

Q-FIVER

The Official Newsletter of the OH-KY-IN Amateur Radio Society



FOXHUNTING !!!!

We held our first of many ARDF style on-foot foxhunts in February.

It was 75 degrees the day before but 34 degrees, snow showers and a wind chill of 23 at Mt Airy. That did not stop 7 people and teams from trying ARDF on 2m for the first time, or honing their skills for the experienced hunters. There were the standard 5 transmitters placed in an approximately 2.5 km course, and the homing beacon at the circle right by my car. We explained the basics, gave people a great map and off they went. Everyone found at least something and some found them all! We will do this again in March, but be a little more 'official' with times and transmitters counts. The March RDF practice will be on Saturday March 25th at McFarlan Woods—we will be listening on 146.670 if anyone needs help finding the start.

We do have loaner equipment if you want to try it, and we will be holding an antenna building session soon.

Mobile Foxhunt

The February mobile foxhunt had great weather—for February. Phil was hiding in Ross Park near Ft Thomas, and he had a fine signal at the start. We raced towards downtown, and just as we passed the stadiums, the signal starting pointing to nKy—we were about to go hunting downtown in the tall buildings. It lead us through Ft Thomas, and pretty much straight to Ross Park.

Bill had problems just after the start, again, so he could not finish.

I am going to start keeping a table of results in each newsletter—no, not just because we won, but so we can see the standings!

<i>Team Name</i>	<i>1st</i>	<i>2nd</i>	<i>3rd</i>
Brian, K4BRI and Marji, KJ4ZKC	1		
Dick, WB4SUV and Janie, KJ4VCW		1	
Bob, WA6EZV			
Bill, KA8TWB			

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OH-KY-IN Repeaters

146.670 (-) Clifton

146.625 *(-) Withamsville

146.925 *(-) Colerain

443.7625 *(+5) Clifton

A CTCSS (PL) tone of 123.0 Hz is required for access to all OH-KY-IN repeaters. All repeaters also transmit a CTCSS (PL) tone of 123.0 Hz

** Fusion Repeater*

APRS on 144.390 mHz

K8SCH-10 Edgewood WIDEn

K8SCH-9 Clifton WIDEn

Packet on 145.010 mHz

K8SCH-7 Digipeater

For membership information, please contact Nathan Ciufo KA3MTT, 6323 Cinnamon Ridge Dr, Burlington KY 41005, (859) 586-2435 or Email membership@ohkyin.org. Renewals of Club Memberships are due by the end of March. Permission is hereby granted to any amateur radio group to quote or reprint from this publication, if proper source credit is given, unless permission is otherwise reserved.

THE Q-FIVER is now mailed & e-mailed, it's hoped, a week before the club meeting.

Normally copy deadline is the weekend before that. Please send your submissions for THE Q-FIVER (including notice of upgrades & callsign changes) to Brian K4BRI

These may be: snail-mailed to or dropped off at 6901 Backus Drive, Alexandria KY 41001 or telephoned to (859) 635-3095 any time



Oh-Ky-In Life Members

John Phelps N8JTP

Kenneth E Wolf N8WYC

John W Hughes AI4DA

Karl W Kaucher KJ4KWR

Howard Hunt NG8P

2017 Committee Chairs and Appointments

Newcomers/Elmers Net..... Robert Gulley AK3Q
Technical CommitteeBrian DeYoung, K4BRI
ARPSC Representative.....Jerry Shipp W1SCR
Volunteer ExaminersBrian DeYoung K4BRI
QCEN Representative Pat Maley KD8PAT
Membership Nathan Ciufu KA3MTT
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Repeater Control Ops Mgr Bruce Vanselow N8BV
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Field Day..... Eric Neiheisel N8YC
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Special Publications Jo Haltermon KD4PYS
Fox Hunters Dick Arnett WB4SUV
Equipment MgrFred Schneider K9OHE
WebMaster Ryan Williamson W1RYN
Silent KeyBruce Vanselow N8BV
Tech Talk Net MgrBruce Vanselow N8BV
K8SCH QSL Mgr Bob Frey WA6EZV
TV/RFI Dick Arnett WB4SUV

We will try and hold monthly ARDF practices as well as mobile foxhunts. The next ARDF practice will be March 25th at 10AM—Location will be McFarlan Woods.

March Calendar

Wed Mar 1	9:00 PM	Tech Talk, NCS Robert AK3Q
Sun Mar 5	6:30 PM	Newcomers/Elmers Net, 146.67, Topic: ARDF and Foxhunting - Brian K4BRI —NCS Robert AK3Q
Tue Mar 7	7:30 PM	Club Meeting in St Bernard - Scott/N8SY will give an Ohio ARRL Section update
Wed Mar 8	9:00 PM	Tech Talk, NCS Brian K4BRI
Sat Mar 11	10:00 AM 1:00 PM	Monthly Mobile Foxhunt—start at Mt. Storm park in Clifton—setup 9:30—talk in 146.670 Brunch Bunch at Fred's Frozen Custard & Steakhburgers
Sun Mar 12	6:30 PM	Newcomers/Elmers Net, 146.67, Topic: Digging into APRS —NCS Robert AK3Q
Mon Mar 13	7:00 PM	Technician and General classes—Red Cross building on Dana Ave.
Tue Mar 14	7:00 PM	Technical Committee meeting at the 146.670 repeater site
Wed Mar 15	9:00 PM	Tech Talk, NCS Dale, KC8HQS
Sun Mar 19	6:30 PM	Newcomers/Elmers Net, 146.67, Topic: Working with NVIS - Jerry W1SCR —NCS Robert AK3Q
Mon Mar 20	7:00 PM	Technician and General classes—Red Cross building on Dana Ave.
Wed Mar 22	9:00 PM	Tech Talk, NCS George N3VQW
Sat Mar 25	10:00 AM	Monthly ARDF Style Foxhunt—starts at 10:00 AM—location is McFarlan Woods
Sun Mar 26	6:30 PM	Newcomers/Elmers Net, 146.67, Topic: Antenna Gain and Efficiency —NCS Robert AK3Q
Mon Mar 27	7:00 PM	Technician and General classes—Red Cross building on Dana Ave.
Tue Mar 28	7:00 PM	Board of Directors meeting

Prizes

Across

- 1. A6 dignitary
- 5. A ham does it every 10 years
- 11. CW approx.
- 14. Twenty one hundred time
- 15. Made up (for)
- 16. Icom xcvr name part
- 17. Five score since '45
- 18. VO1 ATC locale
- 19. Term. label
- 20. Experiment place
- 22. Some retirement sums
- 24. Upgraded 67-across
- 28. Small, medium or large
- 29. Director Howard
- 30. Next Elecraft rig?
- 31. Worked All follower
- 32. Creative spark
- 34. Apr. addressee

- 35. Speaks or moves with lightness
- 36. With 38-across, a more difficult 17- or 67-across
- 38. See 36-across
- 39. Ease
- 41. W9 area net
- 42. Bid place
- 46. Molecule parts
- 47. Kind of cycle
- 49. W6 to VO1 dir
- 50. Alka-Seltzer sound
- 51. Worked All follower
- 53. Window, so to speak
- 55. Overload ctrl. ckt.
- 56. 17-across unit (abbr.)
- 57. Excite

- 60. Portal site
- 63. Downed
- 64. Parallel partner
- 65. Give up
- 66. Young OM
- 67. Worked All follower
- 68. Angular subj.

Down

- 1. Dipole current node location
- 2. Early polar-exploring ham Don
- 3. Slope
- 4. A radio restoration process, among others
- 5. Part of RCC
- 6. Flight board abbr.
- 7. Perplex
- 8. Make beloved

- 9. Pipsqueak
- 10. Newfangled rcvrs
- 11. Designate, as an ORS or OBS, say
- 12. Coats in metal
- 13. Coin flips
- 21. Zero on a res.
- 23. Wagnerian heroine
- 24. Prefix with -band
- 25. Grounder
- 26. Cook Islands prefix
- 27. Minute opening
- 31. Imp. imp.
- 33. Spkr. drivers
- 35. KII6 island
- 37. "___ alive!"
- 38. W3 metro. area
- 39. W4 metropolitan area

- 40. Amplified
- 41. Feedline pipe
- 43. Paddle peddler
- 44. Sig. catcher
- 45. C on A1
- 46. Attraction
- 47. XE state bordering W7
- 48. Genetic inits.
- 51. Shift 6
- 52. Bumper sticker word
- 54. Low frequency
- 58. Five-dit word
- 59. Triple dit
- 61. Log file type
- 62. Milligig?

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Hamilton County ARES

“We make a living by what we get, but we make a life by what we give.”- Winston Churchill

Natural and man-made disasters are an unfortunate feature all too common in life. Yet they can be met with bravery and courage in a spirit of public service. Helping the community in a time of need is an obligation every amateur should prepare themselves to meet. Your local chapter of ARES is a great place to start. In Hamilton County the number of agencies served by ARES continues to expand. In response to this we need some helping hams. Volunteering with ARES is a great way to stay Radio Active through monthly nets, marathons and other public service events, as well as training exercises. In a time of need we often think we will be able to rise to the occasion, yet more often than not we sink to the level of our training. To be truly effective for the communities we serve it is important for amateurs to exercise our radio communication skills and equipment on a regular basis. The folks involved with Hamilton County ARES are doing such work and aim to be prepared when “all else fails”.

Emergency Services and Public Health

In Hamilton County one of agencies served by ARES is the Department of Health. One of the roles of that organization is to immunize residents during a natural or manmade medical emergency such as the spread of a deadly and contagious virus. Another less likely event is a bioterror attack using anthrax or a similar agent.

When the need arises for the population to be immunized, the local health departments would open several Point of Dispense or PODs. These PODs allow the citizens in the area to receive the needed medications in a timely manner. The goal is to immunize everyone within a seventy-two hour period from the time the health department decides to activate the PODs.

In Ohio the health departments have realized the capabilities hams have for providing communication when critical infrastructure is overburdened or down. It is imperative during POD activation that the local department be able to maintain a constant command and control of the PODs. In Hamilton County, we have taken it one step further and have made amateur radio communications the primary means of communication between the PODs and the Department Operations Center (DOC). We have operators assigned to work in the DOC, acting as net control, and operators assigned to PODs. We have thirty-seven PODs that would need an operator for three days, twenty-four hours a day. The DOC requires three operators at all times.

As with all volunteer organizations, we are always looking for more help. Won't you join us?

If you are interested in working alongside a friendly and knowledgeable group of fellow hams please contact Pat Maley for information on becoming a member. She can be reached at: masterspinner1@gmail.com

Brunch Bunch

The Brunch Bunch is going east!

The next Brunch Bunch will be held **Saturday, March 11th, at 1pm**. The location for March is **Freddy's Frozen Custard & Steakburgers in the Madisonville/Fairfax area**. This location of Freddy's is located at 3939 Red Bank Road, 45227, just south of the Walmart Supercenter.

For a look at the Freddy's menu, go to:

www.freddysusa.com/store/cincinnati-red-bank-rd/

Remember that the Brunch Bunch always meets the second Saturday of every month at 1pm at a location to be announced each month. If you can't join us this month, maybe you'll be available to join us in the months ahead.

I'm always looking for suggestions on what restaurant you think might be a good place for the Brunch Bunch to visit soon.

73,Bruce, N8BV



By Robert AK3Q



I find myself becoming more and more interested in chasing some of the experimental stations and beacons which reside down in the 200-500kHz portion of the band, as well as signals in the 136kHz band. This might sound odd for someone who has a terribly small lot and has yet to find a way to get a decent signal out on 160m. But, then again, receiving is not transmitting, and there are a number of ways to get big waves to fit on small antennas.

In receive mode we are not worried quite as much about resonance (although it is still important for optimal reception), nor are we forced to be concerned about transmitter inefficiency or arcing over coils in our tuners. We are just listening. In fact, many people around the world are limited to antenna lengths which are mere fractions of a wavelength and still do quite nicely. Additionally, folks who listen only like myself can contribute to DX spotting, testing, and propagation information gathering.

With that in mind, I have begun exploring LF antenna designs which hold promise for achieving my goals, and I think they might be worthy of examination by anyone interested in catching some of these "monster waves"!

A Few Caveats

Several issues face the intrepid LF band explorer unless one happens to be in a very quiet region of the world. The first is, not surprisingly, man-made electrical interference from almost every type of electrical device imaginable. I live in an area like this and so it might seem any hope of hearing beacons or experimental stations on these bands is a waste of time. While there are more challenges to this type of situation, rest assured signals can get through.

The second major hurdle is the sensitivity of our receivers at low frequencies. I have no doubt for those who get serious about chasing LF (and VLF) signals they will eventually build or buy receivers designed specifically for LF work. In the meantime, just be aware that many receivers are a bit deaf in this range, particularly if they automatically insert an attenuator in below 500 kHz.

The most obvious solution would be to add a preamplifier to boost signal strength to compensate for the lower sensitivity of many receivers, but this can also boost the unwanted noise. A solution around this is to use preamps with tight bandpass filtering to block signals out of the desired bandwidths, thus reducing the noise and overload. SDR receivers can be a good alternative, particularly if they have filtering capability down in the lowest regions of the bands. A preselector circuit may also be used to filter out some of the stronger AM signals.

A significant advantage of an SDR receiver or a standard radio with a true panadapter/waterfall display is the ability to see the code pattern (or digital mode pattern) when it might be hard to distinguish aurally.

Regardless of whether analog or digital radios are used, filtering is key. CW filters are perfect for LF reception as they are narrow-banded by design. Many radios now come with CW filters built in, and of course many more allow for adding optional filters. Since most signals in the 136 kHz through 500 kHz are CW signals, this will work quite well. If AGC can be turned off in the rig this is a bonus, but if not, some selective use of the RF gain will help.

(Continued on page 8)

(Continued from page 7)

There are numerous homebrew projects online for building simple preamplifiers for LF, as well as preselectors and LF-to-HF converters for radios which either do not tune down to 136 or which have poor sensitivity.

Use What You Have

My first piece of advice would be to use what you have already, both in terms of antennas and radios. I have used a basic multiband vertical barely 5 feet off the ground and have been able to receive beacons and an experimental amateur station out of Connecticut outputting just a couple of watts. Local noise levels will always be a factor, but what I have found is that even noise levels are unpredictable. There might be a string of 5 days in a row where the noise makes it hard to hear any but the strongest signals, and then a day pops up where there will be stations which have never come in before. On days where the AM broadcast band is coming in well is also a likely time for LF reception, as many of the stations we are trying to hear are just below the AM band.

Keep in mind there are many different ways to improve reception. One of the easiest ways to begin exploring the lower bands is by listening for non-directional beacons. These beacons usually only put out a few watts at most, but they have surprising coverage. I use them to test propagation as well as local conditions.

As typical with most antennas, but especially so with LF antennas, move them as far away from local interference sources as possible. These interference sources include electrical wiring and metal surfaces, but they also include environmental sources as well. The lower the frequency the more likely there will be some interference from tall trees, buildings, etc. This is less of a problem on receive than on transmitting in that these sources can block a lot of radiated power, but they are also a concern for keeping signals from getting to the receiver.

Grounding is also important for lowering noise and increasing signal strength. For vertical antennas radials are essential, but sometimes there are creative ways to increase grounding capacity such as using a chain link fence for the ground portion of the signal. A ground rod will work better than nothing, but the larger the grounding area the better.

While it might seem that larger antennas and bigger radial systems would improve signal reception, the fact is, most folks cannot put up an antenna which represents more than 1% or 2% of a wavelength for 136 kHz, and no more than 4% to 8% of an antenna for 500 kHz. The ideal antenna for 136 kHz would be a vertical 1800 feet high (and do not forget the ground radials!!).

At 500 kHz we would still need something on the order of 500 feet up in the air and an equivalent ground system. Let's see: 10% of 1800' is 180', and 10% of that (or 1% of 1800) is 18'; so a 1% length antenna is roughly a 1/256 wavelength. You get the idea. If we are looking to transmit with these antennas, we are looking at fractions of a percentage of efficiency for 136 kHz, and maybe if conditions are good for our 500 kHz antenna, 1% or 2% efficiency.

Next time around I will look at some different antenna types for these low bands. Until then, give these low bands a try – you just might be surprised at what you hear!

73, Robert

The Music of Radio: The Synthesis of Speech Part 4

A Bicycle Built for Two

By Justin Patrick Moore, KE8COY

Speech synthesis confers a number of benefits to technology end users. It allows individuals with impaired eyesight to be able to operate radios and computers. For those who cannot speak, and who may also have trouble using sign language, speech units such as the device employed by Stephen Hawking allow a person to communicate in ways unthinkable a century ago. For these individuals speech synthesizers play an integral role in adding quality to their day to day lives. On our local repeaters synth voices make announcements about nets and club events, and speech synths read the weather on the NWS frequencies. Beyond these specialized uses, one of the ways everyone can share in the joy of chip talk is through the medium of music.

The IBM 704 was the first computer to sing. It was first introduced in 1954 and 140 units had sold by 1960. The programming languages LISP and FORTRAN were first written for this large machine that used vacuum tube logic circuitry. Bell Telephone Laboratories (BTL) physicist John Larry Kelly coaxed the 704 into singing *Daisy Bell* aka *A Bicycle Built for Two* using a vocoder program he wrote for the 704.

Lovely as the a cappella computer was, it was deemed in need of instrumental accompaniment. For this part of the song the expertise of fellow BTL employee Max Vernon Mathews was sought out. Max was an electrical engineer whose first love of music enabled him to become a pioneer in electronic and computer music. In 1954 he wrote the first computer program for sound generation, MUSIC, also used on the IBM 704. The accompaniment to the voice portion of *Daisy Bell* was programmed by Max in 1961 using the IBM 7090. The IBM 7090 was the transistorized version of the 709 vacuum tube mainframe. The 7090 series was designed for "large-scale scientific and technological applications." The first of 7090's was installed in late 1959 at a price tag of close to \$3 million. Adjusted for inflation the price today would be a whopping \$23 million buckaroos. Besides its musical capabilities, the 7090's other accomplishments included being used for the control of the Gemini and Mercury space flights. IBM 7090's were also used by the Air Force for the Ballistic Missile Early Warning System up until the 1980s. Daniel Shanks and John Wrench used it to calculate the first 100,000 digits of pi. Yet none of the above uses compare, in my mind, to the beauty of the IBM 704 joining forces with the IBM 7090 on the song *Daisy Bell*.

Another computer, HAL 9000, still gets most of the credit for this electronic version of *Daisy Bell*. Arthur C. Clarke, author of *2001: A Space Odyssey*, happened to be visiting his friend and colleague John Peirce at BTL when John Larry Kelly was making his demonstrations of speech synthesis with the IBM 704. He was so fascinated by witnessing this computational marvel that six years later he wrote that version of *Daisy Bell* into his screenplay, as sung by HAL in the middle the machines climactic mental breakdown. The song was on the vinyl platter "Music from Mathematics" put out by the Decca label a handful of decades ago, but can also be listened to on youtube at: <https://www.youtube.com/watch?v=41U78QP8nBk>

Max Mathews continued to make strong contributions to the humanities in the realms of music and technology. In 1968 he developed Graphic 1, a graphical system that used a light pen for drawing figures that could be converted into sound. In 1970 Mathews developed GROOVE (Generated Real-time Output Operations on Voltage-controlled Equipment) with F. R. Moore. GROOVE was the first fully developed music synthesis system for interactive composition and realtime performance. It used 3C/Honeywell DDP-24 (or DDP-224) minicomputers.

(Continued on page 10)

(Continued from page 9)

An algorithm written by Mathews was used by Roger M. Shepard to synthesize Shepard Tones. These tones (named after Roger) consist of a superposition of sine waves separated by octaves. When the base pitch of the tone is played moving upward or downward, it is known as the Shepard Scale. Playing this scale creates an auditory illusion of a tone that continually ascends or descends in pitch, yet seems to get no higher or lower. It is the musical version of a barber pole or of the Penrose stair, a type of impossible object in geometry, made famous in the drawing *Ascending and Descending* by M.C. Escher.

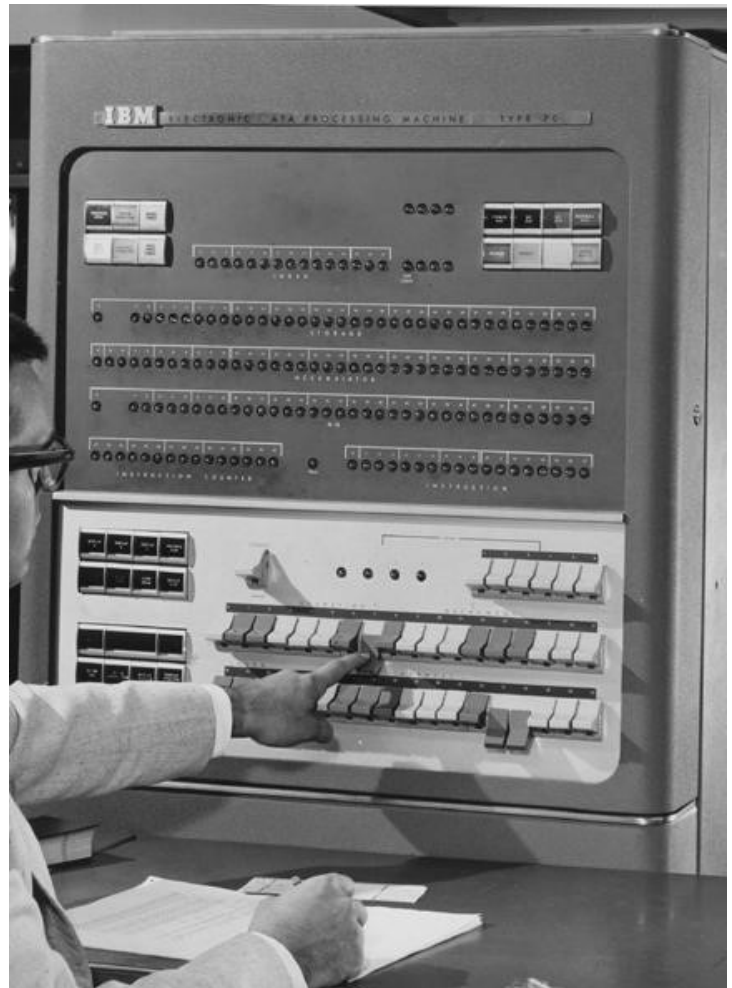
Max also made a controller, called a Radio-Baton and Radiodrum, used to conduct and play electronic music. Developed at BTL in the 1980s it was originally a kind of three-dimensional mouse. The device has no inherent sound of its own, but produces control signals that are used to trigger sounds, sound-production, effects and the like. The Radio-Baton is similar to a theremin. Magnetic capacitance is used to locate the position of the conductors baton, or mallets in the case of the drum. The two mallets are antennas transmitting on slightly different frequencies. The drum surface, also electronic, acts as another set of antennas. The combination of these antenna signals is used to derive X, Y and Z, and these are interpreted according to the assigned musical parameters.

ARTIKULATION

Besides the use of *Daisy Bell* in the soundtrack for *2001*, director Stanley Kubrick used a wide range of work by modern composers. The piece *Atmospheres* written by Gyorgy Ligeti in 1961 was used for the scenes of the monolith and those of deep space. Ligeti's earlier electronic work *Artikulation*, though not used in the film, shares an interesting connection to some of the ideas behind speech synthesis. *Artikulation* was composed in 1958 at the Studio for Electronic Music of West Deutsche Radio in Cologne with the help of Cornelius Cardew, an assistant of Karlheinz Stockhausen (whose works involving shortwave radios will be explored in time). The piece was composed to be an imaginary conversation of multiple ongoing monologues, dialogues, many voices in arguments and chatter. In it Ligeti created a kind of artificial polyglot language full of strange whispers, enunciations and utterance. It can be listened to at: https://www.youtube.com/watch?v=71hNl_skTZQ.

Sources:

Music from Mathematics: Played by IBM 7090 Computer to Digital Sound Transducer, Decca LP 9103.
https://en.wikipedia.org/wiki/IBM_704
https://en.wikipedia.org/wiki/IBM_7090
https://en.wikipedia.org/wiki/Shepard_tone
https://en.wikipedia.org/wiki/Max_Mathews
https://en.wikipedia.org/wiki/John_Larry_Kelly,_Jr.
<https://en.wikipedia.org/wiki/Radiodrum>
Gyorgy Ligeti: Continuum / Zehn Stucke fur Blaserquintett / Artikulation / Glissandi / Etude fur Orgel / Volumina, Wergo 60161, 1988.



March 2017 DX Spots de KA3MTT

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 J5UAP - Guinea Bissau thru 3-3 	2	3 9M4IOTA - West Malaysia thru 3-5 	4 C6APY - Bahamas thru 3-11 
5	6	7 8P9IF - Barbados Thru 3-13 9G5X - Ghana thru 3-21	8 9N7EI - Nepal thru 3-20 	9 ZF2CA - Cayman Isl thru 3-13 5U5R - Niger thru 3-21 TU7C - Ivory Coast Thru 3-19	10 E51KTA - S Cook Is thru 3-19 	11
12	13	14 T2 - Tuvalu thru 4-4 5H3MB - Tanzania Thru 4-12	15 EA9 - Ceuta & Melilla thru 3-22 S21 - Bangladesh thru 3-21	16 V47 - St Kitts & Nevis thru 4-5 	17	18 EG9TOR - Ceuta & Melilla thru 3-21
19 V633KS - Micronesia thru 4-3 	20 ZF2 - Cayman Is Thru 3-27 	21	22 ZA - Albania thru 3-29 	23	24	25
26	27	28	29 KH2BY & AH2P - Guam thru 4-17 	30	31	

OH-KY-IN Amateur Radio Society

Regular monthly meetings are held the first Tuesday of each month at 7:30PM local time at the St Bernard Recreation Hall, 120 Washington Avenue (corner Washington & Tower Aves) in St Bernard, just east of Vine St. Please come in the doors at street level, facing the high school. Visitors are ALWAYS welcome!

The next meeting of the Oh-Ky-In Amateur Radio Society will be Tuesday, March 7th at 7:30 PM

Topic: Scott/N8SY will give an Ohio ARRL Section update

OH-KY-IN Amateur Radio Society

Q-FIVER Editor
Brian DeYoung, K4BRI
6901 Backus Drive
Alexandria, KY 41001

Phone: (859) 635-3095
Web: www.ohkyin.org
E-mail: k4bri@arrl.net

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STAMP
HERE

