

SPARKS

P.O. Box 342768 * Memphis, Tennessee 38134-2768 * Volume 23 * September 2017



Welcome to the Delta Amateur Radio Club

Visit our home on the web: <http://delta.bobvawter.com>
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Facebook: <https://www.facebook.com/darcmem>
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W4BS

REPEATER SYSTEM

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

This month's meeting begins at 7pm on September 12, 2017, at Ellendale Church of Christ, 7365 Highway 70 Memphis, TN (1 ½ miles north of Highway 64 (Stage Road)).

In this month's program we welcome Delta Division Director David Norris, K5UZ. He will present "Putting the Spark Back in Amateur Radio: ARRL and Our Future." A lifelong citizen of Batesville, AR, and a registered professional (civil) engineer with the Arkansas Highway and Transportation Department in Little Rock, David has served for the past six years as ARRL Delta Division Director. He has held the positions of EC, OO, OES, VCE, VE, and DXCC Card Checker. First licensed in 1977 as WD5FUO at age 15 and now an Extra, he has been active off and on from various QTHs around the world. He has won or finished in the top ten category in several major contests over the years. He enjoys chasing DX with 353 DXCC entities confirmed, 5-Band DXCC, 2000 DXCC Challenge and DXCC Honor Roll. He also remains quite active with his local club and ARES/RACES groups.

Delta Club FCC testing sessions are held monthly except December. Registration begins at 5:30 PM; testing begins by 6:00 PM. Please bring a photo ID and another form of identification, copies of existing licenses or CSCEs, and your FCC Registration Number (FRN) if one has been issued. Please be on time for registration to allow our Volunteer Examiner (VE) team to complete their work prior to the club meeting. The 2017 test fee is \$15 (cash or check). Individuals receiving their initial FCC license grant at a Delta Club test session or through a Delta Club training class will receive a complimentary individual club membership for the remainder of the current calendar year when they also show proof of ARRL membership. For more information, please email our VE Liaison, Jeff Krause, AJ4GY, or call at 901-301-6776.

Congratulations to those who passed exams during Delta's August, 2017, test session: new Technicians Jack Griffith, KN4FDK, and Joseph Stafford, KN4FDG, new Generals Arpad Kovesdy, KN4FDF, and Carlos O'Neill, KK4CRO, and new Extra TJ Shouse, W4BNT. Arpad passed both Technician and General exams in one evening.

President's Corner

Submitted by Ken Laseter, KI4AOH

These last few days have been cooler and I'm enjoying every day. Hope all of you are too! It seems that the Dog Days of summer may not be so bad this year. I don't know about you, but I'm ready for some cooler weather and hope we actually have a Fall this year!

Don't forget that the Multiple Sclerosis 150-mile bike ride is from the Byhalia Mississippi High School to Oxford, Mississippi, this year. As always, this is a two-day event beginning Saturday morning, September 23rd and finishing up on Sunday afternoon, Sunday 24th back at the High School. Check the Sparks newsletter for additional information or attend this month's Delta Club meeting to hear the event plans in detail from Darrell Sheffield, KK4D. BY THE WAY – we could still use more volunteers for the event.

If you missed the bus to the Huntsville Hamfest again this year, you missed another FUN trip. I think we had a couple of empty seats so you could have gone with us. Now would be a good time to put the 2018 Huntsville Hamfest bus trip on your schedule. I think it is held the third full weekend in August each year, and we schedule the bus trip on that Saturday.

As always, please don't forget to check into the Delta Club information net on the 146.820 repeater at 8:00 pm each evening, and when you check-in, make sure to thank the net control operator for taking time from their family and busy schedule to call the net for us. They are some of our most valuable assets!

If you have not renewed your club membership now is the time. I think we still have some members that are procrastinating or have forgotten. Linda, KJ4CTX, will be glad to accept your renewal application and cash, check or money order, either at a club meeting or via snail mail.

See you at the meeting Tuesday night!

73

Kenneth Laseter
KI4AOH

Treasurer's Report
Submitted by Linda Laseter, KJ4CTX

DELTA AMATEUR RADIO CLUB
Monthly Treasurer's Report
For month ended August 31, 2017
Submitted by Linda Laseter Treasurer

CHECKING ACCOUNT

BEGINNING BALANCE	
BEGINNING BALANCE as of August 1, 2017	\$5,823.25

INCOME		
Date		Amount
08/02/17	Equipment sale	\$ 440.00
08/08/17	Huntsville bus trip	\$ 200.00
08/09/17	Membership 2017	\$ 15.00
08/10/17	Equipment sale	\$ 50.00
08/10/17	Patch sales	\$ 10.00
08/16/17	Huntsville bus trip	\$ 70.00
08/17/17	Huntsville bus trip	\$ 70.00
TOTAL INCOME		\$ 855.00 \$ 855.00

EXPENSES				
Date	Check #	To	Description	Amount
08/01/17	1421	Nashoba	Field Day expenses	\$ (179.11)
08/01/17	1422	Linda Laseter	Door prizes & postage	\$ (60.55)
08/02/17	1423	Cline Tours	Huntsville bus	\$ (1,683.00)
08/19/17	1424	Huntsville Fest	Tickets	\$ (300.00)
08/12/17	1425	VOID		\$ -
08/08/17	1426	Len Grice	Reimbursement shirts	\$ (75.00)
08/15/17	1427	Hanover Ins	Liability insurance	\$ (200.00)
08/15/17	1428	Hanover Ins	Equipment insurance	\$ (218.72)
TOTAL EXPENSES				\$ (2,716.38) \$ (2,716.38)

ENDING BALANCE as of August 31, 2017 **\$ 3,961.87**

CERTIFICATES OF DEPOSIT			
	Maturity Date	Balance as of	
Certificate of Deposit #1	10/10/2018	7/26/2017	\$ 10,502.10
Certificate of Deposit #2	10/19/2022	7/31/2017	\$ 10,079.58

TOTAL DARC CASH ASSETS **\$ 24,543.55**

This Month's Board Meeting Minutes
September 5, 2017, submitted by Barri Munday, WB4SWP

Attendees: Steve Frazier, KK4VPT, Bill Stevens, WC9S, Dan Lasley, NE7JN, Ken Laseter, KI4AOH, Linda Laseter, KJ4CTX, Barri Munday, WB4SWP, Scott Adams, KM4PMU, and Joe Lowenthal, WA4OVO. Absent: Kevin Zent, K4KLZ, and Len Grice, W4MKS. We welcomed Jose Ibarra, KJ4TCJ, as a guest.

Ken called the meeting to order at 7pm.

Barri told us that Pat Lane, W4OQG, will bring items to the September meeting for sale from the estate of Denise Ganechau, KJ5DG (SK).

Joe said 12 Tech students out of 14 tested and passed. One of the students is to test next week. A General class is to start in November on the first or second Monday. An Extra class may be held in January, 2018. Joe also mentioned that Barry McDonald, KW4ZH, is a new alternate net control operator for the nightly 146.82 Delta Club net.

Given the good reception of the recent YL training (see this month's **YL News** column), Dan suggested the club consider hosting an event several times a year; this event would include training, get-on-the-air sessions, a Swap-n-Shop, and food! There is a tentative late October date and more details will appear in the October Sparks.

Linda gave the Treasurers report.

The group discussed possible candidates for the open 2018 Board of Directors positions: Vice President, Secretary, and Director of Publications. Any club member having attended at least six meetings through next month is urged to consider running for one of these positions.

The meeting adjourned at 8:30pm.

Minutes of Last Month's Club Meeting

August 8, 2017 – Submitted by Barri Munday, WB4SWP

Club President Ken Laseter, KI4AOH, opened the meeting at 7:00 pm and reminded everyone to sign in and drop a ticket in the bucket. Introductions were then made by name and call sign.

Ham Hilliard, W4GMM, moved to approve the previous meeting minutes as recorded in Sparks, seconded by Richard Martin, K4DXF; the minutes were approved by acclamation.

Ham moved to approve the Treasurer's report as recorded in Sparks, seconded by Adrian Moseley, N4EMO; the report was approved by acclamation.

In the YL meeting at the church, the ladies had some veteran hams to come speak with in hopes of understanding their radios. The next meeting is a luncheon at a restaurant.

Testing produced two Techs, two Generals, and one Extra.

Joe Lowenthal's most recent class had 11 to pass. So far he has had 440 people to test and pass. A General class may be in the works in November and an Extra class in January, 2018.

As of July first you have to be a member of ARES in order to opt out of the \$25 charge for the license. A list of ARES members is being compiled to send to Shelby County.

There are a few seats left on the Huntsville bus trip. The bus will leave Germantown Baptist, 9450 Poplar Avenue, promptly at 6:00 am.

Pat Lane, W4OQG, announced the death of Denise Ganucheau, KJ5DG. Pat will have some estate items from Denise at the September Delta Club meeting.

Ric Honey, KK4SZO, president of the Memphis Astronomical Society, spoke about the eclipse on 8/21.

Darrell Sheffield, KK4D, spoke about the upcoming MS 150 event.

Sam Kahel from Memphis Light, Gas and Water spoke about smart meters.

We had many ticket winners, then adjourned at 8:50.

Last Month's Program
Submitted by Dan Lasley, NE7JN



Sam Kahel, PE, Telecommunications Engineer for Memphis Light, Gas, and Water presented last month's program on "MLGW Smart Grid."

Sam told us that MLGW spent more than 15 years in research and development for their smart meter technology, beginning with a 1,000-meter Smart Grid Demo in 2010-2012, then a 60,000-meter project in 2013-2014, followed by a full smart meter deployment with a 2020 completion date.

The rollout is approximately 40% completed as of August, 2017.

This is a non-trivial task, as shown by the numbers in the table below.

Meter type	Residential	Commercial
Electrical	372,000	46,000
Natural gas	309,000	26,000
Water	243,000	24,000



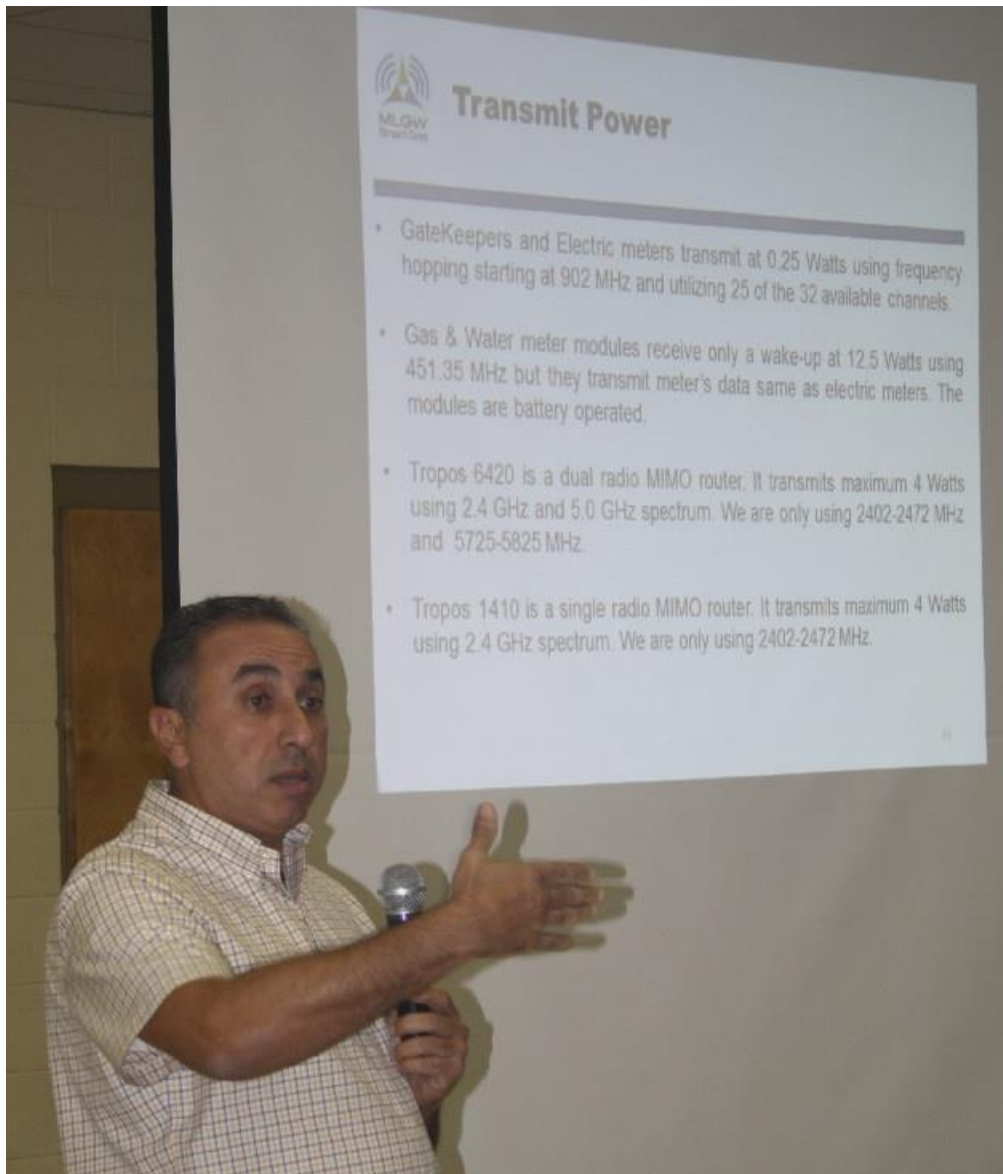
The meters send their data to a mesh network that is quite similar to the mesh networks used by the ham community.

Installation of the MLGW network was completed in 2016. Sam told us the meter data is encrypted and does not contain personally identifying information. He also said MLGW can remotely turn electric power on or off at a customer's site.

If you want to get a ham friend's attention, figure out how to cycle his or her power remotely several times a day!

Sam's slides included the status of the rollout of each type of meter as of August 1, 2017. See the table below.

Meter type	Number of Smart Meters Installed
Electric	300,000
Gas	110,000
Water	90,000



Sam told us the following about transmit power:

GateKeepers (part of the mesh network) and Electric meters transmit at 0.25 watts using frequency hopping starting at 902 MHz and utilizing 25 of the 32 available channels.

Gas and water meter modules receive only a wake-up at 12.5 watts using 451.35 MHz but they transmit the meter's data the same as the electric meters. The modules are battery operated.

The dual radio MIMO router (part of the mesh network) transmits a maximum of 4 watts using 2402-2472 MHz and 5725-5825 MHz.

The single radio MIMO router transmits a maximum of 4 watts using 2402-2472 MHz.

When Sam told us about the low levels of RF exposure, someone in the audience cracked everyone up by saying, "We're hams. We don't really care about RF exposure!"

We thank Sam for taking his time to give us a very interesting presentation. You can read his [presentation](#) at Delta's web site.

My Air Bazooka

Submitted by Bob Vawter, KW4RJ

When I was looking at getting into HF, I looked at many, many retail dipole and long wire antennas. My back yard is very small (85' x 35'), so I am limited as to what kind of antenna I can use. My homeowners' association prohibits antennas on a mast, so using a beam or other HF antenna is out (although I do have a homemade J-Pole for VHF/UHF, courtesy of Steve and Rosalinda Smith and Ham Hilliard via a group project one Saturday!). I won a \$50 gift certificate at the Jackson, MS, hamfest through ARRL, so I thought I'd put that money to good use by purchasing the "Antenna Book," and designed my 80 meter dipole from the instructions in that book.

I decided to make an 80 meter dipole, so I went to Lowe's or Home Depot and shopped for wire, stainless steel screws and other connections (that's another story on the antenna!). Originally, I put the center of the dipole at the eave of the house and used a fishing rod to throw a weight over trees in each corner of my back lot. This worked pretty good (I got around 1.4 SWR at 50 ohms), until we had a storm and my "heavy duty" string broke! I put the ends of the dipole temporarily onto the fence at each back corner of the house; this brought the SWR up to 3.5! I thought I'd do better by getting the feed end up, so I put a 24' pole at the back of my house (still can't see it from the street!) with the feed end up there and the terminal ends of the dipole still on the fence. I STILL had a 3.5 SWR! I couldn't get my fishing line up high enough with my spinning outfit, nor could I put it exactly WHERE I wanted it over the tree(s). I saw an ad for the Air Boss (<http://www.kr4loairboss.com/>) for \$59.95 and \$25 shipping, but just couldn't justify that much cost, so I began looking to make my own "Air Bazooka" as I call this thing.

I don't (ha!) mind browsing around Home Depot or Lowe's, so I probably spent two or three hours looking at PVC, connections, talking to sales people, etc., until I finally came up with my design. There are three things I don't particularly like about this Air Bazooka: 1. The valve to release the air is a bit cumbersome, but it does work; 2. The PVC tube for the 2 oz. weight is a bit too large and would probably work better if I could close it up some, and 3. I don't like the air gauge and air inlet valve at the bottom of the tube, because then you have to be very careful when storing the unit. Having said that, my Air Bazooka shoots the weight and fishing line WAY high enough to clear the 50-60' trees in back, AND the SWR is back down to 1.3! I'm happy with my project, and thought I'd share it with you other hams! I know several hams have already made one of these, but there may be those of you who would like to try. Following is my list of materials, where I bought them, and some pictures. If anyone knows how I can make my end tube smaller inside, then please let me know, as I'm not sure how to best get that done.

Air Bazooka materials

- 2' of 2" pvc Type 1, Sch 40
- 22" of 3/4" pvc
- 3" of 3/4" pvc (between the adapter and the air valve)
- 2" x 3/4" conversion/adapter pvc

- 2" pvc cap
- 2" pvc coupling (between the 2' tube and the 2" adapter)
- 3/4" pvc valve
- Tubeless tire valve (from Auto Zone)
- Air tank gauge 1/8" NPT fitting (from Amazon)
- 2 – 1 & 1/4 " clamps (to hold the fishing reel)
- sandpaper
- pvc cement
- Epoxy cement
- Spinning reel with minimum 20lb line.
- 2 oz egg shaped lead sinkers (Wal-Mart or Bass Pro)
- Large fishing pole eyelet (Bass Pro) for the line. (If you don't use this, it is much more difficult to reel in the line!)
- Zip ties for the eyelet. You can use pretty much anything you want to hold this thing on; I just happened to have some zip ties handy.

I was told NOT to use the primer to clean the PVC, as this would weaken the cement in time, so use the sandpaper to roughen the surfaces to be joined, then use the pvc cement only.

I got my pieces all ready and "dry fit" everything together, sanded each, then began cementing the parts together one by one. Be careful -- coat the PVC cement on both surfaces, then push and twist 1/4 turn into place. After just a few seconds, you WILL NOT be able to move or remove the two parts!

I drilled the holes for the gauge and tire valve with a 3/8" bit, then used epoxy around both inside and out. I put the end cap with the gauge and tire valve on last. I let all this dry for 24 hours.



I've been told not to use more than 70 pounds of pressure on this device, but I've only had up to 40 pounds in mine so far, and even with a little extra room around the weight, it shoots up over my trees! Oh yeah, DON'T forget to release the bail on the fishing reel before releasing the air! Have fun!



The completed Air Bazooka, ready to be loaded for bear!



Editor's note: Thanks to Bob for nice work on his Air Bazooka, an interesting story, and some great photos!

Readers, don't be shy about sharing your accomplishments!



August HQ 101

Submitted by Linda Laseter, KJ4CTX

Welcome to everyone who joined us in HQ 101 in August. We enjoyed having you and answering your questions. The following are some of the questions asked and answered in August:

- Will a metal roof on my ham shack have an effect on my antenna?
- How difficult will it be to put up an antenna tower?
- Can I attach a J pole antenna to my chimney?
- How do you use an antenna analyzer?



HQ 101 attendees: (Standing, L-R) guest Arn Vartrea, Ham Hilliard, W4GMM, Perry Hayes, N4PSH, Linda Laseter, KJ4CTX, Glen Ellis, K4KKQ, Ken Laseter, KI4AOH, Carlos O'Neill, KK4CRO. (Seated, L-R) David Jackson, KM4SEC, Bob Van Keuren, KM4SEB. Photo by Dan Lasley, NE7JN.

If you have been searching for the answer to a ham radio question and just can't seem to find the answer or have a problem you need help with, please join us in HQ 101. Our Elmers are very knowledgeable and enjoy nothing more than answering questions about ham radio.

Our topic for September will be "How to use an antenna analyzer." This will be another good session. Join us upstairs at 6pm on club meeting night, September 12th.

For information contact [Linda Laseter, KJ4CTX](#) or [Dan Lasley, NE7JN](#).

Amateur Hardware Update

Article and image submitted by James Butler, KB4LJV

More and more amateur radio equipment comes equipped for Bluetooth operation. Bluetooth is a high frequency communication system that allows paired devices to exchange data or audio. Even though newer laptop and desktop computers have this built in, most old computer systems do not. Luckily, companies offer add on Bluetooth for these older systems. The unit is very small and plugs into a spare USB port on the computer. The Bluetooth adapter also has a software disk for installation on the computer. One of these allows your computer to link up with newer devices. I ordered mine on Ebay for under \$5.00. Go to Ebay and search "USB Bluetooth adapter."

BLUETOOTH ADAPTER



Amateur Packet Update

Submitted by James Butler, KB4LJV

For amateurs with Android phones there are a lot of apps that are amateur radio related. There are formulas for antenna work, test study guides for license upgrades, Morse code sending and receiving programs and a lot more. Many apps are free to download. Some cost from 99 cents to five dollars. These are available at the Google play store. From your cellphone just go to the Google play store and install. Try it and if you do not like it you can uninstall. You can use your home computer to go and look at all the ham radio programs they have. The web address is <https://play.google.com/store>.

August Trivia Contest Winner

Submitted by Dan Lasley, NE7JN



Page 19 of the August [Sparks](#) showed the cover of Nuts and Volts' [Arduino Inventor's Guide](#) and asked for the name of the lithograph upon which the drawing was based and the famous Dutch graphic artist who drew it. A bonus question asked readers to identify the American cartoonist who created a similar drawing.

Our own David Webb, KV4QI, answered all three questions and took home coupons from Danver's! Congratulations, David!

The lithograph is M.C. Escher's "Drawing Hands." The American cartoonist who created a similar drawing is Saul Steinberg.

Huntsville Hamfest

Submitted by Dan Lasley, contributions by Denise Walls. KM4IRR,
Jim Cissell, KI4I, Randy Wilder, WB4LHD, and Joe Lowenthal, WA4OVO

Delta again took a busload of eager hams to the Huntsville hamfest:



Photo by Joe Lowenthal, WA4OVO.



Denise Walls. KM4IRR, won a "luminAID," a solar-powered inflatable lantern.



She says it has 4 levels of brightness, is waterproof, and floats. It's shown here inflated and powered up.

Photos by Denise.



wiredco.com

We'll Get You Wired!

Roger Deane (480) 209-1700
 roger@wiredco.com Cables
 Accessories
 Wired Communications, LLC. Connectors
 7342 E. Quail Track Road Led Lighting
 Scottsdale, AZ 85266

For the second year in a row, I bought some coax and connectors from vendors Roger Deane, KD6CNY, and XYL Kim. As you can see, their QTH is Scottsdale, AZ. Roger and Kim are planning to attend the Orlando Hamcation in February. If you see them at Orlando or at other hamfests, stop and say hi. They are nice folks and have some great prices on ham goodies.



Jim Cissell, K14I, won a telescoping Silver Tip vertical. It telescopes to about 14' tall with four 15 foot radials.

Jim has had good luck with winning antennas at hamfests this year; he won an antenna at FreeFest.

Photo by Jim.



Photo by Randy Wilder, WB4LHD.

You didn't have to win anything at Huntsville to have a good time, as you can tell by this photo of Delta Club YLs! (L-R) Janice Shaner, KX4BB, Betsy Freeman, KD4KOM, and Linda Laseter, KJ4CTX.

Shelby County ARES -- Amateur Radio Emergency Service

Submitted by Joe Lowenthal, WA4OVO, Assistant EC

Keith Miller, N9DGK, Tennessee Section Manager, recently appointed John Reiners, KN4BVH, as ARES Emergency Coordinator for Shelby County. We welcome John to this important position in the ARRL Field Organization. John can be contacted [via email](#) or by phone at 230-3327.

If you are interested in joining Shelby County ARES, submit your application on the Tennessee ARES website. This is for new or renewing ARES members. One benefit as a member, if you have Tennessee ham radio auto tags, is that you will not have to pay \$25 more for your tag on either the original or the renewal.

- Go to www.tnares.com
- Click (do not scroll down) on INFORMATION on top bar on the right side
- Scroll down to TN ARES Membership and Appointment Application Forms
- Click on ARES Membership Application: [FSD-98](#)
- Complete FSD-98 form
- Click SUBMIT
- You should get an acknowledgement of your application information in a few minutes.

Learning CW: The Law of Contiguity

Submitted by Dan Lasley, NE7JN, contributions by Ian Fulton, G4XFC



Ian Fulton, G4XFC, founder of [The Morse Crusade](#), joined the RAF in 1965 at age 18 and learned Morse code using the [Farnsworth/Koch](#) method. At the end of the course, he was operating at 20 words per minute (wpm). At the end of his training, his speed had increased to more than 30 wpm.

A ham since 1983, Ian is a strong supporter of the correct approach to teaching Morse code.

At Ian's web site I found several topics of interest for those of you who are struggling as much as I am with learning Morse code and I'd like to share those topics with you.

I've tried to learn Morse code three times. My first two attempts failed miserably. My third attempt, learning from audio tapes, was more successful, but my ability to copy either quickly or correctly leaves much to be desired.

However, here's the incident that makes me think I might eventually be a CW operator: I was tuning around the bands one day trying to find an on-going CW QSO to practice copying its messages. I heard dah-dit-dah-dit dah-dah-dit-dah at a high word-per-minute rate and realized the op was sending CQ! I couldn't copy anything else due to the high word rate, but I nailed the first two letters then and also in later, faster instances! That brings me to Ian's first topic.

In "[Achieving the Reflex Action](#)" Ian says, "When a student approaches me and excitedly tells me that some characters are just popping into his head without thinking and the Morse has slowed down in his head [he] has achieved instant recognition on some of the characters and can only go forward more quickly now." Just as Ian says, "CQ" had popped into my head!

I would go forward more quickly were I to follow Ian's "[Starting Out](#)" advice, in which he says, "Learning Morse code is not easy as it requires 7 days a week dedication of at least half an hour a day training to be able to master it. *(If you are thinking of doing it part time you will be unable to achieve any proficiency so you would just be wasting your time.)*"

If you are learning Morse code, you'd do well to take Ian's advice in "[Bad Practices](#)." He tells us several practices to avoid.

When I was learning Morse code from audio tapes, the instructor sent each new letter about fifty times and told the listener to say the letter as quickly as possible after the listener recognized the Morse code character. I followed the instructions, but the repetition seemed overkill.

However, Ian's reproduction of "[Instant Recognition by Nancy Kott WZ8C](#)" explained the repetition by saying, "In psychology there is a "Law of Contiguity", which says that if two events occur no more than one-half second apart, the mind associates the two events. This means when a Morse code character is heard and it is followed within one-half second by a spoken letter of the alphabet, the mind will associate the Morse sound with the translation. The association works automatically, as a workman thinks "lunch" when he hears the noon whistle blow. But we quickly forget things learned by this association method, so we need to "overlearn" them to make the code a part of our permanent memory. Overlearning occurs when we continue to practice something we feel we have already learned."

I'd never heard of the word *contiguity*. The dictionary says:

1. the state of being contiguous; contact or proximity.
2. a series of things in continuous connection; a continuous mass or extent.

With that definition in mind and the explanation by WZ8C, now it's clear why the audio tape instructor repeatedly sent each new letter so many times.

I can figure stuff out a lot better than I can copy CW! I hope you find these topics as useful and interesting as I did. Thanks to Ian for some very informative Morse code topics and for allowing me to reproduce the graphic found at his [qrz.com](#) page.

Delta Ham License Training, 2017

Text and photos by Joe Lowenthal, WA4OVO

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.

Licenses Earned in 2017 from Delta Classes

18 Technician
2 General
6 Extra

If you are interested in attending a training class, send an email to [Joe Lowenthal](mailto:Joe.Lowenthal@arrl.org) with the desired class name in the subject line, along with your name, email address and cell phone number in the text.

The new [Technician question pool](#) is effective July 1, 2014, through June 30, 2018. You will need the [ARRL Ham Radio License Manual 3rd Edition](#) to study for the Technician exam.

The new [General question pool](#) is effective July 1, 2015, through June 30, 2019. You will need the [ARRL General Class License Manual 8th Edition](#) to study for the General exam.

The new [Extra question pool](#) is effective July 1, 2016, through June 30, 2020. You will need the [ARRL Extra Class License Manual 11th Edition](#) to study for the Extra exam.

Tentative General Class

A General Class is being discussed to start in early November if at least 10 students sign up for the class. The classes would be held on six Monday nights from 6:15-9:30pm. If you are interested, send an [email](#) with your name, call, email address and cellphone number to Joe with subject line: General Class.

Classes Completed

Tech Class 3-17 began on Monday night, July 10th, for six Mondays until August 14th from 6:15pm - 9:30pm at EMHC ambulance company training room, 6972 Appling Farms Parkway. There were 18 students who started with 13 finishing the class, including two young men and three women. The FCC exam was offered on August 7th with a review session prior to the test.

Congratulations to Dennis Curry, KN4FBP, Tony Curtis, KN4FBK, Tom Emens, KN4FBO, Jack Griffith, KN4FDK, Mary Jean Hall, KN4FBL, Mike Helbig, KN4FBG, Gabe Helbig, KN4FBF, Deborah McDonald, KN4FBM, Craig Treanor, KN4FBH, Dan Wehner, KN4FBJ, and Janet

Wehner, KN4FBI, on earning their Technician licenses (see photo below). One other student who could not attend for the test session will take his exam at the Delta Club meeting.



Thanks to the WCARS VE Team led by Gary Weatherford, W5EMA, for the FCC test session. The other VEs were Len Grice, W4MKS, Perry Hayes, N4PSH, Rosalinda Melena, WN2V, John Reiners, KN4BVH, Steve Smith, W5VAA, and Bob Vawter, KW4RJ.



There were equipment demonstrations on the last night of class. Joe, WA4OVO, presented the basics for operation on repeaters. Pat Lane, W4OQG, showed HF SSB operation with Winlink and the installation of a long wire antenna. In the photo on the previous page, Rick Tillman, WA4NVM, and Richard Martin, K4DXF, worked the XW-2A SSB satellite. Richard (far right in photo) is holding the antenna and Rick (bottom center) is barely visible.



The instructors were Pat Lane, W4OQG, John Reiners, KN4BVH, Keith Barton, KT4EP, Len Grice, W4MKS, Perry Hayes, N4PSH, and Joe Lowenthal, WA4OVO.

There were equipment demonstrations on the last night of class. Joe, WA4OVO, presented the basics for operation on repeaters. Pat Lane, W4OQG, showed HF SSB operation with Winlink and the installation of a long wire antenna. Rick Tillman, WA4NVM, and Richard Martin, K4DXF, worked the XW-2A SSB satellite. Rick Pellicciotti, KJ4NWQ (photo above), explained APRS operations.

YL News

Submitted by Linda Laseter, KJ4CTX

YL NET – Please join us each Saturday night at 8:45 p.m. on the 146.820 repeater for the YL Net.

Congratulations YLs! September 3rd we will celebrate the YL Net's first year on the air. Great job YLs and a very special thanks to our Net Control Operators (Stacy, KJ4MDA, Janice, KX4BB, Barri, WB4SWP and Linda, KJ4CTX). Hope everyone will forgive me for congratulating myself, but I am proud to be working with these ladies and proud of our accomplishment.

We had a great Net on Saturday, August 5th! Several of the YLs who attended our potluck luncheon checked-in and we also had a few OMs check-in. We appreciate your support, OMs, and hope you will to continue join in.

Please join me in welcoming Linda, KM4STI, Denise, KM4IRR, and Debra, KN4FBM, to the YL Net. We are so glad you joined us and look forward to hearing more from you.

We were saddened to hear of the passing of Denise Ganucheau, KJ5DG. She fought a long battle with cancer and was undergoing another operation when complications occurred and she passed away. She will be missed by all. Currently we do not have any information regarding a memorial service for her.



YL LUNCHEON – We had a lot of fun at the YL potluck luncheon on August 5th at the Ellendale Church of Christ. If you missed this one you missed some great food and wonderful fellowship as well as some excellent training. Watch for another training session at the church in October. See information below for September and October luncheons.

Shown at left are (L-R) Gale Tisdale, KI4VDI, and Joe Wray, WD4GXI.

Several OMs joined in the fun and did some one-on-one training with the YLs. The OMs fielded questions about HT problems, how to manually program specific HTs, and even some training on the HF rigs. The YLs took notes, asked questions, and soaked up as much information as they possibly could.



All the YLs would like to thank Jim, KI4I, Joe, W4OVO, Ervin, KU4K, Tom, AC5MR, Joe, WD4GXI, and Ken, KI4AOH, for volunteering to help us at the luncheon. You are all very knowledgeable and we really appreciate the time you spent with us.

Jim Cissell, KI4I, demonstrates HF to Janice Shaner, KX4BB (left), and Angela Ivy, who is not yet a ham but we hope she will become part of the ham community.



Joe, WD4GXI, and Betsy Freeman, KD4KOM, discuss the fine points of HTs.

Congratulations to Linda, KM4STI, who won the door prize which was a cute door hanger in the shape of a tea pot.



Joe Lowenthal, WA4OVO (right), goes over HT programming with Linda Griffin, KK4STI, and Wyman Griffin, KK4CBH.



Janet Kelly, KK4PRT, and Tom Diciara, AC5MR (left pair), take a deep dive into the Internet while Ervin Ables, KU4K, and Audrey Torrence, KM4FHU, talk about HTs.



Delta Club President Ken Laseter, KI4AOH, and Suzy Balsamo, KM4FHS, also discuss HTs, a very popular subject today!

I look forward to seeing everyone at our next luncheon.

Our September luncheon is as follows:

**11:30 a.m.
Saturday, September 16, 2017
Olive Garden
8405 Hwy 64 (east of Wolfchase Mall)
Memphis, TN 38133**

Our October luncheon will be:

11:30 a.m.

Saturday, October 28th, 2017

Ellendale Church of Christ (the regular DARC meeting location)

7365 US-70

Memphis, TN 38133

This will be another training session luncheon. However, to make it easier on the YLs we plan to serve homemade Bar-B-Q, potato salad, deviled eggs, baked beans, bread, dessert and drink. Yum! Yum! For all of this we plan to charge a mere \$6.00 per person. Where else can you get a wonderful meal and attend a training class at these prices? Mark your calendars and come join us for some excellent training and wonderful fellowship.

We are also planning a short program on "Things To Do To Be Safe In Today's Environment". YL's you do not want to miss this! Some really great ideas for you in this part of our October program.

Editor's note: Congratulations to the YLs for their accomplishments in the last year! They again have a regular YL check-in on the 146.820 repeater, they have established monthly YL lunches, and they are finding Elmers to help with training! This is truly the spirit of ham radio.

MS-150 Event

Submitted by Dan Lasley, NE7JN

The MS-150 is a fund raising event for the National Multiple Sclerosis Society. Delta has provided communications for the event for a number of years and plans to support the 2017 event.

The proposed MS-150 routes this year are different from the previous years. The event begins with the bike riders leaving the vicinity of Byhalia, MS, on September 23 and they ride to Oxford, MS, by one of three routes of [58](#), [77](#), or [102](#) miles. On September 24 the riders leave Oxford and return to the vicinity of Byhalia.

Please keep in mind that the routes may change prior to the event. In addition, the rest stops and beginning/ending points may not have been determined as yet.

If you have questions or would like to volunteer for the event, please contact [Darrell Sheffield, KK4D](#). Darrell plans to be available at the September 12th Delta meeting and will have updates for us on the event.

HF Propagation, Part 12: "The Streak"

Submitted by Dan Lasley, NE7JN, contributions by John Shannon, K3WWP

In "The Streak: 23 Years of Daily Contacts," John Shannon, K3WWP (QST, August, 2017, pages 73 and 74), writes of two streaks of daily CW contacts at five watts or less. His "main streak" refers to 8,389 days as of July 23, 2017 (almost 23 years!) of contacts beginning August 5, 1994. During his "DX streak," which began March 1, 2013, he has made at least one DX contact each day for 1,606 days as of July 23, 2017.

John's web site at k3wwp.com says he uses "[simple wire antennas](#)" for 10 through 160 meters plus a "[rotatable 6M dipole](#)" in his attic. According to his [web site](#), he has contacts with 225 DX entities, all continents, all states, and 36 of the 40 CQ zones. Here are summaries of his two streaks:

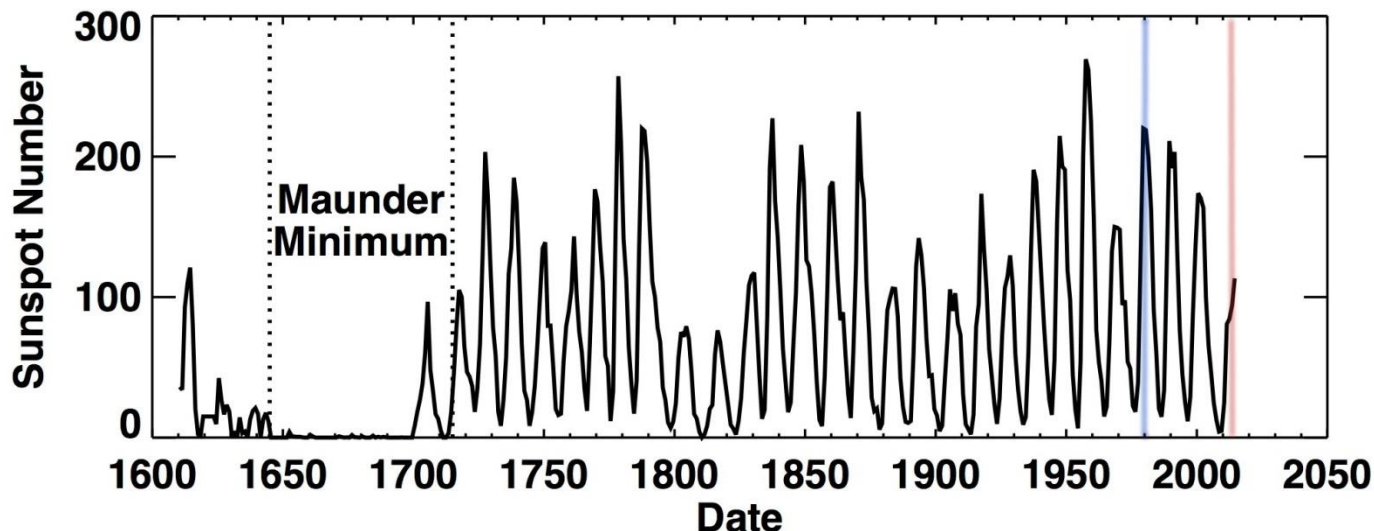
Band	Main streak	DX streak
	Number of contacts	Number of DX contacts
160	3,406	---
80	11,091	37
60	28	---
40	18,284	656
30	3,719	544
20	14,391	2,167
17	1,043	408
15	8,877	1,576
12	421	118
10	7,020	1,055
6	40	---
	=====	=====
Totals	68,320	6,561
Average/Day	8.2	4.1

The table of contacts begs for conclusions to be drawn about propagation, but there are a lot of unknowns and we don't want to jump to conclusions. Sometimes John makes a single contact in each category per day and stops. Other times he makes up to a few hundred contacts in contests or makes a few rag chew type QSOs in a day.

In seeing no DX contacts on 160 meters, we can't conclude there's no DX activity on that band. I've read of hams who have earned DXCC on 160 meters, but it can be a lengthy, tortuous process. John says, "Basically it requires a much bigger antenna system than mine."

In seeing only forty 6 meter contacts, you might conclude there's no activity on 6 meters. If you did, you would be wrong. Local hams Rick Tillman, WA4NVM, and Russ Myers, WD4JHD, (and likely others) earned 6 meter WAS and 6 meter VUCC when the magic band was particularly hot in the early 1980s. John adds he "... does not operate much on 6 meters mainly because of TVI in a crowded residential area."

In the following image I've marked 1980 in blue and 2013 (the beginning of John's DX streak) in red. The sunspot numbers in the early 1980s are about double the numbers from the early 2010s; higher sunspot numbers correlate with better propagation, one reason you must draw propagation conclusions carefully.



Original image from https://solarscience.msfc.nasa.gov/images/ssn_yearly.jpg

While examining John's data for reasonable propagation conclusions, one of his emails pointed to results of his current DX streak at his [web server](#), shown below and reformatted for page width. The 2013 figures are for March through December and the 2017 figures are for January through July 23.

YEAR	QSOS	10M	12M	15M	17M	20M	30M	40M	80M	Solar Flux
2013	1834	19.8	1.9	25.5	7.0	33.3	6.0	6.2	0.3	123.9
2014	1914	27.0	2.9	24.1	5.9	30.9	5.0	4.3	0.0	146.0
2015	1486	9.6	1.7	26.4	6.7	33.1	9.0	12.6	0.8	117.6
2016	899	3.6	0.2	21.9	5.8	32.9	15.5	18.8	1.3	88.8
2017	427	<0.1	0.0	13.8	3.3	41.6	15.0	24.4	1.6	76.8

YEAR	QSOS						North		South
		Africa	Antarctica	Asia	Europe	America	Oceania	America	
2013	1834	2.5	0.0	3.2	72.2	14.6	1.3	6.2	
2014	1914	3.5	0.1	2.6	71.2	14.1	1.8	6.8	
2015	1486	4.0	0.1	2.6	64.2	20.0	1.4	7.8	
2016	899	4.3	0.1	0.4	43.7	33.9	2.0	15.5	
2017	427	4.2	0.0	0.0	36.1	42.9	1.2	15.7	

The **Solar Flux** column shows the average solar flux (a measure of the sun's output that relates to propagation). All band and continent numbers are percentages of QSOs. Here are John's [conclusions](#):

"I think certain of the stats show a definite relationship between DX QSOs and the sunspot cycle or Solar Flux.

1. A noticeable decline in 10M and 12M QSOs after the SF [solar flux] peak in 2014.
2. A noticeable increase in 30M, 40M and 80M QSOs after the SF peak in 2014 as the higher bands became less useable. Also a slight increase in 20M QSOs for the same reason.
3. 15M and 17M didn't really decline until the SF dropped below 100.
4. Continents with high latitude paths (AS and EU) show a definite relationship to the SF.
5. Continents with medium latitude paths (AF and OC) increased as the SF declined. Probably mainly due to the lack of available EU and AS stations to work.
6. As EU and AS became much harder to work, the percentage of NA and SA QSOs showed a big increase."

Nearly 23 years of daily contacts has given John some well-founded insights into HF propagation!

I want to thank John for his amazing perseverance in his daily contacts, for reviewing this article, and for making several excellent suggestions for improving the article.

Best regards, John, for your continued main and DX streaks!

Odds and Ends

Submitted by Dan Lasley, NE7JN



Don't miss the 2017 Route 66 On The Air Special Event to be held September 9-17. See last month's [Sparks](#) for details.

Image by Freddie, CC BY-SA 3.0,
<https://commons.wikimedia.org/w/index.php?curid=12499286>.

ASTRON

See the [schematics and service information](#) on Astron power supplies. (From The ARRL Contest Update for July 26, 2017.)

Analog Engineer's Pocket Reference

Submitted by Dan Lasley, NE7JN

The Texas Instruments [Analog Engineer's Pocket Reference](#) by Art Kay and Tim Green is a free 105 page guide to a number of topics on analog electronics, including conversions, discrete components, analog considerations, op amps, PCB and wire data, sensors, and A/D conversion. Note that a free login is required to download the reference. Here is part of page 66:

Coaxial cable equations

$$\frac{C}{\ell} = \frac{2\pi\epsilon}{\ln\left(\frac{D}{d}\right)} \quad (89) \text{ Capacitance per length}$$

$$\frac{L}{\ell} = \frac{\mu}{2\pi} \ln\left(\frac{D}{d}\right) \quad (90) \text{ Inductance per length}$$

$$Z_o = \sqrt{\frac{L}{C}} = \frac{1}{2\pi} \sqrt{\frac{\mu}{\epsilon}} \quad (91) \text{ Characteristic impedance}$$

Where

L = inductance in henries (H)

C = capacitance in farads (F)

Z = impedance in ohms (Ω)

d = diameter of inner conductor

D = inside diameter of shield, or diameter of dielectric insulator

ϵ = dielectric constant of insulator ($\epsilon = \epsilon_r \epsilon_o$)

μ = magnetic permeability ($\mu = \mu_r \mu_o$)

ℓ = length of the cable

If you solve equation 89 for C and solve equation 90 for L, then substitute the resulting expressions for C and L into equation 91, you **do not** get the result as shown in the Pocket Reference!

Here is September's trivia contest: the first person to [email me](#) the correct expression for Z_o wins this month's contest! All answers must be received by noon local time on the day of the next Delta Club meeting, September 12. The winner receives two tickets to Range USA, 2770 Whitten Road. Each ticket is good for one FREE lane rental for a 1 or 2 person lane (up to \$18 value) or \$10 off any class offered at Range USA.

All Sparks readers are eligible to win (excluding members of the club's Board of Directors). You don't have to be present at the September club meeting to receive your prize, but we hope you will.

More Odds and Ends

Submitted by Dan Lasley, NE7JN



If any of our younger hams plan to journey to Mars with NASA, you'll need "[Radio Wave Propagation Handbook for Communication on and Around Mars](#)." Bon voyage and don't forget to call home.



Lou Frenzel, W5LEF, presents "[What's The Difference Between A Dipole And A Ground Plane Antenna?](#)" This is a good review for those with experience and a good introduction for new hams.

[Image](#) by David Jordan [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0>)], via Wikimedia Commons

SPARKS Newsletter & 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 38184-2768

An alternative email address to offer the Board your suggestions, ask questions, and voice complaints is darc4you@gmail.com.

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>.

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Board members beginning their positions in 2017 are listed in *italics*.

Public Service Events

If you are a coordinator for any of these events, please review the listed information. Please [email](#) corrections or additions.

2017 Date	Event	Contact Information
Jan. 15	Swamp Stompers 50K/25K Run	Keith Barton, KT4EP
May 6	March of Dimes March for Babies	Linda Laseter, KJ4CTX
June 17	Diabetes Tour de Cure	Pat Lane, W4OQG
Sep. 23-24	2017 Bike MS: FedEx Rock-N-Roll	Darrell Sheffield, KK4D
Oct. 7	Bluff City Blues 100 Ride	to be determined
Dec. 2	St. Jude Marathon	Roger Schlichter, WR4R

Tennessee Ham Radio License Plate Submitted by Joe Lowenthal, WA4OVO

The link below is for information and instructions about Tennessee ham radio call sign Emergency/Safety automobile license plates:

<http://www.tn.gov/revenue/article/emergency-safety>

The application can be found at this link:

<http://www.tn.gov/assets/entities/revenue/attachments/f1312601Fill-in.pdf>

As of July 1st, 2017, you must send a copy of or show an ARES membership card to keep from paying the \$25 surcharge for new plates or renewals. If you send a renewal in by mail with the lesser amount and do not include a copy of your ARES membership card, they will return your renewal and check due to insufficient funds.

If you want to become an ARES member, complete an ARES Registration Form FD-98 at <http://www.arrl.org/files/file/Public%20Service/fsd98.pdf>. Send completed form to Shelby County ARES c/o Joe Lowenthal, 6675 Ashbridge Cove, Memphis, TN 38120 or email to wa4ovo@gmail.com.

If you are not an ARES member and you do not want to pay the \$25 surcharge for renewal, you can get a regular plate for no additional charge. You will need a copy of your previous registration or there is an additional \$3 charge.

If a spouse is also a ham, only one of the couple needs to be an ARES member if the auto is registered in both names. If registered in the spouse's name, the spouse must have an ARES membership card.

The following link from the Tennessee Department of Revenue <https://www.tn.gov/revenue/article/emergency-safety> has the Amateur Radio auto tag information and listed below:

Amateur Radio

Available to: Tennessee residents who hold an official FCC-issued amateur radio license (unrevoked and unexpired).

Documentation Required: Application supported with copy of the FCC Amateur Radio license.

Cost: Annual fee of \$51.50; Members of emergency, rescue squad and Amateur Radio Emergency Service - \$26.50.

Even More Odds and Ends

Submitted by Dan Lasley, NE7JN



In the [Worked All Europe DX Contest](#), every contact is DX! The SSB portion of this year's contest will be held Saturday, September 9, 2017, 0000 UTC until Sunday, September 10, 2017, 2359 UTC. See the web site for details. The Solar Flux Index and Sunspot Number zoomed up in early September; perhaps this bodes well for good DX for this contest!



Do you need QSL cards from Ohio? See the [Ohio State Parks On The Air Contest](#), Saturday, September 9, 2017, 1400 UTC to 2200 UTC.

Other Notes of Possible Interest

Submitted by David Webb, KV4QI

It's Time to Renew Your 2017 Annual Memberships! Download the latest Delta Club [Membership Application Form](#). The 2017 membership renewal fee remains a very modest \$20 for an individual, with an additional \$5 fee for family membership. Thanks for Your Active Support of Delta Amateur Radio Club!

Memphis Area VHF/UHF Nets

Updated September, 2016

Name of Net	Freq. MHz	Offset/Tone	Local Time	Day of Week
Delta Club Information Net	146.820	- (107.2)	8:00p	Daily
YL Net	146.820	- (107.2)	8:45p	Sat
Mid-South Barefooted Bullfrog Net	146.535	[simplex]	7:30p	Daily
Secret Service Net	224.780	[no tone]	8:30p	Mon
Elmer Net	145.210	- (107.2)	9:00p	Mon
The Short Winded Net	146.850	- (107.2)	8:30p	Tue
MedMERS Net	146.820	- (107.2)	12:00p	Wed
CERTPlus Net	443.200	+ (107.2)	8:30p	Wed
ARES Training Net	146.880	- (107.2)	9:00p	Thu
Super Sunday Niner Net	927.6125	- (146.2)	8:30p	Sun

Delta Club sponsored Nets are shown in red.

TENNESSEE HF NETS

As of December, 2015

All times are Central Time

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 (Center for United States Earthquake Consortium)	3.810		As needed
CUSEC (Center for United States Earthquake Consortium)	7.180		As needed

3980 kHz – TN Phone Net

Mon-Fri - 5:40 AM, 6:45 AM & 6:30 PM

Saturday - 8:00 AM & 6:30 PM

Sunday - 8:00 AM only

Holidays - 8:00 AM only

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See Advertisement Order Form for Instructions.



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Wire	Swivel Ball	RCA	Rotor Cable

LDG Electronics	Accessories	Miscellaneous
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Remote Tuners	Power Poles	Coax Seal
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MSARS offers free antenna building classes each year and help many new hams with guidance on their first radio, setting up a ham shack, programming a radio and much more. We are proud to be a part of the ham radio community and are *here to help you*.

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Memphis, TN 38134-2768

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Tuesday of every month
at Ellendale Church of Christ
7365 Hwy 70, Bartlett TN



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



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We offer our continued thanks to EMHC ambulance company for generously providing their training room for the many ham radio classes given there.

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