AUGUST 2015

N4LNR

News & Views

P. O. Box 3276
Lenoir, NC
28645

Serving Amateur Radio In Caldwell County

Save the Date!

Next LARC Meeting
August 13, 2015
Thursday, 7:00 PM
2806 Gamewell Fire Dept
Morganton Blvd SW,
Lenoir

LARC Weekly Net
Thursdays 9:00 PM
146.625 MHz Minus PL 94.8
Alt 147.330 MHz Plus PL 141.3

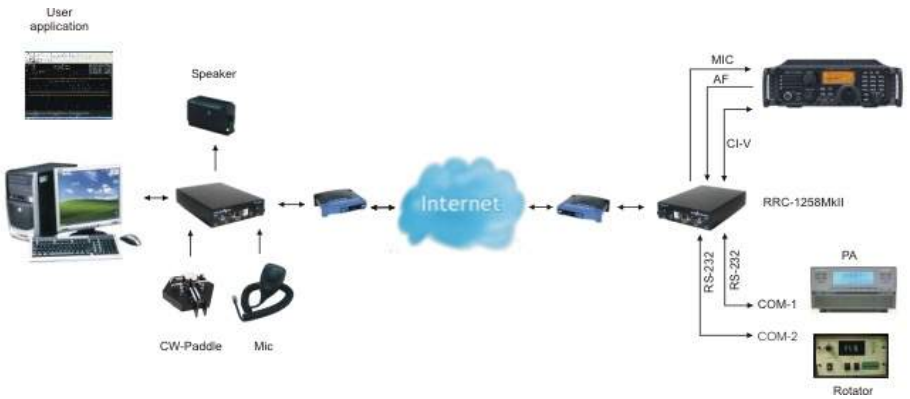
Caldwell ARES Net
Sundays 9:00 PM
147.330 MHz Plus PL 141.3

Remote Station Operation At August 13 Meeting!

Join us at the August meeting for an interesting presentation by Tim Slay N4IB on the basics of remote operation of a ham radio station using RemoteRig. Learn about what it is, how to configure, equipment, software, connecting to the Internet, FCC regulations, problems, and why do it.

A brief business meeting will follow the program, including updates on current Club projects and discussion of issues of interest.

Bring a friend to the meeting!



President's Message

Introducing someone to the hobby
How did you get into amateur radio?

I had been working at my current employer for about three years. One of the guys that work with me had been a ham since before he was in high school. He often times talked about the interesting technology and new aspects of the hobby that he had discovered. Soon, I began to gather interest and paid attention as he explained an aspect of radio during our break or lunch times. There were many conversations about frequency and wavelength and other basic tenants of radio.

As part of these conversations, he mentioned that there was a hacker space that had been founded in Granite Falls. One Saturday we drove down and took a tour. They had a bunch of rooms filled with different kinds of tools and machines. They also had a ham station with an antenna on the roof. They mentioned that there was going to be a class teaching the Technician material and I told them I would try and make it.

After going to the three sessions and taking many practice tests, I walked into the testing room on a summer Saturday morning. I was nervous but I knew that I had prepared well. I walked out with a passing score. My license followed quickly and I received my current call, KK4SZI. I was amazed at all of the things that I could now do. I started talking on my local repeaters and planned on getting my General level license. A few months and another class at Foothills Community Workshop, I passed my General and the HF "bug" bit. I started putting up antennas at my house and buying all kinds of new gear. I really have come to like HF, including all the modes. Ham radio has become a hobby of mine and none of it would be possible without a group of hams that were willing to share their passion.

Many people were pivotal to me becoming a radio operator. From the ham who encouraged me to study and get my license to the one who taught the class and gave me the information that I needed, there were those that influenced me along the way and helped pave the way into a hobby that I now love. There are many people who enjoy hobbies that line up closely with radio. There are those who enjoy working with electronics and radio-controlled devices to those who use computers and enjoy technology. Without someone giving them the nudge, they may never experience radio. As a Club and as individual hams, our purpose is to grow in the hobby ourselves but our greater purpose is to pass along the hobby to others. I am glad the Club voted at the last meeting to volunteer at the NC Mountain State Fair's Ham Radio booth and Special Event station

This booth will help us spread the "gospel" of radio and help develop the next generation of hams for years to come. If you would like to help out at the booth or the radio station, let me know. We will be volunteering September 19th on a Saturday to man the booth/station and share our wealth of knowledge of all things radio. If you cannot help with the event, make an extra effort to share the hobby with your relatives, co-workers, and friends. And, be on the lookout for other opportunities to help spread amateur radio in the community.

Tanner KK4SZI

Repeaters Are Like Printers...huh?

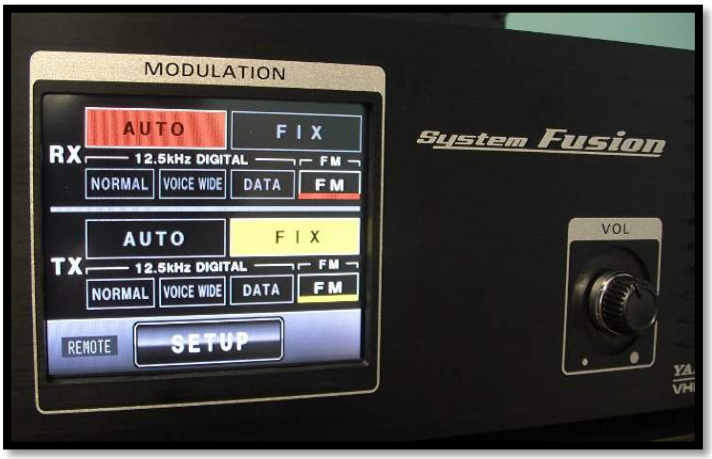
By Phil Crump KG4BCC

Amateur radio encompasses many different aspects of communications. One can talk around town, utilize digital modes, or communicate worldwide; amateur radio means different things to different people. One of the most used mediums in our area is VHF/UHF voice. It seems that these modes are the most simple, and people enjoy them as soon as they get their first license.

While these modes are extremely popular, they rely on infrastructure to expand coverage areas. Repeaters, duplexers, antennas, towers, feed lines and much more are all very important to the success of our VHF/UHF communication. Because this infrastructure is housed at remote sites on mountaintops, the equipment doesn't always get the proper attention it deserves.

Things happen over time, and audio quality and RF quality degrades and repeaters become noisy, or loose range. The infrastructure requires a lot of upkeep and monetary investment if it is kept in proper order. A good repeater setup will cost approximately $8,000 when properly installed!

Over the past few months, digital modes have been gaining popularity. Technologies like DMR, D-star, and Yaesu Fusion hit the market, with no clear market leader. Each digital mode isn't compatible with the others and this causes hams to scratch their head trying to decide what radio to purchase. Each technology has pros and cons but Yaesu has introduced an interesting marketing twist with their new 'System Fusion' digital radio system.



Yaesu knows to sell more of their digital radios; they need the backend infrastructure to be in place to support their proprietary digital protocol. Yaesu has decided to sell repeaters (that normally cost around $2,000) for $500! This is an ingenious idea; building backend infrastructure so people will purchase more radios. Let's stop and think about this new business strategy for ham radio just a moment.

This business model exists in other technology areas and economists call it 'loss leader' marketing. Stop and think about printing companies like HP or Lexmark. They give away printers so consumers will purchase expensive ink cartridges! No matter what you think about Yaesu, it was a stellar idea to use loss leader marketing to sell more radios.

Advertising works

So, why do consumers fall prone to such advertising schemes? I really don't have an answer but their 'loss leader' marketing strategy had me pulling out my wallet and begging them to take my $500! This marketing strategy has been so popular, the repeaters are on 12 week lead time to ship! So I'm glad to say, the Hibriten VHF machine, the 147.330 repeater will be upgraded to a Yaesu Fusion repeater. The repeater has a super sensitive receiver, and with proper filtering on the front end, this repeater will be a great upgrade for our area!

Fusion works

Not only does Yaesu have an awesome marketing strategy, they have a good business model to back it up. Other digital modes like DMR require a 'rip and replace' type upgrade to convert to digital. It's not backward compatible with our current analog radios.
Yaesu built their digital system to be backwards compatible with the analog world. They do this with tone squelch. The analog audio is transmitted with a tone output, so analog users don't hear digital transmissions (unsquelched). Also, someone with a digital radio, can transmit digital to the repeater, and the repeater will convert it to analog. Amazing technology!

One thing I want to explain is my personal opinion on digital VHF/UHF communications in our area. I want to be very clear that DMR is a superior digital standard for us, in our area. For others, other technologies make sense but for us and for our area DMR is the superior standard. I could write a 20-page article on why I believe this, but just believe me ☺. If you want a digital radio, go DMR. Because Yaesu is offering a $2,000 repeater for $500, I couldn't pass it up. The repeater will run in analog mode just like the repeater today, but it will have the option to allow digital communication. I believe that we owe it to Yaesu to leave the repeater in an 'auto' mode that supports analog voice and digital if someone wants to use it. If we don't support their promotion, they will not do it again. Thus, we owe it to them to run it in 'auto' mode which will repeat a digital conversation and analog conversations. I hope you understand my reasoning behind it, and feel free to disagree or call me to discuss it further.

With that being said, we need to slowly start making a change in our radios to support the new functionality of the repeater so that it doesn't interrupt our analog conversations if it's ever used.

Important changes

To support the new Hibriten repeater that is coming in, we need to begin modifying the programming in our radios.

The existing programming will still work, but you will hear the digital transmissions unless you modify your programming in your radios. It's really simple.

Keep in mind, do NOT make the changes until August 29th, or you will not hear audio on the repeater!

1. Frequencies will stay the same --147.330 receive and 147.930 transmit.
2. Tone will stay the same -- Tone 141.3, but we need to add **Tone Squelch**. This will enable our radio to not only transmit a tone when keying up, but to also open the squelch when receiving the same tone from the repeater. *This will ensure you do not hear digital transmissions (being transmitted unsquelched).*
3. Bandwidth will change from 25 kHz to 12.5 kHz (wideband to narrowband). This is a simple programming change in your radio menu. *Radios manufactured in the last 15 or so years will support this, if your radio does not, it's not a big deal.*

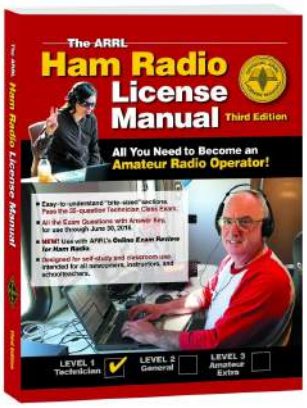
Foothills Community Workshop
Learn - Teach - Make

Technician License Class In August

Foothills Community Workshop will offer an Amateur Radio Technician level license class on three consecutive Saturdays, August 8, 15, and 22 from Noon until 2pm. With some additional on-line exercises, this class is intended to help prepare for the entry level Technician level Amateur Radio Exam.

Topics include: Rules and regulations, Station setup and operation, Operating procedures, Basic electronic terms, components and calculations, Electromagnetic waves, bands, and modes, Propagation and antennas, and Safety

This class is free and open to the public. A license exam session is tentatively scheduled for Saturday, August 29 at Noon and is available to anyone wishing to obtain a Technician License or upgrade to General or Extra. The testing fee is $10.



Go to www.foothillscommunityworkshop.org for directions or contact Michelle KD4YTU at 828-754-5002 or michellesuddreth@bellsouth.net for additional information.

The current Technician License Manual and test question pool is applicable until June 30, 2018.

Extra! Extra! Extra!

By Stan Zawrotny K4SBZ

Someone in an on-line forum claimed that the Technician Class exam is easy enough for a caveman to pass and that the General Class Exam is easy enough for a high school dropout to pass. But, he says, the Extra Class requires real knowledge about physics and electronics – it is equivalent to the knowledge contained in several upper division college courses. So why, of the 717,201 licenses listed in the FCC's database at the beginning of this year, were there 349,163 'cavemen', 167,257 'high school dropouts', and 133,391 'college-level students'? If the exam is that difficult, why has the Amateur Extra Class shown the most remarkable growth over the past decade, climbing by slightly more than 27 percent to represent almost one out of every five U.S. hams?

In the Beginning

First, some history to put this 'exalted' class license in context. The Amateur Extra Class was created in 1951 as the new highest-level class and was then reached by passing both the Element 4B theory exam and a 20 WPM Morse code proficiency test. From the 1950s through the early 1980s, FCC Field Offices would actually issue diploma-form certificates to Amateur Class licensees.

Today, General licensees may upgrade to Extra Class by passing a 50-question multiple-choice examination issued by Volunteer Examiners. No more Morse code test is required! In addition to some of the more obscure regulations, the test covers specialized operating practices, advanced electronics theory and radio equipment design.

So What Do You Get?

Clearly, Technician is a big step up from no license. And General is a big step up because it gives you access to the HF bands (which is very limited for techs who have CW only on narrow slivers of just 3 HF bands and phone on only one.) and lets you use all modes on all bands, if not the entire bands, and lets you use more power on most bands.

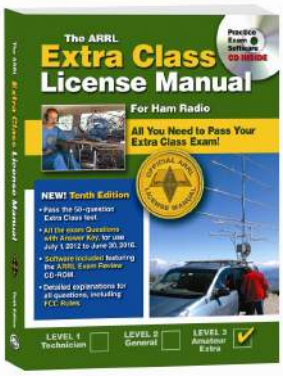
So what does all that extra work get you as an Extra?

Essentially four things:

1. Extra band privileges
2. Use of a shorter call sign
3. Ability to be a Volunteer Examiner (VE) for all license classes
4. Prestige

More Band Privileges. Are the few extra portions of the bands that you gain when you become an Extra worth the effort? In my opinion, YES! Extra gives you twice as much of the 80-meter band than Generals can use and also sizable gains on 40, 20, and 15 meters. If the bands are crowded, the Extra Class sections will often be less so. This could be a real advantage in a contest. For example, when I am on 20 meters during a DX contest, I get much better contacts below 14.225 MHz than above. I always start in the Extra part of the band and work up. The contacts are faster, better DX, less QRM and more efficient. My QSOs per hour drop when I pass 14.225 MHz. (I know, because the logging software keeps track of it.)

In the ARRL International DX Phone Contest in March 2014, more than two-thirds of my contacts were below 14.225 MHz and once I passed that frequency into the General area of the band, my QSO rate dropped noticeably because of the QRM. There were also fewer DX stations in that range, so General Class operators were missing out on the many DS stations that only operate in the Extra Class frequency bands. The reverse of this can work to your advantage if there are state QSO parties or other U.S. contests going on that are causing the General portion of the bands to become crowded with stateside hams who stay in that portion of the band in order to reach as many hams as possible. When that happens, you can just duck down into the Extra Class bands and work DX without all the QRM from U.S. hams.



Shorter Call Sign. Don't you find it tedious identifying yourself with a six-character call sign? Wouldn't it be nice to have a '1x2' like Gary K3OS or a '2x1' call like Warren WU3Y. Just become an Extra like them.

VE for All Class Exams. Because Extras are the top license class, they can be volunteer examiners (VEs) for all license classes, even for prospective Extras.

Prestige! What can I say? To have demonstrated that you are among the 'best of the best.' To have a '1x2' call.' To be able to roam the bands without worry of going past the edge of the range for your class. DX. Freedom. Glory. Prestige. *Become an Extra now!*

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Ham Tips

Ham College is a new show for those new to the hobby and those wishing to get into amateur radio. For more information, go to www.hamcollege.tv

Back To The Future With Digital Radio

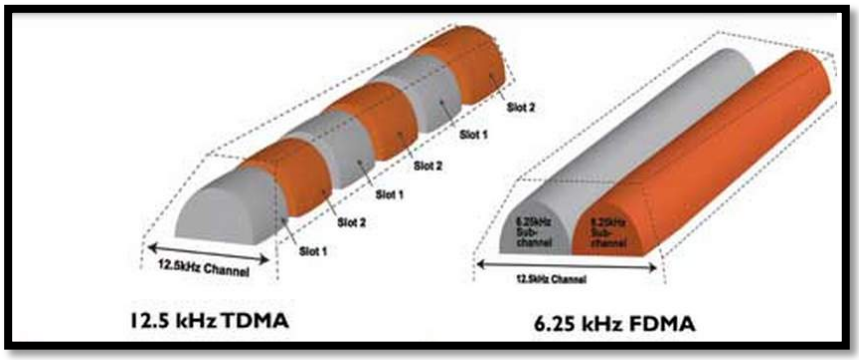
By Phil Crump KG4BCC

If you flip through any recent amateur publication, you will say to yourself, *"Great Scott! Amateur radio is going digital!"* What are the advantages of digital and why are we being pushed to go digital? I think we can answer this question with one word, but that wouldn't be very fun or informative, so let's take the longer approach.

A few years ago, the FCC stated that where they were going, they wouldn't need roads. The FCC mandated that all transmissions on VHF go from 25 kHz to at least 12.5 kHz. This will accomplish 2 goals for them. More licensing fees (meaning more money) and, hopefully, 'more' frequencies. This means the 5 watts your HT produces is concentrated in 12.5 kHz of spectrum instead of the older 25 kHz standard of spectrum. While this sounds like we have more power concentrated in a narrower space giving us a bigger punch, we loose ½ of our bandwidth. Bandwidth is the audio fidelity (i.e., data rate). Just like in the computer world, the more bandwidth we have the more information we can send at a time. Take a look at AM radio fidelity compared to FM -- FM radio has more bandwidth and this makes it sound better! The solution to overcome the bandwidth restrictions is to go digital. When we go digital, we can put more information into the same space (arguably).

So, we are going digital to give us better audio, and more features. Whenever manufactures try to fit digital signals into analog spectrum, they accomplish it in 2 different ways: splitting time or splitting frequency.

Option 1 (TDMA) we split time not in a Marty Mcfly and Doc Brown kind-of way, but by splitting transmissions into 2 'timeslots' in the 12.5 kHz channel. The transmitter cycles on and off many times a second based on a space-time continuum.



While the transmitter is off, a 2nd transmitter can transmit, thus giving us 2 simultaneous voice paths in the 12.5 kHz wide spectrum. This is how DMR works. We can have 2 conversations unrelated to each other at the same time on one repeater by splitting time. *Great Scott!*

Option 2 (FDMA) The other method is to make each radio transmit a continuous 6.25 kHz signal, thus giving us 2 talk paths in 12.5 kHz of spectrum. This method isn't as complex as TDMA, but it accomplishes the same thing in a round-about way. It gives you 2 audio paths in 12.5 kHz of spectrum. You can now begin to understand why the different digital modes are not compatible with each other!

So while there are many different digital technologies in amateur radio voice, one thing is clear; in our area DMR is the standard of choice. There is a large infrastructure presence in our area, providing the best digital coverage vs any other digital technology. Also, the infrastructure is linked. You can have a conversation across town, across the state, or across the world. With the technology being TDMA, we can have 2 conversations simultaneously! Much thought has been placed into this system, and it was built from the ground up to be scalable. Other digital technologies are coming along, but at a more rapid rate, and no real implementation 'plan' that offers the ease of use and simplicity of DMR.

If I want to talk 'local' I go to my 'local' channel. If I want to talk 'worldwide' I go to my 'worldwide' channel; there is no DTMF codes to memorize, confusing memory banks to walk though, simply turn the knob and talk! The only disadvantage to DMR in my mind, is the lack of native support for amateur radio. DMR was built for commercial networks/environments, not with amateur radio in mind. Systems like Yaesu Fusion were built to be backwards compatible with older amateur radio analog conversations and have built in support for APRS and image transfer using SSTV. While Yaesu Fusion was built around amateur radio, it doesn't support linking natively. You must purchase another piece of hardware and connect it to the repeater and a PC at the repeater site. This really adds to the cost and complexity of the system. DMR is clearly the digital mode of choice in our area.

So with all this being said, do we really know the real reason amateur radio is going digital? I believe it is money. Manufactures know things have to change to make people purchase more radios. Why would consumers keep purchasing analog radios if we already had one? Money -- it's what makes the world (and amateur radio) go 'round!

LARC To Sponsor Day at NC Mountain State Fair Ashville - September 19

LARC will join with the Road Show Amateur Radio Club to sponsor a day at the NC Mountain State Fair will be held September 11-20, 2015, at the Western North Carolina Agricultural Center, 1301 Fanning Bridge Rd., Fletcher, NC (across from the Asheville Airport, I-26 Exit 40). Last year, the Fair attracted 191,000 visitors. The Fair celebrates the people, agriculture, art and tradition that make the region great.

The Road Show Amateur Radio Club joined by area Clubs hosts a visitor's booth and special event station N4F. This is possibly the largest public ham radio demonstration in the Southeast. Volunteers are needed to work the event. If interested, contact Tanner KK4SZI at tannergreer@bellsouth.net.

W4DXCC Convention 2015 Pigeon Forge TN September 25-26

The W4DXCC DX and Contest Convention located in Pigeon Forge, TN is September 25th and 26th. This is the 11th year and it will be another great event. Convention registration is $30. The presentation schedule is full and packed with presentations. Manufacturers are located in the lobby right outside of the conference hall allowing easy access to all the gear. Come and have a one on one conversation with the manufacturers and twist the knobs.

This year for the first time there is a *Ham Radio Bootcamp* on Friday before the convention. The *Ham Radio Bootcamp* is an all day session that will help the new amateur learn how to build a station, build antennas, make QSOs and log them and after lunch learn how to DX -- how to contest and learn some tricks for DXing. This is the Elmer you never had to help you get started right. This session is sure to be of use to every Ham and it's free.

For more information, see http://www.w4dxcc.com/index.html

From The July Meeting

Attendees. Tanner KK4SZI, Tom KA4HKK, Josh N4JDE, Phillip KG4BCC, Susan N4OJN, James N4NIN, Ro K4HRM, Shawn KI4ZKP, Dave KK4MWF, Scott KC4SWL, John N4LBX, Irv W4IWK, David K3DW, Michelle KD4YTU, and guests Phillip Jenkins N4HF, Mark Berrera, Curt Hiller.

Repeater. Seeking volunteer to take the lead on getting the work finished on the Club repeater. Tanner KK4SZI to develop a list of needed work. Ro K4HRM to contact Marv WA4NC for info on tower climber. John N4LBX to also get info on tower climber.

Trailers – Communication & Antenna. Both trailers worked well at Field Day 2015. Additional work is needed to complete both trailers. Tanner KK4SZI will schedule workdays. Discussed storing trailers at Lovelady Volunteer Fire Dept. Additional information will be obtained before pursuing.

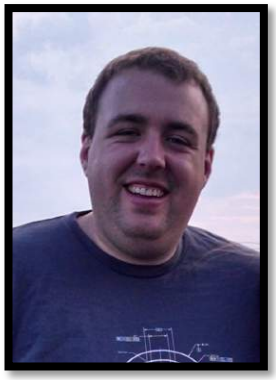
Public Relations. LARC will sponsor one day (September 19, 3-10 PM) at the Road Show Amateur Radio Club Special Event Station N4F and Booth at the NC Mountain State Fair, Asheville NC. Tanner KK4SZI will coordinate getting Club volunteers for the event.

Field Day 2015. Tom KA4HKK commented that it looks like the Club will have a little over 4,000 points from Field Day 2015 – a good increase from last year.

Program. John Crowe presented on Emergency Antennas and demonstrated a wide variety of simple antennas.

Did You Know? Ever wonder what the VLA does? Watch Beyond the Visible: The Story of the Very Large Array, which describes the technology and the science being done with it.

LARC 2015 Officers



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