

# Minutes of the Forsyth Amateur Radio Club - 13 August 2018

By Jim Register (KV4SJ)  
Secretary, Forsyth Amateur Radio Club

**1. Call to Order and Welcome:** The 13 August 2018 meeting of the Forsyth Amateur Radio Club at the Red Cross Building, 690 Coliseum Drive, was called to order by President David Shoaf, KC4X, at 1936 hours. David welcomed all attendees, approximately 52, for coming out this evening, and invited each to give their name and callsign.

**2. VEC Report:** Dale Mierisch, WB9SZL, reported we had two candidates who passed their tests. Mike Vernon, W4MAV, earned his Extra. Timothy Brown, KN4HQN, earned his General. Dale and the club offered congratulations. Dale also recognized the VEs for their support.

**3. Business Meeting:** David, KC4X, reminded everyone about our upcoming business meeting on August 20, 2018 at Sixty-Six Pizzeria on Frontis Plaza Drive, right near the new Academy Sports. The meeting starts at 7:30; we get there between 6:00 and 7:30 to eat, and hang around until 9 or so when they want to go home.

**4. September Program:** David, KC4X, announced that next month's program will be Satellite 101, and there were some handouts listing the satellites we were likely to be able to hear in this area. The info is also available at the club website.

[http://www.w4nc.com/files/SATELLITES\\_YOU\\_MAY\\_BE\\_ABLE\\_TO\\_HEAR-WS.pdf](http://www.w4nc.com/files/SATELLITES_YOU_MAY_BE_ABLE_TO_HEAR-WS.pdf)

**5. Treasurer's Report:** Kent Englebert, K4HKE, had to work, so David, K4CX, gave a brief treasurer's report. Our balance in the bank is roughly \$3,660.

**6. ARES® Report:** Harlan Cobert, W1HRC, reported on several items:

- ARES® is still part of our program, but as of July 1, we became an AUXCOMM group. DHS and the state of North Carolina label all auxiliary communications that occur during disasters and other emergencies.
- Harlan reminded everyone the AUXCOMM net runs Thursday nights and we get a lot of training done in thirty minutes. The net is on the W4NC repeater, 145.470 starting at 8:30 pm on Thursday nights.
- ECOMM Net Controller Course - November 10th 9am until 4 pm. There will be a lunch break. All you need is an amateur radio license - the ICS certs are not required for this. Morning will be going through scenarios, teaching what has to be done, including the documentation, and creating a communications plan. Harlan did one the other night for the Dixie Classic Fair - took about twenty minutes, but it included all players - law enforcement, fire, EMS, etc. Afternoon will be exercises - be split into three-person teams.
- If you haven't taken the ICS 100, 200, 700 and 800 courses, please do - they are available online. <https://training.fema.gov/is/courseoverview.aspx?code=IS-100.b>
- ICS-300: If you have the ability and would like to be the senior operator at the EOC, please take the ICS-300 class. This is a three-day long classroom-only course.
- DHS AUXCOMM Course: This 3-day course will be offered again next year, and you are encouraged to apply for and take it. It is held annually at the Charlotte Fire Academy. Enrollment

is limited to 30 people. The state normally pays for the hotel; your expenses would be travel each way, breakfast and dinner each day. Lunch is provided.

- Tour to Tanglewood is coming up in September 22 and 23; we still desperately need people. Harlan has been assigned as the Incident Commander for the event. He will be busy interfacing with four different jurisdictions law enforcement and EMS, and may not be able to sit at a radio. The ARES page on the club website has the signup link where you can verify that you have signed up or look for a gap you can fill.

A radio operator sign up slot is for a radio operator that is not part of a SAG team. Radio operators will be stationed at rest stops, at the integrated command center, or assigned as a shadow.

A SAG sign up slot is for one vehicle and the radio operator or team that will be managing that vehicle. If a two-person team is operating a vehicle, one person should sign up, and put the other individual's info in the comment field.

<https://www.signupgenius.com/go/20f0944acab22abfd0-2018416>

**7. Suggestion Box:** David, KC4X, reminded everyone that our official Folgers coffee can suggestion box was open for business and just waiting for customers, and asked that folks not leave it neglected. The suggestion box wants to know what programs you would like to see and whatever else is on your mind. Please note that "Launch Harlan out of a torpedo tube" is not an appropriate program idea, at least according to Harlan.

**8. Christmas Party:** David, KC4X, announced that we will again be having the Christmas meeting/dinner at Mi Pueblo on 644 S. Stratford Road. We will have the whole room to ourselves. This will be on December 3, the first Monday in the month.

**9. Program - Repeaters and what they do:** Dale, WB9SZL, gave a program explaining repeaters, also known as Amateur Radio Relay Stations and how they work. Seeing a number of new faces, Dale covered subjects for folks unfamiliar with repeater operation, and how we deal with issues more experienced folks might have encountered, such as when the band opens up and we receive signals from a distant repeater as well as our local ones. Dale apologized for some of the slides noting, however, that it was an amateur type of presentation.

Dale showed pictures of our original installation of the 145.47 machine on WXII's property on Sauratown Mountain, with the antenna about 2500 feet above sea level.

Dale then talked about what repeaters are, about the three W4NC repeaters the club hosts, the temporary repeater sites we have and why we have them, repeater functions, add-ons, user codes, and EchoLink.

Dale named some of the members of the Forsyth Amateur Radio Technical Society who help maintain the repeater system and mentioned that we picked this particular name so we would have a catchy acronym. When asked if we were related to G.A.S. over in Guilford, he replied not at present, but with all the mergers and acquisitions, that could come to pass. Dale allowed that one of the key things to remember is that we are an unpaid volunteer organization and we appreciate all the members support, whether it is club dues, donations, and your time, which is much appreciated.

Repeater Benefits:

- Extended Communication Range through an elevated high-gain antenna. Range between handheld radios is frequently from four to seven miles, but when talking through a repeater that range can go up to a hundred miles or more.
- Autopatch - ability to link a radio to a phone line, popular before cellphones were everywhere.
- EchoLink -

#### Repeater Components:

- Controller: The controller handles timeouts, repeater shutdown, and, in the case of malicious interference, can record and fingerprint the transmitter being used. The controller contains the Carrier Operated Relay which starts the transmitter when the receiver picks up a signal. The controller also contains tone detectors so a sub-audible tone can be used to prevent unwanted signals from triggering the repeater if necessary. The controller uses DTMF tones as used for telephone dialing to control certain functions, and Dale showed a slide with some common user function key sequences.
- Receiver and Transmitter: These, well, receive a signal and retransmit it on a different frequency. In the 2-meter band, the transmitter and receiver frequencies are offset by 600 kHz. For example, our 146.640 repeater transmits on 146.640 MHz, and receives on 146.040 MHz. This frequency offset makes the next component useful.
- Duplexer: A duplexer lets the repeater transmit and receive simultaneously using the same antenna and cable. Basically, the duplexer uses a system of filters to block any transmitter energy from getting to the receiver, which would deafen it to the weak signal being received, and block any of the received signals from reaching the transmitter. (The transmitter probably wouldn't notice, but we want the entire received signal available to the receiver.)

#### Common Repeater types:

- Analog
- Motorola's DMR which links your digital handheld to the internet so you can talk across the state or across the country.
- Icom's D-Star - the first to come out. The Greensboro group has some, but we do not and there are none in our area.
- Yaesu's Fusion - We have two Fusion repeaters, which are designed to work digital to digital, analog to digital, and analog to analog. Ours are currently locked in fixed mode due to a firmware issue.

Dale also explained the concept of open and closed repeaters. Basically open repeaters are available to all users, while closed repeaters are only open to members. Most closed repeaters were in major metropolitan areas, where users could rack up some impressive phone bills when using an autopatch. Closing the repeater would limit its use to people who helped defray the operating expense. There aren't many closed repeaters any more

#### Repeater Coordination:

SERA, the Southeastern Repeater Association, helps repeater owners work together to avoid interfering with each other. Someone wanting to activate a repeater would submit their desired location, operating frequencies, and power level to SERA, who would use software to plot the signal range and check for potential interference. It turns out that the 2-meter repeater frequencies are full; there is room on 220MHz, and the 440MHz/70cm is filling up.

Issues with keeping them running:

Parts availability is becoming a problem - some of these are so old some parts aren't made any more, and you may have to buy a piece of junk equipment to get parts.

Intermodulation distortion results when you have several transmitters operating in an area and one or more go into non-linear operation due to nearby signals. The non-linear operation turn the device into a mixer, creating sum and difference frequencies, one of which is sure to interfere with your gear. One symptom is that it works fine on the bench but doesn't work once you get it installed out in the field. It's tricky to figure out which transmitters are causing the problem, and can require some diplomacy to get them to put a priority on fixing their issue that they don't necessarily see.

Dale also put up a slide with some guidelines for operating over a repeater. He has previously recommended the site linked below as a good start to learning the do's and don'ts.  
<http://www.k0nr.com/wordpress/my-articles/fmvhf-operating-guide/>

Dale closed with some videos of each repeater installation, pictures of the tuned cavities that make up our various duplexers, and updates on each repeater's status.

Using DTMF function codes:

Key up, identify, then enter the code.

375 - Test DTMF Tones

400 - Time of Day

725\* - DVR a 16 second of your audio to check how you sound to others.

**10. Adjournment of Meeting:** A motion was made and seconded. Meeting was adjourned at 2101 hours.

**11. Partial List of Meeting Attendees:** Below are the names of FARC meeting attendees.

Dale Mierisch WB9SZL, Jerry Minor K4GW, Doc Holliday WB9SZL, Jim Register KV4SJ, Terry Brown AK4D, Jeff Stafford AC4YN, Steve Mellen K2MLN, Bill Kennedy WD4OTY, Ken Melvin KM4NFQ, Cathy Melvin KM4OCS, Rick McCullough, Nick Gibiets KN4ACT, Terry Goode W3NPS, Adam Martin KN4GCP, Steve Weifenbach KN4LKP, Daryl Knight N5WK, Gene Bowman WB4MSG, Jim Atkins W4UX, John Kippe K1PPE, Logan Weddle KN4MZR, Geoff Rudy KK4MOV, Matt Taylor KB1BSR, Dave Griffith WA4MKK, Bruce Bailiff WB4QCM, Brian Kuebert N4UEZ, Caroline Keubert KM4VCO, John Canup KM4HVB, Randy Tompson NC4RT, Rick Batte N4MBI, Steven Mierisch KG4JWU, Doug MacArthur W4STH, Stacey MacArthur W1LLO, Sam Poindexter NI4TG, Van Key KC4WSK, Steve Patterson WA3RTC, Harold Richardson N4HER, Mary Depuy KN4LKO, Judson Davis KG4OHQ, David Ramsey W4OIL, Henry Smith W4HHS, Sarvasri Ananda KG7SU, Harlan Cobert W1HRC, Mary McClellan KM4WPO, Bob McClellan W3AVB, Ronn Dunn KN4RKD, Jim Bielski KJ4FIN, Mark Gaines KM4TUK, Bobby Meier AA9AU, Mike Vernon W4MAV, Michael Pope K4OLD, Don Edwards WS4NC, Pedro Tomas KN4GKY.