



Photo supplied by Bob Cady, W7JNM



## NEWSLETTER PROMOTING **MORSE CODE**

SPRING 2026

### **WHAT'S HAPPENING IN LICW: SPRING UPDATE**

by Howard Bernstein, WB2UZE

#### ***Paving the future of LICW***

LICW never sits still - we're always working to be a better organization. Over the past couple of years, we've focused heavily on redesigning our curriculum to make it more relevant and effective. Many members and instructors contributed to that effort - too many to name here - and we're grateful to all of you.

So what's next? With LICW approaching **10,000 members** this year, it's time to focus on **long-term continuity**. In practical terms, that means ensuring the club's critical functions aren't held by any one person - so LICW remains resilient, consistent, and well-run for years to come.

This effort includes both **operations and technology**. We rely on a set of platforms to deliver classes, manage schedules, support instructors, and keep the member experience smooth and reliable. Long-term continuity means documenting how these systems work, ensuring the right access and backups exist, and having trained volunteers who can maintain and improve them. Just as importantly, we will use this work to **enhance the member experience**: simpler navigation, clearer schedules, fewer points of confusion, and a more consistent experience from onboarding through advanced operating.

As we move forward, we'll invite some of our most active members to step into continuity and succession roles. Running an organization of this size comes with responsibility, and volunteers are always

welcome. One of the best ways to get involved is to **teach** and work closely with our instructors and managers - you'll learn how we operate and help preserve the culture and standards that make LICW what it is today.

If you'd like to help - whether in instruction, operations, or technology - please reach out. There's a place for you.

- HB. ★

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## Of Passion and Purpose

*The sun is bright,  
The air is clear,  
The darting swallows soar and sing!  
And from the stately elms I hear  
The Bluebird prophesying Spring!*  
(shared by James Wades, WB8SIW)

Spring is a most wonderful time of year. A time of renewal; a time of reawakening. A time of growth. Spring is a very good time to renew your resolve to master CW. It is also a good time to reaffirm your passion for ham radio in general, and the art of CW in particular. It is safe to say that almost all the members of the LICW have a passion for communicating via CW, and are passionate about the radios they use and the keys they collect.

I think about the passions that have powered my life. Back in college, I minored in Film Production for a time. Each semester we were to write, shoot, and edit a movie of any length, on any subject we desired. Real films, long strips of 16mm celluloid coated with chemicals that recorded images when exposed in a camera, and made them move when run through a projector. Those were wonderful, heady days; I would start a film and it would capture me completely. I remember going into the editing booth for my second film, sitting there on a stool with my project surrounding me, long strips of film of many lengths hung vertically on pegs, each one a snippet of the story I wanted to tell. I spent a solid twenty-four hours in that little room, hunched over a splicing block, gluing little bits of film together, trying to turn the puzzle of confetti into the best movie I could make. Food? Who knew of food? Sleep? HAH! It was only when my instructor arrived the next morning, put a hand on my shoulder and said, "Go home. This will all be here when you get back," that I finally put the cap back on the bottle of splicing glue.

We can't always indulge our passions with that much time and energy. "Real Life" throws obstacles at us daily, problems to solve and obligations to fulfill. But we can strive to keep our passion alive, even if sometimes only as an ember deep inside that we blow on every now and then.

Passion and Purpose complement each other well; under the best of circumstances, one can create the other. James Wades, WB8IW, writes: "I'm fond of what I call the 'draft horse analogy.' If one takes a healthy, beautiful draft horse...and suddenly sets him loose in a pasture with no purpose, he will atrophy over time. He may become 'pasture sour.' The horse needs a purpose. He's made by the creator to have a purpose. The same is true for man." Purpose is both the keel that keeps you upright, and the rudder that steers you straight towards your goals.

The good news is that Purpose is like a flywheel; once it acquires momentum, it tends to keep going.

Ham radio supplies us with plenty of Purpose. The NTS gives traffic handlers a daily reason to keep their skills sharp, in preparation for the days when their radiograms could save lives. The instructors in this club enjoy the shared purpose of helping us to improve our CW skills, even to the introduction of CW to a new generation. And over the past few months, I have found a sense of purpose in bringing the information contained within this newsletter to you.

I urge you to recognize and acknowledge your Purpose in life, be grateful for it; gratitude goes a long way towards achieving lasting Happiness.

Allow the newness of Spring to reawaken and reenergize your Passion, the thing that makes you spring out of bed before the alarm goes off, the thing you would do for free long after the sun goes down. Embrace your Passion – completely, unapologetically. Run headlong into each day with it. Don't let anything or anyone diminish it for you. Relish exuberance and joy whenever they occur. If CW is your Passion, celebrate it with every dit and dah you copy and send.

Use your Passion to fuel your sense of Purpose. Together, they will keep you alive, and will allow you to thrive and be happy for many years to come. ★

73 – Rich Spohn, WB2GXM

## THE LICW MORSE PRACTICE PAGE

### HOW TO MAKE AUDIO FILES

Many students would like to be able to make audio files of the MPP exercises so they can play them when they don't have an internet connection. There are several ways to do this and I'll go over some of them.

### MPP AUDIO TAB

The first one is built into the MPP program but has the limitation of only being able to capture the Morse Code being sent. So if you use it with any of the exercises that use VOICE, you will not hear any spoken words. It also does not change speeds in exercises such as the VET since all it is doing is capturing the characters at whatever speeds are set at the top of the page. Even with these limitations, it is the easiest way to create a file that you can play back offline.

To use this, set up the exercise and then click on the green AUDIO FILE box located in the More Settings drop down menu. You don't need to click PLAY. This will create a .wav file on your desktop. If you don't see it there, then you have your computer set to save files somewhere else. Just open a file browser and search for .wav files. There are many programs out there to change it to a different format if needed (*including the below - ed*).

### AUDACITY

The second way is to use a program like [Audacity](#) that will capture whatever is being heard by the computer. This is more complicated and requires you to set up the audio record and playback devices. These are normally just

the default input and output devices of your computer. You will need to play around with the volume controls to get the desired volume. I have found that I need to set the speaker volume for Audacity in the Windows Volume Mixer to zero while recording or else I get a lot of feedback. Then I raise it when playing it back. I always start the recording before starting the MPP so I know I will get the beginning captured. I then just delete the first blank part.

You will then need to export it. You'll find this under the "File" menu then Export Audio. I save it to "Export to computer". You can give it a file name and also select what format you want to save it in.

You can click on LOOP to have it play the exercise continuously to get a longer audio file.

### VOICE RECORDER

A third way is to use the built in Voice/Sound Recorder on your device. I won't go into how to set this up since there are way too many different devices out there. You should be able to start the voice recorder and then start playing a MPP exercise and have it recorded. I suggest you Google something like "voice recorder" for your device to get help on how to set it up if needed.

I hope this gives you some idea's as to how to record the MPP exercises for off line listening. I'm sure there are other programs that will do similar recordings so feel free to use whatever works for you.

Have fun experimenting! ★

– Tom Noller, AB5TN

## MORSE CODE WORLD NOW AVAILABLE OFFLINE

The Morse Code World training tools are now available for download and as a standalone app. The tools have always worked fairly well offline, but now it is an explicit feature. If you visit the [training page index](#) you will find instructions and download/install buttons.

You get all the tools in a single download. You can also access the download buttons in the title area of any tool and you'll be informed of any updates as and when they arrive. You can also install the tools as a separate app in Windows/MacOS/Android/iOS (directly from the website, not in the app stores yet).

As well as the offline/download feature, the update brings:

#### Word List Trainer:

- Word list cache management buttons added (to choose which lists to download for offline use).
- New dynamic headlines lists from a wider range of sources and in multiple languages.
- LICW OverLearn speed levels reorganised (Level 1 and 2, now called 2 and 3; new Level 1 at 25 WPM).

#### Headlines Trainer:

- Many more headlines sources added (now 20), including in French, Italian, Spanish and German.
- Refresh and fetch all buttons added.
- Speech (shared — affects all tools with speech)
- Lots of work-arounds for Safari speech synthesis issues.
- Error handling for when a cloud voice is not available.

I really hope this helps people with their training – that's what it's all about ★

– Stephen Phillips

# LONG ISLAND CW CLUB



Teachers of Morse Code  
[longislandcwclub.org](http://longislandcwclub.org)

## THE LONG ISLAND CW CLUB CHALLENGE!

By Kasey Efaw, KD2YMM

We have wrapped up the fourth quarter of 2025 and reset the points for the start of the New Year. Award certificates have been generated and are being sent out to recipients.

With Spring right around the corner and the end of the first quarter, we will bring a close to the on-going nature of the LICW Challenge. In its place, we will be offering some unique "Challenge-style" exchanges throughout the year, perhaps once a quarter or even 'worked most states/entities'.

Please email your suggestions to [kd2ymm@gmail.com](mailto:kd2ymm@gmail.com). ★

– 73's,  
 de Kasey KD2YMM



## Score Board

LICW CHALLENGE QUARTER 4 (OCT – DEC 2025) TOP 10 SCORERS:

Rank	Callsign	Name	LICW #	QTH	Total Score
1	K2MZ	Robb	225 I	Massachusetts	126
2	N0IPA	Jim	588 I	Colorado	105
3	KC1UML	Michelle	5888 I	Massachusetts	94
4	KC0DWZ	Don	3982 I	Minnesota	79
5	F5IJO	Jean-Jacques	5902 I	Europe	79
6	K2GV	Jerry	4 I	New York	75
7	AC0VW	Keith	8819	Wisconsin	55
8	N5DCH	Dave	3064 I	New Mexico	45
9	W6PNY	Mac	7331	North Dakota	43
10	K9VIC	Eric	2404 I	Illinois	38

## MY LICW SUCCESS STORY

– Scott DeMatteo, W3GTR

Last November of 2024, I was trying to decide whether I should pursue getting my extra or learning CW. My buddy Mike K4NYX in Florida convinced me to learn CW. He has been great at keeping me on my toes and not allowing me to become complacent and lazy.

I had been and am an avid POTA activator, with 500+ activations and 100+ parks being activated, but I was getting a bit bored with SSB and wanted to pick up something new. I decided LICW was the right fit for me. I grew up on Long Island and it kind of felt like home. I started taking the LICW BC1 classes followed by the BC2 classes. I was doing well on sending but my copy was horrible. I'd often get off the class when it came time to do the VET practice because I'd just get frustrated. After finishing only the BC1 and BC2 I decided it was time to hunt some POTA stations. Three months after I had started at LICW, I started hunting POTA stations at 14 WPM, which moved up to around 18 wpm eventually. By July I had hunted over 900 POTA stations and was getting bored – It was time to activate!



It was mid-July, 8 months had passed since I started at LICW and I decided it was time to make a plan to start activating. My copy was improving but was nowhere near where I thought it needed to be to activate. I made a

plan with a friend NN3E to help me activate in September so I was doing a lot of call sign practice gearing up for my first activation. One day in early August I just decided, let's activate. I headed out to a park near my house on my own, with a QMX-Plus QRP Radio, 5-watts and a EFHW antenna hung up in the woods between some trees. I sent a lot of question marks but I made 12 QSO in about an hour. I was exhausted, my brain was fried but that was the beginning of it. I went out the very next day and made 37 QSOs with the same setup. From there it's history.

In just the short time between August and October I've activated 205 times, all CW for a total of 7,504 CW QSOs.



Exactly one year later from the date I started at LICW, I decided to film a One Year Anniversary CW Journey video on my channel: <https://www.youtube.com/watch?v=tCW2uPCAfjs>

I have decided to become a LICW lifetime member now. I'd like to thank all the awesome instructors who did an awesome job helping to get where I am today in my journey.

Hope to catch you on the air, I activate approx. 5x a week, I am always CW and most of the time QRP. ★

– Cheers de W3GTR, 72

## LICWC'S INAUGURAL NAQP CW TEAM SHINES!

I am thrilled to spotlight the Long Island CW Club's (LICWC) first North American QSO Party (NAQP) CW team from January 2025! Spearheaded by contest coordinator KI6OY, this Team marked our club's bold entry into team contesting, blending relaxed fun with serious CW action.

LICWC NAQP team scores are in, strong showing for the pilot!

### Team #1 Results

KI6OY (Full Time): 37,625

KC0DWZ (Full Time): 2,352

K2MZ (Part Time): 3,430

NR7Z (Part Time): log submitted

K6TTA (Part Time): 3,450

Team #1 Total: 46,857

### Team #2 Results

KD2YMM (Full Time): 2,240

WT4TB (Part Time):

VE3DRS (Part Time): 273

KG4EXY (Part Time): 5,130

KC1UML (Part Time): 850

Team #2 Total: 5,980

### Overall Highlights

First-time teams emphasized fun, mentoring, and N1MM use; top scorer KI6OY highlighted relaxed running skills. Together, we chased NAQP's fast-paced fun, building skills for a August rematch. Curious? Join our new Discord contesting group for scores, strategy, and low-pressure mentoring. Positions pending official NCJ release. We have a great foundation for LICWC growth! ★

– 73, Lee Zalaznik, KI6OY

## LIFEBOAT RADIOS

– Denis OBrien, N2JFF, ex Merchant Marine

During the second world war Germany designed the first lifeboat radio. One of them was captured by the British and copied. The information was also given to the Americans, who used it to design the "Gibson Girl" as it was affectionately known for its hour glass shape. Its shape allowed the operator to hold it between his legs and crank the handle with one hand and send with the other hand. They weighed about 30 lbs. and were a bright yellow color. These early radios were transmit only with no receiver.



Gibson Girl

Many changes have been made since then. I sailed on merchant ships from 1970 till 1984 and a lifeboat radio was always carried. It was usually stored in the radio room. Fortunately I never had to use it, but in case of abandoning ship, my job was to bring the radio to the lifeboat. The two lifeboat radios I worked with were the Marconi made "Survivor" and the Skanti "Marinetta". I still look on ebay

for one of these which I would like to have. There is currently one on ebay in Holland and he is asking \$550!!!!

These radios were the first QRP radios as their output was only between 4 and 5 watts. The radios had the 500 Khz CW distress frequency, 2182 Khz R/T distress frequency and 8364 HF frequency which was cw only.

The radios were simple to use with one button sending out automatic cw distress. At the end of the automatic sequence a long dash was sent to enable rescuing ships to use their direction finders to pinpoint the lifeboat position. A Morse Code table on the front cover allowed non-radio operators the ability to send Morse Code. The antennas were whips or, wires, and a kite was provided to raise the wire antennas higher. A reel of wire was provided for grounding just by throwing it into the ocean.

We periodically tested these radios when we lowered the lifeboats during drills. I would rig an antenna and two of the sailors would crank the handles, and I would try to contact the local coast station. It was very exhausting work maintaining the power. There was a provision to supply 24V external power, which was impractical as no batteries were carried for the radio. I was always able to contact the local station which was usually less than 10 miles away but I was never able to make any long distance contacts. Now this is not very reassuring when you are in the middle of the Atlantic or Pacific Ocean! On HF I did not make any contacts but I could hear many long distance stations. If band conditions had been better I may have been more successful. In my opinion these radios were not very efficient or effective, but psychologically it must have been reassuring to crews in lifeboats that since you are sending there is that chance someone might hear you.



Skanti Marinetta

There was one incident in 1968 where a ship broke in two in the Atlantic off the coast of New Jersey. The main radio station was midships so it was lost, but luckily in this case the lifeboat radio was stored on the stern which was intact. The radio officer was astern at the time eating dinner (lucky for him as all crew who were midships were lost). He was able to use an existing antenna which was mounted on the stern to send out a successful SOS, and all remaining crew were rescued by the US Coast Guard.

On today's ships it is much different. They carry EPIRBs ( Emergency Position Indicating Radio Beacons) which are automatically released when under water and float to the surface. They then start transmitting via satellite which can pinpoint your position within a few feet. I presume they also carry some kind of portable satcom to talk to rescue personnel. If I were sailing today, I would feel a lot more confident about my chances for survival. ★

## THE KEY THAT STARTED IT ALL

– Todd Mitchell, NOIP



It was 1978. Ten years old and curious, I liked poking around Dad's basement workshop while he was at work. One day, I found something buried in a box that instantly captivated my imagination. Its finely machined parts obviously had some very special purpose. I didn't know it at the time, but I had just discovered the key that would start it all for me in amateur radio – a Nye Viking Speed-X straight key.

When Dad got home from his long day as an electrical engineer (EE) at 3M, I was waiting for him. "Dad, what's this?" I asked, holding up the Speed-X.

"Oh, that's a key for sending Morse code," he said. "I always wanted to get into amateur radio but never found the time."

So, we got into it together! But I'm getting ahead of myself.

When I finally understood Dad to mean there were "amateur radio operators" out there sending Morse code over the air, something clicked.

I had come across this word "amateur" before but didn't know what it meant. Our Heathkit GR-64 shortwave receiver had small band segments labeled, "AMATEUR," and I had listened with wonder to Morse

code in those segments. It had all been shrouded in mystery. The fog was beginning to clear.

I pressed Dad for more. When I learned that even a ten-year-old could earn an amateur radio license from the United States government and actually send Morse code over the air with keys like the one I held in my hand, I was on fire! I couldn't wait to take the next step.



Photo courtesy of Rich Post, KB8TAD, and his Boatanchor Pix site at <https://people.ohio.edu/postr/bapix/index.htm>

Dad started by teaching me how to solder. We built a Heathkit HD-1416 Code Practice Oscillator (CPO) while I learned CW from cassette tapes. When the CPO was finished, I learned to send CW by imitating those tapes with the Speed-X.

Finally ready, I brought Speed-X and CPO to the home of Lyle Koehler, KOLR, who administered my Novice exam.

I don't recall the written portion of my Novice exam at all, but I sure do remember that 5 WPM code test. I was sweating bullets! Looking back, I imagine Lyle was sweating bullets, too, trying

to make sense of my 5 WPM fist well enough to pass me.

As an EE and holder of a First Class Radiotelephone Operator license, Dad could have easily gotten Extra class were it not for the CW requirement. He worked hard learning CW and did well, though. I still have the QSL card from Dad's first QSO. Bill Hall, WD9HII (SK), wrote, "Do you realize you did not make a miss key in your QSO?"

When Dad was ready to test at 13 WPM for the Advanced ticket and I was ready to upgrade to General, we went downtown to the FCC office and tested together. My call changed from KAOCEN to NOART, and Dad got NOARQ.

Pretty soon my big brother Tom, NOBSY, surprised us with his General after only a couple weeks of study. Being a skilled cellist in the Minnesota Youth Symphony surely helped, but I am still amazed how quickly he got to 13 WPM!

Thanks to Dad's labor, Mom's patience, and the loving generosity of both, I had it mighty good as a young ham. Dad would go on to publish a couple of articles in QST and The ARRL Antenna Compendium.<sup>1</sup> He was by far my most important Elmer. He taught me not only about radio but also about keeping radio in its proper place in our lives of service to God, family, and country.

Nearly five decades later, Dad is gone — but that Speed-X is still the centerpiece of my shack, screwed down to the desk the way Dad did. I have made digital and acrylic paintings of that key, too, which appear on my return-address stamp, QSL card, an SKCC calendar, and elsewhere.

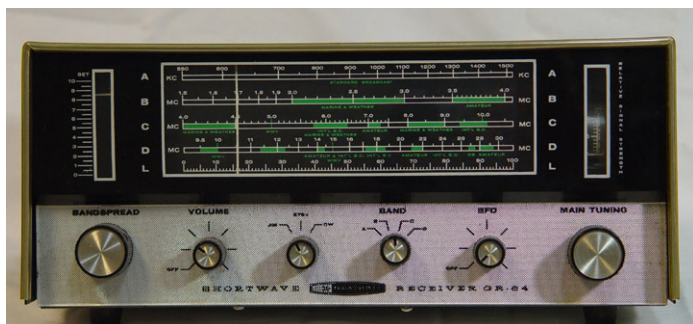


Photo courtesy of Universal Radio, Inc. [universal-radio.com](http://universal-radio.com)



Todd, NO1P, with his father Harold "Bud" Mitchell, NOARQ (SK). Photo taken by Todd's mother in 2018.

Because it is more than a key. It is a tribute to my father.

Thank you, Dad, for the key that started it all. ★

1 Mitchell, Harold, NOARQ, "Optimum Gain Boomless Quad," in *The ARRL Antenna Compendium*, vol. 1, Newington, CT: American Radio Relay League, 1985, pp. 11–17; Mitchell, Harold, NOARQ, "88-mH Inductors — A Trap!", *QST*, vol. 67, no. 1, January 1983, pp. 34–36.



"Nye Viking Speed-X," 2021 acrylic by Todd, NO1P

## OUTSIDE THE BOX

### *Effective, Easy and Cheap Common Mode Chokes*

If you're like me, you're literally watching every dollar, trying to keep your bank balance out of the red. Commercial common mode chokes can be expensive, while "ugly baluns" can work up to a point but are also costly, as they require 20 to 25 feet of coax.



If you use RG-8x or thinner coax, you can make your own common mode choke for as little as \$10

that provides isolation superior to an ugly balun. All you need is a 3-foot RG-8x coax "patch cable" with connectors pre-installed on each end, and a \$10 toroid core of the FT-240 size from Amazon or [Palomar Engineers](#).

The choke can be built in less time than it takes to watch the typical TV commercial break. Simply pass the coax patch cable through the toroid as many times as will fit – as few as 5 turns will provide isolation above 20db. You can buy these coax cords on Amazon for as little as \$18 for a pack of 3, but be forewarned, if you want to attach your choke to a coax feedline with PL259 connectors at each end, you will have to add a female-to-female barrel connector at added expense.

If you always use the same RG-8x feedline, you can save even more money by passing the feedline itself through the toroid five times or more, eliminating the need to purchase patch cords or connectors. In this case your choke will cost a grand total of \$10. ★



# ***SPRING SPECIAL: PORTABLE OPS***

In Spring, a young ham's fancy lightly turns to thoughts of **PORTABLE OPERATIONS!** Shed those Winter skins, get *OUTSIDE* and smell the fresh, new air!

In that spirit, we present our ***Special Section on Portable Ops***. Inside are a few stories from the field to inspire you, a really excellent article from the Ham Ninja on how to enjoy the Spring Experience and still get back to home base all in one piece, and a reprint of Jim Stinson's excellent equipment checklist. Enjoy! – then, Get Out There and ***ENJOY!!!***

## MULLETS AND MOUNTAINS

– Jim Stinson, NOIPA

(The following is reprinted from the Summer-Fall 2025 Issue)

One could easily create a checklist for portable outings to ensure nothing critical gets left behind. Coax, key, transformer, radio...Or...

Have a fully stocked MacGyver kit to help you engineer your way out of forgetfulness.

I have both, thank goodness. Several long hikes up a summit would have been a total waste of effort and time had I not.

My SOTA/POTA checklist is quite complete, having learned from early and recent mistakes. Separate sections for my rig, antenna and even logging material help me remember all the little things. The largest section covers non-radio gear I have regretted leaving behind once or twice.

My SOTA pack is usually always packed and ready, so grab and go is the plan. But, every once in a while, I need something for a day hike and it doesn't make it back into the pack. Or I do a quick mental checklist and head out the door. My XYL will tell

- Rig**
- Battery
  - Power Cord
  - Mic
  - Ears
  - Key/Cable
  - HT/Whip

- Antenna**
- Wire
  - Transformer
  - Ties
  - Mast
  - Coax
  - BNC Adapter

- Log**
- Pen
  - Log Sheet
  - Summit/Park
  - Chasers

- Gear**
- Knee Braces
  - Sox
  - Lt Buff
  - Gloves
  - Glac Glasses
  - Sticks
  - McGyver Kit
  - Mid-layer
  - Soft Shell
  - Power bank
  - Beer/Tequila
  - Spikes
  - Snow Shoes
  - Hardshells
  - Mtn Sox
  - Mtn Gloves
  - Therm Buff
  - Puffy
  - Knit Cap
  - Bothy
  - Seat
  - Food

you how effective that is. Good thing I'm extraordinarily good looking.

So, just what exactly is in my MacGyver kit and why?

### 1. Swiss Army Knife

I'm a man, with pants on. Therefore, a pocket knife must be present.

### 2. Spare antenna wire

On more than one occasion I wasn't happy with my wire placement up in a tree, and pulling it down to try again, I've broken the wire or yanked it out of one of the traps. I've always been able to strip the ends with my teeth (not part of the kit) or the above knife, and twist it back together. WGOAT has been known to heat up a small nail with a bic lighter and do some field soldering.

So, I carry an additional small gauge (light-weight) random wire and 9:1 transformer, just in case. My rig has an internal tuner.

### 3. Extra transformer

I've forgotten my transformer (early on I only had one rig and antenna had to disassemble them from the shack to go portable) and had to rig a connection





from the coax to my radio without the transformer in between. Luckily, my G90 can tune a lawn chair, so it handled the impedance. The extra transformer follows the two is one, one is none concept.

I found the mini-boxes that QRP guys uses for their No-tune EFHW and made a few. They are light and small (QRP rated).

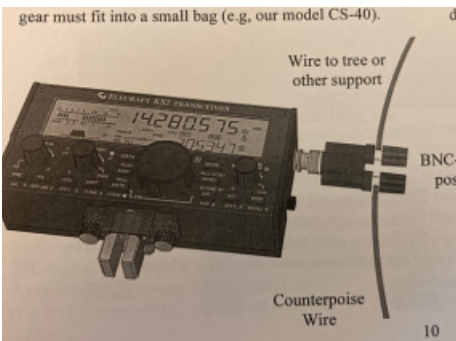
**4. Coupling adapters**

See #3 above. My coax has BNC connections and my G90 has a PL239 connection, My KX2 and MTR4 have BNC...so, I have a string of every conceivable BNC-RF adapter.

After the wind blew a door down on my antenna and yanked my radio off my lap and across the ground, I now have RCA connections that pull out when yanked leaving the expensive part still in my lap.

**5. Binding Post**

I once threw everything in my suitcase and flew off to house/dog sit for a week. Setting up my rig on the balcony overlooking the lake and anticipating a week of beer-rocking chair-radio, I found that I threw



everything in the suitcase except my antenna.

I did have a binding post in the kit, so rummaging around in the garage for some wire, I discovered my host never needed wire for anything. Who doesn't have a spool of wire in their garage? But he did have some gardening wire. You know for tying up roses on the trellis, or stringing trip wire to cans with rocks in them to alert you when the armadillos are back.

I used the garden wire and the binding post to rig a random wire with a counterpoise just like in the KX2 instruction manual, and enjoyed a week of beer-rocking chair-radio.

**6. Alligator & Crocodile Clips**

Life savers! I have the narrow crocodile clips and the wider alligator clips (see Mutual of Omaha's Wild Kingdom reruns. Good luck, Jim) with the wire attachment screws. I also



have a set of test leads with crocodile clips on the ends.

Once, I left my coax at home and had to find a way to connect my wire to the radio. I was able to jam the crocodile clip into the RF connector center receptacle, and connect my wire to the jaws.

I forgot my key one time. Using the test leads, I completed the activation by clipping to the audio cable for my key, and tapping the clip ends



together to close the connection and send my CQ...

I recently took my solar panel instead of my regular battery and, while Power Cord is on the checklist, I only brought one half of the cord and had no way to plug it into the solar panel. Test leads to the rescue!

**7. Straps & Ties**

Various Velcro straps, paracord, S-clips and zip ties. Useful for securing the antenna mast, snowshoes to the pack, and repairing micro-spikes.

The MacGyver kit is on the checklist, and I never leave home without it. It's saved an activation on many an occasion. As for the contents of mine, your mileage may vary. I know, I know..."You forgot about this or that." I haven't gotten there yet.

And what's all this got to do with Mulletts? Only the best one ever! ★



**GREEN-EYED MONSTERS AND 15 METER CW...**

– Bob Houf, K7ZB

In the Arizona 'High Country' made famous a century ago by the novels of Zane Grey, there is a unique geological formation – an escarpment – of nearly 2,000 feet of rapid elevation change from the high desert's rolling hills of Pinyon-juniper to the Colorado Plateau.

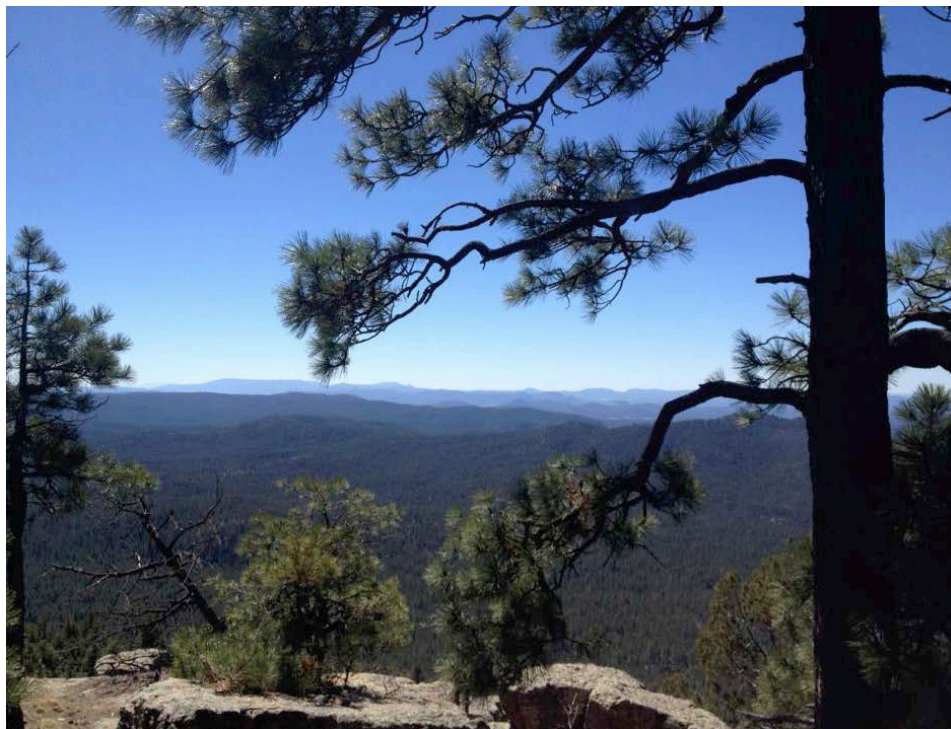
The picture shows the view from the edge of the escarpment at 7,700 feet above sea level looking down and across the Tonto National Forest 2,000 feet below and out across to the Mazatzal Wilderness area.

This unique formation is called the Mogollon Rim (pronounced 'muggy-own' by natives) and is the de-facto playground for the city dwellers of the Sonoran Desert.

The formation stretches from Flagstaff in north-central Arizona in a shallow arc scribing eastward, then drifting southerly to the White Mountains – a run of 200 miles containing the world's largest single stand of Ponderosa Pine trees.

These massive pines are in several National Forests – the Coconino and the Apache-Sitgreaves, and the US Forest Service maintains the woodlands while the Arizona Game and Fish organization oversees the herds of elk and mule deer and the trout in the streams and lakes of the High Country.

The city of Phoenix simmers in the summer heat of the Valley of the Sun, two and a half hour's drive from the Rim. During the hottest months of the year thousands of campers and weekend RVers ascend to Rim Country to escape the blistering heat and to enjoy the cool mountain air and the sound of the whispering pines.



Over the years the small cowboy towns of the Rim have added condos, cabins and cottages along with other modern amenities, but the area still remains as rugged and wild as it was in the time of the Apache Indians who roamed freely across the land.

The US Cavalry under the leadership of General Crook fought the Apaches across Rim Country in the late 1800's with the conclusion of the conflicts resulting in the establishment of the Fort Apache Indian Reservation in the White Mountains of eastern Arizona.

Driving up on to the Rim from Interstate 17 in central Arizona from



Fort Verde on Route 260, you can see the original wagon road cut in to the side of the hill paralleling the highway. On the Rim you can hike along the General Crook trail itself and see the ruts carved into stone by the iron rims of the wagon wheels dating back to the 1870's. In some areas the blazes on trees marking the trail are still there on the same Ponderosa Pines the US Cavalry rode past.

But what interests the amateur radio operator – in addition to the scenic beauty and wild west history of the area – is the opportunity to put wire antennas high up in those Ponderosa Pine trees.

The 150' tall pines with your antenna at an elevation of nearly 8,000' ASL and the escarpment's sharp drop-off gives your signal very favorable reports from around the world.

When camping on a remote site on the Rim (you bring in your own drinking water and there are no latrines) you use battery power for your radio station. A deep discharge marine battery, fully charged, will





provide adequate power to run 100 Watts of CW over a three-day weekend.

A favorite way to take advantage of the very quiet radio reception environment of the High Country is to chase DX on CW from a remote campsite.

On one such adventure we set up camp near General Crook's trail and using a pair of stacked dipoles we worked 20 and 15 meter CW with great success.

It was at the peak of Sun Spot Cycle 23 and the 15 meter band was alive and bristling with signals far into the night – European stations were stacked up on our frequency causing a mild pile-up.

It seemed every ham in Europe running 100 Watts and a dipole was calling us. For hours we logged stations – it was like running a small-scale DXpedition just a few hours from your home!

My two sons dropped off to sleep in the tent after star-gazing. The campfire



burned down to ashes, leaving just the dull, red glow of the embers.

My rig was set up on a camp table under a pop-up canopy tent with open sides. I hung a small gas lantern under the roof of the tent and with my earphones on I worked 15 meter CW until midnight, running Europeans until I couldn't keep my eyes open any longer.

As I switched off the rig I reached up to turn off the gas lantern, leaving me in total darkness and completely blinded without night vision.

I fumbled around and picked up my 6-Volt spotlight lantern from the table and just casually swept it across the forest around our campsite.

"Holy Cow!! What on earth is that?!" immediately came to mind as all I saw was an army of green eyes spread right around the tent – within 25 feet of my table!

They were looking right at me and I froze in fright for a moment as my eyes adjusted – then I saw a large herd of mule deer grazing literally all around me, completely oblivious to my gas-lantern radio operations and the clickety-clack of my telegraph key for hours on end.

They had not been bothered by my telegraphy at all but were interested in the light in the woods – the so-called 'deer in the headlights' phenomenon.

They placidly looked at me as I jack-lighted them with the lantern, then they casually dropped their heads and went back to grazing on the forest floor.

I shook my head in amazement and went in to the tent pondering pounding brass with the Europeans on 15 meters in a mule-deer herd on the Mogollon Rim of Arizona... with the spirit of General Crook and the Apaches watching over us. ★

## OUTSIDE THE BOX

### *Save the Trees, Save the Planet*

I've noticed there is a lot of "get out your paper and pen/pencil" exercises in the BC1 carousel classes, and probably those beyond as well. I'm not big on wasting paper, or anything else for that matter, so I purchased some dry erase (white) boards off Amazon and are using those instead. I was able to get TWO double-sided 9x12 inch boards, with two black pens and two erasers, all for under \$7. Much more eco-friendly than tearing off pages from a notepad and tossing them into the trash.



Getting two boards works out great; I keep one downstairs in the shack where I attend my Zoom classes, and the other upstairs where I can use my other laptop to access the Morse Practice Page and do drills up there as well. If you're interested, search "Max Gear" white board 2 pack on Amazon, or you can probably find the exact same thing at Target, Walmart, Staples, etc. One tiny step to save the planet. ★

– Brandon K "Brando" Fox,  
W3TKB

[These whiteboards work great on POTA & SOTA outings also. – Ed]

# THE HAM NINJA'S TOP 10 SAFETY TIPS

– Chris Claborne, N1CLC



After surviving 880+ SOTA summit activations, I wanted to share what I've learned from direct experience and from others about how to lower the risk of injury and death while doing this outdoor hobby. In 2025, I published my ["Top 10 safety Tips"](#) in a weekly email series for SOTA (Summits On the AIR) operators. Later, I was asked to present my "Top 10 Safety Tips" to various ham clubs. I hope you find some value here for you and your family.

## REDUCING RISK – NOT MAKING THE OUTDOORS SAFE

Nothing can be made absolutely safe. My list is all about reducing risk when doing SOTA and other outdoor activities. We can't eliminate risk, but there are things we can do to reduce risk. For example, many people recommend that you hike with others (not covered here); that in itself doesn't eliminate risk but it would reduce some risks. I don't make hiking with other people a requirement because it reduces the amount of time I can enjoy the outdoors and I'm willing to take on the associated risk. However,



if you feel hiking with others is a requirement, should that "other person" have medical training, or be a doctor specializing in emergency medicine?

**This article is about what I do to "reduce risk", not eliminate it.** I'm willing to take on some risk when hiking in the wilderness but I do things that help reduce the risk of going by myself into the wilderness.



These safety tips come from my experience hiking and camping for SOTA and also apply to anyone conducting other outdoor activities like POTA (Parks On The Air) or just general hiking and being away from civilization, whether it be on foot or in your jeep.

I'll try to keep these tips short and simple by explaining **what each tip is, why it's important and what I and others to reduce risk.** To create these tips, I used my own experience, I reached out to other experienced hikers and mountain Search & Rescue team members, as well as respected and trusted research sites. The core assumption is that your activity is limited to a day or two outdoors. Note: I'm not perfect, I've been injured, and I've come a little too close to having a significant event and learned from that so you don't have to.

If you find any errors, please reach out to me at [N1CLC@HamNinja.com](mailto:N1CLC@HamNinja.com).

## THE 10 ESSENTIALS (THE GEAR)

Before we dive directly into safety tips, let's delve into my "10 essentials" when hiking. Some of these will be repeated when we get into the top 10 tips.

1. Navigation: Compass, GPS & Paper charts
2. Headlamp (& extra batteries)
3. Sun Protection
4. First aid including foot care
5. Knife: multi-tool for repairs
6. Comms: Radio or Satellite
7. Shelter: emergency bivy to stay warm
8. Extra food beyond what the expedition calls for
9. Extra water. If you are hurt, you will need this or you may run into someone else that does
10. Extra clothes: I pack a minimum of one extra layer (2 in winter) and a shell.

## SAFETY TIPS

### Tip #1 – Bring Plenty Of Water

The Mayo Clinic recommends 3.7 L of fluids for men, 2.7 for women per day. Temperature and exercise raises that significantly.

#### Why?

Dehydration can quickly bring death. Also the older you are the more dehydration affects you due to heart efficiency, being more susceptible to





electrolyte imbalances. Severe heat injuries can result in swelling of the brain, seizures, kidney failure, coma and death. I've run out of water due to a malfunction in my pack and also forgetting to resupply. I was miserable.

In addition, we've recently had a death on a small summit near my house due to dehydration, and the SOTA community had a close call when an operator recounted how he forgot to re-fill his bottles and pressed on. He said he "came to sitting in his truck with the air conditioning on, not knowing how he got there".



### What I and others do:

I check the weather first. My minimum water for a half day hike is 2 L, if it's going to be warm, 70 - 80, 2.5 L, 80+, 3+ L. **Hydrate before leaving the car**, and have water at the car for the return.

**Consider having an electrolyte replacement additive for hot days.**

**Look up signs and symptoms of dehydration and heat injury** so that you can recognize it in yourself and others. Learn how to treat yourself and others.

**Turn back if you identify a lack of water early.** SOTA operators tend to be very goal oriented. Be aware of that and force yourself to mitigate that risk. If you run out of water,

consider stopping and stay in the shade until it cools off (don't let a made up schedule kill you). Don't be afraid to ask others for water or make a call for help.

### Tip #2 – Know Your Limits

Knowing your limits means knowing what the limits of your skills, capabilities and gear are. Your assessment includes weather, training, mountaineering skills, assessing your fitness, how much water you have, layers of clothing, weather, and mission appropriate gear like microspikes, crampons, ice axe, etc.

**Don't forget to assess the skills of your group.** Many times, SOTA operators are the ones leading the pack, so look out for your team, and don't let them exceed their limits.

### Why?

SOTA activators tend to be very goal oriented and this can get us into trouble. Hikers call it "summit fever", pilots call it "get-there-itus". We tend to push on when we shouldn't. I'm told that **Search & Rescue teams are constantly rescuing people that just weren't prepared in one way or another and continued on anyway.**



### What I and others do:

Be prepared to abort. I've had to abort a few summit attempts when I've encountered terrain that exceeded my skill level. I've also aborted a hike when thunderstorms were going to be a factor. Also, abort the trip when conditions exceed your skills, training or equipment. For example, I know what an ice axe is and how it

works, but I've never been trained or practiced with one. If I might need an ice axe, I abort.

**Set your expectations** on what you will do if anything above is encountered. As a pilot, aborting an unstable approach or when visibility is below minimum was drilled into me, and I apply that to hiking as well. Pilots expect to abort every approach.

Have an alternate plan for when things go wrong. I've been able to just pick a different route or summit or do POTA and still have a great day. I've done the same when flying.

Tell your party that you will abort if needed to set expectations. This establishes the expectations for everyone in your expedition.

### Tip #3 – Have a First Aid Kit and The Training To Go With

Make sure your pack has a first aid kit and that you've had the training to use it. Because most SOTA adventures are pretty short, I recommend just enough gear to stop the bleeding. Anything more than that and you are probably going to need to press the SOS button anyway. If you're leading a larger expedition, re-evaluate your safety loadout.



### Why?

**Things happen and emergency response isn't 5 minutes away.** You may need to survive or help others till it does arrive. For Example: When I was setting up an antenna, I stumbled backward and did a very simple fall to a sitting position, impaling myself on a sharp branch sticking out of a fallen tree. I put my medic training into action, calmly pulling myself off



the log (I said “calmly”, not quietly). I had a plan A, B, C ready to go if the bleeding didn’t stop (never mind the stuff poking out :-). I let my wife know I needed a ride to the ER when I got home, and I constantly pinged my location using my Garmin Inreach to an online map just in case my wife wanted to come get the dog if I didn’t return.

**What I and others do:**

I carry a small two-person first aid kit that has some small bandages for cuts and scrapes, antiseptic wipes, large bandages, gauze and tape, cling wrap, tweezers. I have some extra bandaids for when I decide a summit just needs some blood sprinkled around on it. I also carry leukotape for the hot spots / blisters. In addition, I find that my leatherman multi-tool is great for pulling cactus spines out of me or the dog.

**Get training.** I was an Army medic and a certified EMT. This is a perishable skill so I am looking for some wilderness first aid training. [see REI.com](http://see.REI.com)



I’m ready to treat others but only to my level of training (fixing boo boo). Stop the bleeding, provide comfort and warmth and get help if needed.

Pay attention to trends in patient’s health when treating, documenting some baseline measures as soon as you can will be helpful.

I love N6JFD’s advice “Bring your brain”. Calm down, and remember your training. For example, knowing multiple ways to stop the bleeding, maintaining an airway, and treating a bit of shock will go a long way to allow you or others to survive until support arrives.

**Tip #4 – Check the Weather**

Before you leave, check the weather forecast for your area of operation. This includes not only the destination, but also the trailhead and route.



**Why?**

Checking the weather means you can reschedule your plans early due to lightning or other severe weather. It also allows you to be prepared for the forecast temperatures and other conditions. This is critical for packing the proper number of layers and water for your trip.

Don’t forget to look at the night time lows in case you get stuck on the mountain. Be prepared to stay overnight due to injury, being lost, or something else.

**What I and others do:**

I use [Weather Underground](http://WeatherUnderground) but there are tons of free apps for your phone and other websites that provide forecasts. My favorite tool for SOTA is [SOTAMAT.com](http://SOTAMAT.com). It allows me to use a sms message or email from my phone or inreach to get the weather for my summit or a lat/long. The night before, I send the command similar to “w w6sc330 1” to get the hourly weather forecast for a designated summit. If needed, I send

the lat/long of my trailhead for that forecast. I love that SOTAMAT can be used from Inreach or other satellite communicator.

**No forecast is perfect** but it does help *mitigate the risk*. Don’t forget to have a backup plan if things don’t work out. Look at trends in weather and get updates on the trail if you have concerns.

**Tip #5 – Have Backup EmComs**

The focus here is not to depend on cell service in the backcountry!

**Why?**

We have become overly dependent on cell phones. Service can go from 4 bars to zero for no apparent reason. Phones break or they can go dead.

Recently, we had a Southern California SOTA operator who fell, slid, and broke his leg. He lost his phone and his satellite locator was dead. He saved his life using a 2m HT. He had backup!

**What I and others do:**

Try to call 911 if needed, even if your phone doesn’t have service. Carry a satellite communicator like an Inreach or other device. Some phones will send sms message via satellite. Carry an HT, and program it with area repeaters. Since you are a ham, you could use HF radio if needed. (Try 14.300). Make sure your backup devices are charged.

**Tip #6 – Be Able To Communicate Your Location**

In an emergency, you need to be able to tell people where you are located. The best way to do that is to communicate your latitude and longitude.

**Why?**

Your location is the single most important piece of information you’ll communicate in an emergency. Being



able to communicate your location using lat/long in decimal format will improve the chances that help can get to you in time.

### **What I and others do:**

**Know how to find your position using the decimal format of lat/long (eg: 33.94735, -109.12171).** If all you have is the old degrees, minutes, and seconds (DMS) data, (e.g. 33° 56' 50 N 109° 7' 18" W), use that, but I recommend using the decimal format if possible.

**Find an app that can display your location in decimal format.** Decimal format will be easier to communicate and I think easier for people to use in today's digital world with GPS. Know how to cut and paste. Try putting 33.94735, -109.12171 into Google Maps and other charting apps to see what I mean. You should know how to get this from multiple sources – phone, watch, radio, GPS. **Teach others in your house this skill.**

### **Tip #7 – Tell People Where You Are Going**

Tell people where you are going before you start your expedition.

#### **Why?**

**You could be lost or injured and unable to ask for help.** If you leave and don't come back, hopefully people will start looking for you. If you don't tell anyone where you are going, they will have no idea where to start.



### **What I and others do:**

I tell my wife where I'm going. If I don't come home in a reasonable amount of time, she'll call my favorite SAR person (who is also a SOTA

operator) because she'll want the dog back.

Tell a friend, preferably one that is into SOTA and let them know when you return. It's similar to filing a flight plan with the FAA.

Leave a note on your car's dashboard, readable through the windshield. Many a hiker has been found because they left a note in their car describing where they were headed and possibly the planned route.

### **Tip #8 – Reduce Your Navigation Risk**

Build redundancy into your navigation capabilities and execution.



#### **Why?**

Getting lost is no fun and it could be deadly. Our phones are super capable, but this makes us too dependent on them. Breaking your phone, or running out of power can put you in danger if you don't have a backup plan.

Using a well established trail is great, but if a fire sparks up, or a flash flood closes off your return route, you'll need to navigate on the fly.

### **What I and others do:**

I research & study the area of operation. Don't forget to download offline maps for my GPS (phone or other)! Carry a compass!

When hiking, I stop at places that I know I can get to and take a bearing to my car or other known location. Also, pay attention to the terrain and key landmarks as you hike to the summit.

Have a backup plan. For example, my watch, and some of my radios can give me guidance. I've also carried paper charts (in water proof containers) for the area and can use it with a compass. If you've never done this, take an orienteering course.



If you become lost, stay where you are, take a break, and evaluate your options while you await search and rescue. No fires if possible.

Consider taking an orienteering class. It's fun.

### **Tip #9 – Layer for Safety and Comfort**

Use the layering method when packing for an expedition to ensure you can survive unexpected cold conditions. Carry light, non-cotton layers that you can put on or remove as needed.



#### **Why?**

Hypothermia can be life-threatening even it isn't super cold, cooling your body below 95 degrees f.

The temperature drops 3.5 to 5 degrees f per thousand feet of elevation gain. Our hobby means you'll most likely be climbing up in elevation and it will probably be cooler than the trailhead. The

weather can change unexpectedly; arriving on a windy summit while covered in sweat will cause you to chill fast. Additionally, you could be stuck on the mountain longer than expected if you or someone else gets hurt, you become lost, or other unforeseen events cause a delay.

### **What I and others do:**

**Check the weather before you leave (see Tip #4).**

**My standard loadout always includes bringing a fleece and a rain shell.** You would be amazed at how effective putting on a light fleece and shell can help keep you warm in cold windy weather. Obviously, staying dry is a critical factor to avoid becoming chilled, but the shell also doubles as a wind breaker. Add a light fleece under the shell and you have a very effective start at layering.

When you're cold, you'll burn a lot more calories, so ensure you have food to eat and ability to hydrate. Want that extra comfort? Bring a hot tea kit when it's cold.

When it's hot, wear long sleeves, light pants, and a big hat.

Don't forget tip #2, abort if you get into conditions for which you aren't prepared. Experiment and learn what works best.

### **Tip #10 – Avoid Sky Sparks**

**Don't get injured by lightning.**

#### **Why?**

You'll be shocked to know, but getting hit directly or being close to a lightning strike can be deadly. According to [NOAA.gov](https://www.noaa.gov), each year in the United States, lightning kills 20-30 people on average and injures 100s more. (research 2025)

Studies have shown that most people struck by lightning are struck not at the height of a thunderstorm but before and after the storm has peaked. Storms don't need to be close. Most



people are unaware of how far lightning can strike from its parent thunderstorm or what to do. Lightning can strike more than 10 miles away from the location of rainfall. In addition, putting up an antenna when thunder storm activity is close can increase the risk of a lightning strike.

### **What I and others do:**

Never be on a summit during a thunderstorm and re-read Tip #4, look at the weather forecast. As we all know, weather forecasts aren't perfect but they can give you a heads up. If you can see it or hear it, get off the high ground immediately.

When hiking, our instinct is to seek shelter under a tree to avoid rain and hail which usually accompanies lightning. Fight this urge. When lightning strikes a tree, you can become part of the circuit and be electrocuted as all of that energy flows into the ground around the tree. You can also be hit by debris from falling limbs or shrapnel as it blasts off the tree. You don't need to be hit directly by lightning to be killed or insured.

### **If you can see lightning or hear thunder, take action!**

- **Get off the summit and the high ground!**
- **Don't stand under a tree, near a body of water, near metal structures like buildings, fences, poles. Stay away from tall structures or near a telephone pole or electric wires. (I've got personal experiences on this one)**

Look for other signs of increased lightning potential:

- If your antenna connector is zapping static out to the ground (Myself and others have had this happen before), **exit the area immediately.**
- If you are lucky enough to have hair, and it's lifting up, exit the area immediately and don't be the tallest thing around.



### **If you are caught outside during a thunder storm:**

- **Get off the summit.**
- **Crouch down** in a ball-like position with your head tucked and hands over your ears so that you are down low with minimal contact with the ground.
- **Wait 30 minutes** after the last sounds of thunder before returning to the affected area.
- **Seek Shelter if possible.** Every single piece of research I've read instructs its readers to seek shelter. If you are on a hike, this is going to be a challenge but I feel obligated to repeat it. Recommendations for shelter include non-metal building, or homes. An alternative would be enclosed vehicles such as a car, van or school bus. Avoid standing under trees, near bodies of water, or close to metal structures such as buildings, fences, and poles. Also, steer clear of tall structures, telephone poles, and electrical wires.



**If Someone Is Struck By Lightning**



**FIRST AID**

- Call for help. Call 9-1-1
- Begin CPR, if necessary
- Use an Automatic External Defibrillator, if necessary and one is available.
- If possible, move the victim to a safer place
- Continue to monitor the victim until medical help arrives

### If someone is injured by lightning strike

- Call for immediate help.
- Move them to safety if the area is still dangerous if possible
- Assess their injuries
- Administer CPR if required and get an Automatic External Defibrillator to the patient as quickly as possible (many police and sheriff vehicles have them on-board).

### Be OK with aborting the trip, Tip #2.

#### Bonus Tip #11 – Site Safety & Respect

Ensure that your site is safe for you and others. Don't setup on unstable cliffs, or anywhere near power lines. In addition we share mountaintops with others so we should make the least amount of impact possible so others can enjoy the summit as well.



#### Why?

Recently, a POTA operator died in a tragic accident when part of his station contacted (or came near) a high voltage power line.

The danger is NOT limited to direct contact. Setting up an antenna too

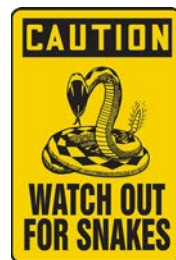
close to high power transmission lines can still result in a shock.

We also want to ensure that others can enjoy the summit and be safe as well, leaving a favorable impression with the public.

#### What I and Others Do:

Don't put up your antenna directly under or near high power transmission lines.

Survey the operating position for your safety and its impact to others by looking for power lines, unstable cliffs, and falling rock hazards. Also, survey the area where your mast might fall and ensure that others will be outside the "mast fall zone", and they can't trip over guy lines. Don't forget to look for snakes in rocky areas.



Lastly, conduct your activities in a way that allows everyone to enjoy the view. Although we see beauty in antennas and squealing

SSB or CW, others may not so I use headphones or ear buds. For SOTA operators, you don't need to setup at the very top, so if it's a busy summit, setup off to the side or below the summit. If you are in a park, be mindful of trafficked areas and where you put your wires and guy lines.

#### Continue Learning & Teach Others

Get some wilderness first aid and survival training from a reputable source, and read up on things like signs and symptoms of heat injury, hypothermia, and dehydration.



Why not share these tips with others in your household. Does your household know how to find and communicate their location if needed?

If you'd like to use the information in presentation form, feel free to leverage what I used to present to other groups and pull my slides from [HERE \(HamNinja.com/safetypresentation\)](https://www.hamninja.com/safetypresentation)



#### About N1CLC

Chris Claborne, N1CLC, operates mostly from mountaintops, and is the W6 (California) SOTA Association manager. Years ago, he was an Army Medic and a certified EMT, and as a private pilot, was steeped in the "safety culture" of aviation. N1CLC's BLOG ([HamNinja.com](https://www.hamninja.com)) and his [YouTube channel](#) cover SOTA, and other Ham Radio interests. Chris also built and manages the W6 Association web site [W6SOTA.org](https://www.w6sota.org) to support California SOTA operators and the SOTA community. ★

# NATIONAL TRAFFIC SYSTEM NET TRAINING

– Ed Conway, N2GSL

## ANATOMY OF THE RADIOGRAM

### What is a Radiogram?

The **Radiogram** is a format used to convey a formal message. In its current form this format has been with us since the early 1950's, but

The *Precedence* assigns an urgency to the message. Most of the messages that are relayed each day throughout the NTS are designated as ROUTINE, meaning that the message is handled after all other traffic with higher priority. Messages that concern the life and death of an individual or group are the highest level of urgency and are designated EMERGENCY. PRIORITY messages are important messages having a specific time limit that are official messages not covered in the Emergency category. A WELFARE precedence is a message

The *Time Filed* is the time that the originating station first listed the message in NTS and is optional. When used it is always in UTC.

The *Date* is the date that the originating station entered the message into NTS and must agree with the UTC date. If the message is entered at 8pm local time in New York on Feb 26 then the Date is Feb 27 as it is 0100 UTC on the 27th.

The *TO* section is for the addressee information. The name can include a callsign if the person has one. The street address on the next line is followed by city, state, and zip code.

*Telephone* is just that. Nowadays an email address might be included after the phone number.

The *body* of the message is next. It is generally limited to 25 word groups but if needed it can be longer.

The *signature* is the name of the person sending the radiogram and may include a callsign.

### Summing Up

The other sections of the radiogram are informational. As you can see, the consistent use of this format allows for messages to be relayed accurately across the country. The routine traffic affords traffic handlers the opportunity to practice on a daily basis so that when normal communication systems are compromised the operators can move EMERGENCY, PRIORITY, and WELFARE messages in a timely manner and with confidence. If you are interested in the National Traffic System, Radiograms, or CW net operation please join us on Tuesday evening at 7pm in Zoom A for National Traffic System Training. This is the "theory" class and on Monday evenings at 7pm in Zoom E we put the theory to practice by conducting a simulated traffic net using V-band in conjunction with Zoom. ★

– 73, Ed Conway N2GSL

that is an inquiry as to the health and welfare of an individual in the disaster area or an advisory or reply from the disaster area that indicates the status of an individual in the disaster area.

its roots date back to 1920 when the traffic handling rules were codified in the February edition of QST. This standardized format allows the receiving station to know what is coming. Remember the goal is to deliver the message letter for letter, word for word to the addressee just as the message creator intended.

### Let's Break Down the Radiogram

The radiogram consists of the *preamble or header*, the *addressee information*, the *message text*, and the *signature*. Additionally, information about the delivery station can be added as well as an area for your records.

The *Preamble or Header* contains information about the Radiogram.

The *Number* is assigned by the station that enters the Radiogram into the National Traffic System (NTS).

Various *handling instructions* can be designated using HX followed by a letter that corresponds to specific instructions. An example that is commonly found is HXC, which asks the delivery station to send a message back to the originating station containing the date and time of delivery. A listing of the handling instructions can be found at <https://nts2.arrl.org/>

The *Station of Origin* is the callsign of the ham that puts the message into the system.

The *Check* is the number of word groups in the body of the message. This is used to as a verification the receiving station has copied the same number of word groups as identified by the originating station when the message was created.

The *Place of Origin* is usually the location of the originating station.





## M32 POCKET MORSERINO

– Roger Burkhart, N3GE



The much awaited delivery of the new M32 Pocket Morserino is underway. QRP LABS (<https://shop.qrp-labs.com/morserino>) has commenced shipments & the wait was well worth it. The M32 Pocket is an amazing CW training device.

Since 2018, Willi Kramer OE1WKL has provided us an outstanding product. The original Morserino was

provided only as a kit. The new unit is completely assembled and ready to go right out of the box. Just add a battery.

I can personally attest to the advantages of the original Morserino in my journey towards CW proficiency. The new M32 Pocket is the same, but much better.

A wide range of the original functions are still included, such as, CW Keyer, CW Decoder, WIFI transmission, Echo Trainer, and support for the BC classes. These features are vital to the full range of CW operators, from learning each letter to running 40 WPM+. Your fist is evaluated with every character you send.

The new M32 Pocket has some additional features that make it amazing:

- Larger, high contrast color display
- Better speaker
- Bluetooth keyboard output
- USB-C connectivity

Want to find out more? Join our team of experts every Sunday at 1000 Eastern on Zoom A.

We will be glad to demo the unit & answer your questions. ★

73, Roger N3GE

### S(LOW) S(PPEED 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**

## LICW ANTENNA FORUM

– Kimball Williams, N8FNC

When our Editor inquired after an article for the LICW newsletter about the Antenna Forum, he titled his email: *The Write of Spring*. Of course, I had a good chuckle about the reference to Igor Stravinsky who wrote the music for the ballet *The Rite of Spring (Le Sacre du printemps)*, which premiered in 1913. Commissioned by Sergei Diaghilev for the Ballets Russes and choreographed by Vaslav Nijinsky, the groundbreaking score and performance famously caused a near-riot at its Paris debut. The avant-garde nature of the music and choreography caused a sensation. Many have called the first-night reaction a “riot” or “near-riot”, though this wording did not come about until reviews of later performances in 1924, over a decade later. (TNX. Wikipedia.)

Our LICW weekly *Antenna Forum* on Sunday morning at 11AM EST is an hour of discussions (and an occasional special speaker) and although we have yet to achieve the level of response that approaches a ‘riot’, we do have a lot of fun, and interesting views of how many different and successful (or unsuccessful) antenna installations our members come up with. I think I have said before that even if all the Hams in a particular group were all to put up the ‘same’ type of antenna, individual constraints and sometimes aesthetic considerations would most likely result in no two sites being alike in all respects. So, no two antenna installations perform exactly the same, no matter how hard we try.

Over the years we have been hosting the Forum, Greg, WA1JXR often uses his mastery of the EZNEC antenna analysis program to illustrate what happens when one antenna installation configuration is modified. It can

be quite instructive to see how moving a radiating element or a counterpoise can alter the radiation pattern, or why an antenna mounted at 1/2 wavelengths above ground can be a DX chaser’s dream, while the same antenna only at 1/8 wavelength above ground becomes an NVIS (Near Vertical Incident Skywave) an ideal antenna for close-in contacts and local CW traffic nets. (Note: *It is a LOT easier to find out if a configuration change is an improvement in performance before spending a lot of time and energy modifying the antenna only to discover that nothing significant changed.*)

Of course, there are always those who are searching for the next ‘magic’ antenna that can ‘do it all’. Greg’s usual response is that “It is ‘difficult’ to get around the laws of physics.”. Eventually everyone finally finds an antenna type and installation configuration that allows them to get a signal out. However, it is interesting to see some of our friends who work week after week trying different tweaks and alternative installations until it becomes obvious that a lot of the changes and ‘improvements’ are part of the ‘reason’ why they have not yet tried to get on the air and make a QSO. ‘Key fright’ or ‘Mike fright’, is a real phenomenon. So is ‘just one more antenna change.’

I am reminded of a saying that is common among electronic engineers... in fact, I believe all engineers: { *Perfect is the enemy of ‘Good Enough!’* } Some design engineers will hesitate to ‘throw the switch’ until they make ‘Just one more improvement.’ If you use the Reverse Beacon Network to check to be sure you are getting a signal out, and your VSWR is not so high as to be a threat to the security of your rig, then you antenna and feedline are probably good enough for you to ‘get on the air’ and begin making friends.

However, if your antenna and feedline are ‘OK’ and the RBN tells you your signal is getting out but you still are not getting stations to come back to your CQ, or respond when you call to them, then it is time to go back to practicing your Morse code receiving and sending.

Speaking of sending, if you attend the Antenna Forum, and we hope you will, ... right after the antenna forum is finished, the *LICW Sending Clinic* is in the next time slot in ZOOM A. These friendly folks will do everything they can to help you become better at sending clear, clean, readable code.

What am I doing about an antenna at my QTH? I am planning to swap out my long wire dipole configured as an NVIS antenna for working local traffic nets with a 160 / 80 / 40 meter trap dipole which should have better noise rejection characteristics. Right now I am assembling the components and waiting for the snow to melt off the roof.

If I have not mentioned it, mid-Winter is **NOT** the time to be climbing on roofs or up trees which can be slippery and snow- or ice-coated in just the place you might plant your foot.

### **Wait for Spring!**

Mid-Winter is the time to experiment with indoor home built magnetic loop receiving antennas, or compact QRP antennas for SOTA / POTA / and for an actual emergency, if / when something disruptive happens.

Remember the reason our government licenses us as Amateur Radio Operators has 5 elements. And #1 is ‘Emergency Communications’. Every time you leave your ‘shack’ for a SOTA or POTA outing, you are exercising your equipment under simulated emergency conditions and practicing your communication skills so that if / when they are needed in an actual emergency situation, you and your equipment will be ready. That includes your antenna! ★

## BRINGING IDEAS TO LIFE: HOW 3D PRINTING IS BECOMING MORE ACCESSIBLE (AND FUN!) WITH LICW

– Richard Rieben, KE4WLE

The whirring of stepper motors, the smell of warm plastic, and the incredible satisfaction of holding a tangible object that just moments ago existed only in your imagination – this is the magic of 3D printing. For many years, 3D printing felt like something out of a science fiction movie, a tool reserved for engineers, industrial designers, and those with deep pockets and specialized knowledge. But times have changed, and dramatically so. Today, 3D printing is experiencing a democratization, becoming more accessible to enthusiasts, hobbyists, and curious minds across Long Island, thanks in no small part to the vibrant community fostered by the Long Island CW Club.

Gone are the days when a reliable 3D printer meant a five-figure investment and a steep learning curve. The market has exploded with affordable, user-friendly models that deliver impressive results. Entry-level machines, once rudimentary and finicky, now boast features like auto-bed leveling, direct drive extruders, and quiet operation, making them a joy to use even for absolute beginners. This increased affordability has thrown open the doors to a world of creative possibilities, allowing individuals to bring their digital designs into the physical realm with unprecedented ease.

Imagine needing a replacement knob for a beloved radio, a custom enclosure for a key or paddle, or a unique gift for a friend. Instead of searching endlessly online or settling for a generic solution, you can now design and print it yourself. The practicality is immense. For ham radio operators, the applications are particularly exciting. Custom antenna mounts, wire winders, specialized

enclosures for transceivers, aesthetically pleasing control knobs, or even personalized callsign plaques are all within reach. The ability to prototype and iterate quickly means ideas can go from concept to physical object in a matter of hours, rather than days or weeks waiting for commercially produced parts.

But accessibility isn't just about the hardware; it's also about the knowledge and support network that empowers individuals to overcome challenges and explore the full potential of this technology. This is precisely where the Long Island CW Club's weekly 3D printing forum shines. We recognized the growing interest in 3D printing among our members and saw an opportunity to create a supportive environment where everyone, from seasoned veterans to curious newcomers, could connect, learn, and grow.

Our weekly forum (Wednesday Nights at 2000 EST, 0100 UTC) is a welcoming space where questions are encouraged, problems are collaboratively solved, and successes are celebrated. We've seen firsthand how daunting it can be for beginners to navigate the initial steps of 3D printing. Which printer should I buy? What software do I use? How do I get my prints to stick to the bed? These are common hurdles that, without proper guidance, can lead to frustration and abandonment. Our forum acts as a crucial bridge, providing the mentorship and practical advice needed to overcome these initial obstacles.

Each week, we delve into a range of topics, from basic printer setup and calibration to more advanced techniques like multi-color printing, working with different filament types, and designing complex

geometries. Members share their latest projects, showcasing ingenious solutions and inspiring others with their creativity. For those who encounter challenges, the collaborative problem-solving approach is invaluable, transforming potential roadblocks into learning opportunities.

The beauty of our forum lies in its informal yet highly informative nature. There are no silly questions, only opportunities to learn. We're a diverse group, encompassing individuals with backgrounds in engineering, art, education, and everything in between. This diversity brings a wealth of perspectives and expertise, enriching the discussions and making the learning experience truly dynamic. We've had sessions dedicated to understanding different slicing software, exploring the intricacies of various filament materials (PLA, PETG, ABS, TPU, and more!), and even troubleshooting common printer issues like clogged nozzles or bed adhesion problems.

Beyond the technical aspects, the forum fosters a sense of community and shared passion. There's a tangible excitement when someone successfully completes their first complex print, or when a member uses their 3D printer to solve a practical problem around the house or in their shack. These moments of triumph are often shared and celebrated within the group, reinforcing the idea that 3D printing is not just a solitary pursuit but a collaborative journey.

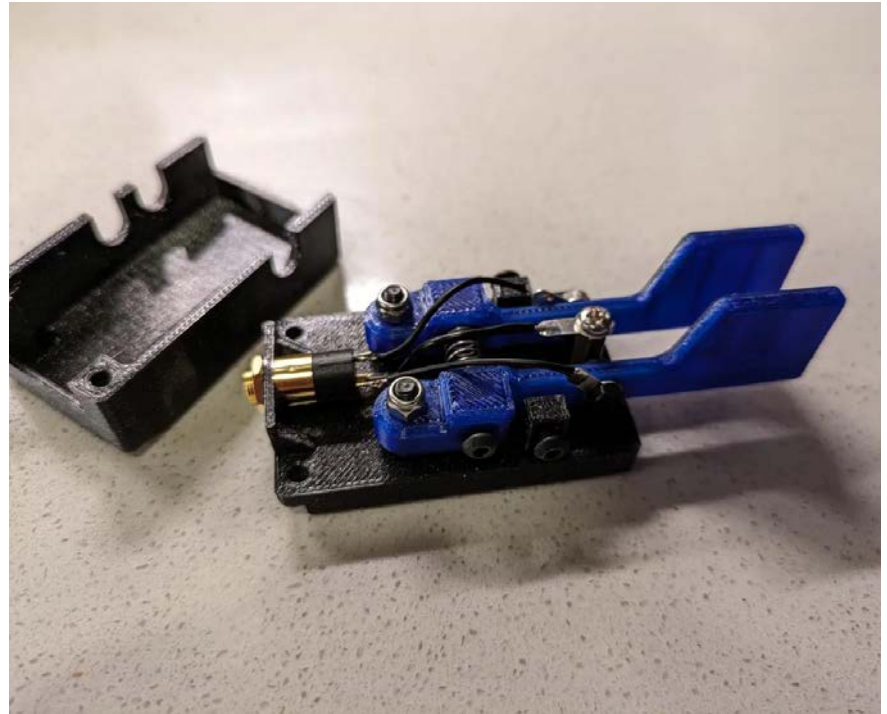
For those considering dipping their toes into the world of 3D printing, the Long Island CW Club's weekly forum offers an unparalleled entry point. You don't need to own a printer to attend; many come simply to observe,



ask questions, and learn from the experiences of others before making an investment. We offer guidance on choosing the right printer for your needs and budget, demystifying the jargon, and helping you navigate the vast array of online resources.

Beyond our weekly sessions, the conversation never stops. For real-time troubleshooting, sharing prints or just chatting about the latest filament sales, we encourage everyone to jump into the #3D-Printing channel on our Discord server. It is a thriving, 24/7 community of 3D printing hobbyists always ready to lend a hand. Whether you participate via the forum or on Discord, bring your ideas and your questions, and let's bring those digital designs to life together. ★

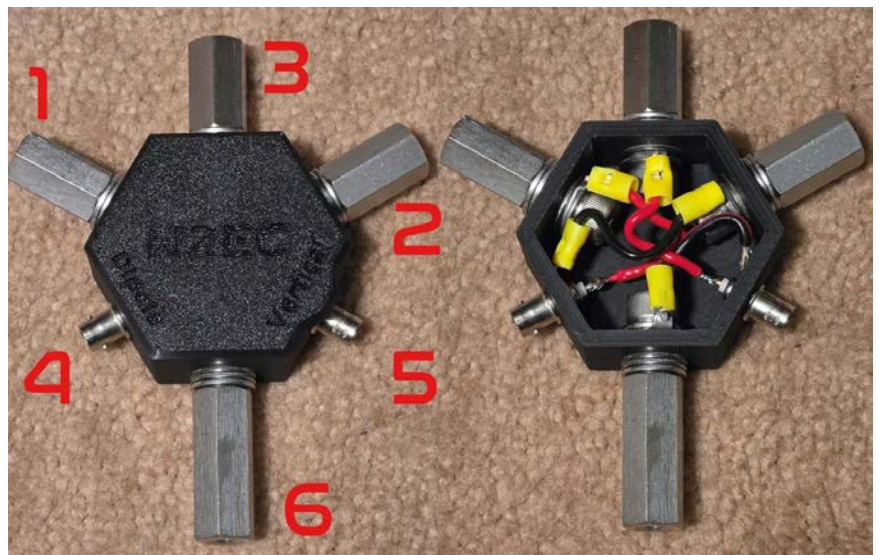
– 73, Rich KE4WLE, OH - #4504i



<https://www.printables.com/model/653813-iambic-cw-morse-code-paddle-by-km4cf>



<https://www.printables.com/model/1434543-elecraft-kh1-kneeboard>



<https://www.printables.com/model/1335531-n2ec-versahex-antenna>

## VBAND - A CW FRIENDLY INTERNET

– Kimball Williams, N8FNC

Using ZOOM as a CW teaching tool was a master stroke in 2018 when Howard WB2UZE and Rich K2UPS first envisioned a method of teaching students Morse code in a virtual classroom. With just a few students to begin with, it soon became obvious that careful configuration of the ZOOM audio tools was needed to keep the ZOOM software from treating the Morse code characters as 'noise' to be filtered out. Now those initial configurations are taught to all beginning students, and we all 'listen' and advise each other if we notice when an 'update' to the software 'corrects' our 'mistake' for us. We also learn to 'Mute' our own ZOOM window to ensure we don't inadvertently cause an echo and we don't try to practice send 'on top' of another member when they are sending.

ZOOM gets 'upset' when more than one signal is present at the same time.

Two friends, David W6DS and Byon N6BG, "...decided to get back into CW and could not reliably work each other due to band conditions and antenna restrictions. (Then there was the fact that we were too embarrassed to just get on the air.)" They both wanted a way to practice Morse code with each other and noticed that both could connect via internet but found the existing communication programs were not accepting of CW type signals. Those signals were treated as noise and filtered out. Since both were electrical engineers and computer savvy, they decided to create their own specialized software site to allow CW communications over the internet. The two decided to build an internet software tool that could allow CW, and vBand was born

In order to allow the use of CW keys when using vBand, Byon and David designed a 'dongle' that would accept

input from a Morse straight key, bug, side-swiper or paddle and interface with their local computer's USB port. With that launch, members of the LICW got involved in the inevitable debug and troubleshooting process, working out the last of the needed tweaks and software guard rails to make a robust product.

Somewhere along the way, David and Byon reasoned that it would be convenient to be able to connect using WIFI to link directly into the local internet hub, and get 'online' without needing a computer. Thus the CW Hotline was born which connects directly to the local internet, wherever you happen to be. (Both are available through their website: <https://hamradio.solutions/>

We know that the Morserino also has the same ability to link directly into your local internet, log onto the vBand site and communicate with others in one of the vBand channels. For more information on vBand, the videos at: <https://www.youtube.com/watch?v=f376DCaM1Ps> and <https://www.youtube.com/live/uumF7vPV4iw> can go into more description details.

There is a vBand experience / class' on Monday evenings at 7PM EST with a support ZOOM session on Channel 'E' to help anyone new to vBand get over the initial setup and configuration, followed by a class in using the National Traffic System 'NTS' net protocols that provides a practical exercise session. That class is in support of the Tuesday evening 7PM Class on the details of handling CW Net traffic, where new net operators are trained to get on the air with CW and 'check in' to local CW traffic nets.

Come join us!.. kw: N8FNC★

## YL OPEN HOUSE

– Anne Dirkman, KC9YL

Our YL4CW Open House group continues to meet on Mondays in Room C - 9:00 PM Eastern Time. We welcome new members or gals who have been around for a while. Have you gone through the BootCamp training? Scored some sweet DX? Made your very first contact, or solo POTA activation? Stop in and let us know what you've been up to.

Our LICW YL POTA – AND MORE! WhatsApp chat group is active on a daily basis. If you want an invite, just send your phone # to Anne KC9YL (good on QRZ and listed on groups.io)

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



USB Dongle



CW Hotline



## KIDS CW CLASS NOTES

– Bob Cady, W7JNM

Kids Classes continue to go well and the program expanded a bit in 2025. We continue to have about 30 students active at any given time with an average of 10 students per weekday class and 2-3 students Saturday and Sunday (GOTA) classes. Saturday class is for younger students and students that cannot make weekday classes. Sunday is for more advanced kids and those that want to get on the air. We also do new student orientation at odd times or before classes.

We currently have 9 full and part time adult instructors plus 4 student instructors in our North America classes and 2 instructors (Michael and Gareth) in the EU. One of Michael/Gareth's students in the UK has attended a couple of our Saturday classes (it is more convenient for her time zone) and we have enjoyed her presence. Three of Michael and Gareth's students have received their licenses in the UK and Italy and are on the air.



We conduct one high school class where the after school technology class is run by a teacher with a ham radio license. The hope is that he will eventually take over the class. This is our second year and class has 2 to 6 students per session

Please welcome Jeff, K4TNE, Todd, NOIP and Greg, WA1JXR to

the kids classes. Greg is going to do License classes and technical classes as needed. About half of our kids come to us licensed and about half of the unlicensed group go on to get their license, both US, Canadian and EU. We just had one of our younger students in Canada get her upgrade to cw privileges and is on the air.

It continues to be a joy and a challenge to work with young people in cw and radio as they learn and participate so differently from adults. Our curriculum will continue to evolve and our wonderful instructors, both adult and student, will continue to work on ways to keep all our different levels and age groups interested and engaged. ★

## NEWEST KIDS CLASS LICENSEE



This is Galen Fitzgibbons, KD3CRK, who just received his tech license. That is his dad, with the lighter blue shirt (and big smile) right after his test. He has been tutored by Asher DeJarnette, KFOQFB, who is one of our student instructors who also took on the responsibility of preparing him for his license.



## WILD ABOUT BUGS

– Tom Waits, WA9CW

Hello again from Wild About Bugs! Today, we are going to talk about a different kind of subject. It's a little controversial for some, but I think there is a little something here for all of us. The topic is *QRQ with Bugs*. Some say it's not practical and some say it's too much work to be fun. Some say that they don't like having QSOs with ops using bugs because they are often so hard to copy. That difficulty could be even worse if the op is pushing the code speed above their comfort zone. So, what is the point? In what universe does it make sense to pursue QRQ using bugs?

First thing, let me say that I am not an expert in any high speed capacity [aka QRQ]. In the last few years, I have been somewhat active with a few friends working on high speed morse. There are a few of us interested in doing it with bugs, but the rest are using paddles and keyboard. I want to emphasize that within that group, I am definitely not a standout. Enthusiastic, yes, shining star, absolutely not. However, I have learned a lot from the experience, and I have made great advances in my cw skills by trying.

What is specifically meant by QRQ? The Q signal followed by a question mark means "shall I send faster?" the Q signal alone means "Please send faster." The request to send faster may also include a suggested speed. The other meaning associated with QRQ refers to high speed morse code at speeds in excess of 40 wpm. We will look at both, and you can decide if you are interested in pursuing QRQ for yourself.

Thinking of QRQ as speeding up could be as simple as going from 16 or 18 wpm code to being proficient at 22 or 25 wpm. To be honest, this is probably the hardest jump to make. Lower speeds like 16 wpm

or even 18 wpm are getting to the upper end of comfortable copy with a pen and paper. The skill of head copy has to be mastered at this point, but it is the official beginning of the QRQ journey.

T.R.McElroy said that the term "speed key" used for bugs should be replaced with the term "easy keys" as they make sending code a much easier job over their predecessor, the straight key. A lot of messaging in those days was done at around 27 wpm. This speed was considered the most accurate for sending and copying commercially. When customers were paying by the word, speed and accuracy mattered. That was quite a job for the straight key, but it was a breeze for a competent bug operator. From this, we know that it is possible for a capable operator to run a bug at 27 wpm for long periods of time. Because of the history with this speed, let's just say that the gateway to QRQ with bugs is 27 wpm. It's faster than most of what you will hear on the air, but still a very attainable speed and a good jumping off place to QRQ. When using paddles, QRQ is usually defined as 40 wpm and up. Because of the difficulty of manipulating the bug opposed to the paddle, let's set the speed for entry level QRQ with bugs at 30 wpm. Anything over 30 wpm is fast. Once you are sending and copying well at 27 wpm, you are ready to get serious about QRQ and are ready to head for that 30 wpm mark.

OK, so, how do we determine what is 30 wpm code speed? Is it the dits speed of the bug or is there more to it? Can you just set your dits to 30 wpm and say that you are sending 30 wpm? Of course, the dit speed has to be there but there is more to it. The words per minute speed is the aggregate speed of the dit length,

dash length, as well as the inter-element, inter-letter, and inter-word spacings. Taking all this into account, sending speed will probably vary a bit based on word construction. Words with more dits will be "lighter", or less dependent on all the longer elements, thus faster. Words with more dashes or with difficult transitions will be "heavier" or slower. Average it all out and the overall words per minute is the result.

Does your 25 or 27 wpm bug fist scale up to 30 or 35 wpm or do things fall apart? From experience, I can tell you that your slow fist cannot be too good but it can easily not be good enough to scale up. If you have developed the habit of expressing your personality with your bug fist, you may have some cleanup work to do. A big Lake Erie swing may sound sweet to some ears, but it will never hold up in the QRQ game. If you think there may be some QRQ in your future, machine quality code should be your goal from the get go. Most of us send less than perfect code on our best days, but perfection should be the standard we compare ourselves to. In order for our bug fist to speed up, it must be smooth and efficient.

Let's address the question of "why QRQ in the first place?" Most cw ops want to improve their copy skills. No matter the level, most want to copy better, hear more words, follow the conversation and fully experience Morse as a language. It is my opinion that the pursuit of QRQ is the most productive way to do that. It takes you out of your comfort zone and makes you stretch your mind. Thereby putting you directly in the learning or progress zone. As the brain becomes accustomed to higher speed code, rag chewing becomes a real conversation. Thoughts are easier to follow and details are easier to hold on to. There are plenty of high speed



contesters out there, but high speed rag chewers are rare. Personally, I would like to see that change. Hopefully, some of you will also.

If a person wants to become a QRQ operator, how would you get started? I know some are hoping to hear that you need a new bug. Nope, whatever you have will get you going. The most important thing to have is a QRQ code buddy or, even better, two. A like-minded person to have a daily on-air schedule with. Someone to meet up with and just sling it at one another, mistakes and all. Mistakes are an inevitable part of this journey. If you push your sending to the edge every day, you will make mistakes, but you will get better. Even if you don't notice improvement, your QRQ buddy sure will. This is something that a person would never do with a stranger on the air. A like-minded QRQ code buddy with similar skills is essential to the process.

How long does it take to reach QRQ cw speed? That is an individual thing. There are two sides to it, the sending side and the receiving side. Success breeds success. Goals should be attainable along the way, so progress/success can be realized. Slow and steady wins, but plateaus are inevitable. Don't expect it to be linear. Getting on the air with a QRQ buddy every day for a 30-minute qso will get results.

Also, avoid the trap of setting a date to reach a certain speed.

Aggressively pursue each level, but don't rush the process. Allow improvement to happen naturally. That way, you don't have to panic as a date is looming, and you are way behind your target. Remember that enthusiasm will get you started, but consistency will get you where you want to go. Take the time it takes, and you will not waste nearly as much time along the way. The real time benefit is that any gain you have on the high speed end will pay big dividends at the pedestrian speed

where we actually spend the most time using CW.

The QRQ community is small and there are not a lot of people doing it, especially with bugs. Fifty years ago, it was common to hear high speed code on the bands. These days, it is usually a waste of time to get on the air and call CQ at 30 wpm, even more so at faster speeds. That is why QRQ buddies and skeds are so important.

When perusing QRQ using a paddle, the biggest challenge is copying compared to sending. It's easy to get ahead of yourself and be able to send much faster than you can copy. In a way, the two are a little more evenly matched when using the bug. Sending and keeping all the parts mentioned earlier together is much more of a challenge with a bug and will take longer. The good news is that this makes it a little easier to bring up copy skills in step with sending skills with the bug. The other news is, QRQ takes many hours of practice both sending and copying. There are no shortcuts. Some of the things I have mentioned will hopefully help avoid some pitfalls, but the journey is no less difficult or complicated. There is no one to teach us how to do this, and it's mostly trial and error. Small gains on the fast end make big improvements at the slow end while the challenge keeps things fun and fresh.

As always, you are welcome to join us in *LICW Bug Sending and Copy* class and the *Wild About Bugs* forum on Tuesdays. If you would like, you can always email me with questions or comments. I am always interested to hear from you. "I'm good in the book", so you can find my email address on my QRZ page.

73 for now!

– Tom WA9CW ★

## CALL FOR SUBMISSIONS

*For the LICW Newsletter, Summer Edition*

We need your articles and pictures for the Summer Edition of the LICW Newsletter! Do you have any good stories or original articles you would like to share? What are your plans for POTA when the weather gets warmer? Are you planning any new antennas or 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 working on any home-brew projects this Summer? 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 Summer edition!

Don't forget – **FIELD DAY IS COMING!** Are you going to spend it in your backyard or with your local club? Give us some plans! Tell us some juicy stories and/or share some photos from Field Days past! What kind of equipment are you planning to bring into the field? We wanna read about all of it!

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

– The Editor

## PRODUCT REVIEW: THE KORECTAMUNDO MODEL IB4E STRAIGHT KEY WITH SPELLCHECK



When you operate cw, are you so focused on correct technique that simple spelling errors slip into your sending? For many years we have enjoyed the assistance of “spellcheck” when typing texts on our phones and creating documents on our computers. Don’t you wish we could use it for our cw sending, too?

Well, wish no more! The Korectamundo Company has come to our rescue with their new flagship product, the Model IB4E Straight Key with Spellcheck. This innovative device listens to your sending and utilizes a micro-sized AI brain to correct your spelling, sending perfectly-spelled words and phrases to your rig with its built-in keyer. No more shall you be the butt of off-air derision from your QSO partners!

The IB4E is easy to set up and use, just plug it into your radio with the included patch cord and plug in a source of 12v power.. It’s J-38 key is immediately available for use; after you send a few words, it will deduce your language and begin correcting your spelling, sending perfectly spelled words out on the air at the wpm speed you input. What could be easier?!

The unit’s AI library includes hundreds of dialects to add “flavor”

to your sending. Character spacing can be automatically adjusted to emulate different varieties of “fists”, and chopped-off dits and elongated dahs are supported. There is even a “straight-key night” mode which outputs random sloppiness to imitate sending while slightly inebriated due to the effects of imbibing too much champagne!

The IB4E has a few special modes to make your sending more efficient. For example, in “Precise” mode, if you send “UR RST 599/”, the IB4E will send “UR RST FIVE NINE EIGHT POINT FOUR TWO SEVEN.” In “Abbrev” mode, if you send the letters “SC”, the IB4E will correctly send “THE SMITH CHART CLEARLY SHOWS AN IMPEDANCE OF NINETY OHMS AND NOT FORTY TWO PLUS FIFTY SIX IMAGINARY, YOU NITWIT.”

Overall, the IB4E is a solid performer and will improve your sending immensely, adding an abundance of polish, flair and a certain panache to your QSOs. I have used it for many months and it has performed flawlessly all that time. A “Best Bye”!!!

– by Warren Peeze, WRØNG.★

## OUTSIDE THE BOX

*First-Aid for Poor Band Conditions*



**Warning!** May contain ozone.

## OUTSIDE THE BOX

*Help for Apartment-Dwelling Hams*



## "BK", "K", OR "KN"?

Recently asked on Groups. Rio: "{When handing off to the other station in a QSO,] wouldn't a "K"/"KN" [instead of "BK"] be superior in brevity (e.g. not starting a TX with a prosign) without sacrificing clarity or intent?"

Scott, KW4NJA, replies, "K means 'over' or 'go', allowing other stations to answer. KN means 'Over to a specific station' – only the named station should respond. BK means 'break', meant for a quick turnaround. So you might ask someone their name again and end with BK, the other station will start up with 'BK', answer your question, and send BK back. This is mostly to turn the conversation over without the formality of sending your callsign.

Mike, N1CC, adds: "The clean way to think about it is that K/KN end a transmission and invite a reply, while BK is a turn-taking control signal that says 'I'm breaking the flow and handing you (or taking) the circuit right now.' BK comes from wired/landline procedure, where shared circuits needed an explicit 'break / handoff' cue. When the next operator began with BK, it functioned as a quick handshake: 'I copied your handoff and I'm taking the floor.' That convention carried into radio because it keeps fast, informal QSOs moving without repeating calls every over: you'll hear ...BK to mean 'your turn, immediately,' and the other station may start BK... simply to acknowledge the handoff before sending content. KN, on the other hand, is 'go only' (inviting one specific station) and in practical ham terms it became especially useful in the crystal-controlled/Novice era, when you were essentially stuck on frequency and pileups or multiple callers could quickly make things chaotic. KN was a polite, efficient way to tell everyone else 'stand by – this is directed to the station I'm working.' So it's not that BK is a better 'invite' than K/KN; it's that BK is optimized for rapid alternation, while K/KN are optimized for clean, directed end-of-over control – and that's why you'll hear operators mix them based on the rhythm and formality of the contact."

From Jim, N0IPA: "All three are ways to indicate you are done sending and it's the other operator's turn. BK is used in down and dirty QSOs that are fast moving, or just plain short. K and KN are used more formally during 'complete' information exchange/message traffic. LICW is de-emphasizing the use of KN, as it is redundant unless there is confusion about who you are 'talking' to. Unless you are in a net, it's pretty obvious by the call sign exchange who is chatting back and forth. Using BK instead of just K in a short exchange helps make it clear that I am turning over to you without the formal call sign exchange (and I don't want you to slow things down by sending the call sign exchange back to me). Clarity is important when flying low and fast. Another example of simple messaging is to end the call with simple 'dit dit' instead of <Call> <SK>. This indicates that I am done (dit dit) and don't want or expect a closing reply from you, other than 'dit dit'."

From James, WB8SIW: "CW procedures evolve a bit, but it might be helpful to understand the evolution and context of prosigns and the like. Considerable data exists to explain the use of 'K' in both Amateur Radio and in other radio services. It's what one might call a 'definitive' procedure; the equivalent of 'over' in voice communications. 'KN' on the other hand is a procedure unique to Amateur Radio, having been invented by the ARRL during the late 1940s. It has no parallels in other radio services. However, I suppose one can think of the ARRL as a hegemon that exercises a degree of magisterium, at least in the United States.

"As for BK, or 'break,' it does have history that dates from the telegraph era. As land-line telegraph circuits in North America operated on a normally closed current loop principle, one would 'break' the circuit to either seize the circuit for higher priority traffic or to request a 'fill' in message traffic. It wasn't so much a prosign, but rather an actual physical process of opening one's key to interrupt the sending

operator (e.g. when no traffic is being handled, all keys are closed and current flows through the circuit (loop). When one is receiving his key must be closed, the opposite of radio practice). For example, I knew an operator who was working at the New York Stock Exchange on September 16, 1920, the date of a terrorist bombing outside the Exchange on Wall Street. He interrupted the brokerage traffic (break the circuit), had the wire chief connect him to Associated Press, and he transmitted a 'Flash' press message to AP about the incident; the first news of the event!

"Break got pulled into radio communications, generally used to jump into or interrupt a QSO or traffic exchange. I suppose one could use the official 'attention' signal as well, but 99 percent of hams have probably never heard it! LOL. "dah-di-dah-di-dah".

"I suppose you can divide prosigns and the like into two groups; formal procedures and colloquialisms. Prosigns such as 'K,' 'AR,' 'VA,' 'AA,' etc., have long established antecedents and might be thought of as 'formal' practices, whereas the use of BK as commonly encountered today is more of a colloquialism, the use of which is heavily influenced by contesting, sprints, and similar activities that have come to dominate amateur radio." ★

### CW PROSIGNS

**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)

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**.

# 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)

## 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  $\overline{SK}$  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  $\overline{SK}$  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  $\overline{SK}$
  - 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.  $\overline{BT}$  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!**

**DOWNLOAD DOCUMENT**

## 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

### **ENDING:**

Standard QSO Protocol Ending

### **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 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 call sign exchange to keep things moving
3. The ending is shortened

### **ENDING EXAMPLES:**

TU DIT-DIT

RR TU 73 DIT-DIT

TNX BOB ES 73 DE KF6FCV SK DIT-DIT

### **SPRINT CQ RESPONSE:**

*(your call) Send your call once or twice*

### **SPRINT EXCHANGE:**

*UR 599 CA BOB SKCC 15169T BK*

### **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

[DOWNLOAD DOCUMENT](#)

## LICW-SKCC CLASSES

– Cathy Goodrich, W4CMG

**L**ong Island CW Club (LICW) and **S**traight Key Century Club (SKCC) – a perfect community partnership for new and not-so-new CW enthusiasts to learn CW, get on the air, and experience a wealth of support from members of BOTH clubs!

Long Island CW Club has a great opportunity for our members to learn about the tools offered by the Straight Key Century Club (SKCC)!

### LICW-SKCC Forum on Wednesdays at 12:00 EDT in Zoom B

This LICW-SKCC Assistance class is facilitated by SKCC Board members and long-term SKCC members (either in years, experience, or both!) so you get the benefit of working with ops who have been through the experiences of a new CW operator, and who are now regularly on the air.

During the *LICW-SKCC Forum* on Wednesday at noon (EST) sessions in Zoom B, you can bring specific “how-to” questions about the SKCC activities, awards, support materials, tools (SKED Page, Logger, Skimmer) and member “benefits” such as “The Ragchew” Newsletter, the SKCC Buro, and more! Are you brand new to CW and/or SKCC and don’t even know what to ask? That’s OK, because we can walk through the process of signing up for free SKCC membership, give some live demonstrations of our tools, as well as some basic tips to make your on the air experience great!

If the LICW session days and times don’t work for you, SKCC is offering an “Introduction to SKCC Forum”, open to all SKCC members, including the many LICW Members who are members of both clubs, and want to know more about SKCC, typically on the first Friday of each month at 1500 UTC (10:00 AM EDT) and the following Sunday at 1800 UTC (2:00 PM EDT). DATES may vary due to holidays/travel, so check the

SKCC groups.io for announcement of the scheduled dates. Dates are also posted on the [SKCC SKED Page](#) two weeks prior to the event.

The content is the same for each session, so you need only attend one. We cover the SKCC Handbook, basic tools, and have additional Bonus Topics that change monthly, so watch on the respective groups.io for info.

**NOTE: REGISTRATION IS REQUIRED** since virtual seats are limited. For more details and registration, contact Cathy, W4CMG at [w4cmg.skccintro@gmail.com](mailto:w4cmg.skccintro@gmail.com) or through her email good on [QRZ.com](#)

### Your “Local Elmer”

The “local bands” (40M, 80M) generally bring good propagation (as long as the sun behaves) and the band doesn’t “run long”. They are the perfect place to start engaging with a “Local Elmer” – someone in your call area who can communicate with you on the lower bands, even in the middle of the day. Your local Elmer – from your physical call area – not necessarily the number in your callsign – can help you to overcome some of the challenges of being a new operator with a bit of “finger fright” going on. They can answer questions on a call, or ideally, on a Zoom, MS Teams or What’s app call, and get on the air for some guided QSOs. You might even get to meet in person if you live close enough. You can also engage in some live CW practice, work through some stumbling blocks



in sending and receiving, and become more comfortable with random chats in addition to the “usual and customary” exchanges one might hear from contests and scheduled events.

Guided QSOs?? Best over Zoom or alternate videoconferencing, both you and your local Elmer (who would be able to hear many of the same stations) can help to close the gap between hearing the stating and knowing what to send -and when. They can help you by serving as a “CW Translator” when you are having trouble copying (was that an “S” or an “H”?), remind you of the expected exchange, and especially in the beginning, give you prompts like “OK – send your call now – no, wait they just picked up someone else.” Even CW operators with some experience can benefit from helping newer ops – you will both learn something – and many become friends in the process.

### Where does one find an Elmer?

LICW members can take advantage of two different “Elmering” sessions offered by LICW:

- Elmering Hour on Sundays at 1 p.m. Eastern Time in Zoom A
- Elmer 101 on Saturdays at 10 a.m. Eastern Time in Zoom B

SKCC Members can check the SKCC home page, select the tab for “Morse Elmers” and check the “SKCC Elmer list” at: <https://www.skccgroup.com/member-services/morse-elmers/>. The list is organized in a Call-Region Index for USA Call areas and from several countries. Simply check the list for your call area, find the Elmer who sounds like he/she would be right for you, and send them an email via the email address provided by the Elmer.

See you in class – AND CU on the Bands! ★

73, Cathy W4CMG  
LICW #899i  
SKCC #20093S

## KEY FRIGHT OR P.T.S.D. ?

– Tommy Judson, N5CTC

First off to lay the ground work: I was born into the ham radio hobby. A half-dozen neighbors and family members were hams so I had no choice. This started during WW II.

I never was any more interested than to do enough to be allowed to tag along sometimes. They did interesting things and being a big kid they “let” me do some foot soldier things. You know – dig tower foundation holes, erect tower sections, climb on the roof to attach an insulator for a wire – that sort of “ham” thing.

I must have picked up an aptitude toward doing “radio” in general because when my draft notice arrived in the mail causing me to have to report to take a battery of tests to see where I fit into the military, I found out that was being placed in radio communications.

So after being hustled off to boot camp and completing a grueling indoctrination into the military, I was given a set of orders and told to report to another boot camp at a Navy base in Bainbridge MD, all the way across the continent from San Diego, CA.

This time it was to learn CW communications. That was a part of ham radio I never gravitated toward wanting to learn. So began 6 months

of 8 hour days of machine-sent CW, always at a speed slightly higher than the average comprehension level of the class, whew!

My failing was I didn’t know how to type along with half of the class. However, there was a bunch that did know how to type and it was a competition between us. I did know the code, but for the first few weeks my fingers found all the space in-between the little round keys on the mill. Fortunately, it typed only uppercase, but had half a dozen extra keys according to the instructor.

The mill keys had squiggly shapes on them that the instructor finally told us were the cyrillic alphabet characters and it had more letters than were on a typical U. S. typewriter keyboard.

The instructor stood at the back of our small class so he could look over our shoulders to see if we were getting it or not. I sat in the back row and he finally figured out I knew the characters but not what key to punch on the mill. So he started a little “personal coaching” as he called it. His nickname for me was “shaky” because my fingers had to sometimes search for the correct key. Of course my anxiety level was very high then, as it is now, whenever using CW.

Note: That high “anxiety level” back in the day was eventually called P.T.S.D. Heard all sorts of encouragement like - “Buckle up Buttercup”, etc.



That’s about when my key fright started; however, I overcame it enough to graduate in the top tier of my class. The day he handed out our certificates of completion he called several of us into his office and told us he was looking forward to seeing us again out in the field. He said he would enjoy serving with us.

Anyway, after 60 some odd years, that feeling of anxiety (P.T.S.D.) has just about gone away but I still experience an anxious feeling when trying to communicate with CW.

And just for grins, I need to add that I was never required to copy CW for the military after that class, go figure. That is, except for a very short while on station in Karamursel, Turkey before P.C.S. orders arrived in my mailbox to Scotland. And I did have to send and receive CW several times over the years at different levels to become a Navy Chief by the time I retired. ★

73 – Tommy N5CTC

## THE LAST WORD

Thank you for reading The 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 Spring is a great time to get outside and work on all those antenna projects you never had time to get to when the weather was cold! Take your time, “measure three times and cut once,” and **BE CAREFUL!** Respect heights and rough terrain! We want you to be around to see Summer!

In closing, I want to thank all the great 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

### Clubs and Organizations

[American Radio Relay League](#)

[Ham Radio University](#)

[Long Island CW Club](#)

### Online Stores

[DX Engineering](#)

[Gigaparts](#)

[Ham Radio Outlet](#)

[Martin Lynch & Sons \(UK\)](#)

[Powerwerx](#)

[Radioddity](#)

[Waters & Stanton \(UK\)](#)

### Keys

[CW Morse](#)

[Vibroplex](#)

### Kits

[3rd Planet Solar](#)

[Circuit Specialists](#)

[Dan's Small Parts and Kits](#)

[Electronics DIY](#)

[Four State QRP Group](#)

[HamGadgets](#)

[HecKits](#)

[HF Signals](#)

[Kanga \(Phoenix\) Kits](#)

[Midway](#)

[NMOS](#)

[Pololu](#)

[QRP Guys](#)

[QRP Kits](#)

[QRP Labs](#)

### Parts

[Abra](#)

[Adafruit](#)

[Antique Electronic Supply](#)

[Aretronics](#)

[Arrow](#)

[Digikey](#)

[Digiparts](#)

[Electronics Goldmine](#)

[Electronic Surplus](#)

[Futurlec](#)

[Jameco](#)

[Kits and Parts](#)

[LCSC](#)

### Mike's Electronic Parts

[Mouser](#)

[\(MPJA is closed\) Skycraft](#)

[PJRC \(Arduino\)](#)

[QRPme](#)

[RF Parts](#)

[ROWaves](#)

[Sparkfun](#)

[Surplus Sales](#)

[Tayda](#)

### Antennas

[Alpha Antennas](#)

[Balun Designs \(Balunsetc\)](#)

[Chameleon](#)

[Greyline](#)

[Pacific Antenna](#)

[Palomar Engineers](#)

[RF Guru](#)

[Vibroplex](#)

### PCBs

[Far Circuits](#)

### Wire, Cable and Connectors

[Davis RF](#)

[RF Microwave](#)

[Tech Fixx](#)

[The Wireman](#)

[True Ladderline](#)

### Online Tools

[Arduino](#)

[Best EF Random Wire Lengths 1](#)

[Best EF Random Wire Lengths 2](#)

[Coil Inductance Calculator](#)

[Coil Placement Calculator](#)

[EFHW Antenna Calculator](#)

[EFHW Antenna Designer](#)

[Falstad Circuit Simulator](#)

[IanJohnston Online Tools](#)

[LC Resonance Calculator](#)

[LC Filter Design Tool](#)

[MagLoop Calculator](#)

[Morse Code World Trainer](#)

[NTS Radiogram Portal](#)

[Practical Antennas](#)

[POTA app](#)

[QSL Card Generator](#)

[Radiogram – Editable PDF](#)

### RF Z-Matching Calculator

[Toroid Inductance Calculator](#)

[Toroids.info](#)

[VSWR to Return Loss Calculator](#)

[Ugly Balun Calculator](#)

[Vband \(Ham Radio Solutions\)](#)

[VOACAP Coverage Analysis](#)

[Weather Underground](#)

– with assistance from  
Grant Porter, KG4SDR

