

**JOHNSON COUNTY RADIO  
AMATEURS CLUB, INC.**  
P.O. Box 93  
Shawnee Mission, KS 66201

# FEEDBACK

DECEMBER 2016/JANUARY 2017



## MEETINGS

**Dec 9 - Holiday Party**

**Jan 13 - Planning for 2017**

**Jan 27 - TBA.**

The Johnson County Radio Amateurs Club normally meets on the 2nd and 4th Fridays of each month at 7:30 PM at the Overland Park Christian Church (north entrance), 7600 West 75th Street (75th and Conser), west of the Fire Station.

Much of the membership travels to the Pizza Shoppe at 8915 Santa Fe Drive for pizza buffet and an informal continuation/criticism/clarification of the topics raised at the meeting ... or anything else.

*LEAVE THE CHURCH, TURN RIGHT (WEST) ON 75TH. TURN LEFT (SOUTH) ON ANTIOCH. TURN RIGHT (WEST) ON SANTA FE. PIZZA SHOPPE IS JUST PAST THE SONIC ON YOUR LEFT.*



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## **-> FEEDBACK <-**

*A publication of the  
Johnson County Radio Amateur Club, Inc.*

**Bill Gery, KA2FNK, President**

**Jaimie Charlton, ADØAB, Vice President**

**Ted Knapp, NØTEK, Secretary**

**Cal Lewandowski, KCØCL, Treasurer / FEEDBACK distribution**

\* \* \*

**Chip Buckner, ACØYF, Editor**

**Charlie Van Way, NØCVW, Photography**

**Deb Buckner, KDØRYE, Contributing Editor**

*All email addresses are available at w0erh.org*

## ***Resolution Recap***

From the January 2016 FEEDBACK:

*On the theory that a public commitment enhances the likelihood that something will actually get done, your editor hereby commits to learn Morse Code and to assemble a variety of beginner electronics projects in 2016.*

Well, it started well. Your editor got through the alphabet, but rehearsals for--and performances in--a couple of musicals and a variety of English cathedrals interrupted continued practice. There were a couple of beginner electronics projects, but when there was a snag, I didn't have anything to report and ended up falling behind. Thus, as happens with all too many well-intentioned resolutions, they get made again the following year.

On the subject of beginning projects, Bill McMillan, NØYUD submitted his experiences with the construction of a simple 40m receiver over a year ago. The plan was to run the article when the FEEDBACK beginner projects series reached that level of sophistication. Given your editor's progress to date, the risk was that the series would never reach that point. Accordingly, we present Bill's construction experiences. Enjoy Bill's article and take a shot at trying something new.

***Chip Buckner -- ACØYF***

## ***PRESIDENT'S CORNER***

Thanks to everyone that could support Skywarn Recognition Day on December 3.. I'm still processing the



logs, but the KCØNWS station made over 800 contacts during the twenty four hours of operation. Of that number 41 were National Weather Service offices.

The club's web site is now two years old and is being kept current by Ted Knapp, NØTEK. The web site is the Club's image to the world. So thank Ted for a great job. We continue to get very good comments about both the look and articles in the Feedback. This due to the editors, Chip ACØYF and Deb KDØRYE Buckner. Please also thank them for a fantastic job.

Team work made Field Day 2016 a great event. WØERH was first in its class for Kansas and eleventh overall. This was the club's best national standing for at least ten years. Coordinator Jay Greenough, WJØX, and the station team leads need to take a bow. Bill Warrington, KC4TKL, once again made sure that the logging network ran with out any issues.

The Ensor auction was another success. Auctioneer David Schulman, WDØERU, put in a monumental amount of work. Thanks to Jay Greenough, WJØX, Diana Fiddick, KDØOBP, Cal Lewandowski, KCØCL, and John Hochscheid, WØBBQ, for their extra effort at the auction.

***- Bill Gery - WA2FNK***



## ***Johnson County Radio Amateurs Club - November 11, 2016***

Attendance: Self introduction with name and call sign. 28 signed the check in sheet. This was followed by the Pledge of Allegiance.

The Minutes from the October 14 and 28 , 2016 meetings were accepted with 1 opposed vote.

The Treasurer's Report – No Report due to technical difficulties.

### Old Business:

- We welcomed all 1<sup>st</sup> time visitors to tonight's Club meeting.
- Repeater Update – All are working well!
- Ensor Museum Volunteers – Thank you to all that volunteered at Ensor during the month of October!
- Ensor Auction 2016 Report

Number of Consigners	10	Auction Grossed	\$3,679.00
Commission to JCRAC	\$398.40	JCRAC Grossed	\$1,769.40
Payout to Consigners	\$1,909.60	Raffle Grossed	\$695.00
Bidders	66	Total Grossed	\$2,464.40
		Contribution to Ensor	\$1,232.20
		JCRAC Share	\$1,232.20

### New Business:

- Annual Christmas Party December 9. Bring your family and some food to share.
- Herb Fiddick, NZ0F reported that the WW1USA dates have been set for 2017. They are: January 28 & 29 (operating inside), April 29 & 30 (operating outside), July 22 & 23 (operating inside), and October 14 & 15 (operating outside). Herb asked the Club if we wanted to Sponsor one of these events. The Club decided on sponsoring the April 29 & 30 event.
- Brian Short, KC0BS asked the Club to produce 2 - 60 seconds commercials about the Johnson County Radio Amateurs Club. They would air on TV25.

### Reports:

- 6 m – None.
- 10 m SSB Roundtable – 6 participated on November 110.
- 440 Wheat Shocker net – 14 Check-ins on November 9.
- 2m Wheat Shocker net – 14 Check-ins on November 10.
- HF Activity – NR.

### Announcements:

- Ham Class at Johnson County EOC November 12 and 19.
- Skywarn Recognition Day December 2 – 3, 2016.
- Raytown Hamfest.
- See Cal Lewandowski, KC0CL if you want to be on the Auction Raffle Committee.
- Watch Larry's List for upcoming events.

Business meeting adjourned at 7:59 PM

### Program:

- The Program for this evening was the Part 2 presentation on Smith Charts by Dennis Baker KE0QM.

## Hambone's Christmas Letter

Merry Christmas and Happy New Year to everybody!

Okay, okay, I know I'm not Hambone, but my brother asked me to write this letter for him. So, here I am chronicling the family's events.

First, let me say we all made it around the sun one more time so there are no silent keys to report. That's good because it's more fun to report birthdays than dirt naps. Speaking of birthdays, let's all welcome little Stanley, cousin Rosa's new son, into the world.

Stanley actually popped out on November fourteenth which, as some of you may recall, happened to be the exact day of Rosa and Beau's wedding. There's some question as to whether he arrived during the 'I dos', or waited until the after the 'I now pronounce you...'. Eye witnesses are split on this detail, but I'm going with the latter.

The small wedding took place in that old church in North Kansas City. The very same place that my pal Joey and I picked up voices coming from the cemetery last Halloween. I guess it wasn't as abandoned as we thought.

Some of you may not have heard how me and Hammy caught a mountain on fire. It was ham radio Field Day – Hammy is a ham radio operator – and these guys like to take their radios outside and try to talk to each other. It's a lot of fun.



Anyway, Hammy wanted to operate from a really good, high location so we went to Coal Mountain in West Virginia. I was his helper. You all know how we caught the mountain on fire and that got the

town folk real excited. But that coal fire is not what they were excited about.

Nope. A still, owned by some guy named Dooley, was hidden in the hollow right next to our campsite. When our fire got out of hand, it ignited a tank containing about forty gallons of 'Dooley's Finest' which started flowing down the hill. One look at that and you knew why it's called white lightning'. That's the loss that had the locals pissed.

Hammy and his buddy, Rick, both passed their extra class license exams after getting some coaching from Uncle Elmer. Now they are strutting around like they've won Nobel Peace Prizes. Give us a break guys, it's only a ham license.

Speaking of Uncle Elmer, if you should be speaking to Uncle Elmer, don't mention that little joke Hammy played on him about his solar panels receiving messages from outer space. He's still mad.

A few weeks after his moment of fame on TV, the city Building Inspector showed up and pointed out how Unck had not provided sufficient ventilation under his

panels. He said mold would start to grow and eventually rot away the wood shingles. Unck argued with him, but in the end he agreed to fix the problem.

The inspector was right. Mold and slimy stuff had started to grow under one of the panels. Unck accidentally stepped in it and slid right off the roof onto the grass. It was really funny! Only his pride was hurt and he's still trying to forget the whole ugly event. But, it's gone viral on Facebook.

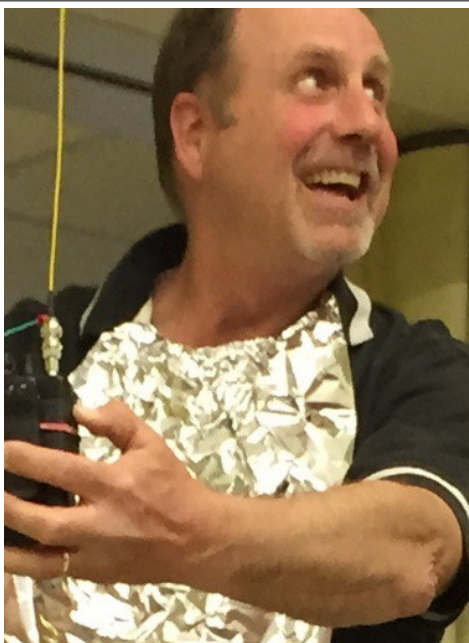
I'd like to thank again Denny, Dom, Hal and all the guys who helped Hammy and me when we were being held by those dope peddlers. You guys really saved our butts. And I gotta say, Hammy was particularly brave except for when the bad guys scared us in the pot patch and he wet his pants, again. I wish he'd make a new year's resolution to stop doing that.

Well, I've got to get back to wrapping my presents. I'm giving Hammy a fancy long wire fan dipole antenna covering all bands DC to light. But, I'm hiding a little trick in it. Let's see if he finds it (Aside: Don't worry, he never reads these newsletters.). I'm giving Unck a new pack of yellow pads and a pen with a light inside so he can doodle in the dark. Finally, Joey's getting a special heavy metal mix I just made. I added extra heavy bass and a whole lot of compression so it sounds really loud. He'll love it.

That's pretty much all the family news that's fit to print, at least for

*see HAMBONE on page 7*

## You Can Build a 40 Meter Direct-Conversion Receiver - Bill McMillan, NØYUD



Bill McMillan's "just try it" attitude made him the winner of JCRAC's first VHF antenna shoot-out in April 2015.

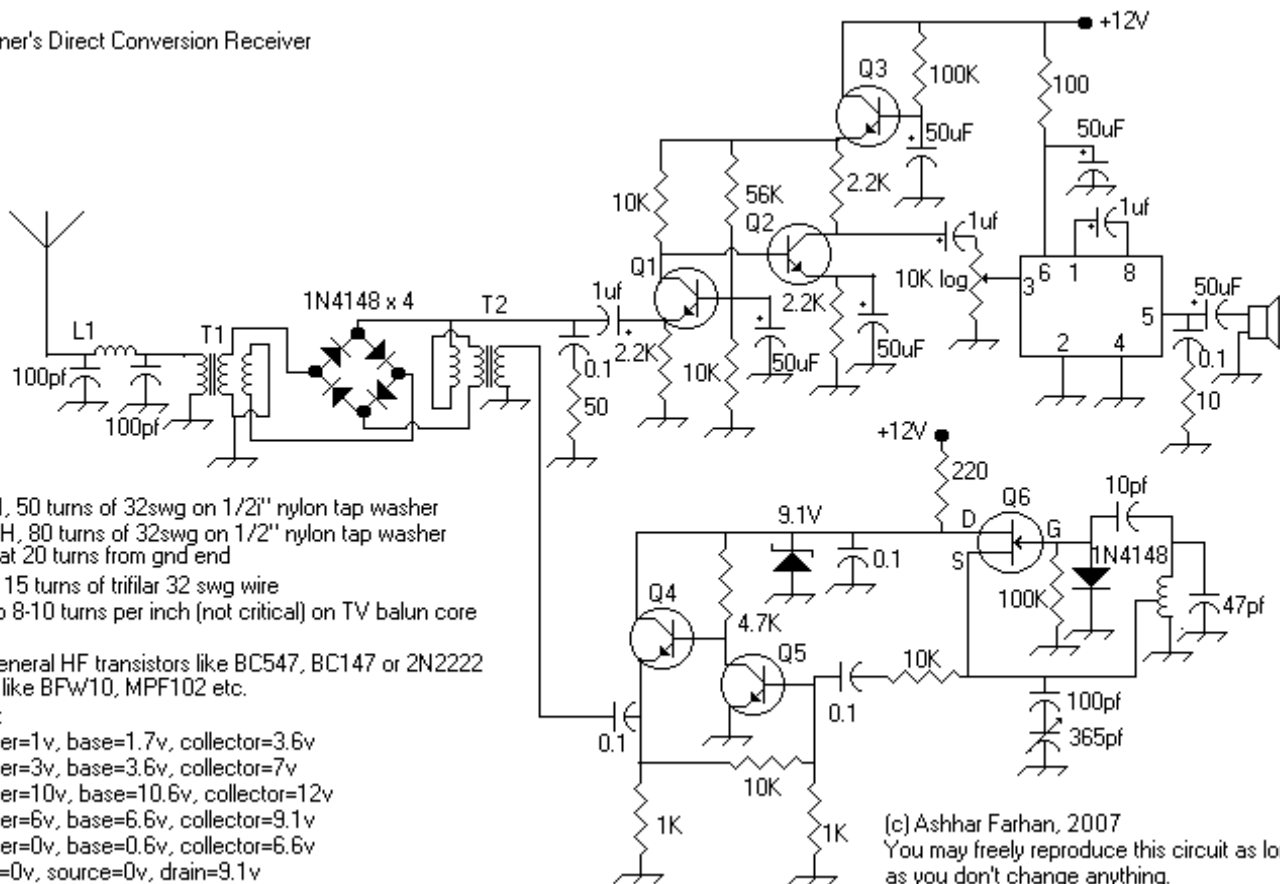
If you would like to try your hand at building a simple receiver, this might be the perfect circuit. While it consists of only four main sections, there are plenty of learning opportunities. The receiver was designed by Ashhar Farhan, VU2ESE of the BitX fame. (ED -- For more on Farhan's projects, see [www.hfsigs.com](http://www.hfsigs.com).) Farhan has a good-natured approach to circuit design and his projects are always practical and sensible in regards to performance, ease of construction and component choice. This is probably the first time I was able to look at an entire schematic diagram and not feel like I was looking at a map of the Paris Metro. Instead of seeing a bunch of parts I actually saw distinct sections.

Ok, there is the RF filter on the top left, next comes the double balanced ring diode mixer, the local oscillator is on the bottom right and that bunch of parts on the top right must be the audio amplifier! All of the parts are easily obtained, and in true Farhan fashion the coil forms for L1 and L2 are nylon washers. I was not sure about T1 and T2 (TV balun core?) but I did a google search and saw an image of a binocular core so that is what I used and it seemed to work just fine.

Here you can see how I built the local oscillator on its own section of the board (top). Apparently you want to isolate this portion of the circuit (and shield it) in order to prevent unwanted signals from

**see RECEIVER on page 6**

DC - 40  
A Beginner's Direct Conversion Receiver





**from RECEIVER on page 5**

entering the audio chain. The LM386 based audio amp is in the lower right corner and the pre-amp is on the lower left. The double balanced diode mixer is in the center bottom (binocular cores) and the RF filter is tucked beside the top of the audio amp (see the coil).

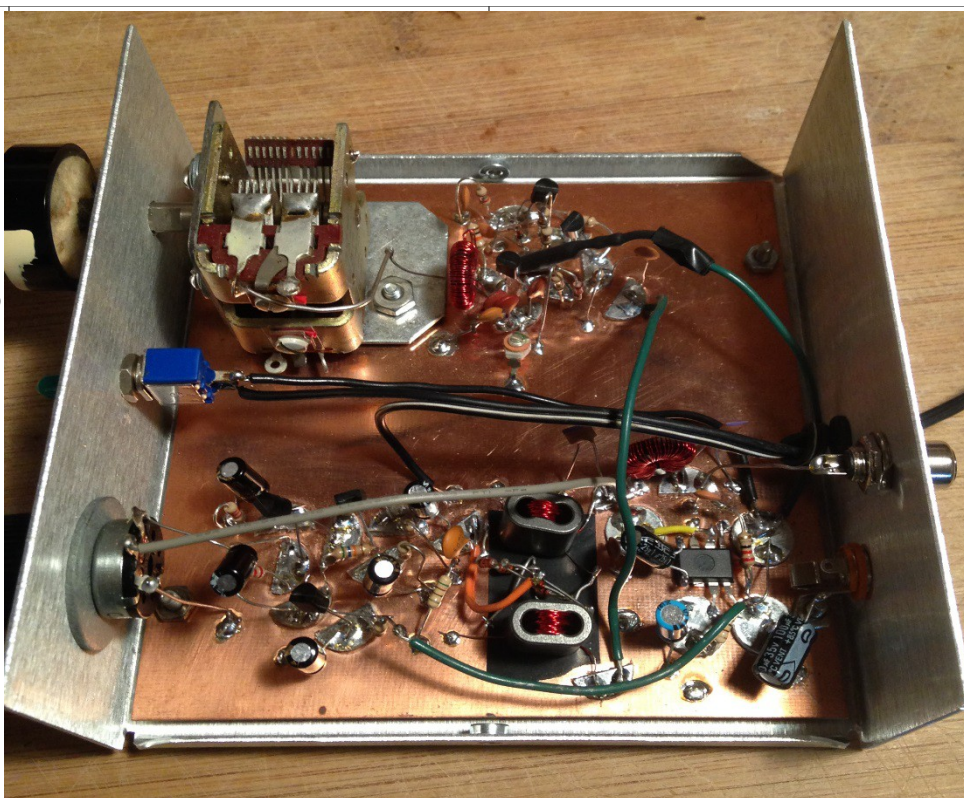
Here is a link to the circuit notes:

<http://www.phonestack.com/farhan/dc40.html>

I built the circuit on a 4 ½ inch square piece of single sided pc board. My intention was to house the receiver in a blank Hendricks Kits box I had picked up at Dayton a couple of years ago. This was my first experience with Manhattan style construction and I found it easy and enjoyable. The best part is that when you make a mistake it is super simple to correct. (ED -- *"Manhattan Style" circuits are built using glued-on metal pads to which components are mounted. It is an alternative to using printed circuits. See, for example, <https://hackaday.com/tag/manhattan-style/>*.)

Here you can see how I built the local oscillator on its own section of the board (top). Apparently you want to isolate this portion of the circuit (and shield it) in order to prevent unwanted signals from entering the audio chain. The LM386 based audio amp is in the lower right corner and the pre-amp is on the lower left. The double balanced diode mixer is in the center bottom (binocular cores) and the RF filter is tucked beside the top of the audio amp (see the coil).

From a construction standpoint, the local oscillator and the mixer were the most challenging. The local oscillator required some tweaking



with added capacitance to bring it down to the range I was looking for. In the end I added a few capacitors to the 47pf on the coil and then added a trimmer capacitor for fine tuning. I was able to adjust the trimmer cap so that the oscillator tuned from 6.894 to 7.311 MHz... perfect!

The mixer was interesting because it requires proper phasing....just remember that the top of each coil on the schematic is on one end of the toroid and the bottom of each winding on the schematic is the other end of the toroid. And even though it looks simple with the ring diodes, the physical construction is slightly awkward. I'm sure I will do better next time.

I would like to say it worked the first time I fired it up but alas...no joy! In fact, I had no noise at all. I knew the audio amp and local oscillator worked because I had checked them before moving on. That left the mixer and the pre-amp.

After checking the pre-amp I found that I had mistakenly reversed the emitter and the collector leads on Q1, Q2 and Q3. It took just a few minutes to correct the connections and all of a sudden I was tuning SSB and CW signals all over the 40 meter band! It's a unique experience when you first listen to a receiver that you built from scratch. I hope that feeling returns each time I build a new radio!

The receiver has a few peculiarities. There was some pretty loud hum coming from the power supply which I foiled by running a few turns of the cord through a large toroid. It is not extremely selective, in fact, tuning the CW portion of the band often brings up a symphony of signals which is very nice for background music but challenging for good copy. At night I often receive strong shortwave stations (which I assume are transmitting AM) which can cover

**see RECEIVER on page 7**

<p><b>from RECEIVER on page 6</b> the entire tuning range of the receiver. I'm not sure how that works.</p> <p>I learned a lot with this project but I still have some questions.</p> <p>1) When I wired up the local oscillator according to the schematic the range was 9.090 to 9.350 MHz. I knew that increasing the capacitance would lower the frequency. Is there a limit to how much capacitance I can add? Without changing the coil (yes, it has 80 turns!) how low in frequency could I possibly go?</p> <p>2) Tuning 300 kilohertz with one turn of the dial can be challenging. I used a 6 to 1 reduction drive variable capacitor which helped greatly. Is there an easy way to introduce some sort of band spread switch to allow for fine tuning? How would this be wired?</p>	<p>3) Why does the receiver lack selectivity? How could I improve the selectivity?</p> <p>4) How exactly does a double balanced ring diode mixer work? I think it is magic!</p> <p>So there you go, build one of your very own and see what you might discover!</p> <p style="text-align: center;"><b>&gt;&gt; JCRAC FEEDBACK &lt;&lt;</b></p>	<p><b>from HAMBONE on page 4</b> now. Hambone's busy in the basement building some kind of ray gun. I guess he still dreams of being the first on the block to rule the world. I'm pretty sure that's his plan 'B' if his school grades don't improve. But, with his abilities, I think a part-time barista at Starbucks is a more likely career move.</p> <p>Uncle Elmer is off to an undisclosed location to work on some weird problem involving driverless cars. I don't know what's up with that. Pretty much all cars are driverless - until a driver gets in.</p> <p>So, Merry Christmas, Happy New Year, keep it real, 'tis the season, have a cool Yule and a frantic first and whatever all that means.</p> <p><b>Dude</b></p>
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