

ARC-SHORTS

June 2021

Club Repeaters: 147.315 (PL 107.2), 444.6 (PL107.2), 224.82 (PL107.2), 53.13 (PL107.2) 927.6 (-25Mhz, PL107.2), and 1282.600 (PL 107.2), DSTAR 145.38Mhz, 442.060, and 1284.
: DMR IS UP AND RUNNING 442.4125 +5Mhz Color Code 1.

PLEASE USE OUR REPEATERS.

Next Meeting

Due to the continuing COVID 19 cautions, we are still meeting via ZOOM. Our next meeting will be on June 11th at 7PM. Don will be sending out the link. We will be discussing FIELD DAY. We will be taking precautions per COVID-19, but we will be at Joseph Hensley Park on June 26th and June 27th. We will reduce operations to 4A plus the FREE VHF station. Ian, N8IK is our Field Day Chair. At meeting we will run down the equipment to be supplied and other actions that we must take to make Field Day a success.

Presidents Corner

Presidents Corner

Field Day 2021, June 26-27, is less than a month away, and it is final that the Alexandria Radio Club will conduct an in-person Field Day 2021. With recent relaxations in COVID-19 restrictions by the CDC and the State of Virginia regarding outdoor events, the Leadership Group made a decision to revise an earlier decision. Because of these recent changes, it is important to note that planning for Field Day 2021 has been compressed into a much shorter timeframe. COVID-19 health precautions had to be given a lot of emphasis in planning for the event. Full details for planning and health precautions for the event have been completed and will be briefed by Field Day Chair, Ian, N8IK at the June 11th club meeting.

Regular club meeting events are still subject COVID-19 restrictions at our normal meeting location, the City of Alexandria Police Headquarters building. Until we are notified those restrictions are lifted and that we may resume our regular meetings, we will continue with virtual club meetings using Zoom.

The May 14th ARC monthly meeting featured Barry Feierman (K3EUI) discussing Antenna Tuners: When do you need one, and how do they work; and other antenna matching techniques. Licensed in 1958 (KN3EUI) as a teenager, Barry notes that his knowledge of electronics was nil back then, but he could memorize hundreds of questions and answers to pass FCC tests. He confides that it took him decades to really understand radio concepts, which he would now like to share with others. He is a retired physics teacher/professor with a background in astrophysics. He loves to tinker with sound card digital modes and build and test antennas. He is the net manager of the Pennsylvania NBEMS (EMCOMM) net and active in ARES/RACES in Chester County PA. His presentation abstract:

- Why antennas have reactance (phase errors) and how to correct the situation with a "tuner" at the antenna, or in the shack.
- Detailed discussions of how the tuner provides a conjugate match, zeros out reactance, modifies impedance back to 50 ohms, and so the tuner provides a "REFLECTION GAIN" to offset the antenna mis-match loss.
- Antenna-feedline matching devices, including delta matching, gamma matching, stub matching, etc.

The list of upcoming club activities and presentations planned for 2021 is listed below. The Club also welcomes any ideas from club members for programs and activities in 2021. Please send your ideas to president@w4hfh.org.

One of the greatest things about Alexandria Radio Club is how accomplished some of our club members are. Steve Herman (W7VOA), one of our club members, wrote an article published in the ARRL May/June issue of 'On The Air,' entitled "There is always Someone Listening." Steve is recognized worldwide for his prominence as a journalist with Voice of America, and as a ham. His interest in radio took him from SWLing as a kid to the VOA and the Whitehouse. See page 34, <https://is.gd/Tyszgk>. Also see Steve Herman (W7VOA), <https://www.grz.com/db/W7VOA>. Steve has been an active contributor to Alexandria Radio Club contesting scores.

On June 2, Alexandria Radio Club launched its first Tech Talk series with a Tech Talk #1. The talk featured a discussion of "Repeaters, how they work and much more" given by Tim (KT4MV). Tim has been a ham since 1981 and has developed an extensive background in building and maintaining many repeaters in the local area. He has the honor of being selected as a Life Time Member of the Alexandria Radio Club for his many contributions to the club. Tim's presentation on amateur radio repeaters included: Basic concepts, Locations, Equipment, Repeater controllers, Duplexers, PL tones, Voting systems and remote receivers, Remote links, Antennas and lightning protection, and Coordination. Thanks to Tim (KT4MV) for a great presentation. Tech Talk #1 has been posted for your viewing on <https://drive.google.com/file/d/1rLwPKatBFGty-ppiY0Uw3skt8seDZqM/view?usp=sharing>. Tech Talk topics are based on a club survey conducted this past spring. However, all sessions are open to all hams. These talks will be conducted monthly during the coming months. The purpose of these sessions is to provide an opportunity for in-depth conversations, including Q&A, on a variety of ham radio topics. This follows up on ideas from club members desiring to build on their knowledge of ham radio. It is also hoped that these sessions will build on club mentoring efforts for our newest hams and will serve to promote their continuing interest in club activities. Finally, it is hoped that these sessions will lead to more interest in operator license upgrades enabled by increased knowledge of ham radio. A list of coming Tech Talk topics is enclosed at the end of this email.

Orders for Polo shirts with club logos and safety vests have been completed. Over 20 club members ordered these items. We are hopeful that the garments will arrive by Field Day weekend for delivery.

ARC recorded Zoom meetings with featured presentations are located at <https://drive.google.com/drive/folders/1MG9VUqKOWeoWEWt0oBwychbzh4qllqbl?usp=sharing>.

Scheduled Activities and Presentations for 2021 updated as of June 1, 2020

- January 8th – ZOOM MEETING, Pentagon Radio Club MARS Operations by Gary Sessums (KC5QCN), 2021 Plans & Programs, Voting Meeting
- February 6th – (CANCELLED) FROSTFEST, Richmond, VA

- February 12th – ZOOM MEETING, VA QSO Party, Gordon Miller (NQ4K)
- February 15th – (CANCELLED) George Washington Day Parade Participation
- March (Date) – License Classes begin, Ends May (Date)
- March 6th – (CANCELLED) St Patrick’s Day Parade
- March 12th – ZOOM MEETING, How to Learn and Have Fun with Morse Code by Long Island CW Club, Howard (WB2UZE) and Jim (W6JIM)
- March 20-21th – VA QSO Party Weekend
- April 7th – ZOOM MEETING, FIELD DAY 2021 planning committee kickoff
- April 9th – ZOOM MEETING, West Mountain Radio, Mark Siegesmund (W9WMR)
- April 24th (VIRTUAL) WINTERFEST, Annandale, VA
- May 14th – ZOOM MEETING, Antenna Tuners: When do you need one, and how do they work?

Barry Feierman (K3EUI)

- May 21-23rd – (CANCELLED) HAMVENTION, Dayton,
- June 11th – ZOOM MEETING, FIELD DAY 2020 final briefing
- June 26-27th – FIELD DAY 2021 Weekend
- July 9th – ZOOM MEETING, AREDN, Joe Porcelli (KT3I)
- August 1st – Berryville HAMFEST, Berryville, VA
- August 13th – ZOOM MEETING, ARC ARES, Rick Bunn (N4ASX)
- September 10th – ZOOM MEETING, DX Engineering, Tim Duffy (K3LR)
- October 8th – ZOOM MEETING, TBA
- October 31st – MARINE CORPS MARATHON
- November 12th – MEMBERSHIP MEETING, Elections
- December 10th – MEETING, Christmas party

Proposed Tech Roundtable Topics for 2021 (Panel of experienced club members and others discussing their experiences with Q&A.)

1. Ham Activities for New Technician Class Hams
2. Handy talkies (HT) options, what kind, how much? Pros and Cons
3. Building a Go-kit for ARES
4. QRP (Reduced transmit power out)
5. Portable ops (rigs, batteries, antennas, etc.)
6. Mobile installations
7. Starter Base Station Options
8. Stealthy Antennas for city dwellers
9. QSL Cards
10. Getting Started with ECHOLINK
11. Getting Started with Amateur Radio Satellite Communications
12. Parks on the Air for Beginners
13. Working with Repeaters
14. Using NVIS
15. Working with Digital modes
16. Radio Scanners for Beginners
17. Packet Radio
18. Raspberry Pi Applications
19. Virtual Ham Shack Tour
20. Ham Shack Hotline

21. Installation and Logging with N3FJP
22. Matching Antennas to Feedlines
23. Propagation and Sunspot Cycle 25
24. "Time" for new amateur radio operators

Please get vaccinated and stay safe with masks and social distancing.

73 Don, KI4D

Last Months Meeting Minutes

ARC Meeting Minutes

May 14, 2021

Guest Speaker Berry Feierman (K3EUT)

Featured Topic: Antenna Tuners, Antenna Feedlines and Characteristics:

Barry briefing covered Antenna Fundamentals Antenna Matching and SWR, His presentation abstract for the meeting were as follows:

- Why antennas have reactance (phase errors) and how to correct the situation with a "tuner" at the antenna, or in the shack.
- Detailed discussions of how the tuner provides a conjugate match, zeros out reactance, modifies impedance back to 50 ohms, and so the tuner provides a "REFLECTION GAIN" to offset the antenna mis-match loss.
- Antenna-feedline matching devices, including delta matching, gamma matching, stub matching, etc.

Below is a quiz that Barry provided us as food for thought, please give it a try.

Antenna QUIZ by K3EUI Barry TRUE or FALSE

1. A balanced two-wire feed line will not radiate as long as the two conductors have equal currents in opposite directions, since their fields cancel.
2. The SWR on a feed line is determined by the impedance mismatch that occurs at the junction of the feed line at the antenna terminals.
3. Changing the feedline length by $\frac{1}{4}$ wavelength will change the measured impedance and antenna system resonant frequency in your shack but will not change the SWR on the line (assuming low-loss line).
4. The impedance of a $\frac{1}{2}$ wavelength dipole operating slightly off the resonant frequency changes mostly due to reactance changes (X) and not so much from changes in resistance (R).
5. If your antenna operates on a frequency where one-half of the forward voltage is reflected at the antenna terminals, then the reflected power will be 25% of the forward power, and the SWR will be about 3:1.

6. The attenuation of all feed lines increases with frequency of the RF.
7. Attenuations of 1 dB or less are too small to be detected so ignore them.
8. Attenuations of 3 dB in your coax result in 50% of the power lost to heat in the cable. That represents about 1/2 S – unit loss to the receiving station.
9. Ladder-line and window-line have far less loss than typical coax.
10. RG213 has a loss of less than 0.5 dB / 100 ft at 4 MHz, so 200 ft of this cable can be neglected in terms of your antenna efficiency on 80m.
11. The impedance of a center-fed 1/2 wave dipole at a reasonable height in the clear is roughly 50-70 ohms, depending on ground and other nearby conductors. As the dipole gets closer to ground, the impedance drops rapidly.
12. If both halves of a center-fed dipole get equal current, then each half of the antenna will radiate the same energy. Even the side that is connected to the shield (grounded at the rig) will radiate 50% of the wave's energy.
13. When operating at a frequency BELOW resonance, a dipole exhibits CAPACITIVE reactance (the current leads the voltage at the feed point).
14. When operating at a frequency ABOVE resonance, a dipole exhibits INDUCTIVE reactance (the current lags the voltage at the feed point).
15. The resonant frequency of a dipole does NOT depend on where the feed line is attached (center-fed, off-center fed, end-fed) .
16. The impedance of a dipole increases as the feed point location moves outward from the center of the dipole towards the ends of the dipole.
17. A 100 ft long dipole mounted at least 40 ft above ground and fed with ladder- line or window-line makes a great all-band HF antenna, but you will likely need an antenna tuner in the shack to match the higher impedance ladder line to 50 ohms that your rig wants to see.
18. All end-fed antennas present a high impedance to your feed line, and thus need a high impedance to low impedance UNUN or a parallel tuned LC circuit to match the antenna to typical 50-ohm coax.
19. The main function of an antenna tuner is to provide a “conjugate match” and turn the reflection LOSS due to high SWR into a reflection GAIN. The reflected power is turned into additional forward power.
20. non-resonant antennas can radiate just as well as resonant antennas if matched to your rig.

ARES

I have two items of interest.

The first is Field Day. More on that from our field day chair (Ian, N8IK) at our next meeting. Field Day is important on several fronts. 1 – New hams get a taste of HF radio and emergency operations. For those who think that HF radio is no longer relevant you only need to look at the natural disasters:

hurricanes, volcanos in Hawaii etc. The ability to use HF for longer distances when regular infrastructure is DOWN HARD is critical and Amateur Radio is the primary support for that type of emergency. 2 – The effectiveness of a station is reflected in the score. While Field Day is not strictly a contest, the contest is part of Field Day. It tells us how effective we can be. PLEASE come out and participate. In 2019 we set up a schedule for people to sign up for each station in two hour increments. There were problems with that, but we are making changes. When you finish your two hours, PLEASE turn the station over to another pair of operators. Another method is to swap one person out every hour so that there is continuity. It's only fair with 5 stations (10 operating positions) that a club with 100 members shift and allow all to participate. We need lots of willing hands to help with the setup and takedown. SO, if you come out to set up, that's a good time to sign up for a shift on one of the stations.

Marine Corps Marathon is UNCANCELLED. This event REQUIRES about 140 amateur radio operators. Even if you are a new ham, consider volunteering. It can be an exceptionally long day, On the Virginia side of the course, people need to be in place very early and cannot leave until the race has passed them. So if your working Mile Marker 23 you are in for 12 hours. Most of the traffic is on 2 meter FM so gear can be a handheld with sufficient batteries and maybe a mobile antenna. Other positions include Aid Stations for those with AREDN, PACKET or D-STAR we have 10 Aid Stations which need that level of expertise. Also covered are the start finish area, net control, zone commanders and of course eyes and ears at mile markers. So, consider volunteering. All the nets are formal nets, and you are providing a valuable and very PUBLIC service. The professionalism of amateur radio operators is well known.

D-STAR

I want to welcome our current graduates of our Tech and General classes to the roles of Amateur Radio and congratulate you on your efforts. For those who follow up and join the Alexandria Radio Club, note that the club has more repeaters than any other club in the area. See the top of the first page for more details.

Three of our repeaters are D-Star repeaters which are digital repeaters and can be linked to reflectors via the internet to anywhere in the world. The easiest way to use this feature is to set up your radio with multiple channels for your local D-Star repeater. RT Systems software makes it easy. But you do need to be careful.

An example is below

RX Freq	TX Freq	Offset	Direction	Mode	Display	MYCALL	RPT1	RPT2
145.38000	144.78000	600 kHz	DUP-	DV	W4HFH T	CQCQCQ	W4HFH C	W4HFH G
145.38000	144.78000	600 kHz	DUP-	DV	W4HFH U	U	W4HFH C	W4HFH G
145.38000	144.78000	600 kHz	DUP-	DV	REF062AL	REF062AL	W4HFH C	W4HFH G
145.38000	144.78000	600 kHz	DUP-	DV	REF062BL	REF062BL	W4HFH C	W4HFH G
145.38000	144.78000	600 kHz	DUP-	DV	REF062CL	REF062CL	W4HFH C	W4HFH G

I've removed a bunch of other items in the channel lines.

The first line W4HFH T is for TALKING on the repeater. After you link or unlink you need to switch to that channel to communicate

The second line W4HFH U is to UNLINK a reflector. Do this when you are done as a courtesy to other users and to the others using that reflector.

The last three lines are the commands to LINK our repeater to a specific REFLECTOR.

The sequence is :

- 1 – Listen – Is someone using a reflector on our repeater. If so, you do NOT want to UNLINK.
- 2 – IF the repeater is free and you want to link to a reflect like REF062B go to the channel that says REF062B and key for about 10 seconds
- 3 – The repeater will come back with SYSTEM LINKED.
- 4 – Make your call or operate on that reflector.
- 5 – When you are done, go to W4HFH U and UNLINK by keying for 10 seconds.

Recently an amateur operator linked the W4HFH D-Star repeater to an INTERNATIONAL reflector and when done, did not unlink that reflector. We hold a weekly net on the W4HFH 2 Meter D-Star repeater and that net was carried all over the world. Some D-Star users in Australia were put out and sent our trustee a nastygram. Normally we DO link the repeater to the 62B reflector for the net so that members from out of the local area can check in. (N4ASX when he's in Florida, K4QFS in Guam and others), but the repeater should be unlinked when the reflector is not needed.

Hamfests –

The spread of COVID-19 (AKA Corona Virus) has put a major damper on hamfests for 2020 and early 2021. However, with people getting vaccinated, there are more hamfests showing up on the calendar. Let's hope this continues.

Ole VA Hams will be holding a tailgatefest in lieu of their hamfest. The date is June 12 from 8 AM to 2 PM in the lot across from Signal Hill Park in Manassas Park. Gates open at 8 AM. Talk-in will be on the 146.970 MHz repeater (PL 100.0 Hz). Here is the link: <https://w4ovh.net/wp-content/uploads/2021/03/ovh-tail-gate-2021.pdf>

The Baltimore Amateur Radio Club Father's Day Hamfest at Arcadia on June 20 from 8 AM to 2 PM. The location is the Arcadia Volunteer Fire Company Grounds, 162020 Carnival Avenue in Upperco, MD. Talk-in will be on the 146.670 MHz repeater (PL 107.2 Hz). Here is the link: <https://w3ft.com/hamfest/>

The Shenandoah Valley ARC has confirmed on their website that the Berryville hamfest will be happening on August 1, 2021. Gates open at 6 AM, breakfast starts at 7 AM and the famous barbecue lunch starts at 11 AM. SVARC does ask you please wear a mask. Here is the link for the hamfest: <https://svarc.us/hamfest/>

Whether it's Manassas or Berryville 2021, or Richmond 2022, once we are able safely to attend hamfests, let's be sure to all go to the first area hamfest.

Training –

We finished up our latest class on May 25 with 13 test takers. Here are the results:

New Techs:

Joseph Izaguire	KO4QQX
Sean Gallagher	KO4QQY
Brian Cavanaugh	KO4QQZ
Darin Leleux	KC3SFP
Daniel Beckler	KO4QVA

Louis Mingo Jr KO4QVB
Jonathon Carter KC3FSP
Jose Araiza KC3SFR

New Generals:

Kelly Wilken KO4ERF
Todd Taylor KO4IJH
Christopher Schneider KO4QVC
Phillip J Brown 3rd W3PJB

New Extra:

Troy Wright KC7URL

Congratulations to all. Everybody walked out with a new license or upgrade. When you hear them on the air, be sure to congratulate them on a job well done.

Contests –

- June 5 and 6 – Kentucky QSO Party. Exchange is RST and state.
- June 12 through 14 – ARRL June VHF Contest. All bands 50 MHz and up. Exchange is 4-character grid square.
- June 19 and 20 – West Virginia QSO Party. Exchange is RST and state.
- June 19 and 20 – West Virginia QSO Party. Exchange is RST and state.
- July 1 – RAC Canada Day Contest. Exchange is RST and serial number.
- July 10 and 11 – IARU HF World Championship. Exchange is RST and ITU Zone number. We are in ITU zone 8.
- July 17 and 18 – North American QSO Party, RTTY. Exchange is name and state.
- July 17 and 18 – CQ Worldwide VHF Contest. 6 and 2 meters. Exchange is 4-character grid square.

While not a contest, June 20 is ARRL Kids Day. Kids get a chance to talk with other kids (and adults) via radio while a licensed ham supervises them. If you hear one on, be sure to give them a call, or put your own kids on the air.

Don't forget Field Day on June 26 and 27. It's not a contest, but an emergency preparedness exercise.

Every Sunday evening at 8 PM local time, the K1USN Radio Club sponsors the "Slow Speed "Contest." The exchange is similar to a QSO. See the rules here: <http://www.k1usn.com/sst.html>.

Every Tuesday at 0000 (8 PM EDT Monday for us) is the Worldwide Sideband Activity Contest. Exchange is RS and age group (OM, YL, Youth YL or Youth). Here are the rules: <https://wwsac.com/rules.html>

Don't forget, be sure to send in your log within 7 days after the contest ends for all ARRL sponsored contests. ARRL now uses a web application for contest log submissions. Here is the link: <http://contest-log-submission.arrl.org/> Be sure to convert your file to Cabrillo format before submitting. Most logging programs support the Cabrillo format.

REMEMBER to support the CLUB'S score for contests by providing Ian, N8IK your info (Name, Call sign and Grid Square location) and submit your scores for the contests you play in. If the contest asks for

a club affiliation, the Alexandria Radio Club is on the list of contest clubs. Contesting is one way we show that we are using our frequency allocations.

Contests may not be your thing, but contests are a great way to show outside interests we do use our valuable spectrum. By showing we use our spectrum, other services will have a hard time proving that we don't use our spectrum and it's up for re-allocation to someone else.

Contests can also be a great way to become introduced to HF communications. While it can be intense, pick the contest and jump in. Most contests have a limited exchange so it is usually easy to get what the other station needs.

State QSO parties are a great introduction to contesting. Most are low-key and the exchange is limited.

Speaking of state QSO parties, there is now a state QSO party challenge. You can start accumulating multipliers by submitting a log in any state or provincial QSO party to 3830scores.com QSOPartyGroups.io/forum and [State QSOParty.com](http://StateQSOParty.com).

Repeaters –

The club repeaters are all up and running. The DSTAR repeaters are seeing a lot of activity. We have been linking the 70 cm repeater to Reflector 001C, the world-wide reflector and the 23 cm repeater to Reflector 030C, another busy reflector. If you want to link to another reflector, be sure to unlink the repeater first and then link to the reflector of your choice. All we ask is you unlink the reflector you were listening on when you are finished listening.

The DMR side is working normally with access to the DMR servers. If you use the DMRVA codeplugs, they have updated codeplugs on their website with some of the new DMR repeaters. The codeplugs include more than just the DMRVA system repeaters. Their website is <http://www.dmrva.org/>

DMRVA has announced on their website they will be partnering with the Hospital Emergency Amateur Radio Service (HEARS). HEARS operates linked repeaters primarily located in Southwest Virginia, North and South Carolina. New talkgroups will be added to the DMRVA system and at least one talkgroup will be deleted. We will have the details as soon as we see them.

We have resumed (semi-regularly) the follow-on net on one of the other repeaters after the Thursday net on the 2-meter analog repeater.

Ian, N8IK, has started a Wednesday night DSTAR net on the 145.380 MHz repeater at 8 PM. We have linked the repeater to Reflector 62B so members and former members outside the local area can join in. Some time ago, I asked the folks who maintain the lists of DSTAR reflectors to create a Virginia perma-link reflector. Many other states have them. Be sure to put Reflector 62B in your DSTAR programming.

As always, ham it up and get on the air.

73, Rich, KA4GFY