Capers

November - 2017

Candlewood Amateur Radio Association
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CAPERS is the MONTHLY NEWSLETTER of the
Candlewood Amateur Radio Association
Editor: Dan Fegley, W1QK

Next CARA Meeting: Friday, November 10, Stony Hill Fire Station

Doors open at 7:30 for socializing and conversation. Meeting begins at 8:00 p.m.

Tentative Agenda:

- ***Pledge of Allegiance***
- ***Reading of Minutes***
- ***Treasurer's Report***
- ***Repeater Committee Report***
- ***Old/New Business***
- ***Presentation?***

President's Message - de AB1WV

Photo Credit: KB1YHW

Hello All,

What a month. A very informative presentation on transmitter location (fox hunting) was enjoyed by all who attended our October meeting. I also attended the Yagi build party at Jay's QTH a few days later, and received a great lesson on how to use it. Thanks to Jay-N1NRP for putting that on! I can hardly wait to try it out at the fox hunt that Jay and Marlon - KC1EHW are putting on November 12th. It should be a fun time for all.

I participated in the CQWW DX SSB contest in October, and made a few contacts. Not a lot, but more than I have before. One step more in my goal of participating in contesting more this coming season. Speaking of contesting, we are trying to set up another YCCC/CARA joint meeting again in the coming months, and we will keep you all posted here and in the reflector when that happens.

Our repeater committee (mostly Gregory KB1YHW and John W1JGM) have been working hard on our Motorola 2m repeater and our 6M repeater; and indicate that redeployment of them both should be occurring soon. That will be a welcome step in these projects.

Remember that our Holiday Potluck will be happening at our December 8th meeting.

Start planning that now, and get that item for the gift exchange squared away early.

I hope to see you all then, and at our November meeting coming up.

--... ...--
Marcus
AB1WV

Vice-President's Message
de N1NRP

Photo Credit: KB1YHW

Hello club members and friends of CARA:

October was an action-packed month, and the weather was exceptionally mild; with lots of sunny days.

We had a great October meeting, where I really enjoyed the Fox Hunt University presentation given by Karl Zuk - N2KZ.

Thanks to Gary-N1GSA for his coffee brewing expertise, and Marlon-KC1EHW, for setting up the table.

We had a great turn out for the 2-meter tape measure Yagi antenna building session in preparation for the fox hunt that's been scheduled for Sunday, November 12th at 2pm.

Details about this event are included in this issue of Capers; along with the rules and information about the prizes. For those of you who've never participated in a fox hunt, you're in for a real surprise at how hooked you'll be; and will want to do it again.

We had a great time at the "N1GSA Race Day" at On Track Karting in Brookfield. Thanks to all who lapped me on the track; I really wanted to finish in first place. I was impressed with W1QH (aka "Quick Ham") for his ability to stay on the track, and his second-place finish. Maybe that's a result of watching all those NASCAR races on TV.

Congratulations to Eric – KC1EDE, for his first place over-all in the points standing, plus first place with the fastest lap.

I hope everyone enjoys their Thanksgiving holiday with family and friends. I just love those leftovers; especially with lots of homemade cranberry sauce.

This year, I'm inviting everyone to a holiday sit down dinner at the Hearth Restaurant in Brookfield on December 5th at 6 pm. They offer a wide variety of food and drinks at very affordable prices. (Dutch Treat)

Please RSVP to me at JJAlbano@aol.com by December 1st with the number of people in your group that will be attending.

Be advised that this is ***in addition*** to our usual December Pot-Luck Holiday Gathering on December 8 at the Stony Hill FD, including the "Bring a Gift – Receive a Gift". More details about that meeting in the December Capers.

I hope to see all of you there.
73 – Jay, N1NRP

October 13 - CARA Meeting Minutes
de N1GSA

The meeting was called to order by Pres. Marcus Swearingen at 8:00 PM.

The Pledge of Allegiance was recited.

A moment of silence was observed for George Politzi, K2ZZ.

Round Table Introductions were given. 19 Members & Guests were present.

Minutes of the last meeting were given and was passed after 2 changes.

Tom gave the Treasurers Report which ended with a Oct. balance of $6185.45

Jim gave a report on the website. He stated that the site is presently running on the old software. He is working with the new software and troubleshooting this.

Gregory gave an update on the repeaters. There have been 2 technical sessions to make the Motorola machine work as we want it to. These have involved over 8 hrs. of time invested so far. There will be at least one more 5 hr. session to complete the updates to the control system. Kevin presently has the 6-meter system and is checking it. He gave a report on the reason to try to link all 3 systems, being that all systems are at the same location. The main reason for linking is to increase the usable footprint of the system.

John gave an update on New Fairfield Day. All who attended had a good day, good food, and 17 contacts. We were asked to attend again next year.

Fire Prevention Day is tomorrow the 14th.

The SET (simulated emergency test) is going to take place tomorrow the 14th. This year we will try to use a portable repeater and try it out. Feedback was asked for as to reports and accessibility.

Bethel EOC will not be operation this year, they will be operating from the Middle School, which is the secondary shelter.The Goshen repeater is the Control Station for this event. Brookfield EOC will be on the air with VHF& packet. Newtown EOC will be active with Winlink running.

At 8:40, we took a short break to prepare for the presentation of the evening.

N2KZ -Carl Zuk, gave a presentation on Foxhunting.

He noted that Jay and Marlon attended the WECA foxhunt and won. WECA usually has 2 foxhunts per year using the on and off format.

The broadcast is 5 mins and 5 mins of silence followed by 3 min broadcasts from then on.

This is NOT a World Class Foxhunt.

Some use very sophisticated schedules and broadcast power.

The necessary equipment is an HT, preferably with a metal case, a beam type antenna, and a short connecting wire.

The HT should have the best signal strength meter possibly.

An attenuator is a great addition to your system. WHITE PVC is the preferred mast material, other colors are somewhat metallic.

Frequency Harmonics are a great way to attenuate the signal.

You should NEVER use any squelch or PL on the receive radio, it will KILL the signal.

A 4 element is probably the best compromise for selectivity and size.

Set your radio with preset frequencies to eliminate fumbling with finding the correct frequencies.

A map is a wonderful item to use. GPS takes too much time and uses to small a picture.

Accurate time is also required to be listening at the proper time.

Meeting Adjourned at 9:30.

Respectfully Submitted:
Gary S. Adams - N1GSA, Secretary

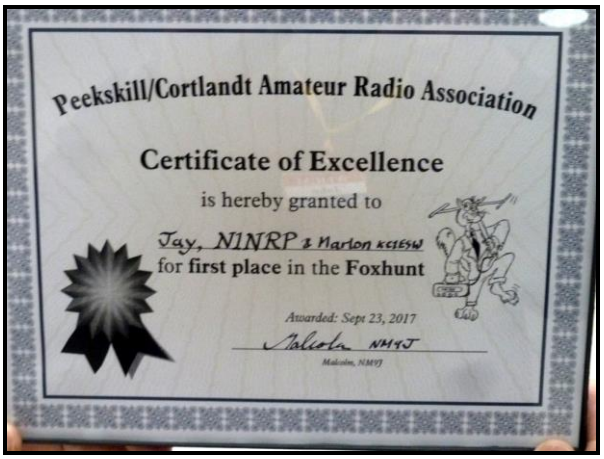
October CARA meeting - Fox Hunt University encore

de W1QK

Photo Credits: W1JGM

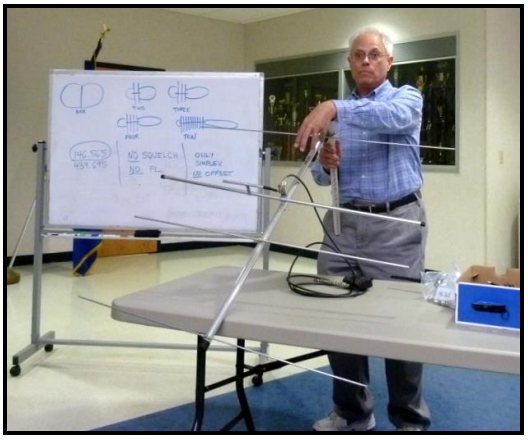
CARA hosted the second performance of Fox Hunt University at the October meeting.

Alan – K2DMV, Marlon – KC1EHW, Jay – N1NRP



Jay – N1NRP, and Marlon – KC2EHW placed first in the Fox Hunt recently sponsored by PCARA. They were presented this certificate at the October CARA meeting.

Karl Zuk – N2KZ Presenting “Fox Hunt University”



A four element Yagi provides the proper gain and pattern that's ideal for fox hunting.

A rear-mounted white PVC mast works best when taking bearings on the fox.

Program the fox's transmit frequency and the second harmonic in your dual-band HT.

Plan on using some attenuation in your setup – and remember not to transmit when it's installed.

Using maps and drawing bearing lines to help "triangulate" the fox's position is helpful.

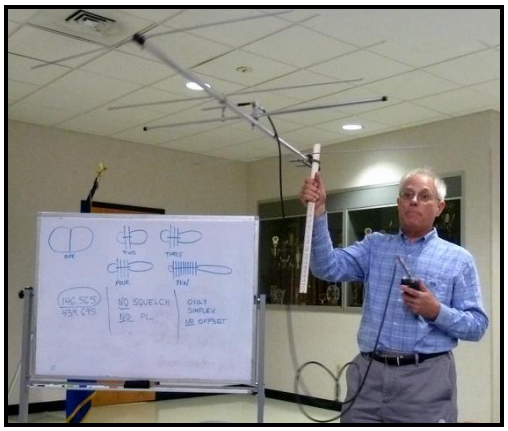
Be aware that reflections can send you off in the wrong direction.

The fox may be using a variety of either horizontally or vertically polarized antennas.

Knowing the geography and roads around of the search location is an advantage.

A Radio-Shack scanner was cleverly used at the meeting to serve as the fox by programming it's frequency so the internal oscillator's frequency landed in the 2M band. Some appropriate calculations using the scanner's IF frequency, and the desired "hunt frequency" within the 2M FM band is required beforehand.

Our thanks to Karl and Alan for making the presentation.



N2KZ "sniffing" for the hidden fox.

CARA holds Tape Measure 2M Yagi building event

de N1NRP & W1QK
Photo credits: N1NRP

As a result of the presentation to the club on October 13, Jay - N1NRP, organized a 2M tape measure Yagi building event at his QTH on Saturday, October 21.

David - KB1ZAC

Report on the Tape Measure Yagi building session:

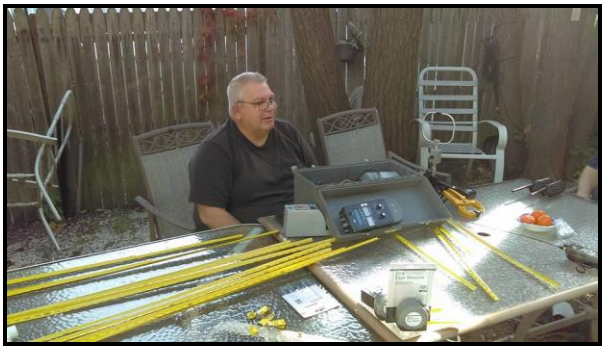
The day was nice, and all involved helped each another successfully build their Yagis.

(L-R) Alan-K2DMV & George-N1GS

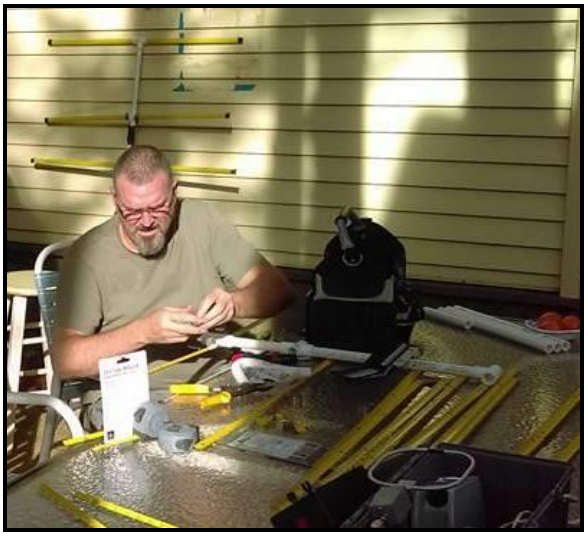
Charlie - KC1IBR

Foreground: WA2NRV- Stanley, WECA Director at Large; Background: Charlie - KC1IBR

Jay - N1NRP, CARA Vice-President



Alan - K2DMV



Marcus - AB1WV, CARA President

(L-R) Charlie - KC1IBR, Joe-KC1IBQ, Fred- KD2GJJ, and Stanley- WA2NRV

After each person completed their antenna, Stanley - WA2NRV, WECA Director at Large, hid a fox in the neighborhood for all to test their newly built antennas.

Afterwards, we enjoyed a wonderful barbecue with homemade potato and macaroni salad - prepared by my wife, Juliana and my daughter, Carolina.
Coffee and cake for dessert.

Those in attendance:

Marcus - AB1WV
David - KB1ZAC
Jay - N1NRP
Marlon - KC1EHW
George - N1GS
Charlie - KC1IBR
Joe - KC1IBQ

Visitors from PEARL:
N2OHH - Vin

Visitors from PECARA:
KD2GJJ - Fred

Visitors from WECA:
WA2NRV - Stanley
K2DMV – Alan

The following article was written by Joe Leggio - WB2HOL, and can be found at:

http://theleggios.net/wb2hol/projects/rdf/tape_bm.htm

Description

This antenna evolved during my search for a beam with a really great front-to-back ratio to use in hidden transmitter hunts. This design exhibits a very clean pattern and is perfect for RDF use. It trades a bit of forward gain in exchange for a very deep notch in the pattern toward the rear. (You could optimize the design for more forward gain, but at the expense of a really good notch in the pattern toward the rear.) It is a design that can be constructed using only simple hand tools (no machine shop needed) and still perform well. It has been duplicated several dozen times by other local hams and has been successfully used as a club construction project.

When I designed this antenna,I had one basic idea in mind. It had to be easy to get in and out of the car when hunting for a hidden transmitter. This would be accomplished by the use of steel "tape measure" elements. These elements could fold easily when fitting the antenna into my car and yet still be self-supporting. I decided to use three elements to keep the boom from getting too long.

Another of my design goals was to use materials that were easy to obtain. I chose to use Schedule-40 PVC pipe and fittings available at my local hardware store for the boom and element supports. These kept the cost for the antenna very low. The element supports consist of PVC crosses and tees.

Since I had never seen any plans for an antenna using elements made from 1-inch wide steel "tape measure," I had to do the design myself. To assist in the design, I used a shareware computer aided Yagi design program written by Paul McMahon VK3DIP. It allowed me to optimize the antenna for the cleanest pattern combined with the best front-to-back ratio.

Performance Predicted by YAGI-AD

GAIN 7.3 dBd
Front-to-Back Ratio
>50 db
3 db Beamwidth
E = 67.5 degrees
3 db Beamwidth
H = 110 degrees

When I first built this beam, I found it needed a matching network of some kind to have a low SWR. My first attempt was a Gamma match. This was unwieldy. The driven element could barely handle the weight and the Gamma match itself was not very flexible. The best matching network turned out to be a "hairpin match." This is simply a 5-inch length of wire that is connected across the feed points of the driven element. The antenna has some capacitive reactance without the matching network. The 5-inch length of wire has just enough inductance to cancel the capacitive reactance. This resulted in a better match than anything else I had tried.

The wire I used for the hairpin match was enamel insulated 18 - gauge solid. Other hams who have duplicated this beam have used just about anything they had on hand. 14-gauge house wire works well, so does a length of 22-gauge hookup wire. It does not seem to matter if it is stranded or solid, use whatever you have available. This results in a very good match across the two-meter band once you have adjusted the distance between the halves of the driven element for minimum SWR. (1 inch apart on my prototype).

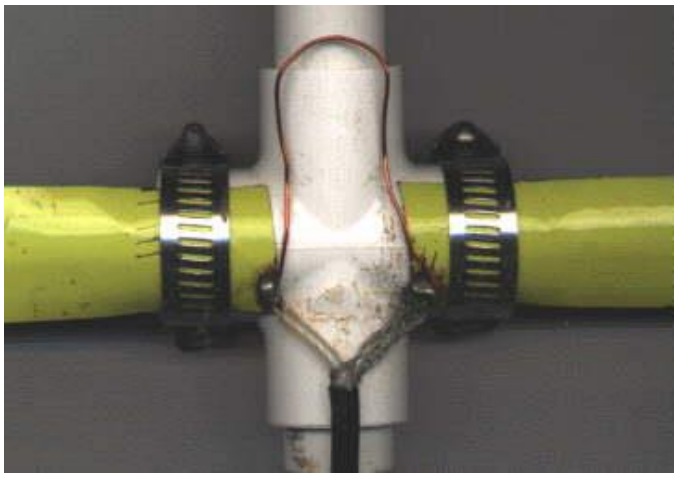
I used a pair of shears to cut the tape measure elements to length. An old pair of scissors will probably do as well. No matter how you cut the elements be very careful. Those edges are very sharp and will inflict a nasty cut if you are careless. Use some sandpaper to remove the really sharp edges and burrs resulting from cutting the elements to size. I put some vinyl electrical tape on the ends of the elements to protect myself from getting cut. I encourage you to do the same. It will probably be best if you round the corners of the elements once you cut them. Wear safety glasses while cutting the elements. Those bits of tape measure can be hazardous.

The RG58 coax feedline is connected directly to the driven element. No matter what method you use to attach the feedline, make sure you scrape or sand the paint off the tape measure element where the feedline is attached. Most tape measures have a very durable paint finish designed to stand up to heavy use. You do not want the paint to insulate your feedline connection.

If you are careful, it’s possible to solder the feedline to the element halves. Care must be taken since the steel tape measure does not solder easily and since the PVC supports are easily melted. You might want to tin the tape measure elements before mounting them to the PVC cross.

If you decide not to solder to the tape measure elements, there are two other methods that have been used to attach the feedline. One method employs ring terminals on the end of the feedline. The ring terminals are then secured under self-

tapping screws which hold the driven element halves. This method does not allow you to tune the antenna by moving the halves of the driven element. 6-32 bolts and nuts could be used if holes are drilled in the elements near the ends. If the bolt heads are placed nearest the PVC fitting, you could secure ring-terminals with nuts and lock washers. Another possibility is to simply slide the ends of the feedline under the driven element hose clamps and tighten the clamps to hold the ends of the coax. I know this is low-tech, but it works just fine.

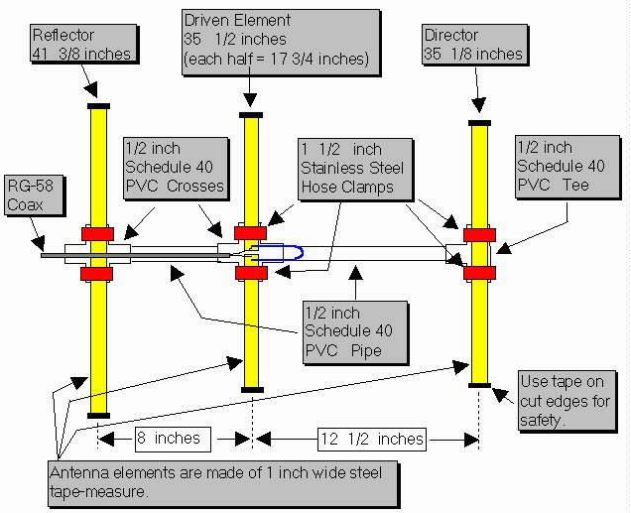


Stainless steel hose clamps are used to attach the driven element halves to the PVC cross which acts as its support. This has the added benefit of allowing you to fine tune your antenna for lowest SWR simply by loosening the hose clamps and sliding the halves of the driven element either closer or further apart. By using the dimensions specified, I found that the SWR was 1:1 at 146.565 Mhz (our Fox-Hunt frequency) when the two elements were spaced approximately 1 inch apart. Figure 1 shows the method used to attach the driven element to the PVC cross.

I used 1 1/2-inch hose clamps to attach all the elements on my prototype beam. Others who have duplicated my design have used self-tapping screws to attach the elements to the PVC crosses and tees. Performance is the same using either method. The screws are much less expensive but they do not hold the elements as securely. If you do not use 1/2-inch PVC fittings but instead use 3/4 inch, make sure the hose clamps you buy are large enough to fit.

If you wish a slightly neater looking beam, use the self-tapping screws. If you do not mind spending a few more dollars for the hose clamps, use them instead. If I were to build another beam I would use screws for the director and reflector, and hose clamps for the driven element. That would give me the best of both methods.

Rubber faucet washers have been used by some builders between the tape measure element and the PVC fittings on the director and reflector. These allow for the tape to fit the contour of the PVC fitting and will make the antenna look better. Now you know what to do with those washers left over from the assortment you once purchased; You know the ones I mean, the washers that do not fit the faucets you have in your house. If you are an apartment dweller, ask around, these things are stashed in almost every homeowner’s basement or garage.



Construction:

Cut a length of tape measure to 41 3/8 inches. It will be the Reflector element. Cut two lengths of tape measure to 17 3/4 inches. These will be used for the Driven element. Cut one length of tape measure to 35 1/8 inches. It will be used for the Director. Once you have cut the tape measure to length, put vinyl tape on the cut ends to protect yourself from the sharp edges. You will want to scrape or sand off the paint from one end of each of the driven element halves so you can make a good electrical connection to the feedline.

If you are planning to solder the feedline to the driven elements it is best to tin the elements first before attaching them to the PVC cross. If you don't, the PVC will melt as you apply heat to the element. It would be a good idea to also take the time to form the wire used for the hairpin match into a "U" shape with the two legs of the "U" about 3/4 inch apart. Tin the ends of the hairpin if you plan on soldering it to the driven element. If you tin 1/4 inch of each end of the hairpin it will leave 4 1/2 inches to shape into the "U".

You will need to cut two lengths of PVC pipe to use as the boom. One should be cut to 11 1/2 inches. It is used to form the boom between the Director and the driven element. The other piece of PVC should be cut to 7 inches. It will be used between the Reflector and the Driven element. Just about any saw will cut through the soft PVC pipe. I used a hacksaw. When we mass produced this antenna as a club project, we marked the pipe and used a portable jig saw to cut the lengths in assembly line fashion. It took longer to measure the pipe than to actually make the cuts. Since the pipe is available in ten-foot lengths, you can make a few beams from a single 10-foot length. In any case, you might want to cut a few extras lengths for your friends. They will want to duplicate this once they see your completed antenna.

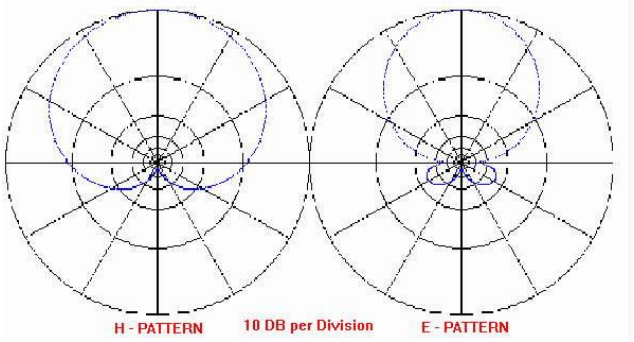
At this time, you can pre-assemble the PVC boom, crosses and tee which will support the tape measure elements. I did not use any cement or glue when I assembled mine. The PVC pipe is secured in the fittings with a friction fit.

The hose clamps I used are stainless steel and have a worm-drive screw which is used to tighten them. They are about 1/2-inch-wide and are adjustable from 11/16 inch to 1 1/2-inch diameter. Attach the tape measure elements to the PVC fittings as shown in the accompanying drawing. It is normal for the Reflector and Director elements to buckle a bit as it is tightened to the PVC Tee and Cross. You can eliminate this buckle if you use the washers and self-

tapping screws to attach these elements instead of the hose clamps. I do not think the beam will withstand as rough a treatment as when hose clamps are used.

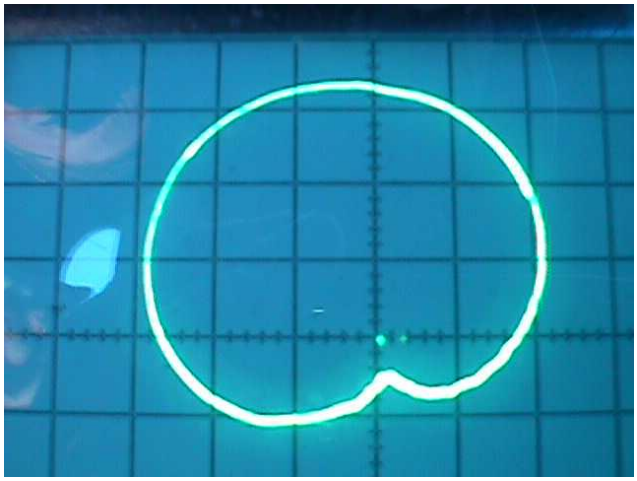
How does it perform?

Once you have completed your beam you probably will be interested to see if it performs as well as the computer predicted. The SWR should be less than 2:1 across the entire two-meter band. The front-to-back ratio is predicted to be very good with the antenna exhibiting a very deep notch in its pattern towards the rear. The YagiCad 4.1 program produced these antenna pattern graphs showing the pattern you should expect. If you would like to experiment a bit with this program, the yagi specification file for this tape measure beam is available for download here. Simply download the YAGI-CAD program and put the tape measure beam design file in the same directory. You will then be able to experiment with the design.
Note: under Windows95, only the first .yag file will show in the OPEN-FILE menu. You can either move all the other .yag files to a sub-directory or re-start the computer in MS-DOS mode. It works fine there. (I really do not know why this occurs, but will blame Microsoft)



How does the tape measure beam "measure up?"

WB4SUV and WA6EZV used a storage scope connected to a copy of this antenna constructed by KC8FQY and provided the following picture of the actual antenna pattern. I am very happy to see that the computer prediction of a clean pattern with a really great front-to-back ratio was accurate. What do you think?



Summary

This beam has been used on Fox-Hunts, on mountain tops, at local public service events, outdoors, indoors in attics, just about everywhere. The SWR is typically very close to 1:1 once adjusted. Front to back performance is exactly as predicted. The null in the rear of the pattern is perfect for transmitter hunts. When tested using a sensitive field strength meter and a low powered fox transmitter, full scale readings were seen from a distance of ten feet. With the same field strength meter, I was able to point the antenna away from the transmitter and move the reflector element to within a few inches of the transmitter antenna and

still not see a reading. I don't have the facilities to verify a 50 db notch as predicted by the Yagi-Cad software but It sure seems close. The flexible elements have taken a lot of abuse. My antenna has seen a lot of use and has held up quite well. Best of all, when on a fox-hunt, this beam is a breeze to get in or out of the car.

Marvin Johnston also offers the attenuator circuit board mounted inside the boom of a WB2HOL-style measuring-tape beam. Actually, the circuit is inside a plastic pass-through electrical box (with waterproof gasket) that is incorporated into the PVC pipe boom. While holding the mast of the beam, you can adjust the attenuator with the thumb of the same hand. Kits are now available directly from Marvin.

A complete offset attenuator with enclosure and connectors, ready to use, is available from this model by Arrow Antennas, shown below. It uses a miniature coin-cell lithium battery. A product review is in my Winter 2006 Homing In column for CQ-VHF Magazine.

Transmitter hunting

From Wikipedia, the free encyclopedia

Transmitter hunting (also known as T-hunting, fox hunting, bunny hunting, and bunny chasing), is an activity wherein participants use radio direction finding techniques to locate one or more radio transmitters hidden within a designated search area.

This activity is most popular among amateur radio enthusiasts, and one organized sport variation is known as amateur radio direction finding.

Types of transmitter hunts

Transmitter hunting is pursued in several different popular formats. Many transmitter hunts are organized by local radio clubs, and may be conducted in conjunction with other events, such as a radio enthusiast convention or club meeting. Before each hunt, participants are informed of the frequency or frequencies on which the transmitters will be operating, and a set of boundaries that define a search area in which the

transmitters will be located. Transmitter hunters use radio direction finding techniques to determine the likely direction and distance to the hidden transmitter from several different locations, and then triangulate the probable location of the transmitter. Some hunts may include limits on the amount of time allowed to find a transmitter. Although many transmitter hunts are conducted just for the fun of the activity, some more competitive hunts will recognize winners in publications and offer awards, such as medals or trophies.

Mobile transmitter hunts

Mobile transmitter hunts are organized events where participants travel exclusively or primarily in motor vehicles. Most mobile transmitter hunts use VHF transmitters and receivers. Some participants use radio direction finding equipment and antennas mounted on a vehicle, whereas others use antennas that are temporarily deployed in an open window or an opening in the vehicle roof that can be easily rotated by hand while the vehicle is in motion. Other participants employ handheld antennas and radios that can only be used when the vehicle is stationary. Some mobile transmitter hunts require participants to leave their vehicles and proceed on foot to reach the actual location of the radio transmitter. The winner of a mobile transmitter hunt can be either the first vehicle to arrive at the hidden transmitter, or the vehicle that travels the shortest overall distance to locate the hidden transmitter. Mobile transmitter hunts are more popular in North America than other parts of the world.

Pedestrian transmitter hunts

A regulated sport form of transmitter hunting by runners on foot is called Amateur Radio Direction Finding, known worldwide by its acronym, ARDF. It is an amateur sport that combines the skills of orienteering and radio direction finding. ARDF is a timed race in which individual competitors use a topographic map and a magnetic compass to navigate through diverse, wooded terrain while searching for hidden radio transmitters. ARDF is the most popular form of transmitter hunting outside North America.

Fixed location transmitter hunts

Some transmitter hunts feature a "mail-in" competition, in which teams in fixed locations work together to locate hidden transmitters, then secretly give the coordinates to the organizers without actually traveling to the transmitter location. The team which provides the closest coordinates wins, thus a team which believes that the transmitter is in the northwest parking lot at 2nd and Elm (if it actually is there) will beat a team which says that the location is 2nd and Elm. This type of hunt enables participation by contestants who are unable to travel, such as shut-ins, school groups, etc., and requires a greater level of skill and coordination.

Equipment

Directional antennas are popular choices for transmitter hunting. A directional antenna is more sensitive to received signals in some directions than others. When a directional antenna is rotated, a received signal will either increase or decrease in signal strength, information from which a skilled hunter can determine the likely direction to the transmitter. The most popular designs for mobile transmitter hunts are quad antennas with three to five elements. Special design considerations include adequate strength to withstand the wind at highway vehicle speeds and ease of repair after collisions with overhead tree branches. In mobile transmitter hunts, directional antennas are often turned by hand while the vehicle is in motion.

Some radio direction finding equipment popular with mobile transmitter hunters operates on the time difference of arrival principal. Two identical antennas are mounted a precise distance apart from one another.
Specialty electronics compare the phase of the signal received on each antenna and determine whether the signal is coming from a direction closer to one antenna or the other. This information is commonly displayed with LEDs on a display. These devices are popular for mobile transmitter hunts where participants have to exit their vehicles and proceed to the transmitter location on foot.

Some mobile transmitter hunters use equipment based on exploiting the principle of Doppler shift. At least four antennas are mounted in a precise geometric pattern, often on the roof of a vehicle. Specialty electronics computes the amount of Doppler shift present in the received signals and determines a probable direction from which the

signal originates. The direction is commonly displayed using LEDs oriented in a circle or a straight line. Advanced units can use a compass or GPS receiver to compute a direction relative to the instant motion of the vehicle.

Attenuators are used by transmitter hunters to reduce the received signal strength of a transmitter. Attenuators are most often used when approaching the near vicinity of a transmitter, in order to keep the received signal strength within a usable range.

References

- *Moell, Joe (2009-03-11).* "Let's Go T-Hunting".
- *Sakane, Jim (2005-10-02).* "Foxes Choice Hunt".
- *Baker, Linda.* "Suzhou: City of canals, semiconductors and hidden radios". *Retrieved 2008-03-25.*
- *N6XFC &, N6AIN.* "Southern California Transmitter Hunters". *Retrieved 2008-03-25.*

The first and only full-length book for radio hobbyists on all aspects of Radio Direction Finding (RDF):

TRANSMITTER HUNTING Radio Direction Finding Simplified

By Joseph D. Moell, KØOV, and Thomas N. Curlee, WB6UZZ

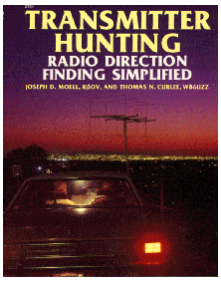
7 X 9 inches, 323 pages, 235 illustrations
Publication #2701 from TAB Books, division of McGraw-Hill

First edition, 17th printing - - ISBN number 0-8306-2701-4

Written by two "T-hunters" with years of practical experience in both competitive and enforcement RDFing, this book puts together for the first time a compendium of both tried-and-true and newly-developed methods of closing in on the target. There are careful reviews of commercially available DF sets and complete construction plans for inexpensive, easy-to-make homebrew equipment, such as the **Roanoke Doppler** and the Happy Flyers RDF set. Computer buffs will appreciate the complete listings for two RDF triangulation programs. There are even some "secret weapons" to put you ahead of the competition.

Mobile T-hunting (also called foxhunting and bunny-hunting) can help police the ham bands, save lives, and be just plain fun. On-foot radio-orienteering (also called foxhunting and ARDF) is becoming a world-wide sport. If you've never been out on a transmitter hunt, you've missed some real excitement. Getting started can be easy and fast. You may have almost everything you need right now! This book will help you with equipment choices and teach you the right techniques.

Partial list of topics:



- Using Yagi antennas for RDF
- Building and using VHF quad antennas
- Reviews of commercial dopplers
- Plans for the **Roanoke Doppler**
- Marine RDF equipment
- Loops for HF and VHF
- External S-meters
- Audible S-meters
- Review of the Little L-Per RDF

- Plans for the Happy Flyers RDF
- Review of the BMG SuperDF
- Equipment takealong lists
- Maps and triangulation
- Cooperative hunting
- External attenuators, with circuits
- Internal attenuators, with circuits
- Plans for an automatic attenuator
- Vehicle mountings
- Direction indicators for masts
- Search/Rescue agencies
- Interferometer techniques
- Airborne hunting techniques
- Weak signal techniques
- Close-in sniffing techniques
- Build the Shrunken Quad for sniffing
- Build the Sniff-Amp field strength meter for sniffing
- International-rules on-foot foxhunting
- Creating rules for mobile hunts
- Hiding tricks to foil hunters
- Build tone/ID boxes for hiding
- Adcock RDFs
- Fixed site RDFing
- RDFing from satellites
- Tracking down cable TV leakage
- Tracking down power line noise
- Commercial/military RDF sets
- Computerized triangulation
- Dealing with jamming and malicious interference

TRANSMITTER HUNTING --- Radio Direction Finding Simplified (THRDFS) is easy to read with plenty of clear photos and drawings. Hams, SWLs, and users of 2-way radio technology (public safety, industrial, government, business) will all find it valuable. Search and Rescue volunteers and professionals are using it as a training manual.

How To Get It

THRDFS is sold by many Amateur Radio equipment dealers and electronics stores. You may also order it by mail from the authors. Book price is **$30.00 each, plus postage** (normally $6.45 to USA, see below). Single-book orders to addresses in the USA are now shipped via Flat Rate Priority Mail at $6.45. Orders for larger quantities may be shipped by other means including Parcel Post or Book Rate (Media Mail). Inquire by e-mail for quantity rates.

To order by mail, send check or money order to **Joe Moell, PO Box 2508, Fullerton, CA 92837**. Sorry, no C.O.D.'s or corporate Purchase Orders.

CARA 2M Repeater Update:

de W1JGM

As of October 31, Greg and I have the Motorola MSF 5000 and the Arcom RC 210 controller ready to go back into test service at the New Fairfield site to prove operation once again. The cooling fans are installed and thermostatically controlled; solving the transmit drop-out issue due to PA heating. The DTMF codes have been programed to control various repeater functions remotely. A new courtesy tone is in use - along with several new voice ID messages. There are many new features incorporated into the system. Once the repeater is placed on the air and successfully passes our tests, we will schedule moving it to Spruce mountain. I would like to accomplish this by end of November or sooner.

CARA Fox Hunt Announced:

de N1NRP & W1QK

Club Members and Friends of CARA:

Based on the November contest schedule, CARA will be holding the November fox hunt on Sunday, November 11 at 2 PM. We will be meeting at the boat launch at the Candlewood Town Park, 36 Hayestown Rd., which will be the starting point to look for the fox, Afterwards, we'll meet at Three Brothers Diner in Danbury for socializing.

CARA Fox Hunt Rules

1. All participants; (name and callsign) are required to register with the Referee at the official starting place before the hunt begins.

2. Hunters will be designated as being in either the Yagi or Doppler equipment category.

3. Hunters may be comprised of only an individual or a group.

4. *Hunters are encouraged to use any and all available resources to locate the fox (that does not detract from the spirit of the hunt)*

5. *Hunters are solely responsible for the safe operation of their vehicles, and proper operation of all equipment in accordance with FCC rules and regulations.*

6. *If Hunters must leave the hunt prior to the conclusion, they MUST check out with the Referee, so they are accounted for.*

7. *If the fox is an automated station, you must find the actual location of the fox, not the person in control of it.*

8. *Upon discovery of the fox, Hunters are to make no reference to the location, nor the discovery itself.*

9. *The CARA Fox Hunt Referee will record the search times for each individual and/or team.*

10. *The first-place hunter and each member of the first-place team will win a banana split with syrup at Three Brothers Diner at CARA's expense.*

11. *Certificates will be prepared and presented to the first place, second place, and third place hunter or team for each category.*

Optional:

CARA Fox Hunt Participation Certificates will be prepared and presented to hunters who registered at the start of the hunt, **and** submitted some brief written comments within two weeks of the end of the event that includes at least one picture of their team, antenna, vehicle, etc. to the Capers Editor; to be included in the next CARA Capers. (You don't need to reveal any hunting secrets)

Three Brothers Diner

242 White St, Danbury, CT 06810

Gray fox is widespread in Connecticut. They have a mostly grizzled gray fur coat that is accented by other patches of color. Rusty red fur is on their neck, chest, the back of their ears, and under their tail. Their throat, belly and inside of their ears are white, and there are black markings on their faces. Their 8 1/2 to 17 1/2-inch tails are bushy and gray with black fur along the top as well as at the tip. They have pointy muzzles that are broader and shorter than a red fox's, and a stockier build than their red counterpart.

Gray fox range through most of the eastern US, even pushing into southern Maine over the last several years. They are usually most active at dusk and at night. Gray fox prefers wooded or brushy habitat and will live in residential areas with those characteristics. As the amount of farmland in Connecticut has decreased and more woods have returned, the population of gray fox has increased.

Source:
http://wildlifeofct.com/gray%20fox.html

Additional Resources:
Championship Radio Foxhunting News From USA and Around the World

http://www.homingin.com/farsnews.html#cinci17

http://www.homingin.com/intlfox.html#rules

ARRL Nutmeg Hamfest and Connecticut Section Convention

ARRL CT Section Manager, Chuck Motes, K1DFS, presents updates:

1. A new club was formed in Ashford, CT
2. Comments about the upcoming MARS activity on 60M.

ARLB019 Communications Interoperability Training with Amateur Radio Community Set

QST de W1AW
ARRL Bulletin 19 ARLB019
From ARRL Headquarters
Newington CT October 24, 2017
To all radio amateurs

ARLB019 Communications Interoperability Training with Amateur Radio Community Set Elements of the US Department of Defense (DOD) will conduct a "communications interoperability" training exercise November 4-6, once again simulating a "very bad day" scenario. Amateur Radio and MARS organizations will take part.

"This exercise will begin with a national massive coronal mass ejection event which will impact the national power grid as well as all forms of traditional communication, including landline telephone, cellphone, satellite, and Internet connectivity," Army MARS Program Manager Paul English, WD8DBY, explained in an announcement.

During the exercise, a designated DOD Headquarters entity will request county-by-county status reports for the 3,143 US counties and county equivalents, in order to gain situational awareness and to determine the extent of impact of the scenario. Army and Air Force MARS organizations will work in conjunction with the Amateur Radio community, primarily on the 60-meter interoperability channels as well as on HF NVIS frequencies and local VHF and UHF, non-Internet linked Amateur Radio repeaters.

Again, this year, a military station on the east coast and the Fort Huachuca, Arizona, HF station will conduct a high-power broadcast on 60-meter channel 1 (5330.5 kHz) on Saturday from 0300 to 0315 UTC. New this year will be an informational broadcast on Sunday, on 13483.5 kHz USB from 1600 to 1615 UTC. Amateur Radio operators should monitor these broadcasts for more information about the exercise and how they can participate in this communications exercise, English said.

"We want to continue building on the outstanding cooperative working relationship with the ARRL and the Amateur Radio community," English said. "We want to expand the use of the 60-meter interop channels between the military and amateur community for emergency communications, and we hope the Amateur Radio community will give us some good feedback on the use of both the 5-MHz interop and the new 13-MHz broadcast channels as a means of information dissemination during a very bad day scenario."

Contact Paul English for more information or questions about this exercise via email at, mars.exercises@gmail.com .

CARA Holds Family Race Day

de N1NRP & W1QK

Photo Credits: N1NRP

CARA members and family ventured to On Track Karting in Brookfield, for what I've called the "N1GSA Race Day" on Sunday, October 22nd.

There were nine of us, and the winner of the race was determined by the fastest lap.

Jay and his daughter, Carolina

BROOKFIELD TRACK

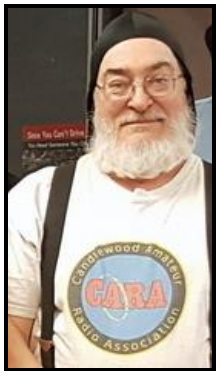
We've got one of the longest and fastest indoor tracks in the country. Challenge yourself (and your friends) through more than a dozen turns along 1,600 feet of track.

Lap Results:

1. Eric - KC1EDE: 40.243
2. Harlan - W1QH, (aka QuickHam): 40.524
3. Carolina Albano: 43.145
4. Isabel - KC1EHW's daughter: 45.585
5. Gary – N1GSA, (aka Leadfoot): 48.727
6. Jay – N1NRP (Jaybird) : 48.875
7. Marlon – KC1EHW: 49.549
8. David - KB1ZAC: 52.407
9. Tom – WX1T: (aka AceRogers): 55.717.

But in my mind, we were all winners!

Other Data:



"QuickHam" - W1QH, came in first during the 8-minute race with an average time of 44.176 seconds.

Eric- KC1EDE, was second in the 8-minute race with an average lap time of 45.363 seconds. He had the fastest lap time.

Afterwards, we enjoyed swapping stories while enjoying Jersey Mike's world-famous "A Sub-Above" sandwiches.

73, JAY - N1NRP

Connecticut Phone Net – CPN

Meets daily: M-F 6:00 p.m. 3.973 MHz.
Sunday: 10:00 a.m. 3.965 MHz.
CARA Contributions:
Wednesday Net control: Harlan, W1QH
Net Manager: Tom, WX1T

Weekly Sunday CARA NETS:

CARA 10M "Rag Chew Net":
28.490 MHz. 7:00 pm Sunday
CARA 2M NET:
W1QI Repeater – 7:30 pm Sunday
CARA PSK Digital NET:
28.100 MHz. 7:00 pm Tuesday

Worked All Connecticut Counties Award, WACC – Sponsored by CARA:
http://www.cararadioclub.org/activities

Upcoming Contests, Hamfests & Meetings:

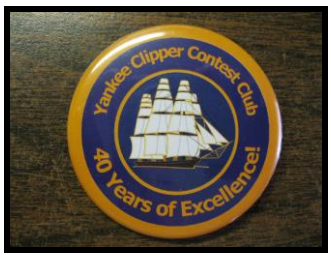
Nov. 4-5: ARRL Sweepstakes - CW
Nov. 11: OK/OM Contest, KY QSO Party
Nov. 13: ARES Region 5 South Meeting – Danbury EOC
Nov. 18: ARRL Sweepstakes - SSB
Nov. 24-26: CQWW DX CW Contest
Nov. 1, 8, 15, 22, 29 CWT 1300Z, 1900Z, 0300Z
Nov. 27 ARES Region 5 Meeting

New England and other local hamfests:
http://web.mit.edu/w1gsl/Public/ne-fleas

Complete Contest calendar at:
http://www.hornucopia.com/contestcal/contestcal.html

Upcoming CARA Calendar:

Nov. 10: CARA meeting - doors open at 7:30
Nov. 12: CARA Fox Hunt - 2:pm Danbury Candlewood Town Park
Nov. 24: Monthly CARA planning meeting – SHFD – Begins at 8:00 pm
Nov. 27: December Capers input deadline



YCCC News

The next scheduled meeting of the Yankee Clipper Contest Club will be Sunday December 3 from Noon to 4pm Auburn-Webster Elks Club - Holiday Dinner

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Connecticut ARES Region 5 conducts a weekly net each Wednesday at 7:30 p.m.

New Milford: 146.730 MHz -600 kHz PL 192.8 Hz
NARA analog repeaters for this net:

Washington: 441.850 MHz +5 MHz PL 77 Hz
Woodbury: 444.800 +5 MHz PL 192.8 Hz
Warren: 53.970 MHz –1 MHz PL 110.9 Hz
Please check in – All are welcome.

2017 CARA Ham Exam Schedule:

2017 Amateur radio exams sponsored by CARA at the Stony Hill FD:
December 2 Starting at 11:30 a.m.
Walk-ins are welcome, but it's helpful if candidates call or e-mail Frank Sileo, N1PE, at 203-438-0218, or send a message to frsileo @ att.net

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Other upcoming VE exam sessions:

Sponsor: Northwest Ambulance
Location: Litchfield Firehouse, 258 West St. Litchfield, CT
Time: 7:00 PM (Walk-ins allowed)
Nov. 14, Dec. 12.
Please feel free to direct questions to: w8zy@hotmail.com
Walk-ins are welcome and we will be testing for all classes.

CARA used N1MM+ Contest Logger during the ARRL 2017 Field Day.

For a free download, visit:
https://n1mm.hamdocs.com/tiki-index.php

Vintage GATES BC-1T KW AM Broadcast Transmitter Restoration at ARRL HQ Laboratory

de W1QK

A brief visit with Bob Allison, WB1GCM by W1QK and NG1R on September 8 on the way to Boxboro…

Bob Allison, WB1GCM
Product Review Engineer
Areas of expertise: Product Review testing, Vintage Radios, AM Operating, Digital Modes, Ham Radio History, Servicing Equipment, Teaching, Kit Building, Contesting, Public Speaking, and rag-chewing!

Bob explained how this vintage 50's Gates BC-1T KW AM broadcast transmitter was moved to the ARRL lab after being restored by Dan Thomas - NC1J, at the Vintage Radio and Communications Museum of Connecticut, where both are quite active and involved.

It was originally acquired from the National Capitol Radio and Television Museum in Bowie, MD.

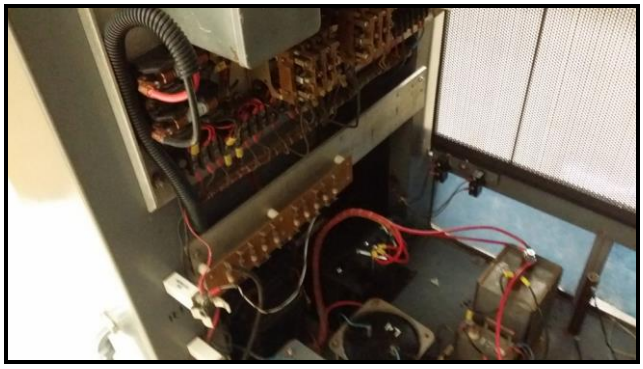
The transmitter is on loan from the Vintage Radio & Communications Museum of CT, located in Windsor, CT.

Located only 20 minutes North of the ARRL, this museum features communications technology from the 1800's to the 1950's; including a fine collection of amateur radio equipment. It's open Thursday thru Sunday, offering guided tours to the public.

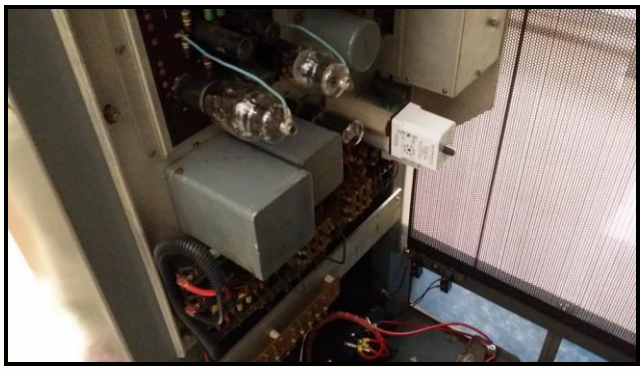
PA Tuning controls.

Full metering of all operating parameters is included.

Audio input XLR jack on the side.

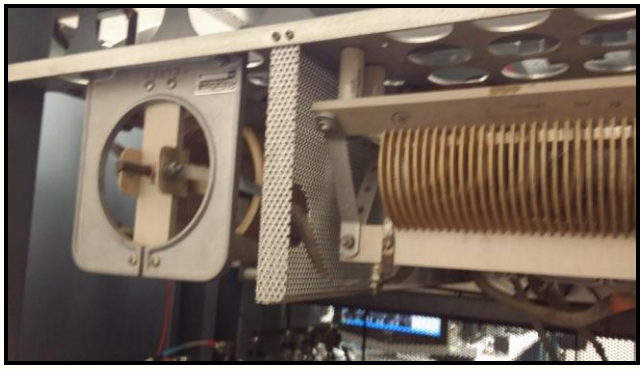


Bob opened the back cover of the BC-1T to allow me to shoot several internal pictures. This refurbished broadcast transmitter will eventually will be converted and used at W1AW on 75M AM operation.

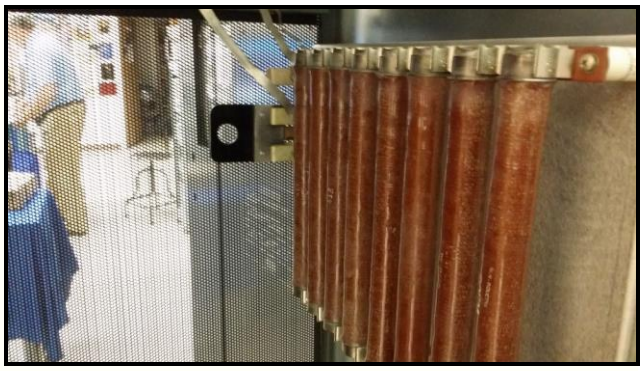


The plate voltage, modulation, and bias supply tranformers and filter capacitors are attached to the bottom of the cabinet.

A robust pair of 833's modulating a second pair of 833's in the power amplifier.



The tank circuit is attached to the top of the cabinet.



The high voltage power supply bleeder resistors are attached to the cabinet wall.

The output SO-239 connector is on the top.

Bob also showed us a GATES audio "control board" that was previously used at WPLR-FM in New Haven, and will be re-used along with the GATES BC-1T. Of course, a PTT circuit will need to be engineered and installed.

Many thanks Bob, for the tour of this 50's era "oldie but goodie"; and we're looking forward to hearing them both back on the air from W1AW.

Here's a link to several pages describing how W4NEQ restored and converted his GATES BC-1T to 160M:

http://w4neq.com/htm/gates.htm

Here's yet another link to a complete description of how WD8DAS restored and converted a BC -1T to 160M. There's also a link to the technical manual there too!

http://www.qsl.net/wd8das/gates.html

ARRL The national association for AMATEUR RADIO™

ARRL Contest Update

NEWS AND TECHNIQUES FOR THE ACTIVE OPERATOR

Public Service
Advocacy
Education
Technology
Membership

CONVERSATION

NEW HF OPERATORS - THINGS TO DO

Putting a serious effort into a major HF contest demands being at the rig for a significant number of consecutive hours. Make it easier on your body and improve your scores by making sure the ergonomics of your station are good. You don't want to have a sore neck or back muscles. There are a lot of sources of information on the topic of computer ergonomics, but things that matter include desk height, good posture, monitor viewing angle, and having every control within easy reach.

Station automation can reduce fatigue, which makes operating in the wee hours less error prone. Strive to use the operator to make contacts, and use technology to do everything else, like switching antennas.

Thanks to the ARRL:

Dxpedition to: Annoban Island – 3C0L & the Republic of Equatorial Guinea - 3C1L

Activated by Yuris, YL2GM & Kaspars, YL3AIW

It's very interesting to hear what it sounds like at the other end of a DXpedition's pileup, and learn how they tune around to pick out stations; especially when "operating split".

Follow this link to the YouTube Video of 3C0L's recent 160M pileup to see how it's done. A transceiver with a second receiver or a built-in second receiver, or a transceiver like my Yaesu FT-1000MP is perfect for DX chasing, especially for operating split.

Please listen to find out where the DX station is listening before you join the pile-up.

3C0L 160m, rx with simple inverted V dipole at 12m

Callsigns: **3C1L** (Equatorial Guinea) and **3C0L** (Annobon)
Dates: From October 9 to yet unknown date, 2017

http://www.lral.lv/3c0l_3c1l/index.html

NEWS AND STATUS

November 2 - Update

13:30 GMT
Good news. Yuris finally settled issues in Malabo and is on his way back to QTH in Luba with 2nd K3 transceiver, coffee and cigarettes. So we can expect 2 signals on the air soon. And may be SSB again. Because Kaspars = "CW machine gun", Yuris = SSB (mainly) and sometimes CW.

08:40 GMT
Kaspars reply to SMS with request to listen for Oceania on 20m: *I have tried numerous times. But European HAMs are misbehaving and calling on top of areas I am trying to listen for.*

Guys in Europe and elsewhere. Please listen for operator instructions and obey them! If 3C1L calls for specific area (VK/ZL/JA/NA/Asia e.t.c.) and you are in other part of the world, stop calling! Some areas, like Asia and Oceania have short propagation windows to 3C. Europe has much longer openings and shorter path to 3C. So please respect your fellow HAMs in other parts of the world and stop calling when 3C1L is calling for areas outside Europe. Please behave as one might expect from "civilized Europeans".

Those who will misbehave could find themselves in the blacklist with no chances to get QSL.

CW Ops CW Academy:
Interested in learning CW or improving your skills?

Check out www.cwops.org

"CW is an art of incremental improvements over a lifetime, getting ever closer to an ideal of perfection, which is always moving, and always presents a new horizon to strive for." Carlo Consoli"

CW Ops "CWT" Every Wednesday Regular Tests:
Full Speed Start: 13Z, 19Z, 03Z (+1), 1-hour each session Exchange: name/number (members) name/SPC (non-members) Avoid DX pileups!

CW Ops CW Practice Sessions:
For: On-air practice at 13+ wpm for CWA students, graduates, others wishing to have real-time CW practice with others similarly afflicted with a love of CW and a need to improve proficiency, with a goal of 25+ wpm.

Purpose: To improve CW through on-air practice at a time and place when others are likely available.

Time and place: 7035-7045 kHz every Tuesday, Friday and Sunday around 6-8 pm local time.

That means possible overlap with other time zones, which may mean 5 pm in Texas and 7 pm in New York.

Conditions at this stage of the sunspot cycle make a comparable plan on 20m and higher for international contacts a risky proposal so for now we will limit this to 40m local evenings. 73
Jerry, AC4BT, CW Academy Manager

CARA is an ARRL – Affiliated Club

For Sale:

Alpha 99 High Performance Amplifier

Alpha 99 high performance HF amplifier. 10-160 Meters including WARC bands. Manual tuning. Wired for 240 VAC. Uses two 4CX800 tubes. Full power (1500 watts) output with 55 watts input. This amp is clean both inside and out. The amp was purchased from Alpha in 2002. SN 9902240255. There are no scratches, no rubbed-off lettering, or dents in the case. This is a one-owner amplifier. Non-smoking environment. There are no mods. Included with the amp is a factory operating manual. Includes two new spare matched Svetlana 4CX800 tubes in unopened boxes with receipt. Extra spare parts also included. This amplifier will NOT be shipped - however, original cartons are included. Inspection, demonstration, and local pickup in South Salem, NY.
No trades. Being sold by the XYL of WA2EVH (sk).
Call to make an appointment to check out this awesome amplifier.
Pictures available to email.
Serious potential buyers please.
Asking $3200. (914) 548-2040.

ICOM IC-757 Pro III

I'm selling my Icom 756 Pro III. Very Good Condition. I have the original Box. Harlan recently used this radio, and can vouch on its condition. This is the same model radio that CARA uses (from the Danbury EOC) for Field Day. Contest season has started.
I am reducing the price to $1150.

If interested let me know.
73, John - W1JMA

Our Short Trip to Boston

By Sander- W1SOP

Dear CARA friends,
A few weeks ago, I traveled to Boston with my wife and kids to visit a few universities. My son is a Junior in High School, and my daughter is a Freshman, so many of you know this means getting ready for college applications. We went during the Columbus Day long weekend and visited Boston University on Saturday. Since this is a radio newsletter, I won't bore you with the details, but I was quite impressed. However - my son, Alec, thought it was much too big, so that was a useful thing we got out of the trip right away.

On Sundays, most schools don't do tours, so we decided to walk part of the Freedom Trail (http://www.thefreedomtrail.org/) to learn more about all the important events that happened in that city. We started at the USS Constitution, the oldest active duty warship in the world.

USS Constitution – "Old Ironsides"

There are many interesting facts about this ship, but one that I find amazing is that it was virtually indestructible because of the type of Oak that was used. Apparently, the live Oak from Georgia, combined with other materials, made her particularly strong and gave her the nom de guerre Old Ironsides.

As you perhaps remember, the British were primarily interested in the colonies because of wood for their navy - as they had very little left after centuries of building and burning their forests. Another interest was preserved cod fish to feed their armies. I think it shows the nation's unity that

wood from Georgia was used to build a ship in Boston that helped liberate the country. That said; the ship gives a good sense of the misery its sailors must have endured during peacetime travel and especially during battle.

We then walked over to a WW2-era destroyer, the USS Cassin Young (DD-793). At first, it was too high in the water due to the tide, but then we were allowed on board.

USS Cassin Young (DD-793)

This is where the radio part of this story picks up. I quickly located the communications room and found it to have fake CW being piped through a hidden speaker. There was also a sign showing the station's call for NPOTA: HP04.

Keep in mind this radio room was on the top deck on the outside of the ship. As far as I could tell, armor plating was nonexistent on these vessels, so even a slight encounter with enemy fire would have been very unpleasant in this location.

I apologize for not taking more pictures, but it was cramped, and we were not allowed inside. I took two quick snaps through the open door. This type of ship was cranked out by US industrial might by the dozens and helped turn the tide in both oceanic theaters.

We saw both traditional depth charges shaped like oil drums, as well as the newer Hedgehog system. All lovingly restored and maintained by the National Park Service. The torpedo launch installation was also very impressive.

My grandfather was forced to sail in the merchant navy between the US and Europe and the USSR, evading wolf packs of U-boats.

Visiting this ship was an opportunity to explain to my kids the sacrifices of US service men and women and the hardships my family endured during German occupation of the Netherlands.

Finally, a shot of the two main gun turrets which are puny compared to main battleship armament, but they look quite impressive up close. You can also tell this is one of the rare locations where a bit of armor was used. Still - it must have been utter hell to be inside that turret during battle. Hot, smelly, noisy, jerking in all directions as the ship steams at full power to evade the guns of much bigger adversaries.

You can make out what must be various antennas including radar installations. You may remember that early in the war, the British gave the US vital radar miniaturization technology and the magnetron. Radar was, of course, vital in the Battle of Britain, but also when at sea, it was one of the technological advantages the allies had.

I imagine the long wire is an HF antenna, but these are details that are, of course, not explained by the tour director on these ships.

Only radio geeks like us would say "Hey, there's a short-range VHF antenna, and that one must be for long range HF".

I think this brief glimpse into the past makes practical history much more interesting.

We then proceeded down the Freedom Trail and enjoyed the history of it all.

73, Sander W1SOP

Thank you, Sander, for sharing your story with Capers readers, especially the information about your grandfather.

November 11 is Veteran's Day in the United States and Remembrance Day in Canada. Thank a Vet for his or her service - Editor

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Member and Station News:

Your story could go here in the next Issue of CARA Capers. Contact W1QK, Capers Editor

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CARA is an ARRL Affiliated Club

NOTICE TO CAPERS READERS

CAPERS is an important aspect of our club. It's time for **more participation** with this publication.

CAPERS is looking for ANY and ALL input.

Don't be shy, just send a few words, a picture, link, or short message to Dan Fegley, your Editor. If possible, text should be submitted in Microsoft Word format, and images in .jpg format. Please use picture files that are sized for publication.

w1qk@snet.net

CAPERS deadline for input:
LAST Friday of the Month preceding the meeting.

CAPERS will be released:
Monday before the scheduled Friday monthly