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

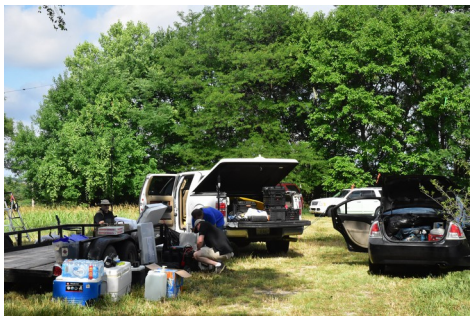
FEEDBACK

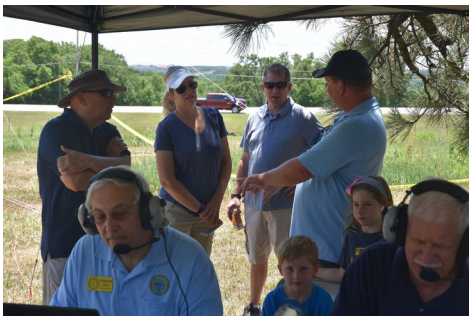
JULY 2018

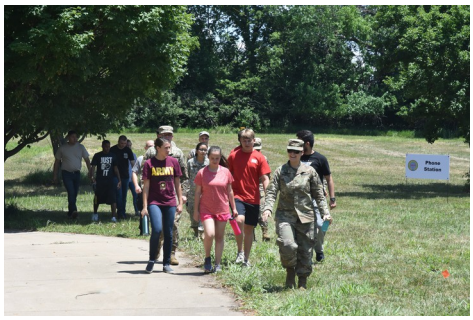
Field Day: June 23-24, 2018 (and June 24-25, 2017)

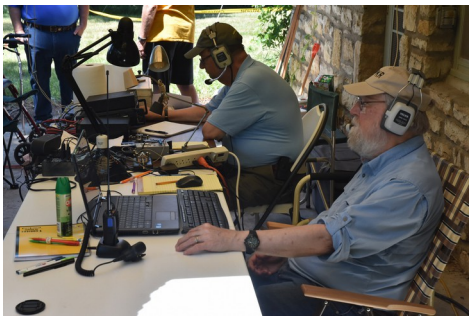
	CW	Digital	Phone
Total QSOs	528(412)	266(215)	1873(1788)
QSO Points	1056(824)	532(403)	1873(1788)

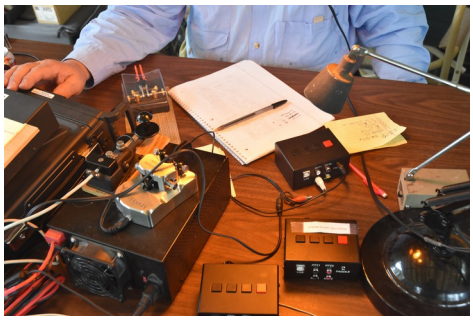
Claimed Score = 6,922 (6,084)











Page 1 photos by Charlie Van Way, NØCVW

JULY MEETINGS

***July 13** -- TBA*
***July 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.

IN THIS ISSUE

1 - Field Day Results
2 - President's Corner
3 - June Meeting Minutes
4 - Hambone Tames the 80-Meter Beast - A Hambone Story - Jaimie Charlton, ADØAB
6- Radio Operators Co-ordinate Thai Cave Rescue
Throughout - Field Day Photos

-> 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

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.

Which is precisely what your Editor said at this point last year.

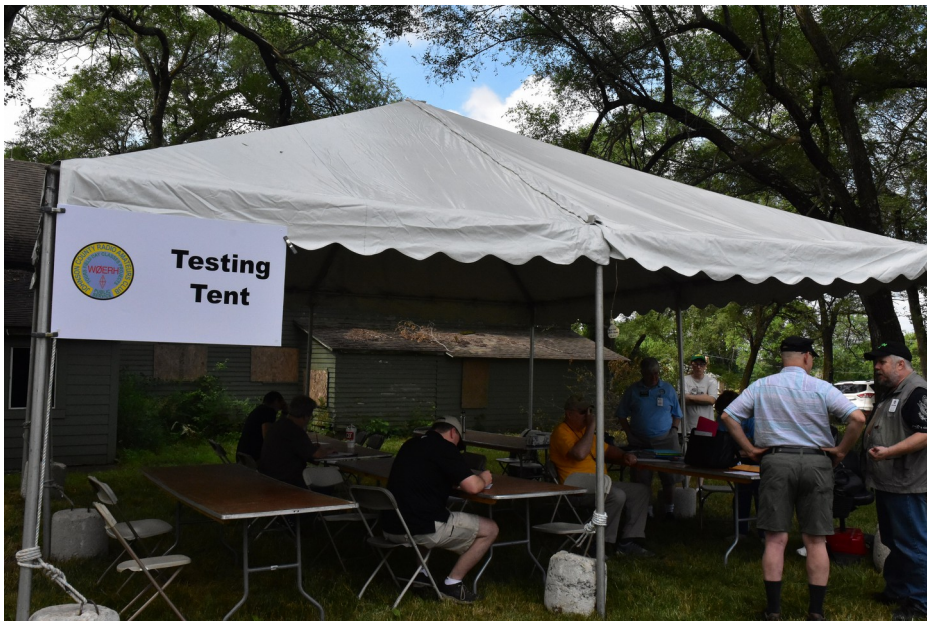


Photo by Charlie Van Way, NØCVW

Incidentally, did you know that if you attach a perfect 50 ohm coax to a perfect 50 ohm antenna, you might not get a 1:1 SWR? The SWR will stray from 1:1 if the antenna's impedance includes a reacive component. For example, Zant = 30+j40 ohms = 50 ohms and SWR = 3:1. If someone asks, now you know.

PRESIDENT'S CORNER

Field Day 2018 is now in the log. By all accounts, everyone had a great time.

As always,many people put in extra effort to make Field Day a success. It was great to see Keith and Barbara and have them with us for Field Day Coordinator Jay (WJØX) was outstanding. He was on edge about the arrival of the tents Friday, but they were there when needed. Bill (KC4TKL) and the improved power for the network logging system worked flawlessly. The entire network was solar powered. No worry that someone would fail to keep the generator fueled like last year. The solar phone stations, the logging network, the welcome tent talk-in and the NTS messaging stations all used the solar system.

Coach Brian (KCØBS) explained amateur radio capability to standing room crowds in the Salvation Army communicaiton vehicle. Norma and her testing team were positioned qualified two new technicians, a general and an extra at the testing tent.

The National Guard visited us again and a few made contacts using the GOTA station.

Gerard Jebaily (WX4STM) from channel 41 dropped by again this year. He visited the phone stations and showed off a drone and the 41 jeep.

The Salvation Army set up one of the its canteens and served snacks and drinks Saturday.

A little rain occurred Friday night and some more as we were breaking down were the only thing that dampened the weather. No oppressive temperatures Saturday or Sunday.

– Bill Gery – WA2FNK

Johnson County Radio Amateurs Club - June 8, 2018

Meeting Date: Friday June 8, 2018. The meeting started at 7:00PM.

Attendance: Self introduction with name and call sign. 34 signed the check in sheet. This was followed by the Pledge of Allegiance.

The Minutes from the May 25, 2018 meeting were read and accepted with 1 opposed vote.

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

Cash on Hand	$ 118.00	Repeater Operating Reserve	$ 1,040.83
Checking Account	$ 745.70	Memorial Fund	$ 310.00
Savings Account	$ 9,926.03	Active Members	147
PayPal Account	$ 23.00		
Total	$ 10,812.73		

Old Business:

- We welcomed all 1st time visitors to the meeting.
- Repeater Update – All are working according to plan.
- Ensor Auction in October.
- Joel Meddings, K0JEM announced that he is putting the General Class on hold due to his schedule. Look for the class later this fall.
- The Club leadership along with John Raydo, K0IZ are working on amending the By-Laws. The amendments will be to the reading of the minutes, meeting time, and how the president appoints committees. More detail to follow.

New Business:

- For more than 10 years at Field Day the club uses software written by N3FJP (Scott Davis) to log contacts at all stations. While the club long ago paid for a lifetime License for the use of his ARRL Field Day software, Scott faithfully puts out updates each year ensuring the software is ready for Field Day. In recognition of his faithful and valuable service to our Club and to all the Hams worldwide, Bill Warrington KC4TKL, made the motion that a donation be sent in the Club's name to N3FJP along with our sincere thanks. After a short discussion the amount of $50 was added to the motion. A vote was taken and passed unanimously.

Reports:

- 6 m – FT8 on 6m 50.313 MHz.
- 10 m SSB Roundtable – 1 participated.
- 40m SSB Roundtable – NR.
- Fusion Digital 440 net – 6 Check-ins on June 6 and 18 Check-ins on May 30.
- 2m Wheat Shocker net – 14 Check-ins on June 7 and 23 Check-ins on May 31.
- HF Activity – Slovenia 20m SSB, Denmark, Bulgaria, Czech Republic on 20m CW.

Announcements:

- See Larry's List for upcoming Events.

Business meeting adjourned at 7:40 PM

Program:

- The Program for this evening was the final Field Day run through by the station captains.

Johnson County Radio Amateurs Club - June 22, 2018

Meeting Date: Friday June 22, 2018. The meeting started at 7:00 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 Needs More VSWR

"Boy, Unck, some of my frat brothers sure can be mean," said Hambone as he sipped a cool soda in his uncle Elmer's ham shack on a hot Kansas summer afternoon.

"How do you mean?"

"You remember Baaron, don't you?"

"I think so. He's that really smart kid who transferred to the University of Missouri, isn't he?"

"That's right, Unck. He transferred, but he's still one of our frat brothers and he came to visit last week. He'd been to a hamfest and bought a new wire antenna he wanted to show us. It's really short, but the guy who sold it said it is especially designed to work on 80 and 40 meters. He said the wide band operation was due to the two special matching devices installed partly along the elements and the coax/window line combination that is also its feed line.

It seemed like a good deal because it came with everything. It's ready to go.

Baaron knows we don't have a lot of space at the frat house, so he thought we could use it."

"That's pretty nice of Baaron," observed Elmer. "So, what's the problem?"

We strung it up between those two trees behind the house and the combination of window line and the special matching coax worked out to be just about the right length to reach into our shack. That was lucky because Baaron said the guy said not to change or cut the coax or the window line."

"And…" said Elmer, losing patience and feeling the need for another cup of coffee in spite of the heat.

"The antenna loaded up beautifully, very low VSWR – less than 2:1 - across both bands and even between the bands. We could hear a few stations, but it seems they couldn't hear us. Only the really strong ones came back when we called with CW and they only gave us 559 and worse."

"Hmm," said Elmer, sensing a teaching moment. "What did you and buddies think was wrong?"

"Everybody had ideas. Some guys said the trees were the problem, others said the transmitter wasn't putting out and still others suggested it was a receive-only antenna. We tried re-hanging it and re-tuning the transmitter, but nothing helped."

"So, Hammy, what do you think is the problem?"

"I really don't know, Unck. But I made what has turned out to be a really bad suggestion. I suggested we take the antenna to Professor Flask at school. We are all taking his extra-credit Practical Radio class so we know he's there."

"Erlenmeyer Flask is a good friend of mine. I bet that's a fun class."

"Well, it was. Before this. We showed him the antenna and the readings we got. He took one look at it and said that it would be a good class project. Right then and there he assigned us the job of finding out what was wrong and creating an engineering report for presentation in the regular telecommunications class in the fall."

"So, what's the problem?"

"Unck! The assignment, that's the problem!" shouted Hambone. "Everybody was taking the class for an easy extra credit "A". Now we actually have to do something. Everybody's blaming me for ruining their summer!"

"Did Erly, that's what his friends call him, give you any hints or ideas what might be the problem with you antenna?"

"No, Unck, not really. He did say something about the VSWR being too low, but that makes no sense. Then he put the antenna back in its box and said he had other work to do. Kind of cold, if you ask me."

Well, Hammy," sighed Elmer. "I don't know what the problem is, but he gave you a really good hint. Rather than whine about summer being ruined, you might consider this a real-world problem that you and the guys must solve. This is the sort of thing you'll be facing when you finally graduate as real engineers."

"Easy for you to say, Unck. But none of us even knows how to start," moaned Hambone.

see HAMBONE on page 5

from HAMBONE on page 4

"Since you don't have much in the way of test equipment, you might start by replacing each part, one piece at a time, and see what happens. For example, replace the coax and make detailed notes of what changes. Then replace the window line and the rest until you've replaced every part and noted the effect on performance. Pretty soon you'll have found the problem and you'll have written your report.

But remember, do every part. Even a piece of wire can have a hidden break under the insulation and an insulator can be leaky."

"Well, okay," said Hambone as he scooped up the antenna and slouched towards the door. "I was hoping you would help us."

"I just did. If I did the work for you, Erly would have to give me the credit and I don't need it. I graduated long ago."

**** Later in the week ****

"Unck!" shouted Hambone as he and his frat brothers, Baaron and Jody, burst into his uncle's hamshack. "We found the problems with the antenna!"

"That's great!" replied Elmer. What did you find?"

"First, we replaced the coax and suddenly the VSWR changed as we changed frequencies and sometimes went up to over 4:1. We had to use a tuner, but we started to make contacts!" We didn't stop there, though."

"We checked out the "special matching devices" on the dipole wires and found that they were nothing more than a small ferrite bead inside a piece of plastic pipe. We took them out and nothing really changed," added Baaron.

"Next, we removed the coax and connected the window line directly to the tuner," said Hambone as he displayed their drawings and notes.

"The VSWR went up a little more, but the tuner handled it. Now we could hear better and lots of stations answered our CQs. The only problem was that we had a lot of RF in the shack. But I solved that!" added Jody, proudly.

"How did you do that?" asked Elmer enjoying the boys' enthusiasm over making their discoveries.

"Simple," continued Jody. "I hooked up a balun to convert the balanced window line to coax before connecting it to the tuner. At first, we just stuffed one wire from the window line into the coax connector's center hole and tied the other side to the tuner's ground. It sort of worked, but gave a lot of RF in the shack. The balun fixed that."

"That's great!" said Elmer matching the boys' excitement. "You all did really good engineering work. But, do you know why your changes worked?"

"Well, the ferrite beads did nothing so removing them didn't change anything. And Jody's balun did a great job of getting rid of the RF in the shack. But I'd like to know why removing the coax made such a big improvement and why the higher the VSWR got the better the antenna worked," said Baaron.

"Yeah, I always thought that low VSWR was the sign of a good antenna," said Hambone. "And I still don't get Professor Flask's comment that we didn't have enough SWR."

"Here's the whole story, began Elmer. "The low VSWR across a very wide range of frequencies was the hint that something was wrong. I'm sure Professor Flask saw that from your data.

Normally, VSWR tells us how well the input impedance of the antenna matches the characteristic resistance of the feed line. Since the feed line is usually 50 ohms, that means the antenna's impedance must also be 50 ohms *resistive* to get a VSWR of 1:1.

There's nothing special about 50 ohms other than it is a common coax impedance. Other impedances exist, but 50 ohms is the most popular. But the resistive part of the impedance is special.

The input impedance of a simple antenna – like yours - becomes purely resistive only at its lowest resonant frequency and certain higher multiples of that frequency. Otherwise, its impedance is a combination of resistance and either capacitive or inductive reactance."

"Unck, I get it!" shouted Hambone. "Since the antenna could only match the coax at certain frequencies, it would be impossible for the VSWR to be evenly low across a wide band of frequencies. The VSWR should have gone up and down as we tuned around, but it didn't. It stayed low."

"That's why Professor Flask said the VSWR was too low," added Baaron. "But what was keeping it low?"

"Line loss," continued Elmer. "Any loss that reduces the power going to the antenna or the power reflected by a mismatched antenna and

see HAMBONE on page 6

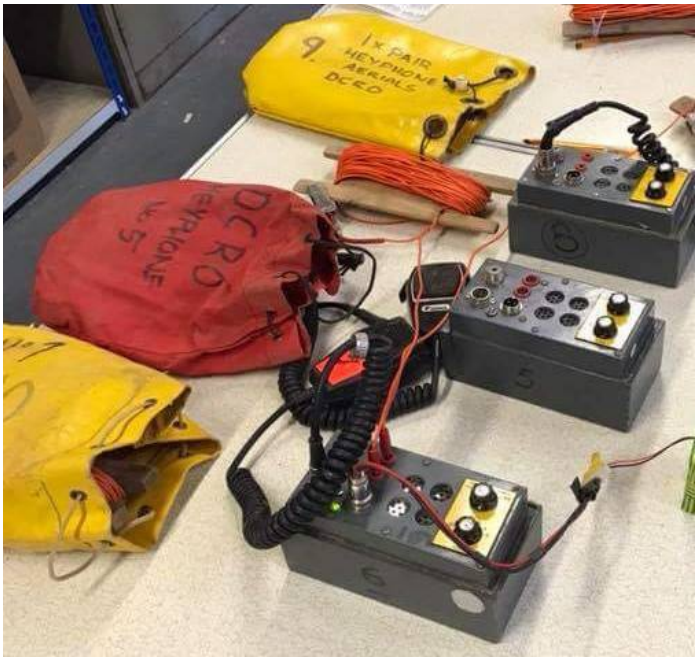
Radio Operators Co-ordinate Thai Cave Rescue

You've doubtlessly heard of the spectacular rescue of the spelunking Thai football team. Radio's role in the rescue gets less attention.

Amit Katwala reported on wired.co.uk that above the ground, seventeen radios of Israeli design built an ad hoc mesh network. Below ground, divers from the British Cave Rescue Council used HeyPhones to communicate with the surface.

The HeyPhone, designed by John Hey, G3TDZ, SK, uses upper side band at 87 kHz to penetrade deep into the ground using either induction loop antennas or electrodes injecting RF energy directly into the ground.

Each of the HeyPhones pictured to the right is a two-box radio. The lower waterproof box holds most of the electronics. A cable connects the electronics to the sockets and controls in the top box.



Heyphones - photo by Pete Dell - courtesy xray-mag.com

from HAMBONE on page 5

makes the VSWR appear lower. The loss could be due to loose or corroded connections, poor coils or even damaged wire. But in your case, it was caused by very lossy coax.

Removing the coax didn't raise the SWR, it just revealed it. The high VSWR you measured after removing the coax was caused by a mismatch between the antenna – which is really a short dipole - and the window line. Since the window line has very low loss, it did not significantly reduce the apparent VSWR.

I think you boys now have yourselves a pretty good antenna."

"Thank Goodness," said Baaron. "For a while I thought I'd bought a lemon."

"But Unck, if a high VSWR doesn't affect how well an antenna sends or receives, why does my transceiver shut down when the VSWR gets even a little over 2:1?" asked Hambone.

"Good question, Hammy. Nearly all modern transceivers and RF amps have transistors in their output stage. While these devices work great, they are sensitive to over-voltage. The reflected power that's causing the high VSWR appears to these output transistors as extra voltage. If it gets too high, they burn out. That's why most manufacturers specify a VSWR of 2:1 or less."

****Another week has gone by and the boys just received their class project back and are looking at their grade.****

"WOW! Look at that!" exclaimed Jody. "Everybody got an A!"

"That should get the guys off my back," said Hambone breathing a sigh of relief. I guess Prof. Erly Flask isn't such a hard nose after all."

"Look," Baaron said pointing to the last page of the boys' report. "He wrote us a note."

Hambone,

Please say hi to your uncle ;-}

Regards,

E. Flask

"And there's another note on the back," said Jody. "It's addressed to the readers."

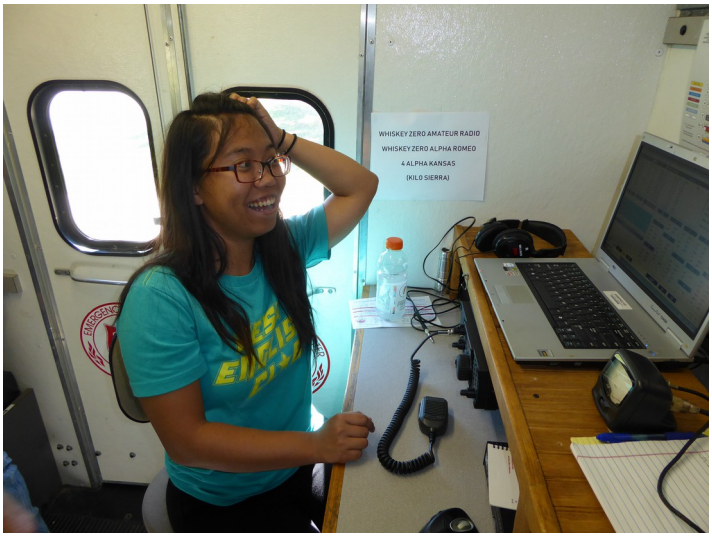
Dear Readers,

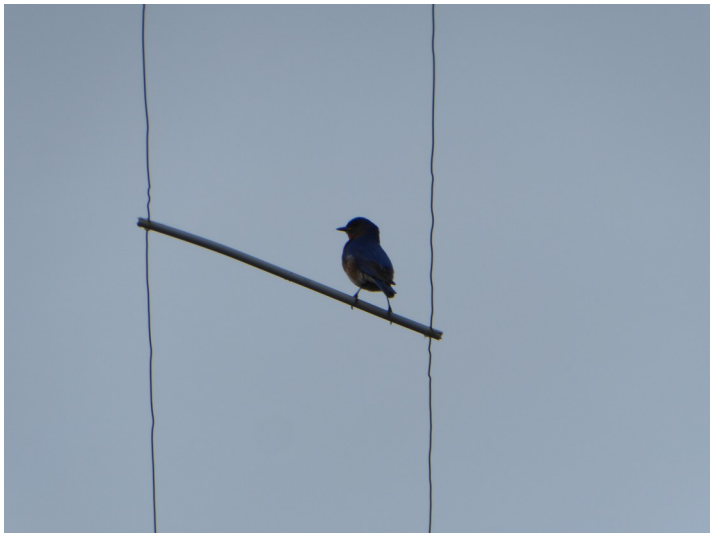
As the boys continued their investigation of the new antenna, they found they could trim it so the impedance meter on their antenna analyzer showed a perfect 50 ohms input impedance. Yet, when they connected the antenna with RG-8X fifty-ohm coax to their transceiver, the SWR meter showed a high SWR.

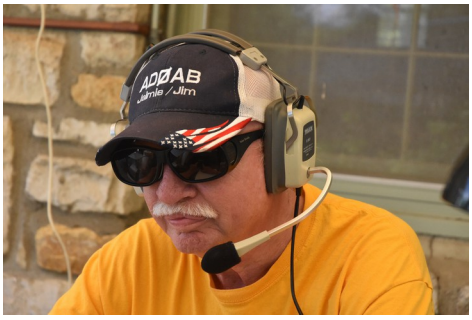
Is this possible or, are they just seeing measurement errors? What would you advise them?

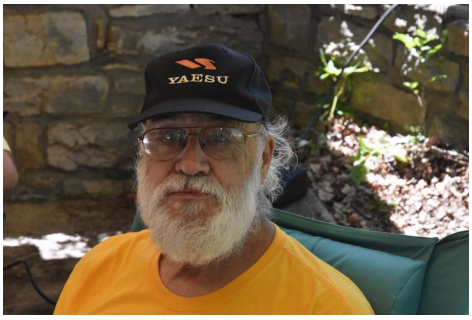
Sincerely,

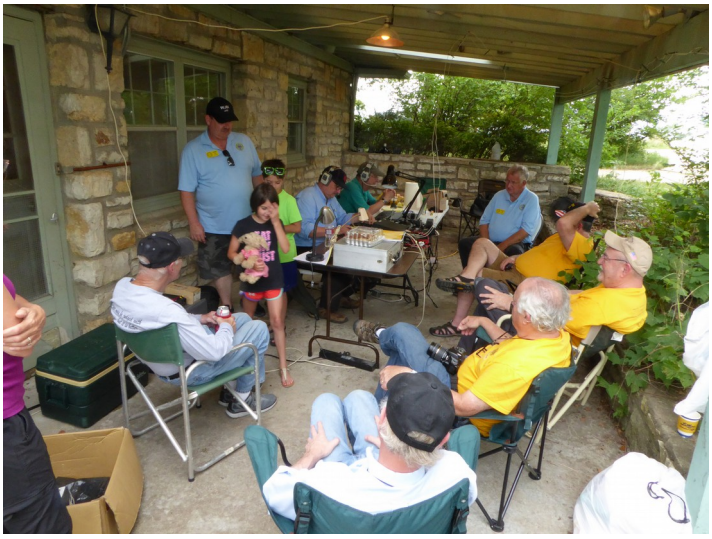
Professor E. Flask

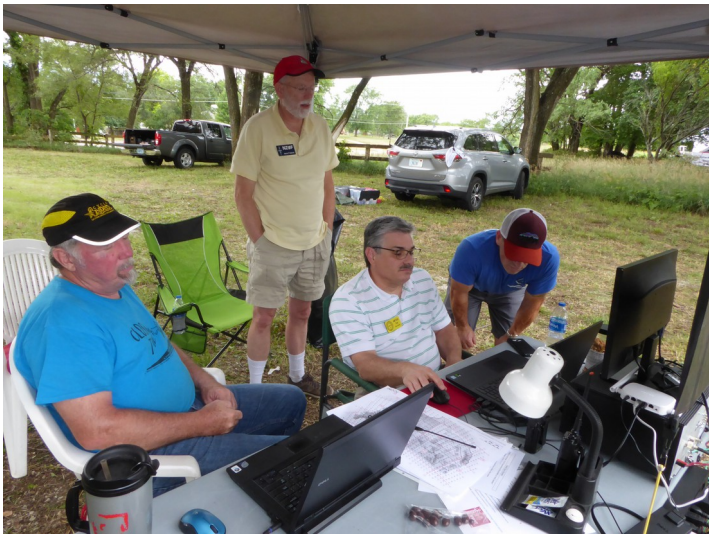


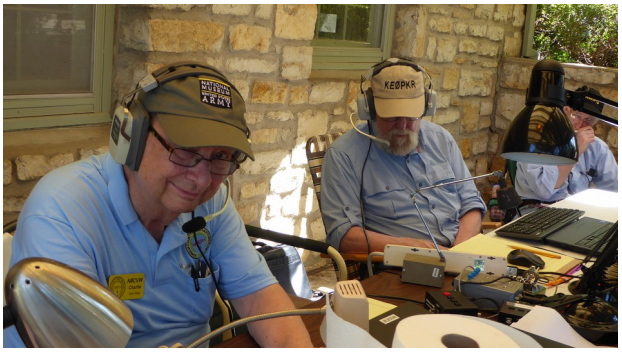


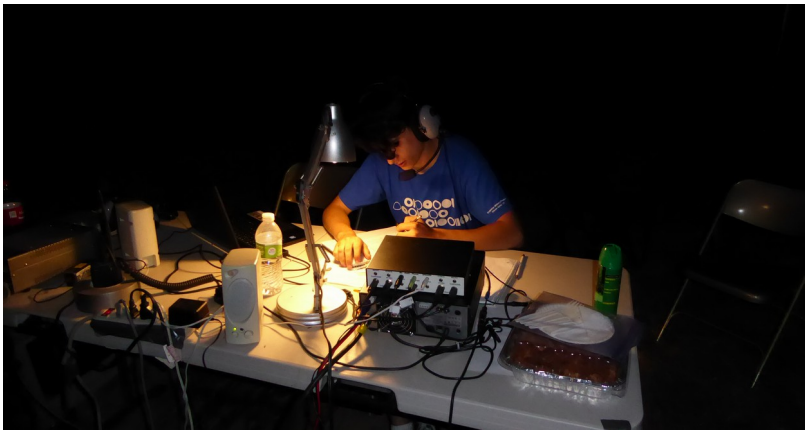












"Triplets" by NØCVW. Others by KØIZ.