



ZERO BEAT

<http://hcra.org>

May 2015

Special points of interest:

- New England QSO Party
May 2nd & 3rd
<http://www.neqp.org>
- ARRL Field Day, Agawam, Ma
June 26-28
- Visit the HCRA [facebook page](#).
- Don't forget to check out
hcra.org
- Visit "Summits on the Air"
<http://www.sota.org.uk>
- Visit "Parks on the Air"
facebook.com/pota413
- 2015 New England ARRL
Convention Aug 21-23
<http://www.bxboro.org>

FIELD DAY 2015

June 26-28 2015



hcra.org/field-day/field-day-2015

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May Meeting

**Join us Friday May 1st at 7:30, in the Holyoke Medical Center
Auxiliary Conference Center**

Audio Speaker Design for Amateur Radio

By

Steve Dick K1RF



Steve Dick, Amateur Extra K1RF, received a Bachelor's degree in Electrical Engineering from City College NY and a Master's degree in Electrical Engineering from New York University. He is now retired from Northrop Grumman Corporation. There he had various roles as a senior digital design engineer, engineering manager, and functional group manager. His current interests include amateur radio circuit design and construction, kit construction, software defined radio, and speaker design for amateur radio. He became interested in acoustical engineering and how to apply it to amateur radio speakers from one of his sons who is an acoustical engineer.

[For directions to The Holyoke Medical Center Auxiliary Conference Center:](#)

HELP WANTED

There are open positions on the Board of Directors.
Help our club to stay one of the best in the area.
See Ed LaCombe KB1NWH or Jeffrey Bail NT1K for details.

Field Day is fast approaching! Learn how you can
get into the FUN!



Visit hcra.org/field-day/field-day-2015 for more details, and ways
that you can join the Fun!

FROM THE SHACK



First and foremost, we need to fill a few more spots on the slate of officers. This club can't run its self. We need the help of our members.

President: Jeff NT1K

Vice President: OPEN

Treasurer Juergen: NV1Q

Secretary: OPEN

Membership: OPEN

Technical Bob: K1YO

Program: OPEN

At-Large: Eric W1MOR

Zero Beat Editor: Gary WA1MOW

As you can see, there are several gaps that need to be filled. So PLEASE help your club by filling the voids.

Next, yes, it's almost Field Day time again! The HCRA will be performing its spectacular Field Day effort once again at Agawam's School Street Park on June 26, 27, and 28. But in order for this to be a success we need YOU! Regardless of whether you want to operate an entire band by yourself, or you just have 20 minutes to operate, so some one can take a break. Are you the mechanical type? We need your help on set up and take down. There is a planned trailer party for the 17th of May to check out the Field day equipment. If you are interested in any type of field day activity please contact Jeff NT1K@NT1K.COM or Ed KB1NWH@COMCAST.NET .

One of the initial charters of amateur radio is emergency communications. Just like Field Day. On any given day there are "NETS" going on HF, VHF, and UHF. Some are traffic nets that prepare you to handle and pass traffic in the event of an actual emergency. Traffic is a formal name for messages for health and welfare. Others are weather nets that are more commonly used in this are to relay weather reports to the National Weather Service, either in Taunton or Albany. Whether it be a severe thunder storm, tornado, or blizzard, we are the eyes of the National Weather Service. Another form of NET is AWARD type net. These nets help you get certain certificates available to you via the ARRL and other clubs for example OMISS, 3905, YL System and many more. Certificates vary from Worked All States, DXCC, and many different certificate that the individual clubs offer. Small suggestion is that you listen to a few nets to learn the way they use certain jargon and procedures.

HCRA CLUBLOG

FOR MAY 2015

Can Jim KK1W finally overtake Juergen NV1Q?

Can Matt W1MSW take over the top spot? (A few more lunches.)

Can Jason KC1BTA get out of spot#19? (It would only take 2 more QSO's.)

Can someone new beat them all?

It's not too late! Join Now, and get in on the fun!

Rank	Call Sign	160	80	60	40	30	20	17	15	12	10	6	DXCC #	Stations	Range
1	NV1Q-3 *	1	31	0	61	34	175	130	178	142	168	1	231	921	30 yrs
2	KK1W-1	0	73	0	125	47	134	61	128	73	124	0	203	765	30 yrs
3	W1MSW	6	64	0	95	13	118	21	128	38	123	0	179	606	5 yrs
4	W1MJB	0	18	0	10	8	63	54	62	79	68	0	167	362	12 yrs
5	AB1WT	1	10	1	6	4	33	41	70	32	41	1	136	240	1 yrs
6	K1VQI	4	15	0	26	22	63	24	42	17	44	1	127	258	14 yrs
7	KX1X	4	35	0	68	2	85	3	102	11	94	0	123	404	18 yrs
8	WD1S-2	9	38	0	60	6	87	5	68	5	52	1	105	331	3 yrs
9	WN1E-1	0	16	0	51	2	67	7	57	9	55	0	105	264	24 yrs
10	NT1K-2	1	7	0	13	1	66	6	63	4	46	0	104	207	5 yrs
		160	80	60	40	30	20	17	15	12	10	6			
11	KC1ABV	0	0	1	11	0	27	20	38	19	8	0	85	124	1 yrs
12	N3IMU	0	4	0	36	2	41	0	29	0	19	0	71	131	3 yrs
13	N1FTP *	0	0	0	8	0	33	3	38	8	39	0	67	129	7 yrs
14	KB1WWQ	0	3	0	21	0	36	12	28	4	40	1	66	145	4 yrs
15	N1FJ	0	0	0	1	0	10	0	11	3	13	0	36	38	2 yrs
16	N1MFL	0	1	0	1	0	2	1	7	1	15	1	21	29	3 yrs
17	W1MOR	0	1	0	3	0	2	0	10	0	7	0	18	23	2 yrs
18	K1MAZ	0	0	0	0	0	1	3	1	0	0	0	5	5	4 yrs
19	KC1BTA	0	0	0	0	0	0	0	0	0	4	0	4	4	1 yrs

NEW ENGLAND QSO PARTY

JEFFERY BAIL NT1K

New England QSO Party May 2nd - 3rd

[Http://www.neqp.org](http://www.neqp.org)

Don't forget that this weekend is the New England QSO Party (NEQP). It's a nice laid back contest that even allows you to sleep!

It takes place on the following date and times:

2000Z Saturday May 2nd until 0500Z Sunday May 3rd (4pm EDT Saturday until 1am EDT Sunday)

1300Z Sunday May 3rd until 2400Z Sunday May 3rd(9am EDT Sunday until 8pm EDT Sunday)

The goal of NEQP is to contact as many New England stations and counties as possible. Points and multipliers will be assigned per contact. 1 point for each SSB contact, 2 points for each CW/Digi contact. Multipliers for those within New England are States, Canadian provinces and DXCC entities. We will be wanted stations. This is perfect if you're working on awards such as worked all state, triple play and even DXCC.

If you're within Hampden County, your exchange will be "HMD MA". I would suggest printing out a map of the county list from the NEQP website as sometimes operators won't include the short hand abbreviation.

Did you know that HCRA sponsors a nice plaque for the single operator with the most points in Hampden County? Wouldn't you like to have it hanging on your wall? I'd suggest to come out and play in NEQP. It will show the rest of New England that Hampden county ham radio operators are active. There will be a lot of HCRA members on the air so please say a quick hello. Who knows, you might win! Check out <http://www.neqp.org> for more information, rules, and categories.

Did you know that there are other QSO parties happening this weekend as well? 7th area QSO Party (7QP), Indiana QSO party and the Delaware QSO party is also happening during NEQP. With certain loggers like N1MM, this allows you to multiple contests. Not only could you win NEQP, you could also win in other QSO parties using the very same log.

I hope to see everyone on the air.



2013 New England County Expedition First Place Award.

Won by the HCRA.

Thanks to the efforts of:

Jim Mullen KK1W, Frandy Johnson N1FJ, Dave Cain AA1YW, & Matt Wilhelm W1MSW

HCRA MEMBER PROFILE MAY 2015

IN AN EFFORT TO GET TO KNOW ABOUT EACH OTHER BETTER, WE'RE BRINGING BACK
"HCRA MEMBER PROFILE".

EVERY MONTH WE WILL PROFILE A DIFFERENT MEMBER OF THE HCRA.

1) **Name:** Jeffrey Myers

2) **Town:** Longmeadow

3) **Callsign:** AB1WT

4) **Previous Callsigns:** KB1VKY

5) **License Class:** EXTRA



6) **Main station equipment:** Kenwood TS-590 into a home brew inverted L antenna. I also have the icom 706MKIIG for portable work. I use a smaller homebrew inverted L as the portable antenna

7) **Favorite Band(s):** I have no favorite band. During the day you can find me on 40 through 10 and at night you can find me on 80 and 40 and sometimes higher up the band depending on the propagation.

8) **Favorite Mode(s):** I like working SSB but lately I have been using a cw reader and sender to work DXCC stations I need in CW.

9) **Year you were first licensed and license class:** I was licensed originally in 2011 as a tech and then went to general and then extra.

10) **How did you become interested in amateur radio?** I woke up one day and decided I wanted my ham license. I had no one to assist me so I ended up searching on line and found Ham Test Online. It was a great website in assisting me in getting my license.

11) **What are some of your favorite aspects of the hobby?** I like working remote. I think it is an awesome way of enjoying my radio equipment while I am away from the shack. I also enjoy working Echo/IRLP. I have 2 nodes running in Longmeadow. One is a 440 repeater and the other is a 2meter simplex.

12) **What is your most memorable experience in the hobby?** My wife did not want to see antennas outside. So she wanted me to try and set up an antenna in the attic before I attempted antennas outside. SO I decided to purchase the cheapest antenna which was an MFJ G5RV JR. it is a 52 foot dipole. So I put it up in the attic thinking, no way will this thing work and WOW. I started working stations all over the world. So my wife tells me, "See you don't need an antenna outside, the attic antenna has you working stations all over the world." Man talk about shooting yourself in the foot. Anyway, 4 years later I have a homebrew inverted L outside which is working even better than the MFJ dipole in the attic.

13) **If different from the above question, what was your most memorable contact on the radio?** When I had set up my remote station. I was on my iphone away from the shack and I was talking to hams all over the world and I was not in the shack. How cool is that.

14) **What do you feel ham radio operators must do to help ensure the future of the hobby?** If you really want to ensure the future of the hobby, then you must publicity the hobby in the media. Whether it is just local meetings once a month or events which are going on such as field day, hamfests, local VE sessions and so on. The more publicity the public receives on the hobby the stronger the hobby becomes.

DOTS & DASHES:

Things I can't think where to put, but are interesting.

VERMONT BOY SCOUT COUNCIL CAMPOREE, JUBILEE 2015,

The Green Mountain Council (Vermont), BSA will be holding a Council Camporee on May 15, 2015 to May 17, 2015 at Camp Plymouth State Park, near Ludlow, VT. The Amateur Radio Demonstration Area will be active from 1300 hrs. UTC to 2000 hrs. UTC on Saturday, May 16. The active Camporee callsign will be K2BSA/1. We will be operating phone on 3.75, 7.20, and 14.175 MHz and digital on 14.070 MHz. All frequencies are +/- 20 KHz. QSLs can be requested for QSOs made during the Camporee by sending a SASE to Dennis Ziegler, KB1NST, 966 Mead Hill Road, Derby, VT, 05829. Give us a shout and talk to the Scouts!

TICKETS FOR THE 2015 NEW ENGLAND ARRL CONVENTION NOW ON SALE

Tickets for the 2015 Boxboro convention are now on sale. This year the event will be held August 21, 22, & 23rd, at the Holiday Inn, Boxboro, Ma.

The committee is lining up speakers, forums and exhibitors, so many details are still to be announced. However, Gordon West WB6NOA is confirmed as the keynote speaker at our Saturday banquet.

And finally.. be the first on your block to get tickets.

<http://www.boxboro.org>

INTERESTING HAM RADIO WEB SITES:

NWS Office in Taunton, Ma is starting up this year's training cycle. If you ever wanted to be a trained SkyWarn Observer, this is the website for you!

<http://www.weather.gov/box/skywarnprogram#tab2>

CONTESTING:

MAY 2015 CONTESTS

May 2	Ten-Ten Spring CW Contest	www.ten-ten.org	CW
	7th Area QSO Party	www.7qp.org	CW, PH, Dig
	Indiana QSO Party	www.hdxcc.org/inqp	CW, PH
	Delaware QSO Party	www.fsarc.org	CW, PH, Dig
	Radio Club of America QSO party	www.radioclubofamerica.org	PH
	New England QSO Party	www.neqp.org	PH
May 9	Armed Forces Comm'n's Test	www.netcom.army.mil/mars	PH, Dig
	Nevada Mustang Roundup	www.nvqsoparty.info	CW, PH, Dig
	50 MHz Spring Sprint	www.sites.google.com/site/springvhfupsprints	CW, PH, Dig
May 17	Worked all Britain-7 MHz Phone	www.wab.intermip.net	PH
May 30	CQ WW WPX Contest	www.cqwpw.com	CW



THE AUTOTURN: A ROTATOR ENHANCEMENT FOR THE CD-45

GENT LAM WA1CQF

My Cushcraft A3s triband beam and CD45 rotator are the primary antenna at my station. The beam is usually pointed east for dx or west for the U.S. Going from one to the other involves holding down the brake release switch and either the CCW switch or the CW switch. This takes 30 seconds or so. For quite some time I've been thinking of adding a knob which I could position to a desired direction and activate another switch which would start an automatic sequence to rotate the antenna to that desired direction.

I've been playing around with the Arduino UNO and this would be a suitable application for its use. This project would be a real world application with specific goals to meet. I'm not the kind of person that can sit down and perform exercises out of a book "to learn" how to use the UNO.

A potentiometer would serve as the control which would set the target direction for the rotator to turn. The control box ON-OFF rotary switch could be replaced with a potentiometer with an ON-OFF switch. Now the power ON-OFF function and target direction control are contained within an existing hole in the front of the control box. A momentary toggle switch would be added to initiate the automatic rotation function. The Arduino programming will factor in the current antenna heading and the potentiometer position which sets the target heading to determine the appropriate direction to turn. A green LED at the top left of the meter would indicate ccw rotation. A red LED at the top right of the meter would indicate cw rotation. With neither LED lit, the rotator is in the stationary position. Manual rotation will be available by depressing either the CCW switch or the CW switch along with the brake release switch. The original meter lamp will be replaced by a string of white LED's.

The rotator has a 500 ohm potentiometer which sends a dc voltage to the meter to indicate heading. This voltage will be fed to the UNO and compared to the target position potentiometer to determine direction and when to stop rotation. The UNO has A-D converters with an input range of 0-5vdc. The control box uses 13 vdc which is too high for the UNO. Two potentiometers are used to scale the control box meter circuit and rotator potentiometer voltages to a nominal 4.8 vdc. Three UNO digital outputs are used to drive three DC relays. Relay normally open contacts are bridged across the control box CCW, brake release, and CW switches. Also LED's connected to the relay coils are positioned above the meter to indicate automatic rotation and direction. A three terminal regulator will provide operating voltage for the UNO, relays, and direction LED's.

That's the easy part. Programming should be a piece of cake. Wrong!! The UNO is programmed in C++. I've been programming in Visual Basic for a number of years. Syntax and convention are similar in the two languages but there are quite a few differences. I kept trying to use Visual Basic practices which are not compatible with C++. You can teach an old dog new tricks.

The project entails an Arduino UNO, a 5 vdc power supply, and a few relays and discrete parts. Everything fits within the confines of the rotator control box.



Fig 1

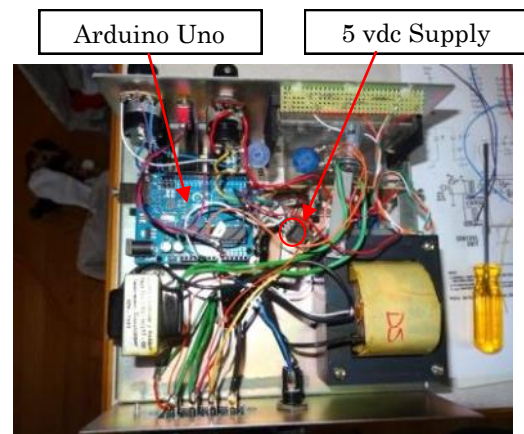


Fig 2

Fig. 1 shows the ON-OFF switch replaced with a 10k pot with switch. A momentary toggle switch is installed just above the “Brake Release” marking. Fig. 2 shows the Arduino UNO installed left center. To its right is the 5 vdc power supply. The meter bulb has been replaced with a array of 4 white LED’s. At the leftmost side of the perfboard is a red LED. At the rightmost side of the perfboard is a green LED.

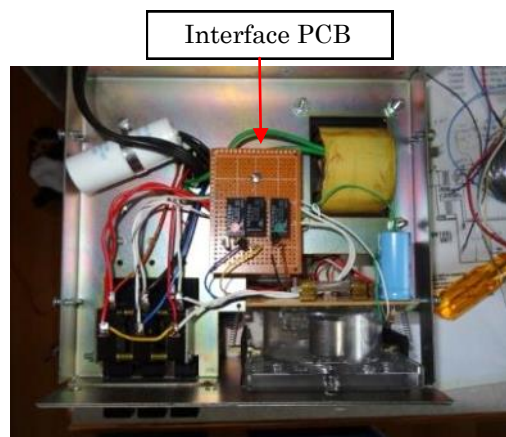


Fig 3

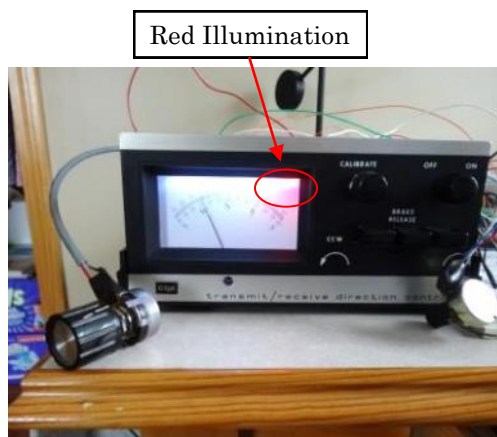


Fig 4

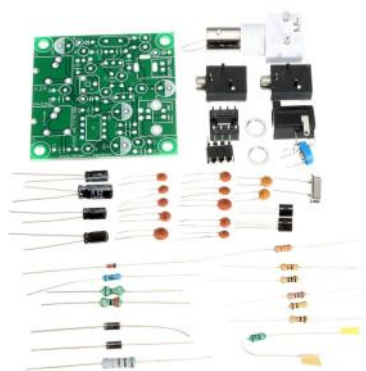
Fig. 3 shows the chassis bottom with the interface board containing 3 relays and the interface to the UNO. Fig. 4 shows the control prototype in autoturn clockwise operation. Note the red illumination at the meter upper right corner. The potentiometer with switch and momentary Autoturn switch have not yet been installed.

This project is the culmination of an idea I’ve had for quite some time. It allows me to free a hand to perform some other mundane task while the rotator points the antenna to a desired direction. The experience gained in Arduino implementation is “priceless”.

40M CW QRP PIXIE TRANSCEIVER

HAROLD WOERING N1FTP

I was looking around ebay one day and noticed a DIY 40m Pixie CW transceiver kit. It’s a 7.023–7.026Mhz, 400mw, CW transceiver. As you can see from the pictures, it comes with all the components and circuit board. The whole project took me like half an hour and it WORKED! Better than that in only costs \$12. I used a 9V battery, some ear buds, my G5RV mini and a straight key. It worked like a champ. For tuning, notice the small variable cap in the center of the circuit board. It was lots of fun, and a very cheap project with positive results. To fit it into an Altoids box, I think I’ll put the BNC connector so that it goes out the left side of the box. A couple of stand-offs screwed in from the underside to keep the circuit board off the bottom box will do as well. That and maybe add a 9V battery clip and I’ll be all set for DXCC on 400mw!!!!!! Harold, N1FTP



Unassembled Kit



Assembled Kit



Assembled Kit w/Altoids tin

Editor’s Note: I found the same kit at banggood.com sku number 191661

There is also a [YouTube](#) Video by Dave Tadlock

FOR SALE:

If you have a piece of Ham Radio equipment to sell, send photo and details by the 20th of the month, to wa1mow@arrl.net. All submissions will be screened for appropriateness, and content. The decision to publish is at the discretion of the ZB Editor



DO YOU NEED AN HCRA NAMEPLATE?

ASK AT THE MEMBERSHIP TABLE

AT THE NEXT MEETING!

FREE TO A GOOD HOME:

90 feet of 75 ohm Hardline Contact: Gent Lam shortwrench@comcast.net

FOR SALE:

- 1) Ameritron AL-811 600 watt amplifier - \$500.00. New lists for \$750.00 discounted.
- 2) MFJ-969 6-160 300 watt manual antenna tuner - \$100.00. Lists for \$200.00 discounted.
- 3) RotorCard DXA Rotor control card - \$50.00 . Controls rotation within computer logging and contest programs. Compatible with Rotor-EZ or HyGain DCU-1 protocols. New lists for 150.00.
- 4) HP Oscilloscope Model 1740A with manual and probes - \$95.00.



If anyone is interested I can be reached at: k1voi@arrl.net

If you have any Amateur Radio related equipment to buy, sell, or trade.

Or

If you need a piece of equipment.

Email wa1mow@arrl.net to list in Zero Beat.

AREA SWAPFESTS:

2015

May 1	NEAR FEST	Deerfield, NH	www.near-fest.com
May 17	Flea at M.I.T.	Cambridge, Ma	www.swapfest.us
May 30	Southern Berkshire A.R.A. 24th Ann. Hamfest	Goshen, Ct	www.w1baa.org
June 6	Hermon Hamfest	Hermon, Me	www.n1me.com
June 21	Flea at M.I.T.	Cambridge, Ma	www.swapfest.us
July 19	Flea at M.I.T.	Cambridge, Ma	www.swapfest.us

Local happenings

Sundays: 0845: Western Mass Emergency Net 146.94, PL 127.3 - W1TOM/R

First Monday: Southwick Regional RACES Drill, 1845, 146.49 Simplex

Mondays: 1930: HCRA 10m Net 28.375

Tuesdays: 1930-2000: 146.94, PL 127.3 - W1TOM/R - Hampshire County Emergency Net

Wednesdays: 1930: MTARA Info net 146.94, PL 127.3 - W1TOM/R - includes NTS Net

2000: MTARA Swap net: 146.94, PL 127.3 - W1TOM/R

2000: MTARA Simplex Net - starts on 146.94 - PL 127.3, then goes to 146.42 direct (simplex) Usually starts immediately following the swap net.

Thursdays: 2100: Weather Net (Roger, K1PAI Net Control), 1st Thursday of every month: 147.090 MHz, All other Thursdays: 147.000, PL 127.3 - W1TOM/R

Fridays: 1200: BB's (Brown Baggers Luncheon)
Munich House
13 Center Street
Chicopee, MA 01013

Join the ARRL or renew your membership!

ARRL members enjoy:

- QST Magazine
- Members-Only Web Services
- Technical Information Service
- Member Discounts
- Outgoing QSL Service
- Continuing Education
- ARRL as an Advocate
- Regulatory Information Branch
- Public Relations for Amateur Radio
- ARRL Field Organization
- ARRL-sponsored contests
- Operating Awards
- Local Clubs
- Amateur Radio Emergency Service
- Hamfests and Conventions
- Volunteer Examiner Coordinator Program



<http://www.arrl.org/membership>

Club meetings & VE sessions

1st Friday of the month 7:30 PM, HCRA Club Meeting, Holyoke Hospital Auxiliary Conference Center, 575 Beech St. Holyoke MA 01040 (no meetings held in July or August.)
<http://www.hcra.org/meeting-location/>

3rd Friday of the month 7:30 PM, MTARA Club meeting, Red Cross building 506 Cottage St, Springfield, Mass. (no meetings held in July or August)

4th Friday of the month 6:00 PM, Technician, General, and Extra Class License Exams, Holyoke Hospital Auxiliary Conference Center, 575 Beech Street, Holyoke, Mass. Hosted by the Western Mass VE Team (WMVET). Contact: David Cote, w1fab@arrl.net

Third Monday of the month 7:00 PM, Franklin County Amateur Radio Club meeting, Room S301, Greenfield Community College (no meetings held in July or August)
<http://www.fcarc.org/>

4th Monday of February, May, August, November 7:00 PM, FCARC VE Exams, Unitarian Church, Main Street, Northfield <http://www.fcarc.org/>

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Aerial View

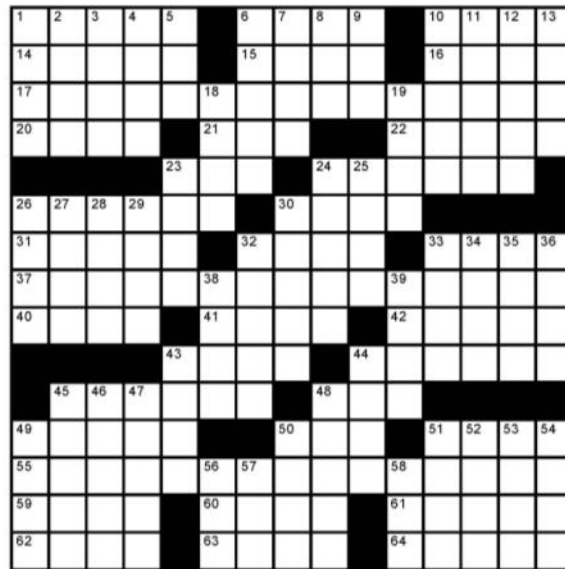
Across

1. 10 kilogauss
 6. UA parliament
 10. Kludge
 14. Kind of socket or tube
 15. Ancient OA-lander
 16. Competent
 17. Improbable dream
 VHF/UHF antenna
 20. Achy, as after an antenna project
 21. Transceiver knob label
 22. Part connections
 23. Ckt between IF and AF
 24. Suffix with bio- or proto-
 26. Loud speaker
 30. Eye part
 31. US hams do it every 10 years, usually
 32. "That's great, friend", on CW
 33. Be next to
 37. What rural hams fancy themselves?
 40. Feedline badness
 41. Baseball stats
 42. Symbol in coax specs
 43. Go out of your cell area
 44. Unidirectional dipole
 45. Where all good signals go, eventually?
 48. Late summer contest
 49. Tribander parts
 50. Kind of FET
 51. They have replaced tuning dials in modern rigs, often.
 55. Improbable dream HF antenna
 59. K, on phone
 60. Elser-Mathes Cup target
 61. Look of disdain
 62. One meaning of V
 63. Switch type
 64. They deliver power

Down

1. Narrowest tower sections, often
 2. EME signal
 3. Sirius, for one
 4. Emit coherent light
 5. Draft pick
 6. One's self, on CW
 7. Ampere, for one
 8. Lots and lots of Hz in the old days
 9. Word to a doctor
 10. Bugs, Roger, Peter, et. al.
 11. Garfield's middle name
 12. Copper often does it
 13. Enables, as a transmitter
 18. Kind of hunter, in radio
 19. Word of regret

23. "See you ____ the log"
 24. Univ. teachers
 25. Kilo follower
 26. Not written
 27. W7-land city
 28. What this puzzle is about, for short
 29. Connectors named for their shape
 30. Italian yagi?
 32. One C per V
 33. BBs, e.g.
 34. E, to a non-ham?
 35. Encourage
 36. Bygone UA leader
 38. It glows amber
 39. Part
 43. Sometimes causes antenna failure
 44. Window part, where the feedline might come in
 45. Group of trees
 46. 5 wpm, 70 mph, etc.
 47. Eyeball benders
 48. Least good
 49. Gait faster than a walk
 50. QSLs often go via them (abbr.)
 51. Lead-ins to P
 52. Future ham, sometimes
 53. Became SK
 54. Switching semiconductors
 56. RX spec.
 57. Break, during a long contest, say
 58. Sig. src.



ARE YOU READY?

LIGHTNING KILLS

Play It Safe!

Lightning Facts...

- ✓ No place outside is safe during a thunderstorm.
- ✓ Lightning kills more people annually than tornadoes or hurricanes.
- ✓ If you hear thunder, you're likely within striking distance of the storm.

Outdoors...

- ✓ Plan outdoor activities to avoid thunderstorms.
- ✓ Monitor weather conditions. If you hear thunder, get inside a substantial building immediately.
- ✓ If a substantial building is not available, get inside a hard-topped metal vehicle.
- ✓ Avoid open areas and stay away from isolated tall objects.

Indoors...

- ✓ Avoid contact with any equipment connected to electrical power, such as computers or appliances.
- ✓ Avoid contact with water or plumbing.
- ✓ Stay off corded phones.
- ✓ Stay away from windows and doors.
- ✓ Remain inside for 30 minutes after the last rumble of thunder is heard.

If Someone Is Struck...

- ✓ Victims do not carry an electrical charge and may need immediate medical attention.
- ✓ Call 911 for help.
- ✓ Monitor the victim and begin CPR or AED, if necessary.

For more information, visit:

www.lightningsafety.noaa.gov

April's Puzzle

