



LICW at the
Huntsville Hamfest.
Photo by Allen Cutts, N4OZI



NEWSLETTER PROMOTING **MORSE CODE**

FALL 2026

WHAT'S HAPPENING IN LICW: FALL UPDATE

by Howard Bernstein, WB2UZE

Celebrating Some LICW Milestones

As LICW matures, it is wonderful to experience milestones that none of us could have imagined when the club began.

As we shared in the Summer 2026 newsletter, LICW was named **Club of the Year** at Dayton. Now we have learned that our newsletter, so expertly designed and produced by our editor Rich WB2GXM, has earned **Second Place** in the ARRL's *Year of the Club Newsletter Contest*, Large Club category.

If someone had told me eight years ago, when we started this club, that one day I would be writing about these two achievements, I would have found it very hard to believe. But here we are.

My sincere thanks go to all of our members, instructors, volunteers, and leaders who have contributed to these successes. None of them would have been possible without the extraordinary commitment to the values and principles that have made LICW what it is today.

And we have achieved another milestone: ***we just welcomed our 10,000th member!*** Of course, that represents the total number of people who have joined LICW over the years; normal attrition means our current active membership stands at 8,418 as I write this.

When Don KC0DWZ pointed out that this milestone was approaching, he suggested that we do something

special to mark the occasion – and we have. I will leave the rest as a surprise until we officially welcome member number 10,000.

As I sit here today and reread this, I find myself absolutely delighted by where LICW stands, what we represent, and what we continue to accomplish together. We are also looking carefully toward the future, working to ensure that the culture, values, academic program, and spirit of LICW continue long after those of us who started it have stepped aside. For me, ensuring that LICW endures as a lasting legacy is perhaps the most important milestone of all. ★

– Howard



FEATURED ARTICLES:

OUR STRATEGIC DIRECTION FOR 2026 – Mike Padron, N1CC	5
SOLAR 101 (Video Links)	5
THE LICW CLUB WELCOMES OUR 10,000TH MEMBER	6
THE LICW CLUB NEWSLETTER EARNS AWARD FROM THE ARRL	8
HUNTSVILLE AL HAMFEST 2026 (Pictorial) – Allen Cutts, N4OZI	10
A MICHIGAN UP EXPEDITION: ISLE ROYALE NATIONAL PARK – John McIntosh, AA8UP	14
LEARNING QRQ IS A LOT LIKE LEARNING CW AT ANY SPEED – Quentin Caudron, F/K7DRQ	18
THE UNIFIED OVERLEARN BOOTCAMP – Tom Weaver, W0FN	20
THREE VIDEOS ON COMMON MODE CHOKES AND REDUCING RFI (Links)	20
TWO CW JOURNEYS – Hardy Pottinger, KG5ZID and Brando Fox, W3TKB	21
FINDING SLOWER SPEED CW QSOS – Mark Harrison, AC1CP	22
LICW FACE TO FACE OUTING – Ed Conway, N2GSI	23
2026 WAYNESVILLE NC HAMFEST (Pictorial) – Allen Cutts, N4OZI	24
ARRANGING PRACTICE SESSIONS WITH OTHER MEMBERS – Don Zvareck, KC0DWZ	28
WHAT LED ME TO MY “DREAM RADIO” – Don Zvareck, KC0DWZ	32
DON’T HANG UP YOUR MIC! – Don Zvareck, KC0DWZ	33
LICW STUDENTS BENEFIT FROM FIELD DAY TRAINING	34
“A PRINCESS OF MARS” ONLINE – INTERMEDIATE LEVEL CW HEAD COPY – Wayne Gary, W5WLG	35
THE “DSPHAM” DSP AUDIO PROCESSOR – Rich Spohn, WB2GXM	36
THE SPECTRUMDSP: A SWISS ARMY KNIFE FOR HAM RADIO – Rich Spohn, WB2GXM	37
BOOK REVIEWS: FARADAY, MAXWELL & HEAVISIDE – Kimball Williams, N8FNC	38
BOOK REVIEW: WHERE WIZARDS STAY UP LATE – Kimball Williams, N8FNC	40
OF VERTICALS AND COUNTERPOISES (Video Links)	41

REGULAR COLUMNS:

LETTER FROM THE EDITOR: CW in September	3
THE LICW MORSE PRACTICE PAGE – Tom Noller, AB5TN	4
YL OPEN HOUSE – Anne Dirkman, KC9YL	4
NATIONAL TRAFFIC SYSTEM NET TRAINING – Ed Conway, N2GSI	23
THE LICW ANTENNA FORUM: UNEXPECTED ANTENNAS – Kimball Williams, N8FNC	26
KIDS CW CLASS NOTES – Bob Cady, W7JNM	29
3D: PRINTING, ASSEMBLING AND MODIFYING THE POLYPUCK – Richard Rieben, KE4WLE	30
CW PROTOCOLS: QSO SKCC PROSIGNS & Q-SIGS UTC CONVERSION ABBREVS FIELD DAY SST	
OUTSIDE THE BOX: Trailer-Hitch Mast Mount / Zero Beat by Ear / Kids Git ‘Er Done!	
RESOURCES ONLINE – Lotsa Links!	55



CW in September

Summer has a wonderful way of lulling you into a false sense that Time is infinite. At least in the Northern hemisphere, the days are long and languid. Barbeques abound. There are frequent, long walks on the beaches and parks into late sunsets. There is plenty of time to relax and enjoy many cold ones downed from frosted mugs in the backyard. I remarked to an instructor last week that I needed to get going on this issue and he remarked, "What? Already?"

Yes, I replied. Summer can be like that.

September always seemed to arrive with a vague sense of sadness. The long hot days were coming to an end, getting shorter and cooler. Time to shop for school supplies. And as an adult, a reminder that the time to complete home maintenance projects has become short. Time to see if the snowblower is still in working condition.

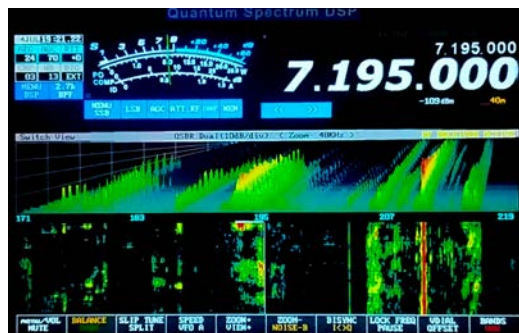
But September also brings a new sense of resolve, and opportunities to experience new things. We are handed bright Fall days to enjoy, colorful piles of leaves to jump into. Savoring the crisp, clear Autumn air as you complete your POTA activation. New and/or rejuvenated antennas, radios, accessories and DIY projects to enjoy as we conduct QSOs from the warmth of our homebase hamshacks. Renewed energy and motivation to learn and master CW, as Winter Field Day and Straight Key Night appear on the calendar. More hamfests to enjoy, new radios and accessories to pique our interest. In short, a reinvigoration of our enjoyment of ham radio.

In Fall, there seem to be outdoor hamfests everywhere! And why not, the beautiful days of Autumn invite one to get outside and soak in the sunshine. There are plenty of deals to be had, and plenty of boat anchors to investigate. Much needed parts can be had for pennies. And of course, there are those wonderful

tubes you can stock up on, to warm your hands over during those cold Winter CW QSOs...

I wish all of you a wonderful Fall season and a joyous rediscovery of what excites you about being a ham and a CW op. **CQ in September!★**

73 – Rich Spohn, WB2GXM



What IS this? See [Page 37!](#)



Fast times and fast deals during the 2026 Waynesville NC Hamfest. Photo by Allen Cutts, N4OZI. More photos on [Page 24!](#)

LATE BREAKING!
THE LONG ISLAND CW CLUB WELCOMES ITS
10,000TH MEMBER!
SEE [PAGE 6](#) FOR DETAILS!

THE LICW MORSE PRACTICE PAGE

– Tom Noller, AB5TN

UPDATED USER INTERFACE AND EXERCISES VERSION 2.0

By now you have most likely seen the MPP version 2.0. The object of this project was twofold. First, to improve the User Interface including how it is displayed on phones and tablets, and second, to incorporate Speed Racing. Both of these objectives were completed through the work of Roger KQ4NKF and Jay W6JY who did all the programming.

All the settings are still available but are now grouped together by function, such as *Voice Options*, *Input Options*, etc. This makes it much easier to find the setting you need. Here is a quick rundown on each group:

Main Page

- Tabs for going to the *HELP* section, changing to *Dark Mode* and closing the menus after clicking on *PLAY*
- Set the *WPM* and *FWPM* speeds and code volume

LICW Lessons

- Select the *TYPE – CLASS – CONTENT – LESSON – PRESET*
- *Save* and *Load* tabs for saving and loading a preset

Lesson Options

- Overrides for *Custom Group*, *Override Time* and *Override Size* along with the *APPLY* button
- Playback settings for *Randomize*, *Auto Close*, *Sticky Sets*, *Keep Lines* and *Shuffle Intra-group*
- Timing settings for *Speed Intervals* and *Speed Racer*
- *Trail* settings

Voice Options

- All the *VOICE* options

Tone Options

- *Dit and Dah* frequencies and the *ZERO BEAT* tab

Input Options

- *Practice text* has the *View Text*, *Clear*, and *Insert File* options
- *Flagged cards* has the area that shows any flagged cards along with the tabs to clear or load the text

Output Options

- Settings for *PRE*, *WORD SPACE*, *CARD WAIT*, *CARD SIZE*
- Tab to turn *cards display* on and off
- The tab for making an audio file

Play Area

- *Timer* and *number of characters played* display
- *PLAY*, *PAUSE*, *STOP*, *REVEAL*, *SHUFFLE* and *LOOP* tabs
- *Card display* area

Help and Information

- Keyboard shortcuts
- Links to various help and resources

In addition to the *User Interface* update, a new function called *Speed Racing* has been added and *PRESETS* for both spelling and words have been added to all INT and ADV classes. This function allows you to play a character, word, phrase, or sentence at either increasing or decreasing speeds as a percentage of the base speed. For example, let's say the word "home" is in a list of words and you set the WPM for 20 wpm. By default, "home" will be sent at 30, 27, 24, and 20 wpm, then the Voice will say the word and then it will be played again at 30. If you have ever listened to any of Kurt Zoglmann's (ADOWE) speed racing

YL OPEN HOUSE

By Anne Dirkman, KC9YL

All YLs are welcome to our Monday night gathering – Room C – 9:00 PM Eastern Time. What will we talk about? You tell us! The discussion topics vary from week-to-week with attendees asking questions, giving advice, making equipment recommendations, sharing study/sending/operating tips, and just cheering each other on! Granted, the theme is CW-focused but we also welcome discussion about your other amateur radio successes, trials and tribulations. Maybe you participated in a special event, enjoyed a recent contest, discovered a new favorite POTA trail, had an issue with a less-than-welcoming club, or ran into a logging glitch – this is the place to share!

See you on the air!!!★
– 73, Anne KC9YL

exercises you will recognize this pattern. There is also a setting for the OverLearn speeds. All the Speed Racing parameters can be changed to suit your needs.

An updated *MPP User's Guide 2.0* has been posted on the LICW website. This document describes each group and setting in more detail.

As always, please contact me (AB5TN48@GMAIL.COM) if you find any bugs.

I hope you find this update useful.★

– Tom, AB5TN



LONG ISLAND CW CLUB



Teachers of Morse Code
longislandcwclub.org

OUR STRATEGIC DIRECTION FOR 2026

– Mike Padron, N1CC

Our overall objective this year is to improve the LICW member experience through technology. That work has been organized into three phases.

The first phase focused on making our schedules more useful, accurate, and informative. Rather than simply showing that a class or forum exists, the schedule now reflects what is actually happening: which character groups are being taught that week, what topic a forum will cover, whether a class is active or cancelled, and other information members need to make better decisions about where to spend their time. That phase is essentially complete.

The second – and most significant – phase is the *LICW Student Portal*.

The Student Portal represents a fundamental change in how members will interact with LICW. Instead of asking students to navigate through a large club schedule, multiple web pages, downloads, and resources to determine what applies to them, the Portal is designed to bring the relevant pieces together in one personalized environment.

Each student will see dynamically generated schedules and content based on their attendance history and selected interests. It will allow us to connect scheduling, curriculum, progress, practice resources, and

other academic tools in ways that simply are not practical in our current system.

Just as importantly, the Portal will begin replacing 20+ weekly schedule announcements sent through Groups.io.

We are currently beta testing the Student Portal and hope to begin rolling it out to the membership in September.

The third phase is *LICW Connect*, our *On-Air Visibility + Engagement* initiative.

Once we have made it easier for students to find the right academic opportunities, the next step is making it easier for members to find one another.

The goal of *LICW Connect* is to improve visibility into:

- Who is on the air,
- Who wants to get on the air,
- Who is looking for a CW practice partner,
- Who would like to practice together on Zoom,
- And who lives nearby and may be interested in connecting locally.

The broader objective is to reduce the distance between learning CW and using CW.

LICW has grown tremendously, and with that growth comes an obligation to make the club easier to navigate without losing the personal connections and sense of community that made LICW special in the first place.

There is a great deal of work underway behind the scenes, and we appreciate everyone's patience as these new capabilities are developed and introduced.★

– 73, Mike N1CC

SOLAR 101

Jason Oleham, KM4ACK, has come out with the first of a planned series of videos on the basics of solar power. His first video, "*Solar 101: The Basics Nobody Teaches You*", covers types of connectors and the basics of charge controllers and can be found here:

<https://www.youtube.com/watch?v=atMrCnjY7uc>

This video follows Jason's "30-Day Challenge" video about setting up a very easy, basic solar charging system to keep a cellphone charged:

<https://www.youtube.com/watch?v=cuXzH-yQdto>

THE LICW WELCOMES ITS **10,000TH** MEMBER!

Hello LICW Members and Friends,

Today, the Long Island CW Club reached an extraordinary milestone: **10,000 members.**

When LICW began, none of us could have imagined that our little club would one day grow into a worldwide community of 10,000 people brought together by a shared love of Morse code. This milestone reflects the dedication of our instructors and volunteers, the enthusiasm of our students, and the enduring appeal of CW throughout the amateur radio community.

Several months ago, Don KC0DWZ brought the approaching milestone to our attention and suggested that we commemorate it by thoughtfully selecting the recipient of member number 10,000. His idea led us to consider what this number should represent, not simply whom it should be assigned to.

We decided that member number 10,000 should represent the future.

It is therefore our great pleasure to announce that LICW member number 10,000 has been awarded to Maggie KE2AIZ.

Maggie is eleven years old, but her amateur radio journey began when she was just seven. After watching her two older sisters pursue their licenses, Maggie asked her father, "Can I get my license, too?" She had to convince him that she was serious. She was.

With the help of classes offered by the Rochester Amateur Radio Association and many hours of study and practice, Maggie earned her Amateur Extra Class license a couple of months later. Few people can say that their introduction to multiplication, division, and decimals

came by way of Ohm's Law, but Maggie can.

Her CW journey soon led her to the LICW Kids classes, where she learned Morse code and made her first CW QSO as soon as she had the essentials needed to get on the air. Today, Maggie describes herself as a "mostly-CW" contester. She continues to develop her skills on the air, encourage other young operators, and in 2025 received a Young Achiever's Award from the Radio Club of America.

Many of those who attended our presentation at the Dayton Hamvention also had the opportunity to meet Maggie and see firsthand

what an impressive young person she is.

Read more about Maggie KE2AIZ and her remarkable CW journey [here](#).

Recognizing Maggie with this historic membership number carries tremendous symbolism. Member number 10,000 represents not only Maggie and what she has already accomplished, but also the future of Morse code and the importance of passing this wonderful tradition from one generation to the next.

Throughout LICW's growth, our purpose has remained unchanged: to welcome people into Morse code, provide them with patient and



Maggie, KE2AIZ

THE LICW WELCOMES ITS **10,000TH** MEMBER! (Continued)

effective instruction, and help them develop the confidence to get on the air. Maggie's journey embodies that mission and reminds us why the work of our instructors, volunteers, and students matters so deeply.

We congratulate Maggie and thank her family for allowing us to recognize her as part of this remarkable moment in LICW history.

Most of all, we thank every member, instructor, volunteer, and friend who helped make 10,000 possible. This milestone belongs to the entire LICW community.

And what better way to celebrate where LICW has been than by recognizing someone who represents where Morse code is going.

– 73, The Long Island CW Club

* * *

Congratulations to Maggie for being member number 10,000! – Mike AA6MK, LICW #506

What an outstanding way to celebrate — honoring those who embody the future of Morse code is a fitting way to celebrate LICW's journey. – Randy_KB4QQJ

Congratulations, Maggie! I am a proud member of this wonderful group, and happy to have you with us. I wish you well on your ham radio journey! I would be honored to have the privilege of a CW QSO with you someday. 73 – Cheers, Howard KO6ATE

Welcome Maggie! – Jim NOIPA

That is the most heartwarming thing I have read in a long long time! Congratulations Maggie. Maybe you can elmer this old grandma sometime! – Jackie K1DDA

Maggie, well done!! Bravo Zulu. Best wishes 73 – John W3JJB

Congrats Maggie! – Chris N8PEM, LICW #254I

What a wonderful story. Congratulations Maggie for being the 10,000th and have fun. – Tom AB5TN

Absolutely brilliant news! Congratulations to Maggie. LICW has been a wonderful club to belong to. With each CW contact, my confidence and love for radio grows. Wishing Maggie all the best in her continued operations, and all my fellow LICW clubmates clear signals and full hearts. 73 de Ingrid K8ZI, LICW #7377

* * *

Don Zvareck, KC0DWZ, was the clubmember who first called our attention to the approaching 10,000-member milestone and suggested that we do something meaningful with it. That idea ultimately led us to Maggie, and we

cannot imagine a more fitting way to mark this point in LICW's history.

But our thanks go well beyond this one idea. Don, your leadership, judgment, and steadfast support have been an important part of LICW's growth and success. Much of what you do happens quietly and behind the scenes, but we know how much we rely on you, and we want our instructors to know it as well.

And to all of our instructors, thank you. Reaching 10,000 members is not simply a measure of growth. It reflects the thousands of hours you have spent teaching, encouraging, mentoring, and helping students discover the joy of CW. You are the heart of what LICW does, and this milestone belongs to you as well.

Don, thank you for your leadership and for always being there for LICW. And to every instructor in this club, thank you for helping make this remarkable milestone possible.

– 73,
Mike and Howard



THE LICW CLUB NEWSLETTER EARNS AWARD FROM THE ARRL

This year the LICW Club Newsletter was entered into the American Radio Relay League's *Year of the Club Newsletter Contest*. Out of 80 entries, our newsletter has won **Second Place** in the Large Club category.

According to Becky Schoenfeld, W1BXY, ARRL Director of Publications, *"The judges felt that the newsletter offered lots of good reading to keep members interested in CW. The layout is beautiful, with good use of photos. Features written by the "departments" of the club reinforces their visibility, and reinforces connection with their activities...we were glad to see that, as a newsletter of this length, and with this much material in it, needs a TOC. Linking TOC entries to the internal pages, as well as providing a link back to the TOC on every page (helpful features that we saw in perhaps only one or two other entries) ensures that readers have efficient access to everything this quarterly has to offer."*

The LICW Club congratulates all the winners of the contest:

LARGE CLUBS – First Place **Gloucester County Amateur Radio Club, W2MMD**

Pitman, New Jersey
CrossTalk
Jeffrey Garth, WB2ZBN, Editor

MEDIUM CLUBS – First Place
Ozaukee Radio Club, W9CQO
Grafton, Wisconsin
The Ozaukee Radio Club Newsletter
William Shadid, W9MXQ, Editor

MEDIUM CLUBS – Second Place
East Greenbush Amateur Radio Association, W2EGB
East Greenbush, New York
Sidebands
Bryan Jackson, W2RBJ, Editor

Honorable Mention
Providence Radio Association, W1OP
Johnston, Rhode Island
The Old Professor
Thomas Greenwood, W1ER, Editor

SMALL CLUBS – First Place **Peekskill/Cortlandt Amateur Radio Association, W2NYW**

Greater Peekskill/Cortlandt Area,
New York
PCARA Update
Malcolm G. Pritchard, NM9J, Editor

SMALL CLUBS – Second Place **Morongo Basin Amateur Radio Club, W6BA**

Morongo Basin, California
MBARC Beacon
Aaron Chesney, KM6IAU, Editor

SPECIAL COMMENDATION **Best Newsletter for a Specialized Audience: Families and Youth** **Sci-Tech Amateur Radio Society, W1STR**

Natick, Massachusetts
Sci-Tech Amateur Radio Society News
Robert F. Phinney, K5TEC, Editor

Best Newsletter for a Specialized Audience: Global Audience
Young Ladies' Radio League, K4LMB
Global
YL Harmonics
Kathleen Houlihan, WA5DUC, Editor

* * *

The LICW Club Newsletter was honored along with the other contest winners at the *Huntsville Hamfest*, the 2026 ARRL National Convention, which was held August 22–23. The award will also be announced in an upcoming issue of *QST Magazine*.

This award comes as a result of a lot of hard work, and we gratefully accept it and appreciate the recognition of our efforts. We are proud to share this recognition with every member of the LICW family. ★

– Rich Spohn, WB2GXM, Editor

WHERE CREDIT IS DUE

I would like to express my gratitude to all of our contributors for all of their hard work, and for the consistently high quality of their writing, quarter after quarter. A big **THANK YOU**, in no particular order, to: Anne Dirkman, KC9YL; Brian Collins, AK6MA; Steve Stalker, KC8TVW; Roy Thaller, VA7RTL; Scott DeMatteo, W3GTR; Lee Zalaznik, KI6OY; Jean-Jacques Brasse, F5IJO; "Brando" Fox, W3TKB; Bob Houf, K7ZB, thank you for your Service and for sharing all your fascinating experiences with us; Tom Noller, AB5TN, for his continual improvements to the Morse Practice Page; Don Zvareck, KC0DWZ; Richard Rieben, KE4WLE, for bringing New Dimensions to our ham radio experience; Chris Claborne, N1CLC, *THE Ham Ninja*; Tom Waits, WA9CW, for taming the Wild Bug; Kimball Williams, N8FNC, whose excellent treatises on antennae resonate with us all; Bob Cady, W7JNM, and Ken Cone, K7BXL, for making sure that The Kids Are Alright!; Ed Conway, N2GSL, for his skill in directing Traffic; Jim Stinson, NOIPA, for Bringing Us the World as One Gigantic POTA; Roger Burkhart, N3GE; Eric S. Kennard, WS4K; Roland Williams, AE6VL, for biting into his role as Instructor with such gusto; Michael F. Welborn, WW4MW; Tom Weaver, W0FN, for making it look so easy; Ed Cabic, N2EC; Paul Tazar, W4PDT; David Collins, N4WDC; Mark Harrison, AC1CP; Tim Sammons, N6CC, Allen Cutts, N4OZI, Scott Wooten, KW4NJA, Alan Glasser NY2G, and Terrence Banks, KO6CGU,

Continued Page 7

THE LICW CLUB NEWSLETTER EARNS AWARD FROM THE ARRL (Cont'd)

This is a tremendous honor for LICW, and I especially want to congratulate and thank our newsletter editor, Rich WB2GXM. Rich puts an extraordinary amount of time, care, and creativity into every issue. His work has made our newsletter far more than a collection of articles – it has become an important reflection of the people, knowledge, enthusiasm, and culture that make LICW such a special community.

A special thank-you also goes to Brian AK6MA, for bringing this contest to our attention and taking the initiative to submit the LICW Newsletter for consideration.

I also want to thank every member who has contributed an article, photograph, idea, story, or encouragement along the way. This recognition belongs to all of you as well and especially to those who have a column every edition. Please join me in congratulating Rich on this very well-deserved recognition, and in thanking Brian for helping make it possible. Regarding Brian, this is a good example of our members being encouraged and motivated to come forth with ideas and suggestions, as we take them all seriously. ★

– Howard

* * *

Brian's side of the story: I had been an LICW member for a few months when Rich sent around the Winter edition of the LICW newsletter via Groups.io, and I was totally amazed. I've been a member of various organizations; ham, non-ham, professional, and recreational. Never had I seen such an engaging, wonderfully organized, informative, and down-right professional looking document, especially given the 100% volunteer nature of the thing.

Somewhere, perhaps the ARRL Letter email, I heard about the ARRL "Year

of the Club", and how there was a newsletter contest as part of it.

Linking these two things together, I posted back to the Groups.io thread, "BTW, ARRL is having a Club Newsletter Contest. Has there been any conversation about submitting?" Howard pounced. "Brian good idea and I didn't hear about this but we can certainly submit. Would you like to head this?"

Oh, snap! I'm the new guy! No way I want to interact with the ARRL on behalf of LICW! Well, my idea so suck it up and do it. After a couple emails with Rich, and asking Howard to update the LICW Club info on the ARRL website, I had a newsletter, and a webform (link is dead now) to fill out. Remember, I'm the new-guy in all this!

I filled out the form, submitted the newsletter, and figured I had done a good thing. A few months later we all now know the result of that.

I had so little to do with this, it's almost embarrassing to write about it. That said, I think there are a few things learned from this that we can all celebrate. The culture that Howard and the Club Leadership have created and fostered is something amazing. I was told during my working career that; the mission statement is what an organization does, the culture is how the organization does it. The quality, passion, inclusivity, openness, and sheer humanity of LICW is no accident. Yes we are a technical organization, but we are also people. I am SO proud to be a part of this wonderful thing we call LICW.

Congratulations to Rich!
Congratulations to those who have contributed to the newsletter!
Congratulations to *all* of us! This is indeed something we can all be proud of. ★

– Brian Collins, AK6MA

WHERE CREDIT IS DUE (Cont'd)

for all the tasty photography; Kasey Efaw, KD2YMM, who always rises to meet a challenge; Niel Wiegand, W0VLZ; Hardy Pottinger, KG5ZID; Wayne Gary, W5WLG; Jay Fox Sr., NK2Y, for being a Buddy; Todd Mitchell, N0IP, and the key that started it all; Tommy Judson, WA5CXG; KB Sriram, AJ6QZ; John McIntosh, AA8UP; Ron Roberts, KC2PSA, always there to help beginners get on the carousel; Anthony Luscre, K8ZT, and Cathy Goodrich, W4CMG, for making sure that we all get our quarterly dose of essential operating subjects; Mike Croce, N2PPI, for the Welcome; Hal Grant, WA2AKV; Mike Padron, N1CC, for his excellence at herding cats; Greg Algieri, WA1JXR, for being the Best Darn Doctor; Ai Loan, AI8AI; Dean Marzocca, N2TNN; Grant Porter, KG4SDR, who's always ready with a link and a smile; Denis OBrien, N2JJF; Steve Greenbaum, N1SG, who's always thinking outside the box; James Wades, WB8SIW, for his sage words of wisdom; Quentin Caudron, F/K7DRQ, for an understanding of the psychology of CW so deep that it borders on clairvoyance; Bob Conder, K4RLC, for the Scotch; and to Tom Grosvenor, NV1U, and Bob Schwer, K3ZGA – we love you, wherever you are.

And finally, of course, to Howard Bernstein, WB2UZE, and Rich Collins, K2UPS, for kicking the snowball down the hill in the first place.

Second Place, is after all, a good place. We are *STILL ON THE WAY UP!* ★

– The Editor

HUNTSVILLE AL HAMFEST 2026

Photos by Allen Cutts, N4OZI



HUNTSVILLE AL HAMFEST 2026 (Continued)



←
David Collins, N4WDC, on right wearing the cap, accepts the Award for **Second Place** in the **ARRL Club Newsletter Contest**, Large Club Category, on behalf of the **Long Island CW Club**.
(Photos by Eric W. Davenport, KZ5ED)

HUNTSVILLE AL HAMFEST 2026 (Continued)

Photos by Allen Cutts, N4OZI



HUNTSVILLE AL HAMFEST 2026 (Continued)



A MICHIGAN UP EXPEDITION: ISLE ROYALE NATIONAL PARK

– John McIntosh, AA8UP

Sweat dripped off the end of my nose as I loaded gear into my truck and boat for the upcoming trip. Checking my lists, double and triple checking gear. Making final decisions on what goes and what stays behind. It's hot here along the southern shores of Lake Superior in Michigan's Upper Peninsula. In just a couple of days I will be traveling across 70 miles of Lake Superior to Isle Royale National Park. Meanwhile, oppressive heat, and a blanket of thick acid smoke in the air from wildfires raging across Ontario and Minnesota make being outside pretty tough. As much as my wife tried to convince me not to go, I was having none of that. 22+ years as a firefighter, I'm no stranger to breathing some smoke.

Isle Royale National Park lies in the middle of Lake Superior. While it is physically closer to both Minnesota and Ontario, it is within the boundaries of the state of Michigan. It is the least visited, yet most re-visited park in the National Park system. It is only accessible by boat or float plane. As a designated wilderness, there are no motor vehicles or mechanical conveyances. At 50 miles long, and 9 miles at its widest point, it's a big island. It also boasts of having the biggest island, in the biggest lake, which is on the biggest island, in the biggest lake in the world. Ancient mining of copper ore 5,000 years ago is the earliest known mining of minerals, pre-dating iron. Later attempts at commercial mining in the mid-1800's were quickly abandoned, although remnant traces of both of these efforts can be found on the island. Before becoming a national park in 1940, several fishing camps and resorts dotted the island. All are now shuttered, and many of those structures remain and are preserved. A few are still privately held by descendants of the original builders under agreement with the NPS.



The Rock Harbor Lighthouse

To get there, you either travel via private boat, take the ferry from Grand Portage, MN, Houghton or Copper Harbor, MI, or take a seaplane to fly you in. I chose to take the Ranger III ferry, operated by the NPS. It is a longer route, 6 hrs to cross the 70+ mile route but it is also the only one that will load my 16' boat onto the ferry to take with me. Taking my boat gives me several distinct advantages, I can take considerably more gear than what the typical backpackers take, I can cover a lot more areas of the island (depending on weather), and I can also do a lot of fishing. And frankly, at my age, my backpacking days are behind me.

I had been planning this trip since winter of 2025, with plans to go that year. Unfortunately, those were cancelled due to changing schedules for eye surgery. You must make your ferry reservations in early January as it books up fast.

My plans regarding radio were to do Parks on the Air activations from the island daily, as well as explore and an obscene amount of fishing. I do a

fair amount of POTA activating, POTA for me is more about places than it is about how many QSOs I can rack up.



Isle Royale National Park location in Lake Superior



My portable station- Yaesu FT-891, EFHW, NOSA small dual paddle key

But this one did have a couple of goals as far as numbers too.

The park had been activated 39 times prior to my arrival, by a total of 22 operators, dating back to 2016. Total QSOs were around 1,900. The most activations, and most QSOs by one activator, were 7 and 447 respectively. Further, the total number of CW contacts for all activations was 253. My goal was to surpass the 447 as well as the 253 totals. As we all know, solar/band conditions can

upend that easily. So, I knew it was a lofty goal, but certainly achievable.

The morning of departure from Houghton, MI was very smoky, cool, and a thick layer of lake fog hung in the air. Once my boat was loaded, I boarded the Ranger III, and found a seat up from looking over the bow of the ship where I could see my boat as well as the other boats and cargo they were hauling to the island. I settled in for the long ride, and chatted with other passengers.

Upon arrival at Rock Harbor, where the Ranger was to drop us off, visibility was near zero. My boat and gear were off-loaded, and I was to boat down Rock Harbor about 5 miles to my intended camp spot. You can only camp in designated campgrounds, which consist of a few 3 sided screened front shelters, or tents. Given the weather and visibility, I decided to head very slowly to a closer island camp 1.25 miles away. I was totally dependent on my chartplotter to get the there. Visibility at best was 25 yards. I ran at idle the entire way, through rain and thick fog, and man was I sure glad to see the dock appear out of the fog!

Fortunately for me, I found one of the 2 shelters on the island vacant, so I



Performer antenna 1/4 wave vertical with 25' whip and 2 resonant elevated radials

promptly unloaded my gear. Most of my stuff got wet, my waterproof duffle bags weren't, and it rained most of the trip across the lake. My radio gear though, was in a waterproof drybag backpack which was my carry on onto the Ranger so it was well protected. After long day, I organized my gear and heated up some water for a homemade freeze-dried meal of venison Swiss steak, rice and some hot coffee. Checking over my radio gear, and my antenna bag, all looked like it was good to go. I hit the sack early and made plans to get an activation in the morning.

One thing I love about this hobby, especially among CW ops, is the wide array of radios and antenna setups we use for portable ops. I would guess the majority are in the QRP camp, and the variety of small light compact QRP rigs is amazing. I do not have one of those. I am not a QRP op myself. I want to hear and be heard, but I will work to dig out those weak stations. My kit consisted of the following gear:



My radio kit: Yaesu 891, EFHW Antenna



Sunset over Isle Royale

- Yaesu FT-891
- NOSA dual lever paddles (compact size)
- CW Morse paddles for backup.
- Performer/Challenger antennas designed by Greg Mirhan KJ6ER
- EFHW 10-40m homebrew
- 25' RG8X coax
- Rig Expert antenna analyzer

My 12v power setup was rather extensive, along with my radio gear, I was also running a Set Power 12v cooler/freezer, and needed recharging capability for a video camera, Garmin In-reach Mini 2 satellite communicator, headlamp and cell phone (for apps to send messages via Garmin and downloading video to phone). So for batteries, I had 2 100-ah, 1 30-ah and 1 20-ah EcoWorthy LifePo4 batteries. To recharge, a portable solar panel array (which was a huge concern early on with the fog and smoke).

I mainly used the 2 bigger batteries for the cooler, and for charging. The smaller I used for radio. I never got any of them below 60% as the cooler was very power efficient once it got down to temp. In retrospect, next time I can

cut this down to 3 batteries and be just fine.

I got on the air the first morning, and the very first QSO was Thomas Martin W8TAM, a founding member and board member for POTA. Later in the week I also logged his wife Julie, WT8J, who is also the POTA mapping coordinator for MI. I have worked with her to get several new parks added in the Upper Peninsula and keep her informed when there are closures etc. It was really cool to get them both in the log. I was not aware they were both also CW operators, so that was a nice surprise to me to get them via CW mode.

Now one thing that was a concern was spotting. For the most part, the RBN did a good job of that, and if you pre-schedule activations on the POTA page, as soon as RBN spots you it will automatically spot you on POTA's website as well. There are a number of other ways to do it, including Sotamat, which I did not need to use. But have to give a huge shoutout and thank you to our very own Don KC0DWZ. I had set up with Don to message him via my Garmin when I was QRV and he would also spot me. I knew you could

set up the Garmin with Sotamat to spot using that directly, but when I read the instructions it was over the capacity of my low tech brain.

Weather was a prominent factor for the entire trip, early on the fog and low visibility made moving about the waters around the island difficult. A few storms, as well as some very windy days, nixed traveling to a few points I really wanted to operate from, including the Passage Island Lighthouse, which is the furthest north point in Michigan. Wave and wind conditions made that idea unsafe given the size of my boat. That venture will have to be another day.

One place I did really want to activate from was the Rock Harbor Light, a very historic lighthouse, and one of the oldest in the country. It is one of 4 lighthouses around the island that were constructed to protect shipping in and around the island waters of Lake Superior. The Rock Harbor light was the first one built. It is now a museum of the maritime history surrounding Isle Royale, highlighting the many shipwrecks on the reefs and rocks surrounding the island, and



My boat packed and ready to load onto the Ranger III for the return trip home



memorializing those mariners who lost their lives there.

Unfortunately, the stairs up to the light tower were closed, as they were in poor condition and unsafe, so my thoughts of setting up a wire and operating from the tower were nixed. I ended up setting up on the rocky beach in the shadow of the light, and activating the park for the day from there. It was a picture perfect day, quite breezy, so I opted for setting up my EFHW wire. I used a 33' collapsible mast I leaned against a tree for my antenna. I found a perfect spot on some flat rocks to sit and set up my rig, and commenced the activation. Band conditions were not good at all, and I only managed 18 QSOs. I could have stayed longer, but the wind was picking up, as were the waves and I had a 5 mile run with the boat back to my camp. I will say, that day's activation was the highlight of my radio ops for the week.

I had intended to do an activation every day from a different, historically significant location, but that was not feasible. Some of the locations have no docking, and with the wind I would be risking damage to the boat to do so. So I operated from camp, usually mid-day between attempts at catching some fish. Fishing was very slow, but I did manage enough success to have fish for dinner most days. There is nothing better than fresh caught Lake Superior fish while camping on the island.

I used the old reliable paper logging method while on the radio and later entered them into Ham2K polo log. I had never used it before, and with my fat fingers on my phone screen, live logging would have been a challenge.

Friday the 24th, the forecast was for increasing winds, and an unfavorable direction. I made the decision to pack up and head to Rock Harbor campground adjacent to where the ferry arrives and departs from for the last day/night before boarding on Saturday for the return home. This

proved to be a wise decision as even at 8am when I left the dock it was getting pretty sporty. I was able to secure a shelter in the camp area for the day, and tied my boat up on the dock. The Rock Harbor campground is the biggest on the island, and a jumping off point for many backpackers and adventurers, so you can only camp there 1 night.

I threw a few essentials into my shelter, leaving the rest of my gear on the boat. Another thing about Rock Harbor is you can get a pay shower and laundry, so I took a hot 3 minute shower for \$8.00, and washed some clothes for the trip home. Afterwards, I set up my rig and activated from the campground. I had a number of curious campers stop and inquire, including another ham who was very interested in POTA, and LICW. I worked the radio for the last time this trip, and was very happy with my totals when I added them up.

I made 454 total QSOs, 389 of which were CW. This reached and surpassed my goals, so I found the trip to be a big success. The fishing was slow, but I caught a few and ate a few.

I learned a lot, this trip gave me a whole new appreciation for the efforts the dxpedition operators go through just to make a few radio contacts and give other ops the chance to log a hard-to-get location. I cannot thank all of the LICW ops who made a point to get me in their logs. The way our members support each other's radio activities and adventures is nothing short of amazing. Every call sign I recognized put not just a contact in the log, it put a big smile on my face as well.



Large Lake Superior Lake Trout caught near Rock Harbor lighthouse



AA8UP working a POTA CW activation at Rock Harbor lighthouse

A few lessons, and tips of any of you seek to do a similarly remote operation:

- Do a lot of pre-planning homework. Maps, local weather trends and forecasts, travel etc.
- Talk to other operators who have been where you are going, if there are any. Ask what worked, what didn't, and learn from their experience.
- Go over your radio gear list several times, lay it all out, decide what is necessary. Do a couple of test outings with your exact kit before you depart. Having an extra coax, some connectors and a few basic tools for repairs is a good idea. I was lucky that I did not need to repair anything.
- If you are camping, same goes for camp gear. And since I was also boating, I had additional preps for the boat and fishing gear. My preps for this trip took place over several weeks before I ever stepped foot on the Ranger III, but those preps paid off as conditions were not what I had anticipated. and yet everything went as well as it could be expected.

I will definitely be doing this trip again next summer. Isle Royale is an amazing place, and I cannot say I did much more than scratch the surface and open a Pandora's Box of future expeditions to the island. ★

– 73, John McIntosh, AA8UP

LEARNING QRQ IS A LOT LIKE LEARNING CW AT ANY SPEED

– Quentin Caudron, PhD, F/K7DRQ

With my recent move from Washington to northwestern France, I have not been on the air nearly as much as I would like this year, but I've had a lot of time for reading. The LICW has published [some fantastic materials](#), all of which I've read through recently: the *Method Guide*, the *Curriculum Guide*, the *Position Paper*, the *Culture Guide*, and all twenty-six *Intermediate lesson plans*.

If you open our Curriculum Guide at the Advanced level, you will find something interesting: Advanced 2 and 3 are listed as "mastery at 25 to 35 wpm" and "35 to 45 wpm and beyond", but then, the boxes are empty. No exercises, no bootcamps, no benchmarks, nothing to tell an instructor what to do with a student stuck at 28 wpm. The guide is candid that Advanced classes are "intentionally open-ended".

This is a direct consequence of the thing I admire most about this club: we do not teach what we have not tested. The Beginners and Intermediate curricula have the shape they do because dozens of instructors hypothesized, tried things in class, watched what happened, iterated, refined, and threw out what did not work. Above 25 wpm, nobody has done that yet; the boxes are empty because the evidence is missing.

LOOKING FOR EVIDENCE

I started reading through the peer-reviewed scientific literature: Morse cognition, auditory perception, expertise and automaticity, practice scheduling, and the psychology of language comprehension. There's only a small set of studies on Morse operators – one from 2021 has a group of hams,¹ but essentially nothing at the speeds ADV3 aims at. So most of what follows is inferred

from adjacent skills: touch typists, court reporters, chess players, sprinters, people learning to listen in a second language. Some of the findings in these papers are exactly the sort of thing a club like ours could test in class.

SPEED TURNS OUT TO BE A LOOK-AHEAD PROBLEM

Here is the finding that struck me as an unusually good analogy for Morse code. In 1984, Timothy Salthouse² sat skilled touch-typists down and took away their preview (the amount of upcoming text visible to them). With seven or more characters in view, they rolled along at about 180 milliseconds between keystrokes, and it made no difference whether they could see seven or nineteen characters. Cut the preview to five characters and the interval stretched to 205 ms. At three, 293 ms. With a single character of preview — see one letter, type it, see the next — the same expert typists collapsed to 645 ms per keystroke, roughly their reaction time for pressing one key when a light comes on.² Remove the look-ahead and a lifetime of skill evaporates.

What made these typists fast was not just how quickly they could hit a letter, it was how many letters they could keep lined up and waiting. The faster the typist, the further ahead they read; and the span halves on random text, where there is nothing to anticipate.²

Which brings me to the pen. If you have made the move from paper to head copy, you know the particular misery of it. What the typing work suggests is that the pen was never just a crutch for your memory — the pen was your buffer. It let the signal run ahead while your understanding caught up. Putting it down, you lost your look-ahead, and dropped back toward reaction time until you built a

new buffer between your ears. We have a name for that buffer in the Intermediate and Advanced classes: the *Retention Buffer*. It appears to be the thing that governs speed, and it can be trained directly.

PLATEAUX ARE YOUR METHOD TOPPING OUT

The second finding is about why progress comes in fits and starts. The usual story about a plateau is that you are consolidating, and that if you keep grinding, you will pop out the other side. The literature on skilled performance tells a less comfortable story. A ceiling is generally the sign of a method that has run out of room, and when you adopt a new method, your performance gets temporarily worse before it leaps past the old ceiling.³

The mechanism is well established. Psychologists distinguish deliberate, conscious, one-thing-at-a-time processing from automatic recognition,⁴ where you simply know the answer instead of working it out.⁵ Conscious processing has a hard speed limit that no amount of effort raises.⁴ Getting faster is not that process running quicker; it is a handover to a different process entirely,⁵ which makes "try harder at the same method" not only inefficient, but a strategy that cannot work. If you've bumped into me in class when we discuss the shift from paper to head-copy, you've heard me say, "you need to be ready to suck for a while before head-copy comes".

Even if 45 wpm sounds like science fiction, here's why it matters. Look back at the walls you have already broken. Counting dots and dashes caps you around 10 wpm, and you got past it by hearing each character as a single sound. Spelling words letter by letter in your head caps you



in the low twenties. The pen caps you when your hand cannot keep up. Every one of those was the same event: an old method saturating, a while of feeling distinctly worse, then a leap. The wall at 25 is not a new and more frightening species of wall; it's the same shape as the ones behind you.

If you're at a plateau, my job is not to reassure you that consolidation is quietly happening. It is to say: your method has topped out, here is another one, you will feel worse for a while, and please do not reach for the pen when you do. Retreating at the dip is the one move that reliably prevents the leap. Throw the pen over your shoulder and don't look back.

IF YOU ARE NOWHERE NEAR 25 WPM

Plenty of this applies at any speed, and some of it argues against how most of us naturally practice (although, thankfully, it's in line with what the LICW recommends):

Mix things up rather than drilling in long blocks. Practicing several things interleaved – different characters, words, speeds, exercises – produces worse scores today and better retention later. A 2024 meta-analysis adds an interesting detail: the effect sizes were largest in learners over 60.⁶

Short and daily beats long and weekly,⁷ and once you can reliably copy something, stop drilling it that day. Repetition past that point buys a bump that decays within weeks.⁸

Practice on real language. Bryan and Harter, who studied telegraph operators in the 1890s and effectively founded the study of skill, found that an expert could hold forty to sixty groups in mind when the material made sense, and only three or four when it was random.⁹ Meaning is worth something like a tenfold multiplier on what you can carry.

Random groups have their place, but they are a different and harder skill, not the one that makes a QSO flow.

Never drill a crutch you will have to undo. Reversing a well-learned habit costs roughly two and a half times what learning it correctly cost in the first place.⁴

And one that is less a technique and more of a reality check: good practice is meant to feel worse than bad practice. If a session felt smooth and your score was high, you may only have been rehearsing what you already knew.

EARLY DAYS FOR THE ADVANCED CURRICULUM

At this point, our research into an Advanced curriculum is in the very early stages. We've collected academic papers and cross-referenced them with what we know works in LICW classes. Some genuinely interesting questions have surfaced too – chief among them how much of a word vocabulary arrives on its own from hours of listening, and how much is worth installing on purpose. That is really a question about the best use of a practice hour, and it is exactly the sort of thing we can answer in class, through rigorous, empirical research, as we've done so well before. That part is coming, and I'm excited about it. This is the club that turned "let the code come to you" from a nice phrase into a curriculum through real research, and I think we can do the same for the next series of classes.

In the meantime, let the code get a little ahead of you. Read further ahead than feels comfortable. And when something you used to be good at suddenly feels awful, consider the possibility that you have just changed methods, and that the leap is waiting on the other side of it.

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THE UNIFIED OVERLEARN BOOTCAMP

– Tom Weaver, WOFN

We've updated the Long Island CW Club's **Bootcamp** into a single, unified experience spanning four skill levels, from Intermediate 1 through Advanced 1 (INT1–3 and ADV1). We will evaluate and refine this new course based on real-time and post-Bootcamp feedback from both students and instructors.

Instead of splitting classes by speed or experience, BootCamp now brings everyone together. As a result, the August 2026 BootCamp will have more participants than usual. Here is why this combined approach delivers a far more effective learning environment for every student:

Immersion Matters More Than Copy Speed: Bootcamp's core value comes from immersion in short-flow and long-flow CW, active listening, learning Morse code fluency concepts, and reframing how you process code.

We All Play by the Same Rules: Whether you're just starting out or working on high-speed copying, the fundamental principles—such as the *Hierarchy of Skills* and *Over-Learning the Alphabet* as distinct, single sounds—apply universally.

Rewiring Habits and Mindsets Benefits Everyone: Replacing old, mechanical receiving habits with modern, fluid techniques require the exact same behavioral shifts at every stage of the journey.

Peer Learning Elevates the Room: In our experience, the insights, observations, and questions shared by more experienced students provide invaluable shortcuts and clarity for all students.

Shared Deep Dives: The high-yield discussions, Q&A sessions, and the breakdown of Type 1 and Type 2

reasoning concepts contain insights that every CW operator needs to hear, regardless of where they are on their CW journey.

ELIGIBILITY:

- Know the 44 basic Morse characters, attend the scheduled sessions, complete assignments.
- Be willing to participate in Q&A sessions and discussions during class.
- Have the ability to copy some short-flow CW (single two-letter words, and/or common three-letter words).
- Be in the Intermediate to early Advanced curriculum or have equivalent experience.
- *Commitment:* Attend the scheduled sessions consistently, complete the daily "homework" (up to 30-60 minutes/day in short 10 to 20-minute sessions), and engage fully with the concepts and behavioral changes being taught.

SCHEDULING:

- *U.S.:* Eight classes monthly, two each week (Tuesdays and Fridays) at 8PM ET beginning on Tuesday, August 4th through August 28th
- *Europe:* Eight classes spanning two months, one each week on Wednesday at 3PM ET (1900 UTC) beginning on August 5th and ending on September 23rd.

To register, click the **Bootcamp Registration link** in the *LICW Resources* section in the *Class & Forum Schedule* message on Groups.io. ★

Cheers,

– 73 de Tom WOFN

THREE VIDEOS ON COMMON MODE CHOKES AND REDUCING RFI FOR HAM RADIO RECEPTION

There is an excellent video available on Youtube, created by Quin Schultze, K8QS, and Tom Dulisch, WA9TDD, as part of their "Ham Radio Perspectives" channel, entitled "AMAZING Secret to Reducing Radio Frequency (RFI) in Ham Radio HF Reception!". In this 36-minute presentation, Quin and Tom interview Palomar Engineers' Bob Brehm, AK6R, about his "common mode noise filter" for receiving.

There are links included in the description for Palomar Engineer's products and for their excellent, free technical papers on all antenna subjects. Reducing RF noise in our modern inverter-and-switching PSU-infested world is a common, persistent and ever-increasing problem, and this video provides some great food for thought.

RFI Video:

<https://www.youtube.com/watch?v=ijep2lxDaZQ>

Another great Youtube discovery is a discussion of how Common Mode Chokes actually work. **THIS VIDEO SHOULD BE REQUIRED VIEWING FOR ALL HAMS.** It can be found here:

<https://www.youtube.com/watch?v=XiEpgtDupo4>

Bonus: Which mix to use – Mix31 or Mix43? View here:

<https://www.youtube.com/watch?v=V6QEPRtlfOo>



TWO CW JOURNEYS

Back in the dark ages of the late 1950's I first became aware of a thing called morse code. I'm not sure exactly how or when, only that several of us kids were also working toward our Novice license. We were being elmered by one of the local hams my dad's age, and needed to be able to pass a 5 wpm code test. I must have passed it because I have a copy of one of my first novice QSL cards from December 1960 when I was still using a homebrew 6L6 oscillator as a transmitter. It was always a thrill working 80m CW late at night and hear someone hundreds of miles away answer my flea-powered CQ. On one such night my dits and dahs must have awakened my grandmother whose bedroom was across the hall from mine, and was regaled with stories about her days as a telegrapher during World War I.

Shortly after that I passed the General Class exam and its 13wpm test, and graduated to a DX-100B boatanchor; 100 watts and a wire. Wow! Unfortunately the old beast chirped a lot and I mainly limped along on 80m AM, chatting with my fellow high school buddies in the midwest. Next came college, and ham radio started to fade. When my license came up for renewal I was faced with a decision: spend \$25 on a license I seldom used, or go on a date in St. Louis. No contest!

Before I retired, I taught Electrical Engineering. A few of my students were also hams and one even went so far as to check and inform me that my old call sign was still available. No, I did not need another hobby, thank you. Fast forward forty years or so and I found myself retired and camped out with a little Grundig short wave receiver. One of my geocaching buddies, who was an avid ham, had found out I was once KODMA and was constantly on my

back to get my ham license. I took out my radio one night, threw a wire up in a nearby tree, and tuned into one of the HF ham bands. Bingo! I heard someone calling CQ and could actually understand it! I couldn't read the call signs but I could sure hear that CQ and the memories just started to come in a cascade. Once again, I was hooked!

Suffice to say I am now KG5ZID. Things are a lot different than in the 1960s. The rigs are a whole lot lighter and smaller, computers are part of the package, digital modes abound, but Maxwell's equations are still valid and the antennas are still big. I get a kick even now out of hooking up a flea-powered rig to one of those big antennas and hearing someone way off come back to my CQ late at night. Only now I can also tune into an SDR in London over the internet and try to hear my own dits and dahs, or see how I'm getting out with one watt and a rain gutter on the reverse beacon network. And don't get me started on POTA! I only wish I had known about that ten years earlier when I was camping out with that little Grundig radio.

– Hardy Pottinger, KG5ZID

* * *

I haven't been a ham radio operator all that long; I started out in the hobby during the COVID shutdown, looking for something to occupy my time. One of the things I've really enjoyed is doing portable ops; in particular...taking a rig with me on camping & hunting trips.

Summer 2024: went on a week-long Halibut & Salmon fishing up in Alaska with friends, and decided to bring along my FT-818 to play with during non-fishing times. Needless to say, operating phone SSB with only 5w output didn't yield a lot of

OUTSIDE THE BOX

Trailer-Hitch Mast Mount

Have a trailer hitch on your vehicle? Turn it into a holder for your antenna mast by gluing a "pipe tee" onto the end of a PVC pipe big enough to fit over the hitch.

– Steve Greenbaum, N1SG



contacts from AK. It was after getting home I decided that in those types of situations, operating CW would give me more bang per watt, and that I needed to learn Morse code.

I joined LICW in February of this year, and have been enjoying the journey...albeit somewhat frustrating at times!! I just tell myself to keep calm and soldier on!

– 73, Brando Fox, W3TKB ★

FINDING SLOWER SPEED CW QSOS

– Mark Harrison, AC1CP

For those of us still working our way up in speed and learning to recognize code, finding slower CW on the air can be a challenge. I thought I'd share a couple of things I've run across that have helped me. Hopefully they'll be useful to others too.

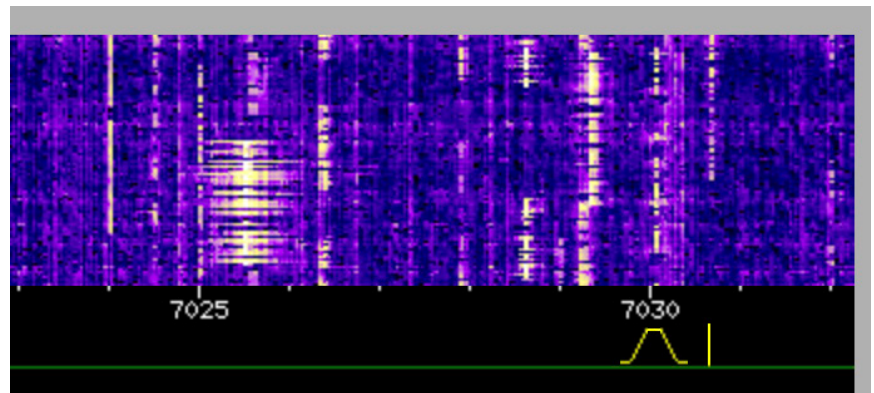
A.) BEACON NETWORKS

You can use the Reverse Beacon Spotter, which has filters for speed and bands. After you've selected the speed to filter on, you will find the frequency listed on the bottom left side of the page. If you click that, WebSDR opens on that frequency. I had to click Start Audio on the desktop for every new instance, which can be tiresome. It can be hit or miss whether they are still on the frequency. Go online to: <https://rbn.telegraphy.de/>

B.) USING THE WATERFALL TO SPOT SLOWER CW

After scrolling around the band with my beginner skills, I find most code is too fast at this stage for me. I was hoping the RBN would be the single tool to use, and while it can help, the hunt to find them still on frequency can be challenging.

While scrolling the band and listening by ear, I managed to find a slower-paced QSO. What I noticed with the waterfall was probably the most useful thing I've figured out so far. If you can read the vertical Morse code dits and dahs, it is a slower QSO relative to the other blurry Morse signals. This works even better if you have a larger waterfall display than WebSDR, especially if you have mature eyes! ★



CW Club RBN Spotter

The table shows recent RBN spots of (optionally filtered by CW club members) in a dynamically updated bandmap (also available via teletext). See [here](https://rbn.telegraphy.de/) for more info.

hide filter - hide frequencies and calendar

Members of: ☐ all clubs ☐ CWops ☐ FISTS ☐ FOC ☐ HSC ☐ VHSC ☐ SHSC ☐ EHSC ☐ SKCC ☐ AGCW ☐ NAQCC ☐ BUG ☐ RCWC ☐ LIDS ☐ NRR ☐ QRPACI ☐ QWJE

☐ TORCW ☐ SOC ☐ UET ☐ ECWARC ☐ LICW ☐ EACW ☐ ME ☐ AIC ☐ NTC ☐ MORSE ☐ 4SQRP ☐ 30CW ☐ SPCWC ☐ HTC ☐ U-QRQ-C ☐ GPCW

☐ Marconi Club ☐ SMHSC ☐ QECWG ☐ CFO ☐ CFT ☐ FOQW ☐ QROCREW

Bands: ☐ all ☐ nil ☒ 160 ☒ 80 ☒ 60 ☒ 40 ☒ 30 ☒ 20 ☒ 17 ☒ 15 ☒ 12 ☒ 10 ☒ 6

Speeds: ☐ all ☐ nil ☒ <10 ☒ 10-14 ☐ 15-19 ☐ 20-24 ☐ 25-29 ☐ 30-34 ☐ 35-39 ☐ >39

Call filter: *

Own call: ☐ GUEST ☐ Include self-spots

Skimmers from: ☐ all ☐ nil ☒ EU ☒ NA ☒ AS ☒ SA ☒ AF ☒ OC ☒ Custom

Max spot age: ☐ 5 ☐ 10 ☐ 15 ☒ 20 ☐ 25 ☐ 30 ☐ 35 ☐ 40 ☐ 45 ☐ 50 ☐ 55 ☐ 60

Refresh rate: ☒ 30 s ☐ 60 s ☐ 120 s ☐ 180 s

Sort by: ☒ Freq ☐ Call ☐ Age ☐ Club ☐ Speed ☐ Spotter

Misc: ☐ Abbreviate Club Names ☐ Top 9 QRGS only ☐ Click on call links to: RBN Activity Lookup: [RBN Activity Ranking](#)

Alerts: ☐ Visual alert ☐ Audio alert (CW) [Alert help](#)

Awards: ☐ CWops: ☐ ACA ☐ CMA ☐ FOC: ☐ Augie ☐ Windle (one QSO / year) ☐ Windle (normal) ☐ ABC ☐ WAFOC ☐ Options: ☐ Show only needed stations on bandmap ☐ Audio alert (CW)

Club	160m	80m	60m	40m	30m	20m	17m	15m	12m	10m	6m
HSC, VHSC, SHSC, EHSC	-	3.525 / 3.567	-	7.024 / 7.025	10.125	14.025	-	21.025	-	28.025	-
CWops	1.818	3.528	-	7.028	10.118	14.028	18.078	21.028	24.908	28.028	-
FISTS	1.818	3.558	-	7.028	10.118	14.058	18.085	21.058	24.908	28.058	50.058
FOC	1.825	3.525	5.373	7.025	10.125	14.025	18.080	21.025	24.905	28.025	50.095
SKCC	1.8135	3.530 / 3.550	-	7.038 / 7.055 / 7.114	10.120	14.050 / 14.114	18.080	21.050 / 21.114	24.910	28.050 / 28.114	50.090
NAQCC	1.810 / 1.843	3.560	-	7.030 / 7.040	10.106 / 10.116	14.060	18.096	21.060	24.906	28.060	50.096
UFT	1.835	3.545	5.352	7.013	10.135	14.045	18.083	21.045	24.903	28.045	50.085
ECWARC	1.822	3.542	-	7.022	10.122	14.042	18.082	21.042	24.912	28.022	-
BUG	1.813	3.533	5.373	7.033 / 7.123	10.123	14.033	18.083	21.033	24.903	28.033	50.083
U-QRQ-C	-	3.518	-	7.018	-	14.055	-	-	-	-	-
GPCW	1.830	3.528	-	7.028	10.128	14.028	18.081	21.028	24.898	28.028	50.098
Marconi Club	-	3.564	-	7.029	-	-	-	-	-	-	-
HTC	-	3.550	-	7.033	-	-	-	-	-	-	-

Upcoming events
Jul 31, 2000z to 2100z KIUSN Slow Speed Test EU
Aug 1, 0000z to 2359z SKCC CQS
Aug 1, 0000z to 2359z SKCC Slow Speed Saurter
Aug 3, 0000z to 0100z KIUSN Slow Speed Test NA
Aug 3, 13z, 19z, 03z MST Medium Speed Contest
Aug 3, 2230z Great Lakes Bay Net
Aug 4, 1930z to 2030z Tuesday's Telegraphy Contest
Aug 5, 1200z to 1300z AICLUB Weekly Contest
Aug 5, 13z, 19z, 03z, 07z CWops CWT
Aug 6, 1830z European BUG Net
Aug 6, 2300z Burlington ARC Slow CW Net
Aug 7, 2000z to 2100z KIUSN Slow Speed Test EU
Aug 8, 1200z to 2359z SKCC WES

Frequency	Call	Age	Member of	WPM	Spotted by (and signal strength)
7024.1	LU5DZY	5		13-14	CX6VM PY2XNK PY2PE
7025.0	SM/DL1YEQ	8		12	SP5GQ
7036.1	DL3JAF	2	AGCW	13	DL8TG DK3WW PASKT4 DL1HWS P4ACC ES2RR DM5GG OK1FCJ F4GOU OE9GHV S5DARX OE6ADD HA1VHF DM6EE DF7GB DO4DXA G4ZFE SESE ESSPC DE1LON DK9IP1 G0TMX IK4VET DK3UA SM7JUN HABTKS Y02CK G4II
7039.0	EA2DR	1	TORCW	13	G4ZFE
7049.0	K1GOW	6	NAQCC	13	K5KHK
10111.0	LASXT	4		14	G4ZFE
10111.0	LASXTA	3	SKCC	13-14	ES2RR MM9PSY DK3UA RU9CZD SP5GQ OK1FCJ G3AKX OK9IP1 LZ5DI DE1LON ES5PC GOKTN
10112.0	WA0RSX	0	FISTS SKCC	14	KW7MMZ ND7K KSTR
10114.1	BA3GES	4		14	ESSPC RU9CZD DL1HWS E4HQ DL8TG DCRYZ P4ACC S8BW
10115.0	LZ3MAR	2		14	OE6ADD SESE S8BW OK1FCJ HA1VHF IK7YTT OK1HRA ESSPC DE1LON DL8TG DL1HWS3 G3AKX SM7JUN
10115.0	LZ3MI	7		14	S8BW
10120.0	K8JD	7	FISTS SKCC NAQCC NRR	11-13	W66BEE K5KHK
10120.0	KD7ZNG	0	SKCC	13	ND7K KSTR
10122.2	K4WOP	2	FISTS SKCC	13-14	K7EK K9IMM K4PP AC0C1 WE9V

NATIONAL TRAFFIC SYSTEM NET TRAINING

– Ed Conway, N2GSL

SKILLSET FOR CW NET COPY

Is there only one skill needed for CW Net Copy?

No, many skills are needed for an operator to copy a CW net. During the call up or preamble of the net head copy can be utilized as this may not be the first time you heard the net being called. You are familiar with the preamble. When the Net Control Station (NCS) sends his call during the preamble you slip into “note taking” mode and jot down their callsign. Once the preamble is completed the NCS may ask for specific stations to check in that have a defined role. They may have been assigned to check into a net earlier in the day to bring traffic from the earlier net to the net you are listening to, or tasked with taking traffic for a later net from the net you are receiving. In other words, they are representatives from or to another net. You should note their callsigns and any traffic they list. They will state the destination of the traffic and the number of messages when checking in.

Next the NCS will call for general check ins using the QN signal QNI. Note taking mode continues as you hear the stations check in. This is also when you check in if you were planning to. You need to know who the station was before you check in as later when it is time to check out of the net the NCS will do so in order of check in.

Whether you are receiving traffic or listening to the messages as practice, you need to decode and write or type each character of the message. This is another skill set described as *annotative*

copy, meaning writing down every character or word.

As the net proceeds you continue to take notes. If you are listening to improve your skills, the checkout process is another chance to practice call sign recognition. If you checked into the net you are listening to know when it is time for you to check out.

Listening to or participating in a CW training net is a terrific opportunity to develop and train many of the skills that you use to make contacts, have QSOs and even ragchew on the air. To learn more about CW nets, the LICW National Traffic System Net Training classes will resume on September 22. The class meets on Tuesday evenings at 7pm ET in Zoom room A. ★

– 73, Ed Conway N2GSL

LICW FACE TO FACE OUTING

LONG ISLAND AREA AT BELMONT LAKE STATE PARK WEST BABYLON, NY

Everyone had a wonderful time at Belmont Lake State Park on Thursday July 23; the weather was perfect. The temperature was about 80 degrees with low humidity and very few clouds. There was just enough of a breeze to keep the insects away. Owen NA2MM, Howard WB2UZE,



Owen with his Elecraft KH1

Dick N6AA, and Ed N2GSL met at the Terrace Diner near the park. Dick, from California, was visiting family here on Long Island and made time to join us.

Owen used a Chelegance telescoping vertical as an antenna paired with an Elecraft KH1. Owen successfully activated the park by making many contacts to Ohio, Michigan, and other stations in the Midwest.



Ed and Dick at the picnic table

Ed set up his Yaesu FT-891 and a vertical Random Length End Fed antenna. It took three tries to get the arborist throwline up high enough into the tree. With perseverance and patience eighteen contacts resulted in 11 DXCC entities. European contacts were made to Poland, Croatia, Sardinia, Corsica, Italy, Germany,



France, and Spain. Also, Ed's station contacted the Caribbean with stations in Puerto Rico and Saint Kitts & Nevis. Out to the west Utah and Idaho stations made it in the logbook. ★

– 73, Ed Conway N2GSL

2026 WAYNESVILLE NC HAMFEST

Photos by Allen Cutts, N4OZI



2026 WAYNESVILLE NC HAMFEST (Continued)



THE LICW ANTENNA FORUM: UNEXPECTED ANTENNAS

– Kimball Williams, N8FNC

As practitioners of 'the radio art' we spend a lot of time thinking about our antennas. I mean the ones we put up intending to use for sending and receiving signals on the bands we normally think of as 'ours', i.e. those which are part of the **ARRL Band Plan** (<https://www.arrl.org/graphical-frequency-allocations>). If we are successful, we will receive signals from other amateur radio operators, and be able to reciprocate by responding to a 'CQ', or join a traffic net.

However, sometimes we discover that the antenna we intended to receive other Ham's signals also seems to be receiving 'something' that is neither what we were expecting, nor any signal we can easily identify. If you are thinking of radio 'noise', Radio Frequency Interference (RFI), (QRM), you are correct. That unwanted signal is getting into our receiver when we don't want it, can't use it, and just want it to 'go away'.

There are companies that are willing to sell us products designed to reduce radio noise with filters, or phased antenna systems to pick up the noise, and use that signal to cancel the objectionable signal in our receivers. Those can cost lots of \$\$\$, may or may not solve the current problem, and may not solve additional noise sources if / when they show up.

So, what's to do?

One basic principle recommended by the IEEE (Institute of Electrical and Electronic Engineers) Electromagnetic Compatibility Society is: **Solve the problem at the source.**

The reasons for this approach are two:

1. There may be more than one 'receiver' being interfered with by the noise source. (Consider your cell phone, your home Intercom,

HiFi, TV or AM or FM broadcast receiver, etc.)

2. Solving the problem at the source is usually easier and less expensive.

The obvious question is 'how do I identify the 'source'?

There are a few techniques that can help isolate the origin of the noise, and fortunately most are straight forward and easy to do. A few only require slight 'adjustments' to our receiver. Others may require the active cooperation of the members of your household. Only a very few may require building or buying equipment.

Suggestion: If your local radio club has an RFI committee, contact them and see if they can assist you to hunt down the source of the noise, and suggest ways and means to control or eliminate it where that is possible.

If your local club does not have an RFI committee, after you successfully finish finding and correcting your problem, consider starting one.... It is a great way to help out!

Assuming your local club does not have an RFI committee, continue reading so we can identify and solve this together. As they say, 'this is not 'rocket science', and in learning what you needed to learn for your Amateur Radio license, you have all the basic concepts already in your mental 'Tool Kit'. We just need to show you how to use a few of the 'tools' in ways you might not have considered before.

STEP 1: DETERMINE IF THE SOURCE IS WITHIN YOUR DIRECT CONTROL

In this step we will hope to confirm the source of our noise is in our own home. (This is actually the best scenario. If the noise is in your home, the likelihood of being able to solve

it is much better than if it is in your neighbor's home, or on a power line or at a power pole etc...)

1. Begin by powering your receiver, (or another) from a DC source (battery) and tune to clearly hear the offending noise.
2. Move to the primary AC power panel in your home and turn off the main power breaker.
3. Did the noise source go away? If so, celebrate because your chances of solving the problem have greatly improved.

Happiness! The problem is within your scope of control!

4. Next turn off all the individual house circuit breakers, then turn on the main breaker.
5. **Nothing should change at this point**, since in the previous step everything in the home should still remain without power. If the noise comes back, there may be a problem with the home wiring. Consult an electrician before you go further!
6. If you hear no change when the primary power breaker was closed, proceed to switch on each of the other circuit breaks for each room, **one at a time**, while monitoring the receiver. (The room powered through each breaker should be written on the distribution box front panel 'Map' to identify each room.)
7. If the noise comes back, record which room was re-connected to power, *note the noise level on your receiver and what the accompany noise sounded like*, then open that circuit breaker and leave it open.
8. Move back to the main power panel and continue to turn all the rest of the breakers on, then off, one at a time, to confirm whether



more than one noise source exists. If so, record each room that enabled a noise source, its noise level in your receiver, and identifying features and then turn all off.

Congratulations! You now have a 'map' of where each noise source in your home can be located, and appropriate solutions applied.

STEP 2: SEARCHING IN EACH ROOM OF YOUR HOME

1. If there was one room in your 'map' where the noise level in your receiver was loudest, or more disruptive, *reconnect the circuit breaker for that room, and move to that room.* **Note:** EMC engineers referring to starting with the loudest signal first as 'peeling the onion'. This is because the loudest signal will 'cover up' weaker signals, so you need to eliminate the loudest signal first, then go after the next loudest. "Peeling the Onion."
2. Turn off – and/or- unplug every electrical or electronic device in the room, one at a time, and note when the receiver noise disappears or reduces. **Note:** Some modern electronic devices still draw 'fast start' current even when turned off. If you turn off everything and the noise remains, then unplug everything, one at a time, again watching the results in your receiver.
3. If the noise source is 'broadband', (The noise covers a wide frequency range both above and below the frequency you first noticed), that may mean electrical 'arcing' [an unintentional spark-gap transmitter] and it may indicate a safety concern and a potential fire hazard.

Short True Story: A few years ago a Ham in a new community had interference located in his garage. Nothing plugged into the garage

outlets showed any change in the interference. Walking around the garage with a small AM receiver demonstrated that the background noise got louder when approaching a permanently wired device property of the phone company. When a representative of the phone company arrived and heard the noise in the AM receiver, he disconnected the AC power to the device and the noise went away.

Follow up: It turned out that the device was the battery back up to the home server for phone and internet. The battery charger was arcing internally and was a potential fire hazard! Finding that noise source may have saved the Ham problems in the future.

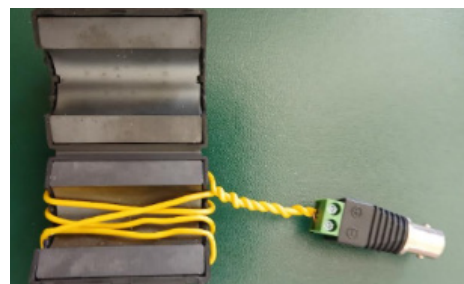
If the noise is coming from a room with no obvious device powered from the AC line, look for something permanently connected to AC power. Kitchen and Bathrooms often have GFI (Ground Fault Interrupter) devices for safety near sources of water. A GFI will detect when more than 3-5 mA of current is flowing in the green wire 'safety' line, and shut off power to its outlet plugs.

The average human body presents ~1500 Ohms of body resistance across the heart. AC voltage at 120 Volts will develop ~14 mA. The GFI detects that current and shuts off the primary power in ~1/40th of a second, saving a life!

A GFI that will cause noise is unlikely, however if you determine it is the source of your noise, let a qualified electrician make any changes.

4. If you find only one noise source in a room, celebrate, ... because your problems just got easier to solve.
 - If it is something you don't need, or don't use, toss it!
 - If it is something easy and/or low cost to replace with a 'quiet' model, Hooray!

- If it is something costly and under warranty, contact the manufacturer's customer service department and give them the news.
 - If it is something costly, and not easily replaced, look at alternatives.
5. In a great percentage of devices powered from the AC lines, any noise generated within the device is radiated by coupling into the power cord and the power cord becomes an unintended antenna.
 6. Moving a portable receiver antenna close to the device and then along its power cord may indicate that the power cord has become an antenna for noise.
 7. If you have access to a portable oscilloscope or spectrum analyzer or NanoVNA, a simple clamp on RF current probe may be built from a ferrite clamp. See the photo below. Notice the simple construction, add a few turns (4 or 5) to pick up the field and attach a connector (if you want to be fancy) or just plug the end of one wire into the center of the instrument (receiver / scope / spec_Anal / NanoVNA / etc.



Our local IEEE (Institute of Electrical and Electronic engineers) EMC-S (Electromagnetic Compatibility Society) Chapter built these as a project by and for the members as a handy, and inexpensive, field measurement tool.

8. An alternative method demonstrated by Karen Burnham, EMC Engineer - KE8GVH – and CEO of EMC United demonstrated at the IEEE EMC Symposium in August this year involves using a long wire,

Continued Next Page

THE LICW ANTENNA FORUM: UNEXPECTED ANTENNAS (Cont'd)

cut to the lengths of the power cord laid next to a line carrying power. The wire will 'couple' enough energy to identify RF 'hot' frequencies. Just plug the end of the wire into the center conductor of a measurement instrument and voila! **Note:** *This is a practical solution for a long 6 foot or 2-Meter power cord but, a clamp-on probe would be a more practical solution for long leads such as with HiFi speakers, for example.*

9. If you determine that the problem noise is indeed being radiated from the power cord, or long speaker leads from your TV to your surround sound speaker system, you might want to consider appropriate capacitors or ferrite rings to impede signals on those lines, or clamp on ferrites if the problem responds to common mode chokes well.
10. One last suggestion to try is to listen to the noise on your receiver and loosen the part of your RF antenna cable connector that holds the connector to the chassis of the receiver and back the connector out just enough to disconnect the shield but leave the center connection in contact with the receiver input port.
11. Did the noise level drop significantly? Then the noise is being coupled into the coaxial cable braid shield.
 - If yes, then an option to consider would be one of the designs for an HF common mode choke in the antenna line.
 - If the noise level stays about the same, then the noise is entering through the antenna itself, and a common mode choke is not likely to help.★

ARRANGING PRACTICE SESSIONS WITH OTHER MEMBERS

– Don Zvareck, KC0DWZ

Recently there have been questions about how to coordinate practice sessions with other members, as well as finding on-air opportunities to work other members. We would like to encourage members to use our vast resources to help you achieve these interests. Specifically,

- We offer about 26 hours of "Open Practice" and 17 hours of "BC Open Practice" on our class calendar. Feel free to coordinate meeting your classmates in any of those slots for practice.
- Also, we have 5 Zoom rooms that are only about 20-25% utilized for our academic classes and forums. Rarely are all five scheduled at the same time. That means the balance of the week they are available for YOU and other members to practice! If the open practice times don't work for you, just search the calendar for an open room and pop in! You might encounter other members as well, or, have the place to yourselves. These are a great place to practice QSOs back and forth if you feel your fist isn't quite "prime time ready."
- Want to try a QSO with real world conditions? Use Zoom for you and others to coordinate which bands might be open between you. You can each mute while sending over the air, and then unmute after and discuss how it went.
- If you haven't yet joined our Discord server, it is a great, near-real time way to reach out to other members to practice or even get on the air. We have two specific channels

at the moment: "skeds-for-cw-practice" where you can post your availability and skill level and "ragchew" where you can seek members who want to get on the air and expand beyond prescribed exchanges.

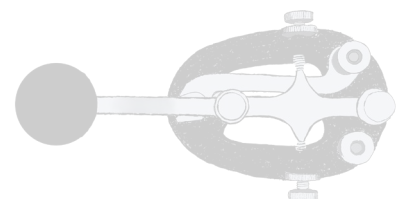
- Additionally, we have a "sota-pota" channel that often shows when members are out activating and a great spot to find what frequencies they are on (in addition to pota.app and SOTA Watch, of course). There is also an "on-air" channel where people might mention stations of interest, and our "dx-marathon" and an "skcc" channel where ops can discuss SKCC items.

We strongly encourage you to use Discord or direct communications with classmates and friends to coordinate practice. Use of groups.io is discouraged because 1) it often is not timely as many members choose the "digest" option and won't get notified for several hours; and 2) it sends an email (and the subsequent thread emails) to over 8,000 members. So please use Discord for these types of communications.

Feel free to use the club resources to help you get on the air! If you have any questions feel free to contact me at KC0DWZ@gmail.com.

Thanks, and good luck!★

– 73, Don Z, KC0DWZ



KIDS CW CLASS NOTES

– Bob Cady, W7JNM

What a wonderful summer the kids classes have had! Student enrollment has stayed strong and we have had many wonderful accomplishments from our kids. We are not the only Elmers/Mentors that these young people have and please reach out to all the amateurs who guide and work with these young people as they grow in Amateur Radio. Many of us have had the joy of meeting some of our kids this summer during amateur radio events and activities.



Alice, KO6KZO, was on a SOTA journey from CA to OR when she ran into one of our local hams and his wife who are into SOTA also and they climbed together and activated. Alice also has started using the 2M handheld that can be firmware updated to send CW, and successfully became a member of the new “Brass Knuckle Gang” in so doing!

Haley, KE2EVX, was a keynote speaker in the *Youth Forum* this year at Dayton and already has brought 2 new students to us, one of them local



to Ken and I in Portland, through the *Youth on EchoLink* group.

Kasey, KD2YMM, works in the radio room on the museum ship, the *USS Slater*, and is introducing a GOTA class during our regular class hours for students that are ready to get on the air and may not be able to attend the GOTA on Sundays with Cathy, W4CMG.

We have added 4 students locally this summer. Anjuli logged for 2 of the Portland Amateur Radio Club's CW operators during Field Day. She will be on the air by Winter Field Day. A local Ham that Ken and I work with on the museum ship, *USS Blueback*, SS-581, has an operational Remote Flex Radio network that is strictly web based and is allowing our students to have access to radios on this network. This is a game changer for our licensed students without

access to radios or in restricted areas and cannot put up adequate antennas.

Finally, Ken and I are volunteers at the *Oregon Museum of Science and Industry* and not only work on the submarine but also are docents in the featured exhibit which until October, is about the Titanic. Below is a picture of Ken demonstrating Morse Code with a replica of the Kent Key that the Titanic would have used. We have attracted 2 new students from this.

All of us from the Kids Classes wish you a great Fall and hope to hear you on the air! ★



BIG SIGNALS FROM A LITTLE PUCK: PRINTING, ASSEMBLING AND MODIFYING THE POLYPUCK

– Richard Rieben, KE4WLE, Amateur Extra

At the summit of Mestaáèhehe Mountain in Colorado, with a thunderstorm building over the next ridge, I had about twenty minutes to get ten contacts in the log. Setup took four of them: drop the puck, thread in the whip, fan out four radials, clip on the coax. The rest of the time was mine. That little puck has become one of the most-used piece of gear in my kit, and it costs less than a decent dinner.

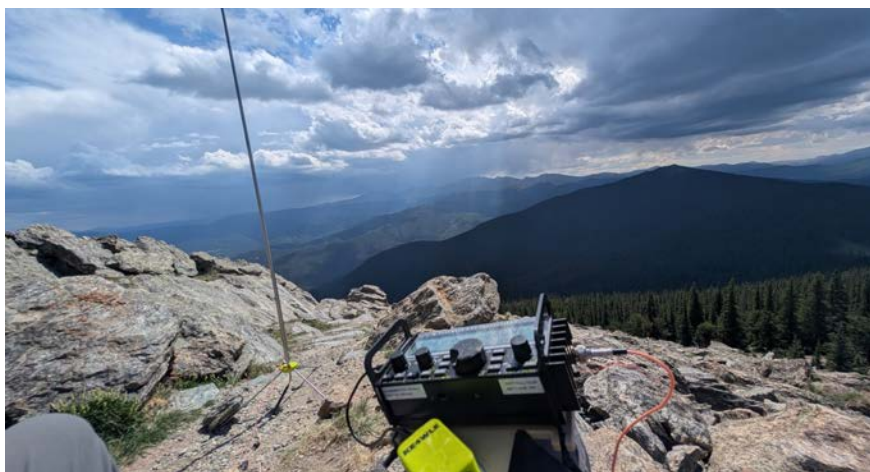
WHAT THE POLYPUCK IS

The PolyPuck is a 3D-printed vertical antenna base hub designed by Kevin, W0AEZ. It is a simple idea executed well: a puck with a 3/8-24 antenna mount in the center, three angled sockets for 3/8" legs, and screw terminals for radial wires. It accepts anything with a standard 3/8-24 stud – I typically use it with a 17' or 25' telescoping vertical with or without an adjustable coil depending on desired bands. You supply the legs and the wire; the puck does the rest.

While it's commercially available from Kevin in completed and kit form, Kevin generously publishes the design files for free on Printables. A commercial tripod mount from the usual vendors runs well north of a hundred dollars and weighs several times as much. This prints overnight in PETG for a couple of dollars of filament.

THE CASE FOR PRINTING IT YOURSELF

Buying one is easy, but printing your own has real advantages beyond the price. First, spares are free. I keep two in the truck and one in the go-bag, and I have never once worried about stepping on one. Second, material choice is yours: PETG for general use, ASA if it lives in a hot vehicle, carbon-fiber blends when every gram matters.



Rocky Mountain ops — the whole setup packs into a side pocket.

Kevin provides guidance on printing profiles, but I typically use 6 walls with 30% gyroid infill.

Third — and this is the part that hooked me — once the model is on your own build plate, it stops being a product and starts being a platform. Every annoyance I hit in the field turned into a small design problem I could solve before the next trip.

THE ACCESSORIES I DESIGNED

Over this past few months I built up a collection of add-ons, all published free on Printables. A few highlights:

Martin's Not-So-Murderish Spike. Metal ground spikes and TSA do not mix. These printed spikes are designed to pass through carry-on screening, and they work either under the puck or on the leg ends. They will never match steel, but they weigh almost nothing. Print them in a carbon-fiber filament — I used PETG-CF at ten walls and 30% infill. Unless the ground you're setting up on is rock-hard, these will get the job done — even better if you can anchor it down in case of any wind.

3/8" tubing plugs and rod caps. Hollow stainless tubing weighs about a third of what solid stock does, which



Summit operating. Weight matters when the base is on your back.



is a substantial saving across three legs. The plugs cap the open ends — flat to keep from scratching gear, pointed to turn a leg into a ground stake. The rod caps do the same job for solid stock and keep bare ends from shredding a pack.

SO-239 adapter shim. A small part that solves a real irritation: without it, the adapter can spin freely in the housing during assembly. It ships in the W0AEZ kits but was never in the published files, so I made one.

Rod organizer. Keeps leg sections bundled instead of rattling loose in the bag. Unglamorous, and I use it every single time.

TAKING IT MOBILE

Two of the accessories exist purely for vehicle operating. The PickupPolyPuck embeds the puck into a trailer hitch bar — same assembly as stock, but now your antenna base is a solid part of the truck. The Flagpole Base version drops into a standard drive-on tire-mount flagpole base. Both are printed at six to ten walls with 30-40% infill, and both have handled a 25-foot telescoping whip without complaint. On a July roving trip through the Dakotas, I ran the hitch version at stop after stop and it handled it just fine.

WHERE TO GET ONE

If you have a printer, everything above is free to download. If you do not — or you would rather have it in your hands next week — Kevin sells the PolyPuck v3 both ways from his site. The kit version includes the printed puck and hardware, and you supply legs and radial wire. The assembled version arrives ready to use. Both are printed and hand-assembled in Colorado.

Whichever route you take, this is one of those rare pieces of gear that is cheap, light, endlessly adaptable, and genuinely good on the air. 73!



Left: PickupPolyPuck in the hitch, solid enough for a 25-foot whip. Right: Flagpole Base PolyPuck with a base-loaded coil.



Roadside activation in the North Dakota badlands.

LINKS

Original PolyPuck v3 (free files):
<https://www.printables.com/model/292691-vertical-antenna-tripod-polypuck-v3>

PolyPuck Accessories (free files):
<https://www.printables.com/model/1778502-polypuck-accessories>

Assembled unit: <https://w0aez.com/products/polypuck>

Kit version: <https://w0aez.com/products/polypuck-kit> ★

– 73, Rich KE4WLE, OH - #4504i

WHAT LED ME TO MY “DREAM RADIO”

– Don Zvareck, KC0DWZ

Buying a new ham radio is always exciting. *SELECTING* a new ham radio can be extremely daunting, depending on how broad your considerations are. This is my story of how I arrived at my new (and likely last) shack rig.

Being a COVID-era ham (only by finding out there was no longer a Morse Code requirement in 2020), the “hot” radio at the time was the ICOM IC-7300. After extensive research for the radios of the day (IC-7100, IC-7300, FT-891, FT-991 and FTdx10) I chose the 7300. The dx10 was beyond my price point at the time, especially since I didn’t know if this “ham radio thing” was going to stick or not. I had already purchased a 2M / 70cm shack unit, so the 7100 and the 991 would have been redundant since they are “shack in the box” units. I chose the 7300 since it had the built in tuner, it looked nice, and there was a lot of information available from the YouTube community from the likes of Dave Casler and Tom WA2IVD (*Ham Radio A2Z*). It made the learning curve much shorter. I enjoyed the radio for years, and even bought a second one for POTA along with an FT-891 that I never quite became comfortable with.

Then I learned CW through LICW and wanted to see if the Yaesu FT-710 (released a couple of years earlier) was any better for CW. I bought it in 2024, expected it to be no better, and then planned on selling it. Now, along the way I had acquired an IC-705 for POTA and the CFT-1 so I had plenty of QRP rigs (since adding a KX3) so I had many options. I did find the FT-710 had one (and only one in my ears) advantage over the 7300. It had APF which allows an additional audio peak filtering capability in the passband. So when the IC-7300 Mk-2 came out WITH APF and

some additional features, I strongly considered purchasing one of them and dumping a 7300 Gen 1 and maybe another radio. Hamvention, here I come with plastic in my pocket!

Prior to Hamvention I was made aware of a Flex Radio that was available for an attractive price. Not ever having a Flex, I consulted a Flex owner who I knew would give me unbiased thoughts. So I rang up our very own Mike N1CC and explained my thinking. He listened to my radio history, why I was considering Flex, some things I liked and didn’t care for on the Flex radios, etc. Then he said “If money were not a consideration, what would you get?” Without even thinking I blurted out “Well my dream radio is an IC-7610.” To which Mike replied “So why don’t you get the 7610?”

Gulp. Fair question. I have always admired the 7610 from afar. When at an HRO or at Hamvention I would look, play with, and figuratively drool at them. It can give the appearance of an older style radio but also has all the modern features, including the much coveted APF, dual VFOs, a DVI output (like the FT-710) and so on. It also features the ability to plug in both paddles and manual keys simultaneously and switch from one to the other seamlessly. Almost every 7610 owner I know uses them as their daily driver and wouldn’t change. So, when I got to Dayton I immediately asked if anyone had them discounted at the show. They did. I then had the opportunity to sit at length with one of the DX Engineering folks about the radio and all the others in the similar class. He had owned all and the one he has stuck with is the 7610. So after two days of pondering and debating I made the purchase. Well, I tried to make the purchase but my credit card was flagged for the purchase amount

and location! Which was fine as the credit card company alerted me to ask if the purchase was valid. Once I assured them it was, it went through. BUT...the flag caused my dear XYL to ALSO get an alert. With the amount. And the vendor. And as soon as the transaction was complete I received a text from her: “New radio, huh?” So much for stealth.

The radio arrived home the day after we did. I have been using it and growing into it since then and the more I use it the more I realize this radio absolutely fits my operating style. With 5 years of ICOM experience behind me (7300, 705) the 7610 is very natural to me. I was never comfortable in the Yaesu ecosystem. Don’t get me wrong... Yaesu radios are fabulous, and there is a certain part of me that wishes I could have benefited more from the venerable FT-891. But the ICOM menus and button are my comfortable place. The other features I mentioned match my operating style, and the larger screen helps these aging eyes. All in all at the time of this writing I do not regret the purchase and have already sold one 7300 and am now marketing the 891 to help the defray the cost difference.

So what is my real message? Listen to the views of others on all the radios you might be considering for purchase. If you can, get hands on time with the short list. Operate them if you can. But most importantly, don’t buy a radio that someone else tells you to buy. Buy the radio **YOU** want and within your budget. If your dream radio is just beyond your price point, take your time until you can afford it. I am glad I did. And thanks to Mike N1CC for setting me on the right path. ★

Don—KC0DWZ



DON'T HANG UP YOUR MIC!

– Don Zvareck, KC0DWZ

"Don't hang up your mic!" That is the suggestion I have for new CW ops. You will hear from many others that they have never taken their mic out of the box. Or, they put away their mic years ago when they learned CW. Or, they can't even find a mic. They often say this with a twinkle in their eye and a smirk on their face. They are letting you in on the joke. They really aren't discouraging YOU from ever using a mic again. In most cases.

Others, however, may feel differently and really, *REALLY* have a distaste or disdain for phone QSOs. Others have vocal issues and it is a challenge. It doesn't matter why, but there sometimes might be some appearance of superiority as they are "CW-only ops." This is meant to offer some alternate perspectives.

I am a "no-code ham" minted in 2020. When I couldn't learn CW to get my license as a youth, I turned to the dark side, CB radio. I enjoyed using CB radio, mainly while mobile as I aged, until cell phones became in vogue. (*Aside: I moved into this house 24 years ago and I know I used my CB radio in the car when we moved from a couple of states away. I never recall getting rid of it, but I can't find it.*) So I gave up on ham radio until I heard there was no longer a code requirement and got my tickets. So, of course I started with VHF/UHF and then later HF phone. In fact I became a net controller for a Sunday evening net and was a local repeater NC for my club. I really enjoy talking on the radio during those times as well as other events and contests. The Indy Motor Speedway club station runs a phone-only event for the Indy Grand Prix, Indy 500, and Brickyard 400

and if you work each you can get a nice 8x11 QSL Card / picture of the 500 champion. Without my mic I wouldn't be able to have fun doing that. 13 Colonies is another event that has phone in addition to CW and digital. I try to get the sweep on CW and phone.

I believe that all hams should be able to pursue whatever facet of the hobby they wish, and we should encourage whatever they enjoy. I for one have had exactly one digital contact in the 3½ years that I have pursued CW. That was only because when I found out I only needed a digital contact with Nevada for a Worked All States award from ARRL, I dusted off WSJT-X and fired it up for one contact. Does that mean I don't respect or encourage those who use digital modes exclusively? Not at all. That is where they get their rewards. And, as the sun cycle continues, I too might be using that mode more than the last few years. It's ok!

So the appeal I have to new CW ops is, you do you. Please don't let others, well intentioned or otherwise, steal your joy from however you choose to participate by making you feel you have to hang up your mic. Personally, I think being skilled and adept at as many modes as possible is a feature, not a bug. Resist any naysayers who might hold their CW-only narrative over you. Respect and admire them, and hopefully they will do the same for whatever modes you choose. ★

Don—KC0DWZ

ZERO BEAT BY EAR

"Zero beat" takes advantage of the fact that when two audio or radio frequency signals are combined, two additional signals are created – the third frequency is the sum of the original two frequencies, and the fourth is the difference between the two. It is the difference frequency we are interested in.

You can use two audio oscillators to illustrate how zero beating works. At least one of the oscillators needs to be variable in frequency. Turn on both oscillators and bring the variable oscillator close in frequency to the other oscillator. As the two oscillators get closer in frequency you will begin to hear a third frequency – this is the difference between the frequencies of the two oscillators. This is the BEAT frequency. If the two oscillators are 1 kHz apart, this beat frequency will be 1 kHz; if one oscillator is at 2 kHz and the other is at 1.4 kHz, the beat frequency will be 600 Hz. When the two oscillators get very close, less than 100 Hz apart, you will literally begin to hear a regular, rhythmic BEAT. For instance, if the oscillators are only 2 Hz apart, you will hear a BEAT that occurs every half of a second. When this BEAT completely disappears, the two oscillators are outputting the same exact frequency.

Now swap out one of the oscillators for the received signal in your radio, and the other oscillator with your radio's sidetone. Turn your radio's break-in to off to listen to the sidetone without transmitting a signal. Press your key or paddle and tune your radio so that the BEAT frequency between the incoming cw and your sidetone completely disappears; now your radio is exactly on the same frequency as the incoming signal. In other words, your transceiver is now "zero-beat" with the received signal.

One caveat: "Receiver Incremental Tuning" (RIT), and "Transmitter Incremental Tuning" (XIT) shift your receive and transmit frequencies to compensate for signals that are slightly off-frequency. For zero beating to work effectively, make sure your RIT and XIT are turned off. ★

LICW STUDENTS BENEFIT FROM FIELD DAY TRAINING

I had a great time at Field Day 2026 – thanks to the prep I got from LICW. I joined back in November, hoping to get my CW skills back after being out of the hobby for 25 years. I attended a lot of classes, mostly the Beginner 2 classes with James AE6JG (*thanks James!*), but I got something out of every class. The Field Day classes were great!

Bottom line: I had 112 contacts, split evenly between 20 and 40. Before I quit I got 3 contacts on 80.

A buddy and I decided on a 2B effort from a local state park campground. I operated the CW station, he operated FT8. We set up early, using wire antennas in the trees, which was a good idea, since we discovered our signals interfered and we spent a lot of time trying to reduce the interference. Our plan was to swap bands hourly, 40 and 20.

Things got off to a slow start, since I guess a lot of operators don't set up until the event starts, but it quickly took off. It was pretty intense, with wall to wall stations calling CQ and creating pileups. Lots of strong stations. I wish the bands were that crowded all the time! My strategy was to hunt and pounce, starting at the bottom of the band and working my way up. I would listen, pick out the station calling CQ, copy the call and exchange, then throw out my call sign. That strategy worked really well. Sometimes I would answer the call before I got the exchange, and then wait until I heard it again and fill in the info. Rarely was I able to copy it the first time. The stations calling CQ were fast. I was using a keyer and N3FJP software, but only sending at about 16 WPM – which is the speed I can go with the paddle. I did have to use the paddle every now and then, so faster would not have worked for me.

I worked 7 hours, with breaks for food and to swap bands. That was pretty exhausting – part of the problem was the heat, 90 degrees in the late afternoon in

Georgia. My buddy worked about 10 hours on FT8, but it was a lot less strain for him.

Interesting to see the difference between CW and FT8. I had twice as many contacts, and I worked hard for them. My buddy wasn't even listening to his audio, just watching the decode stream and clicking his mouse. But it takes time to make an FT8 contact, and I could make a CW contact a lot faster – the slowdown was the time it took me to decode the fast CW.

You could tell the people that had NOT attended an LICW Field Day class! They sent a lot of extra info, repeated the exchange, asked for repeats, and dragged out the ending. Those of us "in the know" kept it short and simple and moved on.

And, in my humble opinion, some of the stations calling CQ were going way too fast for the conditions. Slowing down to 20 wpm or less may have resulted in faster turnover and more contacts...

But I had a lot of fun, and was well prepared, thanks to the LICW classes! Thanks!

– Sam N4MAP

* * *

While memories and enthusiasm were fresh, I wanted to share a couple of LICW experiences that might seem minor but made a real difference for me in this years Field Day. I am perhaps like some subset of your students that finds getting on air fairly intimidating (except for POTA) due to copying insecurities, and so there was no chance in my mind that I would have any involvement this year..

But this last month one of my int2 instructors, Eric K9VIC, included in his weekly class Field Day practices of callsign plus station class, section for us copy, and was generally encouraging Field Day involvement. Around the same time another one of your instructors, Todd NOIP, encouraged me to talk to my local radio club (which I had not yet joined) regarding Field Day, pointing me to SARA, the Stillwater MN club, that

was going to be active on Field Day and had a CW station.

While I wasn't brave enough to sign up with them initially, on Saturday I did plunge into hunting from home. Due to Eric's practices I found the hunting to be much easier than I imagined (I could just keep listening till I got the callsign and class section info down cold). As a result I did quite a bit of hunting that afternoon across several bands from my home station.

It was a blast and that gave me enough confidence to head over to the SARA Field Day site and make contact. I met some great people, joined on the spot and am now totally revved up for full involvement next year. I met another fellow student and we bonded over our KX3 radios, and while he too was too timid to sit in the chair this year, we both committed to be in action next year. I might not be ready to run a frequency but I already feel up to contribute by hunting.

Sometimes it is the small things that help those of us trying to climb the hill to keep moving. Yea for LICW and its instructors!

– Keith AC0VW

* * *

I'm writing to express my sincere gratitude for the recent Field Day training workshops organised by LICW, and to share my impression as a new member of LICW.

I am a retired electrical engineer, first licensed in 1965 as WN6RDG. I moved up to Technician class, but couldn't make the code speed for General and settled into the world of 2 meter AM with a Gonset Communicator III, where I sat until setting aside the hobby in college. Fast forward to 2009 and the "no code" era, I passed the Extra exam and dove back in with a passion for home-brew/kit built QRP and wire antennas. CW suddenly made a lot of sense again.

The odd thing was that I didn't really look at the LICW club until this year, drawn in by the ARRL Field Day classes



offered. 2026 would be my first Field Day in roughly 40 years and I was determined to make it my first CW Field Day ever, but Intimidation raised it's shaggy head to warn me off. That's where LICW, and particularly Howard WB2UZE and Mike N1CC, changed my outlook. While not the only instructors I met, they were folks I immediately felt comfortable with. They were more like 6th-grade geography teachers than drill sergeants. Mistakes were met with patient corrections and ample opportunity for "do overs" (which I needed). The classes were small and everyone was treated with quiet encouragement. The 1-hour meetings always seemed too short and I asked too many questions. I'd emphasize that attending multiple sessions is very much worth the effort. While largely redundant, I found myself becoming more comfortable with each one (I think I took five).

Now to the mechanics. While any key and any way of making dits and dahs is usable, making it work with Zoom requires some thought. If you haven't used Zoom video conferencing before, learn it first so you are comfortable with the class tool. At the least, you need to be able to open the program in a browser window to see and listen to the instructors and your fellow classmates. Next add your voice to the conversation and, finally, pipe your melodious CW sounds through to the class. There are lots of ways of doing it and feel free to message me through my QRZ address if you need advice! Probably the most important things are clarity and lack of background noise.

A short note concerning the advanced Field Day sessions where more operational details are addressed. Cathy W4CMG is incredibly knowledgeable with respect to both hardware and software, and apparently a dedicated contender! It's worth noting that the class is tilted towards club operations (Class A) and Windows software, since that represents the majority of Field Day operations. Operating 1E (battery) and logging to an Android tablet isn't terribly popular, but even there I found a couple of class attendees who could give me valuable tips and tricks.

"A PRINCESS OF MARS" ONLINE - INTERMEDIATE LEVEL CW HEAD COPY

"A Princess of Mars" by Edgar Rice Burroughs is out of copyright and was downloaded from the Project Gutenberg website as a plain ASCII text file. The Project Gutenberg license has also been included in the file LICENSE.TXT.

My adaptation is using the text files prepared by Howard Pepper, AC4FS. He has divided the eBook into roughly 10 minute segments. My approach differs from others as I am including three speeds for each segment. The segments are downloadable as audio mp3 files.

I have divided the chapters into 5 groups as follows:

- **Group 1:** 16, 18, 20 WPM
Forward and Chapters 1-5
66 Parts – 198 mp3 Files
- **Group 2:** 18, 20, 22 WPM
Chapters 6-11
62 Files – 186 mp3 Files
- **Group 3:** 20, 22, 24 WPM
Chapters 12-17
67 Files – 201 mp3 Files
- **Group 4:** 22, 24, 26 WPM
Chapters 18-23
53 Files – 159 mp3 Files
- **Group 5:** 24, 26, 28 WPM
Chapters 24-28
28 Files – 84 mp3 Files

There are a total of 276 Parts and 828 mp3 files

If you would like other speeds you can use the text files and create new mp3 files with: <https://lcwo.net/text2cw>

My "Table of Contents" will open the directory for each chapter. Each chapter is iTunes ready and may be directly imported. I have also included a playlist which may also be imported.

My "A Princess of Mars Online" real-time access is available here:

[http://www.w5wlg.net/A Princess of Mars Online/ACCESS.HTML](http://www.w5wlg.net/A%20Princess%20of%20Mars%20Online/ACCESS.HTML)

Complete groups may be downloaded here:

[http://www.w5wlg.net/Downloads/Morse Code Practice/A Princess of Mars/README.HTML](http://www.w5wlg.net/Downloads/Morse%20Code%20Practice/A%20Princess%20of%20Mars/README.HTML)

Installing all 5 groups will take 1.3GB of disk space. Each group may be downloaded and run standalone to save disk space.

A discussion of this project is on our Discord at "other-tools-apps."

I hope you find the material presented here useful in your CW path. Your comments and suggestions are always welcome! ★

– 73, Wayne Gary, W5WLG

* * *

[Editor's Note: You can save any module you want to to your hard drive – or to your phone, for CW practice anywhere and everywhere you happen to be. These audio files are perfect for maximizing your CW practice during all those idle times you would otherwise waste during the day!]

Wayne's "A Princess of Mars" CW audiofile collection is an awesome achievement, and will make an excellent study tool for all wishing to better their CW copying skills. We wish to thank Wayne for all the hard work he has put into this project!]

While I belong to a number of online radio clubs, I can say that LICW, its instructors, classes and fellow members are my new favorite and worth every

penny of membership. I even upgraded to Lifetime Member, I was so impressed! Thank you to all! ★

– Brent AB1LF

THE “DSPHAM” DSP AUDIO PROCESSOR

– Rich Spohn, WB2GXM

Anyone who knows me, knows I am a gear slut for audio filters (probably as a result of my growing up making music with analog electronic music synthesizers). When I got wind of this open-source audio project in late July, I immediately ordered the parts for it.

The DSPham is billed as “a DSP audio processor aimed at radio amateurs.” It uses an Arduino Teensy-4.0 processor as the heart of a remarkably low-cost and low-parts count digital audio processor. Be forewarned, this is NOT a kit, and cannot be purchased pre-assembled; you must buy the parts yourself and assemble the thing, then program it with an Arduino sketch which is provided on Github (see all the links below). However, assembly is very simple and straightforward. The only hard part is buying the Teensy-4.0 and its associated audio board (links are also provided below).

If you have ever put together an Arduino project from scratch, this will all seem like old hat; if you are new to the Arduino, carefully read the Overview which is available [here](#). Take your time with this project, work carefully and deliberately. Sparkfun provides the Teensy-4.0 with and without header pins, and I provide a link here to the header version. I do recommend that if you are at all interested in this project, purchase the Teensy-4.0 and its audio shield first, and look for the other four components later as they are somewhat generic. Teensys tend to suddenly go unobtainium (projects that call for the 3.2 version are currently out of luck for new stock). Do **NOT** buy the Teensy 4.0 with header pins installed! I did this, then found out later that purchasing the Teensy *WITHOUT* headers allows you to install double pins in order to neatly mount the audio shield on

top of the Teensy and then plug both into the breadboard as one unit ([this Youtube video](#) is for a different project but does show the correct way to mount the audio shield to the Teensy).

When I get interested in an Arduino open-source project, the first thing I do is to create a “Library” folder on my computer and download all the software, schematics, bill of materials, and any other provided information for the project. For the DSPham, you can do this all in one shot by going [here](#) and clicking on the green “Code” button, then downloading the Zipfile that appears last on the drop-down list.

The parts required are:

- One Teensy-4.0 (<https://www.sparkfun.com/teensy-4-0.html>)
- One Audio Shield for the above (<https://www.sparkfun.com/teensy-4-audio-shield-rev-d.html>)
- One 16x2 LCD display; the part described in the readme communicates with the Teensy via the I2C protocol and can be purchased from Grove (<https://www.seeedstudio.com/Grove-LCD-RGB-Backlight.html>)
- One rotary encoder, model KY-040 (<https://www.amazon.com/Cylewet-Encoder-15%C3%9716-5-Arduino-CYT1062/dp/B06XQTHDRR>)

- One LED of your choice
- One SPST switch, used when programming
- Header pins (Mouser, Digikey or [Amazon](#))
- Breadboard ([Amazon](#))
- Hookup wire, solid 18-ga.

You must provide your own enclosure. If you purchase the Teensy-4.0 with header pins, you can build this project entirely on a breadboard.

WARNING: Proceed at your own risk! **There are NO WARRANTIES OR GUARANTEES either stated or implied with this DIY project.** You should have prior experience in building Arduino projects, assembling circuits from schematics, using the Arduino IDE on a computer and uploading program “sketches” to Arduino-based microprocessors. I am not affiliated in any way with the DSPham project and I will not be held responsible for any difficulties or damages you encounter while building or operating this project. My sole purpose in writing this article is to make you aware of the DSPham DIY audio filter; please do not contact me about any problems you encounter either with its construction or with its performance. ★



THE SPECTRUMDSP: A SWISS ARMY KNIFE FOR HAM RADIO

– Rich Spohn, WB2GXM

Last Winter I purchased the QRP Labs QMX+ transceiver. I didn't know it at the time, but my investment was to become many times better, with my discovery the last week of July of Quantum SDR's awesome "open source" ham radio offering, the SpectrumDSP M4+ "QCom" combination 20-watt self-contained transceiver and panadapter front end for other radios. You can think of the SpectrumDSP QCom as a "Swiss Army Knife" for ham radio!

The SpectrumDSP QCom just blew me away. According to the QuantumSDR website, "The Quantum SDR Project has one core aim: to develop exciting and novel radio technology that's more affordable for our members." This open-source project has been around since 2023, starting out life as the M2 panadapter front end only. It interfaces perfectly with the QMX+, providing a full panadapter and waterfall display on a 5-inch touchscreen, and by the way, that's pretty much the size of the entire product. The current M4+ model, based on a Cortex processor, provides a two-way interface with the QMX+ (and select other radios), acting as either a slave display or as a master controller, with which you can tune the QMX+ by touching controls on the display, including instant retune to any frequency on the waterfall. Youtube videos showcasing the SpectrumDSP can be found [here](#) and [here](#).

The SpectrumDSP is ordered à la carte, and each unit is built to order. The basic unit, starting at \$240, is the panadapter and 2-way CAT controller. For small



additional charges (yes, *SMALL*), you can add in an IF tap in order to provide a waterfall display for older radios such as the Yaesu FT-950 and the Icom 706MkII, and/or an RS-232 interface for the Elecraft family. You can also add in a WiFi module that will allow the waterfall to be displayed on any networked display. You can add in a receiver module that can turn the DSP into a dedicated standalone general coverage receiver. Finally, you can add a transmitter module, a low pass filter, and an optional VFO with a large knob, to turn the DSP into a "QCom" full standalone 20-watt transceiver on one band (or as many bands as you buy external low pass filters for). Fully tricked out, the SpectrumDSP QCom 20-watt transceiver with one low pass filter costs less than \$500. There is currently no internal antenna tuner option for the SpectrumDSP.

It is important to note that if you buy the full plate, you can still

use the SpectrumDSP in any one of its three modes at any time – the 20-watt transceiver, OR the standalone general coverage receiver, OR as a panadapter/waterfall display for other radios. This makes the SpectrumDSP very handy to have, both in the hamshack and during portable ops.

The SpectrumDSP is in a continual state of development. The VFO module is available either as a kit or pre-assembled, and there are plans to create a companion "head unit" with a full complement of low pass filters, to achieve an all-in-one all-band 20-watt transceiver.

For more information, visit QuantumDSP's website at <https://quantumsdr.com/>. ★

"Buy the radio **YOU** want, not the radio someone tells you you need." – Don Zvareck, KC0DWZ

BOOK REVIEWS: FARADAY, MAXWELL & HEAVISIDE

– Kimball Williams, N8FNC

Faraday, Maxwell, and the Electromagnetic Field ***How two men revolutionized physics.***

By: Nancy Forbes and Basil Mahon

and

The Forgotten Genius of Oliver Heaviside ***A maverick of electrical science***

By: Basil Mahon

*Both published by Prometheus Books,
59 John Glenn Drive, Amherst, New
York 14228*

*"When I found these two books, I
could not put them down."*

*This is a dual book report and
recommendation. KW - N8FNC*

Faraday and Maxwell:

Nancy Forbes and Basil Mahon's history of the two men most remembered for solidifying our understanding of electromagnetics begin with a two & a half page listing of the known contributions of physicists, both before and after Faraday's discoveries. It begins with Gilbert's 1600 'De Magnete' and his realization that the Earth acted as a giant magnet and finishes with Marconi sending signals across the Atlantic in 1901 and Einstein predicting the photon and publishes his special theory of relativity in 1905. *(Of course, we might also credit Thales of Miletus who discovered static electricity in 600BC.)*

In just 300 years the foundations of most of our contemporary understanding of the principles that govern the physical world were discovered and began to be used. We also need to understand how the availability of materials that possess magnetic fields (loadstones) and metals that can be drawn into thin conducting wires along with fibers

that can serve as insulators enabled diverse experimentation not possible without them.

Faraday:

Even given materials and the work of others leading up to Faraday's first experiments, knowing he had only a rudimentary education with no mathematics, his ability to design, conduct and interpret the results of experiments were clearly genius. The son of a blacksmith and apprenticed to a book binder the young Michael knew how to build things with his hands and his exposure to books of all types opened a range of avenues of inquiry that were exceptional for his time.

Faraday's interests finally drew him to the City Philosophical Society and his acquaintance with more learned people which led to the Royal Society, then to the Royal Institution and finally to Humphry Davy.

A friend of Faraday had given him a ticket to a series of lectures by Davy. Faraday was enthralled by the work Davy presented. Later, when Davy had been temporarily blinded by an explosion in the laboratory he needed as assistant to help with his experiments and chose Faraday. This temporary employment did not immediately lead to posting at the Institution but, with patience and persistence, he finally became Davy's full-time assistant, then colleague, then friend. Later in life, when being interviewed by the press Davy was asked what his most significant discovery was, his answer was simply, "Michael Faraday".

Faraday was the quintessence of 'experimentation, observation and deduction' and was thorough and dedicated to the careful description and explanation of each and

every question to which he sought an answer. Without the support of training in mathematics, his achievements and results seem almost superhuman. We must attribute some of that dedication, persistence and focus to the help and support of Sarah Barnard, his wife, who provided stability and a center to his life.

Later in life, when the telegraph was revolutionizing communications Faraday sought the assistance of William Thompson to help understand why the undersea cable across the Irish Sea could not send messages above a very slow few words per minute. (A proposed cable across the Atlantic to the Americas would never work unless a solution was found.) Thompson had some success but along the way he gave advice to another Scott who wanted to study electricity. His advice, 'Read Faraday's "Experimental Researches in Electricity"'. That Scott was James Clerk Maxwell, a young professor at Marischal College, Aberdeen.

Maxwell:

In 1857 Maxwell sent Faraday a two-part paper "On Faraday's Lines of Force" and in part 2 had found a way to begin a mathematical description. Faraday had been looking to find someone to carry on his work and that paper opened the door to a lasting relationship and pointed the young Maxwell toward his most noted achievement.

Maxwell was a mathematical genius without peers. He wrote his first paper at 14 and it was deemed significant enough to be read for him at the Royal Society of Edinburgh because he was considered too young to read it himself. Eventually trained at Cambridge, he used mathematics to demonstrate that the rings of Saturn had to be composed



of millions of small objects and settled a long-standing astronomical debate about their constitution. (*The Cassini spacecraft, launched in 1997, arrived at Saturn in 2004 and verified Maxwell's original comment: "... a great stratum of rubbish jostling and jumbling round Saturn without hope of rest or agreement in itself ..."*). Maxwell was also responsible for proposing the theory of white light being composed of multiple colors and developed a wheel with different colored segments. When the disk spun rapidly the colors blended into white. Later a similar blending of photograph projected colors provided a second demonstration of that principle. While at Aberdeen, Maxwell wooed and wed Katherine Mary Dewar who aided Maxwell in his experiments and gave him an emotional home.

Maxwell completed his work in two successive publications. The first provided a mechanical analogy for the relationship between electricity and magnetism. The second fully embraced the Faraday 'field' concept. It is possible that the mechanical approach was intended to give his contemporary colleagues, then steeped in Newtonian concepts, a bridge to prepare them for the concepts of energy fields. However, Maxwell also used 20 different equations to explain the various interactions of electric and magnetic fields, which made the work "rough going" for those with less mathematical skills.

Heaviside:

Every student of electromagnetics owes a vote of gratitude to Oliver Heaviside. The young Heaviside was entranced by Maxwell's theories but was dismayed at the 'heavy going' needed to plough through all 20 of Maxwell's equations to come to an understanding of the linked relationship between electricity and magnetism. Although, like Faraday, Heaviside was untrained

in mathematics, he was a natural mathematical genius of the first order.

When the early communications method of telegraphy was first attempting truly long distance signaling, problems began to show up as long lines refused to transmit signals rapidly. We now understand that it was necessary for the electromagnetic field around the wires to sufficiently charge the inductance and capacitance inherent in long wires. The immediate solution for land-based telegraph systems was to establish intermediate 'stations' along a route where relays would terminate the incoming signals, activate a relay switch and create a 'new' signal on the following line. Thus, a signal would 'leapfrog' across a long stretch of line in stages with no significant delays. This was, of course, impossible for undersea intercontinental cables.

It was Heaviside who understood the mathematics of Fourier's theories of heat diffusion and Thompson's application of diffusion to electrical signals. He was also fortunate to discover the work of James Clerk Maxwell and immediately grasped a new concept he called 'inductance', and its implications for electrical signals with rapidly changing levels, such as closing and opening a switch. Fourier's work had shown that such a signal inherently contained a large number of frequencies due to the fast rise and fall time of the exciting current.

Heaviside saw what those rapid on-off changes implied when viewed from the perspective of Maxwell's theories and that the signals were traveling as waves along the wire. To enable higher frequency propagation, inductance was needed to offset the inherent cable capacitance, leading to Heaviside's creation of the 'telegrapher's equation'.

Heaviside did not stop with the telegrapher's equation. He went on developing what we now call

'Vector Calculus' which enabled him to re-express Maxwell's 20 equations in the four equations form we all have come to refer to as 'Maxwell's Equations' but which, in truth, are really Heaviside's. Along the way he identified and combined the interactions of resistance, capacitance, inductance and frequency into the concept of impedance, which opened many doors blocked by less sophisticated approaches to the application of electricity to engineering problems.

Oliver Heaviside was an undoubted genius in mathematics and electromagnetics, but his personal and social life was a disaster. Heaviside lived alone most of his life as a recluse and maverick with few friends and only the income from publishing in scientific journals to sustain himself. Yet his writing pointed the way to the solutions to many electrical engineering problems which were readily picked up and applied to the financial benefit of those who made the resulting equipment and machines but who rarely acknowledged the source of the concepts that had enriched them, and never offered to compensate Heaviside in any way for his intellectual contribution to their wealth.

The evolution of electrical engineering and its mathematical basis did not end with Heaviside. Diverse applications and fresh viewpoints from such notable sources as Thevenin, Vaschy, Tesla, Steinmetz, and Armstrong led the way. However, it is clear that the work of Oliver Heaviside first opened the doors.

One might wonder whether some future, more aware society might refer to the totality of that work as '*The Maxwell-Heaviside equations*'.★

– 30

BOOK REVIEW: WHERE WIZARDS STAY UP LATE

– Kimball Williams, N8FNC

Where Wizards Stay Up Late

By: Katie Hafner & Matthew Lyon

Subtitled “*The origins of the Internet*”, this is more than the historical record of the development of one of the most influential electronic communication systems on the planet. It is a fascinating close look into the men and women and the forces that moved us from the primitive ‘stand-alone’, isolated computers of the 1960’s, to the integrated worldwide communications systems we rely on today.

Working with the surviving engineers, mathematicians, programmers and scientists, the authors have captured and documented the evolutionary steps leading from the early ARPA desire to link computers among its university-based researchers. The resulting ‘Blue Sky’ conversations among university, industry and government leaders ignited the imagination of MIT scientist J.C.R. Licklider who, along with a small group of dedicated engineers, mathematicians and programmers, bucked the large companies like IBM and AT&T who declared the concept was frankly impossible.

Early in the 1960’s computer experimenters in both the USA and in England, independently, and completely unknown to each other, began developing the theory behind what was to become computer communications networks. Paul Barns in the US and Donald Davies in the UK, who came up with the concept and the term ‘packet’ switching, while Barns evolved message blocks, both later proved to be so useful with the evolution of what we now refer to the mature result as a distributed network.

Computers talking to a similar computer even next door needed

programs to allow the exchange of specific types of data. But the linking of different computers from different manufacturers across cities, then states then the country required the invention of first an ‘Interface Message Processor’ (IMP) to act as a gateway and traffic control arbiter. A small company in Cambridge Massachusetts, Bolt Beranek and Newman, BBN, was awarded a small ARPA contract in 1969 to do what others said could not be done. And they set off to work.

Along with the IMP the evolving system required the invention of communications protocols and software to interpret the signals from each computer. With hardware and software coming together and using leased lines from AT&T (*still claiming it could not be done*) the first four sites came online. With each site came new developments and contributions from each location, which were immediately spread, adopted and everyone moved forward. By October of 1972 when the first International Conference on Computer Communications was held in Washington D.C. using what had become the ARPANET linked sites along the East Coast with those in the Mid-West, Utah and California.

Evolutions were numerous but perhaps the most noticeable was the development of email, which took the community by storm. Along with email the suffixes that helped sort categories of mail to selected groups organizational groups were adopted. Examples such as .com (company), .edu (education), .mil (military), etc. have now become an integral part of our everyday lives. Along with these the separator between organizational groupings and specific email target addresses for individuals was invented by one genius who introduced the “@” sign which was immediately

adopted by everyone without question or quibble.

Hafner and Lyon have given us a remarkable history of engineering and scientific development in only 273 pages (not counting the Bibliography and Index) that makes for a fascinating read that is hard to put down. Along the way we are introduced to groups of individuals who formed cooperating teams all determined to do what so many had flatly said was impossible, and called our attention to leaders who ventured where ‘no computer has gone before’ and pulled the rest of the world along with them.

I recommend setting aside a weekend to read the whole book with little to distract you. (*You may also ‘Stay up Late’.*)

Then sit back and wonder what else is even now being developed in laboratories all over the world that we have been told by ‘experts’ is flatly impossible.★

– 30

SIGNAL POLARIZATION IS JUST A MATTER OF PERSPECTIVE.



Photo by Mark Harrison, AC1CP

OF VERTICALS AND COUNTERPOISES

Peter Waters, G3OJY, of Waters and Stanton (UK) shows how to create a very small vertical backyard antenna using a mobile whip (Hamstick or Ampro) as a ground-mounted vertical. In this video he also shows how to check your signal via the RBN CW spotting network:

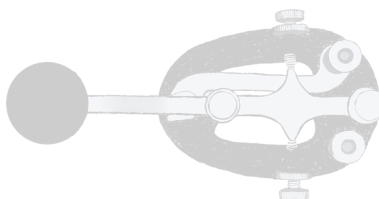
<https://www.youtube.com/watch?v=hJ8vnSPuskI>

In another video, Michael Martens, KB9VBR, describes his build of the POTA Performer vertical:

<https://www.youtube.com/watch?v=wqw3ultuPQg>

Does your endfed antenna need a counterpoise or not? Some say yes, some adamantly say no...this video, *"The Shocking Truth About Counterpoises and End Fed Antennas"* by popular youtuber The Smokin' Ape, examines the issue and why 'No Counterpoise Needed' is a myth:

<https://www.youtube.com/watch?v=yOVHumh5IVk>



SPURIOUS EMISSIONS



"It's a key meant to be used only in the Fall – to maintain return tension, it uses **LEAF** springs..."

KIDS GIT 'ER DONE!



Alice, who holds a Technician-Class license, modifies a Quansheng radio to do CW on 2M, adding the 20K and 10K resistors in the key circuit. Working with Surface mount technology, no less! (Photo by Bob Cady, W7JNM)

CW QSO PROTOCOL

Prepared by W6JIM



PROTOCOL-1

(their call) DE (your call)

1. GM/GA/GE ES TNX FER (CALL/RPRT)
2. UR RST 599
3. QTH FRESNO, CA
4. NAME JIM
5. OK HW? $\overline{\text{AR}}$

} x2

(their call) DE (your call) K

Key-Words:

RST - QTH - NAME

PROTOCOL-2

(their call) DE (your call)

1. OK (John) FB ES TNX FER (INFO/RPRT)
2. RIG IC 7300 ES PWR 50W
3. ANT DIPOLE UP 45 FT
4. WX Rain ES TEMP 50F
5. OK (John) HW? $\overline{\text{AR}}$

(their call) DE (your call) K

Notes:

PROTOCOL-3

(their call) DE (your call)

1. OK (John) SOLID CPY
2. AGE 55 YRS
3. BEEN HAM FER 25 YRS
4. MY KEY J38
5. OK (John) HW? $\overline{\text{AR}}$

(their call) DE (your call) K

Notes:

ENDING

(their call) DE (your call)

1. OK (John) TNX FER FB QSO
2. ES HP CUAGN 73 $\overline{\text{AR}}$

(their call) DE (your call) TU $\overline{\text{SK}}$

Notes:

(Send closing "Dits" as described on next page)



CW QSO PROTOCOL (CONTINUED)

Additional Info

1. QRL? - Before calling CQ. Call **QRL?** at least twice to ensure the frequency is not in use
2. Calling CQ - A typical CQ call is in a 2 x 2 format: **CQ CQ DE (your call) (your call) K**
 - a. Wait then repeat, if necessary, again 2 x 2. No need to call lengthy CQs
 - b. Stations most typically respond with **(your call) DE (their call) (their call) K**
 - c. When a station answers your CQ begin protocol P1 using the **TNX FER CALL** option
3. Answering a CQ - Answer a CQ by sending **(their call) DE (your call) (your call) K**
 - a. The calling station will go through protocol-1 then hand it back to you
 - b. Now you start protocol-1 using the **TNX FER RPRT** option
4. Ending - other station starts the ending sequence:
 - a. Come back after the **SK** like you normally would for a K
 - b. Answer any open questions, say anything else you want to share, then initiate Ending
 - c. After sending your **SK** send **2-dits**. The other station will send 2-dits back & your QSO is done!
5. Ending - you start the ending sequence:
 - a. Wait for the other station to finish their turn after you **SK**
 - b. Send **2-dits** after the other station sends theirs and your QSO is done!
6. Repeat important information (RST, QTH, Name) twice
 - a. RST, QTH, and Name and anything else that you feel is important (like club numbers)
7. **BK** – is used in quick QSOs in place of the Callsign Exchange. When you're handed the QSO with a **BK** you acknowledge by starting with a **BK**. **BK** is not a pro-sign. There is space between the B and the K
 - a. Example:
 - i. (other station) OK JIM, UR RIG AGN? **BK**
 - ii. (W6JIM) **BK** RIG HR IS TEN TEC EAGLE, TEN TEC EAGLE **BK**
 - iii. (other station) **BK** OK JIM FB ON UR TEN TEC EAGLE....
8. **R R** - stands for Roger-Roger.
 - a. It is sometimes (not required) sent before you start your portion of the exchange
 - b. Only do this if you fully understood the other stations message
 - c. Example: **R R** (their call) DE (your call) FB CPY JOHN ES TNX FER NICE RPRT
9. **BT** is used to separate topics or to fill dead air like a verbal pause
10. The Callsign Exchange: **(their Call) DE (your call)**
 - a. In a Standard QSO, each turn starts and ends with **(their Call) DE (your call)**
11. For extended Rag-Chews
 - a. Write down some info to share in case you draw a blank
 - b. You may start with the callsign exchange and roll into abbreviated "BK" in a long QSO
 - c. Don't forget to identify your station with a callsign exchange every 10 minutes (minimum)
12. The examples in this reference sheet are just that, examples
 - a. Feel free to tailor your content as you become more comfortable and hear more QSOs
 - b. Abbreviations may differ (Name vs OP, CUAGN vs CUL, CPY vs CPI) , etc....
 - c. **Please edit this document to make it work for you!**

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SKCC QSO Protocol

A basic guide to get new ops on the air



STANDARD CQ:

CQ SKCC CQ SKCC DE KF6FC KF6FCV K

NOTE

1. This is simply Standard QSO Protocol with the addition of your SKCC Number
2. **OP** often used instead of **NAME**
3. **QTH** often sent as state abbreviation
4. Most QSOs will be just one exchange
5. Ending is sometimes sent like sprint

CQ RESPONSE:

KF6FCV DE (your call) (your call) K

EXCHANGE:

1. *GE ES TNX FER CALL*
2. *UR RST 599 5NN*
3. *QTH CA, CA*
4. *OP BOB BOB*
5. *SKCC 15169T NR 15169T*
6. *OK HW?*
7. *KF6FCV DE (your call) K*

ENDING:

Standard QSO Protocol Ending

ENDING RESPONSE

Standard QSO Protocol Ending

WEEKEND SPRINT (WES) CQ

CQ WES DE KF6FCV WES

NOTE

1. Drop all the extras and just send the data
2. Break (BK) is used instead of a formal callsign exchange to keep things moving
3. The ending is shortened

SPRINT CQ RESPONSE:

(your call) Send your call once or twice

SPRINT EXCHANGE:

UR 599 CA BOB SKCC 15169T BK

ENDING EXAMPLES:

TU DIT-DIT

RR TU 73 DIT-DIT

TNX BOB ES 73 DE KF6FCV SK DIT-DIT

ENDING RESPONSE EXAMPLES:

TU SK DIT-DIT

TU 73 DIT-DIT

DE (YOUR CALL) TU SK DIT-DIT



Additional Info

1. Standard QSO Format used in non-sprint type events such as:
 - a. Straight Key Night
 - b. Slow Speed Saunter
 - c. Anytime you are calling CQ SKCC during a non-event period
2. Sprint QSO format used during sprint events such as:
 - a. Weekend Sprint (WES)
 - b. Two-Hour Sprint
 - c. Any event with the word “sprint” in the title
3. **BK** – Stands for “Break”. BK takes the place of the Callsign Exchange when passing the QSO to the other operator. When you get handed the QSO with a **BK** you acknowledge by starting with a **BK**.
 - a. Example:
 - i. (N1CC): UR 599 AZ MIKE SKCC 22261 **BK**
 - ii. (KF6FCV): BK RR TNX MIKE UR 559 CA JIM 15169T **BK**
 - iii. (N1CC): **BK** OK JIM GL DE N1CC TU SK DIT-DIT
4. QTH
 - a. In SKCC QSOs the QTH is often sent as just the state abbreviation. This is standard practice in sprints. But it is also common in standard SKCC QSOs
5. Name/Op
 - a. In SKCC QSOs, the abbreviation “OP” which is short for “Operator” is often used instead of “NAME”. Either is fine.
6. Ending
 - a. In SKCC sprints, the ending is abbreviated to keep things moving quickly
 - b. You will hear something like one of these examples:
 - i. BK OK BILL ES 73 DE K2MZ TU SK DIT-DIT
 - ii. BK RR TU 73 DIT-DIT
 - c. When the “DITS” are sent up-front, it is a signal to keep your good-bye short. Here are some examples:
 - i. DE KF6FCV TU DIT-DIT
 - ii. TU 73 DIT-DIT
 - iii. DIT-DIT

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Procedural Signals (Prosigns) for Morse Code

*NOTE: BK is NOT a prosign, despite what you might see elsewhere.
It is NOT sent as one character, like the A prosign, rather it is sent as B K.*

CQ - Calling any station

AR - "+" over, end of message

K - go, invite any station to transmit

KN - "(" go only, invite a specific station to transmit

R - all received OK

AS - please stand by

SK - end of contact (sent before call)

CL - going off the air (clear)

Q Signals (or Q Abbreviations)

*Q Signals take the form of a question only
when each is followed by a question mark.*

QRG - Will you tell me my exact frequency (or that of ____)?
Your exact frequency (or that of ____) is ____ kHz.

QRH - Does my frequency vary?
Your frequency varies.

QRI - How is the tone of my transmission?
The tone of your transmission is _____. (1. Good 2. Variable 3. Bad)

QRJ - Are you receiving me badly?
I can not receive you. Your signals are too weak.

QRK - What is the intelligibility of my signals (or those of ____)?
The intelligibility of your signals (or those of ____) is:
(1. Bad 2. Poor 3. Fair 4. Good 5. Excellent)

QRL - Are you busy?
I am busy (or I am busy with ____). Please do not interfere.

QRM - Is my transmission being interfered with?
Your transmission is being interfered with ____.
(1. Nil 2. Slightly 3. Moderately 4. Severely 5. Extremely)



PROSIGNS AND Q-SIGNALS (CONTINUED)

QRN - Are you troubled by static?

I am troubled by static ---. (1-5 as under QRM)

QRO - Shall I increase power?

Increase power.

QRP - Shall I decrease power?

Decrease power.

QRQ - Shall I send faster?

Send faster _____. (WPM)

QRS - Shall I send more slowly?

Send more slowly.

QRT - Shall I stop sending?

Stop sending.

QRU - Have you anything for me?

I have nothing for you.

QRV - Are you ready?

I am ready.

QRW - Shall I inform ____ that you are calling on ____ kHz?

Please inform ____ that I am calling on ____ kHz.

QRX - When will you call me again?

I will call you again at ____ hours (on ____ kHz).

QRY - What is my turn?

Your turn is numbered ____.

QRZ - Who is calling me?

You are being called by ____ (on ____ kHz).

QSA - What is the strength of my signals (or those of ____)?

The strength of you signals (or those of ____) is ____.

(1. Scarcely perceptible 2. Weak 3. Fairly good 4. Good 5. Very good)

QSB - Are my signals fading?

Your signals are fading.

QSD - Is my keying defective?

Your keying is defective?

QSG - Shall I send ____ messages at a time?

Send ____ messages at a time.

QSK - Can you hear me in between your signals and if so, can I break in on your transmission?

I can hear you between my signals; break in on my transmission.

PROSIGNS AND Q-SIGNALS (CONTINUED)

QSL - Can you acknowledge receipt?

I am acknowledging receipt.

QSM - Shall I repeat the last message I sent you, or some previous message?

Repeat the last message you sent me [or message(s) number(s) ____].

QSN - Did you hear me (or ____) on ____ kHz?

I did hear you (or ____) on ____ kHz.

QSO - Can you communicate with ____ direct or by relay?

I can communicate with ____ direct (or by relay through ____).

QSP - Will you relay to ____?

I will relay to ____.

QST - General call preceding a message addressed to all amateurs and ARRL members. This is in effect, "CQ ARRL".

QSU - Shall I send or reply on this frequency (or on ____ kHz)?

Send a series of Vs on this frequency (or on ____ kHz).

QSW - Will you send on this frequency (or on ____ kHz)?

I am going to send on this frequency (or on ____ kHz).

QSX - Will you listen to ____ on ____ kHz?

I am listening to ____ on ____ kHz.

QSY - Shall I change to to transmission on another frequency?

Change transmission to another frequency (or ____ kHz).

QSZ - Shall I send each word or group more than once?

Send each word or group twice (or ____ times).

QTA - Shall I cancel message number ____?

Cancel message number ____.

QTB - Do you agree with my counting of words?

I do not agree with your counting of words. I will repeat the first letter or digit of each word or group.

QTC - How many messages have you to send?

I have ____ messages for you (or for ____).

QTH - What is your location?

My location is ____.

QTR - What is the correct time?

The correct time is ____.

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UTC TIME CONVERSION CHART

UTC (Zulu) Time Conversion Chart

UTC (Zulu)	PST/ ALDT	PDT/ MST	MDT/ CST	CDT/ EST	EDT/ AST	ALST	HST	UTC (Zulu)	PST/ ALDT	PDT/ MST	MDT/ CST	CDT/ EST	EDT/ AST	ALST	HST
0000*	1600	1700	1800	1900	2000	1500	1400	1300	0500	0600	0700	0800	0900	0400	0300
0100	1700	1800	1900	2000	2100	1600	1500	1400	0600	0700	0800	0900	1000	0500	0400
0200	1800	1900	2000	2100	2200	1700	1600	1500	0700	0800	0900	1000	1100	0600	0500
0300	1900	2000	2100	2200	2300	1800	1700	1600	0800	0900	1000	1100	1200	0700	0600
0400	2000	2100	2200	2300	0000*	1900	1800	1700	0900	1000	1100	1200	1300	0800	0700
0500	2100	2200	2300	0000*	0100	2000	1900	1800	1000	1100	1200	1300	1400	0900	0800
0600	2200	2300	0000*	0100	0200	2100	2000	1900	1100	1200	1300	1400	1500	1000	0900
0700	2300	0000*	0100	0200	0300	2200	2100	2000	1200	1300	1400	1500	1600	1100	1000
0800	0000*	0100	0200	0300	0400	2300	2200	2100	1300	1400	1500	1600	1700	1200	1100
0900	0100	0200	0300	0400	0500	0000*	2300	2200	1400	1500	1600	1700	1800	1300	1200
1000	0200	0300	0400	0500	0600	0100	0000*	2300	1500	1600	1700	1800	1900	1400	1300
1100	0300	0400	0500	0600	0700	0200	0100	2400	1600	1700	1800	1900	2000	1500	1400
1200	0400	0500	0600	0700	0800	0300	0200	2400	1700	1800	1900	2000	2100	1600	1500

*0000 and 2400 are interchangeable.

2400 is associated with the date of the day ending, 0000 with the day just starting.

UTC = Coordinated Universal Time, or **Zulu**
PST = Pacific Standard Time (UTC - 8 hours)
ALDT = Alaskan Daylight Time (UTC - 8 hours)
PDT = Pacific Daylight Time (UTC - 7 hours)
MST = Mountain Standard Time (UTC - 7 hours)
MDT = Mountain Daylight Time (UTC - 6 hours)
CST = Central Standard Time (UTC - 6 hours)
CDT = Central Daylight Time (UTC - 5 hours)
EST = Eastern Standard Time (UTC - 5 hours)
EDT = Eastern Daylight Time (UTC - 4 hours)
AST = Atlantic Standard Time (UTC - 4 hours)
ALST = Alaskan Standard Time (UTC - 9 hours)
HST = Hawaiian Standard Time (UTC - 10 hours)

Data from Feb. 2004 QST, p67, 68

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CW ABBREVIATIONS MOST COMMONLY USED

ABT: about
ADR: address
AGN: again
ANS: answer
ANT: antenna

B4: before
BCNU: be seeing you
BK: break
Buro: QSL bureau

CFM: confirm
CL: closing down (leaving the air)
CLG: calling
CNDX: conditions
Congrats: congratulations
CPI: copy (I replaces the ending Y)
CUAGN: see you again
CUL: see you later
CUZ: because

DE: from
DR: dear
DSW: das vedanya
(until we meet again)

DWN: down
DX: non USA station
EL: elements
ES: and
EU: Europe
EVE: evening

FB: fine business
FER: for
FREQ: frequency. You can also
use QRG

GA: good afternoon
GA: go ahead
GD: good day
GE: good evening
GG: going
GL: good luck
GLD: glad
GM: good morning
GN: good night
GP: ground plane
GUD: good

HI: laughter and usually repeated 2 times
HNY: happy new year
HPE: hope
HR: here
HRD: heard
HVG: having
HW?: how copy

INFO: information
I I: 2 letter I's spaced apart
can take the place of sending a string of
dits if you make an error.

K: transmission over to you

LID: poor op
LP: long path propagation
LSN: listen
LW: long wire antenna

MSG: message
MX: merry christmas

NIL: none



CW ABBREVIATIONS MOST COMMONLY USED (CONTINUED)

NR: near

NW: now

OK: ok

OM: old man

OP: operator or name

PSE: please

PWR: power

R: roger

RCVD: received

RIG: station equipment

RX: receiver

SA: say, like say 73

Shud: should

SIGS: signals

SKED: schedule QSO time

SRI: sorry. Here again the I replaces the Y

STN: station

Temp: temperature

TKS: thanks

TNX: thanks

TRBLE: trouble

TT: that

TU: thank you

TX: transmitter

U: you

UR: your

URS: yours

Vert: vertical

VY: very

WID: with

WKD: worked

WL: will

WPM: words per minute

WUD: would

WX: weather

XYL: wife

YL: young lady

YR: year

Z: zulu or gmt time

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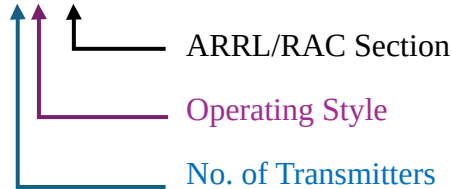
ARRL Field Day Exchange

Define the two exchange components:

- a. **Class** (number of transmitters + power source)
- b. **Section** (ARRL/RAC section abbreviation)

Parts of the Information Exchange (CW format):

- a. “**1D TN**” — One transmitter, home/commercial power, Tennessee.



- b. *Example:* “**3A WPA**” — Three transmitters, club portable, Western Pennsylvania.

Class	Meaning
A	Club / Non-Club Portable
B	One or Two-Person Portable
C	Mobile
D	Home Station (Commercial Power)
E	Home Station (Emergency Power)
F	EOC Station

example

Using **Clarksville Amateur Transmitting Society** call sign

CQ FD KF4L KF4L FD

KC9GBX

KC9BGX 4A TN

R TU 1E WI

TU KF4L

1. For Field Day, there are often **2 operators** at a CW station. One operator can copy and log contacts while the second operator runs the station. And they can trade off duties.
2. **Logging software** is often a helpful tool used during Field Day.
 - a. N3FJP logging software is a common tool. It helps to avoid duplicate contacts. Link: <https://www.n3fjp.com> and is used for more than just field day. (**Note: In case students ask** about how to get the software, there is a cost and the best value for this software is the N3FJP Software Registration Package - \$59.99 with free upgrades)



FIELD DAY SECTIONS AND CLASSES

Class	Meaning
A	Club / Non-Club Portable
B	One or Two-Person Portable
C	Mobile
D	Home Station (Commercial Power)
E	Home Station (Emergency Power)
F	EOC Station

Abrev Section

AB	Alberta
AK	Alaska
AL	Alabama
AR	Arkansas
AZ	Arizona
BC	British Columbia
CO	Colorado
CT	Connecticut
DE	Delaware
DX	Non-US/Non-Canada (DX)
EB	East Bay
EMA	Eastern Massachusetts
ENY	Eastern New York
EPA	Eastern Pennsylvania
EWA	Eastern Washington
GA	Georgia
GH	Golden Horseshoe (Ontario)
GTA	Greater Toronto Area (older)
IA	Iowa
ID	Idaho
IL	Illinois
IN	Indiana
KS	Kansas
KY	Kentucky
LA	Louisiana
LAX	Los Angeles
MB	Manitoba
MDC	Maryland-DC
ME	Maine
MI	Michigan
MN	Minnesota
MO	Missouri
MS	Mississippi
MT	Montana
NB	New Brunswick
NC	North Carolina
ND	North Dakota
NE	Nebraska

NH	New Hampshire
NL	Newfoundland & Labrador
NLI	New York City-Long Island
NM	New Mexico
NNJ	Northern New Jersey
NNY	Northern New York
NT	Northern Territories (Yukon, NWT, Nunavut)
NTX	North Texas
OH	Ohio
OK	Oklahoma
ONE	Ontario East
ONN	Ontario North
ONS	Ontario South
OR	Oregon
ORG	Orange (CA)
PAC	Pacific
PE	Prince Edward Island
PR	Puerto Rico
QC	Quebec
RI	Rhode Island
SB	Santa Barbara
SC	South Carolina
SCV	Santa Clara Valley
SD	South Dakota
SDG	San Diego
SF	San Francisco
SJV	San Joaquin Valley
SK	Saskatchewan
SFL	South Florida
SNJ	Southern New Jersey
STX	South Texas
SV	Sacramento Valley
TN	Tennessee
UT	Utah
VA	Virginia
VI	U.S. Virgin Islands
VT	Vermont
WCF	West Central Florida
WI	Wisconsin
WMA	Western Massachusetts
WNY	Western New York
WPA	Western Pennsylvania
WTX	West Texas
WWA	Western Washington
WV	West Virginia
WY	Wyoming

S(Low) S(Peed con)T(EST) EXCHANGE

RUNNER: CQ SST (RUNNER CALL SIGN)

SEARCH & POUNCE PERSON: (YOUR CALL SIGN)

RUNNER: (S&P CALL SIGN) (RUNNER NAME) (RUNNER STATE)

S&P: GE (RUNNER NAME) (YOUR NAME) (YOUR STATE)

RUNNER: GL (S&P NAME) TU (YOUR CALL SIGN) SST

CALL FOR SUBMISSIONS

For the LICW Newsletter, Winter Edition

We need your articles and pictures for the Winter Edition of the LICW Newsletter! Do you have any good stories or original articles you would like to share? Are you planning any new projects for the shack? Share your plans and photos with us! There is also, of

course, the thrill of seeing your name and call in print!

Are you planning any home-brew projects to work on during the Winter months? Tell us the details! Do you have any "hints and/or tips" to make operating easier and more fun? To make kit building more efficient? Support your Club with submissions for the Winter edition!

When you submit your articles and/or photos, please include your full name and callsign. Send all submissions to: wb2gxm@arrl.net. We accept most file formats including Microsoft Word, Notepad, Textedit, and PDF files, as well as most image file formats.★

THE LAST WORD

Thank you for reading our Award-winning LICW Newsletter! We strive for quality and accuracy. If you notice an error, or a link that is incorrect or broken, please do tell us via groups.io, and we will correct it or print a notice about it in the next issue.

The Fall is a great time to gather your parts for all those shack projects you never had time to get to when the weather was warm! Take your time, "measure three times and cut once," and **BE CAREFUL!** Respect high voltages and wear your safety glasses! We want you to be around to see Straight Key Night!

In closing, I want to thank all the generous clubmembers who went out of their way and took time to contribute to this newsletter. Without all of you and your talent, there would BE NO newsletter to read! I am indebted to all of you.

73 – The Editor



RESOURCES ONLINE

This list is for convenience only and is not to be considered as an endorsement of any company or their products.

Online Page for All Links

Category	Resource Name	URL
Clubs and Organizations	American Radio Relay League	https://www.arrl.org/
Clubs and Organizations	Ham Radio University	https://hamradiouniversity.org/
Clubs and Organizations	Long Island CW Club	https://longislandcwclub.org/
Clubs and Organizations	SKCC	https://skccgroup.com/
Online Stores	DX Engineering	https://www.dxengineering.com/
Online Stores	Gigaparts	https://www.gigaparts.com/
Online Stores	Ham Radio Outlet	https://www.hamradio.com/
Online Stores	Martin Lynch & Sons (UK)	https://www.hamradio.co.uk/
Online Stores	Powerwerx	https://powerwerx.com/
Online Stores	R&L Electronics	https://www2.randl.com/
Online Stores	Radioddity	https://www.radioddity.com/
Online Stores	Waters & Stanton (UK)	https://www.watersandstanton.com/
Keys	American Morse Equipment	https://www.americanmorse.com/
Keys	BaMaTech (BaMaKey)	https://www.bamatech.net/
Keys	Begali	https://www.i2rtf.com/
Keys	CW Morse	https://cwmorse.us/
Keys	Cent Paddle - KR7M	https://www.hamshacklab.com/
Keys	Modern Morse	https://www.modernmorse.com/
Keys	NOSA Keys	n0sa@att.net
Keys	N3ZN Keys	https://www.n3znkeys.com/
Keys	N6ARA Keys and Accessories	https://n6ara.com/
Keys	UR5CDX Keys	https://www.ur5cdx.com/
Keys	Vibroplex	https://vibroplex.com/
Keys	W1SFR Keys	https://w1sfr.com/
Keys	Whiterook Portables	https://electronicsusa.com/
Kits	3rd Planet Solar	https://www.3rdplanetsolar.com/
Kits	Circuit Specialists	https://www.circuitspecialists.com/
Kits	Dan's Small Parts and Kits	https://www.danssmallpartsandkits.net/
Kits	Electronics DIY	https://electronics-diy.com/
Kits	Four State QRP Group	https://www.4sqr.com/
Kits	HamGadgets	https://hamgadgets.com/
Kits	HF Signals	https://www.hfsignals.com/
Kits	Kanga (Phoenix) Kits	https://www.kanga-products.co.uk/
Kits	Midway	https://www.midwayelectronics.us/
Kits	NMOS	https://www.nm0s.com/
Kits	Pololu	https://www.pololu.com/
Kits	QRP Guys -- CLOSED, redirected to:	https://qrpbuilder.com/
Kits	QRP Kits	https://qrpkits.com/
Kits	QRP Labs	https://www.qrp-labs.com/
Parts	Abra	https://abra-electronics.com/
Parts	Adafruit	https://www.adafruit.com/
Parts	Antique Electronic Supply	https://www.tubesandmore.com/
Parts	Aretronics	https://www.aretronics.com/
Parts	Arrow	https://www.arrow.com/
Parts	Digikey	https://www.digikey.com/
Parts	Digiparts	https://www.digipartspower.com/
Parts	Electronics Goldmine	https://theelectronicgoldmine.com/
Parts	Electronic Surplus	https://www.electronicsurplus.com/
Parts	Futurlec	https://www.futurlec.com/
Parts	Jameco	https://www.jameco.com/
Parts	Kits and Parts	https://www.kitsandparts.com/
Parts	LCSC	https://www.lcsc.com/
Parts	Mike's Electronic Parts	https://www.mikeselectronicparts.com/
Parts	Mouser	https://www.mouser.com/
Parts	Skycraft	https://skycraftsurplus.com/
Parts	PJRC (Arduino)	https://www.pjrc.com/

RESOURCES ONLINE (Continued)

Category	Resource Name	URL
Parts	QRPme	https://qrpme.com/
Parts	RF Parts	https://www.rfparts.com/
Parts	ROWaves	https://www.rowaves.com/
Parts	SparkFun	https://www.sparkfun.com/
Parts	Surplus Sales	https://www.surplussales.com/
Parts	Tayda	https://www.taydaelectronics.com/
Antennas	Alpha Antennas	https://alphaantennas.com/
Antennas	Balun Designs (Balunsets)	https://www.balundesigns.com/
Antennas	Chameleon	https://chameleonantenna.com/
Antennas	Greyline	https://greylineperformance.com/
Antennas	KJ6ER Antennas Primer	https://bit.ly/KJ6ERAntennasPrimer
Antennas	Pacific Antenna	https://www.qrpkits.com/
Antennas	Palomar Engineers	https://palomar-engineers.com/
Antennas	Vibroplex	https://vibroplex.com/
PCBs	Far Circuits	https://www.farcircuits.net/
Wire & Cable	Davis RF	https://www.davisrf.com/
Wire & Cable	RF Microwave	https://www.rf-microwave.com/en/home/
Wire & Cable	Tech Fixx	https://techfixx.com/
Wire & Cable	The Wireman	https://thewireman.com/
Wire & Cable	True Ladderline	https://trueladderline.com/
Online Tools	Battery Runtime Calculator 1	https://hamdeck.com/tools/battery-runtime-calculator/
Online Tools	Battery Runtime Calculator 2	https://hamradiocalculator.com/battery-runtime.html
Online Tools	Battery Runtime Calculator 3	https://4sqrp.com/Battery_Capacity/index.php
Online Tools	Best EF Random Wire Lengths 1	https://udel.edu/~mm/ham/randomWire/
Online Tools	Best EF Random Wire Lengths 2	https://www.hamuniverse.com/randomwireantennalengths.html
Online Tools	Coil Inductance Calculator	https://www.66pacific.com/calculators/coil-inductance-calculator.aspx
Online Tools	Coil Placement Calculator	https://coil32.net/online-calculators/coil-placement-calculator.html
Online Tools	Coil-Shortened Vertical Antenna Calculator	https://www.66pacific.com/calculators/coil-shortened-vertical-antenna-calculator.aspx
Online Tools	EFHW Antenna Calculator	https://m0ukd.com/calculators/quarter-wave-vertical-antenna-calculator/
Online Tools	EFHW Antenna Designer	https://www.changpuak.ch/electronics/End_Fed_Half_Wave.php
Online Tools	Falstad Circuit Simulator	https://falstad.com/circuit/
Online Tools	HamDash App	https://hamdash.com/
Online Tools	IanJohnston_Online_Tools	https://www.ianjohnston.com/index.php/projects/54-project-014
Online Tools	K8ZT Presentations	http://tiny.cc/k8zt-p
Online Tools	LC Resonance Calculator	https://www.allaboutcircuits.com/tools/lc-resonance-calculator/
Online Tools	LC Filter Design Tool	https://markimicrowave.com/technical-resources/tools/lc-filter-design-tool/
Online Tools	MagLoop Calculator	https://miguelvaca.github.io/vk3cpu/magloop.html
Online Tools	Morse Code World Trainer	https://morsecode.world/international/trainer/
Online Tools	OpenHamClock	https://openhamclock.com/
Online Tools	Practical Antennas	https://practicalantennas.com/
Online Tools	Proppy Propagation Prediction Tool	https://soundbytes.asia/propy/
Online Tools	RF Z-Matching Calculator	https://home.sandiego.edu/~ekim/e194rfs01/jwmatcher/matcher2.html
Online Tools	Toroid Inductance Calculator	https://toroids.info/
Online Tools	VSWR to Return Loss Calculator	https://www.everythingrf.com/rf-calculators/vswr-to-return-loss-calculator
Online Tools	Ugly Balun Calculator	https://udel.edu/~mm/ham/uglybalun/
Online Tools	Ham Radio Solutions (Vband, CW Hotline)	https://hamradio.solutions/
Online Tools	Vail Morse	https://vailmorse.com/
Online Tools	Vail Adapter Interface	https://vailadapter.com/
Online Tools	VOACAP Coverage Analysis	https://www.voacap.com/
Online Tools	Local Weather Forecasts	https://www.wunderground.com/

– with assistance from Grant Porter, KG4SDR

