



ARRL Standard



Pray for our
Troops



God Bless America!

QUA/HAMnews

June 2019

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**IF YOU HAVE NOT PAID YOUR DUES FOR 2019,
THEY ARE OVERDUE. PLEASE CONTACT JOHN BARNES.**

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P.O. Box 4411, Lexington, Kentucky 40544-4411

Club Station K4KJQ

MARS Station AAV4CAB



Glenn E. Welman/KF4NB
Memorial BBS
145.010 and 145.090

Web Page: <http://www.bluegrassars.org>
E-mail: k4kjq@bluegrassars.org

K4KJQ
146.160/.760

ATV Repeater: KY4ATV
Input: 439.250 // Output: 923.250

WA4HBM
147.765/.165

**"Ham News" was first published by Bobby Foster, WA4ZSQ, in
August, 1972; the parent newsletter, "QUA," was first published
in March, 1947**

QUICKY NOTES

Accessing the Club's web page: <<http://www.BluegrassARS.org>>.

Telephone Number for the Shack (basement of the Red Cross Building): (859) 231-0974.

Subscribe to ListServ: Send an eMail to: bars-request@lsv.uky.edu; in Subject line type Subscribe plus <your call sign>

Post notes to the Club List Serv: <bars@lsv.uky.edu>.

The June program will be a discussion on Annual Field Day and will be presented by David Richardson/W9KHZ.



Reports of the RECORD OF THE BY LAWS COMMITTEE MEETINGS will not be published in the newsletter due to length. Contact Secretary Bruce Campbell to obtain a copy of the reports.

CENTRAL KENTUCKY HAMFEST SATURDAY AUGUST 10, 2019

QUA/HAMnews

Welcome to a new member
Phillip Fraley, /WA4EKY

June 2019

Meeting Notice

Bart Breeding/KB4FEE,
Chair, Newsletter Committee
Bluegrass ARS, Lexington, Kentucky

The general meeting of the Bluegrass Amateur Radio Society, Inc., will be held Monday, June 3, 2019, at 7:30 PM, in Meeting Room B, second floor of the Red Cross Building, 1450 Newtown Pike, Lexington.

The program will be about The Annual Field Day and will be led by David Richardson/W9KHZ. Do you have a topic you would like a program on or a program you would like to present? Do you have a home brewed project you have built? Bring it and show it off! Question? Ask it! Maybe your question isn't one about a Club activity or function, maybe you are having a problem getting some newly acquired equipment set up and operating correctly, or you have an antenna with radiation problems. Regardless of your question, problem, or suggestion, bring it to the Club meeting.

The Club shack is open most Saturday mornings for anyone to operate the Club's stations, or to bring pieces of equipment out to be tuned or checked, or to learn about Amateur Radio, or to just sit around and talk just drop in, no appointment necessary. Bluegrass Amateur Radio Society's ham shack is located in the basement of the Red Cross building at 1450 Newtown Pike Lexington, KY 40511. Entrance is down the steps (look for the BARS banner hung on the railing) at the North Side of the building.

What is ARRL Field Day?

<http://www.arrl.org/files/file/Field-Day/2019/2019%20FD%20Flier%20-%20What%20is%20FD.pdf>



ARRL Field Day is the single most popular on-the-air event held annually in the US and Canada. On the fourth weekend of June of each year, more than 35,000 radio amateurs gather with their clubs, groups or simply with friends to operate from remote locations.

Field Day is a picnic, a campout, practice for emergencies, an informal contest and, most of all, FUN!

It is a time where many aspects of Amateur Radio come together to highlight our many roles. While some will treat it as a contest, other groups use the opportunity to practice their emergency response capabilities. It is an excellent opportunity to demonstrate Amateur Radio to the organizations that Amateur Radio might serve in an emergency, as well as the general public. For many clubs, ARRL Field Day is one of the highlights of their annual calendar.

The contest part is simply to contact as many other stations as possible and to learn to operate our radio gear in abnormal situations and less than optimal conditions.

We use these same skills when we help with events such as marathons and bike-a-thons; fund-raisers such as walk-a-thons; celebrations such as parades; and exhibits at fairs, (continued on page 2)

Field Day June 22-23, 2019

THE BEAUFORT SCALE

<https://fishmonster.com/blogs/fishmonster-magazine-1/the-beaufort-scale>RE

The “Beaufort Scale” has been around in one form or another for over 200 years. Both mariners and landlubbers all around the world use the Scale to estimate wind speed in a standardized way. The Beaufort Scale was first devised in 1805 by Rear Admiral Sir Francis Beaufort, an Irish Royal Navy Officer. Many revisions were applied during the 19th century before the Scale evolved into its present form which contains 13 numbers or “forces” ranging from “0” (calm) to “12” (hurricane). The Scale’s endurance can be attributed to its utility, simplicity, and beauty. The language is descriptive but concise, vivid yet succinct, and poetic while also being very useful. Let us apply a recent local example by considering the maximum sustained winds observed during Tropical Storm Isaac (August 26–27). Maximum sustained winds at the automated weather stations atop the lighthouses along the Florida Reef tract were in the range of 40–45 knots. According to the Beaufort Scale, such winds would classify as “Force 9”, or “Strong Gale” (High waves; sea begins to roll; dense streaks of foam; spray may reduce visibility). Of course, such wind is the exception rather than the rule in the Florida Keys

where average wind speeds for much of the year can be classified as Force 3 (“Gentle Breeze”; 7–10 knots) or Force 4 (“Moderate Breeze”; 11–16 knots). During the late autumn and winter, Force 5 (“Fresh Breeze”; 17–21 knots) becomes increasingly frequent, while Force 6 events (“Strong Breeze”; 22–27) occur with regularity, especially after strong cold fronts. Force 7 (“Near Gale”; 28–33 knots) is rather infrequent, while Force 8 events (“Gale”; 34–40 knots) are fairly rare outside of vigorous thunderstorms or squalls. Forces 9–12 generally are associated with tropical storms or hurricanes. In 2005, the Florida Keys experienced all 13 forces on the Beaufort Scale! To download your own copy of the Beaufort Scale, simply point your browser to the following link: <http://www.srh.noaa.gov/media/key/Marine/beaufortscale.pdf> Remember to be weather-be weather-ready, and stay safe!

(see on page 3)

(continued from page 1
What is ARRL Field Day?)
malls and museums — these are all large, preplanned, non-emergency activities. But despite the development of very complex, modern communications systems — or maybe because they ARE so complex — ham radio has been called into action again and again to provide communications in crises when it really matters. Amateur Radio people (also called “hams”) are well known for our communications support in real disaster and post-disaster situations.

What is the ARRL?

The American Radio Relay League is the national association for Amateur Radio in the USA, representing over 170,000 FCC-licensed Amateurs. The ARRL is the primary source of information about what is going on in ham radio. It provides books, news, support and information for individuals and clubs, special events, continuing education classes and other benefits for its members.

What is Amateur Radio?

Often called “ham radio,” the Amateur Radio Service has been around for a century. In that time, it’s grown into a worldwide community of licensed operators using the airwaves with every conceivable means of communications technology. Its people range in age from youngsters to grandparents. Even rocket scientists and a rock star or two are in the ham ranks. Most, however, are just normal folks like you and me who enjoy learning and being able to transmit voice, data and pictures through the air to unusual places, both near and far, without depending on commercial systems.

The Amateur Radio frequencies are the last remaining place in the usable radio spectrum where you as an individual can develop and experiment with wireless communications. Hams not only can make and modify their equipment, but can create whole new ways to do things.

“The way to get started is to quit talking and begin doing.”
-Walt Disney

BEAUFORT SCALE					
Beaufort Number	Name	Knots	MPH	Effects Observed Far From Land	Effects Observed On Land
0	Calm	Under 1	Under 1	Sea like mirror.	Calm; smoke rises vertically.
1	Light Air	1-3	1-3	Ripples with appearances of scales; no foam crests.	Direction of wind shown by smoke drift, but not by wind vanes.
2	Light Breeze	4-6	4-7	Small wavelets; crests of glassy appearance, not breaking.	Wind felt on face; leaves rustle; ordinary vane moved by wind.
3	Gentle Breeze	7-10	8-12	Large wavelets; crests begin to break; scattered whitecaps.	Leaves and small twigs in constant motion; wind extends light flag.
4	Moderate Breeze	11-16	13-18	Small waves, becoming longer; numerous whitecaps.	Raises dust and loose paper, small branches are moved.
5	Fresh Breeze	17-21	19-24	Moderate waves, taking longer form; many whitecaps; some spray.	Small trees in leaf begin to sway; crested wavelets form on inland waters.
6	Strong Breeze	22-27	25-31	Larger waves forming; whitecaps everywhere; more spray.	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty.
7	Near Gale	28-33	32-38	Sea heaps up; white foam from breaking waves begins to be blown in streaks.	Whole trees in motion; inconvenience felt in walking against the wind.
8	Gale	34-40	39-46	Moderately high waves of greater length; edges of crests begin to break into spindrift; foam is blown in well-marked streaks.	Breaks twigs off trees; generally impedes progress.
9	Strong Gale	41-47	47-54	High waves; sea begins to roll; dense streaks of foam; spray may reduce visibility.	Slight structural damage occurs (chimney pots and slate removed).
10	Storm	48-55	55-63	Very high waves with overhanging crests; sea takes white appearance as foam is blown in very dense streaks; rolling is heavy and visibility reduced.	Seldom experienced inland; trees uprooted; considerable structural damage occurs.
11	Violent Storm	56-63	64-72	Exceptionally high waves; sea covered with white foam patches; visibility still more reduced.	Very rarely experienced; accompanied by widespread damage.
12	Hurricane	64 and over	73 and over	Air filled with foam; sea completely white with driving spray; visibility reduced.	

<https://fishmonster.com/blogs/fishmonster-magazine-1/the-beaufort-scale>RE

What's digital radio all about?

First of all, what digital radio isn't, is the "sit at a computer and type" mode that some, ill-informed, people have called it. It's proper radio, with RF which follows the same laws of physics as any other mode. It has aerials which, if you don't install them correctly, still don't work – just like with FM. It has mobile and handheld radios (which are almost all dual-mode so they can be programmed with normal FM channels as well). It also has repeaters which can be

networked together to increase their coverage area. Next, we are talking about a telephony mode – that is, you talk to people. With a microphone. So, it's definitely not a data mode and there's no typing! If you want that, go elsewhere. Lastly, it's not elitist (or similar) – no more so than someone you know using a band you don't have (yet). Some people want to use it and
(continued on page 12)

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As pressure on radio spectrum increases, the professional communications world is coming up with ways of squeezing more into less. That is more conversations in less spectrum. Inevitably, this technology is finding its way into the amateur world, often helped along by those same professionals.

There are two fundamental ways of achieving this improved efficiency and every technique really boils down to one of these solutions. The first is to make each channel narrower – in the past we went from 25kHz channels to 12.5kHz and now there's pressure for 6.25kHz channels. This is the method the likes of Yaesu's fusion uses – in Fusion's "voice and data" mode, a voice channel is fitted into 6.25kHz along with a data channel in a further 6.25kHz – still a total of 12.5kHz. In Fusion's "voice only" mode, the single voice channel offered is still the same 12.5kHz wide that traditional analogue modes use. This is called FDMA or "frequency division multiple access". FDMA is the spectrum allocation method radio amateurs are most familiar with – a given band is divided into fixed bandwidth channels (for example the FM portion of 2m or 70cm). "Going digital" using this method doesn't offer us very much. We'd still get one digital channel on a given RF channel and we already have the ability to connect to other repeaters around the world – on the Isle of Man, our existing AllStar

The July program will be about Lightning Protection and will be led by Jim Bacher.

FM network is hard to beat in that respect.

The second answer is to squeeze more conversations into the same space. This is called TDMA or "time division multiple access" and is the approach TETRA and DMR both take. In the case of DMR, the system rapidly switches between two channels on the same frequency. The total spectrum bandwidth needed is still 12.5kHz but now there are now two speech channels in the same space instead of one. This is where the term "timeslot" first appears when talking about digital radio – the first time period is "timeslot 1" and the second is "timeslot 2". The picture below shows six timeslots but, theoretically, there can be any number. Remember, DMR is two – this means that can be twice as many DMR conversations fitted into a given band when compared with traditional analogue systems.

Finally, all digital systems offer potential advantages is improved coverage – some are better at it than others. This should not be confused with "bigger coverage area" though - it's still RF and it follows the same laws of physics of any other radio system - for a start, it still gets blocked by big bits of rock. By the nature of digital encoding and modulation, signals are very much either there or not – think of DAB and digital television broadcast systems. What that means in practical terms is that, firstly, there's no mobile flutter and secondly, for areas where FM is noisy, digital systems will deliver clear speech. Experience has shown that DMR will work flawlessly down to a signal strength of around -120dBm, which is a horrible ropy and noisy, S1 signal in an FM system.

There's gear on eBay and plenty of choice of suppliers of new equipment. As well as the established suppliers such as Motorola, the Chinese are beginning to enter the market with less expensive handheld radios and most PMR radio equipment manufacturers are making DMR equipment as well as their traditional analogue systems
<https://manxrepeaters.com/index.php/digital-mobile-radio-dmr/articles-user-guides-and-help/user-guides-and-help/intro-dmr>

(continued on page 6)

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF REVENUE
FRANKFORT
40620
revenue.ky.gov

April 25, 2019

BLUEGRASS AMATEUR RADIO
SOCIETY INC
C/O BLUEGRASS AMATEUR RADI
PO BOX 4411
LEXINGTON KY 40544

RE: Exemption for Certain Sales Made by Nonprofit Organizations

To Whom It May Concern:

House Bill 354 enacted by the 2019 General Assembly was signed into law on March 26, 2019. KRS 139.495 was amended and a new section of KRS Chapter 139 was created providing an exemption for all sales of admissions made by nonprofit organizations, as well as sales of tangible personal property and digital property made at fundraising events by these non-profit organizations. The affected groups should immediately stop charging sales tax on these types of transactions if they have not done so already.

Effective March 26, 2019, Sections 28 and 29 of the legislation provide an exemption from sales tax for all sales of admissions as well as fundraising event sales made by nonprofit civic, governmental and all other nonprofit organizations. However, the exclusion for fundraising event sales does not include *"sales related to the operation of a retail business, including but not limited to thrift stores, bookstores, surplus property auctions, recycle and reuse stores, or any ongoing operation in competition with for-profit retailers"*.

Nonprofit civic, governmental, or other nonprofit organizations that make sales of admissions of any type or fundraising event sales of tangible or digital property are no longer required to collect sales tax for these types of sales if the sale is made on or after March 26, 2019. Upon submission of the final sales tax return for the reporting period, that includes taxable sales transactions and tax collections up to the March 26 effective date, nonprofit organizations may cancel their sales tax accounts if all of their sales are either sales of admissions or fundraising event sales.

Nonprofit organizations that make sales other than admissions as part of the operation of a retail business as an ongoing operation in competition with for-profit retailers must maintain an active sales tax account and continue to collect and remit sales tax on these retail sales. In many cases, the remaining taxable sales activity may be an integral part of the mission of the organization and is offered to the general public on a routine basis.

Nonprofit organizations may submit a signed Account Update Form 10A104 to request cancellation of their sales tax account. The form is available for download from the Revenue website at this link:
<https://revenue.ky.gov/Forms/10A104.pdf>

If you have any questions about how HB 354 affects your sales tax account, please contact the Department at the phone number or email addresses below.

Kentucky Department of Revenue
Division of Sales and Use Tax
501 High St.
Frankfort, KY 40601
502 564-5170
DOR.WebResponseSalesTax.ky@gov

(continued from page 4, What's Digital radio)

The first answer is that their system is entirely proprietary – you can only use Yaesu radios with a Yaesu repeater. Even if you think Yaesu will still be making Fusion gear in five or ten years time, that's only OK if you like Yaesu radios and they make one that suits you – there's not much choice of gear.

The second answer is that DMR is an open standard – the opposite of things like Fusion. This means that there are several manufacturers that make equipment that inter-operates. That's the way we've always worked – imagine having different types of FM so that only people with Icom radios could talk to other Icom owners but people with Kenwood gear couldn't join in. There is one thing to say regarding the open-ness of DMR and that is that it is only the core that is open – there are various things that don't work between manufacturers. This is limited to the likes of text messaging and security which are hardly a problem for amateur radio. Whatever, as a user, you still get the biggest choice of equipment with a DMR system.

The third answer is that DMR is a TDMA system, so we get two channels for the price of one. Extra for free is always good! That means that, depending on who's doing what, we can potentially get two QSO's on a repeater at once.

The fourth answer is that Fusion is an amateur system – that's good on the one hand because it's designed to be easy to set up but it's all based on amateur grade hardware which is not designed to sit on commercial radio hilltop sites, running for ever, with little attention.

Do you want another reason? The fifth answer is that it's the way the world is going. Whether we like it or not, analogue systems are slowly being phased out in the commercial world and, at the moment, DMR seems to be the most rapidly growing system there. That means the supply of equipment suitable for us to use is unlikely to dry up. There's gear on eBay and plenty of choice of suppliers of new equipment. As well as the established suppliers such as Motorola, the Chinese are beginning to enter the market with less expensive handheld radios and most PMR radio equipment manufacturers are making DMR equipment as well as their traditional analogue systems
<https://manxrepeaters.com/index.php/digital-mobile-radio-dmr/articles-user-guides-and-help/user-guides-and-help/intro-dmr>

What is Field Day?

[https://en.wikipedia.org/wiki/Field_Day_\(amateur_radio\)](https://en.wikipedia.org/wiki/Field_Day_(amateur_radio))

Field Day is an annual amateur radio exercise, widely sponsored by IARU regions and member organizations, encouraging emergency communications preparedness[1] among amateur radio operators. In the United States, it is typically the largest single emergency preparedness exercise in the country, with over 30,000 operators participating each year. Field Day is always the fourth full weekend of June, beginning at 1800 UTC Saturday and running through 2059 UTC Sunday.

Since the first ARRL Field Day in 1933, radio amateurs throughout North America have practiced the rapid deployment of radio communications equipment in environments ranging from operations under tents in remote areas to operations inside Emergency Operations Centers (EOCs). Operations using emergency and alternative power sources are highly encouraged, since electricity and other public infrastructures are often among the first to fail during a natural disaster or severe weather.

To determine the effectiveness of the exercise and of each participant's operations, there is an integrated contesting component, and many clubs also engage in concurrent leisure activities (camping out, cookouts, etc.). Operations typically last a continuous twenty-four hours, requiring scheduled relief operators to keep stations on the air. Additional contest points are awarded for experimenting with unusual modes, making contacts via satellite, and involving youth in the activity.

**Annual Field Day is June 22-23, 2019.
 We will be at Veterans Park, Shelter #2.
 Setup will start around 10 am and we
 will start working the air around 2 pm.
 Cookout will be prepared and served in
 the evening.**

Everyone is invited to come and join us for the fun.

Princeton KY Hamfest

06/01/2019

Location: Princeton, KY

Type: ARRL Hamfest

Sponsor: Princeton Ham Radio Club,

Tri-County ARES Group

Website: <http://w4kbl.org>

Bluegrass Amateur Radio Society (BARS)
General Meeting Minutes of May 6, 2019
Red Cross Building, Lexington, Ky.

The May, 2019, BARS General Meeting was called to order at 7:31pm by Second Vice President David Richardson, W9KHZ.

Self-introductions were made by twenty-two(22) members, which composed a quorum, plus four(4)visitors.

Program: Jodie Wells conducted the first short members' auction of excess equipment not needed by BARS. The sale realized \$32.00 before sales tax. Equipment not sold will be put on E-bay for sale.

Club and Members' News.

Mark Elliot, KN4HVX, has upgraded to Extra class license.

Sandy Gragg, KM4PJU, and Tim Kunkel, KF4MPM are celebrating birthdays this month.

Bonnie Fuqua is not feeling at her best.

Bill Weaver, WE5P, has relocated his QTH to Richmond.

Treasurer's Report – John Barnes, KS4GL.

One membership application that was

recommended by the Board of Directors at their April meeting was presented for Phillip Fraley, WA4VYK. J.B.Young, WA4WWH, moved, and Joe Raber, KN4ONX, seconded for acceptance of the membership application, which was approved by unanimous vote.

The summary treasurer's report of amounts in bank accounts statements as of April 30, 2019, are:

Checking account:

General fund: \$8,312.46

Coax/repeater: 804.98

Education: 1,934.29 \$11,051.73

PayPal account: 3,360.36

Savings account: 201.02

Total balance of accounts: \$14,613.11

James Schlessler, WA9MED, moved and J.B.Young, WA4WWH, seconded to accept the treasurer's report, which was approved unanimously.

The Kentucky Sales Tax Law amendments, effective March 26th, exempts non-profit organizations, such as BARS, from certain sales tax provisions which will simplify the Clubs' financial accounting and save the Club from paying sales tax on certain financial transactions – especially dues.

(continued on page 9)

Program Schedule for 2019

David Richardson/W9KHZ, Chair, Program Committee
Bluegrass ARS, Lexington, Kentucky

The following programs are scheduled for 2019. Your input and suggestions for programs for 2019 are needed. Call David Richardson, W9KHZ at 869-983-1380 or e-mail at daveinlex3@gmail.com/.

Month	Topic	Presenter(s)	Comments
✓ January	"Winter Field Day" January 26-27, 2019	David Richardson/W9KHZ	
✓ February	CERT Program	Shelly Bendall LFUCG	
✓ March	SkyWarn National Weather Service, Louisville, KY	Joe Sullivan	
✓ April	Portable Go-Kit	David Richardson/W9KHZ	
✓ May	Antenna Theory and Design	Bill Fuqua/WA4LAV	
June	"ARRL Field Day" June 22-23, 2019	David Richardson/W9KHZ	
July	Lightening Protection	Jim Bacher	
August	"Hamfest" August 10, 2019	David Richardson/W9KHZ	
September	Annual Family Picnic	Bill DeVore	Shelter#4, Shillito Park, LEX
October	Discussion of By-Laws and SOP changes		
November	Report of Nominating Committee	Additional discussion on By-Laws and SOP	
December	"Annual Auction"/Election	Andrew Cook	

Meeting Schedules for Area Clubs, Exam Sessions, etc.

Volunteer examinations are held in or near Lexington on a schedule that has tests in central Kentucky every month of the year. Schedules for area sessions, plus meetings, etc., are as follows:

The Bluegrass Amateur Radio Society, Inc. (Lexington) - (Fernie Williams/KE4MAI (ARRL - \$15.00) and Margie Williams/KE4MAJ(WCARS- \$10.00)), with Darrell/AC4YD in Winchester and Richmond (W5YI), John/K4FT in Danville (ARRL), and Ron/WX4GPS in Georgetown (ARRL - \$15.00), have a schedule to offer an exam monthly in Lexington/central Kentucky. (See schedules on page 9 of this newsletter). ARRL sponsored tests are held the second Saturday of the month, 10:00 AM in the Red Cross Building, Meeting Room "B", 1450 Newtown Pike, Lexington (except the August session is the Saturday of the second weekend of the month and is held at the site of the Central Kentucky ARRL Hamfest), and WCARS sponsored sessions are held the third Tuesday of the scheduled month, 7:00PM in Meeting Room "A" in the Red Cross Building, 1450 Newtown Pike, Lexington. Contact Margie/KE4MAJ at 859-489-6274 or email to ke4maj@arrl.net. Go to <<http://www.lexkywcars.org>> for information.

Winchester (W5YI VEC) - They are located in the Clark County EOC, 200 Maryland Avenue, Winchester, Kentucky. Their 2019 schedule (10:00AM): Saturday, January, 12, Saturday, April 13, Saturday, July 13, and Saturday, October 12. Contact Liaison Darrell Epperson/AC4YD, AC4YD@arrl.net, 859-771-1834

Danville (ARRL VEC) - Test sessions are fourth Saturday in January, April, July and October at 10:00 AM. Liaison John Wulf/K4FT, johnk4ft@gmail.com, 563-505-0339, Wilderness Road Amateur Radio Club, American Legion Post 46, 45 Spears Lane, Danville, KY 40422 - Repeater 145.310 (100 pl).

Georgetown (ARRL VEC) - Liaison Ron Malinowski/WX4GPS, wx4gps@arrl.net, 502-542-8252, Georgetown Police Dept, 550 Bourbon St., Georgetown (for dates see schedule on page 4 of this newsletter).

Radio Theory and Construction Workshop - Each Saturday 1:00-3:00 PM in the Bluegrass ARS Education Center, basement of the Red Cross Building, 1450 Newtown Pike, Lexington. Contact Bill Fuqua/WA4LAV at (859) 272-9523 or wa4lav@arrl.net.

Versailles/Woodford County - The Woodford County Amateur Radio Club meets the first Wednesday of each month at 7:00 PM in the Versailles Fire Station No. 2 on Big Sink Pike (38°3'34" N 84°43'11"W). Anyone interested in amateur radio is cordially invited. Also, visit their web site at <<http://www.ky4wc.org>>. You may contact Todd Rose/KE4YAH (atrose@windstream.net).

Fayette County ARES Net - Wednesday, 9:00 PM, 146.940 (-600 Tone 88.5) repeater.

Amateur Television and Specialized Communications Net

- An informal meeting is held every Sunday evening at 9:00 PM (local time)

on the 146.760 (-600 offset) repeater in Lexington.

Kentucky Six-Shooters Net - Wednesday evenings at 8:00 PM six meters FM on 52.525 MHz (vertically polarized). David Jordan/KI4AWZnet control; and, Daily Six-Meter FM Ragchew net 7:00-9:00 PM on 52.525MHz (vertically polarized). James Peel/KG4VAR net control.

KY-QRP - Temporarily canceled.

Scott County Amateur Radio and Emergency Service Club (SCARES) - Meetings are the third Saturday each month, 9:00 AM in the Solarium room at Georgetown Community Hospital, 1140 Lexington Road, Georgetown. Check in to their weekly simplex net Tuesdays at 7:00 PM on 146.685 (PL 141.3).

Central Kentucky ARS (Richmond-Berea) - Meet the Third Thursday each month in the Madison County EOC, Richmond, Kentucky, at 7:00 PM. Talk-in on 146.865 (-600, PL-192.8 Hz) and 145.370 (-600, PL-192.8 Hz) repeater for location, directions to meeting site, or other information.

Greater Mason County ARA meeting, 7:00 PM, second Tuesday each month, Maysville Community College Science Building.

Pioneer ARC (Winchester) - Fourth Tuesday each month, Golden Corral Restaurant, 7:00 PM (eat at 6:00), except March 26 meet at Christview Christian Church (SkyWarn). Talk-in/info on 145.430 (-600, T-203.5).

Jessamine Amateur Wireless Society (Nicholasville) - Meet Second Monday each month, 7:00 PM, St. Joseph/R.J. Corman Ambulatory Care Center, 1250 Keene Road (U.S. 27 Bypass south to intersection with 169; turn at the light.) Talk-in on the 145.490 (T-123.0).

The Jessamine County ARES Net - Tuesdays at 7:30 PM, 145.490 Repeater, Gary Britten W4GNB net control.

The Madison County ARES Net, Monday at: 7:00 PM, 146.865 (pl 192.8). Everyone is invited to check in. . . Wilderness Trail Emergency Net, Wednesdays, 8:30 PM, 146.715 (pl 100.0). . . Glenn/KO4OL.

The Southeast Kentucky ARC - meet at the Laurel County EOC, 168 Substation St, London. Meetings on odd number months (Jan, Mar, etc.) are on the Second Tuesday at 6:00 PM; meetings on even number months (Feb, Apr, etc.) are the Second Saturday at 11:00 AM. Talk-in on 147.180 (PL-74.4) for directions tor other information. District 11 Skywarn Net meets Sundays at 8:00 PM on 146.925 (-PL- 79.7) and is linked to 147.180 (PL-74.4) and other repeaters in and close to the area. District 11 ARES Net meets Mondays at 9:00 PM on 146.925 (PL-79.7) and is linked to 147.180 (PL-74.4) and other repeaters in and close to the area.

Please send any changes or corrections to these notices to my attention, Bart Breeding/KB4FEE, in care of Bluegrass ARS, Inc., PO Box 4411, Lexington, KY 40544-4411, or e-mail to aratat291@twc.com.

07/20/2019

Big Sandy Amateur Radio Club Hamfest

Location: Louisa, KY

Type: ARRL Hamfest

Sponsor: Big Sandy Amateur Radio Club

Website: <http://bsarc.org/>

The club would like to thank Bill Cotter, N4LG for the donation of equipment to the club.

Schedule for Volunteer Examinations in 2019

Harry Spark/KN4S,*
Bluegrass Volunteer Examiners
kn4s@kn4s.com

The exam schedule for 2019 follows nearly the same format as past years. The scheduling is for Lexington/Fayette County and the sessions in Danville, Georgetown, Winchester, and Richmond hamfest. The Bluegrass Amateur Radio Society-sponsored ARRL exams will continue to be held on the second Saturday of the second month of each quarter (except the August Session will be the date of the Central Kentucky ARRL Hamfest in Lexington), and the WCARS sessions remain as they were last year, Tuesday evenings quarterly.

Test Session Locations

Lexington*	Winchester**	Danville	Georgetown
Red Cross Building	Clark County EOC	Amer Legion Post 46	Georgetown Police Dept
1450 Newtown Pike	200 Maryland Ave	45 Spears Lane	550 Bourbon Street
Lexington KY 40509	Winchester KY 40391	Danville KY 40422	Georgetown KY 40324

* August, Bluegrass ARS Hamfest, Eastland Shopping Center, Lexington, Kentucky

** September, Richmond Hamfest, Madison County Fairgrounds, Richmond, Kentucky

Contact Information

ARRL VEC: Lexington and BARS ARRL Hamfest test sessions - Liaison **Fernie Williams/KE4MAI**, ke4mai@arrl.net, 859-652-3393

(www.bluegrassars.org)

Danville - Liaison **John Wulf/K4FT**, johnk4ft@gmail.com, 563-

505-0339, Wilderness Road ARC, <http://www.wrarc.com>

Georgetown - Liaison **Ron Malinowski/WX4GPS**,

wx4gps@arrl.net, 502-542-8252

WCARS VEC: Lexington - Liaison **Marguerite Williams/KE4MAJ**,

ke4maj@arrl.net, 859-489-6274 (www.bluegrassars.org)

W5YI VEC: Winchester - Liaison **Darrell Epperson/AC4YD**,

AC4YD@arrl.net, 859-771-1834

TEST SESSION FEE: ARRL - \$15; WCARS - \$10; W5YI - \$14

Date and Time	VEC	Location
Saturday, June 8, 2019	10:00 am	ARRL Georgetown
Tuesday, June 11, 2019	7:00 pm	WCARS Lexington
Tuesday, June 25, 2019	6:00 pm	Laurel VEC Lawrenceburg
Saturday, July 13, 2019	10:00 am	W5YI Winchester
Saturday July 23, 2019	10:00 am	ARRL Danville

(continued from page 7, General Meeting 05-06-19)

Committee Announcements.

Contest – Pete Kragh, K2UPD: Bill Weaver announced that the Kentucky QSO party is scheduled for June 1st-2nd.

Field Day is scheduled for June 22nd – 23rd at Veterans Park.

Education – Bill Fuqua, WA4LAV: (no announcements).

Emergency Preparedness - Sandy Gragg, KM4PJU. A “Ham Radio 101”

presentation will be given at the Fayette County Emergency Operations Center on June 4th
hrarCERT certified.

for those ham radio operators who are CERT certified.

Hamfest – David Richardson, W9KHZ: August 10th at the Jack-Pot Bingo Hall in the Eastland Shopping Center.

Newsletter – Bart Breeding, KB4FEE: Nothing to announce.

Program – David Richardson, W9KHZ:

The June program topic will be “Field Day”.

The July program will be “Lightning Protection”.

The August program will be “Hamfest”.

Public Relations and Membership – Bart Breeding, KB4FEE:

A “Ham Radio 101” presentation will be given at the Village Branch Library on July 5th.

Repeater – Andrew Cook, KF4OWP: Nothing to announce.

Shack – David Richardson, W9KHZ: On-going antenna maintenance and replacement activities are scheduled for Saturdays during good weather.

Volunteer Examinations – Fernie Williams, KE6MAI: May 11th at the Red Cross building.

Historian - Bill DeVore, N4DIT: Nothing to announce.

Librarian – John Barnes, KS-4GL: Nothing to announce.

MARS – Harvey Fry, AA4HF, and Barry Jackson, WB4N: (no announcements).

Trustee: Shack – Andrew Cook, KF4OWP: (no announcements).

VHF Repeater – Andrew Cook, KF4OWP: (no announcements).

Bylaws – Andrew Cook, KF4OWP: The Bylaws committee is meeting

each month at 6:00pm before the General Meetings and the Directors’ Meetings to revise the current Bylaws. The committee meeting is open to all BARS members for input and discussion.

Special Interest Groups News. Bill DeVore, N4DIT, announced that 23 to 30 ham radio operators will be needed for Health and Welfare communications coverage of the Independence Day, July 4th, Bluegrass 10K in Lexington. Anyone interested in participating should meet at the old Shriners’ Hospital at 5:30am. The event is scheduled to be over around 10:00am.

(continued on page 11)

Bluegrass Amateur Radio Society (BARS) Directors' Meeting Minutes of April 15, 2019 Red Cross Building, Lexington, Ky. The April, 2019, Directors' Meeting was

called to order at 7:47pm by President Andrew Cook, KF4OWP.

In attendance were:

2nd Vice President – David Richardson, W9KHZ;
Treasurer – John Barnes, KS4GL;
Secretary – Bruce Campbell, KM4EHU;
Directors-at-Large – Mark Elliott, KN4HVX;
plus MARS Representatives Barry Jackson, WB4N, and Harvey Frye, AA4HF, and also Bart Breeding, KB4FEE, Bill Weaver, WE5P, and Mike Saulsbury, WB0JBO.

Treasurer's Report – John Barnes, KS4GL.

New Membership Applications: Phillip Fraley, WA4EKY.

David Richardson, W9KHZ, moved, and Bart Breeding, KB4FEE, seconded that the application be accepted and presented at the May general membership meeting, which was approved without objection.

Summary Treasurer's Report as of March 31, 2019:

Checking account:

General fund:	\$8,536.98
Coax/repeater:	804.98
Education:	1,934.29
	\$11,276.25

PayPal account:

3,341.24

Savings account:

200.98

Total balance of accounts:

\$14,818.47

Bart Breeding, KB4FEE, moved, and Bill Weaver, WE5P, seconded that the treasurer's report be accepted and was approved without objection.

Secretary's Report – Bruce A. Campbell, KM4EHU Nothing to report.

Committee Reports.

Contest: (Pete Kragh, K2UPD). (no report)

Education: (Bill Fuqua, WA4LAV). (no report)

Emergency Preparedness: Sandy Gragg, KM4PJU.

1) John Frost, W8CDS, has been named as Assistant Emergency Communications Coordinator for Fayette County.

2) A simple network exercise is being planned for the future.

Hamfest: David Richardson, W9KHZ.

Nothing to report.

Newsletter: Bart Breeding, WB4FEE.

Nothing to report.

Program: David Richardson, W9KHZ.

The July Program will be changed from DMR to Lightning Protection.

Public Relations and Membership: Bart Breeding, WB4FE.

Bart Breeding, KB4FEE, and David Richardson, W9KHZ, are

scheduled to present a "Ham Radio 101" seminar for CERT

(Community Emergency response

Team) certification at the

Cisco Road Lexington Fayette County

EOC on June 4th, and

also a similar presentation for a general program at the

Lexington Public Library Village Branch on July 5th.

Repeater: Andrew Cook, KF4OWP. Ways and means for increasing the

coverage of the 146.760-repeater on UK's Anderson Hall will

be studied in the future.

Shack: David Richardson, W9KHZ.

Suggested designs for additional wire antennas were presented by Mike

Saulsbury, WB0JBO.

HF Liaison: David Richardson, W9KHZ.

Nothing to report.

VHF Liaison: (Tim Kunkel, KF4MPM). (no report)

Volunteer Examinations: (Fernie Williams, KE4MEI). (no report)

Historian: (Bill DeVore, N4DIT). (no report)

KYQRP(ad hoc) – (Roger Colvin, KJ4YSY). (no report).

Library: John Barnes, KS4GL. Nothing to report.

MARS: Harvey Frye, AA4HF, and Barry Jackson, WB4N.

The MARS station is operational on voice and digital modes.

Trustee: Andrew Cook, KF4OWP. Nothing to report

Bylaws: Andrew Cook, KF4OWP. Secretary Bruce Campbell, KM4EHU,

Reported that the revisions to the Bylaws are reaching the point that they will soon be ready to submit to the Directors' for rounds of preliminary approvals before they are presented to a general membership vote for adoption. The Bylaws committee meeting is open to any interested BARS member.

A set of BARS Standard Operating Procedures is being formulated at the Bylaws Committee meetings, and input is welcome from members.

Old Business:

1) Antenna maintenance activities are postponed for favorable weather.

2) The need for a committee to determine the disposition and disposal of the donated equipment was discussed.

New Business:

Bruce Campbell, KM4EHU, proposed and moved that a "Honorary Life" Membership be granted to Loretta Colvin for her continuous involvement and dedication to BARS. John Barnes seconded the motion that will be presented to the membership at the May general meeting.

Upcoming BARS Schedule:

May 6th, 6:00pm - Bylaws Committee Meeting.

May 6th, 7:30pm - BARS General Meeting.

Program: Antenna Theory, Bill Fuqua, WA4LAV.

May 17th – 19th – Dayton/Xenia Hamfest.

May 20th, 6:00pm - Bylaws Committee Meeting.

May 20th, 7:30pm - Directors' Meeting.

June 3rd, 6:00pm - Bylaws Committee Meeting.

June 3rd, 7:30pm - BARS General Meeting.

Program: Field Day, David Richardson, W9KHZ.

June 17th, 6:00pm - Bylaws Committee Meeting.

June 17th, 7:30pm - Directors' Meeting.

June 22nd – 23rd – Field Day at Veterans' Park.

July 1st, 6:00pm - Bylaws Committee Meeting.

July 1st, 7:30pm - BARS General Meeting.

Program: Lightning Protection.

(continued on page 11)

(continued from page 10,
Director's Meeting =, 4-15-19)

With no other business at 9:00pm,
Mark Elliott, KN4HVX, moved, and
David Richardson, W9KHZ, seconded
that the meeting be adjourned, which
was approved without objection.

Recorded and submitted by:

Bruce Campbell, KM4EHU,
Secretary

(continued from page 9,
General Meeting 5-6-19)

Old Business.

Small amounts of BARS surplus
equipment will be auctioned
bit-by-bit to Club members at
the monthly general meetings.
Items not sold will be placed on
E-bay for sale.

New Business.

(none)

With no other business at
8:50pm, Sandy Gragg, KM4PJU,
moved, and Joe Raber, KN4ONX,
seconded, that the meeting be
adjourned, which was approved
unanimously.

The next BARS scheduled meet-
ings and activities:

Bylaws Committee Meeting:
Monday, June 3rd, 6:00pm.

BARS General Meeting: Mon-
day, June 3rd, 7:30pm. Program:
Field Day.

Bylaws Committee Meeting:
Monday, June 17th, 6:00pm.

BARS General Meeting: Mon-
day, June 3rd, 7:30pm. Program:
Field Day.

Bylaws Committee Meeting:
Monday, June 17th, 6:00pm.

Directors' Meeting: Monday,
June 17th, 7:30pm.

Field Day: June 22nd – 23rd at
Veterans' Park.

Bylaws Committee Meeting:
Monday, July 1st, 6:00pm.

**DUE TO CONSTRUCTION ON
THE PLAYGROUND NEAR SHEL-
TER #2, OUR ANNUAL PICNIC
WILL BE HELD AT SHELTER # 4
AT SHILITO PARK IN SEPTEM-
BER**

BARS General Meeting: Monday,
July 1st, 7:30pm.

Program: Antenna Theory.

Bylaws Committee Meeting:

Monday, July 15th, 6:00pm.

Directors' Meeting: Monday, July
15th, 7:30pm.

Bylaws Committee Meeting:

Monday, August 5th, 6:00pm.

BARS General Meeting: Monday,
August 5th, 7:30pm.

Program: Hamfest.

Hamfest: Saturday, Au-
gust 10th.

Recorded and submitted by:

Bruce A. Campbell, KM4EHU
Secretary

Amateur Radio Emergency Service

**Backgrounder: Amateur Radio
Emergency Communication**

For More Information:

**David Isgur, N1RSN
Communications Manager
(860) 594-0328**

disgur@arrl.org

What do Amateur Radio operators do
during and after disasters?

Amateur Radio operators set up and
operate organized communication
networks locally for governmental
and emergency officials, as well as
non-commercial communication for
private citizens affected by the disaster.
Amateur Radio operators are most like-
ly to be active after disasters that dam-
age regular lines of communications
due to power outages and destruction
of telephone, cellular and other infra-
structure-dependent systems.

**How do Amateur Radio operators
help local officials?**

Many radio amateurs are active as
communications volunteers with local
public safety organizations. In addition,
in some disasters, radio frequencies are
not coordinated among relief officials
and Amateur Radio operators step in
to coordinate communication when
radio towers and other elements in
the communications infrastructure are
damaged.

What are the major Amateur Radio emergency organizations?

Amateur Radio operators have infor-
mal and formal groups to coordinate
communication during emergencies.
At the local level, hams may participate
in local emergency organizations, or
organize local "traffic nets" using VHF
(very high frequencies) and UHF (ultra
high frequencies). At the state level,
hams are often involved with state
emergency management operations. In
addition, hams operate at the national
level through the Radio Amateur Civil
Emergency Service (RACES), which is
coordinated through the Federal Emer-
gency Management Agency, and through
the Amateur Radio Emergency Service
(ARES), which is coordinated through
the American Radio Relay League and
its field volunteers. Many hams are also
involved in Skywarn, operating under
the National Weather Service and pro-
vide emergency weather information to
the NWS for analysis and dissemination
to the public.

Is Amateur Radio recognized as a re-
source by national relief organizations?
Many national organizations have for-
mal agreements with the Amateur Radio
Emergency Service (ARES) and other
Amateur Radio groups including:

- Department of Homeland Security
- Citizen Corps
- Federal Emergency Management
Agency
- National Communications System
- Salvation Army
- National Weather Service
- Association of Public Safety
Communications Officials

###

What is DMR?

http://www.trbo.org/docs/Amateur_Radio_Guide_to_DMR.pdf

Digital Mobile Radio (DMR) was developed by the European Telecommunications Standards Institute (ETSI) and is used worldwide by professional mobile radio users. [http://www.dmrassociation.org] DMR is divided into three tiers. Tier I is a single channel specification originally for the European unlicensed dPMR446 service. It is a single channel FDMA 6.25 kHz bandwidth; the standard supports peer-to-peer (mode 1), repeater (mode 2) and linked repeater (mode 3) configurations. The use of the Tier I standard has been expanded into radios for use in other than the unlicensed dPMR446 service. [http://www.dpmr-mou.org] Tier II is 2-slot TDMA 12.5 kHz wide peer-to-peer and repeater mode specification, resulting in a spectrum efficiency of 6.25 kHz per channel. Each time slot can be either voice and/or data depending upon system needs. IP Site Connect (IPSC) for interconnecting repeaters over the Internet is vendor specific and is not part of the ETSI standards at this time. Most amateur radio implementations of DMR are using voice on both time slots. Tier III builds upon Tier II, adding trunking operation involving multiple repeaters at a single site. Not all manufacturers' trunking implementation is Tier III compatible. Vendor specific protocols have expanded the trunking to multiple site operations. The forward error correction in the AMBE+2™ is an improvement of the voice quality of older vocoders such as used by D-Star™. Amateur Mototrbo™ and Hytera DMR networks, from the end user standpoint, operate the same. Amateur Mototrbo™ networks are much larger, cover many more areas, and most are interconnected. I look forward to the day when the multiple vendor infrastructures can be 2 interconnected by the amateur community. Not all the amateur DMR repeaters are connected to the wide area networks; some are standalone either because they have yet to obtain an ISP connection at their repeater site or because they just want to use the repeater for local communications. Some standalones are operating in dual-mode (analog/digital). Mototrbo™ repeaters operating in dual-mode do not support interconnection via the Internet using IPSC. Some hams have installed DMR repeaters in a vehicle, using 3G/4G cellular wireless services for Internet access.

Others have implemented remote bases to interconnect to other networks or radios; it is important to remember that the wide area networks typically have policies prohibiting interconnected traffic, but what is implemented locally and stays local is acceptable. While some may consider network policies prohibiting interconnection to different types of networks political, these policies are really about keeping large networks functioning. Users sometimes don't realize the hours put in by network operators or the extent of their efforts that are required to keep a linked system running smoothly. There are sometimes issues of poor quality from interconnected technologies because of the vocoding process that would degrade the quality of the network. DMR-MARC has a sandbox available for persons interested in developing and experimenting that is separate

from and off the main DMR-MARC network [http://www.dmr-marc.net/sandbox.html]. Back during the early era of amateur analog repeaters, most everyone used surplus commercial radios. Over time, equipment designed for and targeted to the radio amateur reached the amateur radio marketplace. Today in the DMR marketplace you can find used commercial gear, but new DMR radios are now available with street prices within the range of a typical ham budget. Some amateur DMR users are just using their commercial radios from work with a few extra channels programmed in. Currently, no manufacturer is marketing an "Amateur" DMR radio; they are building DMR radios for the broader world market. Because of FCC Rules & Regulations for commercial users, DMR radios do not offer FPP (Front Panel Programming) as is the norm for other amateur radios. This is really not an issue because most DMR radios have enough channels to program all possible channels you may want to operate. Most of the DMR radios require a programming cable to program the radio using manufacturer software, while some radios support programming using Bluetooth and even over-the-air programming. There are police and fire departments, local/state governments and many businesses using DMR Tier II and Tier III; any Tier III capable radio will 3 also work on Tier II systems but neither will work on Tier I. If you have a DMR radio for work, you may be able to program it to also work on amateur repeaters (make sure you have permission) and you will need to contact DMR-MARC about a usable subscriber ID that will work on both networks.

(continued from page 3, What's Digital Radio)
some don't. If you want to join in, sort yourself out with some gear, you'll be very welcome.

So, to continue....

As pressure on radio spectrum increases, the professional communications world is coming up with ways of squeezing more into less. That is more conversations in less spectrum. Inevitably, this technology is finding its way into the amateur world, often helped along by those same professionals.

There are two fundamental ways of achieving this improved efficiency and every technique really boils down to one of these solutions. The first is to make each channel narrower – in the past we went from 25kHz channels to 12.5kHz and now there's pressure for 6.25kHz channels. This is the method the likes of Yaesu's fusion uses – in Fusion's "voice and data" mode, a voice channel is fitted into 6.25kHz along with a data channel in a further 6.25kHz – still a total of 12.5kHz. In Fusion's "voice only" mode, the single voice channel offered is still the same 12.5kHz wide that traditional analogue modes use. This is called FDMA or "frequency division multiple access". FDMA is the spectrum allocation method radio amateurs are most familiar with – a given band is divided into fixed bandwidth channels (for example the FM portion of 2m or 70cm). "Going digital" using this method doesn't offer us very much. We'd still get one digital channel on a given RF channel and we

(continued on page 13)

TREASURER'S REPORT

Respectfully submitted by John Barnes/KS4GL, Treasurer

BLUEGRASS AMATEUR RADIO SOCIETY, INC.
INCOME, EXPENSES, AND ACCOUNT BALANCES
as of April 30, 2019

	Checking Account	PayPal Account	Savings Account	Total
INCOME:				
ARRL Dues	0.00	0.00	0.00	0.00
BARS Dues	21.00	19.12	0.00	40.12
Coax/Repeater	0.00	0.00	0.00	0.00
Donations	33.02	0.00	0.00	33.02
Education	0.00	0.00	0.00	0.00
Hamfest	0.00	0.00	0.00	0.00
Interest	2.42	0.00	0.04	2.46
Sales Tax	1.98	0.00	0.00	1.98
Miscellaneous	0.00	0.00	0.00	0.00
Total	58.42	19.12	0.04	77.58
EXPENSES:				
ARRL Dues	0.00		0.00	
Coax/Repeaters	0.00		0.00	
Donations	158.00		158.00	
Education	0.00		0.00	
Election	0.00		0.00	
Equipment	0.00		0.00	
Field Day	50.00		50.00	
Hamfest	0.00		0.00	
Insurance	0.00		0.00	
Miscellaneous	44.94		44.94	
Newsletter	0.00		0.00	
Picnic	30.00		30.00	
P O Box	0.00		0.00	
Sales Tax	0.00		0.00	
Telephone	0.00		0.00	
Total	282.94		282.94	

ACCOUNT BALANCES

	March 31, 2019	April 30, 2019
Checking Balance*	11276.25	11051.73
PayPal Balance	3341.24	3360.36
Savings Balance	200.98	201.02
Total Balance	14818.47	14613.11

* Fund-specific balances in Checking Account

General	8536.98	8312.46
Coax/Repeater	804.98	804.98
Education	1934.29	1934.29
Total Checking	11276.25	11051.73

(continued from page 12,
"What's digital radio")

already have the ability to connect to other repeaters around the world – on the Isle of Man, our existing AllStar FM network is hard to beat in that respect.

The second answer is to squeeze more conversations into the same space. This is called TDMA or "time division multiple access" and is the approach TETRA and DMR both take. In the case of DMR, the system rapidly switches between two channels on the same frequency. The total spectrum bandwidth needed is still 12.5kHz but now there are now two speech channels in the same space instead of one. This is where the term "timeslot" first appears when talking about digital radio – the first time period is "timeslot 1" and the second is "timeslot 2". The picture below shows six timeslots but, theoretically, there can be any number. Remember, DMR is two – this means that can be twice as many DMR conversations fitted into a given band when compared with traditional analogue systems. Finally, all digital systems offer potential advantages is improved coverage – some are better at it than others. This should not be confused with "bigger coverage area" though - it's still RF and it follows the same laws of physics of any other radio system - for a start, it still gets blocked by big bits of rock. By the nature of digital encoding and modulation, signals are very much either there or not – think of DAB and digital television broadcast systems. What that means in practical terms is that, firstly, there's no mobile flutter and secondly, for areas where FM is noisy, digital systems will deliver clear speech. Experience has shown that DMR will work flawlessly down to a signal strength of around -120dBm, which is a horrible ropy and noisy, S1 signal in an FM system.

(continued on page 14)

(continued from page13, "What's digital radio")

Why DMR and not Fusion?

The obvious question that comes up after reading the glossy adverts in the amateur radio magazines is "why doesn't everyone use Fusion?" – after all, Yaesu are virtually giving the repeaters away. Apart from the fact that we wanted to keep what we had and add to it, rather than swapping it for something else, here are some thoughts...

The first answer is that their system is entirely proprietary – you can only use Yaesu radios with a Yaesu repeater. Even if you think Yaesu will still be making Fusion gear in five or ten years time, that's only OK if you like Yaesu radios and they make one that suits you – there's not much choice of gear. The second answer is that DMR is an open standard – the opposite of things like Fusion. This means that there are several manufacturers that make equipment that inter-operates. That's the way we've always worked – imagine having different types of FM so that only people with Icom radios could talk to other Icom owners but people with Kenwood gear couldn't join in. There is one thing to say regarding the open-ness of DMR and that is that it is only the core that is open – there are various things that don't work between manufacturers. This is limited to the likes of text messaging and security which are hardly a problem for amateur radio. Whatever, as a user, you still get the biggest choice of equipment with a DMR system.

The third answer is that DMR is a TDMA system, so we get two channels for the price of one. Extra for free is always good! That means that, depending on who's doing what, we can potentially get two QSO's on a repeater at once.

The fourth answer is that Fusion is an amateur system – that's good on the one hand because it's designed to be easy to set up but it's all based on amateur grade hardware which is not designed to sit on commercial radio hilltop sites, running for ever, with little attention.

Do you want another reason? The fifth answer is that it's the way the world is going. Whether we like it or not, analogue systems are slowly being phased out in the commercial world and, at the moment, DMR seems to be the most rapidly growing system there. That means the supply of equipment suitable for us to use is unlikely to dry up. There's gear on eBay and plenty of choice of suppliers of new equipment. As well as the established suppliers such as Motorola, the Chinese are beginning to enter the market with less expensive handheld radios and most PMR radio equipment manufacturers are making DMR equipment as well as their traditional analogue systems.

<https://manxrepeaters.com/index.php/digital-mobile-radio-dmr/articles-user-guides-and-help/user-guides-and-help/intro-dmr>

KY QSO Party

JUNE 1-2, 2019

Volunteers needed for Bluegrass 10K Race

It is time again to plan for this year's Bluegrass 10K Race on July 4. Radio amateurs provide an important communication role during this event by reporting race progress and injuries to participants. Volunteers are needed. You are needed.

We will meet at 6 AM on race day at the corner of Richmond Road and Shriners Lane. From there we will be escorted to downtown, and each person can fall out at their assigned spot. We will use the 146.76 repeater. All you need is an operating 2 meter HT. The race is usually over by mid morning, so you can still spend the holiday with family and friends.

For ARES members and other communication responders this is a good opportunity to keep your skills limber at a low pressure event. I think the local ARES group can receive necessary credit for the event. I will be happy to sign off on required paperwork.

The event is low stress. If you are a new ham, or if you have never participated in a public service event, we welcome you. If you've been out of the game for a while and want to get back in, we welcome you also.

All volunteers will receive a tee shirt.

If you want to volunteer, I need your NAME, CALL SIGN, TELEPHONE NUMBER, AND SHIRT SIZE. I doubt that sizes larger than 2XL are available. If you don't give me your shirt size I will get you an XL. You can also bring a non-ham helper, so make sure you give me their name and shirt size.

Please email directly to me as soon as possible. I must order the shirts and coordinate with race officials well ahead of time.

Any questions? If so just email me directly at kd4csw@twc.com.

Thanks and 73,

Darryl/KD4CSW

To contact the club email info@bluegrassars.org or

We the people are the rightful masters of both Congress and the courts, not to overthrow the Constitution but to overthrow the men who pervert the Constitution.

Abraham Lincoln

FIELD DAY JUNE 22-23, 2019

Bruce Draper, AA5B, aa5b.corral@gmail.com

Contest Corral

June 2019

Check for updates and a downloadable PDF version online at www.arrl.org/contests.

Refer to the contest websites for full rules, scoring information, operating periods or time limits, and log submission information.

Start - Finish Date-Time Date-Time				Bands	Contest Name	Mode	Exchange	Sponsor's Website
1	0000	2	0200	1.8-28	PVRC Reunion	CW Ph	PVRC Member: 1st year of membership, name, SPC, call sign when joined PVRC; non-member: name, SPC	pvrc.org/reunion
1	0000	2	2359	28	10-10 International Open Season PSK Contest	Dig	Name, SPC, mbr	www.ten-ten.org
1	0400	2	2000	3.5-28	DigiFest	Dig	RST, 4-char grid square	www.mixw.net
1	0600	1	0800	7-14	Wake-Up! QRP Sprint	CW	RST, serial, suffix of previous QSO	qrp.ru/contest/wakeup
1	1200	2	1200	3.5-28	SEANET Contest	CW Ph	RS(T), serial	www.seanet2019.com
1	1300	2	1300	50	UKSMG Summer Contest	CW Ph Dig	RST, serial, 6-char grid square	uksmg.org
1	1400	2	0200	1.8-144	Kentucky QSO Party	CW Ph Dig	RS(T), county or SPC	www.kyqsoparty.org
1	1500	2	1459	1.8-28	IARU Region 1 Field Day, CW	CW	RST, serial	darc.de/der-club/referate/conteste
1	1500	2	1500	7-50	Dutch Kingdom Contest	CW Ph	RS(T), serial	dkars.nl
1	1500	2	1500	1.8-28	RSGB National Field Day	CW	RST, serial	www.rsgbcc.org/hf
4	0100	4	0300	3.5-28	ARS Spartan Sprint	CW	RST, SPC, power	arsqrp.blogspot.com
6	1700	6	2100	28	NRAU 10-Meter Activity Contest	CW Ph Dig	RS(T), 6-char grid square	nrau.net/activity-contests
6	1900	6	2100	1.8-28	SKCC Sprint Europe	CW	RST, SPC, name, mbr or power	www.skccgroup.com
7	1900	7	1959	3.5-7	HA3NS Sprint Memorial Contest	CW	RST, mbr or "NM"	radioamator.honlapetes.hu
8	0000	9	1559	3.5-28	DRCG WW RTTY Contest	Dig	RST, CQ zone	www.drcg.de/drcgww
8	0600	9	0600	3.5-28	VK Shires Contest	CW Ph	RS(T), VK shire or CQ zone	wia.org.au/members/contests
8	1100	8	1300	14-21	Asia-Pacific Sprint, SSB	Ph	RS, serial	jsfc.org/apsprint/aprule.txt
8	1200	9	1200	3.5-28	Portugal Day Contest	CW Ph	RS(T), CT district or serial	rep.pt/portugal_day_contest
8	1200	9	2359	1.8-50	SKCC Weekend Sprintathon	CW	RST, SPC, name, mbr or "none"	www.skccgroup.com
8	1500	9	1500	3.5-28	GACW WWSA CW DX Contest	CW	RST, CQ zone	www.wwsatest.org
8	1600	9	1600	50	REF DDFM 6-Meter Contest	CW Ph	RS(T), serial, 4-char grid square	concours.r-e-f.org
8	1800	10	0259	50 and up	ARRL June VHF Contest	CW Ph Dig	4-char grid square	www.arrl.org/june-vhf
9	1700	9	2200	All	Cookie Crumble QRP Contest	CW Ph Dig	RS(T), SPC, cookie #, name	w3atb.com/cookie-crumble
10	0000	10	0200	1.8-28	4 States QRP Group Second Sunday Sprint	CW Ph	RS(T), SPC, mbr or power	www.4sqrp.com
10	1900	10	2030	3.5	RSGB 80-Meter Club Championship, Data	Dig	RST, serial	www.rsgbcc.org/hf
12	0030	12	0230	3.5-14	NAQCC CW Sprint	CW	RST, SPC, mbr or power	naqcc.info
15	0000	16	2359	50	SMIRK Contest	CW Ph	Mbr, 4-char grid square	www.smirk.org/contest.html
15	0000	16	2359	1.8-28	All Asian DX Contest, CW	CW	RST, 2-digit age	www.jarl.org/English
15	1200	16	1159	3.5-28	Ukrainian DX Classic RTTY Contest	Dig	RST, 2-letter oblast or serial	urdx.org/rty/eng.htm
15	1200	16	1200	1.8-28	ARR BPSK63 Contest	Dig	RST, serial	ct1arr.org
15	1400	15	1800	144-432	AGCW VHF/UHF Contest	CW	RST, serial, power class, 6-char grid	agcw.org/index.php/en
15	1400	16	1400	50	IARU Region 1 50 MHz Contest	CW Ph	RS(T), serial, 4-char grid	concours.r-e-f.org
15	1500	16	1500	1.8	Stew Perry Topband Challenge	CW	4-char grid square	www.kkn.net/stew
15	1600	16	0400	3.5-28	West Virginia QSO Party	CW Ph Dig	RS(T), county or SPC	qsl.net/wvsarc/wvqp/wvqp.html
15	1800	15	1959	1.8-50	Feld Hell Sprint	Dig	RST, mbr, SPC, grid	sites.google.com/site/feldhellclub
15	1800	15	2359	3.5, 7, 14, 18, 21, 24, 28, 14	ARRL Kids Day	Ph	Name, age, QTH, favorite color	www.arrl.org/kids-day
16	0800	16	1400	50	WAB 50 MHz Phone	Ph	RS, serial, WAB square or country	wab.internip.net
17	0100	17	0300	1.8-28	Run for the Bacon QRP Contest	CW	RST, SPC, mbr or power	qrpcontest.com/pigrun
19	1900	19	2030	3.5	RSGB 80-Meter Club Championship, CW	CW	RST, serial	www.rsgbcc.org/hf
20	0030	20	0230	3.5-14	NAQCC CW Sprint	CW	RST, SPC, mbr or power	naqcc.info
22	1200	23	1200	3.5-28	Ukrainian DX DIGI Contest	Dig	RST, 2-letter oblast or serial	www.izmail-dx.com
22	1200	23	1200	1.8-28	His Majesty King of Spain Contest, SSB	Ph	RS, EA province or serial	concursos.ure.es/en
22	1800	23	2100	All	ARRL Field Day	CW Ph Dig	Number of xmtrs, operating class, ARRL/RAC section or "DX"	www.arrl.org/field-day
24	1300	25	0400	1.8-28	QCX Challenge	CW	RST, name, SPC, rig	www.qrp-labs.com/party.html
26	0000	26	0200	1.8-28	SKCC Sprint	CW	RST, SPC, name, mbr or power	www.skccgroup.com
27	1900	27	2030	3.5	RSGB 80-Meter Club Championship, SSB	Ph	RS, serial	www.rsgbcc.org/hf
29	0000	29	2359	1.8-50	Feld Hell Sprint	Dig	RST, mbr, SPC, grid	sites.google.com/site/feldhellclub
29	0000	29	2359	7-28	Battle of Carabobo International Contest	CW Ph Dig	RS(T), YV state or serial	www.radioclubvalenciaac.org.ve
29	0600	29	1700	3.5-28	UFT QRP Contest	CW	RST, QRP/QRO, mbr or "NM"	uft.net/reglement/eng.pdf

All dates refer to UTC and may be different from calendar dates in North America. Contests are not conducted on the 60-, 30-, 17-, or 12-meter bands. Mbr = Membership number. Serial = Sequential number of the contact. SPC = State, Province, DXCC Entity. XE = Mexican state. Listings in blue indicate contests sponsored by ARRL or NCJ. The latest time to make a valid contest QSO is the minute listed in the "Finish Time" column. Data for Contest Corral is maintained on the WA7BNM Contest Calendar at www.contestcalendar.com and is extracted for publication in QST 2 months prior to the month of the contest. ARRL gratefully acknowledges the support of Bruce Horn, WA7BNM, in providing this service.

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Letters to the editor, technical articles, items of interest to the Ham community and guest editorials are invited and will be published at the discretion of the editor. Items for sale by members of the Society will be advertised without charge for one issue, and may be resubmitted as often as desired. These ads must be non-commercial in nature.

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Annual Dues (January 1 - December 31)

Payable using Pay Pal - Go to <<http://www.BluegrassARS.org>>, Click on

"Membership," click on the option for your preference as below:

Regular Membership: One year - \$20.00; two years - \$38.00; three years

- \$55.00 (Additional family member(s) at the same address \$1.00 each per year)

Associate Membership - \$15.00 (for those who reside farther than 50 miles from Lexington)

Full-Time Student Membership - \$12.00 (for those 21 and under, and no other Club member in the family)

Shack telephone: (859) 231-0974 web page: <http://www.BluegrassARS.org/>



Calendar of Ham Radio Activities for April 2019



- Sat 1 Shack open 9:00-Noon; Radio Theory and Construction Workshop, 1:00-3:00 PM,;
Sun 2 Amateur Television & Specialized Communications Net, 9:00 PM (146.760 Repeater); District 11 Skywarn Net, 8:00 PM, 146.925 PL-79.7 Hz) linked to 147.180 (PL-74.4 Hz) linked to 147.180 (PL-74.4) and other repeaters in the area.
- Mon 3 Bylaws Committee Meeting, 6:00pm., BARS General Meeting: 7:30pm.Program: Field Day, Jessamine Amateur Wireless Society meeting, 7:00 PM, St. Joseph/R.J. Corman Ambulatory Care Center, 1250 Keene Road, Nicholasville; District 11 ARES Net 9:00 PM 146.925 (PL-79.7) linked to 147.180 (PL-74.4).
- Tue 4 Amateur Swap Net 145.370 (T-192.8) 8:00 PM; "Casual Communicators Net," 9:00 PM Eastern, 443.325+ MHz;
- Wed 5 Six Shooters Net, 8:00 PM on 52.525 MHz FM (vertically polarized);
- Thu 6 Meeting of Bluegrass ARS Technical Group, 6:30 PM, Education Ctr, basement, Red Cross Building, 1450 Newtown Pike, Lexington; Jessamine Cty ARES Net, 7:30 PM, 145.490 Repeater, Gary Britten W4GNB net control.
- Sat 8 Shack open 9:00-Noon; Radio Theory & Construction Workshop, 1:00-3:00 PM, basement, Red Cross Bldg, 1450 Newtown Pike; License Exam Session, 10:00 am Georgetown - Liaison Ron Malinowski/WX4GPS,
- Sun 9 Amateur Television & Specialized Communications Net, 9:00 PM (146.760 Repeater); District 11 Skywarn Net, 8:00 PM, 146.925 (PL-79.7 Hz) linked to 147.180 (PL-74.4 Hz)\
- Mon 10 BARS By-Laws Meeting 6:00 PM; Bluegrass ARS Board of Directors' Meeting, 7:30 PM, Education Center in basement of Red Cross Building; ; District 11 ARES Net 9:00 PM 146.925 (PL-79.7) linked to 147.180 (PL-74.4) and other repeaters in the area.
- Tue 11 License Exam session, 7:00 pm Lexington, Red Cross Bldg, Meeting Room "B," Red Cross Bldg, 1450 Newtown Pike WCARS VEC: - Liaison Margueritte Williams/KE4MAJ, 859-489-6274 (www.bluegrassars.org), Amateur Swap Net 145.370 (T-192.8) 8:00 PM; "Casual Communicators Net," 9:00 PM Eastern, 443.325+ MHz.
- Wed 12 Six Shooters Net, 8:00 PM on 52.525 MHz FM (vertically polarized); Fayette County ARES Net, 9:00 PM, 146.760 repeater.
- Thu 13 Meeting of Bluegrass ARS Technical Group, 6:30 PM, Education Ctr, basement, Red Cross Building, 1450 Newtown Pike, Lexington; Jessamine Cty ARES Net, 7:30 PM, 145.490 Repeater, Gary Britten W4GNB net control.
- Sat 15 Shack open 9:00-Noon; Radio Theory and Construction Workshop, 1:00-3:00 PM, basement, Red Cross Bldg, 1450 Newtown Pike;
- Sun 16 Amateur Television & Specialized Communications Net, 9:00 PM (146.760 Repeater); District 11 Skywarn Net, 8:00 PM, 146.925 (PL-79.7 Hz) linked to 147.180 (PL-74.4 Hz)\
- Mon 17 Bylaws Committee Meeting: Monday, June 17th, 6:00pm, Directors' Meeting: Monday, June 17th, 7:30pm. District 11 ARES Net 9:00 PM 146.925 (PL-79.7) linked to 147.180 (PL-74.4) and other repeaters in the area.
- Tue 18 Amateur Swap Net 145.370 (T-192.8) 8:00 PM; "Casual Communicators Net," 9:00 PM Eastern, 443.325+ MHz; License Exam Session, 6:00 pm., K4TG Laurel VE Team, Anderson County Health Dept., 1180 Glensboro Rd., Lawrenceburg, KY contact Brian Carter/KI4TLW 502-545-0376
- Wed 19 Six Shooters Net, 8:00 PM on 52.525 MHz FM (vertically polarized);
- Thu 20 Meeting of Bluegrass ARS Technical Group, 6:30 PM, Education Ctr, basement, Red Cross Building, 1450 Newtown Pike, Lexington; Jessamine Cty ARES Net, 7:30 PM, 145.490 Repeater, Gary Britten W4GNB net control.
- Sat 22 Field Day: June 22nd - 23rd at Veterans' Park ; Radio Theory and Construction Workshop, 1:00-3:00 PM, ; License Exam Session, 10:00 am, A
- Sun 23 Amateur Television & Specialized Communications Net, 9:00 PM (146.760 Repeater); District 11 Skywarn Net, 8:00 PM, 146.925 PL-79.7 Hz) linked to 147.180 (PL-74.4 Hz) linked to 147.180 (PL-74.4) and other repeaters in the area
- Mon 24 District 11 ARES Net 9:00 PM 146.925 (PL-79.7) linked to 147.180 (PL-74.4) and other repeaters in the area.
- Tue 25 License Exam Session, 6:00 pm Laurel VE Team, Anderson County Health Dept., 1180 Glenboro Rd., Lawrenceburg, KY ,contact is Brian Carter/KI4tlw, 502-545-0376; Amateur Swap Net 145.370 (T-192.8) 8:00 PM; "Casual Communicators Net," 9:00 PM Eastern, 443.325+ MHz;
- Wed 26 Six Shooters Net, 8:00 PM on 52.525 MHz FM (vertically polarized); Fayette County ARES Net, 9:00 PM, 146.760 repeater.
- Thu 27 Meeting of Bluegrass ARS Technical Group, 6:30 PM, Education Ctr, basement, Red Cross Building, 1450 Newtown Pike, Lexington; Jessamine Cty ARES Net, 7:30 PM, 145.490 Repeater, Gary Britten W4GNB net control.
- SAT 29 Shack open 9:00-Noon; Radio Theory and Construction Workshop, 1:00-3:00 PM, ; License Exam Session, 10:00 am, ARRL VEC, Wilderness Road
- SUN 30 Amateur Television & Specialized Communications Net, 9:00 PM (146.760 Repeater); District 11 Skywarn Net, 8:00 PM, 146.925 (PL-79.7 Hz) linked to 147.180 (PL-74.4 Hz)\