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

FEEDBACK

July 2017

Field Day: June 24-25, 2017

	CW	Digital	Phone	Total
Total QSOs	412	215	1788	
Total Points	824	430	1788	3042

Claimed Score = 6,084

JULY MEETINGS

July 14 *-- Field Day Debriefing*
July 28 *– 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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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

* * *

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All email addresses are available at w0erh.org

If You Weren't There ... You Missed It

Your Editor is rarely at a loss for words, but he has nothing to add to what you can see in these pages.

The photo below and those on the top row of page 8 are by Tom Wheeler, NØGSG. All others are by Charlie Van Way, NØCVW.

PRESIDENT'S CORNER

Field Day 2017 is over and we have submitted the paper work to ARRL. As with past years there is a large list of persons that put in the extra effort that resulted in a successful Field Day for the club.

Jay Greenough, WJØX, did a great job coordinating the event again this year. The new location presented some new challenges. **Bill Warrington, KC4TKL**, quickly developed aan improved networking plan for the logging which worked faultlessly ... until the generator ran out of gas and he UPS battery was drained. We have talked aout expanding the solar ability to the network for next year.

Brian Short, KCØBS, served as the head coach for the Get On The Air station At times, the Salvation Army communication vehicle was standing room only, as Coach Brian explained amateur radio capabilities. **Norma Hatfield, WØKC,** and her testing team occupied the testing tent,

The National Guard unit was a great addition to our Field Day event Saturday. We hope to have them back next year.

Channel 41 meteorologist **Gerard Jebaily, WX4STM**, (at the mic, left) spent just over two hours with us and made a couple of contacts. He included his visit that evening with video chips during the news broadcast.

The weather could not have been better starting Friday afternoon through Sunday afternoon.

– Bill Gery – WA2FNK

Johnson County Radio Amateurs Club - June 9, 2017

Meeting Date: Friday June 9, 2017. The meeting Started at 7:30PM.

Attendance: Self introduction with name and call sign. 32 signed the check in sheet. This was followed by the Pledge of Allegiance.

The Minutes from the May 26, 2017 meeting were read and accepted with one opposed vote.

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

Cash on Hand	$ 86.00	Repeater Operating Reserve	$ 1,093.65
Checking Account	$ 90.89	Memorial Fund	$ 310.00
Savings Account	$ 11,308.83	Active Members	152
PayPal Account	$ 38.54		
Total	$ 11,524.26		

Old Business:

- We welcomed all 1st time visitors to tonight's Club meeting.
- Repeater Update – All are working well.
- We are all set for Field Day at the end of the month.

New Business:

- Ted Knapp, N0TEK as an employee of Hallmark Cards, Inc. has the opportunity to participate in Hallmark's Volunteer Program. The purpose of the Volunteer Program is to recognize Hallmark employees who have volunteered a minimum of 50 hours of service to a non-profit organization in a one year period. As the club's Secretary and having met the non-profit qualification, the Hallmark Corporate Foundation has made a contribution of $400 to the Johnson County Radio Amateurs Club.
- The Ensor Volunteer $50 Gift Certificate to Associated Radio drawing was held and the winner was Cal/Anne Lewandowski. Thanks to all who volunteered at Ensor during the month of May!
- Tom Wheeler, N0GSG will research the cost to purchase a Fox Hunt transmitter for the Club.

Reports:

- 6 m – Open all week long.
- 10 m SSB Roundtable – 6 participated on June 8.
- 40m SSB Roundtable – 1 participated on June 7.
- 440 Wheat Shocker net – 12 Check-ins on June 7 and 14 Check-ins on May 31.
- 2m Wheat Shocker net – 22 Check-ins on June 8 and 23 Check-ins on June 1.
- HF Activity – Croatia and Lebanon on 20m.

Announcements:

- Campfire this weekend at Ensor.
- Watch Larry's List for upcoming events.

Business meeting adjourned at 7:52 PM

Program:

- The Program for this evening was a presentation by Vern Wirka, WØVMP titled "CW – Then and Now".

Johnson County Radio Amateurs Club - June 23, 2017

Meeting Date: Friday June 23, 2017. The meeting started at 7:30 PM.

The meeting tonight was held at the Field Day site (Old Hutton Farm at Shawnee Mission Park).

There was no formal meeting.

A Hambone Adventure - Jaimie Charlton, ADØAB

Hambone Tames the 80-Meter Beast

Hambone's really an okay kid. He tries hard to impress anyone who will listen with his technical expertise in the world of ham radio--especially now that he's a freshman in electrical engineering school.

Hambone loves technology and spends a lot of time reading, thinking and talking about it. The problem is that he picks up a bit of information about something–usually radio–and then thinks he's an expert and won't listen to anyone else. That's gotten him in trouble. But, I guess most teenage boys are that way.

His parents are wonderful, but neither shares Hambone's thirst for science. His father is an advertising manager and his mother's a CPA. I guess that's why he spends so much time in my ham shack even though he has a station of his own. Of course, another reason is that he hates to pay for his own pizza and burgers.

A few days ago he decided that he wasn't getting out as well as he should on 80 meters Well, who is? But, he placed the blame squarely on a wire dipole that I helped him make--implying that I steered him wrong.

When he first built the antenna and strung it up in his trees, he liked it. I pointed out that one side drooped pretty close to the ground and other was wrapped around some branches. The SWR, measured by the meter at his transmitter, was high. But, he assured me that everything was fine because his tuner could 'pick up the slack', whatever that means.

He had an I-told-you-so moment when he worked a station in California, about 1,000 miles away. Hambone enjoyed that. He's always looking for a chance to prove me wrong. But, he's not so happy now.

I tried to explain that all bands have been poor lately and nobody has been "getting out". But he was certain that his antenna had somehow gone bad and he was going to fix it. That brings us to where we are today. I can see he's in his backyard next door with a lot of wire and antenna parts scattered on the ground. "Hey Hambone, how're you coming with that antenna?"

"Not so good, Unck. I pulled it down and checked it. I found you cut it too long. It should have been cut for the phone end of the 80 meter band which is really more like 75 meters. You cut it for the CW end. So, I shortened it. I also replaced the insulators on the ends and put a real one-to-one balun in the center instead of that coil of coax you made."

Notice the use of the word *you* when he thinks something is wrong.

"What did you do with that coil of coax?" I asked.

"I cut it off. It made the feedline too long. Besides, I thought its extra loss could be gobbling up my signal."

"So, I guess you've given up on learning CW?" I asked.

"Well Unck, it's not easy and I didn't make very many contacts. And phone works with just pressing the button on the mic."

"That's all true," I continued, trying to keep the snark out of my voice. "A lot of hams, like you, try to learn CW, but like you, few actually do it. Nearly all give up. I guess they find learning a new personal skill is just too difficult."

"Don't forget, Unck, CW is an obsolete format. Nobody but old guys, like you, really uses it any more. I think it's better to learn the newer digital formats which work better."

Realizing that our sparkling repartee had suddenly lost its gloss, I changed the subject. "Anyway, Hammy, how did your "fixed up" antenna work?"

"Not good, Unck. The SWR was so high my transmitter and tuner would not even drive it at all."

Feigning surprise because I expected exactly this result, I asked, "Did you measure it wrong? You cut out a lot of wire."

"I don't know, I don't think so."

I asked this because I know his measuring technique leaves a lot to be desired. He considers a yard and a meter to be the same length. His coax stripping and soldering aren't that great, either.

"My antenna analyzer, er, your analyzer, Unck, showed only about

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five ohms impedance at my transmitter. I checked the resistance with an ohmmeter and it showed almost a dead short. I guess your analyzer must be a bit off."

"Yeah, maybe," I said still trying to keep a straight face. "So, what are you doing now?"

"I'm looking for the short. I checked out my antenna switch. That's been a problem in the past, but it's okay now. Then I was sure the coax was shorted, but it checks good, too. But now I think the balun is bad. The ohmmeter shows a dead short on its input."

Clearly, my nephew has fallen victim to the old adage, 'A little knowledge is a dangerous thing'.

His first mistake was assuming that one good contact meant the antenna was great. Had he investigated further, he would have found that all bands were open that day and the CQ International DX contest was going on. It's almost impossible not to make a DX contact under those conditions.

His second mistake was assuming that his antenna had somehow 'gone bad' because he wasn't making a lot of contacts. If he checked around, he would have discovered that conditions are poor and have been for the last month. Nobody was making lots of contacts. But, he immediately assumed the problem was with my antenna design.

"Hammy, before you tear your balun apart, why don't you use the analyzer to measure the antenna's impedance right at the feed point?"

"Oh Unck, a short is a short, what difference does it make where I measure it? I'm sure the balun's bad."

"Just do it, let's see what the analyzer says."

Grudgingly and with sloth-like speed Hambone connected my analyzer to the coax side of the balun. I could hardly contain my excitement as I anticipated the reading he was about to see.

"Wow Unck, it shows thirty-one ohms!"

Internally, I clamped my fist, raised my arm and hollered a resounding 'YES'! Externally, I suppressed my inner merriment and, in my best deadpan manner, observed, "That seems about right." I then suggested that he reconnect his coax and recheck the impedance at his transmitter.

We repaired to his basement shack where he observed that the impedance was still only a few ohms and that his rig still refused to drive it.

"That proves it, Unck, there's still a short somewhere in the coax."

Not wanting to go through the whole job of taking his antenna down, disconnecting and checking the coax again, I suggested, "Before we go through all that checking, why don't you try adding some coax to your feed line? Just take that piece of coax you removed and put it back in. Let's see what happens."

This time, Hambone didn't argue very much. Instead, he set to putting connectors on the ends the cut off coax. I observed the speed at which he worked and calculated that, if I hurried, I had time for another cup of coffee. I strode back to my shack where my pot of brew yielded yet another steamy cup of inspiration and insight.

"Unck!" Came the call from across the yard. "Look at this!"

Renewed, I crossed the yard, second cup in hand, at my maximum no-spill speed and descended into his basement shack.

"Unck, the impedance is much higher!"

"I thought it would be, do you know why?" I continued, proudly expecting the boy to say something about the effects of SWR on a transmission line – a subject I explained to him in excruciating detail only a few months ago. But, I was wrong.

"Unck, that extra coax must really be corroded inside! Look at how high the resistive part of the impedance got just by adding a few feet."

Crestfallen, but undaunted, I suggested that he confirm his conclusion by removing the added coax and measuring its with his ohmmeter.

"I don't get it, Unck. The ohmmeter shows that the center conductor and the shield both have almost zero ohms of resistance. How does it make the antenna impedance go up?"

"Okay Hammy, here's what's happening," I began in my full professorial tone. "To begin with, you have standing waves on your coax because, at the frequency you're using for your measurements, your antenna is not a perfect match to your coax."

"I know, Unck. That's why I have a tuner."

see HAMBONE on page 6

from HAMBONE on page 5

Sensing a bit of a headwind, I took another sip and pushed on. "Many people think that a tuner cures standing waves, but they're wrong. The standing waves arise because the characteristic resistance of the coax – 50 ohms in your case – does not exactly match the complex impedance of your antenna. So, nothing you do at the transmitter end of the coax is going to eliminate the standing …."

"Okay, okay, Unck, if you say so." Hambone interrupted. "But if standing waves are the reason the transmitter won't operate into the antenna and if the only way to eliminate the standing waves is to do something to make the antenna match the coax, why did adding a piece of coax to the transmitter end make everything work?"

"I'm getting to that. Basically, you have power flowing in both directions on your coax. First, there is the power from your transmitter going to the antenna. That's called the *incident* power. But, because the antenna is not exactly matched to the coax, some of that power is rejected by the antenna and reflected back towards the transmitter. That's called *reflected* power. It is the interaction of these two powers that your transmitter doesn't like.

"I don't get how a little reflected power makes for a short circuit at the transmitter," asked Hambone.

"Don't think about the power, think of two voltage sine waves of the same frequency but offset in time on the same wire. If you could see them, you would see that some places the peaks of both waves more or less add together and make one really big peak while a little farther along the wire they tend to cancel each other and create a valley. If you use open wire transmission line instead of coax, you can measure these peaks and valleys with a voltmeter just by sliding the meter probes along the wires. If you divide the voltage at the peaks by the valley voltage, you get what is called the Voltage Standing Wave Ratio or VSWR or simply SWR."

"I still don't see how that can make the antenna look like a real low resistance, but not be one."

"I'm getting there. Besides the well known VSWR, there is also the lesser known current standing wave ratio."

"What?"

"There has to be, right?" I paused for effect. "Your transmitter is sending power up to the antenna so it must be supplying current as well as voltage. And, since the power is not infinite, when the voltage is hitting its peaks, the current must be hitting its valleys. In between, you get a range of different values of current and voltage. Because of that, the current standing wave ratio is numerically the same as the VSWR or just, SWR.

Let me show you," I said, grabbing my yellow pad.

With pens in hand, I boldly pushed forward. "In any system with an antenna that doesn't match the feed line resistance, and maybe even the transmitter doesn't match it either, there's a lot of voltage and current waves flying back and forth. But, in the end, we are only concerned with what we can measure. Here you see the black line is the voltage as it changes along the length of the coax and the red line is the current. It changes, too. These are the values you would measure if you connected a voltmeter or an ammeter at the various points along the cable.

"But, where does the resistance, or impedance come in?"

"Think about it. We really only deal with voltage and current. These are the basic building blocks of all electronics. Impedance, or resistance, isn't really a basic *thing*. It's simply a way of expressing the relationship between the voltage and current in any particular circuit.

Current is just the flow of electrical charge from one place to another. But, electrical charge won't flow by itself. For example, a plain old piece of copper wire has gazillions of electrical charges, called electrons, floating around inside it, but they don't move unless something gives them a push.

"I get it! Unck. It's voltage that gives them a push. Wherever you have voltage, you'll have current. The two go hand-in-hand and work together."

My heart sings, my brother's kid is an intelligent life form after all.

"If I connect your analyzer to a place on the coax where the current happens to be high and the voltage low, it will read a very low impedance, almost a short circuit. When I cut off the extra coax, I accidentally cut at a point of low voltage and high current that made my transmitter 'think' it was connected into a very low impedance or almost a short circuit."

"That's exactly right!" I shouted, the turbulence in my cup reflecting my jubilance over Hammy's discovery. "And all putting back that extra coax did was to move the position to a more favorable spot, current and voltage-wise," I added.

"Hey, take it easy, Unck. Your go-juice is getting away from you. Look, it's lunchtime and I could use some hamburgers. C'mon. I'm buyin'."

What, Hammy is offering to buy? Will miracles never cease?


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