by W1UU and NM5M both of which attracted audiences of over 300 which is really pleasing. You will no doubt be aware that the overall organisation of the expo didn't exactly go to plan and this led to some interesting last minute reorganisation for us. I must mention Mark N5OT who worked tirelessly to make sure our side of things worked satisfactorily, helped by an uncanny awareness of the underlying mechanics of the Expo software and a close working relationship with Eric Guth, 4Z1UG of *QSO Today*, who was the principal organiser of the event. We're aware that some members still found the experience frustrating but despite missing some 'bells and whistles' and occasional scheduling delays, everything worked in the end and I personally feel that CWops came away with our reputation clearly enhanced. Hopefully by now everyone who registered will have taken advantage of the facility to access all the talks and presentations on an 'on-demand' basis up until April 16th.

Elsewhere, Rob K6RB has done a good job attracting more operators to the Giving Back program. This has been helped by the collaboration of the clubs in the International CW Council and particularly through the efforts of Howard WB2UZE. There is no reason why we can't have multiple volunteers for each time-zone hour particularly as we now use 80m in addition to 40m. I think the word is getting out and I'm definitely getting more newbie 'hits' in my sessions which is very rewarding. The [Friday Slow Speed Contest](#) is building slowly and our postings to a couple of UK beginner CW Facebook groups is attracting interest. We very much appreciate the activity from North America and look forward to the improving propagation making a greater variety of contacts available to everyone in the coming months and years as the new cycle progresses.

Since being elevated to the Presidency of CWops, I've been making efforts to familiarise myself with all aspects of the clubs activities including some that I've previously neglected. I'm ashamed to say that I've never investigated the QTX program even though I do like getting away from the confines of contesting and using the key for a change. I thought I didn't have the attention span or stamina to accumulate large numbers of lengthy QSOs but a glance through my recent log revealed a handful that qualify for 'MQTX' and a couple of >20 minute contacts back to the start of

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the year. Hopefully my call will now appear in the QTX tables and I shall endeavour to keep my totals rolling each month from now on.

A final note: Filipe CT1ILT using CR6K [topped the 31 March 1900 CWT](#) for what I'm sure is the first time from Europe. Well done Fil, and to all who continue to push the boundaries in the CWTs....!

Stay safe everyone....

73, Stew GW0ETF, President

From the [Editor](#)

CW Ballet

In my March column I wrote about my effort to improve my ability to send CW by hand by operating in the K1USN SSTs.

Each time I operate one of these events I am reminded of the challenges new ops face as they try to improve both their sending and receiving skills, and this reminder is reinforced by the challenges I face trying to improve my hand sending. On top of which, some of these ops are trying to complete their very first CW QSO.

Case in point: The Monday, February 1 0000z SST. I was doing my thing, calling CQ at 16wpm, when I heard a very faint reply. I could clearly make out a W7 but the rest of the call was lost. Lost in part, initially, as the clearly new-to-CW op was sending by hand but did not send his suffix consistently. But also lost in part due to the weakness of the signal and some QSB. He faded after several tries and I started calling CQ again.



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Later that night, I received an email from the other op, who wrote: "I believe I was hearing you call CQ CQ SST K9WX on 7.03725 at 00:10Z. I tried to respond with my call and I thought you were replying partial and sending ?? I'm very new at this so unsure but curious if you heard me..."

We sent some email back and forth and I learned that he was a relatively new ham, licensed for just over a year. I would have been his first CW QSO had we been able to complete. He went on to share some other details, including the fact that he had forgotten to turn on his amp so was inadvertently operating QRP. I checked back with him at the end of February and learned that his log now included five CW QSOs. Yes!

New CW ops such as my W7 friend face the obvious challenge of learning to copy the code and learning to send by hand if they chose to roll that way. But if they are new to the hobby and not just new to CW they face a whole list of additional challenges: Putting up a decent antenna, properly operating their equipment, and mastering the [pas de deaux](#) of a contest-style QSO.

All of which reminds me of what Yoda said to Luke in *The Empire Strikes Back*: "Patience you must have." I wish I had been a bit more patient trying to work that W7, and I need to be more patient anytime I come across a newbie when I am operating.

73, Tim K9WX, Editor

(Background image, page 3, Marina Boghigian/ [Wikimedia Commons](#).)

Membership Criteria

[Stew Rolfe, GW0ETF, CWops President](#)

The issue of our membership criteria crops up occasionally on our discussion groups and the "[Membership Requirement](#)" thread that began on March 24, followed by "[Membership Criteria—Final Thoughts](#)" was a beauty. Fifty two different posts! The CWops board would like to summarise the current situation.

- CWops is a global organisation that welcomes any ham with an enthusiasm for, and a commitment to, the mode of CW whether 'rag-chewer', contester or dx-er. The 25wpm requirement indicates commitment and an ability to communicate in English indicates a level of global activity.
- We don't specify the method used to produce CW. This also avoids excluding anyone who

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has to use a keyboard or similar due to health issues.

- Many highly competent CW operators are successful testers who rarely, sometimes never, conduct conversational QSOs. New memberships must be supported by 4 existing members and it is incumbent on these individuals to satisfy themselves of a candidate's overall CW ability. This includes the statement in the Bylaws that *"A nominee must be a licensed Amateur Radio operator, capable of sending and receiving International Morse Code (CW) at no less than 25 words per minute and should be capable of carrying on a conversation in English using CW"*
- We think it's possible to judge overall ability by the way a tester operates over extended periods or a dx-er handles pile-ups without necessarily engaging in a classic conversational QSO.
- CWops is a friendly and highly successful club with a global reach. We don't want to become involved in formal assessments. We feel the current method of sponsorship coupled with a common sense approach is the most suitable way to judge potential new members.



(Background image, page 1, Louis Tarpin/[Wikimedia Commons](#).)
(Background image, page 5, Fibonacci Blue/[Wikimedia Commons](#).)

News and Notes

[Jerry Weisskohl AC4BT](#)

Jim, N3JT: Recently broken springs in my Begali Stradivarius were successfully replaced, not by Begali, given they had no parts and that model is no longer in production, but by Nina's cousin's husband! He has dental drilling equipment and he used a length of .010" spring steel I provided him to fashion new springs identical in shape to those that fractured. The paddle now works like new. But in the meantime, I bought the last available Begali Sculpture Janus. Now if only my essential tremor lets me send correctly...!

Jim, N3JT: N3AM (right) helped me with an antenna issue here in Florida so for him and some other friends I made special chocolate chip cookies. It is rumored that Sharron, John's XYL, threw this cookie like a frisbee and John caught it! (Just kidding!)



Chuck, WS1L: As the weather warms here in the Berkshires, antenna planning continues. The first full week of April I hope to have trees trimmed back to allow room for the new tower. This will also let me re-set the existing dipole.

As of now, I may put up an inverted-L for 160 and 80 but I'm still considering the tuning arrangements. The last piece of the plans will likely be a K9AY receiving array. If all goes well, that should give me a decent set of antennas for my location. Time will tell if these plans come to fruition, or if more changes are needed.

Theo, PA3HEN: Special Event Call PA50AGCW

May 1st 2021 is the 50th anniversary of the German Telegraphy Club AGCW. A well-known and very active CW club. (<http://agcw.de>)

Several European CW clubs will collaborate to celebrate this together with the AGCW. The Netherlands will be represented by the Netherlands Telegraphy Club (NTC) (<https://qsl.net/ntc/>) with the special event call PA50AGCW during the month May. AGCW # of the call is 4164.

The call will be activated by 3 NTC members who are also member of the AGCW and CWops: Rien PA7RA, Joop PG4I and Theo PA3HEN (PF6IK).

We will be active on as many bands as possible, depending the conditions, and the call should be visible in the CW Club RBN spotter too. Other active calls will be DR50AGCW, DP50AGCW, SN50AGCW, CT50AGCW, OH50AGCW



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We hope to work as many stations as possible and a special QSL card may be requested QSOs.

Jim N3JT: CWops presented special awards to several members for contributing to the success of the 2021 [QSO Today Virtual Ham Expo](#). There were a total of 8 plaques presented to N5OT, AC6ZM, W5LA, NM5M, K1JD, K1ESE, W3LPL and 3D2AG. W1UU, who orchestrated it all, got a nice shirt, as did GW0ETF. Several recipients have shared some pictures.

John, K1ESE: Thank you to Jim N3JT and CWops for presenting me with this beautiful award (right) for contributing to the success of the 2021 Ham Expo.

John, K1JD: I wanted to express my thanks to Jim N3JT and the CWops organization for sending me the beautiful plaque shown below. This is for the work I did in connection with the Ham Expo. Much appreciated!



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Photos (above) provided by Juan AC6ZM, Jim W5LA and Frank W3LPL.

Peter, GM0EUL: Of note this month, as some may have seen if they get SPRAT from the GQRP club, I have been awarded the Chelmsley Trophy for 2020 (below). This is an annual award for QRP activity logged throughout the year using 5 watts and single element antennas. The citation in SPRAT reads:

'The (GQRP) Club is pleased to award the (Chelmsley) trophy to Peter GM0EUL for this excellent QRP log compiled throughout 2020. Peter worked a total of 31 separate DXCC entities, all on 80m and 40m. Although he also worked plenty of DX on 20m he did not include those contacts in his entry as his aerial on that band is a home-brew Hexbeam, which is of course multi-element. His best DX was K1CX on 40m, which was also his first QSO with his new KX3 (5W). Our congratulations to Peter for a fine entry." Needless to say my contacts were all CW!



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Mark, K5GQ: CW Academy - One Vacancy filled.

At the end of the CW Academy semester some students may need to repeat the class. My advice is to take the course from another advisor. A new semester starts off with most advisors having a full class. I accept students wishing to repeat the course if a vacancy exists the week of class, preferring to have first time students.

Excuses for NOT wanting to take the course range from:

Work load changed - acceptable

Employment status changed - acceptable

I will slow the class down – not true in my class

Then some wait until a week before requesting to drop. “Hopefully there is time for a stand-by to join in. I'll pick this back up in 2023 when I'm retired from work and have more time to focus. It looks like the course material is freely available so I can work with between now and then.”

The point is that we end up with a vacancy in the class. Last semester I had one student requesting to drop for medical reasons. I checked with him a week later and asked to stay in touch. A couple of weeks before class I got a call from him. He was doing better. I asked if he would like to join this semester's class. His reply was 'YES'. The first class was last night and he was there!

Gator, N5RZ: 22 Days to Remember (Forget?)

Since retiring to the Texas Hill County (about 130 Km west of Austin) in 2017, the N5RZ station has been slowly being built. By the first of 2021, things had progressed to this point:

- Four Towers:

1. 100' (32M) with a 5 el 20 Yagi & WARC Tribander up top and a 20M dipole at 50' (16M).
2. 90' (28M) with a 7 el 15M Yagi and 5 el 6M Yagi with a 40M E/W dipole at 50' (16M).
3. 50' (16M) Bencher Skyhawk Tribander, 7el 6M LFA, 12el 2M Yagi, and 5 el 6M Yagi
4. 47' (15M) UHFVHF tower with 222/432/902 Yagis + a Carolina Windom for Skimmer

- A Four Square on 40M, ¼ wave 80M vertical, and 160M Inverted L Butternut HF9V

- An 8 Circle Hi-Z Receive Array and five 300-plus foot beverages strung through the trees.

Plus more in progress. Not the biggest station, but reasonably competitive. After respective efforts in the RTTY Roundup, NAQP CW and CW Sprint during the first few weekends of 2021, the XYL (K5RZA) and I were looking forward to an effort in the upcoming CQ WPX RTTY contest the weekend of February 13-14, and I was pretty fired up for the ARRL DX contests.

Winter storm conditions were forecast for the end of the week, but I wasn't too concerned. Weather on Wednesday, February 10 was mild, and I climbed the 15M tower to tie down the antenna as the rotor had stripped out.

Booom!! Thursday, February 11, 5:15AM local. A huge lightning flash and thunderclap fol-

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lowed by very heavy freezing rain. The freezing rain continued until daybreak shortly before 7:00AM. The weather station was all frozen up, so the amount of precipitation was unknown, but all the oak trees (there are many) on the property and all the towers and antennas were heavily iced. The live oaks do not shed their leaves in the winter, so they were very top heavy with ice. For the next several hours, seems like every few minutes there would be a loud “pop” and “crash” as the branches gave way.

9:45AM – power goes out. Since the QTH is in a fringe area for cell phone coverage, a cell phone signal booster is utilized on the VHF tower. Without the booster, there are only a couple of spots around the house where minimal cell coverage is available. A call to the power company revealed that some poles had come down a few miles from us, and that repair crews had been dispatched.

The house is total electric – and the fireplace is electric as well. A small generator was being used to charge smartphones, though coverage was very limited. Temperatures remained below freezing and freezing drizzle continued off and on throughout the day. The antennas were drooping more and more. All the beverages and elevated radials were down, and the verticals for the receive array were all bent over with the tips touching the ground. Huge tree branches were down everywhere, and the driveway was completely iced over.

It was pretty apparent as darkness approached that power would not be restored. Calls to the power company could not be completed due to busy circuits. Blankets were piled on the bed and kept us warm. Friday was more of the same. Saturday, the precipitation subsided, and some friends were able to come out and take Deborah (my XYL) to town to stay with them. We had to walk about 400 feet (about 125 meters) to the road as our drive was totally blocked by fallen trees and branches. I elected to stay behind and keep an eye on things

By this time, the boom had broken on the long 7el 15M Yagi and the pieces were dangling by the truss guys. The other antennas were drooping precariously.

Sunday morning I was able to get the tractor (with front end loader) going and cleared the driveway of the fallen branches - - I would do



February 13, 2021 – 3 days into the freeze: L-R: 5el 20M/WARC Tribander on 100' (32 meters) tower; 222 & 432 Yagis on 47' (15 meters) tower; 7 el 15M Yagi and 5 el 6M Yagis on 90' (28 meters) tower (mast is now bent); 7el 6M LFA/12 el 2M/Bencher SkyHawk/5 el 6M Yagi on 50' (16 meters).

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this two more times over the next 6 days. Sunday afternoon, the wind really picked up and snow began to fall and accumulate. By Monday, there was 8"-10" (20-25 cm) of wet snow on the ground. More elements had broken due to the wind on the ice build-up. It was cold and lonely. The propane gas grill on the back porch was utilized to periodically boil a large pot of water that I could take inside to warm up shoes, gloves, etc. Food was snack stuff we had on hand - chips, crackers, etc.

Oh yeah - since the house is on a water well, there was no water after the power went out. The remaining water in pipes was drained into containers shortly after the power went out to hopefully keep the waterlines from freezing. About 15 gallons of water was on hand for flushing the toilet. And luckily, we had plenty of bottled drinking water. Cooking was pretty much out of the question as I did not want to have dirty dishes accumulate.

On Tuesday the sun actually came out for a while, but the temperature never got above freezing. Wednesday and Thursday had more wind and precipitation and more



The aftermath - February 25, 2021 -- L-R: 15M Tower with broken 40M dipole at 50', 20M/WARC tower with only survivor - the 20M dipole at 50', and the 6M/Bencher SkyHawk tower. At the base of the 20M tower is a M2 6el 15M Yagi that was staged to go up on the 15M tower (to be the fixed on JA). Miraculously none of the falling boom/element pieces of the 5 element 20M Yagi (bottom right corner) hit it. Since this picture, the boom and 4 elements on the top right of the 15M tower has fallen to the ground. Note the back half of the Bencher Skyhawk on the right hand tower - hanging by a broken element that went through the tower rungs. Also, an example of the extensive tree damage. Note -- the fifteen meter tower is not really leaning - just a result of the wide angle photo lens.

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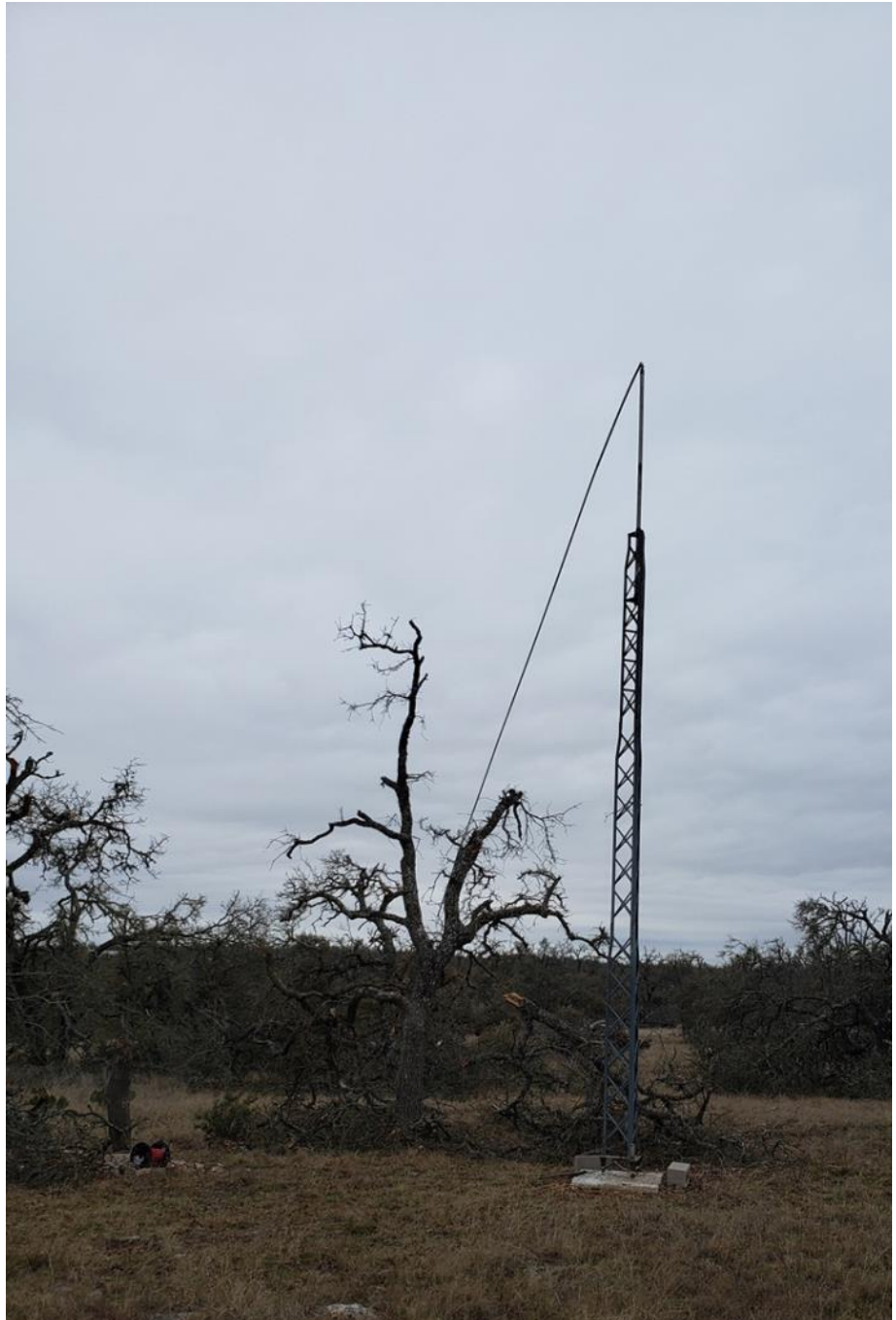
cold and loneliness. I could not go outside because of the wet snow. I could not risk getting my feet wet!

Friday morning, February 19 was the ninth day without electricity. But something was different!! The sun and a beautiful clear sky greeted me at daybreak - temperatures got above freezing finally and things were thawing out. The driveway thawed out enough by noon to clear the remaining branches out of the driveway and drive to town to meet Deborah, who was now staying in a spare room at a friend's "Bed and Breakfast". A hot shower after 9 days for me was wonderful, along with a hot meal at our favorite Mexican Food restaurant!

Our 4th wedding anniversary was February 20, so since I couldn't do ARRL CW, we decided to have a great meal at a new restaurant in town to celebrate. Went back to the house on Sunday February 21 to pull some 12-gauge Romex through the antenna bulkhead to get power from the generator to the cell phone booster, the wireless internet radio and computers to try to get caught up on some things.

Over the next week (remember – still no electricity) I started assessing the antenna and tree damage. The power company was putting out information on their website and advising they would need to replace about 600-800 poles and lines that had come down to restore power to our development. We spoke with some of the crews in our area who advised us that our area was pretty much "ground zero" for the storm.

By now, we had moved to a local hotel which gave displaced locals a very discounted rate



Full sized quarter wave 80M vertical (fabricated from HyTower base) folded over. And more tree damage.

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What is left of the 40M 4 square -- and more tree damage.

(thankfully). Crews were busy in our area, and finally at 1:00PM on Friday, March 5th, the power came on – 22 days after it went out. A sigh of relief when I turned on the breaker for the water well -- water flowed and no broken plumbing! Turned on the HVAC and that all worked. The water heater produced hot water within an hour. Life is good, finally!!

I stayed overnight to make sure all was OK, and Deborah checked out of the hotel Saturday morning. Great to sleep in our own bed with the central heat going, and to take a hot shower at home!

There is tremendous tree damage on the property. The whole landscape has changed and I can now see neighbor's houses that had heretofore been blocked by the trees. Many of the trees were healthy and were probably 75-100 years old. Very sad. The cleanup will take some time.

Antenna-wise, all antennas were a total loss except for the 20M dipole at 50' and the long boom 432 Yagi. The towers all appear to be in good shape. Since then (I am writing this on March 31), it has been too windy to try to clear the dangling debris from the towers, and the winds have blown the dangerous remnants off, so it looks like I will be able to clear the remaining stuff with ropes, slings, hacksaw and ginpole along with a good ground crew. Once that is done, time to rebuild! In the meantime, my buddy from Midland, Alan N5NA has donated an old C19XR, excess to his needs, which I will be putting up at 100' (32M) to get back on the air along with some-

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thing for 40M and 80M until I can get the new stuff fabricated. CU on the bands!!

CJ WT2P: Was featured on page 90 of the March 2021 issue of [CQ Magazine](#). He uses special lighting in his shack for reduced eye strain, along with a high-contrast screen layout on his computer monitors. (Photo, right, provided by WT2P.)



Announcing the CWops Scholarship Fund

[Jim Talens, N3JT, CWops Secretary](#)

Your CWops Board has voted to fund a scholarship fund with a grant of \$30,000 that will be provide an annual scholarship of \$1,000 to a qualifying student at an accredited school. The program will be administered by the ARRL Foundation. Note that a criterion for application is knowing CW; that the scholarship is paid to the school; that the student and school can be anywhere; and that the subject matter is unrestricted. The Fund terms are below.

Endowed through the generosity of CWops, this fund is intended to provide funding for the educational expenses of a licensed Amateur Radio operator who is pursuing higher education.

Requirements:

1. The CWops Scholarship Fund will be administered by the ARRL Foundation
2. The scholarship is available to any qualified applicant regardless of location or nationality.
3. There are no requirements as to field of study, subject to the requirement of Institution, be-

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low.

4. Additional requirements:

- a. Institution: Fully accredited educational institution of higher learning, 2-year or 4-year, undergraduate, graduate or post-graduate, or a fully accredited trade, art or professional school at which the recipient intends to be awarded a degree or license in the chosen field of study.
- b. CW Ability: Demonstrated CW operating ability within the last 24 months by providing a copy of a certificate, listing in a magazine showing results or a letter from a person responsible for membership. Examples include but are not limited to the following:
 - i. ARRL Code Proficiency certificate at 15 wpm or higher;
 - ii. Successful completion of CWA Basic Level or higher;
 - iii. Membership in CWops or HSC or other club where some level of CW proficiency is a requirement for membership;
 - iv. Participation in a CW contest where the results have been published (participation in a multi-op where the station owner provides a letter saying you operated part or all the event operating CW);
 - v. Operation in a CW traffic net where the net manager provides a letter attesting to the candidate's on-air participation; or
 - vi. Achieving any award where all contacts are CW.



- 5. 5) The ARRL Foundation Scholarship Committee will submit its nomination to the ARRL Foundation Board of Directors to approve by majority vote.
- 6. 6) The CWops Scholarship will be funded by a contribution of \$30,000. The earnings on the endowed scholarship will fund the annual award. Additional funds may be added to the fund. Such additional contributions to the fund must be made by December 31 and will be used to increase subsequent grants.
- 7. 7) Scholarships are for the exclusive use of the awardee to be applied to tuition, books, fees and other, direct educational expenses.
- 8. 8) The scholarship award will be \$1000 annually with the first scholarship awarded in 2022, unless otherwise decided and agreed upon by the CWops Board and ARRL Foundation. .

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9. 9) The ARRL Foundation Board of Directors will disperse the scholarship funds to the awardee's institution.
10. 10) The ARRL Foundation assesses each scholarship fund for annual administrative expenses. The assessment is up to 1.5% of the fund's balance as of December 31 of the preceding year.

Giving Back Update

[Rob Brownstein K6RB](#)

CWops' Giving Back (GB) program is meant to provide on-air QSO experience and practice for anyone who wants it. It was initially intended as a way for our CW Academy students to get some on-air experience. We all know that when there is activity on the bands, these days, it's usually a DXpedition pileup or a contest. Today's CW aspirants have had little chance to work others who are skilled at CW, operate at moderate speed, and are committed to helping. That's the mission of Giving Back.

The GB volunteers get on the air at approximately 7 PM local time and seek out CQers, or call CQ, and engage in routine QSOs including some conversational tidbits. Here is the current schedule:

Giving Back Operating Schedule 7 PM Local 40 meters 7.035-7.045 MHz and/or 80 meters 3.535-3.545											
	UTC+9	UTC+3	UTC+2	UTC+1	UTC/BST	UTC-1	UTC-5	UTC-6	UTC-7	UTC-8	Hawaii UTC-10
Mon	JH2HTQ				GM0EUL		AF8A WA2AKV W2LCQ WB2LQF	K8UDH AA5CF AG4CC	NS6W KE7VE	N6HCN W6JIM	KH6LC
Tues	JH2HTQ JR1WYW		SV2BBK		GW2CWO G0POT		WE5P W2TE KW4WA	W0ITT	K7NJ K0ES KE7VE	K6RB	
Wed	JH2HTQ JS2AHG				G0HKC M0CDL	DF7TV	N4TMM W4HXX	K5XU K2MZ	KU7Y K2MZ KE7VE		
Thurs	JH2HTQ		SV2BBK		G0POT		K1KHU K4LRC	KQ0E	KE7VE		
Fri	JH2HTQ JR1WYW		SV2BBK		GW2CWO MI0WWB		VE3FXX	KG5U	KE7VE	K6RB	
Sat	JJ1FXF			LA1IO			VE3FXX	N8LR		N6IET	
Sun	JS2AHG			IZ8NXG	G2CWO		W5DT			K6RB	

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Those interested in working these folks and practicing should look for them at around 7 PM in each time zone. They will usually send a "CWA" just before signing after a CQ. This identifies them as GB volunteers and lets others know these people are there to help. Here are the results of January's GB efforts:

Volunteer: Stations Worked

AA5CF: N0LUF, KB5ILL, W4LRB

AF8A: K3TF, W8BJO, N3HAM, AF1L, WA2AKV, K6RB, K0HX, KA4EET, KN4IXU, K1LKP

AG4CC: KO9Z, W5QLF, AC5O, NT5TT, WA0JLY

DF7TV: DK1MCS, DL4HCF, G0PGK, IK8LNE, IV3VIR, IW0QQL, M5ABP

G2CWO: CT7AUP, SP3DGV, YO2CJX, OH2HT, OE6SMF, F5VBU, GI4BDL, LB5DI, DL4SAS

GM0EUL: G8HKS, OM6AN, G4HOM, HA6GU, ON7DQ, SA6BGR, IQ1QQ/0, M0PKD

GW2CWO: PA2ST, IZ3GFR, G5LP, EA3CE, IZ8NXG, HA6OD, SM6NJK, DL3MB, OZ1LWT, UX1BZ, DL4CW, HA2ZB, IN3TWX, UX2MF, S52TW, R2VQ, I7CCF, F6EJU, UA3WF, SP3IAO, RC6AW, RZ3AR, CR7AWB, R1BIJ, 9A1AA, YO3FFF, DB2OW, YT1XC, DK6JK, YU1ZH, YU7RQ, EA8AF, SP5WPK, DL4KAJ, DL7UCW, UW3WF, LB8IG, Z3ZZZ, I2UVZ, M6MPC, M0TIX, F5HD

JJ1FXF: VR2...QSO

K2MZ: NK8I, KE8RIB, DF7TV, W4HXH, K8EHE, K1SAC, WB9TWJ, K3QAA, KA8MNP, KF8DA, WA8OJR, **K5SGE,** AA5D, KO4MES, AI8AI, NI3T, AE4Y, K4FOY, KD9KHA, W4KFF, K9UCK, NX9Z, VE3IDS, KC9YI, KE8QBQ

K6RB: K9ING, K0FHG, OA4DX, WW5W, W4BCZ, W4MCX, WA6LJW, W0GAS, AA0YY, W9LD, W4EDE, **K7NJ,** WJ7S/P, KN5A/M, KA9DCU, W5TM, KW5KO, KC7NBM, AG4T

K7NJ: KE8CYV, K2NAV, WA1JGA, AA4BQ, YV7TE, LU3VED, KW5KO, KY4AE, VE3ELY, K9ING, W5FBQ, KD0UN, KE8RIB, W8FJ, WC2Y, K3ESE, KI4IO, KE8BWA, WP4AOO, N0GRA, W4USR, WA1ASU, K6RB, AA0Y, KC4AXN, KB3FW, W6PHO, KF6GE, WJ7SXP, WA6SVX, KA9DCU, KK0I, AD0IU, CO3CF, N8DUS, HI8K

K8UDH: KB3SAR, KG5IEE, KK5NA, WA0JLY, K4UX

KH6LC: WC7C, W0ECS, NM6IT, K2MYQ/1, K6DDX, N0FU, WB0IRU, N8DUS, K5LYT, KF2AT, N7EF, NU6F

KQ0E: WC7C, K6JJR, W7USA, NI5MB

MI0WWB: OK2ZV, MM0UMH

N4TMM: WS0T, WB5ZDR, W2LCQ, K5LYT, K8IHQ, WB4DKF

N6HCN: AC2K, WB7A, WB7AEA, N5IR, KE7LOY, W6JIM, W7KB

N8LR: KF6JBV, WB4FDT, K8ED, W7FW, WA5CAV

SV2BBK: IN3LOY, IK2SND, IK2JTU, OM3TGK, UW3WF, IU0YT

W2LCQ: G3MHV, W2ITT, AF4PD, K1GC, KC5BG, KO4OIP

W5DT: W4VN, KB4NQS

W6JIM: KB7LA, W4USR, KB3S, WM6T, N6HCN, KB7LAK

WE5P: SP6ARY, KC2HEI, K3TF, AC5O, NE8J



Traffic Nets: Another Facet of CW Operating

[Glenn Killam, VE3GNA](#)

When I first joined CWops in February of 2010, I did so because I believed in the preservation of the original mode of amateur radio. To this day I still do. Yet what I see in the monthly newsletter is mostly about contest scores, station construction and such. Of course there are little stories by new members about how they got into the hobby and so on.

Yet there is another whole aspect of CW operating which has been infrequently mentioned in the 10 years that the club has been in operation. That is traffic handling. Once upon a time, before cell phones and texting, there was a real need for experienced CW operators to get messages from point A to point B. Long distance calls were expensive and telegrams were limited in what could be said. Thus the NTS system was born. The National Traffic System consists of four cycles each of which is timed so that messages can travel smoothly across the country from east to west and west to east. A message can be inserted at any point along this path. The early Cycle 1 and the late Cycle 4 were predominantly CW.

Since amateurs were forbidden to accept any form of payment for their services, the NTS became quite a natural substitute for telegrams and long distance calls. Because of the way the system was set up, it was not unusual for a message generated in the morning let's say in NYC to be delivered to its final destination by that evening in LA. Certainly not quite as fast as a telephone call nor a telegram but still it was fairly fast and it was free.

I first became involved with traffic handling in the late 1990's when I got my first voice rig, a venerable 2 meter radio that did not have tones for repeater access. No matter, our local repeater at the time did not need a tone for access. A weekly net was held and messages picked up there were transferred into the regional phone net, from which they entered NTS Cycle 4. It didn't take long for me to become a liaison from the phone net to the CW net at a later time in the evening. I guess they liked the fact that I could communicate at the speeds common on these nets.

As time went on, I became disenchanted with the way the regional voice net was being handled so I quit. I decided I was going to be CW only from that point on. 99% of the time I have remained true to that goal. Since that time I have become a volume contributor to the traffic system, both NTS and now RRI (Radio Relay International). In an average year I will generate some 6000+ messages mostly for new hams and hams who have upgraded. Certainly it is a lot of work but thoroughly enjoyable. It is especially nice when I receive a reply from a chap whom I have piqued his

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interest in CW and traffic. I have several of those types of message saved on my computer. It makes what I do all that much more enjoyable knowing that my efforts are appreciated.

Of course there are detractors out there who say that traffic handling is an archaic method of sending a message from one place to another. It is my firm belief that, if more people take advantage of the system, it can still be a very viable form of communications. In the event of a local or regional disaster, such as Puerto Rico a couple of years ago, then amateur radio can be an excellent resource to have available.

A Free Range Lifestyle

[Tim Kirby GW4VXE](#)

When I wrote my new member bio for *Solid Copy*, I wrote about escaping the corporate world and moving to a 'free range lifestyle'. Tim K9WX, like the good editor that he is, saw the opportunity for something for the newsletter and asked me if I'd explain a little more.

My background in the corporate world was in computing which I thoroughly enjoyed. The satisfaction of making things work which helped people in their day-to-day lives was considerable. The problem came when the corporate culture came to value paperwork over technical ability. I am not naïve enough to think that paperwork is unnecessary, but there are limits! I started to think that there was more to life than this – or more precisely, I knew there was. It was just a question of how to make it all work.

Fortunately, my wife Julie, was of the same mind. The boys had left home and our responsibilities towards our parents had reduced. I had always wanted to live by the sea and felt happiest in a coastal environment. We started to think about where we might live and, in the end, it came down to two areas that we both loved; Cornwall (where my parents had lived for many years) and West Wales which we both knew very well as visitors. In the end, West Wales won – we love the landscape here, property was a bit cheaper than Cornwall and, if we need to get back to England to see family members, it's not so far. It did occur to me, in passing if not a little more, that the GW prefix in a callsign is just that little bit rarer than a G!

We started to look at our requirements in a property. We wanted plenty of room to be able to grow vegetables, keep chickens and bees. The property needed to be safe for our cats. We wanted to be in easy reach of the sea. I was keen that we should live somewhere where we had 'far

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reaching views'. You may read that, alternatively, that the house should have a good RF take-off! We looked at a number of properties all of which had their own charms. We came across Parsonage House, which seemed to tick all the boxes. The problem was that our house in Oxfordshire was not yet sold. At one stage Parsonage House sold to someone else and we thought we'd lost it, but in one of those quirks of fate, it came back on the market just hours after we sold our house.

In December 2019, we moved here. So, what do we do here? We have been busy returning this former farm to a productive space for growing our own fruit and vegetables as well as living. A polytunnel has just been erected to help extend the growing season and the variety of what we can grow. We are also enthusiastic 'homebrewers' of beer and wine!



Parsonage House and Farm – our new home on the west coast of Wales

Of course, there is plenty of space for antennas! I am still learning how large an antenna can be left up in a particular storm force. We are about a mile from the Atlantic Ocean so it can get very windy at times (Force 11-12). With the exception of the 6m/2m/70cm vertical on the house, all antennas can be erected (or dropped!) quickly. A short mast provides support for VHF beams, including 6m – which in the summer DX season – is very good to North and South America from here. A semi-permanent fixture is an 80m dipole on a fiberglass mast. I have various supports for verticals for different bands. I've just refurbished a 35 year old Butternut HF6V and put that on the air, but I have single-band verticals which can be used as required. Although the field behind our house is occupied by sheep, it's possible that they may co-exist with more ambitious antenna projects in due course.

Both Julie and I are writers. Julie is a poet as well as an Interfaith minister and has just published

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her first book of poems and prayers. She also supports many people of 'all faiths and none.' I am lucky enough to be able to write about amateur radio. It's something that I have been doing for over 20 years at various levels. Currently, I write a 'VHF/UHF' column each month for the UK's *Practical Wireless* magazine, edited by fellow CWOps member, Don, G3XTT; two columns for *Radiouser* magazine – one on 'Signals from Space' and the other on 'Two Way Comms'. I am also lucky enough to review some equipment, usually VHF/UHF, for both *Practical Wireless* and the RSGB's magazine, *RadCom*.



Far reaching views and great sunsets – great for the soul. And RF!

I feel very lucky to be able to write about a subject that I am passionate about and even luckier that it helps to pay the bills! It is always interesting to try out new equipment and see what can be done with it. If it captures my imagination then I try to convey that to our readers in the hope that perhaps, it will capture their imagination too. It's also been good to learn new things. There's been considerable interest in Digital Voice modes (DMR, D-STAR, Fusion etc), so I have enjoyed learning about how to make the most of those. Morse code they may not be, but they still have their place in our hobby!

Both Julie and I have a great interest in the ancient landscape that surrounds us here in Wales and when there is not a lockdown, we enjoy walking the hills, visiting and photographing some of the Neolithic and older remains which exist here. Some of the ancient sites have been aligned to distant landscape features and others are based on celestial objects such as the sun, moon and the stars. It's my hope, in the due course, that this may provide a writing project.

The pandemic has brought to the fore the opportunity to make presentations to radio clubs and groups using technologies such as Zoom and WebEx. Living here on the west coast of Wales, it's a fairly major trip to visit many groups, so it has been wonderful to be able to meet up remotely with groups that I wouldn't have had a chance to visit. The same is true for 'virtually attending' presentations – I have been able to enjoy talks from many speakers that I would have had no chance of seeing face-to-face. I'm hoping that the ability to join presentations 'remotely' will persist after the pandemic has passed.

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These are some of the components of our 'Free Range Lifestyle'. We feel very lucky and grateful that we are able to do this. Ten years ago, deep in the corporate drudge, I could not have imagined this level of freedom. If, somewhere in your mind you have an inkling that 'there is more to life than all of this...' then, I am here to tell you that change is possible!

See you on the air!

Antenna and Tower Make Over

[Rob Brownstein, K6RB](#)

From July 2005 until March 2019, my antenna system comprised a 72-foot crank-up tower, a 20 foot chromoly mast, and Force 12 5-BA, EF 240/230 and Sigma 180S mounted on it. That covered 80 through 10 including the WARC bands, and a Double L for 160 added top band.

Then, in March 2019, in preparation for selling my house and downsizing, I disassembled the antenna system and donated it Stanford Radio Club's W6YX station. However, for very good reasons, I ended up back in the house in September 2019, but without any antennas. All I had to remind me of what I had once had was 10 cubic yards of concrete and the 72-foot crank-up's base.

Not wanting to risk a bout of CW deprivation, I put up a new SteppIR BigIR/80 vertical in December 2019. I was surprised at how well it played in July's IARU contest but I always felt like I was hearing and being heard with much more difficulty. Sure, if I was living in an HOA community and had to be satisfied with a low-profile, stealthy antenna, I would have survived. But, I lived in a community that had no antenna restrictions, so by May 2020, I figured "why not put up something better?"

Decisions, decisions

I had an existing base (right) for a US Towers 72-foot crank up. I could purchase another one and do something grandiose as before. But, frankly, I didn't want to do that. I wanted to cover the same ground (160 through 10) without a jungle of aluminum and a monster tower. Also, I had decided to go back to SO1R operation after decades of SO2R, so that could make



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things simpler, too.

I decided to explore putting up a 50-foot crank-up tower, with a 10-foot mast, and a Yagi that could provide me with 40 through 10 meters of coverage. After some mulling, I chose a Tashjian WT-51 tower and a SteppIR DB18. To cover 80 and 160 I decided to get two Double L antennas, anchored to the tower, one for 80 and one for 160.

I tend to be deliberative – it's the engineer in me. I had had a Tri-Ex 50-foot crank-up, before, and the Tashjian was essentially the same. And, I had had a chance to build and use the SteppIR BigIR/80, so I understood the technology and had first-hand experience with its quality. So, I spoke with Norm and Karl Tashjian about whether the mounting of the WT-51 could be customized to fit my existing base. They both felt that it could.



Custom mounting plate rests on top of existing base

I considered the DB18 and 18E and chose the 18 because I don't chase DX (except in contests) and don't really care if I'm half an S-unit louder on 30 meters with the 18E.

Ordering and waiting

There was at least a three month turn around on the WT-51 and five weeks on the DB18. Meanwhile, I ordered and received a Yaesu G1000 DXA rotator, an Ameritron RCS-4 switch, and full-size 80-meter and full-size 160-meter dipoles with baluns capable of handling at least 1.5 KW.

The early arrivals sat on the floor of the shack awaiting the SteppIR and tower.

First, the DB18

Again, as a throw-back to my engineering inclinations, I planned out how I would proceed. First, I would test and calibrate the rotator and make sure the RCS-4 switch was working. Then, when the DB18 arrived, I would get it ready to mount on the tower, once it arrived and was mounted.

As I waited for the tower, the DB18 arrived in three different boxes. I studied the assembly manual carefully and decided to be slow and careful in all steps because I did not want to have to fix something, later, while it was mounted to the mast.

The DB18, unlike most Yagis, is not all about assembling the elements and simply putting together the boom and mounting the elements on it. The DB18 is a complex system compared to most Yagis. Instead of fixed length elements mounted in fixed boom positions, the DB18 has adjustable-length elements. Furthermore, it has a complex switching subsystem on the boom that

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moves the coax connection on the outside elements from one to the other when invoking the 180-degree mode. For example, on 40 meters, it is a two-element Yagi with a driven element and reflector. When you invoke the 180 mode, what had been the driven element now becomes the reflector and vice-versa. The coax is switched and the element lengths are adjusted, automatically.

On 20 through 6 meters, all three elements are used with the outside elements as directors and reflectors whereas the center element is always the driven element. When you invoke 180, the lengths of the outside elements change to switch their function from reflector to director and vice-versa. This takes a second or two, and, boy, is it noticeable when you do it. In the recent CQ WW CW contest, I was pointed NW toward Japan and Asia but was frequently called by stations in the Caribbean and South America. By invoking 180, I could improve the received signal by at least an S unit. In the past, I would simply have had to work them off the back and hope for the best.

In assembling the DB18, you first assemble the boom and mast-mount hardware. Then you attach the element housing units (EHUs), return units, switching box and control cable junction box. At that point it is best to make sure that the EHUs and controller are playing nicely with each other. If so, you are supposed to prepare the element support tubes (ESTs), mount them to the EHUs and prepare to bring the fully assembled antenna up to its mast-mounting position. In my case, that was not doable. The only way I could bring that antenna up was to bring up the fully assembled and tested boom, mount it, then bring up the individual ESTs, one at a time, and mount them. I did it, and it worked.

With the DB18 at about 30 feet, and working from a 40-foot boom lift, my wife and I were able to get it firmly in place, set the heading, and prepare to raise it.

Second, the Double Ls

But, before it was raised, I had mounted four bungee cords; two to the top of the top-most tower section, and two about 10 feet off the ground. And, the RCS-4 box was mounted to the top of the tower's base section. The coax from the DB18 was connected to the SO239 for switch position 1, the coax for the 80-meter Double L was connected to position 2; and the 160-meter antenna was connected to position 3.



Mounting the DB18 using a 40-foot boom lift

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Now, one end of each Double L was connected to a top bungee and one end of each to a bottom bungee. The idea is that when the tower is fully raised, the balun and coax for each Double L is about half-way between its top and bottom bungee. The remaining wire lengths – top and bottom – are then brought horizontally to a tree while trying to keep them in the same vertical plane and parallel to one another. I found that this was not really critical because it is the approximately 40-foot vertical portion of each that is the prime radiating element. In my case, the 80-meter antenna's horizontal legs were positioned essentially east of the tower and the 160-meter antenna's wires were located south west of the tower. The vertical sections are displaced about five feet from each other by their respective bungees.

Raising the system

When first raised, the coax lines are all connected to the RCS-4 and the Double L horizontal wires are draped on the ground. As I cranked the tower up, slowly, I made sure none of the coax or antenna wires got snagged on anything. When it was full height, I brought the top and bottom horizontal wires to their respective trees, using the boom lift to position and mount them. The lines were pulled taut while allowing the bungees to expand under wind load.

I remembered that my first 50-foot crank-up had a hand winch



Top: 80-meter Double L anchored to upper bungee; Bottom: Hand cranked winch on WT-51

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where, as the sections went up, you really had to put a lot of weight on the handle. I guess in the quarter century between the Tri-Ex and Tashjian models, they decided to lower the gear ratio, so it wasn't as hard...but it took a lot more rotations. It took about 300 rotations to fully raise the tower from nested to full height. Ouch. Needless to say, my incentive at that point was to do this as infrequently as I could get away with.

Modifying the tower

This is my third crank-up tower. One before had a hand winch; and one had an electric winch. I was much more inclined to lower and fix things with the tower having the electric winch. So, I wondered if there was an option available to replace the hand winch with an electric winch. The answer was "not by the tower maker." Crank-ups are telescoping sections pulled up a system of cables. If a cable fails, the sections come crashing down. So, there's some liability for the makers. Their lawyers make them label the tower with copious warning labels against climbing. Further examination warns against modifying. I get it, It's a tower that can quickly become a guillotine for one's feet. So, my practice has always been to fully retract it, then crank it up a bit to allow me to lay in some heavy-duty wood or galvanized pipe pieces such that when the cable is then relaxed, the sections rest on the blocking serts and won't go anywhere if the cable were break.



Tower modified by removing hand winch and replacing it with hoist mount and electric hoist system

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While researching electrical winch options I found a ham in Utah who makes a heavy-duty hoist mount fixture that attaches firmly to the bottom mast section using the same plate to which the hand winch is mounted, and allows placing an electric hoist unit on top of the mount. With the cable unspooled from the hand winch, and the winch removed, the electric hoist unit can be put in place, firmly mounted to the hoist mount, and then used to take up the tower cable that had heretofore been taken up on the hand winch.

Without getting into huge detail, I succeeded in partially disassembling the hoist unit, removing its standard 38-foot cable and hook, then bringing it out to the tower, connecting the detached tower cable to its drum, the reassembling the unit and finally firmly mounting it to the hoist mount.

Instead of 300 crank rotations after eating a box of Wheaties, I press the up or down switch on the hoist, and the tower goes from nested to full height, or reverse, within a minute (e.g. 45 seconds).

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I like it

The new antenna system got a good workout, recently, in SSCW and CQ WW CW. The DB18 is working flawlessly, and the 80- and 160-meter Double Ls are hearing and being heard as well as can be expected. The only further modification I am considering would be putting a rotary dipole for 80 meters just below the DB18. The height is sub-optimum, but it should be less noisy than a vertically oriented antenna.

Shunt Feeding Towers Made Easy: Part 1

[Tom McGinley, K7QA](#)

Many hams, frustrated in their quest for operating excitement by the sorry performance of solar cycle 24, suffered unnecessarily. An inexpensive antenna improvement for the low HF bands is readily available to many of them, one capable of yielding dramatically improved performance over a tower supported inverted vee or low dipole. For those who possess a tower with a top mounted beam or other antenna, that tower can be easily used as a vertical antenna.



Verticals always generate more low angle radiation than dipoles at equivalent heights and are more effective DX transmitting antennas. The transformation is made by coupling RF to the tower using a method called "shunt feeding" and is the focus of Part 1 of this article.

For those who have more than one tower at their QTH, additional towers can be shunt fed forming a directional array (DA) that produces gain and nulls in desired directions depending on the tower locations. I'll discuss the methods used to implement a two tower DA array for both 80 and 160 meters in a follow-up article that will appear in the May issue of *Solid Copy*.

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Lessons Learned in AM Broadcasting

I have always been a big fan of AM broadcast radio, especially directional tower arrays. Having spent over 50 years as a broadcast engineer building or repairing dozens of AM antenna arrays, I've discovered a few realities about vertical tower antennas that seem to have been ignored or misunderstood by much of the ham radio community, especially for those new to the hobby. I have adapted some of the lessons learned in successfully deploying a very modest two tower shunt fed DA array for 80 and 160 meters at my QTH.

Too many hams overlook the opportunity of using their grounded tower as an effective antenna on the low bands. After all, most all ham radio verticals and broadcast tower antennas are series fed across a base insulator. Some ask how a vertical tower not insulated at the bottom from ground can be fed with transmitter power. The simple answer is shunt feeding.

An easy to understand analogy is the gamma match used to feed a Yagi where the driven element is one continuous radiator attached to the boom in the middle. The coax shield is connected there and the center conductor is connected to one side of the element at some distance out from the center via a capacitor.

A ham radio grounded tower or monopole can be driven in a similar manner following this analogy. The "gamma" wire runs from a capacitor/inductor combination at the base or "middle" of the antenna and connects at some point up the tower below the top mounted antenna rotating mast. The other "half" of the radiator is the ground system or counter poise.

The Truth About Taller Towers

Many hams seem convinced that a 50 ohm or a quarter wavelength feed point is necessary or optimum to feed a vertical antenna. Or that a 1/4 wave vertical is the most efficient length. Neither is true. The only magic about 1/4 wave antennas is they are easier to match to 50 ohm coax. Vertical radiators taller than a quarter wave produce more gain to the horizon up to 5/8 wavelengths.

Two meter enthusiasts know that a 5/8 wave whip is 2.5 dB better than a 1/4 wave whip. More gain to the horizon is certainly desirable for working DX. Towers taller than 5/8 waste their energy at very high takeoff angles and become NVIS radiators or cloud warmers.

Towers taller than 1/4 wave present a higher impedance driving point that requires a matching network for 50 ohm coax lines. The 5/8 wave vertical whip is close to 50 ohms resistive and only needs a series inductor to cancel the large amount of residual capacitive reactance. But antennas between the 1/4 and 5/8 wavelengths generally need at least one inductor and a capacitor in one of several possible configurations to achieve a 50 ohm match to coax.

Good Ground Systems Are Important

Before looking at shunt feeding and matching networks in more detail, let's remember the long established basics of getting a vertical antenna to perform well as a radiator. An efficient ground system or counter poise is definitely needed to reduce IR losses in the radiation return current

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path. So installing numerous buried or ground level radial wires, or a few radial wires elevated above ground up to 1/4 wavelength long is certainly necessary.

The classical studies specify 120 buried wires to reduce ground losses to an ohm or two. The more the better but for ham radio, 20 to 50 wires is usually adequate depending on the quality of your local topsoil. Even a dozen makes a big difference. I simply laid out #14 insulated stranded wires along the top of my back yard lawn and secured them with galvanized ground staples. The lawn growth quickly made them invisible. They are all bonded together at the tower base along interconnected copper bars and straps tied into four 6 foot ground rods.

For locations that can support it, a radial wire system elevated above ground using several wires is as effective as the buried or ground level radial system. Those systems usually impose more maintenance and obstacle headaches however.

Shunt Feeding Prerequisites

Shunt feeding towers for the low bands has at least three caveats. They can be too tall for best radiation pattern efficiency unless they are sectionalized and partially detuned with skirt wires. A top mounted Yagi or other large antenna adds significant top loading and effectively extends the overall length of the radiator. A typical multi-element triband Yagi adds an additional 30 to 45 feet of effective electrical length to the tower. Remember that anything taller than 5/8 wave is a cloud warming waste. Towers with large top loading need to be under about 100 feet for 80 meters and under 200 feet for 160 meters.

The second prerequisite is to make sure any metal guy wires used are not too long or close to resonance. That means breaking up their lengths with egg insulators at intervals shorter than about 1/10 wavelength to prevent reradiation and pattern distortion. Rope or Phillystran guys are exempt, of course.

The last requirement for assuring an efficient and stable shunt fed tower is continuous, very low resistance electrical conductivity from top to bottom. Bonding the coax shield feeding the top



Slant wires running to near the top of the tower.

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mounted Yagi to the boom and at ground should be adequate in most cases. If the coax shield at the feed point of the top mounted antenna is electrically insulated from the tower mast, running "tracer wire" bonded at each end and the slant wires junction level should be added.

Feeding the Tower

The task of feeding a grounded tower with an appropriate feed wire arrangement and matching network back to 50 ohm coax has several options. Most of the online resources that describe shunt feeding towers recommend installing a folded unipole (wire cage) or several drop wires or aluminum rods off the tower supported by a series of insulated side arms. This method almost always describes the need to find the 50 ohm resistive tap point where a shorting clip is installed. That process usually requires multiple trips up and down the tower to find the so called magic 50 ohm spot.

The bottom of the wire feed system can then be driven by 50 ohm coax in series with a simple variable capacitor as a gamma matcher to cancel the rather large amount of inductive reactance at the feed point. Some suggest an omega matching network that uses two variable capacitors to achieve a more precise match at the favored frequencies.

The Simple Slant Wire

Instead of going to all the extra effort of installing a unipole wire cage or drop wires with support arms for the shunt feeder, I simply used a pair of #10 insulated stranded copper wires securely attached with strain relief near the top of each of my towers just below the rotating masts. Two wires



Slant wires terminated at the tower base.

are used instead of just one to improve efficiency and bandwidth. They are pulled tight and terminate together away from the tower base about 2 feet above ground level. See photos page 29 and above.

AM broadcast calls this slant wire feeding. Several notable papers by respected broadcast consulting engineers have demonstrated that even a single slant wire feeder performs almost identical to a series fed tower or a grounded tower using the more complex unipole wire cage feeders with only very minor pattern distortion.

The bottom of my slant wire connections are 12 and 16 feet respectively from their bases. The towers are 40 feet and 52 feet tall below the masts and Yagis. The distance from the base and

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length of the wires varies from 50 to 60 feet but these measurements are not important except for modelling.

High Impedance Advantages and Matching

Attaching the slant wires at the top of each tower results in a high driving-point impedance at the bottom end of the wires. I measured about 1000 ohms Z on each with a Rig Expert AA-230 pocket analyzer. Resolving such high impedance measurements into their R and X components is difficult since the readings change



Matching networks

with every sweep and are heavily affected by nearby objects and ground. Most all of the popular antenna analyzers are designed for a 50 or 75 ohm source impedance using an N connector, so measuring very high Z loads will usually reflect imprecise results.

One of the advantages of using the high impedance feed point almost always results in a lower series Q and wider bandwidth response. Series Q is defined as $Q = X/R$. My measurements averaged less than a 2:1 ratio. On 80 and 160 meters, the VSWR measures under 1.5:1 and covers the entire CW end of both bands without needing a tuner.

I originally matched the high impedance on my taller tower as a single radiator back to 50 ohms with an L and then a pi network using impedance matching software calculators. I installed the coils and large air variable capacitors in weather resistant plastic storage tubs, elevated above ground and the snow line with cinder blocks. For high power operation, the capacitor needs adequate plate spacing to eliminate high voltage arcing and the coil should be heavy copper wire, ribbon or tubing to reduce losses. Vacuum variable caps are better of course. See photo above.

The Parallel Resonant Tank Solution

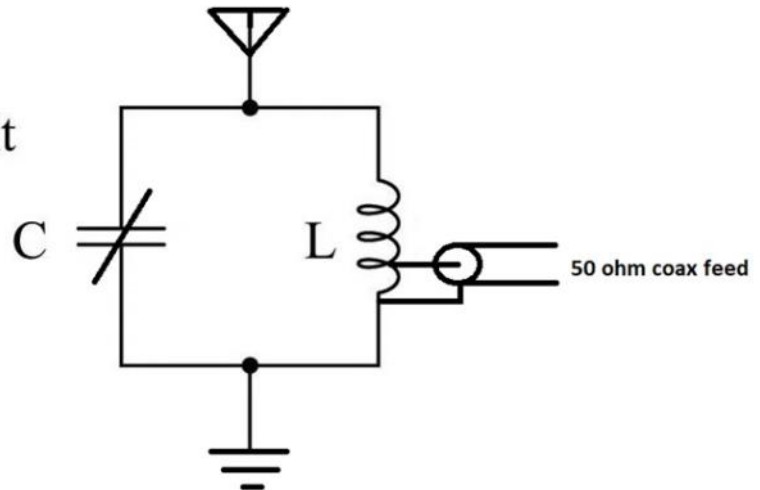
After spending too much time measuring impedances and calculating needed component values with L and pi network matching, I remembered how easy it was to match my 40 meter bobtail

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wire array antenna using a parallel resonant LC tank circuit. The slant wire feeder is connected at the top and the 50 ohm coax feed is tapped a few turns up from the bottom end ground connection. The need to accurately measure the actual high impedance of the slant wire feeder was not really necessary using the tank. It just needs to be low Q for good bandwidth. Q for parallel resonant LC networks is defined as $Q = R/X$. For 80 meters, a coil of about 15 uH works well with a 200 pF variable capacitor.

Tank circuit



The tank circuit was not only easier to set up for a perfect 50 ohm match with the AA-230, but it also yielded the best bandwidth compared to other basic network designs. I had been running my west tower as a full parasitic radiator in a two tower DA array with a variable capacitor to ground at the slant wire feed point. I have since changed that to a tank circuit and initially set the coax tap point on the coil for a good match as single antenna. This has allowed me to easily drive the west tower with power along with the east tower to be able to achieve a more optimized DA pattern. See diagram above.

Wire Antennas No Longer Needed

My east tower is 72 feet to the tip of the lightning rod but functions like a 0.42 wavelength radiator with the tribander top loading on 80 meters. I considered shunt feeding it on 40 meters hoping it might achieve 5/8 wave efficiency but with the top loading, EZNEC confirmed it was only a cloud warmer at over 0.85 wavelength.

I originally installed an inverted V fan dipole covering 40, 80 and 160 meters five years ago at my new QTH to get on the air. The apex was at 55 feet above the house chimney with the ends 30 to 45 feet up. Since installing the shunt fed towers and Yagis, the performance differences on all bands have been dramatic. So I replaced the fan dipole with a chimney mounted 5 element 6 meter Yagi. See photo of my house on page 27

Deploying a second or even a third tower in a DA array using the shunt fed approach is really the fun part of this kind of project. **Next month**, I'll describe the methods I used to achieve success in that effort.

Radio Expedition to Island of Sein

Didier Cadot, F6BCW

I will be managing a radio expedition with F6KJS Radio Club du Bassin Minier from May 27 to June 7. IOTA EU-068, Locator IN78NA79, Bretagne/Brittany – Zone Europe FR03. We were supposed to go to a much farther island, but the pandemic we are experiencing across the world forbids us to do so. So we decided to do an expedition on a small French island, the Ile de Sein in Brittany. For more information you can visit our website: <https://tm6kjs.f6kjs.fr/en/home/>

We hope to work many CWops members, during the WPX CW contest and other pileups with our special call TM6KJS. The team includes 10 operators: 9 on the island and 1 assistant in Burgundy.

100% QSL paper only. QSL direct \$3, address to be announced later. QSL via REF OK, (note: waiting time around 12 months for QSL via Buro). We will activate 6 stations from 80m to 23cm

HF : 2 stations (STN1 – STN2) 24 hours/day with CW, SSB, and digital modes

STN1:	28 MHz to 14 MHz 7M Hz 5M Hz	Spiderbeam HD - which will oriented from NE to SE Omni directional delta loop antenna Omni directional dipole antenna
STN2:	28 MHz to 14 MHz 10.1 MHz 3.5 MHz	VDA antennas - 2 VDAs oriented from NW to SW ANT Vertical 2el in phase switchable at the 4 cardinal points Omni directional inverted-L

VHF – UHF : 4 stations from 6 a.m. to 9 p.m. UTC, with 360° antenna coverage

50 MHz:	SSB FT8 / FT4 CW	4 element Quagi
144 MHz:	SSB FT8 / FT4 (CW on request)	Vertical grouping of 2 Quagi 8el antennas
432 Mhz:	SSB FT8 / FT4	23 element Yagi
1.2 GHz:	SSB	Satellite dish 160cm (23dBd)



Costa Rica SOTA Expedition After Action Report

[David J Wise, KM3A](#)

From January 3 to January 9, I visited Costa Rica to go "play radio." This article will summarize my experience, share some lessons learned, and highlight the success resulting from CW Academy training.

Around January of 2020, I researched a few options for international travel. My criteria required either reciprocal licensing or a pathway for foreign travelers to obtain an amateur radio license. My criteria also included a need for the destination to participate in the [Summits on the Air \(SOTA\)](#) award program. For those who don't know, SOTA is an award program that grants points to "activators" who climb summits and make QSOs using portable equipment as well as to the "chasers" who contact the "activator." For an activator, the program's ultimate award is "Mountain Goat," which requires 1000 points and typically takes several years to accomplish.

Although I initially planned on traveling to Japan and was granted callsign JJ1WZO, the country closed its borders to all foreign travelers due to the COVID-19 pandemic. In June, I selected Costa Rica, which had measures for foreign visitors (including mandatory additional health insurance, health screening, rapid testing, and a few others). From June 2020 to January 2021, I closely monitored the US Embassy website and Costa Rican government messages about immigration, and surprisingly restrictions slightly relaxed over time. I simultaneously submitted the required paperwork to Sutel, the Costa Rican FCC, for callsign designators TI2, TI3, and TI5. The paperwork was very specific and required that I list each planned operating location, radio type, power, and antenna type, polarization, and gain. As a note for anyone planning on operating in Costa Rica or Costa Rican territories: submit your paperwork to Sutel as early as possible - 6 months is "cutting it close." I'd recommend submission a year in advance to assist in navigating additional questions, corrections, and resubmission.

After my paperwork was submitted and my flight was booked, I contacted the [Radio Club of Costa Rica \(TI0RC\)](#) and the [Asociación Radioaficionados Cartago \(TI0ARC\)](#). Both groups were familiar with SOTA and provided me with insights and a list of a few possible summits to explore. They graciously created a "What's App" messaging group and contacted me regularly throughout my planning process. Using their recommendations, I visited [sotl.as \(the SOTA Atlas\)](#) and plotted my



First lines of code sent from Costa Rica on Cerro Frio

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trip through the country. I concluded I could probably activate 2 summits per day, which would be feasible while factoring in drive time, available battery time, weather, and daylight hours.

On January 3, 2021, I landed in San Jose and met Luis Arias, TI3LSK, and we immediately set out to activate two summits. This plan required a few modifications because of closed gates, area closures due to COVID-19, and access issues; however, we activated both Alto Indias and Cerro Frio within several hours. While Luis utilized a VHF HT, I used my Yaesu FT 891 and wire dipole to work CW on HF. As stations stacked up (Argentina, France, Maine, California, etc.) I called them out to Luis, who told me he would set up FT8 for some DX on his Icom 705. Our conversation quickly switched to the topic of CW.



Managing a pileup from the top of Cerro Espiritu Santo

The following day was definitely a trip highlight. I discovered the Turrialba Volcano was open for climbing with a guide. I was excited because Turrialba had been closed to all exploration for approximately 10 years due to volcanic activity. The only downside to climbing the volcano was that I was only authorized to transmit using an HT rather than a complete HF setup due to time restrictions at the summit. Regardless the hike up to 11,000 ft was literally breathtaking due to the scenery and lack of oxygen. I am proud to say that TI3LSK and I were the first to activate this particular summit, which would not have been possible even two weeks prior. After Turrialba, I summited Volcano Irazu, which was equally beautiful and a bit higher in elevation.



Pura Vida!

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My true "DX" station CW learning experience happened on day 3. Conditions were excellent, and I began calling CQ on 20m atop Cerro Espiritu Santo. I received an avalanche of calls. The only time I remember being more mentally flooded was on my first attempt at activating a summit using CW. Fortunately, I practiced by using Morse Runner before my trip, and I was able to pick out pieces of callsigns. I discovered a few things that helped me.

Before I share my lessons learned, I need to point out that I made my first CW QSO around September 2019 and earned my CWops number in June of 2020. Although I know CW, I am not experienced in running as a station, let alone a DX station. While I have run a station on various SOTA summits, the last solar minimum helped create smaller pileups that were more manageable. Additionally, fewer stations are interested in working California than they would be working Costa Rica.

Given the above, here are my observations. First, managing a pileup with rhythmic and standardized responses makes things flow more smoothly. When chasers know what to expect from me on each transmission, the pileup naturally becomes more organized. I also found that when I used a "?" combined with a partial call, the situation would become worse vs. just returning a partial call. I concluded that a "?" sent in combination with anything leads some to send their callsign despite the question not applying to them; whereas, sending a partial call almost always restrained those I didn't intend to work at the moment and allowed me to focus on the intended station. I also found that I needed to try and work the loudest stations first. I learned working a pileup is similar to peeling layers off an onion - and often, the more rare callsigns were hidden at the innermost layers. Most importantly, though, I realized that a DXpedition doesn't require anything beyond the radio you bring with you because the best radio is the one you use. For me, 100w and a wire worked out just fine.

I lastly decided that next time I travel, I will probably not plan on activating a large number of summits; rather, I will choose one or two and spend more time on the summit working all bands and making contacts. My purpose for this trip was a SOTA DXpedition to earn points toward the Mountain Goat award. I met that goal at the expense of rushing through the actual QSO phase. I earned points but made fewer contacts than I could have. By my next trip, I will have the Mountain Goat award, and making points will be secondary to making QSOs and generating a full logbook.

On my final day in Costa Rica, I met with the TI0ARC at a local bar. I was surprised when they presented me with an award they created, congratulating me on a successful SOTA Expedition. I was additionally told that TI3LSK registered for the next available CW Academy Basic course and encouraged fellow club members to do the same.



The TI0ARC: Radio Club de Costa Rica with KM3A, center.

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Although I could write a detailed log describing each day, in summary, I activated 9 different summits, including 2 volcanoes. I made contacts with stations across the United States, Germany, Spain, France, England, Czech Republic, Cuba, Sweden, Argentina, Canada, Costa Rica, and a few others. In total, I added 76 points to my SOTA score, bringing my total up to 908 (as of the day I write this). I drove several hundred miles and met many incredible people. I walked away with many new experiences, great memories, and excitement to do something similar in the future. I also realized my trip was a testament to the CW Academy program. I will forever be grateful for the time NN7M and K6RB put into teaching me proper code. It has made all the difference for me.

Before I close, I wanted to share one point of comedy during my trip. Costa Rica has a saying, "Pura Vida," which means "pure life" but is more of a way of life than anything. The term can apply to bad situations you can't help equally to the beautiful and amazing. On one of the last days of my trip, I was driving from a summit I had just activated toward the next village. Roads in Costa Rica are mediocre at best and terrible at worst, but I rented a 4x4 for that reason. While driving down a hill, the road transitioned from paved to dirt, to overgrown, and finally to muddy. Needless to say, I quickly became stuck to the point that I had my back right tire suspended in the air. Given the situation and my inability to self-recover, I hiked approximately 3 miles back into the town I came from. Thankfully my Spanish helped me find someone who owned a tow truck, and we returned to my vehicle. While we were at work recovering my vehicle, a local who was walking by stopped and lectured me in Spanish, saying, "We have a hard time walking down this road; what makes you think you can drive down this!?" Pura Vida? Pura Vida.



Stuck rental.

CW Academy

[Kate Hutton K6HTN](#) [Joe Fischer AA8TA](#) [Bob Carter WR7Q](#)

The April-May 2021 CW Academy is well underway. We have 640 students assigned to classes led by 82 advisors. We cannot thank enough these individuals who are volunteering their time to help students learn Morse code and improve their CW abilities:

Ramon, 3D2AG; Joe, AA8TA; Scott, AB5M; Buzz, AC6AC; Alan, AD6E; Jed, AD7KG; Martin, AE7EU; Bill, AG4EA; John, AJ1DM; Jack, AK7O; Keith, G0HKC; Duncan, G3WZD; Roberto, IK1HGE; Jerry, K0ES; Bruce, K1BG; Rich, K1DJ; Dallas, K1DW; Michael, K1LHO; Mark, K5GQ; Ed, K6HP; Kate, K6HTN; Peter, K6PB; Rob, K6RB; Gary, K7EK; Tom, K7MOZ; Roland, K7OJL; Bruce, K9OZ; Gregg, KA7MDM; Rosti, KC3FQF; Ken, KD2KW; Randal, KG5LEE; Bill, KG6NRV; Jacob, Joe, KK5NA; David, KK6M; Serge, KK7RR; David, KT5V; Tom, KV8Q; Richard, M0RJG; Will, M10WWB; Bill, N0DNF; Tom, N3EE; Michael, N5KB; Van, N5TOO; Michael, N5WNG; Mike, N7ID; Jack, N7JP; Jim, N7MU; Chris, N8AI; Gary, N8LR; Ed, N9EP; Jim, NE0DA; Max, NG7M; Morgan, NJ8M; Mac, NN4K; Tony, VE2KM; Mark, VE3BXG; Ron, VE3FXX; Roger, VE3RDE; Bill, W0EJ; Tom, W0FN; Philip, W0OJ; Jim, W0UO; Bill, W3PNM; Ted, W3TB; Carl, W4IF; Madison, W5MJ; Tim, W7EEE; Rick, W7VQ; Andrew, W8OU; David, W8OV; Ted, WA3AER; Doug, WA6L; Tom, WA9CW; Terry, WB0JRH; Andy, WB7DKZ; Etic, WG3J; Phil, WM6Y; Bob, WR7Q; Jim, WT8P; Nian, WU6P; Christopher, WX5CW and Hanz, YL3JD.



This represents the last time that we will offer our Spring semester during April and May. Starting in 2022, our Spring semester will take place during May and June. By doing so, we will have two months between semesters consistently throughout the year. Given the size that the CW Academy has grown to, this also allows us adequate time to finish up one semester and get another one set up.

Student and Advisor Sign-up Process Being Upgraded.

The CW Academy is modifying and upgrading the sign-up process for both prospective students and advisors. The new process for students was implemented recently and the changed process for advisors is in final testing and will be implemented in the near future.

The changes are being made in an effort to increase opportunities for prospective students anywhere in the world to be assigned to a class. As students register they will select up to three class times and class days as first, second, and third choices. Advisors will be able to sign up for one to four classes specifying the class times and class days. The process to assign students to advisor classes will match student class times and days preferences with available classes. The change means that students from anywhere in the world might potentially be assigned to an advisor's class.

Another advantage is the new process will do a better job of balancing students and classes requiring far less work to manually balance the classes prior to the start of each semester.

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The previous process has been very US centric. The new system will improve the CW Academy's international presence and add a world-wide flavor to advisor classes.

Many encouraging developments have occurred over the last year or so tailored to providing on-air opportunities for novice CW operators to gain some experience. Every month, the Giving Back program is highlighted in this newsletter and the K1USN club has had enjoyed great success with their [Slow Speed conTests \(SST\)](#) now held every Friday and Monday (UTC times).

Another recent development is an effort to unite CW clubs around the world to help promote CW operating and the development of CW abilities. This effort is just getting off of the ground and will no doubt be eventually described in this newsletter. Suffice it to say that efforts such as these represent a golden time for curious but inexperienced CW operators to find ways of making contacts.

It also represents more people becoming interested in learning and advancing their CW abilities. As busy as we are with the ever growing number of students we serve, there are many reasons to believe that many more students will be looking at our classes.

As always, help to assist these students is greatly appreciated.

73,

Kate K6HTN, Joe AA8TA, Bob WR7Q
CW Academy Managers

CWops Tests

[Rich Ferch, VE3KI](#)

For most purposes, there is no right or wrong choice in how you do the CWTs. You can log with paper and pencil or on a computer. You can send using a straight key (if you can make yourself understood at CWT speeds), a bug, a paddle, a keyboard, or canned function key messages. You can choose whether or not to use spotting assistance (DX cluster spots), "call history" files, or other operating aids. It's all good.

But there is one area where there is a right way and a wrong way to do things, and that is in QSLing, especially electronic QSLing. Electronic QSLing is very easy – just upload your log after every operating session. You don't need to pore through your log to decide which contacts to upload, just upload them all regardless of whether or not you yourself need credit for the contact for some award. You never know, perhaps one of the stations you worked is looking for your

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country, state or county on that band and mode and would appreciate the QSL. Nevertheless, there are ways to do this correctly, and ways to get it wrong and basically nullify the process.

First, it should be clear that when you upload a log to an electronic QSL service like Logbook of the World or eQSL, you should use a tQSL certificate (for LotW) or an account (eQSL) that is for the callsign you used on the air. This is especially important for LotW. If you operate using a club call sign on the air and then QSL using your home call sign, no-one else is going to benefit from your upload, because the computer doing the matching of uploaded records is looking for an exact match of callsigns. If you get a new callsign, don't re-upload all of your old QSOs signed with your new callsign – that's a total waste of time and storage space, because not one of those newly uploaded records will ever be matched.



Second, hopefully it should also be clear that the station location you use to sign the upload should be the one where the station was actually located during the QSO. If you operate portable or remote from a different location than your home QTH, the station location used for the upload should not be your home station location; it should be the location of the station (transmitter and antenna) that made the contact. To pick an example, if you live in Maryland and do some portable operating from Delaware, anyone who contacted you while you were operating from Delaware will be looking for a QSL from Delaware (if they are looking for a QSL at all).. A QSL that falsely states that the QSO was from a station in Maryland, besides being false, is most likely useless to them anyway.

Third, once a contact has been uploaded, don't re-upload it except to correct an error. In particular, if you move, don't re-upload your old contacts signed with your new station location. Suppose you lived in and operated from Rhode Island for many years, and sent QSL cards to people who had requested a Rhode Island card for WAS, and then after retirement you moved to Florida. Would you go to the homes of every one of those people you sent a QSL card to, take the Rhode Island card away from them and give them a QSL card from Florida in exchange? Of course not, that's ridiculous – but if you re-upload your Rhode Island contacts to LotW signed with your new Florida location, that is in effect what you just did.

Some poor amateur looking for a WAS endorsement for that band and/or mode might have been counting on your previous QSL, just waiting until they made a contact with some other state to complete their application, only to find that when they went to submit the application, their QSL from Rhode Island had disappeared, replaced by a useless confirmation for a contact from Florida that never actually took place. The same applies to grid squares and counties as well as to states – the location that matters is the one the contact was made from.

Stay safe, and keep enjoying the CWTs!

73,

Rich, VE3KI

CWops Member Awards

[Bill Gilliland W0TG](#)

The Annual Competition Award (ACA) is based on the number of members worked each calendar year. You get one point per member worked, once per year. It resets to zero at the beginning of each year. The Cumulative Member Award (CMA) is based on how many members you've worked since January 3, 2010 on each band and continues to grow in perpetuity. [Use the new online tool to submit your data](#). It's easy! (Watch the tutorial if you have not used the online tool before.)

This table is a composite of scores from the old system and the new. Anyone who submitted logs via the new web page will see those submitted scores here. Those who have not adopted the new process will see scores they reported via the old system. Anyone who see errors in their scores should report them to cwopscam@w0tg.com.

Members whose call signs are in **RED** have achieved a milestone: 100 DX entities, 40 WAE entities, 50 states (WAS).

Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
AA3B	1246	10565	W1RM	208	WT9U	50	W1RM	59	UR5MM	39
K3WW	1202	8166	F6HKA	195	WT2P	50	UR5MM	59	W1RM	38
N5RZ	1024	6481	DL6KVA	165	WF7T	50	DL6KVA	58	OK1RR	38
NA8V	1009	6295	W4VQ	157	WA9LEY	50	OH2BN	55	OH2BN	38
K3WJV	985	5862	UR5MM	154	WA4JUK	50	F6HKA	54	N8BJQ	38
KG9X	927	4270	G4BUE	149	W9ILY	50	VE3KI	50	F6HKA	38
VE3KI	912	6368	OH2BN	148	W8XC	50	DJ1YFK	50	AA3B	38
K1VUT	877	3985	OK1RR	143	W7GF	50	OK1RR	49	9A1AA	38
N7US	869	4712	VE3KI	135	W6KY	50	9A1AA	49	W4VQ	37
WT9U	848	4550	W9ILY	129	W4VQ	50	G4BUE	47	VE3KI	37
K3JT	847	4138	K1SM	128	W1UU	50	AA3B	47	G4BUE	37
AC6ZM	819	3112	N8BJQ	127	W1RM	50	N8BJQ	46	W9ILY	36
W8FN	796	3124	AA3B	126	W0TG	50	K3WW	46	W0VX	36
K4WW	793	3642	K3WW	125	W0EJ	50	G4HZV	46	N6WM	36
NA4J	791	2741	K1ESE	123	VK7CW	50	W9ILY	45	N5RZ	36
W4WF	782	3194	W0VX	119	VE3KI	50	SM0HEV	45	N5PHT	36
N8BJQ	762	6761	9A1AA	119	NU7Y	50	PG4I	45	K3WW	36
WT3K	761	2921	AC4CA	118	NA8V	50	K3WJV	45	K1SM	36
W1RM	758	7218	N5IR	117	NA6O	50	IN3FHE	45	DL6KVA	36
N4ZR	758	3857	N5RZ	115	N8BJQ	50	W4VQ	44	AC4CA	36
K7QA	754	3836	N5PHT	114	N7WY	50	NA8V	44	N5RR	35
K3PP	744	4039	N1EN	112	N7US	50	K3PP	44	K1ESE	35
N1DC	735	3882	EA8OM	111	N5RZ	50	K1ESE	44	UT3UZ	34
K6NR	731	3077	K3WJV	107	N5RR	50	IK0YVV	44	ON4CAS	34
I2WIJ	726	2737	W1UU	106	N5PHT	50	SM7IUN	43	NA8V	34
F6HKA	720	6612	N2UU	106	N5IR	50	N5RZ	43	N1EN	34
K8AJS	718	3672	4X6GP	106	N4ZR	50	N2UU	43	KR2Q	34

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Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
K9WX	709	3768	VK7CW	105	N2UU	50	M0RYB	43	IK0YVV	34
K2TW	693	2841	NA8V	105	N2RC	50	K1SM	43	4X6GP	34
AC3BU	692	2863	N5RR	105	N1EN	50	I5EFO	43	VK7CW	33
AA5JF	656	1501	N7US	104	N1DC	50	G3LDI	43	N5IR	33
N2UU	653	4665	I5EFO	103	KY7M	50	DL5DBY	43	K0VBU	33
W9ILY	640	5140	IK0YVV	101	KU7Y	50	DK9PY	43	I5EFO	33
WN7S	631	2817	AE1T	101	KR2Q	50	4X6GP	43	W1UU	32
KR2Q	625	2597	K3PP	100	KE4S	50	N5RR	42	N7US	32
KC7V	619	4310	ON4CAS	99	KC7V	50	N5IR	42	N1DG	32
K8JQ	600	4146	KR2Q	99	K9WX	50	K8AJS	42	KC7V	32
DL6KVA	598	4644	K8AJS	99	K9OZ	50	K3JT	42	I5IYJ	32
AF4T	598	1616	EA1WX	99	K8JQ	50	G3YLA	42	DK9PY	32
VE3TM	596	1919	WT9U	98	K8AJS	50	EA8OM	42	WA9LEY	31
WW3S	592	1092	UT3UZ	98	K7QA	50	EA4OR	42	RM2D	31
K1DJ	585	3431	K0VBU	98	K6NR	50	AC4CA	42	NG7M	31
K3ZA	585	1207	N6WM	96	K5IX	50	SQ9S	41	N2UU	31
K1EBY	579	3168	WA9LEY	95	K5CM	50	OZ3SM	41	SM0HEV	30
K6KM	563	1684	N4ZR	93	K5AX	50	LB6GG	41	OK1RP	30
WA4JUK	562	2956	IN3FHE	92	K4WW	50	HB9ARF	41	NA6O	30
NR3Z	555	1807	SM0HEV	91	K4GM	50	G4NVR	41	N7RD	30
KE8G	547	2892	K1DJ	91	K3WW	50	W0VX	40	N2RC	30
W1AJT	544	1171	DK9PY	91	K3WJV	50	UW7LL	40	KR3E	30
NJ3K	542	2123	K3JT	90	K3SEN	50	RM2D	40	K8AJS	30
W3WHK	537	2433	K1DW	89	K3JT	50	N4ZR	40	K3WJV	30
EA4OR	537	1463	NG7M	88	K2QB	50	N1EN	40	WT9U	29
K1SM	534	3376	N7WY	88	K1ESE	50	MI0WWB	40	WF7T	29
W2NRA	531	2260	DJ1YFK	88	K1EBY	50	M0DHP	40	OZ3SM	29
WS1L	531	1774	N2RC	87	K1DW	50	K1DJ	40	N4ZR	29
LB6GG	527	1766	N1DG	87	K1DJ	50	I2WIJ	40	KT5V	29
K1ESE	521	4695	F6JOE	87	K0VBU	50	G4ILW	40	K3JT	29
N4FP	517	1723	N7RD	86	K0MP	50	G4DRS	40	K1DW	29
W1UU	513	3584	KY7M	86	IK0YVV	50	F5SGI	40	IT9VDQ	29
N2WK	509	3059	KR3E	86	I5EFO	50	DF7TV	40	9A2AJ	29
W0VX	506	4677	KC7V	86	G4BUE	50	SP2R	39	N5AW	28
KV8Q	506	2039	RM2D	85	F6JOE	50	SM2CEW	39	K7QA	28
K4TZ	504	2020	PG4I	85	F6HKA	50	RT5P	39	K6NR	28
KT5V	498	2684	CT1DRB	85	F5MNK	50	PA3HEN	39	K5ZD	28
W6LAX	497	1520	N1DC	84	EA8OM	50	LA8OM	39	I2WIJ	28
NF8M	492	1393	I5IYJ	83	DL6KVA	50	K5ZD	39	DJ1YFK	28
VE3MV	486	2553	AD1C	83	DK9PY	50	IT9MUO	39	WE5P	27

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Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
OZ3SM	484	1821	K5ZD	82	AE1T	50	G3WZD	39	W4WF	27
K2YR	479	1357	G3LDI	82	AD1C	50	AE1T	39	N7WY	27
AF5J	453	925	OZ3SM	81	AC4CA	50	WT9U	38	KJ9C	27
K0TC	451	2413	K9WX	81	AB7MP	50	WT3K	38	K4GM	27
W0TG	449	2149	K4HQB	81	AA8TA	50	WA4JUK	38	K3PP	27
AG4EA	447	1271	WA4JUK	80	AA3B	50	UT3UZ	38	IN3FHE	27
WA2USA	445	1439	NA6O	80	WT3K	49	PA5KT	38	WT2P	26
KA1YQC	431	751	K5AX	79	WN7S	49	N1DC	38	WA4JUK	26
KT4XN	429	1678	DL8PG	79	WB5BKL	49	IT9VDQ	38	PG4I	26
SM0HEV	427	1559	N2WK	78	WA5LXS	49	EA3FZT	38	N1ZX	26
9A1AA	420	3390	KJ9C	78	WA3GM	49	DM6EE	38	KU7Y	26
K4GM	404	3073	K1EBY	78	W8FN	49	DK1WI	38	K9WX	26
W1EQ	403	1281	N1ZX	77	W8DN	49	CT1DRB	38	K9OZ	26
PA5KT	402	1636	K4GM	77	W4WF	49	AC3BU	38	K5CM	26
M0RYB	398	1441	IT9VDQ	77	W4PM	49	SV2BBK	37	K4HQB	26
W2VM	393	1911	I2WIJ	77	W4NBS	49	SP1D	37	K2QB	26
K5YZW	386	1022	G4HZV	77	W4ER	49	SM5IMO	37	K1EBY	26
KB4DE	385	1288	DL5DBY	77	W3WHK	49	PA3BFH	37	K1DJ	26
W8OV	378	1766	WT2P	76	W2NRA	49	N1DG	37	G4DRS	26
DF7TV	366	1168	WF7T	76	W0VX	49	KR3E	37	DF7TV	26
N4CWZ	348	947	SM7IUN	76	VE3TM	49	KR2Q	37	CT1DRB	26
N4KO	348	718	KE8G	76	VE3MV	49	K3MD	37	V31MA	25
WA5LXS	347	1579	KE4S	76	VA7ST	49	K1VUT	37	UW7LL	25
W4NBS	345	1767	K7QA	76	OK1RR	49	K1DW	37	SM7IUN	25
DK9PY	335	2910	LA8OM	74	NN4K	49	F6JOE	37	SM2CEW	25
UR5MM	334	3127	K4WW	74	NJ3K	49	DL4KG	37	PA5KT	25
N5IR	333	3983	HB9ARF	74	NG7M	49	W1UU	36	LA8OM	25
KM4FO	325	1631	K2QB	73	NA4J	49	PF5X	36	KE8G	25
K9OZ	321	2837	IT9MUO	73	N7RD	49	ON4VT	36	K4WW	25
AA8R	307	1207	G4NVR	73	N6WM	49	N2WK	36	IT9MUO	25
G3SZU	307	450	KG9X	72	N5AW	49	F5IYJ	36	HB9ARF	25
F5SGI	302	695	WE5P	71	N2WK	49	EA5IUY	36	DK1WI	25
K3SEN	299	2189	LB6GG	71	N1ZX	49	EA1WX	36	W0TG	24
G4HZV	299	1455	KT5V	71	KV8Q	49	9A2AJ	36	PY4XX	24
HB9ARF	295	1927	K4HR	71	KT5V	49	PA7RA	35	NA4J	24
K9CPO	289	696	K1VUT	71	KM4FO	49	ON4CAS	35	N2WK	24
G3LDI	288	1835	DK1WI	71	KK0ECT	49	N7WY	35	N1DC	24
OK1RR	286	3020	W4WF	70	KJ9C	49	N7US	35	KG9X	24
W2CDO	286	936	W2NRA	70	KG9X	49	K0VBU	35	G3LDI	24
W2XYZ	285	944	VE3MV	70	KE8G	49	G4LPP	35	EA4OR	24

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Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
KF8O	284	1168	N5AW	70	KE4RG	49	DD7CW	35	DL4FDM	24
NN4K	282	2297	M0RYB	70	KC8J	49	VE3MV	34	WW3S	23
K5QR	280	1456	G4DRS	70	KB4DE	49	N5AW	34	WT3K	23
W4VQ	274	3165	WT3K	68	K6RB	49	M0NGN	34	LB6GG	23
G3WZD	266	945	SQ9S	68	K6KM	49	KE8G	34	KE4S	23
W7GF	264	1238	SM2CEW	68	K6DGW	49	K7QA	34	K8JQ	23
AI60	262	2012	F5MNK	68	K5ZD	49	K4HQB	34	K4HR	23
AA8TA	259	2004	EA4OR	68	K5QR	49	K1EBY	34	G4NVR	23
N5XE	256	1668	W3WHK	67	K4TZ	49	IK1YRA	34	G4HZV	23
W8XC	256	879	UW7LL	67	K4HR	49	IK0NOJ	34	G3WZD	23
KE6K	253	1090	G3WZD	67	K4EES	49	DL4FDM	34	AC3BU	23
KB8GAE	249	1429	DF7TV	67	K4AFE	49	W4WF	33	AA5JF	23
K4EES	249	919	AC3BU	67	K3PP	49	W4PM	33	W7GF	22
KC8J	248	1294	9A2AJ	67	K3MD	49	W2NRA	33	W2NRA	22
WA5PFJ	245	853	PA5KT	66	K2TW	49	VE3TM	33	VE3TM	22
SQ9S	236	995	NA4J	66	K1VUT	49	PY4XX	33	SQ9S	22
DJ1YFK	235	2049	VA7ST	65	K1SM	49	N6WM	33	KO8SCA	22
KE4S	231	2447	V31MA	65	K0TC	49	KG9X	33	K6KM	22
EA3FZT	230	921	OK1RP	65	EA4OR	49	KC7V	33	K5QR	22
RT5P	224	495	SM5IMO	64	AI60	49	K4WW	33	K1VUT	22
EA5IUY	219	773	K9OZ	64	AF4T	49	NR3Z	32	DL4KG	22
PF5X	216	635	F5IYJ	64	AC6ZM	49	NJ3K	32	AF4T	22
W8DN	214	1505	CO8NMN	64	AC3BU	49	N2RC	32	AA8R	22
N7SU	214	668	M0DHP	63	9A1AA	49	KY7M	32	WN7S	21
G4NVR	213	1402	K3SEN	63	WM6Y	48	KJ9C	32	W4PM	21
PA3HEN	208	528	K3DMG	63	W8OV	48	KE4S	32	W4NBS	21
KE4RG	207	1213	K8JQ	62	W6LAX	48	K5QR	32	VA7ST	21
WU6P	201	423	AA8R	62	W2VM	48	K4GM	32	SP1D	21
K8RJW	200	766	WN7S	61	W1AJT	48	I5IYJ	32	PA7RA	21
PY4XX	199	940	ON4VT	61	UR5MM	48	F5MNK	32	NR3Z	21
M0NGN	197	389	K5CM	61	NR3Z	48	DK3WW	32	NN4K	21
W6TN	188	1034	W4PM	60	N5XE	48	CO8NMN	32	M0RYB	21
W6GMT	177	499	PY4XX	60	N4FP	48	AA5JF	32	M0DHP	21
SP1D	174	1047	DM6EE	60	KT4XN	48	W3WHK	31	K6DGW	21
NA8Q	174	184	DL4FDM	60	KR3E	48	W1AJT	31	K3SEN	21
AB7MP	172	1362	W4NBS	59	KO8SCA	48	VK7CW	31	DM6EE	21
F5IYJ	165	810	VE3TM	59	KE6K	48	V31MA	31	DL5DBY	21
SM7IUN	161	967	NR3Z	59	KB8GAE	48	OK1RP	31	CO8NMN	21
NU7Y	149	1621	KO8SCA	59	KA9BHD	48	N1ZX	31	AC6ZM	21
WB5BKL	147	1499	G4ILW	59	K4QS	48	KO8SCA	31	W4ER	20

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Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
G4LPP	142	689	PA7RA	58	K4HQB	48	K5AX	31	W3WHK	20
MI0WWB	142	641	NN4K	58	K3DMG	48	DL8PG	31	K2TW	20
CO8NMN	139	2468	AA5JF	58	IT9VDQ	48	DL1NKB	31	JF2IWL	20
N7RD	133	1478	K4QS	57	IT9MUO	48	DF4ZL	31	F5IYJ	20
W2TT	132	574	W6KY	56	I2WIJ	48	WS1L	30	AI60	20
M0DHP	130	667	SP1D	56	EA1WX	48	WN7S	30	VE3MV	19
DL4KG	130	513	PF5X	56	DL8PG	48	WA9LEY	30	PF5X	19
K1IG	130	353	K6RB	56	AF5J	48	NG7M	30	NJ3K	19
SV2BBK	129	452	K6NR	56	AF3K	48	NA6O	30	N5XE	19
NG7M	128	3923	G3YLA	56	AA5JF	48	N5PHT	30	KV8Q	19
VE6JF	126	976	W2VM	55	4X6GP	48	K3SEN	30	KB8GAE	19
4X6GP	125	1856	W0TG	55	WW3S	47	G3SZU	30	K0TC	19
KJ4M	117	1265	M0NGN	55	WT8P	47	G0ELZ	30	BD6OT	19
PG4I	99	871	K2TW	55	WS1L	47	DL5JQ	30	WM6Y	18
VA3DKL	88	98	K0TC	55	WE5P	47	AC6ZM	30	WB5BKL	18
DM6EE	84	855	W8DN	54	WA2USA	47	NA4J	29	WA3GM	18
N1DG	80	549	K5QR	54	W6TN	47	N7RD	29	W8OV	18
G4DRS	78	1353	EA3FZT	54	W2NO	47	K9WX	29	W8FN	18
K0MP	72	1781	DL4KG	54	W1EQ	47	K4QS	29	W8DN	18
G4BUE	70	3876	AC6ZM	54	VE6JF	47	K2TW	29	ON4VT	18
DL1NKB	65	186	W8FN	53	VE1OP	47	K2QB	29	NU7Y	18
AA0YY	58	62	NJ3K	53	SM5IMO	47	AA8R	29	KE6K	18
G0ELZ	54	248	MI0WWB	53	PY4XX	47	WT2P	28	K4AFE	18
AJ1DM	52	915	W8XC	52	ON4CAS	47	WF7T	28	IK0NOJ	18
OH2BN	45	1323	KT4XN	52	OH2BN	47	SV9RNG	28	EA3FZT	18
SP2R	42	555	IK0NOJ	52	NF8M	47	NN4K	28	W8XC	17
WT8P	41	547	F5SGI	52	LA8OM	47	KA1YQC	28	W2VM	17
WE5P	39	1235	KV8Q	51	KY0Q	47	K8JQ	28	SV2BBK	17
BD6OT	25	130	KU7Y	51	KJ4M	47	K4HR	28	SM5IMO	17
G4ILW	22	815	K4AFE	51	KF8O	47	AF4T	28	N4FP	17
N1EN	17	2493	AF4T	50	K3ZA	47	AD1C	28	MI0WWB	17
AA0O	7	487	WW3S	48	K2YR	47	WW3S	27	M0NGN	17
K4NE	6	90	WS1L	48	I5IYJ	47	WE5P	27	KT4XN	17
LB2TB	4	4	SV2BBK	48	HB9ARF	47	W8FN	27	KP4AF	17
IK1YRA	3	318	RT5P	48	G4HZV	47	W2VM	27	KK0ECT	17
G0DJA	2	31	KB8GAE	48	DK1WI	47	VA7ST	27	K5YZW	17
AC4CA	0	4479	PA3HEN	47	CO8NMN	47	SV2BXA	27	K0MP	17
N5PHT	0	4303	N3FZ	47	AJ1DM	47	N4FP	27	G4ILW	17
K0VBU	0	4266	G4LPP	47	AG4EA	47	W8DN	26	DK3WW	17
K1DW	0	4250	W8OV	46	AA8R	47	W2CDO	26	AF3K	17

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Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
N5RR	0	4223	N5XE	46	WA5PFJ	46	W1EQ	26	WS1L	16
K6RB	0	4032	DK3WW	46	W2XYZ	46	K3DMG	26	WA5LXS	16
KJ9C	0	3968	AI60	46	W2CDO	46	GW4MVA	26	WA2USA	16
K5AX	0	3634	W4ER	45	V31MA	46	G0MGM	26	W6TN	16
WT2P	0	3586	PA3BFH	45	UW7LL	46	PA0INA	25	VE6JF	16
NA6O	0	3352	N4FP	45	SP1D	46	K6NR	25	NF8M	16
N2RC	0	3271	G0MGM	45	SM0HEV	46	N1RM	24	N3FZ	16
KY7M	0	3252	EA5IUY	45	RM2D	46	KT5V	24	KM4FO	16
K5ZD	0	3210	AF3K	45	PA5KT	46	KT4XN	24	KB4DE	16
AE1T	0	3206	SP2R	44	OZ3SM	46	K6RB	24	AJ1DM	16
VA7ST	0	3088	DD7CW	44	N4KO	46	BD6OT	24	AG4EA	16
WF7T	0	3060	WA5LXS	43	N7SU	46	AF3K	24	AF5J	16
N7WY	0	3045	W1AJT	43	N4CWZ	46	N3FZ	23	W1AJT	15
F6JOE	0	3002	WB5BKL	42	N3FZ	46	KV8Q	23	NG1R	15
WA9LEY	0	2990	KK0ECT	42	N0PP	46	KB4DE	23	KJ4M	15
IK0YVV	0	2958	KB4DE	42	KC4WQ	46	K9OZ	23	KE4RG	15
K5CM	0	2866	WA3GM	41	K8RJW	46	K5CM	23	KC8J	15
EA8OM	0	2758	W7GF	41	JF2IWL	46	K0TC	23	KA1YQC	15
N5AW	0	2510	KA1YQC	41	G4DRS	46	EA1DP	23	K9CPO	15
N6WM	0	2273	K6KM	41	G3LDI	46	W4NBS	22	G4LPP	15
K4HR	0	2212	K3MD	41	DL5DBY	46	W0TG	22	AB7MP	15
K4HQB	0	2193	IK1YRA	40	CT1DRB	46	NG1R	22	W6LAX	14
W4PM	0	2122	DL5JQ	40	AA0O	46	N5XE	22	W2XYZ	14
K6DGW	0	2122	NG1R	39	WU6P	45	K2YR	22	W2TT	14
AD1C	0	2101	BD6OT	39	W0PHX	45	DL8BH	22	W2NO	14
W6KY	0	2088	AA8TA	39	ON4VT	45	AG4EA	22	W1EQ	14
K4QS	0	2069	W1EQ	38	NG1R	45	W8XC	21	RT5P	14
K2QB	0	2023	K6DGW	37	KA1YQC	45	KB8GAE	21	N7MU	14
EA1WX	0	1961	AG4EA	37	K5YZW	45	JF2IWL	21	N0PP	14
IT9MUO	0	1924	W0EJ	36	G4NVR	45	GD4EIP	21	KF8O	14
K4AFE	0	1909	NF8M	36	F5IYJ	45	F5PBL	21	K8RJW	14
VK7CW	0	1809	KM4FO	36	DF7TV	45	WA2USA	20	K4TZ	14
DL8PG	0	1789	WA2USA	35	AB7RW	45	W8OV	20	K4EES	14
K3DMG	0	1773	W2NO	35	9A2AJ	45	K9CPO	20	K2YR	14
K3MD	0	1734	JF2IWL	35	W3RZ	44	K4AFE	20	G3YLA	14
KU7Y	0	1674	G3SZU	35	SM7IUN	44	W2XYZ	19	F5SGI	14
IT9VDQ	0	1618	DL1NKB	35	SM2CEW	44	WB5BKL	18	EA5IUY	14
KR3E	0	1602	AJ1DM	35	PG4I	44	WA5PFJ	18	AA8TA	14
W4ER	0	1582	W2CDO	34	N7MU	44	WA3GM	18	W3RZ	13
KO8SCA	0	1556	G0ELZ	34	N4GL	44	W6KY	18	W2CDO	13

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Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
V31MA	0	1520	SV9RNG	33	M0RYB	44	W2NO	18	PA3HEN	13
I5EFO	0	1447	KP4AF	33	LB6GG	44	VE1OP	18	PA3BFH	13
DL5DBY	0	1417	K5YZW	33	KH6TU	44	N4KO	18	N4KO	13
SM5IMO	0	1382	K4TZ	33	KD2KW	44	NF8M	18	KH6TU	13
LA8OM	0	1370	K2YR	33	K9CPO	44	G4RCG	18	G3SZU	13
UW7LL	0	1362	WM6Y	32	K1IG	44	AJ1DM	18	DD7CW	13
N1ZX	0	1348	W6TN	32	W6GMT	43	PA0VLD	17	AB7RW	13
RM2D	0	1332	W2TT	32	SQ9S	43	N4GL	17	WT8P	12
WM6Y	0	1308	VE1OP	32	N5KW	43	KF8O	17	WA5PFJ	12
KK0ECT	0	1275	KF8O	32	N1RM	43	K8RJW	17	KA9BHD	12
IN3FHE	0	1253	K4EES	32	KI3F	43	WA5LXS	16	K3ZA	12
WA3GM	0	1230	DF4ZL	32	DJ1YFK	43	W4ER	16	K1IG	12
CT1DRB	0	1146	AF5J	32	UT3UZ	42	W2TT	16	AA0O	12
N3FZ	0	1143	NU7Y	31	N7ID	42	K6KM	16	W0PHX	11
ON4CAS	0	1131	N4KO	31	IN3FHE	42	K5YZW	16	SP2R	11
SM2CEW	0	1114	K9CPO	31	G3WZD	42	KU7Y	15	N7SU	11
F5MNK	0	1111	SV2BXA	30	W2TT	41	KE4RG	15	N4GL	11
UT3UZ	0	1035	KE4RG	30	G3YLA	41	K1IG	15	KY0Q	11
AF3K	0	983	KC8J	30	DL4FDM	41	AF5J	15	KC4WQ	11
W2NO	0	961	WA5PFJ	29	PF5X	40	AA8TA	15	IK1YRA	11
DK1WI	0	908	W2XYZ	29	NA1VT	40	K4TZ	14	WU6P	10
K5IX	0	892	K8RJW	29	KR4WI	40	K4EES	14	SV9RNG	10
G3YLA	0	884	W6LAX	28	EA3FZT	40	K0MP	14	KI3F	10
9A2AJ	0	841	N4GL	28	WA5BDU	39	KM4FO	13	K1OJ	10
I5IYJ	0	837	KE6K	28	F5SGI	39	KC8J	13	GD4EIP	10
NG1R	0	828	KA9BHD	28	DM6EE	39	WM6Y	12	G0ELZ	10
VE1OP	0	768	GW4MVA	28	W4MDV	38	W6LAX	12	DL8BH	10
KA9BHD	0	755	EA1DP	28	NA8Q	38	KP4AF	12	DL5JQ	10
W0EJ	0	754	W3RZ	27	K1LHO	38	KK0ECT	12	DL1NKB	10
KY0Q	0	752	K0MP	27	DL4KG	38	KI3F	12	W6GMT	9
ON4VT	0	719	DL8BH	27	WB4OMM	37	K6DGW	12	SV2BXA	9
OK1RP	0	701	PA0INA	26	W9KM	37	K3ZA	12	N7ID	9
KC4WQ	0	694	N1RM	26	PA7RA	37	AA0O	12	N1RM	9
JF2IWL	0	674	N0PP	26	NF5KF	37	ON6PJ	11	KG5VK	9
DL4FDM	0	646	GD4EIP	26	KB8PGW	37	KJ4M	11	F5PBL	9
N5KW	0	639	F5PBL	26	IK0NOJ	37	KA9BHD	11	WX5CW	8
KH6TU	0	631	K5IX	24	EA5IUY	37	G0DJA	11	WB4OMM	8
N4GL	0	574	K1IG	24	DD7CW	37	W7GF	10	W4MDV	8
N0PP	0	550	AB7MP	24	MI0WWB	36	W6TN	10	NA1VT	8
N7MU	0	536	VE6JF	22	M0DHP	36	W3RZ	10	KD2KW	8

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Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
PA7RA	0	518	NF5KF	22	DK3WW	36	W0EJ	10	G4RCG	8
G0MGM	0	495	KJ4M	22	OK1RP	35	NF5KF	10	EA1DP	8
DK3WW	0	491	G4RCG	22	GD4EIP	35	NA1VT	10	AA0YY	8
N1RM	0	490	AA0O	21	G0MGM	35	N5KW	10	SM7CIL	7
W3RZ	0	478	K3ZA	20	W8EH	34	VE6JF	8	OK4MM	7
PA3BFH	0	477	KI3F	18	G4LPP	34	SM7CIL	8	N5KW	7
DD7CW	0	472	KC4WQ	18	KI7RS	33	N0PP	8	KI7RS	7
W0PHX	0	426	W0PHX	17	KG5VK	33	KD2KW	8	GW4MVA	7
KD2KW	0	413	PA0VLD	17	G4ILW	33	K5IX	8	PA0INA	6
DL5JQ	0	381	N7MU	16	M0NGN	32	AI60	8	N4CWZ	6
IK0NOJ	0	366	AB7RW	16	G3SZU	32	NU7Y	7	KR4WI	6
N7ID	0	311	NA1VT	14	VA3DKL	30	KG5VK	7	K4NE	6
KI3F	0	308	N7SU	14	SV2BBK	30	OK4MM	6	G0DJA	6
NA1VT	0	306	N5KW	14	PA3HEN	29	K1LHO	6	DF4ZL	6
AB7RW	0	302	G0DJA	14	PA3BFH	29	N7SU	5	WA5BDU	5
NF5KF	0	289	KY0Q	13	K8MP	29	N4CWZ	5	W9KM	5
KB8PGW	0	284	KH6TU	13	KG5U	28	KE6K	5	PA0VLD	5
KR4WI	0	255	WT8P	12	K4NE	28	KC4WQ	5	NA8Q	5
WA5BDU	0	243	ON6PJ	12	IK1YRA	28	AB7MP	5	K1LHO	5
W9KM	0	236	KD2KW	12	G4RCG	28	W6GMT	4	W8EH	4
W4MDV	0	225	WU6P	11	SP2R	27	NA8Q	4	VA3DKL	4
SV2BXA	0	211	W6GMT	11	DL5JQ	27	LB2TB	4	ON6PJ	4
GD4EIP	0	199	SM7CIL	11	AA0YY	27	AB7RW	4	KM3A	4
K1LHO	0	192	KG5VK	11	N1DG	24	WT8P	3	LB2TB	3
GW4MVA	0	192	K1OJ	11	G0ELZ	24	W0PHX	3	KG5U	3
DF4ZL	0	177	WX5CW	10	SV9RNG	23	KY0Q	3	K8MP	3
WB4OMM	0	169	WB4OMM	10	AF9W	23	KR4WI	3	DD5KG	3
SV9RNG	0	164	OK4MM	10	KP4AF	22	N7MU	2	AF9W	3
KG5VK	0	163	N7ID	9	DL1NKB	21	N7ID	2		
W8EH	0	149	N4CWZ	9	WX5CW	20	KB8PGW	2		
F5PBL	0	134	W4MDV	8	RT5P	18	K4NE	2		
G4RCG	0	131	K1LHO	8	GW4MVA	18	DD5KG	2		
EA1DP	0	131	NA8Q	7	KM3A	17	AA0YY	2		
DL8BH	0	115	AA0YY	7	SV2BXA	13	WX5CW	1		
KI7RS	0	110	KR4WI	6	SM7CIL	13	WU6P	1		
KG5U	0	93	KI7RS	6	OK4MM	13	WA5BDU	1		
K8MP	0	89	K4NE	6	F5PBL	13	W9KM	1		
KP4AF	0	88	KB8PGW	5	EA1DP	13	W4MDV	1		
PA0INA	0	86	W9KM	4	DL8BH	11	KM3A	1		
AF9W	0	59	LB2TB	4	DD5KG	10	K1OJ	1		

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Call	ACA	CMA	Call	DX	Call	WAS	Call	WAE	Call	WAZ
WX5CW	0	49	DD5KG	4	BD6OT	10				
OK4MM	0	40	WA5BDU	3	G0DJA	7				
PA0VLD	0	37	W8EH	3	DF4ZL	7				
SM7CIL	0	35	VA3DKL	3	PA0INA	3				
KM3A	0	33	KM3A	2	K1OJ	3				
K1OJ	0	29	KG5U	2	PA0VLD	2				
ON6PJ	0	21	K8MP	2	ON6PJ	2				
DD5KG	0	18	AF9W	2						

New Members

Trung Nguyen W6TN

With great pleasure we welcome the following new members to CWops:

CWops	Call	Name	CWops	Call	Name	CWops	Call	Name
2865	AA4BI*	Tim	2871	KJ5R*	Dave	2877	G5VZ*	Chris
2866	IK1YRA*	Carl	2872	KE6JAC*	Al	2878	AE0Q	Glenn
2867	N2QV*	Rick	2873	OK2ZV*	Vit	2879	WR4T*	Ted
2868	N0HJZ*	Rich	2874	NA8Q*	Rob	2880	SM6XHM/SE6J	Johan
2869	NG2J*	Jim	2875	KB3SAR*	Jason	2881	YO4AAC	George
2870	KB6VME*	Steven	2876	LZ2NG	Dario			

*Life Member

Current Nominees

As of April 8, 2021: **Need Sponsors:** K7ENH, KE8AQW
Invitations Extended: AB3AH, K7VW, WB8YHD

For more details about nominees and up-to-date status, check the "Membership" then "Members only" page on the website: <http://www.cwops.org>. For information about joining CWops, check the "Membership" page on the website: <http://www.cwops.org>

Notes: If you have updated your personal info, e.g., new QTH, new callsign, or additional callsign, please send it to membership@cwops.org so I can add it to the roster. Vice versa, if your callsign becomes inactive I can remove it, too. Then the roster will be accurate and current for our usage.

73,

Trung W6TN, Membership Manager



QTX Report

Enjoying the Art of Conversational CW

[Bruce Murdock K8UDH](#)

One of my favorite parts of QTX is reading the comments each month from our QTX ragchewers. CW ragchewers enjoy getting on-the-air and their comments are fun to read, like "CW is the best social media, and no ads," and "I am working many of the same guys and getting to know them on a deeper level. Most enjoyable," and "The more I QTX, the more I enjoy conversational CW," and "Two QSOs were with hams licensed less than one year." Regarding the last comment, it's great fun to have ragchew QSOs with newly licensed hams and it's gratifying to see new hams become active CW operators. There's no doubt that CW Academy and the Giving Back program have a lot to do with that. From my perspective, I see CWops initiatives like CW Academy, Giving Back, the SST, and CWTs working together to keep CW alive and well.

Also, I can't help but mention that in March we added seven new ragchewer (QTX) participants. Most every month we add someone, but this is a record during my last 18 months as QTX Manager. The new QTXers are Joe KK5NA, Javan W8UA, Stew GW0ETF, Dave VA3DKL, Mark AA0YY, Mui M0MUI, and Tim GW4VXE. Welcome to the "Art of Conversational CW" and have fun with CW.

Comments from QTX Submissions

KK5NA: First of many I hope after a long dry spell for long QSOs.

K6DGW: Several of my mini-QTX were mini because I didn't have enough time for a longer Q. The rest were ended by my QSO partner. I'm beginning to wonder if something about me or my sending is driving them off

MI0WWB: Just for the record!

N6HCN: So many fine QTX with great friends, and new ones every month. Can't thank you all enough. CW is the best social media, and no ads!

N0BM: Feedline problems kept me off the air most of February and March. Despite that, had several great QSOs. Most interesting was with a NY ham, who had served as a USN radioman in Guam. He took his service call NPN and used it as a vanity suffix for his amateur call. Great guy, good talk and he had a number of rigs on his desk and we discussed the pros and cons of many of them.

GW0ETF: 'Lifetime' for me is the beginning of this year...;-)

VA3DKL: I had more time to get on the radio for some ragchews this month, and hoping to get even more next month. I had a nice marathon QSO with Ben W4LRB who is working toward the marathon award. Hoping to do more of these! It was a lot of fun.

AC8RG: I am having great chats with many good folks who are talented CW operators.

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W1AJT / VE3UUT: Two QSOs were with hams licensed less than one year.

AA0YY: Maybe it's just being retired with more time to operate, but I am working many of the same guys and getting to know them on a deeper level. Most enjoyable. Still hoping to stumble across you Bruce!

WS1L: Most interesting QSO of the month was with Eric, NI4E. We swapped stories of our radio cats (his Roscoe and my Jules) and worked each other with bugs made a century apart - His 1918 Blue Racer and my 2020 Begali Intrepid. It's quite impressive when two pieces of technology made over 100 years apart are still fully compatible.

W9EBE: Due to various factors, my radio time in March was less than usual. However, I still enjoyed some fine ragchews this month!

AA5AD: Lots of great rag chews this month, hope to keep the run going. Enjoyed catching up with Del, W8KJP, who is a great operator, on a rag chew that lasted almost 30 minutes. Had back-to-back rag chews with 2 Missouri stations, W0ITT Gary and NN0D Alan on the 26th. The more I QTX, the more I enjoy conversational CW.

G3WZD: March was a good month and most of the MQTXs were during the Giving Back sessions. 73 de G3WZD

KC0VKN: Boy, condx were variable this month, and the time change got my skedmates!

WA2USA: My longest Q's are usually with a buddy from where I grew up in upstate New York on the Canadian border. They still have snow in the woods. Our Q's usually last anywhere between 45 minutes to an hour and sometimes longer.

AJ1DM: Happy to have my K3 back from Watsonville. It makes the rag-chewing so much more enjoyable! 73 de John AJ1DM

KB6NU: Getting closer to my goal of one QTX QSO per day.

K8UDH: It was a good month, not so much by my personal QTX score, but by the impact that the QSOs are having. Former CW Academy students are getting really good at conversational CW.

Awards and Medals for 2021

Medals for 2021 are awarded for three different levels in QTX.

Gold – 400 QTX QSOs

Silver Medal – 300 QTX QSOs

Bronze – 200 QTX QSOs

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John K1ESE is now in the lead with 239 QTX QSOs while Joe KC0VKN is close behind with 219 QSOs. Both are already at the Bronze Medal level after only three months. Nice job.

QTX for March 2021

Call	QTX	Call	QTX	Call	QTX	Call	QTX
K1ESE	93	N6HCN	22	AA5AD	10	GW0ETF	1
WS1L	68	KG5IEE	15	W8UA	8	KK5NA	1
KC0VKN	65	K4AHO	14	K5YQF	7	M0MUI	1
F5IYJ	37	AA0YY	13	GW4VXE	5	N0BM	1
N5IR	31	AC8RG	12	SV2BBK	3	N5LB	1
N8AI	31	K8UDH	12	VA3DKL	3	W1AJT	1
KB6NU	28	W9EBE	12	K6DGW	2	W3WHK	1
WA2USA	23	AJ1DM	11	G3WZD	1		

MQTX for March 2021

Call	MQTX	Call	MQTX	Call	MQTX	Call	MQTX
N8AI	54	WS1L	15	KG5IEE	8	N0BM	3
AA0YY	26	K6DGW	13	N6HCN	8	K5YQF	2
W2USA	23	G3WZD	12	AC8RG	7	W1AJT	2
K1ESE	20	W9EBE	12	GW4VXE	6	W3WHK	2
SV2BBK	18	GW0ETF	11	MI0WWB	4	W8UA	2
AA5AD	16	K4AHO	11	VA3DKL	4	K8UDH	1

2021 Totals for QTX

Call	QTX	Call	QTX	Call	QTX	Call	QTX
K1ESE	239	N6HCN	56	K6DGW	10	G3WZD	3
KC0VKN	219	K4AHO	47	N5LB	9	VA3DKL	3
WS1L	161	KG5IEE	47	W3WHK	9	W1AJT	3
N8AI	132	K5YQF	37	W8UA	8	K1BZ	2
K9OZ	124	AJ1DM	31	KF9VV	7	W3PNM	2
N5IR	114	K8UDH	30	GW4VXE	5	GW0ETF	1
F5IYJ	98	AA5AD	23	N0BM	4	KK5NA	1
WA2USA	88	AC8RG	16	N3FZ	4	M0MUI	1
KB6NU	86	AA0YY	13	N5PHT	4	MI0WWB	1
W9EBE	64	EA2AJB	10	SV2BBK	4		

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2021 Totals for MQTX

Call	MQTX	Call	MQTX	Call	MQTX	Call	MQTX
N8AI	188	KG5IEE	35	W3WHK	10	N3FZ	4
SV2BBK	72	K4AHO	31	KF9VV	8	VA3DKL	4
WS1L	57	AA0YY	26	K1BZ	7	AB7MP	2
W2USA	55	G3WZD	25	K5YQF	7	AJ1DM	2
K1ESE	48	MI0WWB	18	W1AJT	7	N5PHT	2
AA5AD	47	AC8RG	17	GW4VXE	6	W8UA	2
W9EBE	46	N6HCN	16	N0BM	6		
K6DGW	40	GW0ETF	11	K8UDH	4		

Thanks for supporting the CWops QTX Program. I hope you thoroughly enjoy CW. Comment from above -- "CW is the best social media, and no ads".

73,

Bruce K8UDH, QTX Manager

My Story: New Member Biographies

Vít Kunčar, OK2ZV

I want to say thank you to Lada OK2PAY, Vitek OK5MM, Klaus DL8TG, William MI0WWB, Duncan G3WZD and Gert PA3AAV who nominated and sponsored my membership to CWops. I'm honored to be a new member of CWops Club.

I've been doing ham radio since 1976. It all started with attending the tech club at the elementary school when I was 10. Back then, the club was led by Franta OK2PCS. After a year, I joined the radio club OK2KRK led by Franta's brother Jarda OK2PGG (now OK2GG) and his then-wife Jitka OK2DGG.

We focused on shortwave bands and amateur radiosport



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called Multi-discipline defence radio contest. The contest featured four events: transmitting and receiving a Morse code, working on radio stations in a group, rifle shooting from 50m distance and orienteering.

In 1981, I became a member of our national team and represented Czechoslovakia across Eastern Bloc. I made a lot of friends during my active years in Czechoslovakia's national team, and I'm still in contact with plenty of them either personally or on amateur radio bands (OM3BH, OK2BFN, SP4Z etc).

In 1986, I got my first concession - OL6BES. I could be active only on 160m, power 10W. In 1990, I got an OK2PSZ licence and since then, I am active on all shortwave bands. I've also lived in Albania for three years. Between 1993-1996 I was active under a call sign ZA/OK2PSZ and then ZA1AJ.

After coming back from Albania, I settled up in my born town - Uhersky Brod. I focus on shortwave bands, mainly DX stations and I compete in ham radio from time to time. Over the years, I've had plenty of radio transceivers in my ham shack, from QRP to 100W versions. The majority of transceivers that I have are low power under 100W. As a proper radio amateur, I'm still playing with my antennas and trying new settings.

Apart from amateur radio, my hobbies are Orienteering and long runs in nature. I've been doing orienteering since I was a little kid and I am also an active member of Luhacovice's orienteering team. It's a beautiful sport that balances the long hours in front of the radio :). During those long runs in the forests, an Irish setter Erie makes the perfect companion.

The biggest supporter of my ham radio hobby is my wife Jana. We've been together for over 28 years and I cannot imagine all the beautiful moments in front of the radio without her. I also have three daughters, but sadly, they are not radio amateurs. But that's alright, they have their own nice hobbies and interests.

Joe W. Riggs, AD4UM

First off, I would like to thank all my CW ops advisors, Dennis K2SX, Ron VE3FXX and Buz AC6AC and to my sponsors Tim W7EEE, Jim WT8P and Joseph KH6FHI for helping me along this road to better CW.

As a young teenager interested in electronics, I often would read about amateur radio in our set of World Book Encyclopedias. These were the days of no internet, three TV stations and a school library to get books on various subjects. My family had an old AM/FM "three



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transistor" radio with out of tolerance components which allowed me to tune the upper end of the commercial AM band and discover funny sounds, short and long tones in various combinations. Finally I realized I had wandered into the CW portion of the 160 meter band.

Ah, more questions now, how does one get a radio to operate on this band, is there licensing involved, and how do I do all of this? From this radio I also realized that signals traveled further at night due to the stations that I received at that time. These things all fascinated me such that I began reading all I could about electricity, electronics, and radio.

Growing up on a rural beef cattle farm in East Tennessee did not leave much time or funds for getting into the nitty-gritty of amateur radio, so that notion had to be put on the back burner for a while. After high school I attended college and obtained my degree in electrical engineering and along the way got married. Soon after, kids came along and the usual parent things of school aged kids. By this time, I had started my own engineering consulting business, currently licensed in 10 states to practice electrical engineering.

I finally started working on my license in late 80s and obtained my Novice license with 5 wpm code. Then came the progression up thru Technician, General (13 wpm), Advanced, and finally Extra. I still remember taking my 20 wpm test 8 times. I think I got exactly 1-minute correct copy either; that or the VE team felt sorry for me because they had seen me the last 7 times they tested. No, I did get my 1 minute correct because they came over to me and one of them said in a gloomy voice "Well Joe, guess what?" I thought, "Oh well, here we go again." Then about 5 members of the team said, "You made it!" Yes, a good night that night. (I think I can still find my cassette tapes if anybody has a player.)

I had also begun to assemble a modest 100 watt station so I could join in the fun. As you would expect, I stuck to SSB while letting what CW skills I had slide. I guess I never really enjoyed CW at that time. Moving forward with life, family, kids and their school activities, my radio time became almost nonexistent. Then our kids went off to college and I had some time to pick and choose what activities I wanted to do now that there was more free time in my life.

I applied for and was selected to serve on K2BSA staff at the 2013 and 2017 National Scout Jamborees in West Virginia. We were a staff of about 50 Extra class operators teaching the amateur radio option of the radio merit badge. The Director for K2BSA at the time was Jim Wilson K5ND and in one of his blogs in 2018, he commented that with the solar doldrums we were having that he wanted to get his CW skills back up and he was registering with CW OPS for a class to get back into QRP work. I do not know if he ever did take the class but that information got me to thinking that maybe I should try it. I looked up CW Ops on the internet and read all about the CW academy. I ended up filling out the forms to get registered and the rest is history. I am a much better CW operator since graduating.

I'm 60 now, my wife (KF4CAO) and I have been married 36 years. We still live on the old family farm I grew up on with beef cattle, fences to fix, hay to mow and bale along with engineering work and amateur radio. As I look at retirement, I have a good hobby to keep my mind sharp. Again thanks to all the CW Academy advisors.

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Joe Ferrara, N7IV

I received my first license (WN9IVI) in 1963 while I was in the 9th grade at Nicolet High School in Milwaukee, Wisconsin. After several failed attempts to copy 13 WPM in front of an FCC examiner, I finally earned my General class license in the spring of 1964. At that time, I operated using a Globe Scout Deluxe (75 watts input and XTAL controlled) and a Hallicrafters SX-110.

After college at the University of Wisconsin - Eau Claire, I began my professional life as a high school teacher in Slinger, Wisconsin where I married Alane Donay. That tolerant lady has put up with my hamming for 49 years. In 1972 I took a group of Slinger High School students to Chicago to take their General exams and they challenged me to earn my Amateur Extra. With my students watching, I couldn't afford to blow the code; talk about motivation. In those days I was using a Drake R4-B and Hallicrafters HT-37.



In 1976 I went to Utah State University to work on my Ph.D. When I told the FCC that I had moved to Utah they vacated WA9IVI and assigned WB7FHL to my station. I was despondent; what a lousy call! Some of you could have two or three QSOs while I was still sending that unspeakable callsign. A few months later the FCC offered a deal to Amateur Extra License holders. We could request any unassigned 1X2 call. I wanted a call that was similar to my 9th area call. Since all the 1X2 K and W permutations of WA9IVI were taken, I requested N7IV. Since I didn't want to risk the possibility of another WB7FHL-event, I didn't request a new tenth area call when I moved to Minot, North Dakota in 1991. (Of course, at that time there were no vanity callsigns.)

North Dakota winters can be a little chilly. So far, the nastiest I've enjoyed included temperatures at minus 48 degrees F (-44 C) with winds gusting to 75 MPH (121 KPH). That kind of weather is tough on equipment and I am usually off the air in the summer repairing damage from the previous winter and spring.

Repairing and improving my antenna-farm has become a big part of the hobby for me. Each year, I try to reengineer things to improve survivability. It has been a humbling exercise. Every year prairie winters punish my hubris. ND winters have destroyed every antenna I own at least one time. Each year that destruction is accomplished in new and exciting ways; but the repair and reengineering is always great fun!

Terry Robinson GM3WUX/MM0T

Being blind since birth, I've been interested in things technical as long as I can remember. My career included Electronic, Software and Quality engineering before going self-employed as an information provider in 2000. I retired in 2017 and wonder how I ever found time to work!

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I got my radio licence while I was at school in 1967 and soon acquired a taste for CW. Suffice to say, I've been almost 100% CW ever since. I joined FOC in 1973, at the age of 22, I believe I was one of its youngest members.

I now live in Glasgow. My gear includes a K3, KPA1500 which I can only run to 400 Watts, plus a collection of paddles, bugs, straight keys and one Begali Cootie. I always have a mechanical key and paddle connected so you may hear me using any of these. Part of my collection can be seen in the supplied photo.



I do some contesting, but prefer to spend a bit of time rag chewing and encouraging less experienced operators to develop their liking and skills for CW.

I'm sure many of you will already know me and I look forward to meeting the rest of you on the bands in due course.

Ken Jones, WA7KJ

My picture was taken at Sugarloaf Lookout in the Washington Cascades, where I work for the Forest Service during the summer.

I am a retired airline pilot and US Air Force pilot. The summer lookout job gives me a great opportunity to practice my ham hobby. My rig there is a Xiegu G90 connected to an Alpha Antenna JPole Jr. or EFHW wire. This is a great spot for QSO contacts and SOTA chasing. My season starts around the second week of July and lasts until mid-September.



I am looking forward to the CWT mini contests each Wednesday as well as QSOs from other CWops members.

Chris Pearson, G5VZ / WG5VZ

Around the age of 11, my youngest daughter showed an interest in amateur radio. It seemed

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quite natural as that was just around the age in my own life when ham radio became important. My daughter and her friend progressed through UK Foundation to Intermediate licences and, by the age of 12, they were on the air on CW. Of my other three children, my son has a career in hardware electronics and one daughter in IT development. My other daughter works in health care. I have four grandchildren but they are too young to estimate any influence of ham radio just yet.

I took the RAE in December 1968 but then life intervened. I wasn't licensed until the turn of this new century.



Way back I spent plenty of time in the shack with Bill, G5VZ (SK.) It is his call I now have the privilege to air. I was also fortunate to be at school with the son of Bob, G3ORC (SK) who was Royal Navy and who introduced me to Morse. His son and I used to walk along the road to school making QSOs, dits and dahs with our voices.

Thirty years on and the opportunity to get on the air returned.

Once licensed, I became a Trustee of RAIBC – the charity working for radio amateurs with disabilities – and edited Radial, its journal. I was RAIBC Equipment Manager, providing accessible kit for members with disabilities and often rigging antennas for visually impaired hams.

With a passion for construction of all kinds I found a natural niche in QRP, joining G-QRP Club. I compiled the G-QRP Club Antenna Handbook and collections of projects by Drew Diamond, VK3XU. Visiting Dayton along with George Dobbs, G3RJV (SK) I enjoyed FIDM, and Hamfests at the Hara Arena, helping out on the G-QRP stand. I joined QRP ARCI while there. Also at that time, licensed US Amateur Extra, WG5VZ.

Homebrew QRP confirmed that CW really did get an edge. That led me to re-establish my Morse competence and to join FISTS CW Club. In Dayton I met Pietro and Bruna Begali and fell in love with their keys!

The rest is history, as they say. I edited Keynote for a time; was FISTS' Activities Manager and for three years, beginning in 2013, Chairman of EuCW, The European CW Association. I came up with the idea for Snakes and Ladders, the EuCW activity that is still running – and continues to be popular – years later.

I work as a neuropsychologist, having studied post-grad applied neuroscience. I recognise that neuroscience is at the heart of learning and in developing non-conscious processes. This

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approach has allowed me to develop my own Morse skills, accuracy and speed, and to help others excel. Through this symbiosis of profession and hobby, I came to CWOps with the encouragement of Duncan, G3WZD.

I am proud to now be CWops Member 2877.

David Thompson, AG7TX

My interest in radio began decades ago when I was a teenager. I played with Citizen's Band a bit but really wanted a ham license. Unfortunately I knew no Elmer so my interest was set aside.

I came to amateur radio in April 2019. At breakfast one morning, my friend mentioned that he was studying for the Technician examination. It was something I had looked at a few years before and then set aside when other things demanded my time and attention. I simply said "I'll do it with you." I got my license in April 2019.

My family all lives far from me and I was concerned about the loss of commercial telephony should the unthinkable occur in my region. I saw amateur radio as a way to get a message out should I need to.

Later that year I decided that learning Morse code would be part of being a well-rounded operator. We had a little group that gathered once each week to "practice" but it was really just a social event. So I applied to CWA. I started the first of 2020 and finished the CWA courses in February 2021.

My operations are mostly portable because of noise at home. (It's a common problem.) But I like the outdoors anyway, so this is an excuse to get out, set up a portable station, and work the bands a little. Morse code plays well into my interest in SOTA and POTA and operating a radio while out camping.

Our little group of operators also do expeditions for a variety of events. These include Field Day, the 7 Area QP, the Nevada QP, and many others. We go find a location where we can activate at least two counties. This has led me to a number of beautiful places here in Nevada and a lot of good fun and fellowship. I sometimes write an after-action report and [post it on my weblog](#),



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I am now the CW operator for our little group. I am still learning to run a frequency (the SOTA activations help) and spend some time S&Ping.

I am grateful for my instructors, Jim (N7MU), Mike (N7ID) and Ken (K4EES), and Buzz (AC6AC) and Rich (N4DPM) for their guidance, encouragement, and mentoring. I also made many friends during the CWA coursework and remain in touch with a number of them.

Steve Edenson, KB6VME

It is a real honor to become a member of CWops. I have been a ham since 1985 but have been off the air for much of that time. When COVID hit and I knew I was going to be home I decided that this was the time to do something I had wanted to do for a long time, become CW proficient. I had tried previously by taking a CWops class in 2013, but work and family duties got in the way. A big thank you to AF9W Bob Stephens for introducing me to CWops as my first advisor. Also thank you very much to my newer instructors and mentors David Roy Godden KK6M and Phil Schechter W00J. Thank you to the CWops club for giving me a second chance.

I am a native Californian born in the Bay Area, and now for over 20 years living in Northern San Diego county. I've been married for 29 years and we have one daughter. I am a cell biologist by training and have worked in pharmaceutical drug discovery my entire career. It is a great field where I can interact with extremely smart people and I find that interesting. Currently (pre-COVID) my job has me travelling around the world to visit different labs, and I enjoy that very much.



My other passion besides my family is sailing. I am regularly active with an organization that provides sailing opportunities to disabled sailors, located here in San Diego, called Challenged Sail-

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ors San Diego. In addition to regular sailing days on San Diego Bay we have a schedule of regattas, and I enjoy the competition very much. I have had the pleasure to race against some exceptionally talented sailors at various regattas and look forward to restarting that activity once COVID abates. If you are disabled or know somebody who is that might like to sail, please let me know and I can try to help them find a group to sail with. When not racing with Challenged Sailors San Diego I have a vintage Catalina 30 that I like to sail in San Diego, Mexico, and some of the islands off the coast of California. I have done a few very relaxed FDs from the boat and look forward to expanding the enjoyment of the boat and ham radio by combining them more often.

Hope to work as many of you as possible on the bands!

Johan Lagergren, SM6XHM / SE6J

I first would like to acknowledge my sponsors Eric SM1TDE, Gert PA3AAV and Bob I2WIJ. Thank you, Eric, for your nomination and Gert and Bob for your sponsorships.

The strange thing is – I haven't even been an active ham for more than six months. I got licensed back in 2000 but never really had any time over for the hobby then. See, when my interest in radio first started, I was a young teenager. This was in the early 90's and I had just set up my first CB-station. I had mounted a 15ft loaded vertical on the chimney and surfed the down slope of solar cycle 22 with 5W FM, working the better part of Europe (as I recall it now, that is). This spurred my interest for "heavier drugs". So, I started reading up about ham radio. But the timing was a bit off and I never took the test.

After school, was drafted to military service as a telegraphy radio operator and got my basic CW training. After leaving the army I got a job in SIGINT. This meant additional speed training up to 25 WPM. At this workplace, there was a volunteer examiner for ham license! I got my extra class license as SM0XHM. But I left that job in 2001 to go to medical school. Thus, began my CW-hiatus.

About a year ago I'm on the phone with a friend of mine, Peter SM6WKB. He starts talking about what has happened in ham radio the past 20 years. I remember getting excited about DMR! And better still - there was now a plethora of HT's from cheap to high end. And just like that - I was back in ham radio! Now as SM6XHM.

In the fall of 2020, like a restless child, I was gradually losing interest in DMR. Now my thoughts started wandering about HF. Could I set up a reasonable station at my house? A few months earlier me and my wife opted to take down ALL the trees in the back yard, so there was nowhere to hang any antennas. But I found a Yaesu FT-2000D for sale from a ham in Germany and got it



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shipped over. I hooked it up to a 130 ft end fed random wire sloping from the house down to a 7 ft curtain pole in the garden. And this is still my setup today! Unfortunately, just 100 ft from the tip of the antenna runs an electrified railroad at about 16kV. Needless to say - there is a fair bit of interference!

At this point I am happily striding along with my newfound hobby doing occasional contests (CWT!) and if I'm still this "hooked" in a year - I am seriously going to start looking for a remote site. But I also have a family with two girls to care for and a house that constantly craves attention. Nevertheless, I am honored to be part of a club that keeps CW alive. It is, to me, truly a noble art that deserves to be preserved. I have still long ways to go before I am as proficient as my peers in CWops, but this journey has just begun.

Randy Foltz, K7TQ

First off, I want to thank Jim, N3JT, for sponsoring me, and K4BAI, N0TA, and N3QE for adding their sponsorship. I am proud to be a member of CWops.

In the past twelve months I made 1900 CWT QSOs. Just over half were with my home station consisting of an Elecraft K3, a Force 12 C4SXL at 60 feet and a half sloper for 80 m. The other half of those Qs were with my mobile rig, an Elecraft KX2, KXPA100, and a Scorpion 680 mounted in the center of the bed of a 2002 Ford Ranger.



I was initially licensed in 1975 as WN5QMP, then WB5QMP, while living in Louisiana. In 1996, after passing the Extra written and code test, I became AB7TK in Idaho. A call ending in K isn't the best, in my opinion, so I got the current call of K7TQ. With very few exceptions all of my ham radio activity is CW or RTTY. I've got 220 CW and 135 RTTY DXCC counters. I am a member of the Idaho DX Association and a charter member of the Spokane DX Association where I was president for two years and Vice-president for five more. In 2009 I co-chaired the Pacific Northwest DX Convention in Spokane, WA. In 2013 and 2017 I was the chair of that convention also held in Spokane. For the 2022 convention, the first to be held since 2019, I will co-chair that one with N7GCO.

In addition to operating in DX and domestic contests from the home station, I've multi-operated mobile with WA0WWW three times in the 7QP, five times in the Salmon Run (Washington QSO Party), and once in the Kansas QSO Party; with N7WA once in the Salmon Run and once in the 7QP; and with N7ZUF three times in the Idaho QSO Party. I've got two plaques on the shack wall for the RTTY Roundup, one for the Salmon Run, and one for the Kansas QSO Party.

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I retired from the US Forest Service Research after 25 years of forest road erosion research in western states plus LA, AR, KY, GA, and MN. My major non-radio interest is self-contained bicycle touring which means that you carry all your clothes, cooking and camping gear on the bike without any vehicle support. Tours have been in groups of 10 to 16 riders. My wife and I have done month long tours of Yorktown, VA on the Atlantic coast over the Appalachian Mountains to the Mississippi River in Illinois twice; Eugene, OR to the Pacific coast the south to San Francisco; Route 66 from Chicago to Amarillo, TX; plus a handful of other two week tours.

I look forward to CWT sessions where I can now send RANDY 2885 rather than RANDY ID.

Ted Stoner, WR4T

My amateur radio journey began in the mid-1970s around 4th grade. I purchased an AM/FM, Aircraft, Police band radio, expecting to hear police, fire, and aircraft communications, but then I stumbled onto the local 2 meter repeaters. It took months and a few trips to the library to figure out what amateur radio was all about.

I must admit that I was sorely disappointed and even a bit disillusioned when I discovered what appeared to be an insurmountable obstacle to obtaining an amateur license, having to learn Morse code! How was a 10-year-old ever supposed to do that?



It was not until 7th grade (1978) that my attention returned to Ham Radio. I purchased a Heathkit HR-1680 HF receiver. It was the motivation I needed to finally start learning CW. I had no Elmer and being about 30 miles outside of town there were no local clubs I could access. While I managed to learn the alphabet, things never progressed much further.

In the winter of 1982, my family moved from the hobby farm on the outskirts of Cincinnati to Ft. Thomas, KY only about 3 miles from downtown Cincinnati and I had my driver's license! I was now able to attend the OH-KY-IN ARC classes. In two weeks, my CW instructor John Hugentober, N8FU gave me the novice exam. I received my novice license, KB4DKC, in December 1982, made my first CW QSO with KB4CUH, on 1/6/83, upgraded to General in February 83, Advanced in April (KF4AB), then just before high school graduation I passed the 20 wpm Extra code and theory exams in May. When I told N8FU that my Extra call was WR4T, no vanity calls back then, his comment was with a call like that you're going to have to become a CW man.

I was then off to college for six years pursuing a bachelors and masters in electrical engineering. Purdue had an excellent station, W9YB, but the rigors of graduate engineering school left limited time for Ham Radio, with CW operation only occurring over the summer during field days. It was

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during these field day events that I gained an appreciation for QRQ CW. While logging for a more experienced ops, I learned to pick out some of the call signs and exchanges at 25-30 wpm, but knew I had a long way to go before I could work 1000 Qs at Field Day. Through the 90s I continued to operate mostly SSB, and 2-meter FM, but still regularly put CW contacts in the log.

By the time the 21st Century arrived, I became interested in other amateur radio activities and my key went temporarily silent. It was not until the COVID lockdown this past year that I considered operating CW again. I needed to get out of the house and Field Day presented the best opportunity. Of course, it would have to be a CW operation, but I had not operated CW in 20+ years. Undaunted, I practiced for two weeks and was doing well at 10-13 wpm.

I set up a Ten-Tec Scout and a 40m dipole at 70 feet up in the trees on that same farm property I grew up on in the 70s. The first couple of hours were a real struggle, the stations were so fast. Eventually, I started to get the hang of it and managed to get 100 Qs in the log, with 20 of them coming in the last hour before I packed up and went home. I had a fantastic time and left determined to regain lost proficiency.

It was then I discovered CWops. I tried my first CWT in July making 4 Qs. By October I broke 100 Qs for the first time. Then I signed up for the winter advanced session; with the support of my instructor Ed K6HP, and my practice partner Jerry VE9CD things started to fall into place. Head copy, retention, and comprehension developed. Jerry and I still practice 5 to 6 times a week currently at 27 wpm and we are making good progress with the 30 wpm practice material. Thanks to all of those who helped along this journey: my CWA instructor Ed K6HP, Jim N3JT for the nomination, my CWops sponsors, and my class study partners Derek WF4I, John N4DXI, and Jerry VE9CD.

George Savu, YO4AAC

Hello everyone! For a long time I wanted to become a member of a CW performance club. This dream of mine could be realized with the help of friends who proposed me and supported my candidacy: Bud (AA3B), Chas (K3WW), Dave (N3RD), John (VE3EJ), Bert (F6HKA) and thank you for that!

I was born in 1957 and I am currently retired. I was a military radiotelegraph officer in a unit of the Romanian navy.

I obtained an amateur radio license with the call YO4AAC in 1985, and since then I have combined my profession with my passion for shortwave.



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My first transceiver was a transistorized homemade QRP rig with which I made over 40,000 QSOs. I currently use an FT950. I am passionate about competitions, diplomas and DX traffic.

I'm a big fan of contests, I have participated in hundreds of domestic and international competitions. I think that in the last 20 years I have not missed any of the great WW, WPX, WAE competitions. This helped me a lot, when working in QRP, to achieve the number of countries required for YO DX CLUB.

I am passionate about diplomas, over the years about 900 Romanian diplomas and over 5000 foreign diplomas have been collected. Regarding QSLs, after about 200,000 radio links you will realize that several thousand have gathered! I have confirmed QSLs from 314 DXCC entities that allowed me to obtain the title of Master of Sports in 2016.

In 2010, we also approached the field of digital communications, without neglecting the other ways, first of all with the idea of being able to take part in the competitions organized in this way of working. However, out of the total QSOs made, over 75% are made in telegraphy.

Don Chisholm, K8BB

I'm thankful to have been invited, and grateful to N8EA, NA8V, NF8M, and VE3NNT for the nominations and sponsorships. I've been mostly off the air for the past 12 years, but recently QRV again and have found the Wednesday CWT sessions to be great practice. I became interested in CWOps upon learning about the advocacy, education, and outreach, and eager to join after being approached by the gentlemen above. It's a pleasure to be aboard!

I first learned Morse code with a friend (Greg Lotoczky, now WE8E) by sending random words across the kitchen table using two code practice oscillators my dad bought us at a local radio shop; we soon got our licenses. I later took those two straight keys and mounted them bottom-to-bottom to form a makeshift paddle, and mated it to a memory keyer I bought at a hamfest. I made many QSO with that setup until finally getting a proper key!

I received my Novice ticket in February of 1991 at the age of 14, and was fortunate to fall in with the "right crowd" of local hams - DXers, contesters, and CW enthusiasts - who were supportive of a precocious kid and very generous with their time and guidance. After chairing a "Novice Station" at Field Day that summer, I was motivated to upgrade, and by November had passed my 20wpm extra-class test. I was issued the callsign WX3M in 1992, and held that until 2004 when I request-



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ed and received K8BB, in homage to friends and mentors Dave Pruett K8CC and Hank Kohl K8DD, sadly both silent keys now.

In college I did a lot of mobile CW operating from a Dodge Neon with a Kenwood TS-450 mounted to the dashboard and "Texas Bugcatcher" antenna on the fender. It had a manual transmission, so I mounted a small iambic "Paddlette" to the gear shifter with some zip-ties so I could send and shift without interruption. After college, my next vehicle was a Jeep Cherokee, which I quickly installed antenna mounts through the roof and purchased a new Yaesu FT-100. I mounted a "Palm Paddle" (still my favorite portable key) to the console just below the armrest which allowed me to send comfortably while bouncing down the roads. This vehicle, with modified setups, operated in several Michigan and Ohio QSO Parties, even winning some 1st Place plaques!

I earned a degree in music and had a successful tenure in education, teaching HS and MS band for 15 years. But "teacher burnout" is a real thing, and I decided to try to pursue "Career 2.0" while I was still young enough, and financially flexible enough, to do so, and have been a residential Realtor since 2015, happy to have found success again. (It's not less stress, just different stress, ha ha.)

Through all this, my interests mostly have been CW contesting and DXing, and mostly in that order, as I sometimes lacked the patience to "chase DX" and would rather wait for contest weekends to make lots of QSOs at once, and I only "rag-chewed" on occasion. But with age comes wisdom (or something like that), and eventually I found the discipline to track my logs and apply for the various awards - the "new" LoTW helped, too. In 2008, shortly before going QRT for a while, I earned DXCC, WAS, and numerous band/mode endorsements. Now I'm trying to re-focus on DXing again, with lots of holes to fill in the logbook.

My station has consisted of two Icom IC-765 radios in an SO2R configuration, but recently an IC-7700 was added to the operating desk. Antennas are a work in progress at this time, just a 10m-40m trapped vertical and an 80m/40m wire dipole, "T" fed for 160m. Plans for a modest tower with a tribander are on the radar...

I'm looking forward to continuing to hone my skills, particularly more QTX, and to do my part to "advance the art of CW!"