

SPARKS

P.O. Box 342768 * Memphis, Tennessee 38134-2768 * Volume 89 * June 2023



Delta Amateur Radio Club (DARC)

Sparks Newsletter

Website: <http://deltaclub.org>

Facebook:

<https://www.facebook.com/darcmem>

W4BS

REPEATER SYSTEM

146.820 ^{-107.2}	147.360 ^{+107.2}
146.625 ^{-107.2}	443.200 ^{+107.2}
224.420 ^{-107.2}	443.700 ^{+107.2*}
144.390 Digipeater	*Fusion

This month's meeting will be **IN PERSON ONLY** at 7 pm on Tuesday, June 13, 2023 at the Ellendale Church of Christ, 7365 Highway 70 in Bartlett, TN (1 ½ miles north of Highway 64 / Stage Road).

There will be FCC Testing Tuesday.

Program: “*N3FJP Field Day Logging*” by Steve Frazier, KK4VPT

VE TESTING: Don't forget the monthly ARRL Volunteer Examiner testing session prior to in-person meetings. Registration begins at 5:30 PM and testing begins by 6:00 PM. Please remember to bring two (2) forms of identification, at least one a photo ID, and copies of any existing licenses or CSCE's you might have. Please be on time for registration, as you will not be allowed to enter the testing session after 6:00 PM. This is to allow our volunteer VE team to finish in time to attend the club meeting. Candidates **MUST** have an FCC Federal Registration Number (FRN) **BEFORE** coming to the testing session. For more VE testing, or FCC FRN information, please contact:

Bob Vawter, KW4RJ, VE Liaison

Phone: 901-438-4563

Email: KW4RJ@ARRL.net

Announcements

ARRL Field Day is June 24-25, 2023

ARRL Field Day is June 24-25, 2023. Delta Club is partnering with Nashoba Amateur Radio Club, Mid-South Amateur Radio Association, and Shelby County ARES to host a Field Day event at the Germantown Municipal Park in Germantown, Tenn.

The Field Day event will run from Saturday at 1 pm to Sunday at 1 pm. Setup should begin by around 8-9 am on Saturday.

Free food will be provided to those participating in the Field Day activities. Deli sandwiches and chips will be served for lunch on Saturday, hamburgers and hotdogs will be available for dinner on Saturday, and breakfast will be provided on Sunday. Of course there will be plenty of snacks and drinks provided throughout the weekend, too.

The current plans for the lead station operations are as follows:

Information Table - Joe Lowenthal WA4OVO and Len Grice W4MKS

Get On The Air (GOTA) – Steve Frazier KK4VPT

15m and 80m – Matt Ryan W2MJR

20m – Fred Miller KS2X

Digital modes – David Wilke W5DJW

Satellite communications – Rick Tillman WA4NVM

CW – Pat Lane W4OQG

Logging Network/router setup – John Reiners KN4BVH

We will use the N3FJP logging software for the event. If you aren't familiar with the software, Steve Frazier KK4VPT will give a presentation on the software during the June Delta Club meeting.

This event is ideal for ham radio operators of ANY experience level! The Get-On-The-Air, or GOTA, station is perfect for anyone with little-to-no HF experience, as well as anyone who is not licensed. You don't want to miss this event!

2023 A Day In The Park

The Mississippi Section sponsors A Day in the Park once a year with clubs around the state.

This year it will be held October 14, 2023 at Olive Branch Park coordinated by both the Chickasaw Amateur Radio Association and the Olive Branch Amateur Radio Club.

The following is a link to their flyer:

<https://groups.io/g/CARA-MS/files/2023%20A%20Day%20in%20the%20Park%202.0/A%20Day%20in%20the%20Park%202023%20flyer.pdf>

HUNTSVILLE HAMFEST BUS TRIP - AUGUST 19, 2023
Submitted by Joe Lowenthal WA4OVO, Director of Training

DARC is sponsoring a 50-passenger bus trip to go to the Huntsville Hamfest on Saturday, August 19, 2023. The fare is \$99 if paid by July 12th and \$119 after July 12th. A spouse or child living at the same address can accompany a full fare rider for \$75. The fare includes the \$15 hamfest entry ticket. There will be biscuit sandwiches, water, sodas, chips, and fruit on the bus going to Huntsville and whatever is left for the trip back. There are no refunds, but you can sell your seat to someone else if you can not go. Let me know.

Cash or checks will be accepted for payment. Make checks payable to Delta Amateur Radio Club. You can pay at a meeting or at Field Day. You can also send your check to Joe Lowenthal WA4OVO, 6675 Ashbridge Cove, Memphis, TN 38120. Please include your name, callsign, cell phone number, email address and whether you want ham, sausage or plain biscuits.

Reservations will be on a first come first paid basis.

The bus will leave Germantown Baptist Church, 9450 Poplar Avenue at Johnson Road, Germantown, TN at 6:30am. The bus will leave Huntsville immediately after the 4pm door prize drawing and return to Germantown Baptist Church approximately 7:45pm.

Germantown Baptist Church has asked us to park in the back on the northeast side of the church so there will be security cameras on the cars.

The Huntsville Hamfest website is www.hamfest.org.

President's Corner
Submitted by Mary Jean Hall, KY4FB

June President's Corner
Submitted by Mary Jean Hall KY4FB

It's hard to believe that we are already a few weeks out from the ARRL Field Day, which is June 24-25. Delta Club will be co-coordinating a local event with NASHOBA, MARA and Shelby County ARES at Germantown Municipal Park. Setup will occur Saturday morning around 8-9am.

The event starts at 1 pm Saturday and lasts until 1pm Sunday. Several stations will be set up for you to observe or participate at, including a Get-On-The-Air, or GOTA, station for unlicensed individuals or those with little to no recent HF experience. Like many of our ham radio events, we will have free food! We will have sandwiches for Saturday lunch, hamburgers and hotdogs for Saturday dinner, and breakfast on Sunday. There will be plenty of drinks and snacks available throughout the event, too, for those who are participating in Field Day.

If you have any questions about how to setup a station, then don't miss this event! If you want to get some ideas how to improve your station setup, especially out in the field, then don't miss this event! If you want to enjoy the outdoors with other ham radio friends, then don't miss this event! This is a great time to get out and see what ham radio is all about! Check out this issue of SPARKS for more information.

Delta Club is sponsoring a bus to the Huntsville Hamfest again this year. Tickets have gone up some, but it is still a great value for what you can get! I always look forward to this bus trip. Huntsville Hamfest is a great opportunity to buy equipment in person, so you can save on shipping, and there are often a lot of awesome deals going on in the flea market booth area. There are seminars throughout the day that cover everything from emergency response, to weather balloons, and more. Check out this issue of SPARKS for more information.

See you all Tuesday!

73,
Mary Jean KY4FB

Treasurer's Report
Submitted by Jim Martin, KD4FUU

Please renew your membership right away, so you won't forget about it! The membership application may be downloaded from our website (for both renewals *and* new members) at:

<https://deltaclub.org/membership>

Annual membership fee is \$20 per individual or \$25 per family. Completed applications and payment may be mailed to:

Delta Amateur Radio Club
PO Box 342768
Memphis, TN 38184-2768

If you prefer you can print and bring the completed form, along with the membership fee, to any in-person meeting. Please contact Jim Martin KD4FUU at **kd4fuu@gmail.com** with any questions or concerns regarding application submission and/or payment of annual dues.

LIFEGREEN CHECKING FOR BUSINESS

April 29, 2023 through May 31, 2023

SUMMARY			
Beginning Balance	\$22,983.92	Minimum Daily Balance	\$20,791
Deposits & Credits	\$465.00 +	Average Monthly Statement Balance	\$21,703
Withdrawals	\$20.95 -		
Fees	\$0.00 -		
Automatic Transfers	\$0.00 +		
Checks	\$2,591.34 -		
Ending Balance	\$20,836.63		

DEPOSITS & CREDITS			
05/10	Deposit - Thank You		400.00
05/17	Deposit - Thank You		20.00
05/31	Deposit - Thank You		45.00
Total Deposits & Credits			\$465.00

WITHDRAWALS			
05/17	TN Sos Annual Rp 6157412286 Delta Amateur 1131798		20.95

CHECKS					
Date	Check No.	Amount	Date	Check No.	Amount
05/11	1587	1,975.45	05/16	1590 *	305.45
05/10	1588	135.20	05/22	1591	175.24
Total Checks					\$2,591.34

* Break In Check Number Sequence.

DAILY BALANCE SUMMARY						
Date	Balance		Date	Balance		
05/10	23,248.72		05/16	20,967.82	05/22	20,791.63
05/11	21,273.27		05/17	20,966.87	05/31	20,836.63

SMALL BUSINESS CD *8481

Available Balance	<u>INTEREST RATE</u>	<u>YTD INTEREST</u>	<u>INTEREST EARNED NOT PAID</u>
\$5,049.61	1.980 %	\$49.61	\$10.69
SHOW ACCOUNT NUMBER *8481			
ISSUE DATE	LAST INTEREST AMOUNT PAID	PREVIOUS YEAR INTEREST	
10/28/2022	\$24.60	\$0.00	
ISSUE VALUE	DATE LAST INTEREST PAID	MATURITY DATE	
\$5,000.00	4/28/2023	11/25/2023	
▲ Hide More Details			

SMALL BUSINESS CD *8503

Available Balance	<u>INTEREST RATE</u>	<u>YTD INTEREST</u>	<u>INTEREST EARNED NOT PAID</u>
\$11,122.99	2.230 %	\$122.99	\$26.54
SHOW ACCOUNT NUMBER *8503			
ISSUE DATE	LAST INTEREST AMOUNT PAID	PREVIOUS YEAR INTEREST	
10/28/2022	\$60.99	\$0.00	
ISSUE VALUE	DATE LAST INTEREST PAID	MATURITY DATE	
\$11,000.00	4/28/2023	11/26/2024	
▲ Hide More Details			

Applications Received - May 2023

(0) New Membership(s) - Pro-Rated Dues	\$0.00
(0) New Membership(s) - Dues Waived	\$0.00
(0) New Membership(s)	\$0.00
(2) Membership Renewal(s)	\$45.00
(0) Donations Received	\$0.00
Total Dues Received	\$45.00

Other Deposits & Credits

(1) ARRL Club Commission - New Members (\$15.00)	\$15.00
(1) ARRL Club Commission - Renewals (\$5.00)	\$5.00
Club Equipment Sales	\$400.00
Total Other Deposits	\$420.00

Total Deposits \$465.00

Withdrawals

Debit - TN Secretary of State - Annual Report	\$20.95
Total Withdrawals	\$20.95

Checks

Check # 1587 - Barry McDonald- Reimbursement for Yaesu DR-2X repeater, purchased from DX Engineering.	\$1,975.45
Check # 1588 - Joe Lowenthal - Reimbursement for donation to Wabash Valley Amateur Radio Association (\$100) and refund from prior club equipment sale (\$35.20).	\$135.20
Check #1589 - Void - Lost Check	\$0.00
Check #1590 - Mary Jean Hall - Reimbursement for register.com renewal.	\$305.45
Check #1591 - Scott Adams - Reimbursement for purchase of meeting space audio equipment and meeting refreshments.	\$175.24
Total Payments	\$2,591.34

DARC Board of Directors Meeting Minutes

Submitted by Paul Broom, KY4MX

DARC Board of Directors Meeting Minutes for May 2, 2023

Attendees: Paul Broom KY4MX, Jim Martin KD4FUU, Joe Lowenthal WA4OVO, Mike Harrison KM4MRW, John Reiners KN4BVH, Scott Adams KM4PMU, Barry McDonald W5CJ, and Len Grice W4MKS.

Absent: Mary Jean Hall KY4FB, Perry Hayes N4GJ

Guests: None.

The regular monthly meeting of the Delta Amateur Radio Club Board of Directors was held on Tuesday, June 6, 2023 at 6:30 PM on a Zoom video conference call, with the Director of Training serving as chair and the Secretary being present. Director of Training Joe Lowenthal WA4OVO called the meeting to order.

Unfinished Business

Joe Lowenthal WA4OVO reported that preparations are being finalized for Field Day that will be held on June 24 and 25 at the Germantown Municipal Park. The Delta Club is partnering with Shelby County AREAs, Mid-South Amateur Radio Association, and Nashoba Amateur Radio Club for this year's event. The current plans for station operations are as follows:

Information Table - Joe Lowenthal WA4OVO and Len Grice W4MKS

Get On The Air (GOTA) – Steve Frazier KK4VPT

15m and 80m – Matt Ryan W2MJR

20m – Fred Miller KS2X

Digital modes – David Wilke W5DJW

Satellite communications – Rick Tillman WA4NVM

Logging Network/router setup – John Reiners KN4BVH

Joe Lowenthal WA4OVO gave an update on the bus for Huntsville Hamfest on August 19. There are currently 9 people committed to the trip. No deposit is required for the bus, but payment must be made by August 1. The club needs there to be approximately 25 to 26 people attending in order for this to be an economically viable event.

Mary Jean Hall KY4FB had previously reported that the Register.com fee has been paid for the Club's website. Further information will be provided at the July Board meeting.

New Business

Jim Martin KD4FUU reviewed the treasurer's report with the group.

Board/Officer Reports

Barry McDonald W5CJ had nothing to report.

Paul Broom KY4MX presented 1 new member and 3 renewal applications for approval and made a motion to approve all. John Reiners KN4BVH seconded the motion and the motion passed.

John Reiners KN4BVH reported that Steve Frazier KK4VPT will give the June presentation on this year's Field Day and the N3FJP logging software that will be used. He is still working to try and get David Norris K5UZ, Delta Division Director, to speak at a meeting. He is also planning to give a presentation on mobile HF setups in the near future.

Mike Harrison KM4MRW indicated that he is on track for having Sparks out this weekend, but is still waiting on articles.

Len Grice W4MKS is working on press releases for field day and some related field day interviews that will take place on a sports talk radio program by Jelly Thompson N4HLT.

Scott Adams KM4PMU reminded the group that he won't be in attendance at the next meeting. A discussion was held regarding additional drink and snack purchases for the meeting. He also discussed the new audio upgrades that were implemented at the last meeting.

Joe Lowenthal WA4OVO adjourned the meeting at 7:12 pm. The next regular Board of Directors meeting is scheduled for Tuesday, July 4, 2023, at 6:30 PM on Zoom. Note: With the board meeting normally scheduled on July 4th, the meeting may be held on the 3rd or 5th.

Respectfully submitted by Paul Broom KY4MX, Secretary

Minutes of Last Month's Club Meeting Submitted by Paul Broom, KY4MX

DARC Meeting Minutes for May 9, 2023

Call to Order and Opening Remarks

The regular monthly meeting of the Delta Amateur Radio Club was held on Tuesday, May 9, 2023, at 7:00 PM at the Ellendale Church of Christ, with the President serving as chair and the Secretary being present. Club President Mary Jean Hall KY4FB called the meeting to order and then welcomed everyone to the meeting. At least 45 members and guests were present for the meeting.

Mary Jean Hall KY4FB recognized recent new members of the Delta Club and asked that everyone greet them during a break or after the meeting. She then took a roll call of those present and reminded everyone to sign in on the membership roster and also to sign one ticket for the November drawing.

Minutes and Treasurer's Report

Ham Hilliard W4GMM moved to approve the Treasurer's Report and Minutes as published in Sparks. Dan Wehner KN4FBJ seconded the motion. The motion was adopted by the club without objection.

Announcements

The VE and training updates were given by Joe Lowenthal WA4OVO. One individual upgraded from Technician to General in the testing before the meeting. He also indicated that a Technician training class will be starting on the second Monday in July, running for 6 Monday nights from 6:15 to 9:30. The class will be held in person at the Appling Farms Station of the Memphis Police Department, except for the 5th class which will be held at the Ellendale Church of Christ. The class material will parallel with the ARRL Ham Radio License Manual, 5th edition. He asked that interested individuals email him at WA4OVO@gmail.com with the subject line "Tech Class" with their name, email address and cell phone number. Mary Jean Hall KY4FB also reminded everyone that Ham Test Online is closing on June 30th, unless someone purchases the business, and will not be available after that date.

Joe Lowenthal WA4OVO provided an update on the bus for the Huntsville Hamfest that will be on August 19th. The bus will leave from the Germantown Baptist Church parking lot at 6:30 am

and will return at approximately 8:00 pm. The fare for the trip is \$99 per person if paid by July 12th, increasing to \$119 after that date. The fare includes the bus transportation, soft drink and water, snacks and breakfast biscuits on the bus, and the \$15 Hamfest admission. He also pointed out that concessions at the Von Braun center will only accept credit/debit cards this year.

Mary Jean Hall KY4FB reminded everyone about the announcement in Sparks regarding the ARRL dues survey that runs through May 31. Individuals must be logged in to their ARRL account in order to take the survey that is located at www.arrl.org/take-dues-survey. More information regarding the survey can be obtained in the April edition of QST which contains an editorial by ARRL CEO David Minster NA2AA.

Field Day is coming up the fourth weekend in June (June 24-25). Mary Jean Hall KY4FB indicated that there will be a planning meeting on Thursday May 11th at 6:00 pm at the Germantown Municipal Park in the Kiwanis Pavilion. Anyone interested in participating is encouraged to attend the meeting. It is a great opportunity to gain experience in different modes of Ham radio. Next month's Delta Club program will be on the logging software that will be used during Field Day.

Ham Hilliard W4GMM announced that the Armed Forces Day Crossband event will be on Saturday May 13th and that an event will be held at the Millington Fire Training Academy. He will be there at approximately 7:00 am and is looking for operators to help support the event. He also indicated that he will be holding a mini event for Field Day at the same location.

Ty McMahan KX4MQ brought in some economical DMR radios for people to see and also helped with programming for the radios. He stressed the importance of DMR and how it played a primary communications role during and after of the Covington tornado.

Mary Jean Hall KY4FB also indicated that while the 146.82 repeater is down and the nightly net is being held on the 443.700 repeater, it is a good time to dust off your UHF radios and get on the nightly net.

James Freed KQ4GGX is looking for Ham Radio Volunteers to host an event at his school's field day on Thursday May 11th.

Discussion / Program

John Reiners KN4BVH introduced Bobby Stroud KD5BS who gave a presentation on Parks on the Air (POTA). He was also assisted by Johnny McKenzie KG5YMI, who is currently ranked 12th in the Top Activators of Parks on the Air.

An interesting Q&A followed.

Closing Remarks

Delta Club President Mary Jean Hall KY4FB adjourned the meeting at 8:59 PM.

The next Delta Amateur Radio Club meeting will be Tuesday, June 13th, 2023, at 7:00 PM.

Respectfully submitted by Paul Broom, Secretary (2023)

Delta Ham License Training, 2022

Submitted by Joe Lowenthal, WA4OVO, DIRECTOR OF TRAINING

There is no charge for classes, but the student is responsible for the purchase of the license manual and the \$15 ARRL FCC examination fee. The FCC implemented a \$35 administration fee on April 19, 2022.

If you want to take a class, send an email to Joe at wa4ovo@gmail.com with the class name; ie, Tech Class, General Class, or Extra Class, on the Subject line and name, callsign if you have one, email address, and cellphone number in the text.

Licenses Earned in 2023 from Delta Classes

3 Technician

1 General

3 Extra

Note:

As of April 19, 2022 there is a \$35 FCC application fee for new hams, renewals, Vanity callsigns, etc except for license upgrade, systematic callsign issue, name, address or email changes. This is in addition to the \$15 ARRL VEC FCC exam fee.

The new Technician ARRL Ham Radio License Manual is the Fifth Edition with question pool that becomes effective July 1, 2022 for four years.

The current ARRL General Class License Manual is the Ninth Edition with question pool that became effective July 1, 2019 for four years.

The current ARRL Extra Class License Manual is the Twelfth Edition with question pool that became effective July 1, 2020 for four years. *This question pool will expire on June 30, 2023,*

As of late 2019, expired Amateur Radio license holders can get their license back by taking the current Technician exam and show proof of their previous license class. A previous Advanced Class licensee will only be able to get a General Class license.

PROPOSED CLASSES

All classes will be 3-1/4 to 4 hours long for six or seven sessions; one per week on a week night 6:15pm-9:30pm or Saturday day 9am-1pm.

If interested in a class, send an email to wa4ovo@gmail.com with Subject line: Tech, General or Extra Class and name, email address and cellphone number is text.

The next **General** license class will probably start in early November 2023
The next **Extra Class** license class will probably start in early January 2024

Tech Class 3-23 – July 10 – August 14, 2023

A Technician license class to be held in person to be on six Monday nights from 6:15-9:30pm on July 10,14,21,28, August 7 & 14. The first four classes will be instructional and the sixth class will be informational on FM radio basics, APRS, satellite, and digital modes the students can operate on. Classes 1,2,3,4 and 6 will be at the Memphis Police Department Appling Farms Station precinct, 6850 Appling Farms Pkwy, Memphis. The fifth class on August 7th will be a review of the 399 questions and answers in the FCC question pool with an opportunity to take the FCC exam(s) at Ellendale Church of Christ, 7365 Hwy 70 (Summer Ave) in Bartlett. To register, send an email with the Subject: Tech Class with name, email address and cellphone number.

CURRENT CLASS

None

COMPLETED CLASSES

Tech Class 2-23 – February 27 – April 3, 2023

A Technician license class began on six Monday nights from 6:15-9:30pm on February 27, March 6, 13, 20, 27 and April 3rd. There were thirteen students registered for the class. After the second class, it was down to ten. The first four classes were via Zoom. The fifth and sixth classes were in-person at Ellendale Church of Christ, 7365 Hwy 70 (Summer Ave). The fifth class was an opportunity to take the FCC exam.

Congratulations to Scott Holmes KQ4HJF, Caleb Wise KQ4HGG and Randy Redd KQ4HJH for earning their Technician licenses.



Tech Class 2-23 Testing

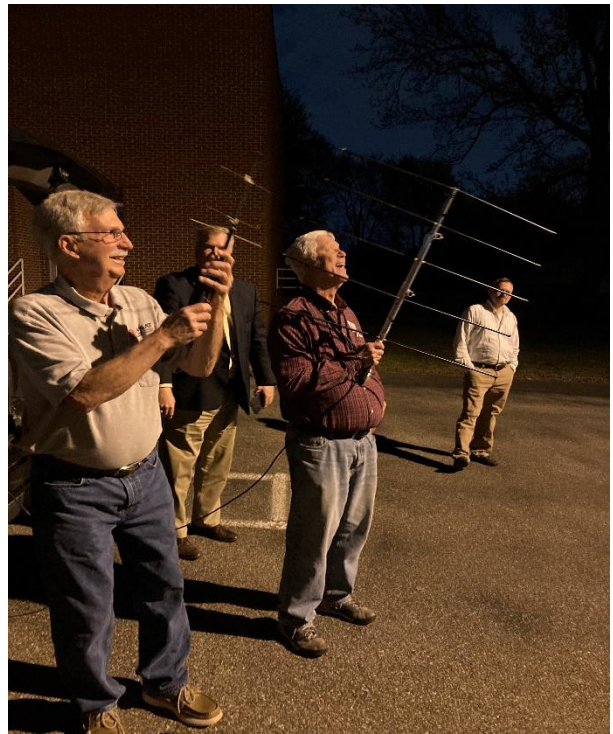
Photo by Mary Jean Hall KY4FB

The instructors were Joe WA4OVO, Paul KA4X, Park AI5CY, Bobby KD5BS, John KN4BVH, Perry N4GJ, David KY4FH and Carolyn KX4QF.



John KN4BVH on Digital Modes

Photo by Joe Lowenthal WA4OVO



The sixth class was for equipment demonstrations. The demonstrators were Joe WA4OVO on FM Radio Basics and Echolink, Rick KJ4NWQ on APRS operations: John KN4BVH on DMR, DSTAR, and Yaesu digital modes; and Rick WA4NVM and Richard K4DXF working satellites and the ISS.

Extra Class 1-23 – January 7 – February 25, 2023

An Extra Class license class was held for five Saturdays from 9am to 1pm on January 7,14,21, February 11 and 18 via Zoom. There were eight students in the class; four from out of town. Since only two students were wanting to take the FCC exam on the 25th and Joe WA4OVO was in quarantine, they were directed to take their exam online by finding one on hamstudy.org or at the next local test session.

Congratulations to Peter Finch K1EXR who passed his exam at the Port City ARC (PCARC) test session on February 4th. Congratulations to Mark Estabrook KO4GQV who upgraded on March 2nd at the Chattanooga test session. Congratulations to Richard Werner KC1DZK for upgrading at the PCARC test session on March 4th. Two of the Memphis students should be testing on the 14th at the Delta Club test session and one at the CARA test session on the 20th. The instructors were Joe WA4OVO, John KN4BVH, David KY4FH, Barry W5CJ, Dave AD4Q, Paul KA4X. Pat W4OQG, Park AI5CY and Bobby KD5BS.

General Class 5-22 – November 7 – December 5, 2022

A General Class license class was held for five Monday nights from 6:15-9:30pm from November 7th to December 5th. The first four classes were via Zoom with the fifth class in person at Ellendale Church of Christ, 7365 Hwy 70 (Summer Ave). The ARRL FCC exam was offered on the fifth night of class. There were 13 students registered for the class. Seven students completed the class with only four testing.

Congratulations to Davis Colston K5TGR, Bob O'Gradr KO4ZCJ and Will Tenney KO4TLY for upgrading to General.



General Class 5-22 ARRL FCC test session Photo by Joe Lowenthal WA4OVO

Congratulations to Dane Kunkler KI5EJD who upgraded at the Huntsville TX ARRL test session on March 11, 2023.

The instructors were Joe WA4OVO, Steve KK4VPT, Perry N4GJ, Paul KA4X, Barry W5CJ, Len W4MKS, Park AI5CY and David KY4FH.

The Delta Club ARRL VE Team of Bob KW4RJ, Mary Jean KY4FB, Perry N4GJ, Bob AI4GI and Joe WA4OVO provided the opportunity for FCC testing.



General Class 5-22 VEs

Photo by Joe Lowenthal WA4OVO

TEARDOWN OF AN ANTENNA TUNER

Submitted by Bob Vawter, KW4RJ

Seth Price

For simple receiving of radio signals, the electrical characteristics are only marginally important. This is why a modern car's FM antenna can be smaller than $\frac{1}{4}$ wavelength vertical, instead appearing as a mere nub on the car's roof, and still function. The end user probably notices no major inefficiencies even if the antenna is not at a resonant frequency of the incoming signal.

However, antennas that must carry transmitted signals must be designed near a resonant frequency. If they are not, this is known as an impedance mismatch, and some of the transmitted signal is reflected back into the transmitter. Not only is this inefficient, it can actually damage the transmitter.

Impedance mismatch

In order for there to be efficient transfer of power through a transmission system (transmitter, feed line and antenna), each component of the system must have a matching impedance. Impedance is basically the frequency-dependent version of resistance, where the impedance takes into account actual resistance and the reactance generated through capacitive and inductive effects.

If the impedance does not match, some of the signal is reflected away at the connection point. Instead of this power being used to transmit the intended signal, it is lost, and may even damage the transmitter. Most modern transmitters will detect this incoming signal and scale back the power to reduce the reflection and prevent damage, but this should not be relied upon. In either case, the signal is still being lost instead of transmitted.

Perfect matches in impedance are difficult to achieve naturally. Antenna geometries have different characteristic impedances, and most transmitters and feed lines have fixed impedance. Therefore, there needs to be a way to match the impedance of the antenna to the rest of the transmitter system. This is the main purpose of an antenna tuner, which adds capacitive and inductive elements to adjust the reactance, changing the impedance of the system.

Antenna tuners

Amateur radio operators and other multiband or multi-frequency radio operators often need a way to adjust the resonant frequency of their antenna so that they can transmit from a range of frequencies. This is particularly true when the radio operator may only have one antenna that is

expected to cover a wide range of frequencies.

An antenna tuner is a device that adds inductance and capacitance to the feedline to make the antenna look electrically different. More specifically, the tuner reduces the reactive impedance, making the antenna look like a purely resistive load. This changes the resonant frequency of the antenna and the feedline, which reduces the reflected signals back into the transmitter, protecting it and increasing the overall efficiency of the system.

This is not a magic box; some energy is lost in the antenna tuner. The tuner does not actually tune anything, it adds components to the system, increasing its complexity and the amount of time spent troubleshooting, if there are transmitting issues.

Example: A teardown of an MFJ-941C antenna tuner

The MFJ-941C Antenna Tuner was designed to match antennas for amateur radio operators. In particular, it is for the 10 meter, 15 meter, 20 meter, 40 meter and 80 meter (28 MHz, 21 MHz, 14 MHz, 7 MHz, and 3.5 MHz, respectively) amateur radio bands.

The user has a number of controls to adjust to tune the antenna. There are two knobs at opposite ends of the tuner labeled “Transmitter” and “Antenna,” as well as a knob to the right of the meter labeled “Inductance.” These are the primary controls for tuning the antenna. There is a knob to the left of the meter labeled “Sens/Power,” where the user can adjust the sensitivity of the meter to correspond to how much output power is being transmitted. This meter will handle up to 300 W.

The meter in the center can be used to show the output power through the tuner or used to show the reflected power back into the tuner, depending on the position of the button labeled “FWD REF,” standing for “forward” or “reflected” power.

<https://insights.globalspec.com/images/assets/922/19922/Fig1.png>

The back panel has multiple connection points for different antenna feedlines. This particular model can be used with two coaxial cables, a balanced line or one unbalanced wire. While it cannot handle tuning them all at the same time, the user can turn a large knob to select which antenna they want to tune. There is also a “bypass” option for when the antenna is a good electrical match and the tuner is unnecessary.

<https://insights.globalspec.com/images/assets/922/19922/Fig2.png>

Under the cover, the components are quite simple, though they are large. There are two large air capacitors, a large air inductor and a bird’s nest of wires connecting the antenna switch and the different feedlines to the rest of the tuner.

Attached to the “Transmitter” knob and the “Antenna” knob are large air capacitors. As the

knob turns, a series of plates overlap. When calculating capacitance, one of the variables is the amount of surface area that overlaps, so as the knob moves the plates, the capacitance changes.
<https://insights.globalspec.com/images/assets/922/19922/Fig3.png>

Connected to the “Inductance” knob is a large open-air inductor. Whereas the “Transmitter” knob and the “Antenna” knob are continuous, the “Inductance” knob is discrete, with multiple positions available. With the cover off, it is clear that each of those positions corresponds to a different tap on the large inductor.

<https://insights.globalspec.com/images/assets/922/19922/Fig6.png>

Final thoughts

Antenna tuners represent a compromise; they help make an antenna work across a wider bandwidth of frequencies while trading off some efficiency and complexity. For most radio operators, this is a welcome trade, allowing them to operate across a wider selection of frequencies without the need to build and place additional antennas.

<https://insights.globalspec.com/article/19922/teardown-of-an-antenna-tuner?uid=430837&uh=fd80b2&md=230306&mh=a37cb2&Vol=Vol18Issue3&Pub=59&LinkId=2126369&keyword=link%5F2126369&itemid=386160&frmtrk=newsletter&cid=nl>

73,
W4WTN

FCC MANDATES RF REVIEW OF YOUR STATION
as of May 3, 2023
Submitted by Joe Lowenthal WA4OVO, Director of Training

From K7QI in Hattiesburg.

The FCC rules governing RF exposure became mandatory for ALL transmitters in the U.S. to include Amateur radio and Amateur radio emergency services. The FCC had a 2-year transition period, which was implemented to allow all transmitters in the U.S. to make needed adjustments.

On May 3rd, 2023, the transition period ended and all transmitters in the U.S. must now comply. You must ensure your station is safe when transmitting. This becomes more evident to amateur operators who live near neighbors such as cities or towns. Every amateur radio operator licensed by the FCC must ensure that you understand and comply with this new ruling.

How do I make sure I am transmitting legally? The simplest way to further understand this is at the American Radio Relay League. They have written an excellent article in the May QST to include links to help calculate the needed formulas automatically. Just answer the questions asked to determine the “Maximum Permissible Exposure”. [ed. RF Exposure Calculator at [RF Exposure Calculator \(arrl.org\)](https://www.arrl.org/rf-exposure-calculator)] Other material to read and understand (for all insomniacs) would be to visit the FCC.gov. Look for OET Bulletins 65, 65a, through 65c. As your ARRL Technical Specialist, I am also available to assist you if needed.

One final thought; I know this may have come as a shock to most. The FCC has entrusted us with following all rules and regulations and has given us a hands-off approach because for decades we have always policed our own bands so please, let's get the job done and don't give the FCC any reason to think otherwise.

--73—

Jim
K7QI and Z81A

How to Print Your FCC License

1. Go to **<https://wireless2.fcc.gov/UlsEntry/licManager/login.jsp>**
2. Enter your FCC Federal Registration Number (FRN) and Password
 - a. If you do not know your FRN, go to Search box and click on License
Click on Amateur; Enter your callsign in Callsign box;
Your FRN is in center of page after your name
(If you do not know your Password, click on Contact Tech Support after Forgot your Password)
3. In When My Licenses screen comes up, click on **Now** in the green line reading “Change your paper authorization preferences [here](#), or download your official electronic authorizations now”
4. In Under Download Authorizations screen, highlight your callsign in the My Authorization area at the bottom left.
5. Click on ADD to right of the highlighted callsign.
6. Highlight your callsign in Authorization to Download and then click on Download on bottom right of screen.
7. If pop-ups are blocked, click on Allow One
8. Click Open at bottom and Print your License.

INDIVIDUAL EMAIL ADDRESS IN QRZ
Submitted by Joe Lowenthal, WA4OVO

Consider going to QRZ.COM and log in. Then enter your email address on their QRZ page so other hams can contact you vial email rather snail mail. Anyone looking for email addresses has to log in to QRZ to be able to see the ham's email address.

ARRL Benefits

ARRL amateur radio community. When you renew, a few of the benefits you will enjoy are: - Your choice of a print magazine. Eligible US-based ARRL members can elect to receive QST, the official membership journal of ARRL or On the Air, aimed at helping new and emerging radio communicators get active and on the air. - Digital access to all four ARRL publications -- QST, On the Air, and now QEX, covering topics related to radio communications experimentation, and National Contest Journal (NCJ), covering radio contesting. - Access to ARRLs Technical Information Service to assist with technical problems and help with your projects. To secure these amazing members-only benefits and many more in the coming year, visit www.arrl.org/join/WE1 to renew or call us toll-free at: 1-888-277-5289 (US Only) , Monday Friday, 8 a.m. to 5 p.m. ET. International members call (860) 594-0338. **If you join or renew through Delta Club, the club receives a commission. For new ARRL members or expired membership over 2 years there is a \$15 commission; for renewals a \$5 commission** ARRL Application.pdf

ARRL MEMBERSHIP COMMISSIONS Submitted by Joe Lowenthal, WA4OVO

Recently ARRL revised their membership commissions to ARRL clubs that process individual ARRL memberships through the club. The club can receive \$15 for new memberships or renewals of past ARRL memberships over two years old. Current renewals generate a \$5 commission. Current ARRL members can renew/extend their ARRL membership at any time. If you renew early, your ARRL membership is extended for the renewal period from the expiration of your current ARRL membership. The club only gets \$5 for each renewal application no matter how many years being renewed.

Here is a link to the ARRL membership renewal form.

[ARRL-Membership-Application.pdf](#)

Fill it out and bring a check made payable to ARRL to the meeting or mail to the Delta Amateur Radio Club at PO Box 342768, Bartlett TN 38134-2768. Or, you can pay Jim Martin KD4FUU in cash at a meeting. Even though credit card information is on the application, the Delta Club does not want to have access to credit cards so we will not accept an application with a credit card information for payment.

Also, here is a link to the Delta Club Membership Application:

[application-15-3.pdf \(wsimg.com\)](#)

Packet Update
By: James Butler KB4LJV

When operating on many of our bands, sunspots affect the frequencies we use for long distance communications. We know the sunspots increase to a peak and go back down in the 11 year cycle. Cycle 25 is now coming up with sunspots expected to peak in 2025. The good news is we now have a lot of websites to keep track of the Sun's activity. Some of the websites we can go to are shown in the following list:

<https://www.weather.gov/news/201509-solar-cycle>

Weather.gov offers information on solar weather and cycle 25.

<https://sohowww.nascom.nasa.gov/sunspots/>

This NASA site shows pictures of the sun with sunspots and talks about the solar cycle.

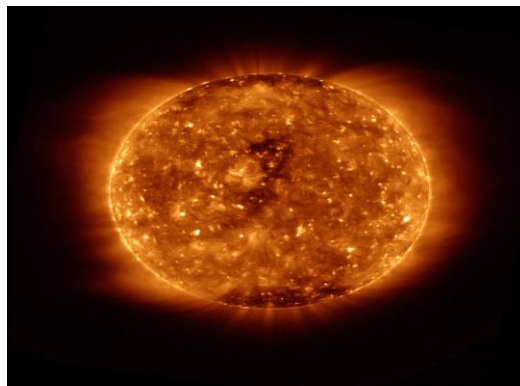
<https://www.solarmonitor.org/>

This is a NOAA website with solar information.

<https://www.swpc.noaa.gov/products/solar-cycle-progression>

This site shows graph information about the progression of cycle 25.

These are just a few sites which can help us get ready for Cycle 25. For more sites you can do a Google search for "solar cycle".



Amateur Hardware Update

By: James Butler KB4LJV

Many amateurs look for smaller antennas for use in a limited space. The loop antenna has this advantage. Preciserf is a company that markets a line of loop antennas for HF. Their low priced loop has variable capacitor tuner on the antenna. It has a 6 to 1 reduction drive to allow for precise tuning. The more expensive models have a special microprocessor controlled automatic tuner for the loop. They also sell other products such as antenna accessories and test equipment. If you are looking for the ultimate in loop antennas check out these from PreciseRF. The web address is <https://preciserf.com/>



**Amateur Radio Emergency Service (ARES)
Emergency Coordinator (EC) - John Reiners KN4BVH**

If you are interested in joining Shelby County ARES, complete an application at <https://www.tnares.com>. Click (do not pull down) on INFORMATION on the top right of the page. Next, go to TN ARES Membership and Appointment Application Forms and then click on ARES Membership Application: FSD-98. Complete the form and click SUBMIT at the bottom of the page. You should get an acknowledgment soon after submitting.

**YL News
Submitted by Mary Jean Hall, KY4FB**

The YL Net is every Saturday at 8:45 pm. We normally meet on the 146.820 frequency, which has a PL tone of 107.2 Hz. We are currently meeting on a secondary frequency, which is on the 443.700 W4BS repeater. This has a +5 MHz offset and a PL Tone of 107.2 Hz.

We encourage all YLs and OMs to check in with us on the YL Net!

Sparks Newsletter and Delta Club Information

SPARKS is published monthly by the Delta Amateur Radio Club and emailed to club members. All information published in this newsletter is provided as a service. While every reasonable effort has been made to ensure accuracy, neither the Delta Amateur Radio Club nor its officers assume any liability resulting from errors or omissions. All correspondence may be mailed to:

Delta Amateur Radio Club *P.O. Box 342768 * Memphis, Tennessee 38134-2768

Please note that you must provide your name and call sign if you're requesting specific actions or personal follow-ups, and also be aware that any profane or mean-spirited comments will be unceremoniously discarded without consideration.

Delta Club Members Can Like Us/Follow Posts On Facebook!

Go to <https://www.facebook.com/darcmem>.

2023 Board of Directors

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Repeater Trustee

Barry McDonald, W5CJ
W5CJ@ARRL.NET
901-853-0510

Upcoming Events

For more information go to <http://hamcalendar.com/>

June 17, 2023:	Knoxville Hamfest and Electronics Convention / ARRL Tennessee State Convention (Knoxville, TN)
June 24-25, 2023:	ARRL Field Day
August 19, 2023	Huntsville Hamfest
September 30, 2023:	Bluff City Blues Bike Ride, Shelby Forest
October 14, 2023	A Day in the Park

Memphis Area VHF/UHF Nets

Name of Net	Frequency (MHz)	Offset/Tone	Local Time	Day of Week
Delta Club Information Net	146.82	- (107.2)	8:00p	Daily
YL Net	146.82	- (107.2)	8:45p	Saturday
Four-Forty Net	443.7	+(107.2)	8:30p	Friday
Mid-South Bullfrog Net	146.535	[simplex]	7:30p	Daily
Elmer Net	444.175	+ (107.2)	9:00p	Sunday
MedMERS Net	146.82	- (107.2)	12:00p	Wednesday
ARES Training Net	146.85	- (107.2)	9:00p	Thursday
Sunday Super Niner Net	927.6125	- (146.2)	8:30p	Sunday
TN Statewide DMR Net	Digital – DMR		8:00p	Friday
Crittenden ARO	147.15	+ (107.2)	7:30p	Sunday
Crittenden ARO	442.4	+ (107.2)	8:00p	Thursday
Olive Branch ARC	147.255	+ (79.9)	8:30p	Thursday
Linked	444.7	+ (107.2)	8:30p	Thursday
Desoto County EMA	146.91	+ (107.2)	8:30p	Monday
Tipton ARS	145.49	+ (100.0)	7:30p	Thursday

TENNESSEE HF NETS

Net Name	Freq. MHz	Local Time	Day of Week
Tennessee CW Net	3.563	7:00p	Daily
Tennessee Slow CW Net	3.682	7:30p	Tue-Sun
Tennessee Alternate Phone Net	7.238		As needed
CUSEC	3.810		As needed
CUSEC	7.180		As needed

(Center for United States Earthquake Consortium)

3980 kHz – Tennessee Phone Net

Mon-Fri - 5:40 AM, 6:45 AM & **5:30 PM** (5:30 pm beginning Nov. 9 evening)

Saturday - 8:00 AM & 5:30 PM

Sunday - 8:00 AM only

Holidays - 8:00 AM only

DELTA CLUB ADVERTISEMENTS

DELTA AMATEUR RADIO CLUB
P.O. Box 342768
Memphis, TN 38134-2768

DARC Meeting: Second
 Tuesday of every month
 at Ellendale Church of Christ
 7365 Hwy 70, Bartlett TN



W4BS REPEATER SYSTEM
 146.82- 147.36+ (107.2Hz tone)
 224.42- 443.20+ (107.2Hz tone)



Joe Miller
Owner

Chick-fil-A Paragon Place
6282 Poplar Avenue
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