SARC
Schaumburg Amateur Radio Club

RHG December 2020
K9KQX – Latest Go Box Case

Latest Go Box Case – By Mike Sorensen K9KQX

Since getting my ticket a few years back, I've dabbled a little with go box cases. Many of you saw the wood box I created for my IC-7300. That was my actual shack in the house as I used to set up next to end table by the couch. Since then I have a real desk at home and traded the original go box.

Well this past summer I picked up a FT-450D from a SK and decided that I'd try another go box. This time with a shallow depth 4U high Gator box. I wanted it to be reasonable small, but robust to handle in shipment.

One of my design goals with this setup was a self-contained HF setup, with the computer and monitor in the case somehow. Ideally all everything but the antenna would fit in the case.

So, to start with, using an FT-450d has its good and bad points. The good points being a decent ATU, bright display, and good contrasting text on the front panel controls.   The bad points are no panadapter, and probably the biggest draw back on space consideration is the lack of a USB interface for digital modes. Because of that I needed to use a Signalink which eats up room in the case.

I purchased two metal shelves about 10 inches deep and mounted the 450D and Signalink on the bottom shelf. The top shelf is a power supply and my homebuilt Magnetic loop stepper motor controller. This would allow band changes without having to get up and mess with the loop.

Below if notice I have LED lighting tape strip mounted on the upper shelf to light up the lower section to read the display easier. This will also provide lighting at night to write on paper. I got this from Menards, and these lights when run off DC don't generate any RFI.

Next, I wanted the ability to run either off batteries or 120v, so I add at Samlex battery backup module(BBM-1225) This neat little device will charge a 12v lead acid battery from the Samlex 12v power supply. If the power supply is off, the battery will take over without any cable changes.

There're also some Anderson power pole distribution blocks in the back to hook things up neatly, but allow for easy changes if needed. That panel on the back is a 2U server rack blanking panel. I installed the power switch and power poles on the back to hook up the battery and to power an external device easily.

Finally, I had a strong desire to integrate a computer in the unit somehow.

Reason were the following:

1. I did not want to take my laptop outside.

2. Desired to have a GPS receiver for a time source from satellites, thus no internet needed for accurate FT8 time source. Accurate time is needed for FT8, and helpful for loggin

3. Wanted something low power that would run directly off of 12v, thus making it easy to run off a car battery

4. Wanted computer integrated to keep the rats nest of wires to a minimum or well hidden.

5. Self-contained go box that is 100% ready, just grab and go, and don't forget the antenna

I purchased the following for the computer setup

1. 12" 1920×1080 HDMI monitor from ebay(TOGUARD 12" HDMI HD display)

2. Raspberry Pi4 Model B 4GB ram Adafruit PID 4269

3. Zero2Go Omini Multi Channel Power supply Adafruit PID 4114

4. Adafruit Ultimate GPS breakout ver 3 Adafruit PID 746

5. Aluminum Metal Heatsink Raspberry pi 4 Case Adafruit PID 4341

6. Qty 1 Stacking Header extra long Adafruit PID 1979

7. Qty 1 Stacking Header standard Adafruit PID 4079

8. 12"x24" 1/8" textured plastic sheet Parts-express Part 265-948

9. 16gb MicroSD card, from anywhere

10. Micro HDMI to HDMI cable less then 3 foot long is good enough(I got mine off of Amazon)

I chose to hinge the front cover, and use the textured plastic as a bezal to mount the monitor, Pi and GPS receiver. You can cut that plastic with a jigsaw or band saw, and then a sander to round the corners.   The cutout for the monitor I did with a Dremel.   Monitor mounted from the front, and yes if you look at that sloppy job its hot glue around the monitor. I couldn't come up with any fancy way to attach it.

Basic High level procedures for setting up the Pi with the GPS receiver

1. Download the latest raspberry pi OS image from raspberrypi.org

2. Follow instructions to image a microSD card and install it in the computer

3. Connect the monitor and Pi and keyboard temporarily on a desk to get working

4. Learn how to run updates on OS from above raspberrypi.org tutorials online

5. Install Zero2Go DC power supply, this converts 12v down to 5 volts, **read notes below on this further down**

6. Install GPS receiver and take a look at some general instructions on setting up the Pi as a NTP time server here below. Just read the instructions after the initial raspberry pi image part https://github.com/TinajaLabs/ansible-role-ntp-gps/blob/master/README.md   There are other examples out there, and this is where I'll leave it open for others to research as there might be better ways.

Zero2Go board install notes.

This board in theory should be easy to setup, but using a Pi4 creates some headaches due to new OS versions of software. Go to there website for details, but even then you may run into

issues. There are configuration step to install there software so that you can configure the board to boot the pi up when power is applied, or to remain off and requiring you to push a button on the right side of the board.   Since I don't have access to the button, I needed to install there software to change the setting.

Unfortunately, after installing the software, and making the change to boot up at power on, caused some issues after the first reboot.   The zero2go board would constantly reboot the pi after login if I was connected only by 12v. If I use the pi USB power supply, it wouldn't do that. I tried everything and decided to just remove there software so it wouldn't start up at boot. This stopped the reboot, and the card remembers my changes, so next time it will continue to boot up when power is applied.

So basically, install the software, change the settings to the zero2go card to have it boot when power is applied, and uninstall the software.

Conclusion

Overall, I was impressed at the performance of the Pi 4 in this use case. FT8 is CPU intensive and generally doesn't decode fast enough on a Pi3. On a Pi 4 its usable. I found that it would decode a good 8 to 10 signal quickly and then another 5 to 6 a bit past the starting time for the next transmission. That's not ideal since the timing would be off when you responded to a QSO. But the stronger, easily decoded signals popped up fast and it was able to transmit on time.

Using FLRig control was fairly easy to setup. I was using a usb to serial cable for the FT450D, and had to determine what comm port to use in Linux

Setting up the Signalink was a bit more of headache. Mostly the pain was self induced. The internal jumpers on my signalink are loose from changing it up on many rigs over the years. I fought that for a while until I finally just used a new dip socket to fix the problem. After that, it worked just fine.

Future plans, I'd like to shoehorn a 2m/440 rig in there but that signalink and speaker is in the way. I might relocate the speaker to the right of the monitor, and I may permanently modify

the signal link up near the monitor too. I just have to extend the 3 volume controls to the front with some wire. Sort of a remote head Signalink.

Key ham radio apps installed

- FLrig – Rig control

- FLDigi – PSK31 and related digital/CW modes

- WSJT-x FT8/JT65 and related

- CQRLog Logging program

- PiGate, a Winlink version for Linux for email over HF

- And a variety of other apps to long to mention here.

Below is WSJT-X with FLDigi running on the right. Yes this is a small screen, your gonna need reading glasses, but it works ?

No planned NETS for Christmas Eve or New Year's Eve.

Please note that the weekly club nets **will not be held** on the following dates:

Christmas Eve – Thursday December 24th, 2020
New Year's Eve – Thursday December 31st, 2020

Wishing everyone all the best for the holidays, and 2021.

Mike, K9KMV

Results Announced! "Field Day Is Not A Contest"

Back in the summer, the Schaumburg Amateur Radio Club added a little competitive edge to Field Day 2020, by organizing a competition for it's members and awarding financial prizes in several different categories:

1st Place $50
2nd Place $25
3rd Place $15

Here are the official results, which have now been certified by the Board. Congratulations to the winners!

SARC FD Contest Winners V2

Name	Call	Power Level	CW	Phone	Digital
Bob McIntyre	W9DXR	Low	173		

Name	Call	Power Level	CW	Phone	Digital
Daryl Jenks	KB9RHR	Low			98
Dennis White	KC0NZP	Low		67	
Dirk Smith	W0RI	Low		43	
Geoff Stevens	KA9QGH	Low	216	19	
Jack McClurkin	W9YY	Low	246		
John Martin	K9JDM	Low		14	44
Kent Ochs	W9KAO	Low		22	102
Mike Griffiths	K9KMV	QRP		41	
Richard Dickens	KY0Q	QRP	424		
Rob Glowacki	N9MVO	QRP	55		

Name	Call	Power Level	CW	Phone	Digital
Robert Kocourek	W9RKK	Low		22	

Contest Winners

CW Low Power	Call	Name	Score
1st	W9YY	Jack McClurkin	246
2nd	KA9QGH	Geoff Stevens	216
3rd	W9DXR	Bob McIntyre	173

CW QRP	Call	Name	Score
1st	KY0Q	Richard Dickens	424
2nd	N9MVO	Rob Glowacki	55
3rd			

Name	Call	Power Level	CW	Phone	Digital

Voice Low Power	Call	Name	Score
1st	KC0NZP	Dennis White	67
2nd	W0RI	Dirk Smith	43
3rd	W9RKK	Robert Kocourek	22

Voice QRP	Call	Name	Score
1st	K9KMV	Mike Griffiths	41
2nd			
3rd			

Name	Call	Power Level	CW	Phone	Digital

Digital Low Power	Call	Name	Score		
1st	W9KAO	Kent Ochs	102		
2nd	KB9RHR	Daryl Jenks	98		
3rd	K9JDM	John Martin	44		
Digital QRP					
No Entries					

Well done to all those who took part in Field Day, be it indoors at home, in your back yard, or out in a park.

It was a very different Field Day to those we have been accustomed to, and hopefully Field Day 2021 will see a return to normality.

Happy Holidays,
Mike K9KMV

# K9KBM: Automotive Manufacturers Limits of RF

Dave, K9KBM, has provided us with some useful insight regarding guidelines by automotive manufacturers, relating to the use of RF in vehicles. If you have a newer car you might want to check your owner's manual under the heading of "Electromagnetic Compatibility".
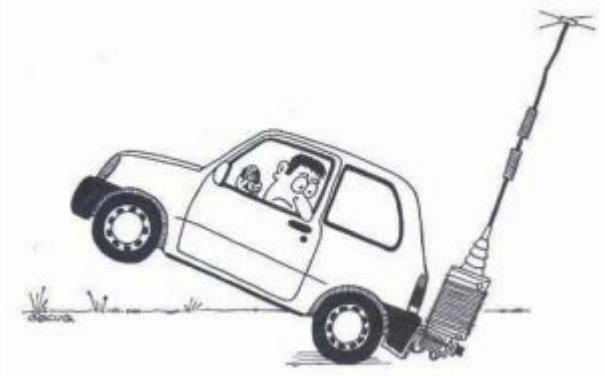
Not only are there warnings to keep antenna and power cables at least 4" from electronic modules and airbags, it limits power output to 50W on all frequencies except 806MHz-870Mhz which is limited to 10W. There are also images showing the placement of antennas at different frequencies.

This relativity new addition to owner's manuals is due to the **"World Forum for Harmonization of Vehicle Regulations"** or **UNECE regulation 10**. The limitations and warnings may be new to the public but have been around for years although less formally in the auto industry for commercial and emergency vehicles.

The following examples are taken from Dave's owner manual.
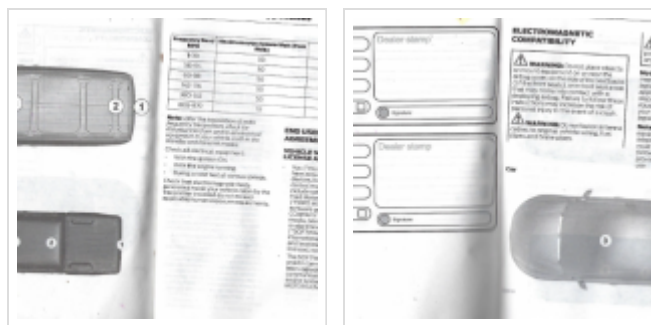
73, Mike K9KMV

Winter Field Day 2021 is approaching

Winter Field Day takes place each year on the last full weekend of January. For 2021 it will be on January 30th/31st.

Here is the link to the organizer's website: https://www.winterfieldday.com/

Due to COVID-19 restrictions, it is unlikely that there will be any club group events taking place, but it will still be possible to operate on an individual basis.

Here are a few pictures from recent years, which will hopefully inspire you to take part in some way.

Happy New Year,
Mike K9KMV

Reminder: No Club Net on New Year's Eve

A friendly reminder to all that **there will not be a** weekly club net on Thursday this week, as it falls on New Years Eve.

Happy New Year to everyone.

Mike, K9KMV

Tower Removal video – Ray WA9BLP – August 2020

Back in August 2020, a brave group of SARC club members volunteered their time and experience to help take down the radio antenna tower at the home of silent key, Ray WA9BLP.

At the time, Roberto WA9E was able to take some great video footage of the project. The video has now been edited, and is available on the SARC YouTube channel, by using the following link.
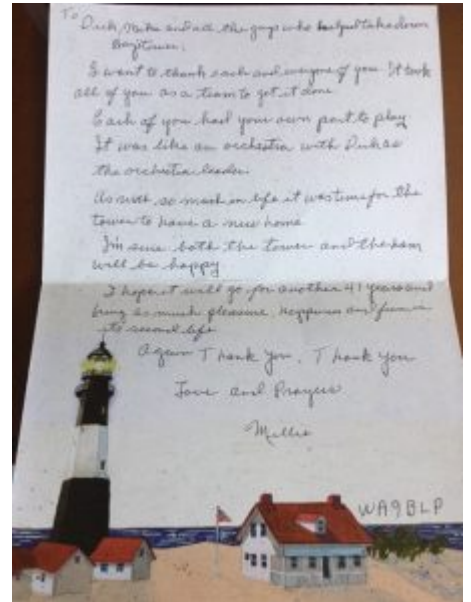
SARC - Radio Tower Removal for Ray, WA9BLP

Thanks to all involved. Here is a link to an earlier post that shows Millie's Thank You note.

Mike, K9KMV

Schaumburg Amateur Radio Club Business Meeting December 17th 2020

Schaumburg Business Meeting   December 17th 2020

Geoff Stevens KA9QGH President called the virtual meeting to order at 7:02 PM

Attendees:

Danny Kafka KD9HIL	Rob Glowacki N9MVO	Mike Sorensen K9KQX
Terry AE9TJ	Geoff Stevens KA9QGH	Mike Griffiths K9KMV
Ed Liska AC9SD	R. Kocourek W9RKK	Brent Kaser WB9UXN
John Zietlow K9WIC	Garrett K9GBN	Russ Schmidt KC9NUV
Doug W9YFC	David Traxler WA9UBR	John Scrip N9IJS
Dennis KD9HIK	Jim Campbell KB9RGU	Steve Karson AC9EM
John Douglas KD9KSH	Leo Ribordy N9NBH	Don Dewar KD9NJR
Cliff Sowka K9QD		

Secretary's Report:

Cliff Sowka K9QD informed November's Minutes published in RHG. Approval so moved. SARC Website requires Officer/Committee information updated.

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Treasurer's Report:

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Chris Brewer AC9GN. Not present. Need Financial Report for close of 2020. Need Proposed Budget for 2021.

Public Service:

Rob Glowacki N9MVO informed there is nothing to report at the moment.

EMCOMM:

John Zietlow K9WIC. Activity currently on hiatis.

Repeaters:

Terry AE9TJ reported our machines are functioning properly. Leo N9NBH described inability to invoke NEWSLINE while AllStar attendees were online. Discussion with Rob N9MVO ensued regarding up/down data speeds and/or Repeater Key/unKey controller process was thwarting ability to bring NEWSLINE up onto the machine. We'll need to review our data service invoice to determine what speeds we're contracted for and if that may be part of the difficulty in handling the audio stream's capacity when three or more AllStar ports are connected. Could also be related to the controller's command sequence; not sure at the moment.

Construction Project:

Bill McGovern W9WEM no report.

VE Exams

Ed Liska AC9SD reported the single candidate scheduled for early December did not attend the planned exam and the Volunteer Examiners returned home. No plans for January or later in Q1 until such time as the VE Team can find suitable facilities to hold their testing sessions.

Radio Hill Gazette RHG

Mike Griffiths K9KMV reports there was a recent article submitted as a very informative reprint but he was hesitant to publish without the original author's authorization.

Membership:

Bob N9JAX no report.

Social:

No current plans.

Education:

Leo N9NBH reports our training schedule will be on hiatus for the duration.   Dennis KD9HIK described DuPage Club's plans for ZOOM license training to be offered starting January.

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NETS:

-

No planned NETS for Christmas Eve nor New Year's Eve. Mike K9KMV will post this update on the Website to inform those not currently receiving SARC-ALL communications.

Steve Karson AC9EM submitted the following report for December 3rd:

Thanks everyone, for checking into our Club NET tonight. 25 Hams checked in!!! Question of the night: The weather is getting colder, is your car battery ready for the winter? Will your ham radio operate if you have one installed?   We had some traffic about Skywarn, Wellness Net, recent silent keys, and other topics.   Also, we are sponsoring outdoor VE Testing this Saturday. Check the Club Web Site for details if you are interested in taking a test…

Check-ins included:

K9MKD, Kevin

N9MVO, Rob

W9RKK, Robert

K9KMV, Mike

N9NBH, Leo

KB9RGU, Jim

KD9HIK, Dennis

K9CMZ Charlene

K9WIC, John

WB9UXN, Brent

AC9SD, ED

N9IJS, John

N9LTW, Lou

KD9KSH, John

KD9NJR, Don

K9KQX, Mike

W9YY, Jack

W9YFC, Doug

KB9QVX, Kevin

N9VWC, Mike

KD9JBS, George

KD9QAH, Tim – Welcome new SARC Member!

K9GBN, Garret

WA9E, Roberto

AC9EM Steve Net Controller

Be Safe and Happy!!!

73

Steve Karson, AC9EM

For the December 8th TechNet, KD9HIK was Net Control Operator. The Net started at 7:32 PM, local time. The following operators checked in:

N9MVO   Rob

W9RKK   Robert

W9WEM   Bill

WB9UXN Brent

WB9VWM Hugh

KD9FMN   Paul

K9CMZ   Charlene

K9KBM   Dave

AC9SD   Ed

K9QD   Cliff

W9YY   Jack

K9WIC   John

KD9KSH John

WE9PP   Jim

KF5IV   Owen

W9YFC   Doug

KD9NJR Don

KD9AJI   Chris

KC9NMW Tim

N9IJS   John

VA3DMZ Scott (Checked in from Windsor Ontario via ALLSTAR)

KD9OLJ   Sid

KY0Q   Rich

Topics included discussion about use of Choke BALUNs and lightning suppressors on exterior di-pole, RF Chokes on long wire antennas, "MAKER' sites and 3D printing.

KD9FMN asked about documentation of maximum safe RF in mobile applications. Concern was about potential to damage in vehicle computers.

N9IJS reminded DMR users that BRANDMEISTER will be implementing a security protocol and that Hot Spots will have to be updated.

Please let me know if there are any omissions or corrections.

73

Dennis C. Calvey

On Friday, December 11, 2020, 11:04:16 AM CST, Leo Ribordy wrote:

Thank you to all the hams that checked into the net this evening.   The question for the night was: Do you have backup radio's for HF-UHF-VHF?

1. KB9RGU   Jim
2. AC9SD   Ed
3. W9RKK   Robert
4. K9EYE   Pierre
5. N9LTW   Lou
6. W5SLS   Scott
7. K9WIC   John
8. K9CMZ   Charlene
9. WB9VWM   Hugh
10. K9KQX   Mike
11. KF5IY   Owen
12. K9KMV   Mike
13. W9YY   Jack
14. KC9NMW   Tim
15. KD9NJR   Don
16. KB9QVX   Kevin
17. K9QD   Cliff
18. KY0Q   Rick
19. K9GBN   Garrett
20. KD9POE   Mike

21.   N9VWC   Mike

22.   K9KBM   Dave

23.   N9NBH   Leo   net control

24.   WA9E   Roberto

25.   K9MKD   Kevin

26.   KD9RCJ   Kevin

27.   AC9CG   Mike

28.   KM4WLD   Bill

—

Leo Ribordy N9NBH submitted the December 15th TechNet report:

Thank you to all the hams who checked into the Tuesday evening net. The question for the

evening was: During a contest can you check in and make a few contacts and then leave?

Yes you can, though the group running the contest would like you to participate for the full

time. Do you have to submit a log? No you do not have to submit a log to the contest nor

You do not have to send your logs to Lotw or QRZ. Sending your logs to Lotw will help keep a
record if you are working on any certificates.

1. W9RKK   Robert

2. KD9FMN   Paul

3. KB9RGU   Jim

4. K9CMZ   Charlene

5. K9KBM   Dave

6. K9WIC   John

7. WB9VWM   Hugh

8. K9KQX   Mike

9. N9VWC   Mike

10. K9QD   Cliff

11. WB9UXN   Brent

12. KD9HIK   Dennis

13. KD9POE   Mike

14. KF5IV   Owen

15. W9YFC   Doug

16. KD9AJI   Chris

17. N9MVO   Rob

18. KC9NMW   Tim

19. KY0Q   Rick

20. KD9NJR   Don

21. N9NBH   Leo   net control

-

Publicity:

Dennis K9HIK No activity at the moment.

Programs:

No report.

-

Old Business:

None.

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New Business:

Rob Glowacki N9MVO reported receipt of SK radio gear. He has pictures and will be summarizing the inventory and provide a listing with anticipated price offers to the membership shortly.

Rob also reported last Saturday's ARRL 10M Contest provided excellent propagation for his 5W QRP participation as recent Sun Spots became very active.

Ask an Elmer

-

None

Motion to Adjourn:

8:04PM

Submitted Friday December 18, 2020

Cliff Sowka K9QD Secretary

Schaumburg Amateur Radio Club Board of Directors Meeting December 2nd, 2020

Board of Directors Meeting, 2 December, 2020

John Shofield AC9JS provided an update regarding plans for Tom Doyle K9MF SK:

There will be a funeral mass at St Marcelline Church in Schaumburg soon, but a date has not been set yet. We plan on having a larger memorial party after Covid, perhaps in the spring or summer of 2021.

With the help of Geoff KA9QGH's ZOOM-enabled call, the meeting was called to order at 7:00 PM

Attendees:

Russ Schmidt KC9NUV	Cliff Sowka K9QD	John Douglas KD9KSH
Geoff Stevens KA9QGH	Danny Kafka KD9HIL	John Zietlow K9WIC
Ed Liska AC9SD	Leo Ribordy N9NBH	Dennis C. Calvey KD9HIK

Kent Ochs W9KAO	Jim Campbell KB9RGU	Leo Ribordy N9NBH
Terry AE9TJ	Rob Glowacki N9MVO	

Secretary's Report:

Cliff Sowka K9QD. November Board Meeting was not held; therefore October Board Minutes were briefly reviewed.

Elections. Election process for 2021 was completed and our website's home page needs to be updated as follows:

President

Geoff Stevens KA9QGH_____

Director Jim Campbell_KB9RGU

Vice President

Danny Kafka KD9HIL_____   Director Ed Lishka_AC9SD

Secretary

Cliff Sowka K9QD_____

Treasurer

Chris Brewer_AC9GN_

Treasurer's Report:

Chris Brewer AC9GN. No Report. We're not sure if the annual insurance renewal cycle has been completed. We also need a proposed budget for 2021.

Public Service:

Rob Glowacki N9MVO. No Report.

EMCOMM:

John Zietlow K9WIC informed there will be a SkyWarn Net this coming Saturday on 3905 KHz hosted by ARRL Section Manager Tom W9RY. Also, Illinois EMCOMM is studying the possibility of a WINLINK simplex exercise utilizing repurposed WiFi equipment for Amateur use.

Repeaters:

 Operations normal after a recent reset. Rob N9MVO and Terry AE9TJ will be conferring with Leo N9NBH to determine some options in providing internet access for reactivating the currently dormant Fusion machine. If the Barrington Road installation is used, then antenna/diplexer accommodations are needed. If the Plum Grove installation is used, then WiresX + another Fusion radio for slave link back to Barrington Road's internet connection could be built. There also needs to be information provided to Illinois Repeater Association to

update our equipment location and frequency utilization. The team will work to prepare an update during the December Business Meeting.

Construction Project:

Bill McGovern W9WEM. No
report

VE Testing:

Ed Lishka AC9SD. Plan for December currently indicates there will be a testing session held for one candidate this coming Saturday.

Nets:

Leo Ribordy N9NBH provided the following report for the November 24th TechNet:

Thank you to all the hams that checked into the net this evening. Asked all the check ins

what they were doing for Thanksgiving and also if they remembered the Polio vaccination

we went through as kids.

1. W9RKK   Robert

2. N9MVO   Rob

3. N9LTW   Lou

4. K9CMZ   Charlene

5. K9QD   Cliff

6. KD9FMN   Paul

7. KD9POE   Mike

8. KB9RGU   Jim

9. N9IJS   John

10. WB9UXN   Brent

11. W9WEM   Bill

12. KB9RHR   Darryl

13. AC9SD   Ed

14. KD9JBS   George

15. WB9VWN   Hugh

16. KD9NJR   Don

17. KC9NMW   Tim

18. K9GBN   Garrett

19. K9WIC   John

20. KD9PWI   Pat

21. N9NBH   Leo

22. WA9E   Roberto

Have a Happy Thanksgiving

STAY SAFE

Dennis C. Calvey hosted The Tuesday evening Dec 1st Tech Net which started at 07:00 PM (local time).

The following operators checked in:

W9RKK   Robert

N9IJS   John

K9CMZ   Charlene

K9QD   Cliff

WB9VMW   Hugh

KD9POE   Mike

N9LTW   Lou

KD9JBS   George

KD9ASI   Robert (?)

K9MKD   Kevin

KD9QBR   Ken

KD9KSH   John

AC9SD   Ed

W9YY   Jack

KB9RHR   Daryl

WA9E   Roberto

KD9NJR   Don

KC9NMW   Tim

N9PEF   Dirk

K9GBN   Garrett

KD9OLJ   Sid

W9YFC   Doug

Ed, AC9SD, reported that there will be a Volunteer Examination in December.

Mike, KD9POE, suggested that due to Covid restrictions that make face to face meetings difficult, that we look for topics that might be difficult for new Hams. Several suggestions for simple antennas to deal with ordinance or HOA restrictions, including attic mounted J Pole, attic mounted fan dipole, and portable Wolf River Coil.

No operators reported participating in the ARRL EME Contest.

Additional discussion regarding JS8 Call.

Reminder that the SARC Board Meeting, by Zoom, will be held Wednesday December 2 and regular club net on Thursdays.

As in the past, apologies if I missed someone or got the information recorded incorrectly.

Net Closed ~ 8:06 PM (local time).

73

Dennis C. Calvey

Radio Hill Gazette RHG:

No Report. Mike K9KMV requests articles.

Recurring Calendar:

Insurance, Meeting Room Reservations for the Airport, Tennis Plus Basement, and CRC, need to be renewed for 2021. Cliff K9QD resurrected previous traffic to assist in establishing the proper governmental contacts required.

Membership:

Geoff KA9QGH.   No report.

Publicity:

Dennis C. Calvey KD9HIK Publicity Chair reported there may not be a published re-opening plan from the Schaumburg Park District for several months.

Social:

John KD9KSH. Present. Nothing to report for obvious reasons. Dirk W0RI had previously has suggested a Road Rally event via SARC-ALL. Interest remains alive but no updates at the moment.

Education:

Leo N9NBH. No Report.

Programs:

John K9WIC indicated Tom ARRL Section Manager W9RY is available to present prepared ARRL materials if we request.

Old Business:

An invoice was presented for "Website Listing Service". Invoice was referred to Matt Walsh for verification. Ed AC9SD will send the invoice notice (due December) to Chris AC9GN so that our Domain N9RJV.ORG is renewed for 3-years at $180.

It is unknown if our insurance has been renewed; normal renewal cycle is ~April/May and we will need to check with our Treasurer to ascertain current coverage.

New Business:

Fusion Machine implementation will be studied and discussed during our December Business Meeting.

Motion to Adjourn:

Meeting adjourned 7:58PM. Submitted December 3, 2020. Cliff Sowka Secretary