Johnson County Radio Amateurs Club, Inc.
P.O. Box 93
Shawnee Mission, KS 66201

FEEDBACK

November 2017

Out at the Ensor Farm.

A beautiful day for an auction.

Photos by Charlie Van Way, NØCVW

NOVEMBER MEETING

***November 10** -- GOES-R (NOAA-15) - The Newest Weather Satellite - Chad Gravelle, Satellite Liasison and Science Coordinator for the National Weather Services Operations Proving Ground, Kansas City, MO*

November 24 - No Meeting - Happy Thanksgiving

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

October's First Timers

Ryan Vaughan, KEØHBF

Steve Vaughan, KEØHBH

Carol Weissenberger, KEØOTH

PRESIDENT'S CORNER

The weather for this year's Ensor events was dry, but there was a chill in the air.

Master fire builder Don, WØDEW, started the fire on Friday evening and kept it going through Saturday, to provide members and visitors with a spot to warm their hands.

Many people worked hard to make the annual Ensor Auction a success.. Dave Schulmann, WDØERU, the auctioneer, handled the event with his usual aplomb. Diana, KDØOBP, Ted, NØTEK, Cal, KCØCL and John, WØBBQ all stpped up to assist with clerking and check-ins. Special thanks, of course, go to everyone who donated items for the auction.

At this writing we do not have a report on how much was made at the auction. The report should be ready by the November meeting.

Skywarn Recognition day will be December 2 (0000 to 2400 UTC) this year. This event is sponsored by the National Weather Service and American Radio Relay League. If you would like to help with this event, please sign up. Contact me if you have any questions. For more information see http://hamradio.noaa.gov.

Because of the Thanksgiving holiday, we have only one meeting this month Happy Thanksgiving and have a safe holiday.

– Bill Gery – WA2FNK

Johnson County Radio Amateurs Club - October 13, 2017

Meeting Date: Friday October 13, 2017. The meeting Started at 7:30PM.

Attendance: Self introduction with name and call sign. 35 signed the check in sheet. This was followed by the Pledge of Allegiance.

The Minutes from the September 22, 2017 meeting were read and accepted with 1 opposed vote.

The Treasurer's report, as follows, was read and accepted unanimously.

Cash on Hand	$ 171.00	Repeater Operating Reserve	$ 1,207.65
Checking Account	$ 907.67	Memorial Fund	$ 310.00
Savings Account	$ 8,408.83	Active Members	147
PayPal Account	$ 7.54		
Total	$ 9,495.04		

Old Business:

- We welcomed all 1st time visitors to the meeting.
- Repeater Update – All are working well. We are exploring the idea of upgrading the Yaesu Fusion Repeaters to the new DR-2X model. More information to come.
- Ensor Museum volunteers will be needed again for the month of October. All who volunteer will be entered into a drawing for a $50 Gift Certificate to Associated Radio.
- This year's Ensor Auction will be on Saturday October 28th with activities also taking place Friday night October 27th.

New Business:

- None.

Reports:

- 6 m – NR
- 10 m SSB Roundtable – 10 participated on October 12
- 40m SSB Roundtable – NR
- Fusion Digital 440 net – 12 Check-ins on October 11 and 18 Check-ins on October 4
- 2m Wheat Shocker net – 20 Check-ins on October 12 and 18 Check-ins on October 5
- HF Activity – NR

Announcements:

- Southside ARC Hamfest October 21
- Boy Scouts Jamboree on the Air is October 21 and 22

Business meeting adjourned at 8:08 PM

Program:

- The Program for this evening was a Presentation on Fox Hunting Ideas by Bill Gery, KA2FNK.

Johnson County Radio Amateurs Club - October 27, 2017

Meeting Date: Friday October 27, 2017.

Due to the Club's annual Auction, no official meeting took place. We did gather around the campfire at the Ensor Park and Museum.

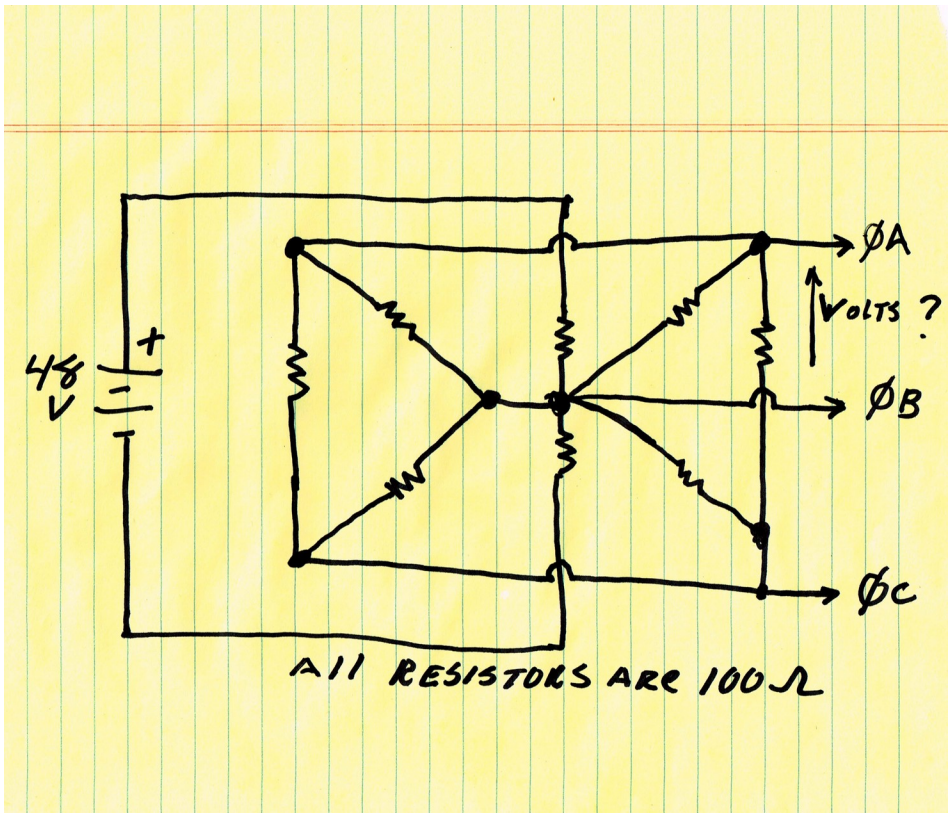
Submitted by Ted Knapp, N0TEK, Secretary.

John Raydo Works With Nuts - John Raydo, KØIZ

Many of us have used stainless hardware on antennas andother applications. I was installing agate for my driveway and lightly tightened a 3/8 stainless bolt and nut. Later I went to remove the nut and couldn't. It seems the nut and bolt welded themselves together (called galling). Regular wrenches didn't budge the nut. I finally used two long ½" socket breaker bars. Unbelievably the Grade 8 bolt broke, the nut was still attached.

The next photo shows the 3/8 bolt (shorter now, compared with a new bolt next to it).

I used an anti-seize compound on other stainless nuts andbolts and had no further problems. Lowes sells Liquid Wrench Anti-Seize Dielectric Grease.



Dude's Brain Buster

Dude was reading some very old Electronic Marvels magazines and came across an article describing how to generate three-phase DC from a single battery. The article included a schematic but did not say how many volts output the circuit gave. Since the three phases are balanced, what is the voltage between phases A and B?

(The answer appears at the end of this month's Hambone adventure.)

A Hambone Adventure - Jaimie Charlton, ADØAB

Hambone and the Antique Lady

Our story begins in Uncle Elmer's radio shack. Here we find Elmer's nephew, Hambone, sharing some brotherly advice with Dude.

"How many times have I told you simply to avoid her? Lots, that's how many!"

"Hammy, I tried, but she trapped me," despaired Dude.

"I told you not to drive or walk by her house. I told you if you see her, don't make eye contact and if she waves--she likes to wave--pretend you don't see her."

"I did all that, but she's the Devil in disguise. She trapped me."

"Sure, she did. How could a little old lady who must be at least 100 years old trap you, especially if you followed my rules?" asked Hambone.

"I was minding my own business putting gas in my truck at the Quick Stop just down the block when I heard the sound of a Hog on the other side of the pumps. I didn't pay any attention until I heard someone call my name. I couldn't see over the pumps, but I immediately recognized the squeaky voice as the old lady's.

You know, she sounds like a canary with a cold. I should have pretended I didn't hear her and left."

"But you didn't, did you?"

No, I peeked around the pump and there she was in a leather jacket, helmet, goggles and gloves with groceries stuffed in her saddle bags gassing up her Harley. She made instant eye-contact and I was hooked."

"I guess the old bat has upped her game," said Hambone. "She must know we've been avoiding her."

"Yeah. She asked me how school was going and how you were and said how much she appreciated some of the things you and I, mostly you, have fixed for her. I'm not sure she can tell the difference between you and me."

"From her point of view," added Hambone, "We are just two free helpers."

"She finished gassing up and was about to drive off when a six-pack fell out of her saddle bag. I grabbed it before it hit the ground. She thanked me over and over again and said she was having trouble carrying her stuff lately and wondered if I could follow her home and help bring her groceries up the steps.

I couldn't refuse, she lives only half a block away. So, there I went. It only took a couple of minutes to carry her groceries in. I was just going out the door when she sprung her trap."

"Who sprung what trap?" Asked Uncle Elmer who had wandered into his shack in search of his ever-hot coffee pot.

"Morning Unck. Dude was just telling how that little old lady down the street trapped him into doing another project for her, for free."

"I thought you guys had learned your lessons when dealing with the LOL, Little Old Lady. But, do go on. This ought to be good."

Dude continued, "I was just leaving when she asked, as long as I was there, if I could take a look at her little old table radio. She said it played fine, but recently started to hum loudly and she didn't know why, it had been so good for so long. I hesitated, so she added that it was her mother's constant companion during her final years and her only good contact with the outside world. Although it's old it's worth a lot to her."

"So," continued Dude. "I agreed to look at the radio and guess what? It doesn't have batteries, it plugs in! And, it's full of tubes! And little, my ass - it's a big hulkin' box with a separate metal speaker! I've never seen anything like that. But she's right, it hums.

I looked it over and couldn't find anything obviously wrong. I jiggled some wires and accidentally got singed on one of the tubes.

Those babies get hot! Finally, I told her that it has an internal problem and I would have to take it to my shop which is really your shop, Unck. She thanked me and said she knew I would fix it because I am 'the smartest boy on the block'.

So, Unck, I took the radio and there it is over on your bench. Help!"

"Don't feel bad, Dude. That LOL has been out smarting us and getting free work for years. She just sees you as fresh meat. Let's have a look at the radio.

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from HAMBONE on page 5

Boy, that is an oldie," observed Elmer as he opened the top and flipped its on-off switch. As the tubes began to glow, music could be heard accompanied by a very distinct hum.

"Boy, that old bird is right, it sure does hum, loud," observed Hambone.

"Do you boys know why radios hum?" asked Elmer.

"No, why?"

"Because they don't know the words!" said Elmer barely containing his inner merriment.

"Oh, Unck!" moaned the boys in unison. "That's really lame."

"Okay, Okay, let's fix this thing.

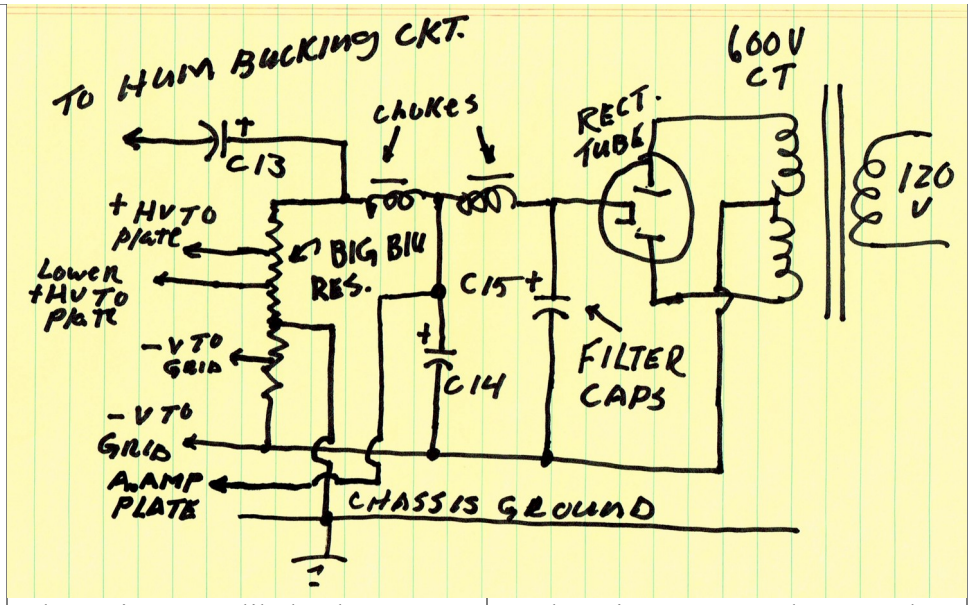
First, notice that the hum is 120 hertz and it's unaffected by the volume control," observed Elmer as he twisted the knobs on the front of the radio. "That almost certainly means it's coming from the power supply. The DC power, which is really rectified AC, is not being smoothed enough by the power supply filter."

"But Unck, the line frequency is only 60 hertz, why is the hum 120 hertz?"

"Look, Dude," said Elmer pointing to a faded schematic taped to the inside of the cabinet. "This radio has a full-wave rectifier tube. Full-wave rectifiers produce two bumps in the DC for every line cycle. That's why the hum is 120 hertz.

Let's redraw the power supply part of the schematic to see what's going on.

Here's the power transformer, the rectifier tube, two filter chokes and three capacitors and the big blue voltage divider resistor on the



schematic. Most likely, the transformer, the rectifier tube and chokes are fine. But those old caps probably have dried out and look more like open circuits than high value filter capacitors."

"How can you tell all that without testing anything?" asked Hambone.

"Easy. First off, the tubes light and the radio plays. That means its working voltages are approximately correct and that means the power transformer, the rectifier tube and the chokes are all okay. It also means that the filter caps aren't shorted. If any of those things weren't true, the radio would not have operating voltages and would not work at all."

"Whoa, Unck, you're a regular Sherlock Holmes, deducing all that from just some hum."

"Well, Dude, troubleshooting is a bit like detective work. By the way, the LOL was pulling your leg. I don't think this radio has been used for at least fifty years. For the hum to be this bad, those caps had to have started drying out decades ago."

"Okay, so the little old lady stretches the truth and scores another victory. How do we replace the caps? I don't see them on or under the chassis," asked Hambone.

"That might be a problem," sighed Elmer pointing to a black can mounted on the chassis. "It appears that they are part of a potted assembly inside this metal box."

"What do you mean, *potted*?" asked Dude.

"In the old days, and to some extent now, components and assemblies were sometimes placed in protective metal cans and then the extra space filled with a tar-like sealant. When the sealant hardened, the components were well protected. But, they were nearly impossible to reach for servicing."

"Problem solved," said Dude. "We just take the radio back to the LOL and tell her it's junk."

"Slow down, Dude," said Elmer. "Because the capacitors have dried out, they are essentially open circuits. We can leave them in the radio without doing any harm. All

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from HAMBONE on page 6

we have to do is add new caps in the right places to provide the same filtering.

From the schematic, we see that C15 has its plus terminal connected to the positive output of the rectifier tube and C14 has its plus terminal connected between the two filter chokes. Both of those capacitors have their negative terminals connected to the most negative voltage supply. These two capacitors and the two chokes form an LC filter to smooth the DC voltages. The output of the second filter choke goes to the top of the big resistor. So, how do you think we can fix this radio without finding the old capacitors?"

"That's easy," said Hambone. "We solder one end of the new cap to the top of that weird resistor and the other to the transformer's center tap which is marked right there."

"Not quite, Hammy. The transformer center tap may not be circuit common, and in this case, it isn't.

We can't reach C15, but we can effectively replace it by soldering the positive lead of a new cap to the tube's cathode and the negative lead to the transformer's center tap. Likewise, we can 'replace' C14 by finding the plate supply of the audio amp and soldering the positive lead of the new cap there and the negative lead to the transformer's center tap."

"But Unck," asked Dude, what about C13, it's not a filter capacitor?"

"That's easy Dude. We just solder the positive lead here to the top of the big blue resistor and the negative lead to the center arm of the *hum bucking pot* as shown in the schematic. We can reach both those places. There, job done."

"Wow, Unck," gushed Hambone. "You just replaced three capacitors without actually replacing them!"

Elmer continued, "So, boys, what do you think that big blue resistor is for?"

"I don't know, Unck. What?"

"Early tube radios operated with a number of different voltages, some of them negative. In this case, taps on that big resistor are being used to provide the different voltages. Zero volts or circuit common is actually two taps up from the bottom end. It's an easy way to get both positive and negative voltages from a single power supply."

"Those old guys sure were tricky," observed Hambone. "Power supplies are a lot simpler now."

"Trickier than you think," said Elmer. "Look again at cap C13. That's called a *hum bucking circuit*. The idea is that this circuit provides a small amount of out-of-phase AC ripple (hum) to the RF and audio stages to cancel the hum induced by the AC power applied to their filaments. The pot is used to adjust the exact amount necessary to cancel whatever residual hum is left over from the power supply. See? Turning the pot makes the last little bit of hum disappear."

"That's so cool, Unck. Let's put it back together so I can take it to the LOL and be done with her. At least we know she will be comforted by having her mother's old radio companion back home and working again," sighed Dude.

* * *

Later, we find Dude at the little old lady's house returning the radio.

"Thank you so much, young man. You are so smart and so nice to help out an old lady, like me, in distress. I really appreciate it. This radio is worth a lot to me now that it works."

"No problem ma'am," said Dude beaming from ear to ear. "It was my pleasure."

"How about some tea and cookies?"

"No thank you, I really can't stay."

"Well then, maybe I can pay you? Here's five dollars, is that enough?"

"I can't take your money," said Dude, wallowing in his warm and cozy feelings from helping the elderly. "It's payment enough knowing that I've helped you out."

"You're such a nice young man. I can't thank you enough for fixing it so fast. I already sold it on e-bay for three-hundred dollars. I got that much because I said it works."

SHOPPING?

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>> JCRAC FEEDBACK <<

Answer to Dude's Brain Buster:

0 volts. There is no such thing as three-phase DC.