



APRIL 2018

N4LNR

News & Views

P. O. Box 3276
Lenoir, NC 28645

Serving Amateur Radio
In Caldwell County
Since 1986

Coming Events

Volunteers Needed

Apr 21 Catawba Valley Hamfest

Apr 28 NC Gravity Games

May 12 Rotary Cycle to Serve Bike Race

Jun 23-24 Field Day

Net Control ~ LARC April Meeting

“A Focus on Net Control” will be the April program presented by Tom Land as the quarterly ARES/AUXCOMM training. Using the Caldwell ARES Net as an example, Tom will discuss the purpose of nets; the principles of net control, how to call the net, and the net control station responsibilities. Also, he will discuss the reorganization of Caldwell ARES and its relationship to AUXCOMM. 2017 was a busy severe weather season, and volunteers are needed to prepare for 2018. This meeting will provide valuable training for those involved in emergency response.

A brief business meeting will follow the program, including preparing for the Catawba Valley Hamfest, the NC Gravity Games, and the Rotary Cycle to Serve upcoming events. See you there!



Next LARC Meeting:

Thursday, March 8, 7:00 PM,
Gamewell Fire Dept.
2806 Morganton Blvd SW,
Lenoir

LARC Weekly Net:

Friday, 9:00 PM, 146.625
Minus PL 94.8 Alt. 147.330
Plus PL 141.3

Caldwell ARES Net:

Sunday, 9:00 PM,
147.330 Plus PL 141.3

DMR Digital Net:

Tuesday, 8:00 PM, Lenoir
Local DMR



President's Comments

John Crowe AG4ZL

I am pleased to announce that I will be conducting a training net for hams to be Net Control operators for Caldwell Severe Weather Net and Skywarn. With the permission of Phil KG4BCC, the training net will be held on the Hibriten repeater 147.330 + PL 141.3.

I will alert you of the day and time when the training net will begin. The training net will operate on a weekly schedule and will prepare participants to be Net Control operators for severe weather events, including Skywarn.

We need amateur radio operators who will be willing to conduct a net during severe weather or to assist when available. Please let me know if you are interested in participating in the training net. No prior net control experience is required and you do not have to be a LARC member.

Also, I would encourage you to become in emergency nets on a regular basis, not just during an emergency event. In the ARES/AUXCOMM article below, we have listed several area nets. I particularly encourage you to participate in the Caldwell ARES Net on Sundays at 9:00 pm and the Tarheel Emergency Net nightly at 7:30.

7 3 John AG4ZL

LARC Rethinks Email Communications

Amateur operators are communicators! Gary K3OS and Ro K4HRM were asked to review how the Club communicates, not only its members, but with those in the greater amateur radio community. The purpose is to find a means that will provide opportunity to all area "hams" to engage in amateur radio issues. The new focus of LARC communications is to reach out to the broader amateur community to get involved in activities, such as field day, fox hunts, trailer and repeater work days, elmers, and problem solving, regardless of whether they are Club members. And, the first step is to inform and communicate activities that will attract amateur talent and keep amateur radio fun!

Initially, there will be bumps in this new email system and some of you will receive duplicate mailings or much more information that you want to get. However, the reworked googlegroup system will now allow all users to engage in discussions by using the "reply to all" response. However, if you only want to get the LARC newsletter or receive no communications from LARC, just let Gary K3OS know. Additionally, updates will be made to the N4LNR website as we move forward on this project. Please be patient with us as we work out the kinks. If you have questions/concerns, contact Gary K3OS or Ro K4HRM.



LARC Provides Communications for Final Hibriten Hill Run

On a cold, snowy morning March 24, thirty-five runners began their final run up Hibriten Mountain. The Hibriten Hill Run, that began in 2007, will be moving its annual event to a new venue in the fall.

Members of the Lenoir Amateur Radio Club have provided communications supporting the run for a number of years and turned out in force for this last run up the mountain. Those hams who have worked this race all marvel at the beauty from the top. The Run is a charity event and all proceeds benefit Communities In Schools in Caldwell County by helping students learn, stay in school, and be prepared for a 21st Century education. LARC has been asked to continue its support of the new event.

The first runner reached the top of the mountain in just 32 minutes, and the first runner to make the round trip did so in 55 minutes. The run is 3.6 miles, 1,000 feet elevation gain up Hibriten Mountain. The run was called after the last runner reached the top due to increasing snow and rain and a 35-degree temperature. John AG4ZL and Mark K9FWA cleared the mountain and helped bring runners back down the mountain.

The Run organizers were very appreciative of our participation and asked us to continue our support of their new event. Ro K4HRM, Tom KA4HKK and James N4NIN operated Net Control from the warmth of Ro's truck. Dick K0CAT was located at the Gate to the Mountain. Tanner KK4SZI worked the Aid Station halfway up, Wes KN4JTC was at the 2-mile marker, and John AG4ZL and Mark K9FWA was at the Top of the Mountain Finish Line. DMR and VHF were used for the event. The event served as Caldwell ARES/AUXCOMM training using ICS forms and procedures.





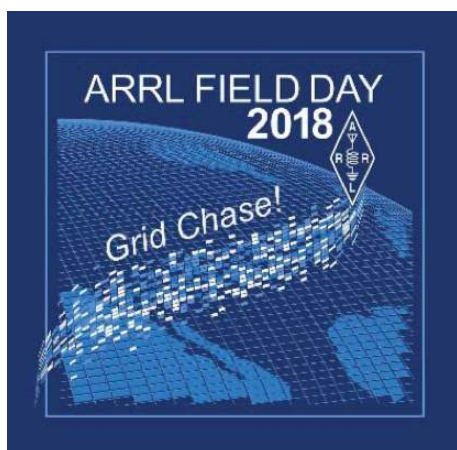
Catawba Valley Hamfest ~ April 21 ~ Morganton

The Lenoir Amateur Radio Club, along with McDowell ARC, Western Piedmont ARC and Western Piedmont Community College, will sponsor the Catawba Valley Hamfest on April 21, 8:00 AM until, at the Burke County Fairgrounds, 145 Bost Rd, Morganton.

This year, the Hamfest Grand Prize is a Yaesu 857D transceiver, First Prize is a TYT TH-7800 mobile transceiver, Second Prize is a BaoFeng UV-82 hand-held transceiver, a pre-registration prize of \$100 Hamfest Bucks (redeemable at any dealer table), hourly prizes of \$20 Hamfest Bucks, a 12 Noon prize of a BaoFeng UV-82 Hand-held transceiver.

Tickets to the Hamfest are \$4 in advance and \$5 at the Gate. Extra tickets for prize drawings are available at the Gate. The Grand Prize, First and Second Prizes will be drawn at 1:00 PM.

LARC will have a table at the Hamfest and volunteers are needed to man the table. Also, space is available for members to sell ham items. To volunteer or sell items, contact Tom KA4HKK.



Field Day 2018 is only a couple months away. Start planning now how you can be involved. Volunteer to tow trailers, setup/breakdown, handle food, operate radio! You do not need to be a LARC member to participate.

Help make this Field Day one for the record books.



LARC To Demonstrate Amateur Radio On Science Street ~ April 28

The Lenoir Amateur Radio Club will have a booth at the NC Gravity Games on Science Street, April 28. The NC Gravity Games is a signature event of the North Carolina Science Festival. The main events are a gravity-powered race and STEM extravaganza designed to get students revved up about science, technology, engineering and math. Event sponsors are Google, Appalachian State University, the University of North Carolina, and the City of Lenoir.

In addition to the gravity-powered race, the first “Feet off the Street festival” will take place simultaneously and will feature bungee jumps, an inflatable obstacle course, a NASCAR simulator, hands-on exhibits on Science Street, food and fun for the whole family!

The LARC booth will feature several modes of amateur radio – VHF, UHF, HF, DMR, CW, Digital, Moon Bounce and SSTV as well as videos of satellite tracking, talking to the International Space Station, balloon chasing, and disaster response. It is our hope that early involvement in amateur radio can stimulate interest in STEM and lead to careers in science. The booth will be located in the Science Street (a giant tent) where hundreds of visitors have passed through in past years. Booths include robots to bones to snakes. Volunteers are needed to help man the LARC booth and talk to kids of all ages. You do not have to be a club member to volunteer. Please contact Ro K4HRM to volunteer.





Caldwell ARES/AUXCOMM

Focus on Nets



Your ARES/AUXCOMM team needs to increase participation in the weekly CARES Net (Sunday 9:00 PM, 147.330 PL141.3) so that we are prepared in the event this year is as active as 2017 with severe weather events. The CARES Net is a place to be informed about emergency events as well as an opportunity to keep your equipment "disaster ready". Listening and participating in area Nets is a great training tool. Here are some and we encourage you to participate regularly in the CARES Net and the Tarheel Emergency Net.

ARES Nets

Caldwell ARES Net, Sunday 9:00 PM, 147.330+ PL 141.3
Cleveland ARES Net, Monday & Friday 8:30 PM, 146.880
Catawba Co RACES, Tuesday 7:00 PM, 145.17
Cabarrus Co ARES, Tuesday 8:30 PM, 146.655- No Tone
Mecklenburg ARES Net, Wednesday 7:30 PM, 146.940 PL 118.8
Gaston ARES Net, Thursday 7:00 PM, 147.120 PL 100
Lincoln ARES/RACES, Tuesday 7:30, 147.015
Rowan Co ARES, Wednesday 8:30 PM, 145.410 – PL 136.5
Union Co ARES, Saturday 8:00 PM, 145.390 PL 94.8
Iredell Co ARES Net, Monday 7:30 PM, 146.685 PL 77.0

Skywarn Nets (ARES Sponsored)

GSP Regional Skywarn Net, Nightly 8:00 PM, 145.470 PL 91.5
Charlotte Regional Skyward/Piedmont Spotters, Nightly 8:00 PM, 145.230 PL 118.8

Emergency Nets

Metrolina 2-M Emergency Net (MECK ARES), Nightly 9:00 PM, 146.940
Piedmont Simplex Net, Sundays 8:30 PM, 147.505 simplex

HF Nets

NC ARES HF Net (Tarheel Emergency Net), Nightly at 7:30 PM, 3.923 LSB
Iredell Co ARES Net, Saturday 8:30 PM, 3.975 LSB

Caldwell County REACT/CERT Updates

Submitted by Shirley Kanode



CERT Basic Class Schedule for 2018

CERT classes are scheduled for June 18, 19, 21, 25, 26, 28 and October 15, 16, 18, 22, 23, 25. The classes are 6:00 pm to 9:00 pm, and are held at the Caldwell County Health and Human Services Building, 2345 Morganton Blvd SW, Lenoir. One class of each course will be at the North Catawba Fire and Rescue Department on Connelly Springs Road. To register, send an email to caldwellcountyCERT@gmail.com. Include your name, email address, cell #, and address.

There is no charge for taking this class. A comprehensive manual is included.

13 people graduated from our March CERT class, some of whom have joined us in Caldwell County REACT. One member has his amateur radio license and is active in the Foothills Community Workshop.



CERT-Trained Volunteers Assist in Active Shooter Drill

On the evening of March 26 our members served as victims of violence in a training drill for North Catawba Fire/Rescue at the Baton Elementary School. Also participating were deputies from the Caldwell County Sheriff's office. We are fortunate to have trained moulage (special effects)

make-up artists in our group who made our injuries appear realistic. We learned much about disaster scene-management and emergency trauma care, but with the hope that it will never be needed here.



Caldwell Senior Center CERT Programs

Members of the Caldwell County REACT will be doing 2 classes in April for members of the Caldwell Senior Center. We will talk about general emergency preparedness and distribute emergency-related door prizes thanks to a Blue Ridge Energy Foundation grant.

Caldwell Senior Center CERT Programs (cont'd)

April 20, 2:00-3:00

- Emergency food storage and preparation
- Water storage and treatment
- Maintaining hygiene and sanitation

April 24, 2:00-3:00

- Emergency home supplies for light, warmth, medical/first aid needs
- Emergency kits—evacuation, stay in place, vehicle get-home kits, first aid, children, elderly, pets
- Communication/radios



On April 30, 3:30-5:00, we will participate in the **Senior Center's Volunteer Fair** distributing information about CERT volunteer opportunities.

North Carolina State CERT Conference Speaker

Shirley Kanode was asked to speak at the state CERT conference in Raleigh on May 19 to report on our Caldwell County activities during the past year. She will include the important partnership between our LARC and CERT volunteers.

Belk Charity Day Fundraiser

The spring Belk Charity Day Fundraiser will be on Saturday, May 5, 6:00 am to 10:00 am. Caldwell County REACT members will be selling tickets to raise money to support our CERT programs. To get into the store on the morning of the sale, customers need a \$5 ticket. The charities who sell the tickets get to keep the \$5, and the customer receives a \$5 discount on their first purchase. The sale is significant, and Belk marks down brand names 25% to 70% on items that typically do not go on sale. Caldwell County REACT members will be selling tickets inside the store and to friends starting about April 20. We also use this opportunity to pass out CERT material and educate the public about our mission. Let us know if you want a ticket!



Tower Building 101: Some Things Never Turn Out Like You May Think!

By Dick Blumenstein K0CAT

Last month you may recall that Gary K3OS and I were just about to finish off tweaking the Yagi's beta match to get the best SWR that we could, and were lowering the tower for the final adjustment. We started hearing these "expensive" and fearful noises coming from the winch gear assembly (or so we thought). I concluded that it was back to the drawing board for me; that the winch assembly which raises the tower from horizontal to vertical appeared to have skipping gear teeth and that I barely averted disaster by re-raising the tower to a vertical position.

I took apart the sprocket gear assembly that probably had been made by the first tower owner. The sprocket gear assembly replaced the original winch's hand crank, so that a motor could turn the winch. I had taken the entire winch assembly apart and replaced a few parts when I re-mounted it on the tower during the initial build.

Now, during the disassembly when I looked closer, I found an astonishing item. It turned out that even though I had retreaded the 4 Allen screw holes that held the sprocket gear onto the winch shaft adapter and winch shaft, that not all the Allen screws (which were very short) made it all the way down to the winch shaft through the adapter. The noise that Gary and I heard was the sprocket gear intermittently slipping on the gear shaft! This was fantastic news.

Upon further examination, it appears the original adapter that was machined and threaded onto the winch gear shaft had an outside diameter that was TOO SMALL.

In the picture to the right, see where the yellow arrow is pointing. The original hand crank (which of course never came with the tower) probably had an outside diameter that filled this hole AND CENTERED THE GEAR SHAFT inside the winch. Due to the adapter being too small, it allowed the toothed gear shaft inside the winch to be too low and prevented the gear teeth in the winch to be fully meshed; a recipe for eventual disaster...more tooth wear if not total tooth failure. How this winch held up over the years is just amazing.



This is the point at which I wished I had ready access to a lathe. I did not. I did the next best thing until I could make a proper adapter collar. I mounted a pair of washers on a bolt, stuck it into my 1/2" drill and ground the OD's down to just smaller than the ID where the original hand crank went on the winch.

This washer will now center the winch gear shaft in the bearing.





To make sure that I knew EXACTLY how far into the holes the set screws were when they were tightened, I threw away the Allen set screws and modified some long hardened cap screws to be pointed.



I remounted the sprocket gear onto the adapter and tightened the cap screws down. They were all the same distance now above the gear hub surface.



This allowed me to get the tower winch system back into service quickly and to continue with the beam beta match adjustment.

Below are three pictures of the tower (from last month's activity) when we were raising it to try to see how the coax looped with the standoff arms. Once I was satisfied that the loops were long enough, I bundled the other 2 coax cables with the first to have 3 coax cables coming down the tower.



To the left is a close-up of the mast and TiltPlate® (as well as part of the 20m Yagi and the 2m/440 vertical antenna) as the tower was being raised.



Back to the beta match adjustment that had so rudely been interrupted last month. Gary and I found that we needed to have the beam at least 15 or even 20 feet off the ground (and parallel to it) so that the SWR reading we got from the Yagi was representative of what it would be when the tower was vertical and extended. When the Yagi was too close to the ground, the SWR we got had no bearing to what it would be like much further up. Hence, I took a fiberglass window



washing pole, extended it the furthest out so that I could tap the slider adjustment on the beta match.

To the right is the beta match slider after it was tapped a few times. Note the aluminum foil that the wind had unraveled after we moved the slider halfway towards the center. The foil was used to make the clamp tighter when the slider was originally in the furthest right position. Once we got to the optimal position I found that the lowest SWR was 1.2. We then lowered the tower and moved the aluminum foil back under the slider and tightened it down.



It was now time to turn to the adjustment of the used Alpha-Delta Sloper antenna that had come with the tower when I bought it. This sloper provides coverage for 40, 80 and 160-meter bands.

On one side of the tower, the 45-degree sloping 80-meter section terminates at the plastic insulator that in turn was attached to a Dacron line and then a bungee cord that in turn was tied to a tree. (The black trucker bungee cords used on both wires prevents the wire antennas from being too stressed in case I crank the tower up a few inches higher than the original position).

On the other side of the tower is the 40m/160m wire, with a coil trap between the two of them. This wire also slopes down at a 45-degree angle. The 40m wire comes from the top of the tower and ends at the trap. The trap is shown in the right photo.

The 40-meter wire is on the right in this picture and the rest of the wire which comprises the 160m run is on the left of the trap.



With the tower extended in the vertical position, you will see are two yellow arrows in the next picture. If you look carefully on the left side of the tower you will see the arrow pointing to the trap on the 40m/160m wire. On the right side (if you look and squint really close), the arrow is pointing to the 80m wire.



Tuning this antenna was very time consuming. The formula for wire length of each side of a dipole (in feet) at a given resonance frequency is $234/\text{freq.}$ This did not apply AT ALL in this instance.

I first started to tune the 80m wire (right side). I would check the resonant frequency with an antenna analyzer, lower the tower vertically down, adjust the length of the 80m wire and raise the tower back up. Hmmm... a change in length of X inches changed the resonant point by Y KHz. Easy! I was off center frequency by just so far, ran the calculation again and again adjusted the wire length. What I found out was that the relationship was NOT LINEAR. I had to make many adjustments to get the 80m antenna to be centered on where I wanted it in the 80m beam.

I then switched over the other (left) side of the tower and started to adjust the 40-meter portion from the tower peak down to the trap coil. Not only was the adjustment not linear, but also changing the length of the 40m wire, CHANGED THE CENTER FREQUENCY OF THE 80-METER wire!! Do you sense some kind of frustration here??

After many adjustments (I will save you the pain of going through it), the Alpha-Delta Sloper was done.

If you have been reading this column since the beginning of the tower project in 2017, I mentioned in the August 2017 column that I brought in Charlie Tomberlin (of Artistic Landscape Design) to dig the tower base foundation hole. This time I brought him in to try to figure out how to make the back yard look somewhat presentable where I had tore up everything in order to install this tower. Here is Charlie pondering how to fix this mess (looking at the ground disarray, not the schluppy tarp mess covering the winch/motor assemblies on the tower.... that's another story!)



And, here is his solution (besides fixing the lawn all around). The gravel gives me something relatively level to walk on, but at the same time, allows me access, if ever needed, to the copper lightning straps where they are connected to the 3@ 8 foot ground rods that surround the tower.



Once the antennas and tower were up, I immediately was able to QSO several European countries very quickly.

It's been a long road getting this project completed. If someone would have told me how all encompassing and challenging this entire tower project was going to be, I might have hesitated. Isn't ignorance bliss?

This project (and other antenna projects) is never really "done". I still need to machine a proper adapter collar for the winch and construct some kind of halfway decent looking cover(s) to replace the two tarps that are wrapped around the motor assemblies to keep the weather off of them.

When my savings account sufficiently recovers sometime in the future, I might like to replace the single 20m beam with something like a multi-band SteppIR Yagi. That will probably be some time, as I still need to buy some "digital" radios to supplement my vintage Collins vacuum tube technology radios.

One other thing I need to mention is insurance. We had a tornado come awfully close to our house last year and it did a lot of damage in our area. I wondered if insurance would have replaced the tower if it ever came crashing down. I found out that the insurance company does not cover it as "replacement cost" but "Actual Cost Value", which means that they will probably NOT cover the bulk of the cost in replacing it. Imagine the cost of having someone come in and haul away the old damaged tower and replicate a lot of the labor I had gone through to erect a new tower with maybe a different steel base plate! Since it is not attached to the house, it is not considered a "structure" for replacement value even though the tower by FCC definition is considered an "antenna support structure". I am starting to look into insurance options some more and have found that the ARRL offer carry antenna and tower insurance.

This will be the last column about this tower. Thanks for following it and, hopefully, the columns I have written since August 2016 to the present in setting up a ham shack and installing a tower might help others in their challenges. I received a lot of good feedback from many people on an Internet tower forum called TowerTalk <http://lists.contesting.com/mailman/listinfo/towertalk>. You can sign up to get daily discussions on the subject matter.

Three parting pictures are below. The first is a view of the tower from my neighbor's lot next door and the other two are just vanity "hero" shots.



I would like to thank all the people who have given me assistance during this project; you know who you are, and I have mentioned you in the columns!

73 Dick K0CAT

...The End!

(Not really! Dick & Ro head for the Dayton Hamvention in May and, surely, there is another project in the making. Stay tuned.)

Upcoming Hamfests: Mark Your Calendar

April 21: **Catawba Valley Hamfest**, Lenoir Amateur Radio Club & others, <http://cvhamfest.com>

May 12: **13th Annual Rockingham County Swapfest**, Rockingham County Amateur Radio Club, Reidsville, <http://n4iv.org>

July 7: **33rd Annual 2018 Firecracker Hamfest**, Rowan Amateur Radio Society, Salisbury, <http://www.rowanars.org/firecracker-hamfest/>

July 21, 2018 **Mid-Summer Swapfest**, Cary Amateur Radio Club, Cary, <http://www.qsl.net/n4nc/>

July 28: **WCARS Hamfest**, Western Carolina Amateur Radio Club, Waynesville, <http://wcars.org>

August 11: **20th Annual Cape Fear ARS Swapfest**, Cape Fear Amateur Radio Society, Fayetteville, <http://www.cfarsnc.org>

August 31-Sept 2: **Shelby Hamfest/ARRL Roanoke Division Convention**, Shelby Amateur Radio Club, Shelby <http://shelbyhamfest.org>

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