Gray Line Report

September 2022

160 Meter Vertical

Antenna Debacle

Member Profile

Flex SO2R

... and more!

Minnesota

Newsletter of the Twin City DX Association
www.tcdxa.org

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KØPX and WØFVR assist KØJM with an antenna repair learning experience. *See page 13.*

Gray Line Staff...

AJ8B
KØAD
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WAØMHJ
WØZF

TCDXA DX DONATION POLICY

The mission of TCDXA is to support DXing and major DXpeditions by providing funding. Annual contributions (dues) from members are the major source of funding.

A funding request from the organizers of a planned DXpedition should be directed to the DX Donation Manager, Mike Cizek, WØVTT. He and the TCDXA Board of Directors will judge how well the DXpedition plans meet key considerations (see below).

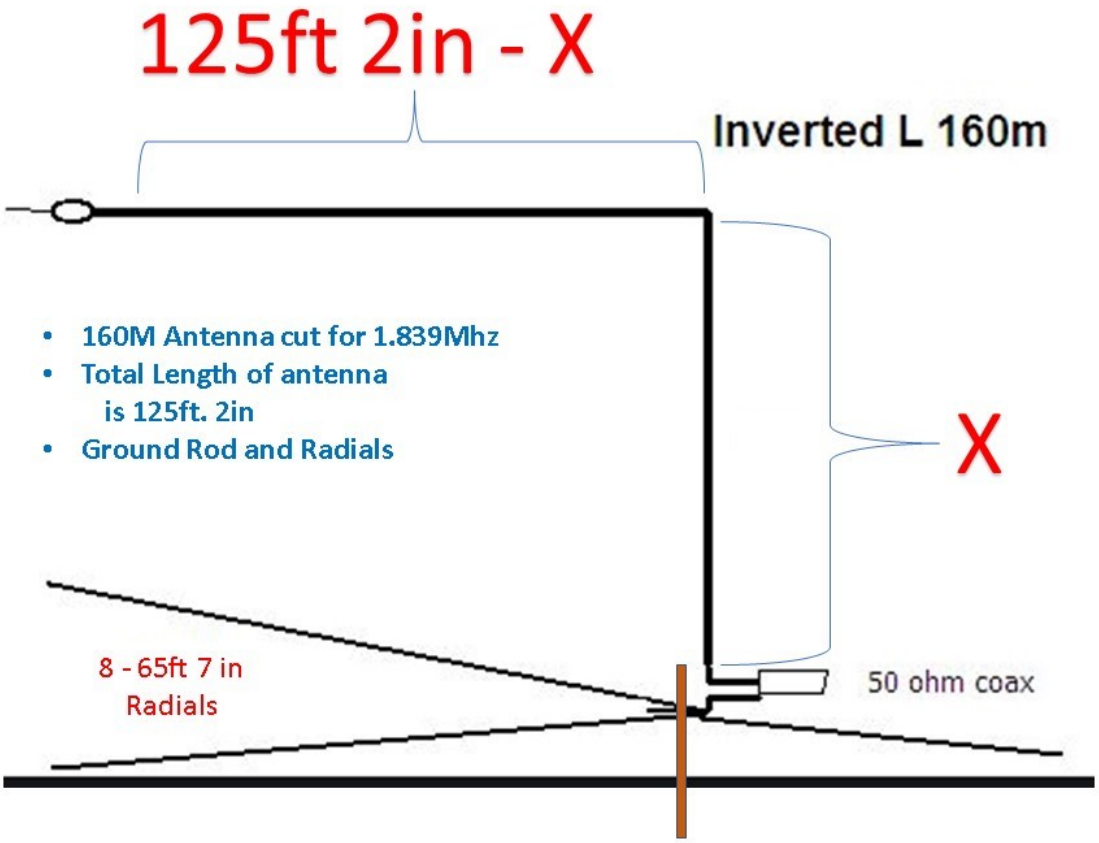
If the Board of Directors deems the DXpedition to be worthy of support, a recommended funding amount is presented to the membership for their vote. If approved, the TCDXA Treasurer will process the funding..

Key Considerations for a DXpedition Funding Request:

- DXpedition destination
- Website with logos of club sponsors
- Ranking on Most Wanted Survey
- QSLs with logos of club sponsors
- Most wanted ranking by TCDXA Members
- Online logs and pilot stations
- Logistics and transportation costs
- Up front cost to each operator
- Number of operators and their credentials
- Support by NCDXF & other clubs
- Number of stations on the air
- LoTW log submissions
- Bands, modes and duration of operation
- Previous operations by same group
- Equipment: antennas, radios, amps, etc.
- Valid license and DXCC approval
- Stateside and/or foreign QSL manager
- Donation address: USA and/or foreign

To join TCDXA, go to

http://tcdxa.org/



The "No-Excuses" 160 Meter Vertical

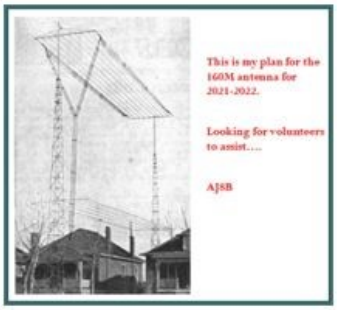
By Bill Salyers, AJ8B.
Excerpts used with permission by John Miller, K6MM.
John's original article appeared in QST*, June 2009.*

In my quest to enjoy 160M, I (AJ8B) originally constructed an inverted "L" with the dimensions shown in the drawing. This worked well and certainly got me on 160M, but I felt that the performance was lacking. I was only able to get the vertical portion up about 40 feet which meant that the long side was 85 feet long.

This was a simple installation, and I was able to keep it up from November 1st to April 1st. However, at some point, the ¼ wave radials interfered with the ever growing grass!

The SWR for the Inverted L is shown in the diagram. I know that SWR is a complex measurement and that there are many factors that affect it and many opinions about how important it is. However, since I was pruning the length of the antenna and had to use some figure of merit, I chose an SWR of 3. This would allow me to use as much of the antenna as possible without a tuner. The SWR diagram shows an SWR of less than 3 up to 1.9M. Not too bad.

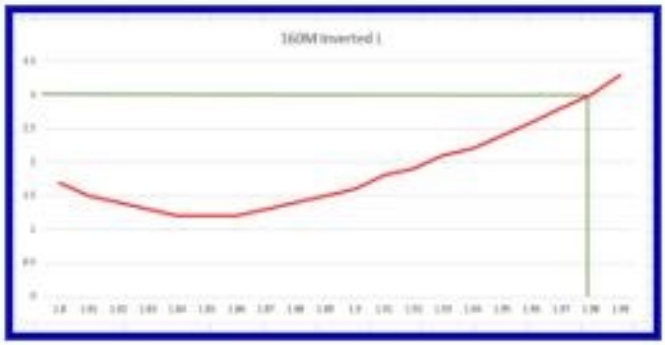
With this arrangement, I worked 29 entities and 48 states on CW and FT8. I had several other designs that I simply could not implement due to their complexity. Those are shown in the 2 drawings below:



Of course, I am kidding on those two. However, I did want to try to overcome some of the directional issues associated with the Inverted L. In the late 70s, my OM (K8DWE – SK) and I had built a helically wound vertical for 40 meters for a small space. It worked well and certainly allow the user to get on to 40 meters and enjoy some level of success. I decided to research a helically wound design for 160M. Very quickly I came upon a design by K6MM, John (k6mm@arrl.net).

When I read John's article, it struck me that it would be an interesting test to compare the "short" inverted "L" against the helically wound vertical consisting of 256 feet of wire. I decided to build John's vertical.

The details of the construction will follow. I already had a 500' roll of #14 wire so I started to wrap it after painting the 25 feet of PVC tubing and fitting the sections together. I am not the most coordinated person and have very large hands which make fumbling around with spools of wire etc. a challenge. The wire kept sliding and would bunch up in some places and be spaced out too much in other.



I enlisted the help of my coworker, Jeremy (a non-ham for now), and he designed and built a wire guide that could be attached to the PVC pipe, keep the wire consistently spaced, and keep it in place. He used his 3 D printer to print the wire guide as shown in the picture. The length is approximately 7".

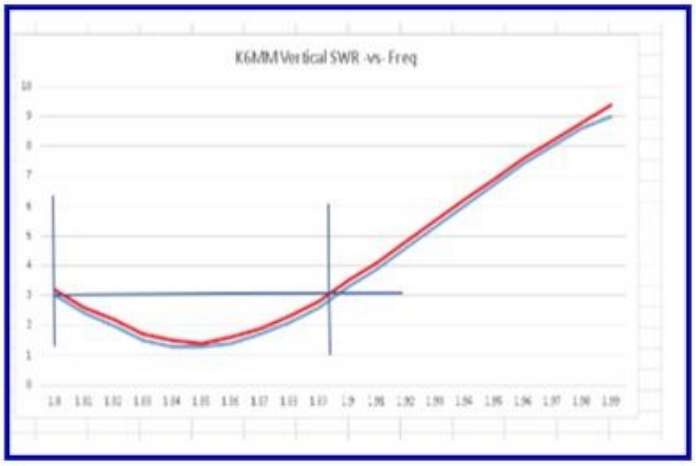
As the mast is 24.5' tall, this translates in to 42 of these wire guides. The latest "version" of the wire guide is a bit longer and only has one mounting hole in the center, not at the ends. I used a very small screw to hold the guide on since the tension of the wire will really do that job!

The picture shows a mid-section wrapped with the wire guides in place. I did use electrical tape every few feet as insurance. Once I dropped the feed spool and achieved the "slinky" effect. The tape helped to keep this under control.

The wire guides (and screws) added about a pound and a half to the overall weight and help me to control the wrapping.

I wanted to have the ground plane in place before mounting the antenna. Joe, W8GEX, had a DXEngineering ground plate and pre-cut radials bagged up for me. Took me no time at all to deploy 16 radials. Thanks Joe!

Using the same criteria that I used for the Inverted "L", I took SWR readings across the 160M band without a tuner. The results are shown in the graph. I can use this antenna without a tuner from 1.8M to 1.9M.



My result after the first week were very good. I worked 26 states and 10 entities, split between CW and FT8. Of course, propagation has a lot to do with this and it is only a sample of a few days, but I am optimistic. It is noisier than the "L", but signals are several S-units louder. To date, I have worked an additional 31 entities, 15 Zones, and into JA, and VK.

I contacted John, and he gave me permission to use the design, publish about it, and to present it as I would like. I decided to take him up on his offer and excerpts from the original QST article follow.

Overcoming my Excuses

(K6MM) I am an avid contester but had no antenna for 160 meters. In fact, I was a bit cynical about ever being able to put up an effective 160-meter antenna from my rather small California city lot. My NCCC contesting buddies, however, convinced me that I was missing out on some big-time fun with the ARRL 160 Meter, CQ 160 Meter, and Stew Perry Topband Challenge contests. No more excuses. It was time for me to get on the Topband Train too.

A review of the literature on 160-meter antenna designs leads to the usual discussion of dipoles, inverted-L's, T's, V's, loops, deltas, and verticals.

After thinking about my own QTH constraints I found myself revisiting the HWV option and settled upon a design often discussed but not often deployed in the US: a helically wound vertical antenna using PVC tubing.

Wire Wisdom

There is no hard-and-fast formula for determining the amount of wire needed to establish resonance in a helical antenna. The

relationship between the length of wire needed for resonance and a full quarter wave at the desired frequency depends on several factors. Some of these are wire size, diameter of the turns, and the dielectric properties of the form material. Experience has indicated that a section of wire approximately one-half wavelength long, wound on an insulating form with a linear pitch (equal spacing between turns) will come close to yielding a resonant quarter wavelength. Therefore, an antenna for use on 160 meters would require approximately 260 feet of wire, when spirally wound on a support.1

Add other possible challenges like narrow bandwidth, poor feed point impedance, radiation resistance, efficient top hat capacitance, mechanical constraints, sufficient ground radial system – and you could easily become a Topband curmudgeon. But then you'd miss out on building this fun antenna – which really works!

To try and get a first approximation on a final HWV design, I used modeling software developed by Reg Edwards, G4FGQ.2 His program models and predicts the performance of a helically wound vertical antenna, mounted immediately above a ground plane, top- capacitance-loaded with a vertical rod or whip. Enter these variables: height/diameter of the helical coil + # turns & diameter of wire + length/diameter of end-loading rod, and you get back theoretically useful data: ¼ wave resonance frequency, length of wire needed, helix wire pitch, capacitance/ inductance data, feed-point impedance and expected bandwidth.

Let's Get Started

The remainder of this article describes the construction and performance of a very simple but effective HWV antenna for 160 meters. In a nutshell: The antenna is made by telescoping three 10-foot PVC sections together, helically winding it with ½ wavelength of antenna wire, attaching a capacitance hat to the top, and feeding it with a 50-ohm feed line against 8 ground radials. The entire construction can be easily completed in just one day using very simple tools.

Construction

Step 1—PVC Painting

The antenna is made from three 10-foot sections of readily available PVC tubing in three diameter sizes: Top Section = 1-inch, Middle Section = 1½ inches, and Bottom Section = 2 inches. To make this antenna environmentally & stealth friendly, the three PVC sections were spray-painted green by suspending each 10-foot section from two pieces of nylon rope between two branches of a convenient backyard tree. Brown paint would work just as well. Figures 1 and 2 show a PVC section before and after painting. All three 10-foot sections were allowed to thoroughly dry before proceeding.

Figure 1. PVC Before

Figure 2. PVC After

Painted PCV pipes

Step 2. Bottom Section: Coax, Antenna and Ground Connections

The bottom 2-inch PVC section is prepared for both ground and coax connections by drilling the necessary mounting holes. A PVC cap is placed on the bottom of the 2-inch diameter PVC tube, and then, using a felt-tip marker, a circle is drawn around the PVC just above the border between the bottom cap and PVC section. This "marker" ensures that subsequent drilled holes will clear the bottom PVC cap.

SO-239 connector

Coax Connection: The PVC cap is then removed, and then holes are drilled for the SO-239 connector and 4 attachment screws. The SO-239 hole is centered about 2½ inches above the marker.

Bottom Antenna Binding Post: One 1/8-inch hole is drilled for the antenna binding post, placed 2 inches above the marker. A red binding post was used for the antenna connection.

Ground Binding Posts: Two 1/8-inch holes are drilled for the ground posts, each placed 1½ inches above the marker. Black binding posts were used for ground connections.

Summary: The 3 binding post holes (i.e., 1 antenna + 2 ground) are placed equidistant from each other around the PVC section. The antenna post and ground posts are staggered by about ½ inch to avoid any possibility of shorting.

Step 3. Wiring: Coax Connector and Antenna Post

One end of a 4-inch piece of #14 wire is soldered to the center connector of the SO-239. The other end is then soldered to either a spade or ring lug. The wire is then pushed

through the prepared SO-239 hole in the 2-inch PVC tube, and the SO-239 connector secured to the PVC tube using only 3 of the 4 mounting holes. The free end of the insulated wire is connected to the inner section of the red antenna post using the spade or ring lug. After securing the antenna post a binding nut, the connection can be soldered.

Step 4. Wiring: Coax Connector and Ground Post

A 6-inch section of #14 insulated wire is soldered (or crimped) to spade lugs on both ends.

One end is connected on the outside of the PVC to the remaining SO-239 screw and secured to the PVC. The other end of the #14 wire is connected to the closest black ground binding post on the outside of the PVC.

Inside the PVC, another piece of #14 wire is attached between the 2 ground binding posts. This essentially connects both ground binding posts and the coax base together. Check to be sure the antenna and ground connections inside the PVC are clean and not touching each other. Braided coax, such as RG-58, can also be used instead of the #14 wire for ground post connections. At this point, the SO-239 and all binding posts should be tightened and secured. For extra strength and protection, the binding posts can also be glued to the PVC, both inside and outside.

Step 5. PVC Mast Preparation and Assembly

The Top, Middle, and Bottom sections are assembled using a high-tech solution: duct tape. I used Gorilla Tape10 for wrapping because it uses two layers of adhesive and two layers of fabric backing to make it much stronger than standard duct tape.

First, the 1-inch diameter PVC tubing is shortened from 10 feet to 7 feet 6 inches by cutting off 2 feet 6 inches from one end. Duct tape is then wrapped around the tubes as follows:

For the Top Section (1 inch diameter tube) = Two wrappings. First wrap = 2 inches from bottom of tube. Second wrap = from 9½ to 11½ inches from the bottom of the tube.

For the Middle Section (1 ½ in diameter tube) = Two wrappings. First wrap = 2 inches from bottom of tube. Second wrap = from 22 to 24 inches from the bottom of the tube.

The 3 PVC sections are then telescoped together. When assembled, the Middle Section will extend 24 inches into the Bottom Section, and the Top Section will extend 11½ inches into the Middle Section. It's important to use enough duct tape to ensure a good fit between the PVC sections.

The next step in PVC assembly is to further secure the "joints" with a bolt and nut. The lower joint (between the Middle and Bottom sections) is secured by drilling a ¼ inch hole through both PVC sections about 12 inches from the top of the 2 inch diameter Bottom PVC section, and using a 3¼ inch bolt, nut, and washer to fasten the sections together.

The middle joint (between the Middle and Top sections) is secured by drilling a similar hole, about 6 inches down from the top of the 1½ inch diameter Middle PVC section, and using a 2¾ inch bolt, nut, and washer to secure the joint.

Top Antenna Binding Post: Similar to the Bottom antenna post previously mentioned, a Top antenna post is prepared by drilling a 1/8-inch hole one inch from the top of the Top PVC section. A red-capped binding post is attached to it, using a nut and glued to secure it. The helically wound antenna wire will be connected to this post, which will also be the antenna- to-capacitance hat attachment point.

Step 6. Helically Winding The PVC

With the sections assembled and fortified, the antenna is ready to be helically wrapped with wire. As previously mentioned, experimentation with HWVs has shown that a half wavelength of wire is often needed for quarter wave resonance, assuming the turns are evenly spaced. At a desired resonance frequency of 1.825 MHz, 256 feet 5 inches of wire is required for a 160-meter vertical, using the formula 468/freq. For this first version of the antenna, I chose #22 insulated wire for the antenna – I had a good supply sitting in the garage.

(AJ8B) At this point, I attached the wire guides along the length of the sections. Because of the slick paint and the 3D printed plastic, they will tend to slide about. I used one wrap of electrical tape per guide to help hold it in place. A picture of the section is shown.

Wrapping begins by first attaching the antenna wire to the Bottom Antenna Binding

Post of the 2-inch PVC section using a spade or ring solder lug. The wire is then wound from bottom to top. Wire wrapping is not a difficult step but does require a bit of patience. It's best not to rush this part of the project.

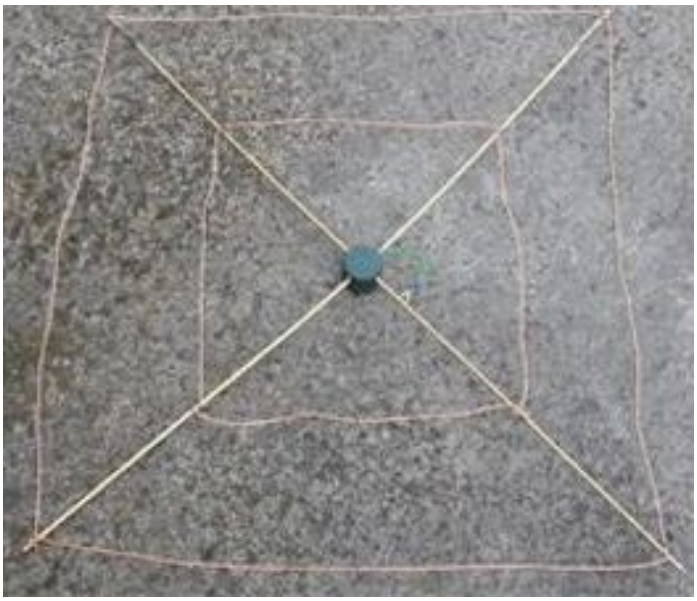
The end of the wire at the top of the antenna is then soldered to a spade or ring tongue and attached to the Top Antenna Binding Post with the red cap at the top of the 1" PVC section.

Step 7. Top Cap Preparation: Capacitance Hat

(K6MM) The square hat construction begins by drilling four 1/8-inch hole 90 degrees apart in the 1-inch PVC cap, about 1 inch from the bottom. An additional 1/8-inch hole is drilled next to one of

these holes. The brass rods are inserted into the cap, forming an "X". A pair of pliers is helpful here, as it will be a snug fit, which is what you want. Next, a 6-inch piece of #14 insulated wire is stripped on one end and soldered to a spade or ring lug on the other end. The stripped end is slipped through the remaining 1/8-inch hole and wrapped securely around the "X" junction of the two brass rods inside the PVC cap, where everything is securely soldered. The brass rods are tied together externally by connecting them together with #14-gauge bare copper wire in two places: the tips of the rods and also midway between the rod ends the and PVC cap. The bare copper wire is soldered to the brass rod at all 8 intersections, to complete the "square hat."

Finally, the PVC cap is attached to the Top Section of the antenna, and the capacitance wire secured to the Top Antenna Binding Post using the spade or ring lug. For maximum result, it's important to have a good electrical connection between the antenna wire and capacitance hat.



Step 9. Bottom Cap Preparation

The bottom cap is used to support and protect the antenna. A ¼ inch hole was drilled in the center of a piece of scrap plywood (about one foot square). Another ¼ inch hole was drilled in the bottom of the 2-inch PVC cap. The threaded aluminum rod was trimmed to 12 inches, and run through the bottom PVC cap, and then through the plywood. Nuts and washers were attached on the threaded rod inside the cap and on the other side of the plywood. When tightened, only 2 inches of rod was left inside the cap, to ensure that the antenna and ground wiring in the bottom section of the mast would not be disturbed (see Step 2). About 10 inches of threaded rod was left sticking out from the bottom of the plywood. The plywood

base serves as a stabilizing platform to ease final installation of the vertical. By gently standing on it and pushing, you can easily drive the 10 inches of threaded rod into the ground.

After the PVC sections were bolted together, and completely wire wrapped, the capacitance hat was attached to the top of the antenna, including the capacitance wire-to-antenna binding post connection. The antenna is now ready for final installation. The bottom 2-inch PVC cap/plywood base was set in the ground at its mounting location. Bracing the bottom against the ground, the antenna was carried to the PVC cap/plywood base and carefully set into the PVC cap. One person can carry & mount the antenna but it's a bit easier with two folks.

Bottom cap showing the threaded rod.

My QTH required bracing the mast to my back fence and securing it at the 6 foot point with nylon rope. To keep the vertical, "vertical", a section of nylon rope was also attached at 12 feet using a convenient tree limb and the rope secured at ground level. Final guying/bracing will depend upon your antenna placement.

Radial Wires: This antenna does require some ground radials. Of course, use as many as your QTH allows. I started with four 1/4 wavelength ground radials cut for 160 meters and have expanded that number now to eight, using #16 stranded insulated wire. Spade lugs are soldered to ground radials which are then attached to one of the two ground posts. Because of the geometry of my property, my radials cover only a 180-degree arc, but they work pretty well.

Initial Readings: After attaching a 6 foot piece of 50-Ohm coax, an MFJ 249B antenna analyzer showed resonance close to 1.790 MHz The antenna wire was adjusted at the bottom to bring the resonance closer to 1.830 MHz Running 500 watts through this antenna without a tuner showed a 50 KHz bandwidth, with <2:1 SWR. With a tuner, the antenna can be adjusted anywhere from 1.800 to 1.900 MHz with an SWR under 2:1.

ON THE AIR: So how does this Helically Wound Vertical for 160 meters perform? From the West coast, it's a solid performer throughout the North America. I have worked all 50 states, Canada, and Mexico during the last year with it, almost all confirmed via LoTW. I was awarded First Place, Single Operator, Low Power for the Santa Clara Valley section in the 2007 ARRL 160 Meter contest. In the 2009 CQWW 160 Meter contest, I worked 46 states and 7 countries using 600 watts in just a few hours of operating. For DX, with limited operating time, I have worked 30 countries. Overall, this antenna plays well to the Far East, South Pacific, Eastern Russia, Caribbean, and Central/South America. Europe is the most difficult region to reach from my

location, but that's generally true for most West coast stations.

Am I the loudest signal on the band? No. Can I compete in pileups with folks having better antennas or higher power? No. But am I having fun on Topband using a homebrew antenna that generates memorable QSOs? You bet!

Summary – A Helically Wound Vertical is not "the" perfect antenna for 160 meters, but for a small lot, or where CC&R's are strictly enforced, this easy-to-build vertical is a good alternative to an inverted-L or dipole. During the last year, I have helped other hams around the country get on the air with this HWV design for 160 meters.

This unsolicited comment from Armand Sun, K6IP, is typical of the feedback I've received:

"I finally put up the HWV antenna and I'm happy to report that it works FB. Mine has two feed options: ladder-line or coax. I'm currently feeding with ladder-line and one elevated radial from leftover wire on the spool and the results are excellent! It takes a KW from 1.8 - 1.9 MHz I painted mine olive drab with black #14 wire so it's pretty stealthy. I would imagine brown would be good too. Sometimes the traditional designs just don't blend well with the existing antenna farm. A Helically Wound Vertical is a good option for small lots or for those with antenna restrictions. Thanks for the design. It was fun to build and just what I needed for a Topband solution."12

So, no more excuses for Armand -- or Me. Now how about you?

John Miller, K6MM — Originally Published in QST, June 2009, pages 32-36.

What is a Real Ham?

By Dan Dantzler, WØJMP

1. A real ham has class: The hobby is never used to lessen the enjoyment of others. I cannot define class but I know it when I see it.
2. A real ham is progressive. They are always looking for ways to improve their knowledge and operating procedures. A real ham embraces new aspects of the hobby. A real ham knows that "new" is not a threat to amateur radio but stagnation can be.
3. A real ham is generous. They are always willing to reach out to other hams. They are willing to share their knowledge and skill for the betterment of others and for the hobby. Mentoring is often the sign of a real ham. Real hams work hard to help and teach newcomers to the hobby.
4. A real ham is balanced. Amateur radio is a hobby but must never interfere with the other duties owed to family, friends, community and country.
5. A real ham is curious: Ham radio at its core is a scientific hobby. A basic driver of science is curiosity. A real ham is constantly reading about and experimenting with new things. New modes, new software, new radios, new antennas and new experiences are sought after by real hams.
6. A real ham is not judged by wallpaper. The number of awards and certificates on the wall does not define real hams. They are defined by friendship and shared experiences.
7. A real ham is thankful. Thankful for the knowledge, the time and the resources to spend on the hobby. They are thankful for the giants upon whose shoulders they stand, and thankful for the friendships and experiences gained through the hobby.
8. A real ham is non-judgmental. The hobby is multifaceted. We all enjoy it in the way we see fit. The real ham does not judge those who enjoy the hobby differently. The real ham is helpful and not judgmental of those learning the hobby or parts of the hobby.
9. A real ham is an ambassador. Real hams are representing the hobby to other hams, to the community and to the world at large. Ever mindful of that representation, a real ham presents in a professional manner. Real hams speak well of the hobby, their fellow radio operators and pay attention to how they present themselves verbally and in appearance.

The Great Brooklyn Park Antenna Repair Debacle

By Mark D. Johns, KØJM

My ten-element log periodic beam has been a great antenna. According to the specs, it performs essentially like a 3-element monobander in any band (including WARC bands), 20 through 10 meters. There are no moving parts, no lossy traps, and it's resonant at all frequencies all the time, which is handy if I have more than one band open at once on my Flex radio.

I love it so much, I've kept it for almost 20 years. It's now in its fourth QTH. My friend and neighbor in Cedar Falls, Iowa, Jan Robbins, NØJR, purchased it new from Tennadyne in Michigan, assembled it, and erected it at his QTH back in the late 1990s. He was impressed, so he bought a bigger one. The T-10 only had to be partially disassembled to make the 8-city block journey to my house when I bought it from him. When we moved to England in 2011, the beam was once again partially disassembled and went into storage for almost two years. At the top of a high, steep hill at my Decorah, Iowa QTH, it performed like gangbusters. And on my suburban lot here in the Twin Cities, it both performed well and gave the new neighbors something to talk about.

The log in it's Decoarh, Iowa hilltop location

Old Age and Injury

But time takes its toll. About a year ago, the log periodic became intermittent. Sometimes it still performed like a champ. Other times, the SWR spiked to infinity. When it finally failed completely, a simple ohmmeter check showed an open circuit. At DC, it ought to be nearly a dead short. Like its owner, the antenna was suffering from old age. I suspected the balun and feed. The log is a balanced antenna, like a dipole. It has a 10-turn coax choke balun at the feed point, which is at the far front end of the boom. I had already replaced it once in the beam's long lifetime, and I figured it was time once again. After all, what else can go wrong with an antenna that has no moving parts?

At this point, the tale takes something of a detour. First, there was a pandemic, and I was reluctant to ask anyone to come over and help me take down a 10-element antenna on a 24-foot boom. Then, in August of 2020, I had a mishap in which my bicycle slid out from under me on a muddy local bike trail, leaving me briefly suspended in mid-air, before leading with my left hip as I landed on solid asphalt. One does not climb towers soon after a total hip replacement. It would be a long winter with no HF antenna other than my puny 80/40 trap dipole, which had always been a cloud-warmer. Thank God for satellite operations to get me through the winter!

Haste Makes Waste

Not only does time take its toll, but as they say, time heals all wounds. Fortunately, that was true of my hip. A winter of therapy exercises and a lot of walking got me back into tower-climbing condition. In spring of this year, Doug Arntson, KØPX, graciously assisted me as a ground man in getting the beam off the tower.

I quickly wound a new balun, and a week later, KØPX returned to help me put the beam back up. It did not go smoothly. Not only did I nearly kill poor Doug by having

Helpers Doug Arntson, KØPX and Reid Maertz WØFVR

him pull hard on a rope for almost an hour, but the antenna decided it wanted to go up sideways, get caught in shingles, slam into siding, and generally create havoc. But despite a few bent elements, we got it back up and it worked very well once again...

...For about a week. Then it went intermittent again. It was the same issue, and quickly went to total failure. What had happened? Had I damaged the new balun in that awkward trip back up the tower? In my haste, had I missed something else?

Angle iron, steel cables, and winch, ready for the experiment

If At First You Don't Succeed...

This time, I was more careful and methodical in my trouble-shooting. Doug had helped me to swap out the mast and put up a little, 3-element yagi on 6 meters, above the log periodic, so I had an extra feedline available. I did some swapping, and things weren't making sense. Eventually, I took a dummy load to the top of the tower, then checked each section of feedline – from shack to lightning arresters, then from lightning arresters to the top of the tower. I discovered an intermittent in one section of feedline. But even eliminating that, things didn't add up. Finally, I took the antenna analyzer to the top of the tower and confirmed that the log periodic was, indeed in failure mode. It would have to come down again.

I really hate climbing in the heat, and this wasn't a cool summer. Waiting for cool autumn weather gave me opportunity to ponder. There had to be a better way to get that ungainly antenna down and back up once again without beating it up or causing back pain to the ground crew. KØPX had suggested some sort of guide cables to keep the antenna from going its own way. I had read about tram systems, most of which seemed way too complicated. So, I did what many of us do when perplexed about a project: I wandered the aisles at Home Depot.

About two hours and two hundred dollars later, I came home with two, 6' pieces of angle iron, 150' of 3/16" steel cable, and a sack full of eye-bolts, saddle clamps, and turnbuckles. I prepared the angle iron by cleaning it with acetone, then spraying with black Krylon. I drilled a hole a few inches from each end and installed eye bolts. On one piece, I found center, drilled, and installed a U-bolt with muffler clamp that would fit around my 2" mast. I cut the steel cable into two pieces, as Pythagoras allowed me to calculate the necessary length for my 50' tower. One end of each piece was connected to an eye-bolt on the angle iron with the U-bolt. The other end was fitted to a turnbuckle.

Using a pulley at the top of the tower, I pulled up the piece of angle iron with the U-bolt and clamped it onto the mast, just below the clamps that hold the beam. The steel cables were coiled, and I got the first one played out nicely. The second one kinked up and got tangled, so it took some time going down the tower to stop and get it straightened out. Once on the ground, I stretched the cables out, attached the turnbuckles to the respective eye-bolts on the other piece of angle iron, and anchored it using four pieces of 2' re-rod, hammered into the ground. Then I tightened the turnbuckles to make sure I had two, parallel rails, nice and tight.

Would it hold? Would it simply sag? Would the antenna slide on it or stick? Would the antenna twist and turn anyway, despite the tram cables? An engineer would have calculated all of this. But I'm an amateur. Everything is trial and error (often heavy on error).

The next excursion was to Harbor Freight Tools. They advertise a nice little electric winch that is supposed to pull 1500 pounds.

Guide lines in place, ready to give it a try!

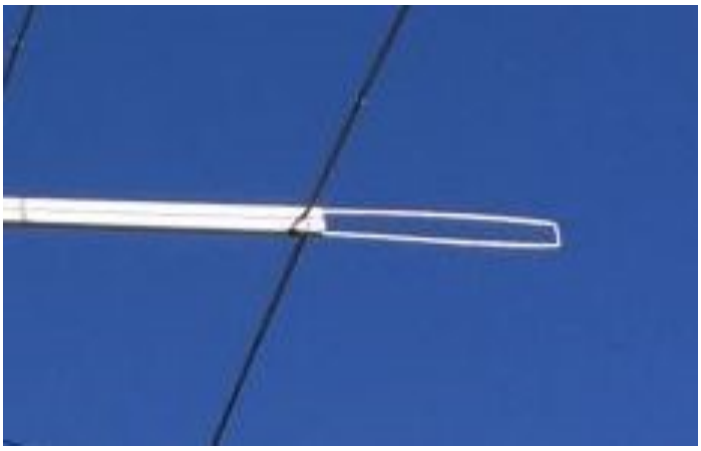
Riding the rails, no twisting, no turning!

My 70-pound antenna only feels like 1500 when pulling it up by hand, so I thought it should be adequate to the task. There were two problems: First, the winch is made to bolt onto a bench, block, or some other rather permanent structure. Second, it only includes a 35' steel rope.

Problem one was solved by bolting the winch to a stack of two short pieces of 2x8" lumber with a 6' nylon lift sling clamped between the two boards by the mounting bolts. The sling went around a convenient tree to hold the winch in place. Problem two was solved simply by tying off the rope and reattaching the winch hook at a different spot, then continuing with the next 35' of movement. Not elegant, but it worked.

Victory!

In fact, it all worked very well. On the appointed day, Doug, KØPX returned, and my neighbor from a few blocks away, Reid Maertz, WØFVR, was called in for reinforcements. My gin pole was attached to the tower, and the rope was tied to the beam.



The culprit turned out to be the hair pin

The winch took up the slack to hold the beam while the bolts of the boom-to-mast clamp were loosed. Then the winch began to lower the beam. It slid majestically down the parallel cables, remaining horizontal and without a trace of squirreliness.

I was going to take another week to go over the beam carefully, but my helpers were enthusiastic and wanted to trouble-shoot the problem on the spot. We inspected the balun and found no damage. But when we started wiggling the "hair pin" fixture at the back end of the boom, all of the intermittent issues began to pop up. Corrosion of the aluminum at this point was making contact erratic.

The boom of a log periodic antenna is actually two booms, electrically separated but held together physically by insulators. The split boom forms a balanced feedline. The hair pin, at the back end, ties the two booms together at the appropriate electrical length. It wasn't making contact, thus creating the open circuit and the infinite SWR.

I cleaned the hair pin and surrounding boom with a wire brush, then drilled pilot holes and added self-taping sheet metal screws to ensure a solid electrical connection. The aircraft grade aluminum of the antenna offered plenty of physical resistance, and conductive grease was added liberally to keep the corrosion at bay.

Once the antenna checked out, the winch began to bring it back up. Again, it remained perfectly level and it only had to be tipped a bit to clear the tower guys. Getting the boom-to-mast bolts back in required a bit of time and muscle. It was tough to get holes perfectly aligned, and unfortunately, my ground crew could do nothing more than watch me struggle on the tower. In the end, all fit into place. The gin pole and the angle iron support for the steel cable tram lines were lowered, and the job was done.

The Moral(s) of the Story

I am too soon old and too late smart. The first lesson learned in this escapade is that one needs to be thorough and methodical about troubleshooting an antenna system, just as one would be about troubleshooting a

Ready to bring the big beam back up

All of the antennas back where they belong. The satellite beams are on a roof tripod, separate from the tower.

piece of gear. By being hasty and making assumptions, I made it necessary to do the job twice and bring the antenna down a second time. I overlooked the feedline issue and allowed it to confuse me, then jumped to conclusions about the real problem with the antenna.

Secondly, I am late to the party when it comes to tram lines and winches. I should have been using something like this years ago. Doing so would have saved a lot of wear and tear on me, my ground helpers, and the antenna itself. A little investment in the proper equipment pays off.

Which leads to the question, why is a bonehead like me writing this article? There are many readers of this newsletter who have far more experience and expertise in antennas and towers than I. The *Gray Line* needs your input and your content. If you haven't the inclination to write, at least pass along your ideas to the editorial team. Wordsmiths are standing by.

Member Profile — Bill Salyers, AJ8B

I was first licensed as WN8IQN in 1971. My first station consisted of an EICO 720, 3 40-meter crystals, a J-38 key and a Hallicrafters SX-100 receiver. The antenna was a dipole suspended between two trees with a heavy spring controlling tension with a "bucket of bricks" (literally) as a counterweight. My OM, K8DWE, insisted that I not be an appliance operator and had me build a tuner and a dummy load. I was 12 and it seemed like quite a challenge, but a few RF burns later, and I was on the air. Who thought you could use two 50-watt bulbs as a dummy load? After taking the novice in late 1970, I received QSL card samples from the "Little Print Shop" with my call on the envelope BEFORE I received the FCC license. I worked quite a bit of 40-meter CW but started playing basketball and somewhat drifted away after a time.

Three years later, I again passed the Novice test and received WN8TZN. That station consisted of the same Hallicrafters SX-100 receiver, but this time we built the "Novice Special" that was featured in the 1971 ARRL handbook. I used that rig quite a bit, and, with the help of yet another Handbook project, the Accu Keyer and Accu Memory (Remember those?) I really became hooked on CW but still just a part time operator.

After meeting Frank, K1FJ, at the University of Dayton school of engineering, I was hooked again, this time for good. I passed the Novice, General and Advanced on August 11th of 1978 and received KB8DF. I used a Heathkit HW-101 and obtained a Heathkit SB-220. I started to regularly work DX and really started to enjoy the hobby. The summer of 1980 provided a lot of operating time, even coming home for lunch from my painting job to work some 10 meters.

Frank and I worked a couple of Field Days with his XYL – KA9IFQ. and I really got in to contesting, even if it was for just a few hours at a time.

After tiring of hearing "If only you weren't just an Advanced" from Frank, I upgraded in February of 1979. In April of 79, I received AJ8B.

I created some CompuServe distributed shareware that allowed the control of two TNCs simultaneously – not available at that time. I was fortunate enough to have it featured in VP2ML's "The DX Magazine." I was really excited to have been published. I went on to publish two books; "Coaching Youth Basketball" and "A Matchup Zone Defense for Youth Coaches." Both exercises made me realize that the only way I could get better was to talk to others with similar interests and ask questions. HP taught me to ask and then to LISTEN.

Around that same time, I joined the SouthWest Ohio DX Association. That really opened my eyes to the world of DX. So much to learn, so much to enjoy. I was able to learn from some great hams including K4ZLE, W8GEX, NR8Z, N8BJQ, and W8OK.

A few years ago, I went to my first W4DXCC. At that meeting, I met Scott, KØMD. Scott challenged me to expand what I had been doing with the club and to learn from it. He also encouraged me to share what I had learned. Of course, I listened to Scott!

I became the DX Dinner chairman for the club. That allowed me to meet a lot of great hams which continued the learning process. After a few years, I realized that our club was missing something; a newsletter.

So, I started the club newsletter, and I am still publishing those bi-monthly. (Feel free to check them out https://www.swodxa.org/newsletters/)

About 2 years ago, I had a call with KØMD. I called Scott to ask him to honor us by being the keynote speaker at the 2022 DX Dinner. Scott accepted and was fabulous. During this call, he mentioned some of the activities that the TCDXA was doing. I checked out the website and the newsletters. Boy, was I impressed. What I found most impressive was that 95% of all the newsletters contained home grown content. I also noticed the list of speakers that were upcoming and knew that this would be another opportunity to learn. So, I had to join.

About 2 months after joining, the call went out for a newsletter editor. After dragging my feet, I contacted WØJMP, Dan, to see if the club still needed an editor. They did! So, I am now the editor of a topflight DX club newsletter. I have to say that the learning curve has been a bit steep, and I have not had the impact that the rest of the editorial group may have wanted, but I am getting there.

My brag tape shows that I am currently using a Flex 6400 and an Ameritron AL-80B. I have a Hustler vertical, an OCF dipole, and a 160M Helically wound vertical. I have a Yaesu FT-857 in the car with an AT-120 antenna. Spending 2+ hours/day for my commute allows for plenty of airtime. So far, I have 138 countries confirmed from the car. I also use the DXLab software suite to manage all of this.

In May of 2018, I was honored with the W8OK award from the SouthWest OH DX Association and won the club DX Contest.

In addition to the activities, I write a weekly column for the Ohio Section Journal, and I am the 8th area QSL buro "N" letter card sorter.

Bill as KB8DF

I am a member of the CWOPs Organization (#1567) and had 6 terms as an Advisor for CWOPs. I was also on the QSO Today Podcast as a guest of Erics, episode #319. I have published in QST and the NCJ, spoken at W4DXCC as well as the QSO Today Expo.

I have wonderful memories of the amateur radio events I have attended or participated in and have met some lifelong friends. I continue to learn and try to get better at my craft.

73 es Gud Hunting AJ8B => Bill

The MWA Contest Corner

"Hands Off the Radio" Contesting

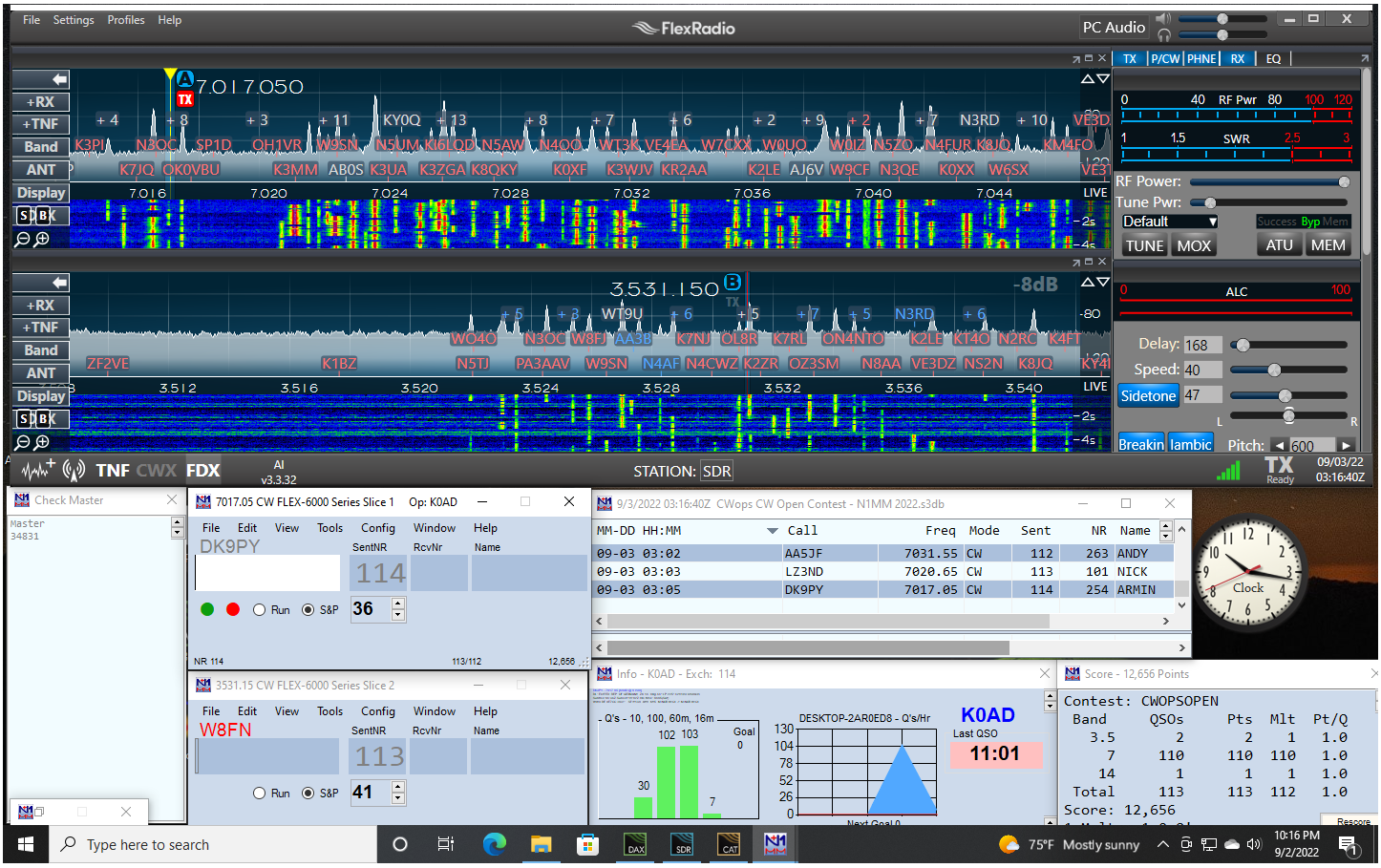
By Al Dewey, KØAD

When I purchased my Flex 6600M radio in 2018, I realized I was jumping feet first into the arena of Software Defined Radios. Having said that, I was not yet ready to give up the comfort of turning the knob, adjusting the gain, and pushing a few buttons on the radio while contesting. For that reason, I purchased the "M" model of the 6600M which had a front panel on it rather than just being a "black box" that I operated entirely with software.

I continued to contest like I always had with two hands on the keyboard controlling the N1MM Plus contesting software while occasionally glancing at the Flex band scope and turning one of the two VFO knobs on the radio with my left hand. Most of my contesting is in CW events using the SO2R (Single Operator Two Radio) method. Normally I would "run" on one band and "search and pounce" on the other one. Occasionally, I would alternate CQs on two bands. This meant my eyes went back and forth between the N1MM screen and the Flex 6600M front panel. I relied heavily on the band scope display on the Flex to find strong signals as well as "holes" in the band where I might start CQing. Occasionally, I might throw in a filter or adjust the AF gain. Band changes were normally handled from N1MM. This is pretty much how I had contested for decades. And I was comfortable with it!

Trying Out the SDR Software

My Flex 6600M came with a SmartSDR Software Application. Up until recently, I had not used it much except when operating a relatively low key Field Day effort from home during the pandemic. I got to wondering what it would be like to operate the Flex in a relatively high speed CW contest (using SO2R) entirely from the SmartSDR software without touching (or even looking at) the radio. I decided to set things up and give the SmartSDR software a try during a few of the Wednesday CWT contests as well as in the CW Open contest in early September. For those of you not familiar with the CWT contests, they are three one-hour CW contests that run in the morning, afternoon, and evening on Wednesdays. They move along quite quickly and have good participation from around the world. I typically make somewhere between 125 and 150 QSOs in a CWT and often place in the top five or ten



Screen configuration while using SmartSDR and N1MM Logger in CW Open Contest

participants in the low power category. I wondered whether using the SDR software would slow me down in any way.

Setting Things Up

One of the first things I had to decide is whether I wanted to use two monitors – one for the SmartSDR software and one for the N1MM Plus logging software. I seriously considered adding a second monitor (which I had) but ultimately decided to try to squeeze everything onto a single 23 inch monitor. Part of the reason was simplicity (laziness?). More importantly, however, I was concerned that two monitors would mean I would be constantly moving my eyes from screen to screen which would partially defeat the objective of my exercise. Pictured above, the way I ended up configuring the single screen for running SmartSDR and N1MM at the same time. Roughly the upper 60% is used by SmartSDR and the bottom 40% is used by N1MM Plus. Obviously, some sacrifices had to be made. One of them was that there was no room to put the N1MM band map. Fortunately, the Flex has the capability to import spots from N1MM and display them on the Flex band scope at the correct position on the band. The red and white call signs indicate the location of the calls. Just like the normal N1MM bandmap, these can be clicked on to move the VFO to the spot. Not perfect but it saved a lot of room.

Sound, CW Monitoring, VFO Tuning and Focus Issues

When I first set things up, I decided to use PC Audio. This meant that I would lis-

ten to the radio through headphones plugged into the computer. It just did not sound right to me. There was some latency and it did not work quite right with N1MM. A really important feature in SO2R operation is the ability to easily mute and unmute the audio from the second band. In N1MM, this is controlled by the "~" key and really works slick. Toggling the "~" key in N1MM mutes and unmutes the audio on the second band. This is critical when operating SO2R. However, this simply did not work with PC Audio.

The second issue was that, although N1MM keyed the radio fine using the Function Key Macros, there was no sidetone so I could not hear what was being sent. N1MM did display what was being sent but there were no monitoring tones. I decided to contact my two "go-to experts" on the Flex 6600M – Pat, KØPC and Roger, KØMPH. They both acknowledged the problems with using PC Audio when using the SmartSDR software. Pat said the solution was simple – just plug the headphones into the Flex. Duh. I did that, and all worked well. I should mention that this solution will not work if you are remote from your radio but I wasn't, of course, so all worked well.

The FlexControl External Tuning Knob provided much better VFO tuning than track wheel on mouse.

The third issue had to do with tuning the two VFOs on the Flex. With the SmartSDR software, this is normally done with the track wheel on the mouse. Although this does work, the tuning with the mouse trackball felt a bit jerky to me. It also meant some extra mouse clicks when I wanted to move back and forth between the two bands I was working. I decided to try out my FlexControl tuning knobwhich plugs into a USB port on the PC. The tuning felt much smoother than with the mouse trackball and didn't require any mouse clicks. Ideally, I would use two FlexControl knobs – one for each band. However, I was able to use one of the programmable function buttons on the tuning knob assembly to move the FlexControl from band to band.

Finally, when I first started using SmartSDR and N1MM on the same screen at the same time, I noticed that there was an annoying "Focus" issue. If my cursor was in the N1MM Call Entry window and I clicked on the SmartSDR display, the cursor stayed there until I "re-clicked" in the N1MM window. This REALLY slowed things down. Again, I went to KØPC to see if he had a solution. Sure enough, he did. It turns out there are some "Focus Helper" parameters in SmartSDR that have to be configured as

well as some "Broadcast Data" parameters in N1MM that have to be set up. Once those were set correctly, it worked fine. As soon as I complete my "click" in SmartSDR, the cursor automatically returned to N1MM within 100ms (configurable). If anyone wants to know the details of how to set this up, drop me an e-mail.

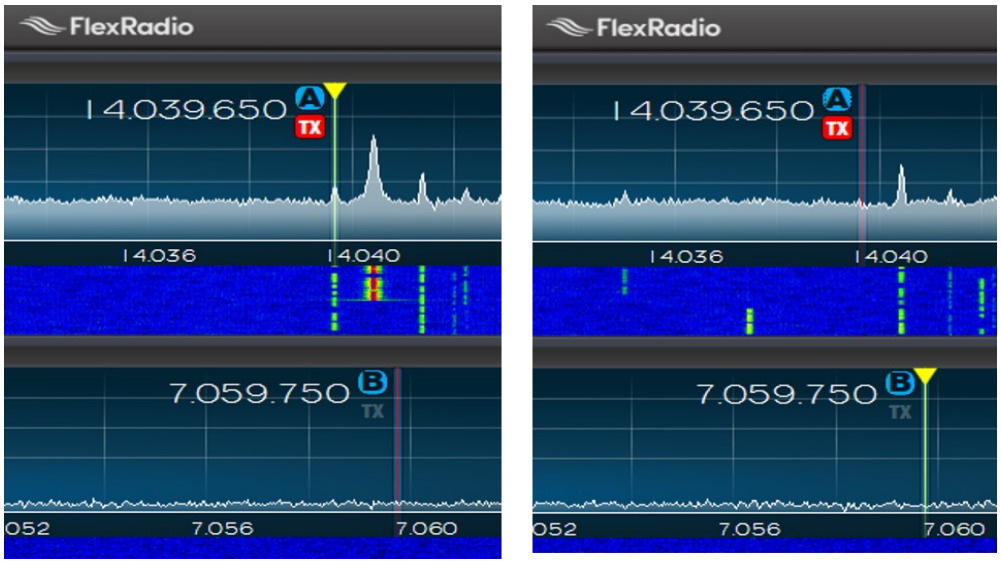
Trying it Out

With the technical problems solved, I decided to try things out. I entered the Wednesday afternoon CWT on August 19 using SmartSDR and N1MM Logger. As I often do in the afternoon CWT, I decided to run 20 meters on one slice while tuning around on the second slice (usually 15 or 40 meters) for additional QSOs. The QSOs made while running felt exactly the same as when I was using the front panel of the radio. The QSOs made on the second slice required me to push the middle button on the FlexControl knob and then tune around on the second band. As for my score in the August 19 CWT using the SmartSDR software, I posted a score similar to what I have done in the past while accessing the front panel of the radio. I place 5th out of 238 in the low power category. Encouraged by this, I decided to try using the SmartSDR software in the September 3 CW Open contest. The screen shot shows how I had things configured for the CW Open. In that contest, the 3830 scores site shows me as scoring 2nd out of 130 entries in the Low Power Category again using the SmartSDR software instead of the front panel of the radio.

Besides tuning the VFO knobs, the only other times I typically touch the knobs on the panel of the radio are to adjust the volume, press the antenna tuner, or possibly engage or turn off a filter. I did not feel having to do these actions with the SmartSDR software took me any significant additional time.

The middle button was programmed to move FlexControl knob between band A and band B

One thing I found I had to be careful of was to make sure the correct band was selected before I started tuning the FlexControl knob. A small yellow triangle on top of the band tuning pointer indicated which band the FlexControl knob was currently tuning. In general, I was able to run on the first band while tuning around on the second band with no problem. However, if I worked a station on the second band, answered and worked a station on the CQing band and then resumed calling CQ, I had to remember



The small yellow triangle on the frequency pointer indicates what band the FlexControl Tuning Knob is connected to.

to move the FlexControl knob back to the second band before tuning around again. Again, a second FlexControl knob would solve this problem.

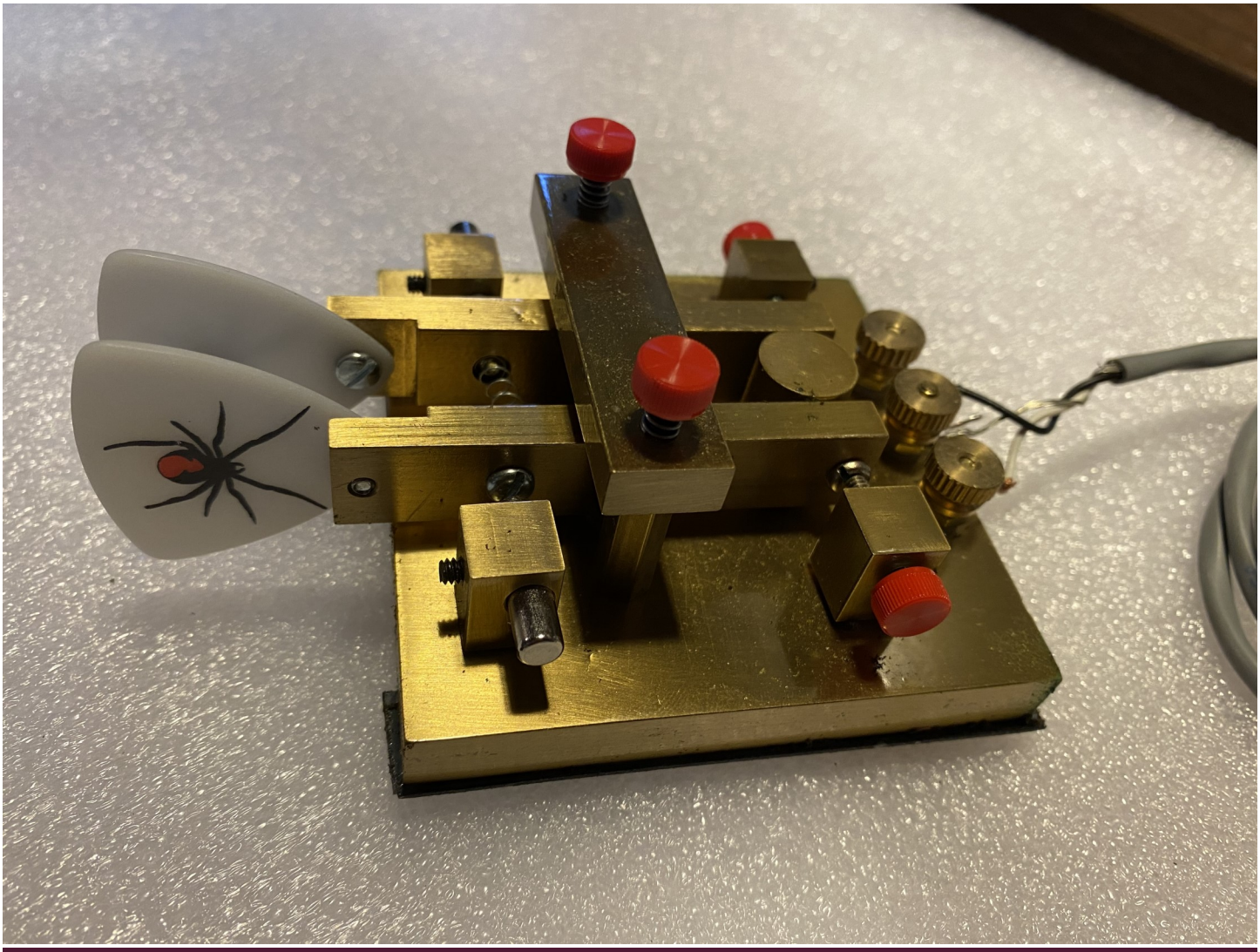
My shack computer is an older DELL desktop (2.7GHZ, 6 GB RAM, 500 GB SSD) running Windows 10 and not upgradeable to Windows 11. I felt it was right on the edge of having enough horsepower to run SDR and N1MM at the same time. There were a few times when I felt a slight delay which I felt was related to the computer horsepower.

Conclusion and Final Thoughts

To be honest, I was surprised at how much I liked operating a high speed CW contest using the SmartSDR software. I was able to keep my eyes focused straight ahead on the screen and get a sense of what was going on in the entire contest without having to move my eyes back and forth between the radio and the computer screen. However, I might have to look into a larger (or second) monitor!

When operating assisted, I did miss the more detailed bandmap available from N1MM versus just showing a subset of the calls on the SmartSDR bandscope. The FlexControl knob really helped and having a second one would be even better. Throwing filters in did take a few mouse clicks but it wasn't bad and not something I had to do that often. Of course I only looked at **CW** contesting with SmartSDR. I think SSB would be similar. For RTTY, I definitely would not have enough screen real estate and would need a second monitor and possibly an upgraded computer.

Finally, I would like to point out that what I was doing was very similar to the experience one might have operating your radio remotely over the internet. Many people are doing that now, of course, using sites such as Remote Ham Radio. Audio latency and CW keying become a bit more of an issue when you are actually remote from your radio. Maybe that is what I will try next! See you in the pileups.



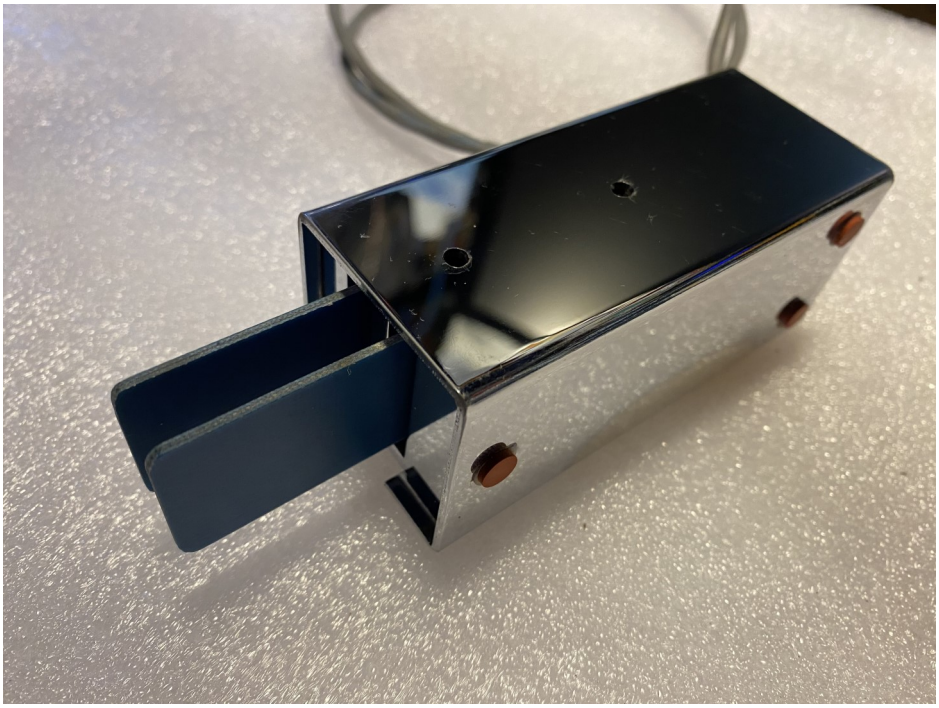
Morse Code Keys and Keyers (continued)

By Greg Widen, KØGW

[*The member-contributed anthology on keys and keyers from the December 2021* Gray Line Report *continues to be one of the most popular articles in some time. We continue to receive contributions almost a year later! If you have a unique key, keyer, or story about them, sent them along, and we will publish them from time to time. — Editor*]

My first key was a straight key, like the one Glenn WØGJ showed in the last Gray Line. I must have gotten it at Lafayette Radio. I took the Novice test in December 1966 and waited impatiently until I got my ticket later in January (remember waiting for the paper?). I don't remember when I got the Vibroplex bug, which I still have, but it must have been early on, because I was running traffic even as a Novice. Doing a lot of CW paid off, because I got my General in time for Field Day in 1967.

The bug was good, but I longed for a keyer. I finally got one of the little Digi-Keyer boards (from what became today's DigiKey company). I built it into a very small box with one of those terrible Cinch-Jones 3-pin connectors for the paddle. I separated the connections for dit and dah on the bug, and used that for a long time as my paddle. Wanting a more compact paddle, I acquired a small item by James Research—it is a dual paddle with each paddle being two pieces of G-10 PC board that flex toward the center contact. Though the travel is adjustable, the tension depends mostly on the G-10 material. It takes a fair amount of force to push the paddle over, so my paddle has a few pieces of steel attached on top to weigh it down to keep it from skidding all over the place.



My call in those days was WB2ZSH (terrible CW call), and I often missed one of the dits, usually on the H. I decided that the problem was that there needed to be a memory for the dits, and I designed and built such a keyer using TTL ICs. I was also able to add a selectable feature to enforce word spacing.

When I got back to ham radio after grad school and early career, I ended up getting the cheaper, black finished Bencher paddle, which I continue to use. I picked up a second, chrome BY-1 from an estate, which I keep on my TenTec 6m rig. I also made a W5JH Black Widow paddle, all in brass, from a kit. Though surprisingly small, it is quite solid, has magnetic and spring tensioning and a very nice feel when I use it for portable operation. The paddles are guitar picks, with the Black Widow logo painted on. I made a keyer in an Altoids tin using one of the little NorCal boards, and I organized a build in my local club where 20 or so people built similar keyers. Now, of course, every rig has a capable keyer built in. Only once computer keying became pervasive did I get a K1EL USB keyer, which is wonderful.

I think using the bug early on caused me to develop a habit of "slapping" the paddle, which I only really unlearned once I got the Bencher. Like Al, I still don't use squeeze keying, even though it's been possible since I got the James Research paddle. Nonetheless, I think modern iambic keyers are more tolerant of my imprecise key closures, so I make fewer mistakes that way.

Dollars for DX

Since the last Dollars for DX report in June, we have only received one new request and revisited one earlier request that had been denied. There have been a fair number of DXpeditions on the air but most have not asked for our support.

The one DXpedition we voted to fund this quarter is K5WE's trip to Chatham Island, ZL7/K5WE. Chatham is #79 on the Clublog most needed list and we voted for a $250 donation. Jeff has done a number of solo trips in the past and this time is joined by his son Scott, KD5GEY. ZL7 will be a new one for 35% of the club members who voted on the donation.

In April the Mediterranean DX Club asked for our support for their J28MD operation in Djibouti. Since J2 is only #120 on the Clublog list and has seen regular activity in the past several years, I rejected their request without even forwarding it to the board. One of our TCDXA members met some of the J28MD team at Friedrichshafen where they mentioned they were having trouble meeting the costs of their trip and were looking for more help. After some discussion on the club email reflector, and among the board of directors, I contacted the team saying that we would revisit their request for funding and asked for the budget for their trip. It took a few tries, but I finally received the standard NCDXF worksheet itemizing their expenses and funding sources, which they asked me not to make public. I must honor that request, but was able to share some of the information with our board of directors. After looking at their budget information, and considering the #120 ranking on the needed list, our board agreed that the team did not rate a TCDXA donation.

Our club's fiscal year ends in September. This year we received six funding requests: 3DAØRRU, 7P7RU, VU4W, J28MD, CYØS, and ZL7/K5WE. We funded five of them for a total of $1850. Back in "normal times", before the virus, we would receive up to a dozen requests and were donating $3000-$5000 per year. Let's hope for a return to the days of easier travel and more DX.

Thank you.

Mike Cizek WØVTT

TCDXA DX Grant Manager

TCDXA OPERATING BUDGET FY 2022
(Sep 2021 - Aug 2022)

End of FY 2022

INCOME		ACTUAL	BUDGET	Actual 2021
Surplus from FY 2021 (balance 8/31/2021)		**12915.93**		*9100.90*
Member Dues 2022 by Cash/Checks/PayPal		4461.62	4400.00	*5122.90*
Door Prize Ticket Sales club share		277.00	500.00	*55.00*
Donatons (estates, wills, etc.)		0.00	0.00	*0.00*
Refunds and Reversals		0.00	0.00	*0.00*
TOTAL INCOME		**17654.55**	**4900.00**	*14278.80*
EXPENSES			**BUDGET**	*Actual 2021*
Member Recruitment/Retention/Zoom		(195.96)	(300.00)	*(160.96)*
Website ISP & Domain Name		(97.77)	(150.00)	*(75.69)*
Office Supplies, Miscellaneous expenses		(15.94)	(50.00)	*(46.22)*
Flowers <SK> and Hospital gifts		(80.63)	(200.00)	*0.00*
Holiday Party Dec		0.00	(500.00)	*0.00*
ARRL Spectrum Defense Fund		(250.00)	(250.00)	*(250.00)*
NCDXF Donation		(250.00)	(250.00)	*(250.00)*
MWA Plaque		(80.00)	(80.00)	*(75.00)*
DXpedition Contributions Total		(6,896.07)	(8000.00)	*(500.00)*
#1 Dxpedition - 3YØJ Bouvet	(5,045.00)			
#2 Dxpedition - 3DAØRU Eswatini	(250.00)			
#3 DXpedition - 7P8RU Lesotho	(251.07)			
#4 Dxpedition - VU4W Andaman Isl	(500.00)			
#5 Dxpedition - CYØS Sable Island	(600.00)			
#6 Dxpedition - ZL7/K5WE Chatham Island	(250.00)			
#7 Dxpedition -	0.00			
#8 Dxpedition -	0.00			
#9 Dxpedition -	0.00			
#10 Dxpedition -	0.00			
TOTAL EXPENSES		**(7866.37)**	**(9780.00)**	*(1357.87)*
NET		**9788.18**	**-4880.00**	
Checking balance		**9788.18**		
PayPal balance		**0.00**		
Cash / Checks on Hand		**0.00**		
NET BALANCE		**9788.18**		

When required, Wells Fargo & PayPal online statements can provide detail not shown in this report.

Note from the President

Bert Benjaminson, WBØN, President

It's time for me to say a few words here again. What should I talk about? The great job our newsletter team does? How happy we are to be back at Pub42 and still putting it on Zoom for all who can't make it to Pub42? Or how about the openings on 10, 12, and 15M recently? Or how FT8 seems to be taking over working DX?

Ok here goes: Our newsletter team is fantastic! Thank-you Mark KØJM, Al KØAD, Dave WØZF, Mark WAØMHJ and last but not least Bill AJ8B you guys rock!

Thanks to Tom ABØJ and Pat KØPC we are getting the Zoom from Pub42 down to near perfection.

I don't know about you all but the last few days 10 and 12M have been great even for antenna challenged ops like me! Thank-you sunspots!

Ok, as for FT8 taking over DX that is a touchy subject with some ops. Of course, you all know where I stand on this and with the amount of you I see on the bands working DX I think it is a hit with the club. Meanwhile let's not forget the original digital mode, CW. It is still a very valuable mode of communication. RTTY is another good digital mode and a lot like FT8 as your computer does most of the work for you, in a contest it's like playing a video game. (I wonder why the FT8 haters don't complain about it too?) As for SSB, it is tough for the little guy but is always good for plan D.

Also, I was very depressed to have to miss Pub42 last month with the positive Covid test, but all it was seemed like a very wimpy summer cold, I get those every summer so does that mean I get Covid every summer? Anyhow I will be back at Pub42 for my Double bleu burger again! Enough rambling on. See you all either at Pub42 or on Zoom or on the air!

73 all de WBØN Bert

Backscatter

Collected by Mark Johns, KØJM

WELCOME ABOARD

TCDXA welcomes these new members:

Bob Beiersdorf, WSØS
Littleton, Mass.

WELCOME, also, to the *Gray Line*'s new Editor, Bill Salyers, AJ8B! Bill has contributed most of the content to this issue. You can read about his history as an editor in his member profile in this issue.

Bill, and the rest of your *Gray Line Report* team, need your help if this publication is going to continue. Anything you are doing related to ham radio is of interest to at least someone else in the club. Write it up! Or at least contact Bill with your ideas so that one of the team can write it up for you.

Remember, this is YOUR TCDXA newsletter. Without member content, it can't continue.