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

FEEDBACK

AUGUST 2018

10th Annual Kansas QSO Party: August 25-26

Kansas hams will be the focus of extra attention in August during the 10th annual Kansas QSO Party [KSQP], running 9:00 to 9:00 Saturday, August 25 and 9:00 - 3:00, Sunday, August 26, 2018.

Kanas participants earn points for phone, CW and digital contacts made in Kansas, times a multiplier for states and Canadian provinces worked. Out-of-state participants earn points for contacts, times the number of Kansas counties worked. Operators compete for themed sweatshirts, t-shirts. Additionally, QSOers who spell Kansas-related words by collecting the suffixes of participating 1x1 hams will earn certificates.

Club members Jaimie Charlton, ADØAB, who will be one of the 1x1 operators, spoke to the club about the event. He invited Doug Tombaugh, N3DPT, to demonstrate the both ideal and realistic (misheard) contest exchanges.

Additional details are available on-line at www.ksqsoparty.org.

From right to left, Jaimie Charlton, ADØAB demonstrates the KSQP contest exchange with Doug Tombaugh, N3PDT. Herb Fiddick, NZØF, Ted Knowles, NØTEK and Jay Greenough, WJØX, assist with a audio and visual representation of a "pile-up". Photo by NØCVW.

JULY MEETINGS

***Aug 10** --Auxiliary Emergency Communication - Jay and Bill Gery, KA2FNK.*

***Aug 24** – Fldigi and flmsg - Herb Fiddick, NZØF and Bill. Gery, KA2FNK.*

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 SOIC ON YOUR LEFT.

IN THIS ISSUE

-> FEEDBACK <-

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

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* * *

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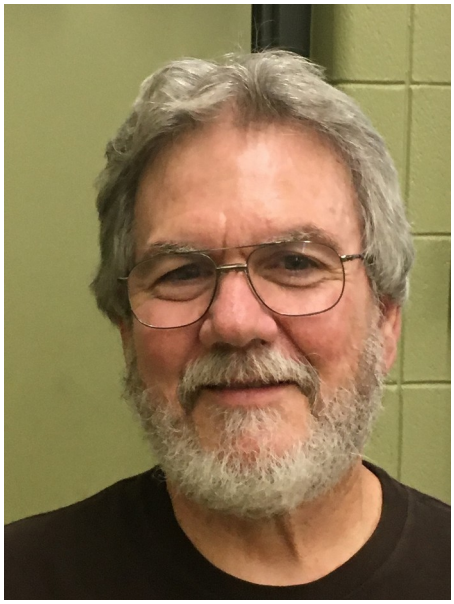
All email addresses are available at w0erh.org

Congratulations to JCRAC member, prolific author and technical wizard Tom Wheeler, NØGSG, (right) whose article "Power Gadgets from USB Sources with this Simple Switching Boost Supply" appears in the September 2018 QST.



Please welcome Jim Parsons, KEØPPE (left) who attended his first JCRAC meeting in July.

PRESIDENT'S CORNER

The public service season is in full swing. Many of the events could use your help. A few hours on a Saturday or Sunday in not a big commitment . Look at Larry's list a select at least one to support. What a better way to get to use your equipment.

Hamclass.org currently looking for persons desiring to get their Technician license. The dates are Aug 18 and 25. The class will be at the Johnson County Emergency Operation Center, 111 S Cherry Street, Olathe, KS. (Enter through the West door) Go the the web site hamclass.org to sign up.

The accident in my Jeep occurred a year ago. We were lucky no one was injured. The concern and offers of help I received from the Ham community shows how caring the Amateur Radio community is. Once again thank you . It was just last month that I installed the last piece of equipment from the 2013 Jeep into the new one.

The next big club event is the Ensor auction in October. Checking with Larry about the date, but October 26/27 are the dates being looked at. The Auction would be on Saturday the 27th.

Please look at your calendar and see if you can help with the Hawk 100 in Lawrence which is a 36 hour event on Sept 8 and 9 this year. We work this event in shifts starting Saturday morning at 6 am. The shifts are 6 am to 2 pm, 2pm to 10 pm, 10 pm to 6 am, and then 6 am to the end of the event.

– Bill Gery – WA2FNK

Johnson County Radio Amateurs Club - July 13, 2018

Meeting Date: Friday July 13, 2018. The meeting Started at 7:00PM.

Attendance: Self introduction with name and call sign. 26 signed the check in sheet. This was followed by the Pledge of Allegiance.

The Minutes from the June 8 and June 22, 2018 meeting were read and accepted with 1 opposed vote.

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

Cash on Hand	$ 158.00	Repeater Operating Reserve	$ 1,068.83
Checking Account	$ 769.75	Memorial Fund	$ 310.00
Savings Account	$ 9,426.03	Active Members	148
PayPal Account	$ 84.54		
Total	$ 10,438.32		

Old Business:

- We welcomed all 1st time visitors to the meeting.
- Repeater Update – All are working according to plan.
- Ensor Auction in October. Vince Sabia, KEØCGR will be in charge of the Raffle.
- WW1USA is September 29-30 and will be outside.
- Work on amending the By-Laws continues.

New Business:

- Ray Erlichman, K0RSE asked if there was any interest in a baseball cap with the Club's logo on in. A poll of the members at the meeting indicated a positive result. Ray will investigate and come back with more detail.
- Anyone wanting to be in the rotation for Net Control of Wednesday's night Digital Net please see Tom Wheeler, NØGSG or Doug Tombaugh, N3PDT.
- John Morse, NØEI asked about the possibility of moving both Nets from 8 pm to 7 pm.

Reports:

- 6 m – NR.
- 10 m SSB Roundtable – 3 participated.
- 40m SSB Roundtable – 4 participated including one from Ohio and one from Colorado.
- Fusion Digital 440 net – 19 Check-ins on July 11 and 11 Check-ins on July 4.
- 2m Wheat Shocker net – 11 Check-ins on July 12 and 10 Check-ins on July 5.
- HF Activity – Baker Island and Ireland on 20m Phone.

Announcements:

- Kansas QSO Party August 25 and 26.
- See Larry's List for upcoming Events.

Business meeting adjourned at 7:26 PM

Program:

- The Program for this evening was this year's Field Day video, Field Day Statists, and Field Day Phone Station Antenna Map and Pattern.

Submitted by Ted Knapp, NØTEK, Secretary.

Johnson County Radio Amateurs Club - July 27, 2018

Meeting Date: Friday July 27, 2018. The meeting Started at 7:00 PM.

Attendance: Self introduction with name and call sign. 26 signed the check in sheet. This was followed by the Pledge of Allegiance.

The Minutes from the July 13, 2018 meeting were read and accepted with 1 opposed vote.

The Treasurer's report was not available to read.

Old Business:

- We welcomed all 1st time visitors to the meeting.
- Repeater Update – All are working according to plan. After a meeting with the City of Shawnee over an expansion project at the 65th Street and Quivira Repeater location it was determined that our repeaters have a home at this location for a very long time. Also that will be put on a power supply line that is 120 volts (currently about 105 volts) and has back-up power supply. The Repeater at this location are the 442.600 MHz, 223.940 MHz, and 145.21 MHz.
- Ensor Auction in October. Donations are starting to come in.
- WW1USA is September 29-30. The Raytown ARC will be sponsoring this event and it will be outside.
- Work on amending the By-Laws continues.
- A report on the baseball cap with the Club's logo on in by Ray Erlichman, K0RSE and company will take place during the 1st or 2nd meeting in August.

New Business:

- We are considering the possibility of moving both Nets from 8 pm to 7 pm. Tom Wheeler, N0GSG will examine Net schedules to see if there are any conflicts.

Reports:

- 6 m – Active.
- 10 m SSB Roundtable – 6 participated including a station from Utah.
- 40m SSB Roundtable – 8 participated including one from East St. Louis, Tennessee, and Florida.
- Fusion Digital 440 net – 11 Check-ins on July 25 and 15 Check-ins on July 18.
- 2m Wheat Shocker net – 15 Check-ins on July 26 and 19 Check-ins on July 19.
- HF Activity – Usual contacts.

Announcements:

- Mid America Antique Radio Club Swap July 28.
- Hawk 100 September 8-9. See Bill Gery, KA2FNK to volunteer.
- See Larry's List for upcoming Events.

Business meeting adjourned at 7:27 PM

Program:

- The Program for this evening was a presentation on Kansas QSO Party by Jaimie Charlton, AD0AB.

Submitted by Ted Knapp, N0TEK, Secretary.

A Hambone Adventure - Jaimie Charlton, ADØAB

Hambone and the Lying S-Meter

Our story opens on a warm Saturday morning in eastern Kansas where we find Uncle Elmer in his ham shack admiring a Collins 75A-4 receiver he has lovingly restored. His ubiquitous coffee cup is nearby, but his mind is far away. He appears to be writing an article about his restoration for the Collins Collectors Association Newsletter. But his mind is fondly reliving days gone by when Collins was king and this receiver ruled.

Suddenly, Hambone and Dude burst in.

"Unck, Unck, you shoulda been at the club meeting last night! This guy from that software defined radio company was giving a presentation when…

Whoa!" shouted the boys in unison catching sight of their Uncle's project. "When did you get a new radio?"

"Eh, what happened at the club?" asked Elmer, groggily returning to reality.

"I've never seen a long skinny dial like that," exclaimed Dude ignoring his uncle's question.

"What happened at the club?" asked Elmer again, only louder.

"Feel how smooth this big knob turns," oozed Hambone. "And look, it even has a old-time S-meter up in the corner. Like the guy at the meeting wanted. Unck, is this a digital radio?"

"No, boys. It's not digital," said Elmer, partially returned to reality and chuckling at the boys' naiveté.

"This radio was born long before you guys were even a gleam in your daddy's eye. It was made back in 1957 by the Collins Company. In its day, Collins gear was the very top of the line in ham radio performance and had prices to match."

"Look at all those tubes, I bet they get warm." gushed Hambone peeking under the cover.

"There's 22 of them and they do get warm. So, what happened at the club?" said Elmer trying to get back to what the boys were so excited about a few minutes ago.

"Oh," said Hambone picking up the discussion where they left off. "The software defined radio guy was explaining the panadapter and showing how it reads out actual received signal power in dBm. He showed that the radio also has an S-meter, but said the dBm scale was much better."

"Then, this guy in the audience jumps up and starts casting shade on those comments," interrupted Dude.

"Who was it and what did he say?"

"It was one of the older guys, I think his name is Jamiel," said Hambone. "I guess he has a software defined radio and doesn't like the way the S-meter works. He said the S-meter is defective because it doesn't agree with his old analog radio's S-meter. Something about adding a preamp doesn't raise the S number like it should. Then another guy stood up and agreed with the first guy. The presenter tried to explain the difference, but the two guys kept interrupting.

I started to feel sorry for the presenter. But then, two more guys said the first guys were wrong and sided with the presenter.

Pretty soon everyone was ignoring the presenter and arguing with each other. The president finally ended the meeting, but the arguments continued even as we all went out for pizza."

"So, Hammy, what side were you on?" asked Elmer.

"Neither, I ate my pizza and went home. When I work contests I give everybody a 599 regardless of what they sound like. My logger auto-fills that value. When I'm working a DX station, the RST he gets depends how badly I want his QSL card."

"I'm not a ham and I don't have a side either," added Dude. "But, I'd like to know why the S-meter is a big deal."

"It's one of those things that has been not quite right for a long time. But it became so ingrained in many hams' understanding of how radios work that it is now considered gospel by some," sighed Elmer.

"So Unck, what's the real story?"

"Back a long time ago, radio reports were considered valuable because everything was new and we were still trying to understand how radios performed. We cherished our RST -

see HAMBONE on page 6

from HAMBONE on page 5

Readability Signal and Tone reports. But they were purely subjective, we just guessed at the numbers.

So, Collins, this company," said Elmer, smiling at his receiver, "added some objectivity to the reports by standardizing the S part of RST and adding an S-meter to their equipment."

"Collins engineers suggested that a received signal power, as measured at the receiver's antenna terminals, of –127dBm should correspond to a reading of S0. They also suggested that each higher S unit should correspond to a 6dB increase in signal strength."

"Does that mean that a reading of S1 indicates that the signal strength is –121dBm and S2 means –115dBm?" asked Dude.

"It does. The units go all the way up to S9 which corresponds to –73dBm. After that, they go up in 10dB increments. That's why you sometimes hear, 'You're booming in at S9+20,' when your signal is very strong. That reading corresponds to a signal strength of –53dBm at the receiver's antenna terminals."

"I see why everyone likes S units better than those dBms. It's a lot easier to tell someone they're S9 than to say they're -73dBm. But, what exactly does a –73dBm signal mean, anyway?"

"Hammy, I guess you really have forgotten a lot over summer vacation. Try to remember what a dB, or decibel, really is. It's a ratio measurement. That is, it's a way of saying how much stronger, or weaker one signal is relative to another and is designed to cover a very wide range."

"Unck, I never really understood how dBs work. It has something to do with three dB meaning something has doubled, doesn't it?" admitted Hambone.

"That's a start," continued Elmer. "If a signal's strength doubles, we say it has *increased* by three dB. We don't say how strong it actually was, or is, in watts, we just say how the signal changed. Additionally, if the signal's strength dropped to half of its original value, we would say it *decreased* by three dB.

For example, say you are listening to a station that is transmitting five watts. If that station raises his transmitter power to ten watts, all other things being equal, you would see his signal increase by three dB."

"Okay Unck, I think I get it, adding three dB means adding five watts."

"Nope, Hammy, you're not listening," snapped Elmer. "Measurements in dB always express the change in a signal. Adding three dB simply means the signal doubled in strength. If the distant station had started transmitting 1000 watts and then raised its power to 2000 watts, the increase would still be three dB. The three dB change simply means the signal doubled."

"Then, why did the SDR guy talk like his dB scale was measuring actual signal strength?" asked Dude.

"That's where the 'm' in dBm comes in. It means *relative to a milliwatt*. By saying that an incoming signal's strength is -3dBm, you are saying that it is providing one-half a milliwatt at your antenna terminals. The –3 means the signal is one-half of the reference which is one milliwatt."

Looking up from playing with the scientific calculator app on his phone, Hambone observed, "That means that even an S9 signal really has very little power."

"True. An S9, or –73dBm, signal is really only 50 picowatts at the antenna terminals. That's 0.000000000050 watts. Since your receiver converts that signal to one or two watts of audio, it gives you an idea how much amplification the receiver has."

"That's nice, Unck, but this here manual for your Yaesu radio specifies its sensitivity in microvolts, not dBm," countered Dude.

"It's just two ways of saying the same thing. The input impedance of the transceiver is 50 ohms. According to Ohm's Law, a -73dBm, or 50 picowatt, signal will cause a voltage drop of 50 microvolts to appear across that 50 ohm impedance and the S-meter will read S9."

"Okay Unck, if the radio manufacturer uses microvolts in its specifications, why bother with all this other stuff?" persisted Dude.

"Basically, using microvolts is a cop-out. It's easy to measure 50 microvolts, but it's difficult to measure 50 picowatts, especially at RF frequencies. Just remember, transmitters transmit power, radio waves carry power and antennas receive power and you'll never go wrong." With that, Elmer put down his pen and took a long gulp from his mug.

see HAMBONE on page 7

from HAMBONE on page 6

"It seems reasonable to me. Why were those guys getting all excited at the club meeting?" asked Hammy as he tried change the subject to something more interesting.

Refreshed, Elmer continued. "At first, some hams wanted different calibrations, but Collins was king and their recommendations won the day. Other manufacturers began adding S-meters and calibrated them to the Collins suggestions. Everything seemed to be going well."

"And then…?" asked Hambone.

"Then, some manufacturers began finding easier ways, than actually measuring the signal strength, to drive an S-meter and accuracy began to suffer.

The most popular way was, and is, to display the receiver's Automatic Gain Control, or AGC, voltage on a meter calibrated in S units. The stronger the incoming signal, the higher that voltage becomes."

"I don't see the problem," said Dude.

"There isn't one, as long as the manufacturer compensates for the nonlinearity of that voltage. Some manufacturers do and some don't. But, the biggest problem comes with preamps.

Adding a preamp to a receiver does not increase the signal strength at the antenna terminals. But, it does increase the AGC voltage and makes the S-meter read higher. It makes the signal sound louder, too. So, it probably increases the readability," mused Elmer. "But not the signal strength."

"Okay," said Hambone. "Let's say I'm receiving a signal whose strength at my antenna terminals is –109dBm which corresponds to a signal strength of S3 and maybe a readability of R2.

Since I am having a hard time understanding the guy, I turn on my preamp which adds 12 dB gain to my receiver. That makes him sound louder so the readability number becomes R3, but his signal isn't any stronger. Yet, my S-meter now reads S5."

"You got it, Hammy," said Elmer. By adding a 12dB preamp, you've artificially raised your S-meter reading by two S units. The signal strength at your receiver's antenna terminals hasn't changed because it depends on your antenna system, not your receiver."

"I still don't see why there was such a fuss at the meeting," said Dude.

"It's a matter of pride," continued Elmer. "The S-meters being somewhat inaccurate and the readings being artificially raised by switching in preamps make everybody happy. The guy at the far end is happy to get that inflated S-reading because it shows that his little rig is putting out a great signal. The guy at the receiving end is happy because he is proud that his receiver (with the preamp on) can show such a high S reading from a station so far away. Both ends are delusional, but happy."

"So Unck," asked Dude, sarcastically, "You're saying that some hams would prefer praise to information?"

"Oh, absolutely! Telling some hams that their signal is anything other than S9 is akin to saying that their wife is ugly and their kid is fat. But it gets worse.

"How?"

"Better receivers," continued Elmer speaking in full professorial mode.

"Back in the day, S0 being equal to -127dBm was a good minimum because that was about the weakest signal a high quality receiver could detect, but not now. Modern receivers can detect signals lower than –140dBm. That means a weak, but readable, signal of –133dBm would show a *minus* S1 on the S-meter if the original Collins recommendation were followed. That would be like telling someone their signal is weaker than no signal at all, but still readable. It makes no sense."

"That's interesting, Unck. But why the attack on the SDR guy's explanation?" asked Hambone.

"Well, in the case of the guy who was complaining, I suspect that his S-meter is set to show S0 when the signal is much lower than -127dBm."

"But he should like that, shouldn't he?" asked Dude. "All the signals will seem much stronger than on his old radio."

"They will, but the S-meter on his SDR now shows low level noise as around S1 to S3. He calls that a defect in the receiver because it gives a reading when no signal is present. He doesn't realize that noise is an energy source his receiver hears just as well as a signal and its more sensitive meter shows it."

"So, you're sorta saying that S-meters in newer transceivers aren't very useful?" asked Dude, edging his way towards the door.

"Oh no, not at all! They're great for a quick comparison between two signals. Just don't read too

		much into them. The boys at Collins did hams a great service by defining the S-meter and it has served them well for over fifty years," said Elmer as he softly stroked his 75A-4. "Those were the days. We didn't have these petty conflicts, everyone was only interested in learning about radio and this little beauty led the way." "Ah, we'd better go, Unck," said Hambone as he and Dude made a dash for the door. "Hammy, did Unck hug that old radio?" "Yeah, I thought he was going to kiss it. We'd better leave them alone."