August 2021

PROPAGATION

Newsletter of the Longview East Texas Amateur Radio Club

VHF/UHF Antenna Issue

Join LETARC at our next meeting on August 28th

In this Issue

LETARC interviews multi - VHF contest champion Dr. Wayne Overbeck N6NB

A look at Arrow© Antennas

Book review: Magic Band Antennas by Bruce Walker N3JO

LETARC activities

LETARC held their monthly business meeting on July 24th. It was great to see Jim Rogers N5VGQ back in person and great to see Robert Stoker KD5FJL with us.

The club has brochures for people interested in ham radio and brochures to give out at VE test sessions. Our communications director, Jim Rogers N5VGQ has done a great job at getting our 147.34 MHz repeater back on the air, getting our DMR repeater going, and he secured a great deal swapping our D-STAR equipment for many useful repeater equipment. There is a chance the D-STAR repeater will be back on the air in East Texas soon. Kudos to Jim N5VGQ for all of his hard work and contributions to our club. Thank you Jim. LETARC discussed having a tailgate sale and voted on a date of Saturday, October 9th.

Most importantly, the club decided to have their August dinner gathering at Cracker Barrel on Tuesday, August 10th at 6:30 P.M. Everyone is welcome. Cracker Barrel is off the interstate at 822 S. Access road Longview, TX 75602.

In ARRL VE testing news Bryan McLaughlin KI5CQT of Henderson and Chris Dahl K5RND of Longview both upgraded to general. Kenneth Ziegelbauer K5ZIG of Longview and Jacob Fruth KI5LBW of Pittsburg upgraded to amateur extra. Congratulations to all! Jacob Fruth KI5BW and his family joined LETARC at testing. Welcome Fruth family to LETARC!

Martin Creek State Park POTA

Early in the morning of Saturday, July 10th LETARC members Chris Crawford KG5SMZ and Don Gamble KG5CMS activated Martin Creek State Park for the Parks On The Air (POTA) program. They made over 70 contacts in a little over an hour operating, all on 20 meters including several park to park contacts.

Chris Crawford KG5SMZ calls CQ next to the lake at Martin Creek. The park groundskeeper came by to visit and was given a ham radio brochure.

Click here to learn more about the Parks On The Air program.

Martin Creek POTA round two

Chris Crawford KG5SMZ logs contacts while Rhett Pilcher KG5NWI checks the POTA site for "spots".

Saturday, July 31st was another Martin Creek POTA activation. Rhett Pilcher KG5NWI joined us this time. We started out with some equipment issues but found work arounds to get on the air. The park was activated on 20 meters SSB and 40 meters CW at the same time. Thanks to Buddy Walker W5DW for making contact on 40 CW.

It was agreed that the most critical piece of portable gear in use during POTA activations for East Texas are portable fans.

Both outings were fun. Join us next time we adventure out.

W7EL to retire

Roy Lewallen W7EL created the EZNEC Antenna modeling software that is popular among amateurs. Roy is retiring in January of next year and will stop supporting EZNEC. The software will be free starting in 2022.

G4FON SK

Ray Burlingame-Goff G4FON passed away on July 29th, 2021. Ray created a popular Koch based CW trainer. G4FON was very active in the amateur community in England. He maintained a website devoted to ham radio at g4fon.net.

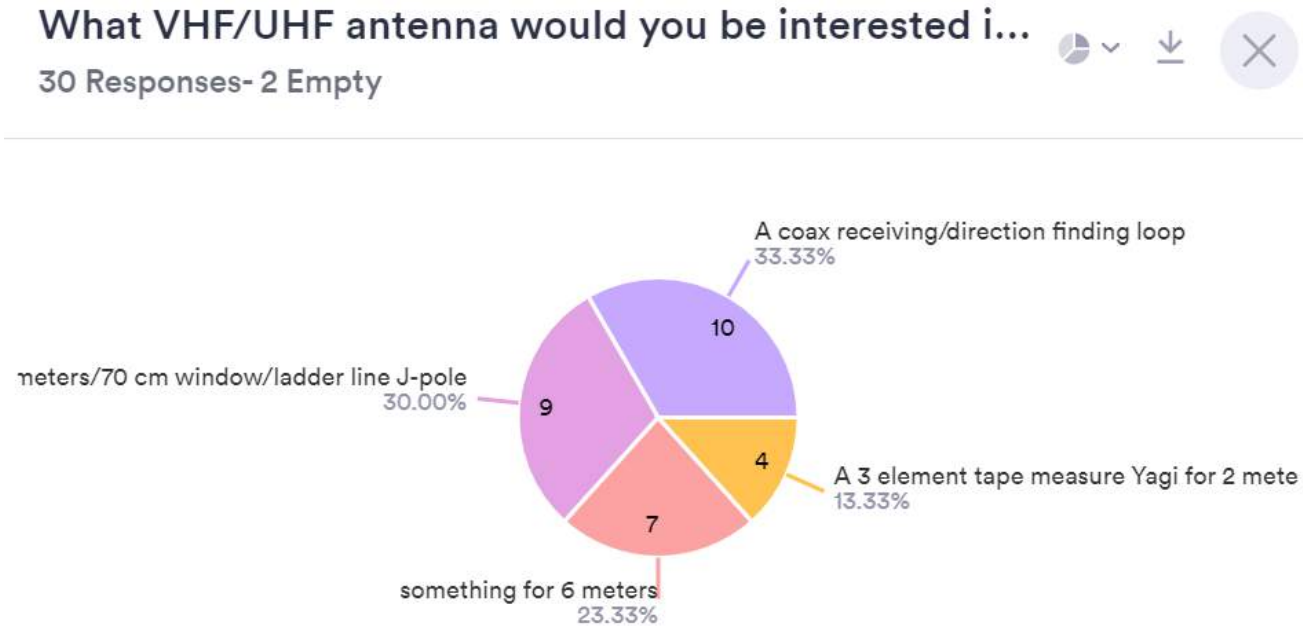
ARRL webinars

Introduction to DMR and Digital Voice -- Tim Deagan, KJ8U / Thursday, September 9, 2021 at 3:30 PM EDT (1930 UTC)

What a good time for a DMR webinar as LETARC/Jim Rogers N5VGQ has recently put a DMR repeater on the air. You can learn more about ARRL webinars by visiting http://www.arrl.org/arrl-learning-network.

LETARC Survey "What VHF/UHF antenna would you like to build?"

33.3%	A coax receiving/direction finding loop
30%	2 meters/70 cm window/ladder line J-pole
23.3%	Something for 6 meters
13.3%	A 3 element tape measure Yagi for 2 meters
0%	2 meter or 1.25 meter Moxon



Thank you for participating in our surveys.

LETARC interviews Dr. Wayne Overbeck N6NB

Dr. Wayne Overbeck N6NB holds the record for the best score in the ARRL VHF contests and has won the contest 12 times as a single operator and 23 times as a rover! N6NB was kind enough to participate in this interview.

LETARC: Are you a member of a local amateur radio club? If so, do you have a favorite part or activity in the club?

N6NB: I'm a member of several clubs, including the San Bernardino Microwave Society, the Orange County Amateur Radio Club and the Southern California Contest Club. Those are three very different groups. The first one is a regional technical club that specializes in the microwave spectrum. The second is a local general-interest club, while the third is about contest operating.

LETARC: Your website n6nb.com showcases some truly incredible ham radio adventures from multiple facets of the hobby. Would you please tell us some of your favorite amateur radio experiences?

N6NB: Over the years I've especially enjoyed building stations and operating them, often portable on mountaintops. My own mountaintop contest station was destroyed in a forest fire in 2011 (about 100 structures burned in that 14,000-acre fire).

LETARC: What peaks your interest towards VHF?

N6NB: I started out on the HF bands and only discovered VHF later, but when I got above 50 MHz, I knew I'd found a home.

LETARC: What advice would you give an amateur who wants to get started in VHF & UHF contesting?

N6NB: Just do it. Start with a transceiver like a Yaesu FT-857 that covers six, two and 432. Then gradually expand if you like what you experience on VHF+.

LETARC: What advice would you give an amateur who wants to start a rover station?

N6NB: I'd give the same advice as in #4. I would add that roving works best if you cooperate with other rovers. When you move into the microwave spectrum, you won't find much activity unless you work with nearby hams. If you have one transverter for 2304, for example, you won't make many contacts. But if you and someone else both have gear for that band, you can make many contacts (and many multipliers) as you rove.

LETARC: Is there any advice you would give a radio club?

N6NB: Activity breeds activity. Reach out to your community to find others who share the same interests.

LETARC: Please tell us about building VHF & UHF antennas and any tips or recommendations you have.

N6NB: Don't be afraid to build antennas. Thousands of Quagi antennas have been built all over the world since I first published the design in 1972. After the design appeared in QST in 1977, that antenna really took off. But there are other good, easy-to-build designs such as WA5VJB's "cheap Yagis."

LETARC: Is there a VHF or UHF antenna that you think would be a good build project for a local club?

N6NB: Yes, either of the designs I mentioned in #7.

LETARC: What is your favorite part of amateur radio?

N6NB: Well, building things is my favorite activity.

Thank you Dr. Wayne Overbeck N6NB

THANK YOU!

Check out his website **N6NB.com** to see all of his amazing amateur radio adventures, activations, and contests.

DON'T FORGET

Saturday, August 14th is the Shreveport Hamfest and the QSO today Virtual Ham Expo. shreveporthamfest.k5sar.com and qsotodayhamexpo.com.

Product spotlight: Arrow Antennas

Arrow antennas are famous for hand-held dual band yagis that are commonly used for amateur satellite QSOs. This Wyoming based company makes a variety of VHF & UHF antennas beyond the hand-held yagi including mast mounted yagis, ground plane antennas, J-poles, and fox hunt loops. Arrow sells duplexers, BNC cables and antenna bags as well. These are not just for 144 MHz and 440 MHz, they have products for 50 MHz and 222 MHz as well. Visit their webpage at arrowantennas.com.

Book review:
Magic Band Antennas for Ham Radio
6 Meter Antennas You Can Build
by Bruce Walker, N3JO

Bruce N3JO lists several 6 meter antennas, most of them yagis. There are some loops as well. Bruce is uses gamma matches for most of his antennas. A nice feature of the book is that he gives shopping lists of the parts you will need. There are diagrams of the antennas but a few more real life pictures of the actual antennas would have been nice. Bruce has a wealth of experience and success with the 6 meter band.

You can buy this book from the ARRL by clicking here or from Amazon by clicking here.

VHF & UHF antennas

In December of 2020 LETARC responded to survey about ham radio interests. Antennas and antenna building was the runaway favorite. This is such a broad topic that it behooves us to seperate the discussion into smaller chunks to divide and conquer. In the May Propagation we talked about wire HF antennas and we found out that our club has a mixture of people who build antennas and others that purchase antennas.

Just like in May, an antenna analyzer or VNA is a great tool to use even in you are using a store bought antenna. The ARRL Antenna book is an excellent resource.

One point of difference worth mentioning is the difference in feed lines. VHF frequencies and up have much greater losses than HF frequencies in coaxial cable. Low loss coax such as LMR-400 is a good investment for VHF/UHF. Stay away from RG-58 or other lossy coax like you can get at a truck stop for CB radios.

Feed line length is also a consideration. While a foot or two to give yourself slack is okay, you don't want to use a 50 foot cable when a 25 foot cable will do.

Connector types can also change. While most 2 meter and 70 cm mobile and base rigs have SO-239 connectors, some 70 cm and higher use N-type connectors. Most 2 meter/70 cm hand-helds use SMA or BNC connectors.

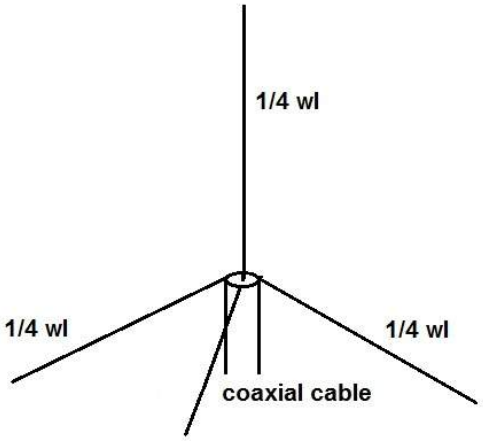
VHF & UHF antenna types

Just like in May, all of it starts with a half wavelength dipole. Most VHF/UHF antennas are also variations of a dipole. FM communications are often vertically polarized dipoles and SSB/CW/other is horizontally polarized. Trying to make contact with another station whose antenna is polarized differently than your station is quite a handicap that should be avoided.

Ground plane

Ground plane antennas are very common at 50 MHz and above. The ground plane antenna takes a vertically polarized dipole and removes the bottom wire (the one connected to the braided shield section of the coax) and replaces the 1 wire with usually 3 or 4 wires offset diagonally. This gives the ground plane an omni-directional radiation pattern from the vertical section.

The vertical wire can be 1/4 or higher. A ground plane will often be dual band with a vertical section that is 1/4 wave on 2 meters and 5/8 wave on 70 cm.



A 1/4 wave ground plane. The "bent down" radials bring the antenna impedance closer to 50 ohms.

J-pole

Many technician class amateurs first outdoor antenna is a J-pole due to easy construction from common materials. The J-pole is a half wave antenna that is end fed from the bottom. There is a stub matching section that helps bring the feed point impedance down to 50 ohms. This antenna has been reported to have slightly more gain than a 1/4 wave ground plane.

A 2 meter J-pole constructed with plumbing copper tubing

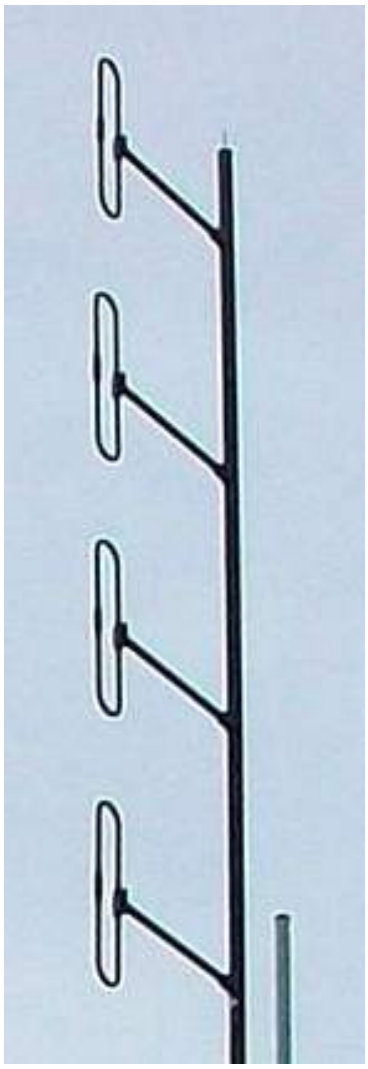
Folded dipole

Folded dipoles are less cumbersome than their larger HF counterparts. These often are used in public service radio antennas, and many times as part of a larger array to increase gain.

A VHF folded dipole

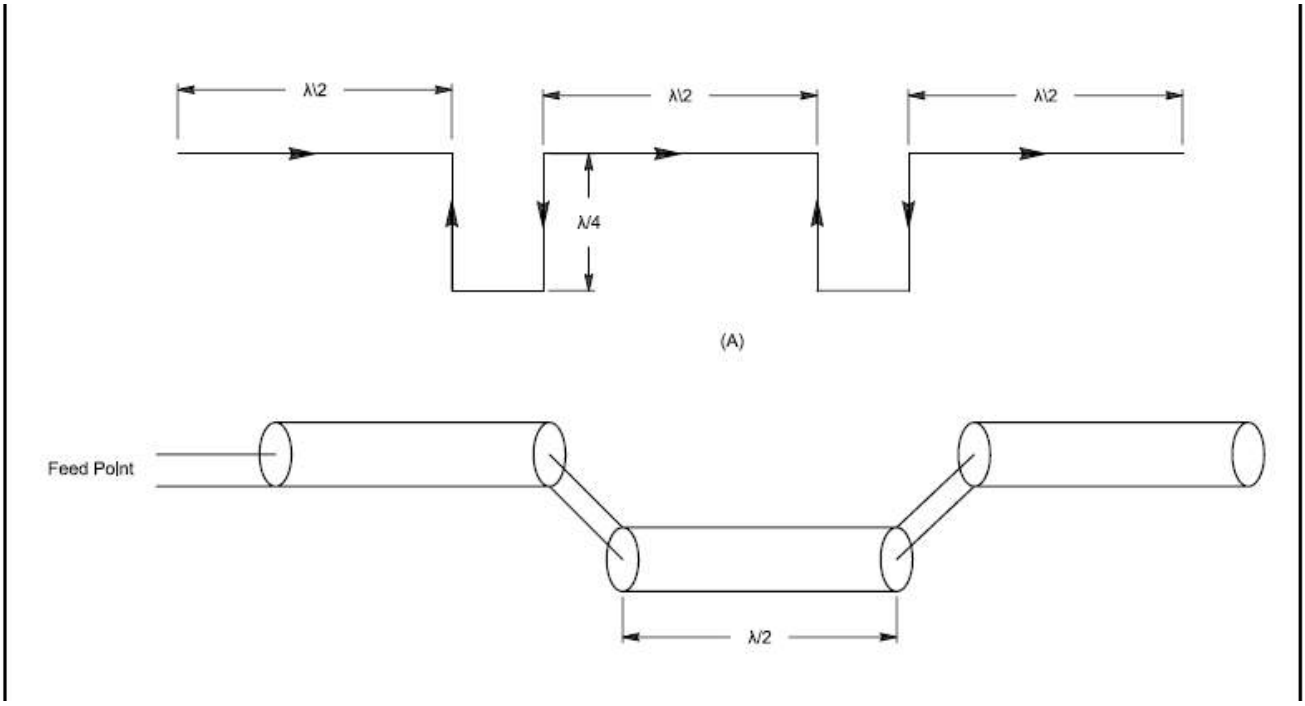
Collinear arrays

Two types of collinears are common, collinear dipole arrays and transposed coaxial arrays. Collinear dipole arrays can be curtain arrays in phase with reflector elements added for more gain. Transposed coaxial arrays sometimes have phase-reversing stubs that create gain at right angles to the antenna.



A collinear dipole array. Collinears can have many elements, 4, 32, some are 128. Folded dipoles are used in this antenna's construction.

A diagram of a transposed coaxial array.

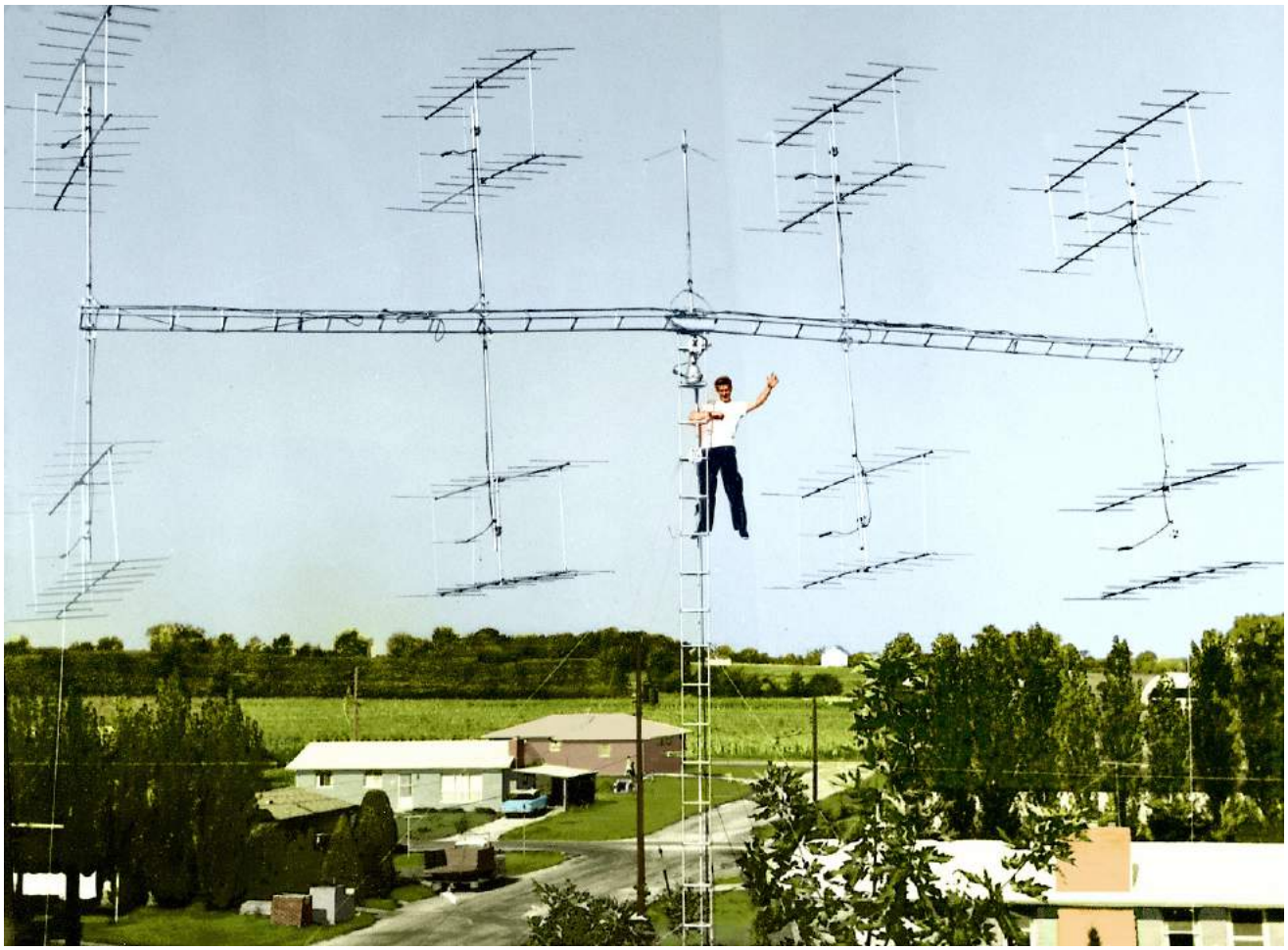


Yagi-Uda

The most common directional antenna for VHF/UHF is the Yagi-Uda, usually just called a Yagi. Shorter wave lengths make these antennas manageable.

Yagis are used as rotatable base station antennas, hand held satellite antennas, and as stackable arrays for Earth-moon-Earth contacts. Yagis can have 2 or 3 elements all the way to 128. Tape measure Yagis are often a homebrew project for local clubs. 70 cm Yagis are quite compact.

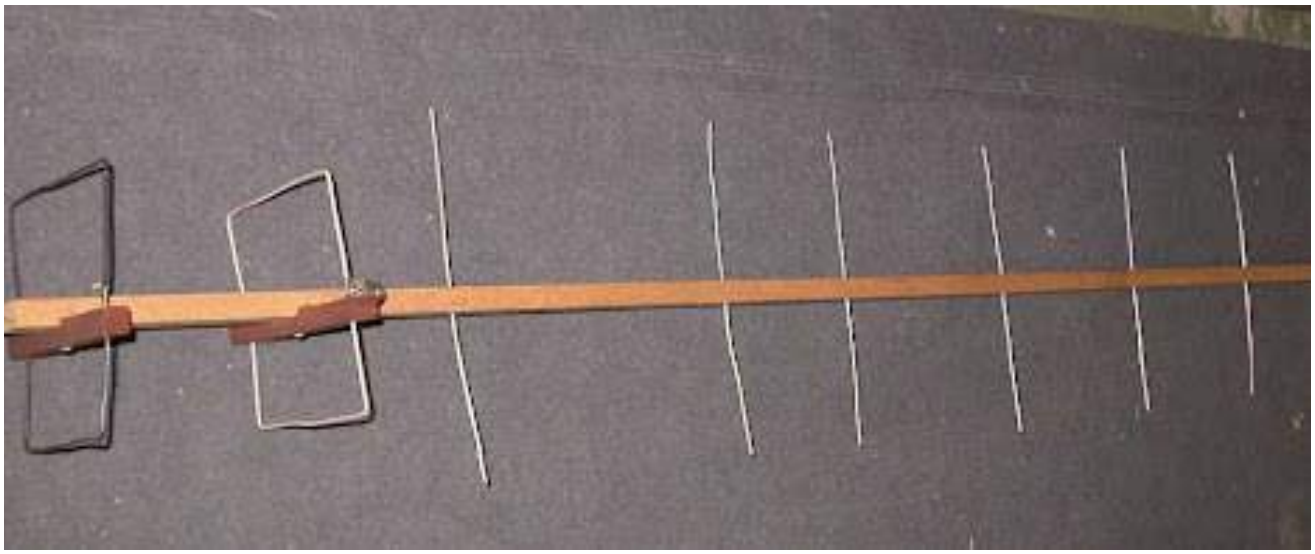
The Diamond 144S10R is a 10 element Yagi for 2 meters. The antenna has a split boom and rotating elements for easy storage.



Bob Heil K9EID stands on his tower and 128 element 2 meter Yagi array in 1960. He was 20 years old at the time. Astronaut Alan Shepard asked Bob to direct the array at the moon to confirm NASA's calculations for how long it would take radio waves to reach the moon.

Quagi

The Quagi was designed by none other than Wayne Overbeck, N6NB, our interview for this issue! Quagis have a full wave loop driven element and reflector. These antennas are popular on VHF and up contests.



A homebrewed Quagi

Quads

If we use loops for every element in the directional array then we have a cubical quad. These antennas are often homebrewed but commercial versions are available. They will be larger and heavier than a Yagi.

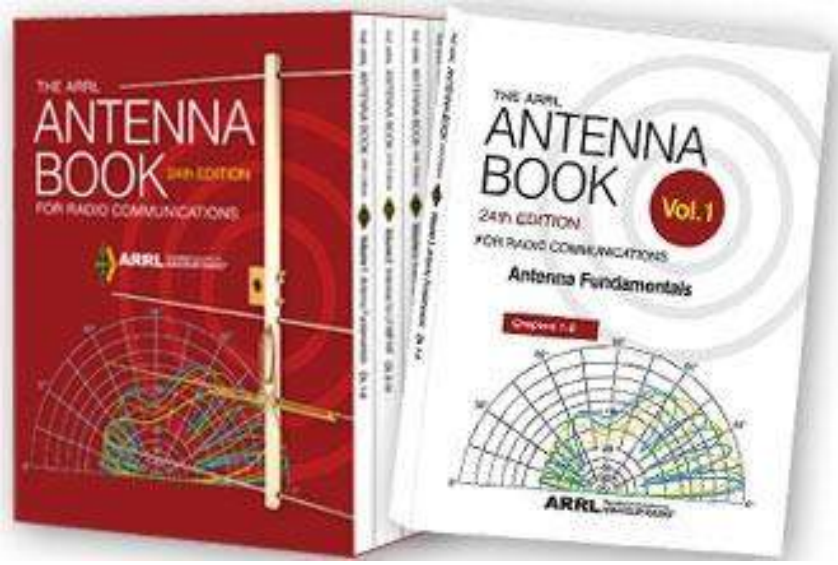
The Cushcraft A14820T is a cubical quad antenna for 2 meters.

More VHF/UHF antenna info

As always there are more antennas and discussions that we haven't gotten to. Moxons, coaxial sleeve antennas, and many others deserve more attention than we can give in a newsletter.

Topics such as gamma matches, hairpin matches, baluns, feedlines and impedances are all important as well. For all of these discussions and beyond take a look at the ARRL's Antenna book. Anyone interested in building antennas will be able to refer back to this book when an idea strikes or a need is found for a new antenna.

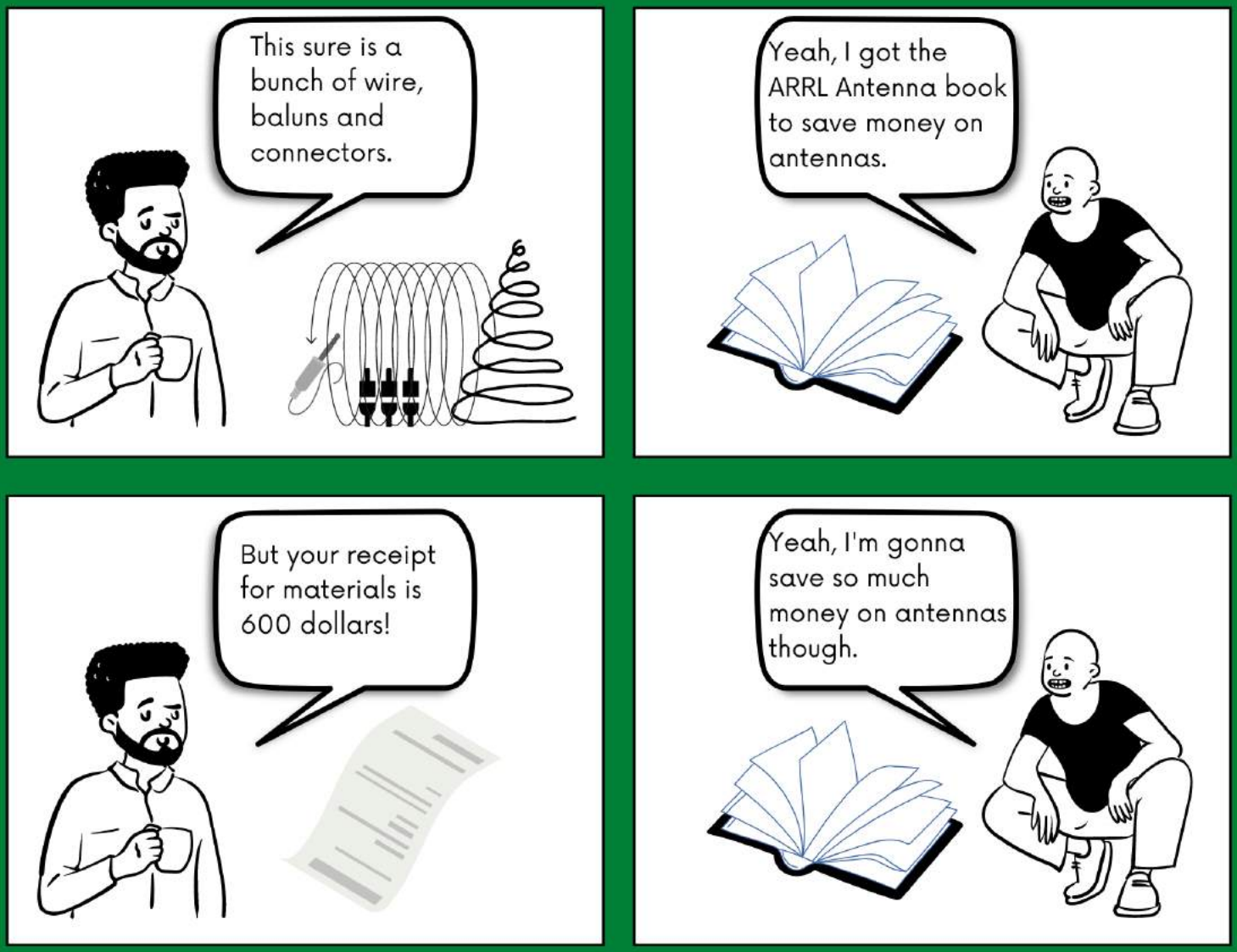
For more information about the ARRL Antenna book click here.



ARRL Antenna book

We would love to hear about your experience with antennas at a LETARC meeting or on our groups.io email service.

LETARComic



Ham radio quote

"In the new era, thought itself will be transmitted by radio."
- Guglielmo Marconi (he didn't have a callsign.)

Our next LETARC meeting

Please join us at LETARC's next monthly meeting will be 9:00 A.M. on Saturday, August 28th at the Longview Fire Training Center located at 411 American Legion BLVD Longview, TX 75601. Don't forget that you can attend our meeting virtually via phone or internet. Phone # 601-516-5566
Pin 206-446-183# or google.com/mds-ndwd-cwo.
Anyone interested in amateur radio is welcome to attend.

There will be a VE test session at 2:00 P.M. that same day at the Glaske science building of LeTourneau University. Walk ins are welcome. Testing costs S15.00 (soon to be S35) and you will need a government issued identification such as a driver's license, a valid email address and an FCC issued FRN number. LETARC VEs can help you get your FRN that day if you need help.

For more information about VE testing please contact John Zenter AE5OY at j.zenter@w-rg.com.

LETARC Net

Please join us each Wednesday night at 8:30 for our weekly LETARC net on the 147.34 MHz repeater. The tone is 136.5. All licensed amateurs are welcome to check in, you don't have to be a member of LETARC. Afterward there is sometimes an informal simplex chat on 146.52 MHz.

Thank you to

Dr. Wayne OverBeck N6NB
Mims volunteer fire department
The Longview fire training center on American Legion BLVD
Jim Perry KA5BCM for our radio room
John Zenter AE5OY and our VE team
Marty Duplissey N5KBP for his great work on the ARRL audio news
Steven Lott Smith KG5VK - ARRL North Texas Section Manager
JoAnn Keith KA5AZK - ARES Section Manager
Ross Bennett KI5SR - Gregg County ARES
David Chenault W5CWT - Rusk County ARES
John Keith W5BWC - Upshur County ARES
Tom Noe W5TDN - Gregg County SKYWARN coordinator
Jim Rogers N5VGQ - Repeater trustee
Ron Case W2RLC - letarc.org webmaster
Jim Quinn AJ1MQ - groups.io coordinator
Dr. Hoo Kim AG5ZS - Letourneau university liaison
Dr. Ron Morton KF5GMA and Carolyn Morton KF5GLT Longview CERT

Thank you for reading our newsletter. We hope to see you at our meetings and dinner gatherings and we hope to hear you on our nets. If you would like to contribute to the PROPAGATION please email Don at gambledon@gmail.com.

Please visit our website at letarc.org.

73 de Don Gamble KG5CMS.

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LETARC AUGUST 2021

SUN	MON	TUE	WED	THU	FRI	SAT
1 Propagation newsletter	2	3	4 LETARC net 8:30 PM	5 Upshur ARES net 8 PM	6	7
8	9 LETARC dinner Cracker Barrel 6:30 PM	10	11 LETARC net 8:30 PM	12 Upshur ARES net 8 PM	13	14 Shreveport Hamfest QSO today virtual Ham Expo
15	16	17	18 LETARC net 8:30 PM	19 Upshur ARES net 8 PM	20	21
22	23	24	25 LETARC net 8:30 PM	26 Upshur ARES net 8 PM	27	28 LETARC meeting 9 AM
29	30	31				

Shreveport Hamfest

Louisiana State Fairgrounds Agriculture Building, 3206 Pershing Blvd., Shreveport, LA, 71109

Meetings

Our meetings begin at 9AM at the Longview Fire Training Center at 411 American Legion BLVD, Longview, TX, 75601. There will be a VE test session at LeTourneau University at 2:00 PM on the same day.

Repeaters & Nets

LETARC nets are Wednesday nights at 8:30 PM on the 147.34 repeater with at tone of 136.5

Upshur ARES nets are Thursday nights at 8 PM on the 146.9 repeater with a negative offset and tone of 107.2

Upcoming amateur radio events

August 7 ARRL 222 MHz and up distance contest
August 7 North American QSO Party, CW
August 7 10-10 International Summer Contest, SSB
August 14 Shreveport Hamfest
August 14 QSO Today Virtual Ham Expo
August 14 Maryland-DC QSO Party
August 21 ARRL 10 GHz and up round one contest
August 21 North American QSO Party, SSB
August 22 ARRL Rookie Round up, RTTY
August 28 Hawaii QSO Party
August 28 Kansas QSO Party
August 28 Ohio QSO Party