



JANUARY 2017

N4LNR

News & Views



Serving Amateur Radio
In Caldwell County

P. O. Box 3276

Lenoir, NC 28645

Next LARC Meeting

Thursday, January 12
7:00 PM

Gamewell Fire Dept.
2806 Morganton Blvd SW
Lenoir

LARC Weekly Net

Friday, 9:00 PM
146.625 Minus 94.8
Alt 147.330

Caldwell ARES Net

Sunday, 9:00 PM
147.330 Plus 141.3

DMR Digital Net

Tuesday 8:00 PM
Lenoir Local DMR

December Eatin' Meetin'





President's Comments

This column will resume when a Club President is elected.

Upcoming Hamfests: Mark Your Calendar

January 14 Winston-Salem FirstFest, Forsyth Amateur Radio Club,
Winston-Salem, NC, http://www.w4nc.com/ws_classic_hamfest_2016.htm

March 10-11 Charlotte Hamfest, Mecklenburg Amateur Radio
Society, Concord, NC, <https://charlottehamfest.org/>

April 15 Catawba Valley Hamfest, McDowell Amateur Radio
Association, Morganton, NC, <http://cvhamfest.com>

April 15 45th Annual RARSFest/ARRL Roanoke Division Convention,
Raleigh Amateur Radio Society, Raleigh, NC,
<http://www.rars.org/rarsfest/>

**September 1-3 61st Annual Shelby Hamfest/ARRL North Carolina
State Convention**, Shelby Amateur Radio Club, Shelby, NC,
<http://www.shelbyhamfest.org>

Club to Discuss Participating in Winter Field Day At January Meeting

The Winter Field Day (see <http://www.winterfieldday.com/rules/>) sponsored by the Winter Field Day Association is scheduled for January 28-29, 2017. The Club will discuss participating in this event, including operating from the Communications Trailer. Come to the January meeting to discuss and volunteer to assist. Contact KA4HKK@ARRL.NET for more information.

Time to renew your LARC membership

Mail your check to the Club address or see Ro K4HRM to pay your dues



Building the Elecraft K3S Transceiver Kit

By Gary Schwartz K3OS

I awoke on Black Friday to see if Elecraft (<http://www.elecraft.com/K3/K3.htm>) was running any special deals. While it wasn't much, free shipping and perhaps a hat was enough to get me to order an Elecraft K3S Transceiver Kit. What follows are some thoughts and observations on the kit building experience and rig operation.

Why buy a K3S? In 55 years of hamming, I have owned quite a few rigs, most of which have been used. The last new one was a Ten-Tec Triton IV -- go look that one up. Following some years of downsizing equipment, I found myself using an ICOM 706M2 and more recently an ICOM IC-7000 for my daily 40-meter QSOs. These radios have small footprints that lend themselves to mobile operation, though I am hard pressed to figure out how one can operate them while mobile! The multi-function buttons, menus, sub-menus can be difficult to navigate. The desktop size, however, can bring some of those needed functions to the front panel and also provide lots of I/O jacks on the rear panel. The K3S fits the bill in these two areas.

My criteria for a new rig: Performance, User Controls, and Single Cable I/O to a Computer. In addition, I wanted a rig that stood on its own without a computer. By performance, I mean selectivity, i.e., the ability to hear a weak station with a nearby real strong station; sensitivity, which is no good without selectivity; low internal noise; RF speech compression. It had to have great CW and easy data setup. I was willing to do without a multi-color display (panadapter, etc.) to get the performance. That goal has been met.

While one can sink a small fortune in a modern transceiver, my K3S is the bare bones kit version. There is no monetary incentive for ordering the options except that it is easier to install the options during the initial build. Otherwise some disassembly is necessary. The kit saves a few hundred dollars that would buy some additional options or filters at a later date. It arrived a week after order in one approximately 16" cubed box. Opening the box revealed dozens of envelopes and bags, each labeled and carefully packed, and a few small boxes. Each parts bag had a slip of paper with the person's name that packed it. A bound hard copy assembly manual was provided. It took 10 hours to construct and test the K3S kit. No soldering was required.

I had previously downloaded the kit assembly instructions and noted that an ESD safe workplace was needed. For about \$25 a static dissipating mat and a couple of wrist straps were purchased. I connected both items to the ground screw on a wall AC outlet. Note that the wrist strap had a 1Meg Ohm resistor in its line to eliminate any personal shocking event!

Two cupcake/muffin pans were borrowed from the kitchen for hardware sorting. I took an inventory of the major parts and bags, but did not inventory each piece of the hardware. Instead, I waited until the first hardware was used, then separated it by size into the muffin pans. Elecraft supplies a bag of spare hardware so I wasn't too worried, or so I thought.

All the boards are pre-built and tested. The parts are surface mount and I can tell you from the minimal surface mount projects I have built, you wouldn't want to assemble any of these boards. Therefore, the assembly is purely mechanical. I sorted the main hardware bag and started the front panel assembly only to find that I was missing two #2 split ring lockwashers needed to mount two spacers. Gauging that a #4 lockwasher could be pressed into service if it was oriented properly, I opted to proceed. There were spares of this size included. Over 90% of the hardware is #4 size. I did find that my fingers were not as nimble as they used to be, but managed without difficulty. A nut driver was used once for the front panel pots and a couple of standoffs, but the liberal use of lockwashers made the screws snug up quickly without pliers or nut drivers.



The front panel is a sandwich of three or more boards plus shielding and a mounting plate. The boards plug together with a myriad of pins, many hidden, so some strong light is necessary to confirm the alignment before pressing things together. I was fortunate not to bend any pins.

The chassis and panels bolt together using small machined and tapped aluminum blocks. (See the picture above). The front panel is the complete receiver assembly and the rear panel (See the picture below) has some sub-assemblies with all the I/O ports. The main RF board on the bottom interconnects the I/O and power amp assemblies to the front panel. Note that the open space allows room for the following options: 2nd independent receiver, antenna tuner, 144Mhz RX/TX board, up to 5 roofing filters, digital voice recorder, general coverage receive and others.



Fairly early during the construction power is applied to test the front panel and overall power distribution. Before the power amp is installed, the entire rig is tested using the 10-watt amp, which is truly the base level power. The 10-watt amp drives the 100-watt power amp. In fact, when the power goes below 10-watts the power amp is bypassed and the smaller amp is put into use. Elecraft provides software to calibrate the amp gain setting on each band. This is an automatic 30-second procedure; however, you will need an RS-232 port from your computer. Once completed the final amp is mounted and similarly tested with the software. During the testing and initial configuration it is easy to panic. I had to take a step back a couple of times and borrow a procedure from a previous step that should have been repeated throughout the testing phase, i.e., reboot the radio when you have a problem. Problems disappeared, the configuration was successful and the radio came alive.

The instruction manual has some minor faults. On day two, I started making marginal notes in case someone else builds one. Sometimes hardware was called for that wasn't in the specified bag. I also devised a better and simpler way to get the speaker to properly mount. Some of the pictures could have been of a larger area to make the chassis orientation a bit clearer. Often the pictures had steps that were not written in the paragraph. These issues proved to be trivial and I learned to take my time, read twice or three times and not do anything until I fully understood what was required. I believe that anyone with decent mechanical aptitude and skills would be successful building the K3S transceiver kit.

Operational Comments

The features and functions available on current radios are mind-boggling. The K3S is no exception. Merely listing all of these things does not tell the whole story. How do you adequately describe the filter controls? In a word, amazing. The two controls allow shifting the receiver passband, narrowing or widening the passband, and separate high or low cut passband control. OMG! The DSP allows bandwidths from AM down to 200Hz even with the stock 2.7 KHz roofing filter. A nearby strong station can usually be eliminated and it doesn't swamp the receiver. While there are front panel controls for Power, Mic and Compression, true RF speech clipping, those can be locked. Tuning rates can be changed to suit. There's a nice big RIT knob. Noise blanking has a dozen or so variations that work well, though a little goes a long way. If you're a CW person like me, the SPOT switch, front panel keyer speed control, adjustable sidetone independent of the audio, and tracking pitch make this a dream to use. The receive audio is smooth and free of noise. Listening is not fatiguing. If there is a "bone" to pick, it would be the placement of the Mic and Phones jack, which get in the way of the AF and RF controls. Fortunately there are duplicate rear panel connectors to eliminate this issue. The rig handles both dynamic and electret mics. One real nice feature is a tune button that allows you to set the tune power level in watts regardless of the mode.

The next phase will be to implement full remote control to my smartphone using TRX-Manager. When at home, the software will provide complete rig control, panadapter, logging, and DX spotting -- no additional hardware is needed! I tested this software a while back with the ICOM 706 and know it will be much easier operating with the K3S.

I will provide a follow up on operating the K3S in a future newsletter. Stay tuned!



Before Snowstorms and Extreme Cold

Adapted from FEMA, <https://www.ready.gov/winter-weather>

By Shirley Kanode



I have friends who live in Alaska who laugh at what I consider “winter” in North Carolina. But after having lived in the Phoenix area for over 30 years, I had to re-acquaint myself with how to be prepared for winter storms. Since moving to Lenoir we have experienced snowstorms, ice storms, and loss of electricity (no electric heat, stove, or well pump.)

One of the most common problems associated with winter storms in our area is the loss of power.

- Have at least a week’s worth of non-perishable food that requires no cooking such as peanut butter, canned tuna, MRE’s, canned fruit, etc. Remember that freeze-dried or dehydrated food will require water.
- Keep extra batteries for flashlights or camping lanterns and fuel for oil lamps. Candles are not recommended for emergency lighting because of the fire danger.
- Have enough water stored for at least one gallon per person per day, particularly if you rely on a well that may lose power to the pump. Having an alternative manual pump is wise.
- Prepare to entertain yourself and your family in the event you don’t have TV or other electronics. Books (*real* books), games, cards, story telling, musical instruments, and singing can make this time fun for the family.

Check on neighbors who are elderly or disabled and may need assistance.

Here are some tips from FEMA to help you prior to a winter storm. I have added comments in parenthesis and italics.

To prepare for a winter storm you should do the following:

- Before winter approaches, add the following supplies to your [emergency kit](#):
 - Rock salt or more environmentally safe products to melt ice on walkways. Sand to improve traction.
 - Snow shovels and other snow removal equipment.
 - Sufficient heating fuel. You may become isolated in your home and regular fuel sources may be cut off. Store a good supply of dry, seasoned wood for your fireplace or wood-burning stove.
 - Adequate clothing and blankets to keep you warm.

(If you lose heat without a means to keep your house warm, use plastic or blankets to isolate one room that you may be able to keep warm that may have a fireplace or other heat source. Bring everyone into the room to sleep and keep warm. Be very careful about any stove or fuel source that may cause carbon monoxide poisoning and is not vented. See the FEMA warning below.)

- Update the [emergency kits](#) in your vehicles:

(Irv and I learned the importance of having emergency supplies in our vehicle when we lived in Arizona. It was common for people to perish in the desert of heat and no water or freeze in the mountains when their vehicles broke down or they became lost in the winter.)

A shovel
Windshield scraper and small broom
Flashlight
Battery powered radio
Extra batteries
Water
Snack food
Matches

First aid kit with pocket knife
Necessary medications
Blanket(s)
Tow chain or rope
Road salt and sand (or a bag of kitty litter)
Emergency flares
Fluorescent distress flag
Extra hats, socks, mittens

Caution: Each year, an average of 430 Americans die from unintentional carbon monoxide poisoning. Carbon monoxide-related deaths are highest during colder months.

- Never use a generator, grill, camp stove or other gasoline, propane, natural gas or charcoal-burning devices inside a home, garage, basement, crawlspace or any partially enclosed area. Locate unit away from doors, windows and vents that could allow carbon monoxide to come indoors. Keep these devices at least 20 feet from doors, windows, and vents.
- The primary hazards to avoid when using alternate sources for electricity, heating or cooking are carbon monoxide poisoning, electric shock and fire.
- Install carbon monoxide alarms in central locations on every level of your home and outside sleeping areas to provide early warning of accumulating carbon monoxide.



Technician License Class

Offered in January

FCW will host a class to prepare anyone interested in obtaining a Technician Amateur Radio license. The class will meet on three Fridays -- January 13, 20, and 27 from 6:00 to 8:30 PM. Topics include: FCC rules and regulations, Electromagnetic (radio) waves, Basic Electronics, Setting up an Amateur Radio station, Station operation, Antennas and Propagation, Safety Preparation for the Technician level exam.

There is no text required. All materials will be handed out or online. The class is free and open to the public. See <http://foothillscommunityworkshop.org/> for directions.

Get On The Air: The Adventures of Dick & Ro

By Ro Maddox K4HRM & Dick Blumenstein K0CAT

When we last checked in with Dick, he had completed constructing his shack “desk” and was getting ready to load it with his equipment. His equipment has now been placed.

The grounding interface plate that provides a bus bar for grounding and connects to the copper strip that goes outside to the ground rod and antenna interface box is done. It also provides a full time ground for all unused incoming antenna coaxes. It is intended to disconnect all antenna coaxes when done “radioing” and attach them to the SO-239 grounds. May this shack be spared from lightning! This is the LAST defense against



lightning; there will be 9 ground rods around the tower and Polyphasers at both the antenna entrance box to the shack outside wall and at the base of the tower for each antenna coax.

Next up is constructing a ground tube like we did on Ro's bench to connect each radio's ground. I like that better than individual braided straps running to the bus bar.

But before completing the interior grounding system, Dick decided to separate his radio shack off from a much larger room and more wall building ensued.



Next steps: Complete the grounding system, make cables for connecting equipment on shack desk, and connect all equipment into the grounding system.

Dick was slowed down in getting the 5'x5'x8' hole dug due to a major renovation of his house that staging site for materials consumed his yard. The home renovation is near completion, so he is ready to dig the hole, build the support “cage” inside the hole, and pour concrete. Where the hole is located will require a “soupy” concrete mix to be pumped so winter weather may be a factor as to when the concrete will be poured.



When we last checked Ro's progress, she was ON THE AIR with VHF/UHF/DMR and had mounted the vertical HF antenna, connected into the grounding system, and started the trap calibration. She is now ON THE AIR with the vertical HF; however, there is still some fine-tuning required on the 6 traps for 80-10 meters. She has also decided to add traps for 12-meters and 17-meters. These traps are on backorder and will be installed when received. She is also researching adding 160 meters (may put on dipole rather than vertical due to trade-off is loss of 80-meters on vertical).

Ro reports that the ICOM IC-7300 is working like a charm even though she is far from understanding all the new technology in this SDR unit. Santa was kind enough to sneak a Heil Pro Set Elite headset under the tree to compliment the HF setup.



Next Steps: Complete installing and fine-tuning the traps. Mount dipole, connect to grounding system, and get that antenna ON THE AIR.

To be continued...

LARC 2017 Officers



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N4JDE



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**Send comments concerning the Newsletter
to Ro Maddox K4HRM hrmaddox@nettally.com
Suggestions and articles are appreciated.**