TALES FROM THE SWAMP

July 2020

Editor: Kevan Nason, N4XL

Thank you to our current group leadership.

President – Ed, K3DNE
Vice President - Dave, WN4AFP
Treasurer – Phil, NI7R
Secretary – Ed, WB4HRL

Note from The Editor

We have input from two club members this month. Thank you and keep them coming! Due to their length I have temporarily removed some of our regular features. Don't worry though, most of that information is still available online through the SFCG website and Groups.io pages. The remainder will likely return in future newsletters.

The Presidents Perspective

Just after this year's June VHF contest, Kevan N4XL posted to the SFCG reflector asking about the skillset required to operate FTx and that some members of another contest club stated they would no longer participate in VHF/UHF contests because it includes FTx. This got me thinking more about this subject that I too have been struggling with.

I almost subscribed to that mind-think. I became very disenchanted with the "new" feel of VHF+ contesting where digital modes (specifically FT8 and FT4 which

I will refer to as FTx in this article) are quickly becoming the dominate modes in VHF+ contests. I really miss SSB signals every 5-10 KHz on 6 and 2 meters. I used to operate from grid square FM19 in Maryland in a prime location in the "northeast corridor" where there were lots of VHF+ contest activity - much different from here in EM94 South Carolina where there isn't nearly same level of VHF+ activity! I missed the opportunity of "talking" to operators I have been talking to for decades in contests, even if just to say “hi”, “nice to hear you again” or working a station on 2 meters then asking that station to QSY to other bands and to "run the bands". FTx does not lend itself well to interjecting pleasantries or requests for QSY to other bands. I was active on 50MHz thru 3.4GHz - many of my buddies were active thru 10GHz and a few beyond. Soliciting contacts on 6 and or 2 meters and moving stations to other bands was the primary way contacts were made on the UHF and microwave bands.

After seeing where vhf+ contesting has moved to and where it continues to go, I don't think there ever will be a reversion to a vhf+ contest without FTx. Many are pushing for this - keep at least one VHF+ contest digital free. I'd be in favor, but now that the genie is out of the bottle most doubt we will ever get the genie back in the bottle! I'm definitely in favor of a VHF+ digital only contest especially if that could be bartered for a legacy contest without digital.

I’ve been swayed in favor of digital modes in VHF+ contesting after my recent June VHF contest experience operating FT8 for the first time. I was surprisingly happy with the experience. I had not appreciated that there is operating skill and strategy associated with operating FTx. I had thought it was point, click and watch the waterfall display, kinda like watching paint dry. Not true! I found myself chasing mults, repositioning the antennas, determining where to transmit to avoid QRM and, likewise, where to listen after I called CQ. I failed to check out FT4 for faster contest QSO's - next time I will! I operated FT8 in-between 6 meter openings (SSB was very productive during the openings) working 54 stations and 29 grids on FT8. I only made 10 contacts on 2 meters (where was all the 2 meter activity?). The only contacts I made on 2 meters were on FT8 - I did call CQ on SSB and CW on and around 144.2MHz with no takers. In fact, I only heard a couple of SSB signals on 2 meters and they were so weak I couldn't identify them.

I believe that if one doesn't attempt to advance that one may be left behind. I for one, have no desire to be left behind with this aspect of our hobby. VHF+

contesting and weak signal VHF, UHF and microwave operating was where it all began for me. I spent some time late on Saturday night of the contest (actually Sunday morning) on the phone with Dave K1RZ in FM19 in MD trying to troubleshoot my wsjt-x MSK144 meteor scatter mode. Dave and I used to live only 20 miles from each other and competed against each other in VHF+ contests. Dave often finishes in the top 5 spots in the nation in the high power category. I asked for his thoughts on the effect digital modes are having on VHF+ contesting and his enjoyment now compared to 5 or 10 years ago. He implied he actually likes it more now. Less downtime and less long periods calling CQ without takers once the band(s) have been milked dry. He talked about the strategy he uses to determine when to be on SSB, CW or digital (FT4, FT8 and MSK144 meteor scatter), using ON4KST chat page to arrange skeds and to QSY stations to other bands and how important it is to utilize all the weapons available in his arsenal to stay competitive.

There has been a tremendous amount of traffic about FTx VHF+ contesting on the VHF reflectors over the past couple of years with many suggestions for rule changes including; eliminate FTx from VHF+ contesting, restrict categories, add categories, change QSO point values, have a legacy contest without FTx, add a stand-alone VHF+ digital contest, etc. I know of several moderate to big-gun VHF+ operators that have decided to sell their equipment and get out of the game due to FTx. Some who were on the fence, like myself, decided to hang on and see where this plays out and give it a try. I'm glad I did as did K1WHS (big-gun multi-op in Maine – it’s not easy to be a big-gun VHF+ station from Maine, so different than on HF) who reported on one of the reflectors he's starting the process of rebuilding his station and will include digital.

I believe the challenge is to retain legacy operators who have no intent on using FTx and provide them a competitive and fun environment while embracing digital ops. They can be in two very different camps! This is where I believe rule changes come in to play - to adjust the contest rules to accommodate both camps, not just to level the playing field. After considering many of the proposed rule changes or adjustments, I have settled on one that I believe is a good fit with history – similar to the ARRL 10 meter contest. In that contest, one has the option of competing in the Mixed Mode (phone and CW), CW only or Phone only categories. My proposal for the ARRL VHF contests is to add three additional entry categories: Legacy (phone and CW only), Digital (all digital modes only) and Mixed Mode (Legacy

[phone/CW] *and* all digital modes) and continue the Single Operator FM only category. All the other rules would remain the same.

So, here's my quandary; it's scoring. In the ARRL 10 meter contest we are allowed to work the same station on phone and again on CW for contest credit and enter in the Mixed Mode category. With the proposal I endorse above, should stations be allowed to work the same station from the same grid square twice per band on different modes - once on phone *or* CW and again once on digital? The advantage would be to make more contacts in the contest. A significant difference between HF contesting and VHF+ contesting is the available number of QSO's to be made. For some, this would increase the enjoyment of the contest especially for stations in areas of low population density where making even a few VHF+ contacts can be a challenge. This scoring metric could really change the VHF+ contesting landscape since, for the first time that I'm aware, one could work the same station twice on the same band from the same grid for contest credit.

But (there's always a but, right?) unlike the ARRL 10 meter contest where it is allowable to work a station on phone then again on CW for contest credit (and enter in the Mixed mode category) VHF+ contest rule 7.2. states: "Stations may be worked for credit only once per band from any given grid square, regardless of mode. This does not prohibit working a station from more than one grid square with the same call sign (such as a Rover)." A rationale for *not* allowing additional contacts for working the same station on the same band on two modes (two contacts) is potentially giving an unfair additional advantage to stations in high population density areas such as the northeast corridor that, many argue, already have a significant advantage. If those stations were able to work the same station twice, once on phone or CW *and* once on digital all for contest credit in the Mixed Mode category, their score could increase dramatically and make what some believe as an un-level playing field even more tilted towards stations in the northeast corridor or a few other areas of the country where there are lots of VHF+ contest activity.

I suppose there are almost infinite variations on the rule change and scoring metric themes. Personally, I favor the two contacts per band from the same location scoring metric – it gives more opportunities to stations in areas of the country that have less VHF+ activity to make more contacts and more of an incentive for Mixed Mode and Digital operators to spend more time on

phone/cw. My goal is to retain "legacy" vhf operators and to give them a competitive environment similar to what existed prior to the digital craze in VHF+ contesting and to encourage what have previously been digital only stations to cross over into the phone/cw modes and compete in the Mixed Mode category. Seems like a win-win to me - just need to work out a scoring metric that is as fair as possible.

I promise all of my president perspectives will not be this long or related to just this topic. VHF+ contesting is near and dear to my heart and I thought it was timely considering how recent the ARRL June contest was, the CQWW VHF contest is upon us and the ARRL September VHF contest is on the horizon. I welcome any feedback and discussion either by personal email or via the reflector.

73,
Ed K3DNE

From the Reflector: See the SFCG Groups.io pages

Contest Tips:

K1AR Contest Tips

21 Timing in big (or small) pileups is everything. By their very nature, the denser a pileup becomes, the harder it is to pull out callsigns--regardless of how good the operator is at the other end. A successful calling technique I use quite often is to wait a few seconds before calling with everyone else (SSB and CW). That slight delay and attentiveness to "sneaking-in" your call when others are catching their breath works time and time again! If only I had 25 cents for everytime a DX station has said to be in a pileup, "The Alpha Radio go ahead . . ." Using low-power in smaller contests to practice this technique will hone your calling skills even more for the big ones.

24 I've heard from so many people about sending speeds in CW contests that I thought it was worthy of mention in this month's contest tip. If you're an experienced CW contester, try taking the time to occasionally slow down. There may be a number of more casual participants who are waiting in the wings to call you. The key is they need to be able to copy your call sign. You may be doubly surprised to snag a rare multiplier once in a while too!

41 Keep a few prepackaged CRT wipes handy during a contest. Looking at a dirty computer screen for 48 hours can be very distracting as well as creating unnecessary eyestrain. You'll find them at K-Mart and most good office supply stores (tnx AA3JU).

Relay Cleaning and Life:

Submitted by Kevan Nason, N4XL

Tom Rauch, W8JI, is considered by many to be one of the foremost technical experts in Amateur Radio, particularly in the areas of all things 160 meters and amplifier design. Tom's web pages at W8JI.com are filled with useful information and insights. The following are excerpts in which he discussed problems with relay contacts. Many of these points also apply to switch contacts. Check out the full article at https://www.w8ji.com/relay_cleaning_and_life.htm . It has much more information and often explains the claims I've quoted below.

Caution before Cleaning!

There is a tendency to immediately blame the relay (and switches) for any amplifier or antenna switch problem, from high input SWR to intermittent output.

Relays (and switches) ***almost never*** cause input SWR issues or intermittent operation ***during transmit*** in an amplifier or antenna switch. Despite the rarity of contact problems during transmission, it is common to immediately rush forward and physically "clean contacts" as a first step.

Physically cleaning low-to-medium current switch and relay contacts generally should be one of the ***last*** things done for ***transmitting*** problems***.***

… There are rare cases where a relay or switch contact can cause intermittent transmitting, but such cases generally indicate a relay or switch so severely damaged replacement is a better solution…

Unnecessary cleaning often leads to life and reliability problems. Cleaners themselves can contaminate ceramics in high power switches, reducing voltage breakdown. Misplaced lubricants also catch and hold dust and dirt, reducing voltage breakdown. Even worse, cleaning can remove contact plating or flashing that aids low-level receive signal connections.

Intermittent Receiving Issues

Intermittent connections causing sporadic weak receive signals can occur anywhere in a receiving system. The bad or intermittent connection might be inside the antenna system, in a coaxial connector, or anyplace between the antenna and receiver input components.

Connections are often healed by momentary application of transmit signal through the poor connection. Intermittent receive is ***almost*** always caused by a poor pressure-connection, where the receiver signal path depends on pressure to form a good low-resistance electrical bond…

Intermittent connections in any pressure contact, from relays to large switches, is almost always aggravated by low or zero current. These poor connections almost always heal at the first application of RF power. It is actually very rare for switches and relays to open while carrying high power. It is very common for them to develop open or poor connections with very low voltages and currents, such as when receiving signal or panel meter currents pass through them.

One way to clear a bad connection on receive is to "bump" the relay receive path with a little power. If the receive drops down, or drops out, from a bad connection in an amplifier relay, place the amplifier on

standby and bump the system with normal exciter RF. This will often heal the relay, although often only temporarily. Another way to clear a receive fault is by application of a dc "wiping" current while cycling the relay. This will often restore receiving for a longer period. You'll see why below…

By far the most common relay problems or outright failures are lack of receive, or high resistance receive connections. Now let's look at a few common claims or causes I have never seen:
1.) **Weakening of beryllium copper contact carriers by flexing.** I have seen excessive current heat beryllium copper contact bars to the point of discoloration. I have found a few relays particularly sensitive to RF heating of contact carrier bars. The relay used in Ameritron power line transfer makes a very poor RF relay at very high power... At about 8-9 amperes on steady 10 MHz carrier for five minutes, the contact bars in the AC power relay will overheat. This same relay is fine at 30 amperes 60 Hz AC (the actual application)..
2.) **Residual magnetism in pole pieces.** If this happens, it must be rare. I've only heard this from one person or source. I haven't seen this, nor have service techs recalled this as a problem…

Many people think silver makes the best low-pressure contact material… Silver low-pressure connections do not have long low-voltage (receiving) life or reliability! … The silver layer is thin, and in low current applications (like receive contacts) should ***not*** be burnished or filed..

The best receiving or low power transmitting contacts have a very thin gold flash. While the gold flash solves receiving return problems and low-current low-voltage connection problems, it also creates a new problem. Gold flash is thin and soft, and does not take well to sanding, filing, rubbing, heat, or arcing. Gold flash should not be burnished, filed (no contact should be filed), or cleaned with anything abrasive… This reduces shelf and service life, increasing surface resistance and receiving connection problems.

Failure to Connect on Receive
Failure to return to receive is often mistakenly assumed to be a "sticky relay". This assumption probably occurs because "bouncing" or cycling the relay, running RF through the relay, or manually lifting the contact carrier restores receiving.

Receiving connection failures are common. This problem occurs because the relay operates in near-zero current and near-zero voltage contact operation. The real problem is a very thin film, usually just a few molecules thick, builds up on contacts. Without sufficient voltage to punch-through the insulating layer, and without enough current to "clean" the very thin film away, only mechanical wiping and pressure break through the thin insulating layer. The wiping and cleaning pressure is often higher in small contacts, because the contact area is very small and the contact carrier is more flexible…

High contact resistance is by far the single most common amplifier and antenna switch relay issue. Large relays suitable for high transmitter power have a large contact. For a given return spring tension, a larger contact has less pressure per unit contact area. This means less mechanical pressure to push through non-conductive surface contaminants…

The source of this contamination is well-documented. It comes either from environmental air quality in open frame relays, or from contaminates out-gassing from materials used inside sealed relays. The predominant problem with enclosed plastic case relays is leaching of gasses from the plastic as the plastic cures or ages. This contamination is worse in new relays, and actually decreases with relay age..

Cleaning a Relay
There are ***three contact cleaning methods***. The goal of cleaning is to remove a very thin layer of contamination without removing plating, and without depositing contaminants like paper fibers. The normal thickness of problematic layers for low-current low-voltage connections are just a few molecule layers thick. It does not take much to remove the contamination.

Physical Cleaning
If your amplifier has an open frame relay, wet a piece of solid ***glossy*** paper with cleaner (WD40 is actually good for this) and fit it between the closed contacts. Proper physical cleaning involves drawing the hard glossy paper, soaked in a mild cleaner and polishing lubricant, back-and-forth between the contacts. DO NOT soak the relay. Do not use colored paper, dirty paper, or paper that leaves fibers. WD40 makes an excellent cleaner. If a cleaner leaves a residual wetness, be sure to do a final cleaning with 100% pure alcohol or another light pure hydrocarbon, or blast the contact dry with clean air.

Contacts should normally not be left wet or lubricated, unless it is a very special situation. Very high current relays, for example, might require a special contact lubricant. Low and medium current contacts are normally best when non-lubricated. Manufacturers will generally tell you where special cases require lube or greasing of contacts.

Safe Electrical Cleaning
Electrical cleaning can be just as effective, if not more effective, then physically cleaning a contact. If you have a few parts, and some ingenuity and electrical aptitude, electrical cleaning can be one of the fastest and safest cleaning methods for restoring weak signal or dry switching operation. Some relays are enclosed, giving us no choice but to electrically clean. (Either electrically clean them, or replace sealed relays. When replacing, be aware a new relay will often have a low-signal problem right out of the box, and might require cleaning.) *(See Tom's web page for information on how to do this – Editor)*

RF Cleaning *(See Tom's web page for information on how to do this – Editor)*

Mechanical Failures
A less-common failure is contact welding, pitting, or pocking... While filing, tinning, burnishing, and other harsh repair methods might temporarily restore operation, plan on replacing the relay.

A second cause of mechanical failure is physical damage. This can be designer error aggravated by carelessness, such as locating a relay where an excessive length cabinet screw can push into the relay. Often times people lose screws, and someone just grabs a random length screw to bolt a foot or cover back on. The designer, through poor hole or parts placement, in essence set the system up to fail. Several commercial amps have screws entering directly in-line with the relay, and just fractions of an inch away. Before closing up any cabinet or changing hardware, look to see what components the screws might hit.

Accidents also happen, so try not to mechanically shock the relay by dropping equipment. Pack well for shipping, with at least 2 to 4 inches of ***proper density*** closed cell foam supporting any amplifier you ship.

N1MM+ Tips: To be continued in future newsletters

Upcoming Contests: See WA7BNM webpages

- The NAQP's are just around the corner

SFOTA Current Leaderboard: See http://www.sfota.com/

3830 Activity: See 3830 webpages. Filter by Swamp Fox Contest Group

Guest Article: ARRL VHF June 2020, by NU4E/R

Gary, W4EEY and I were again Rover during this year's ARRL VHF contest. We chose the same QTH as last year but a bit different setup. Gary was in charge of the VHF station during the Greer Amateur Radio Field Day at the end of June and we wanted to try the setup before that event.

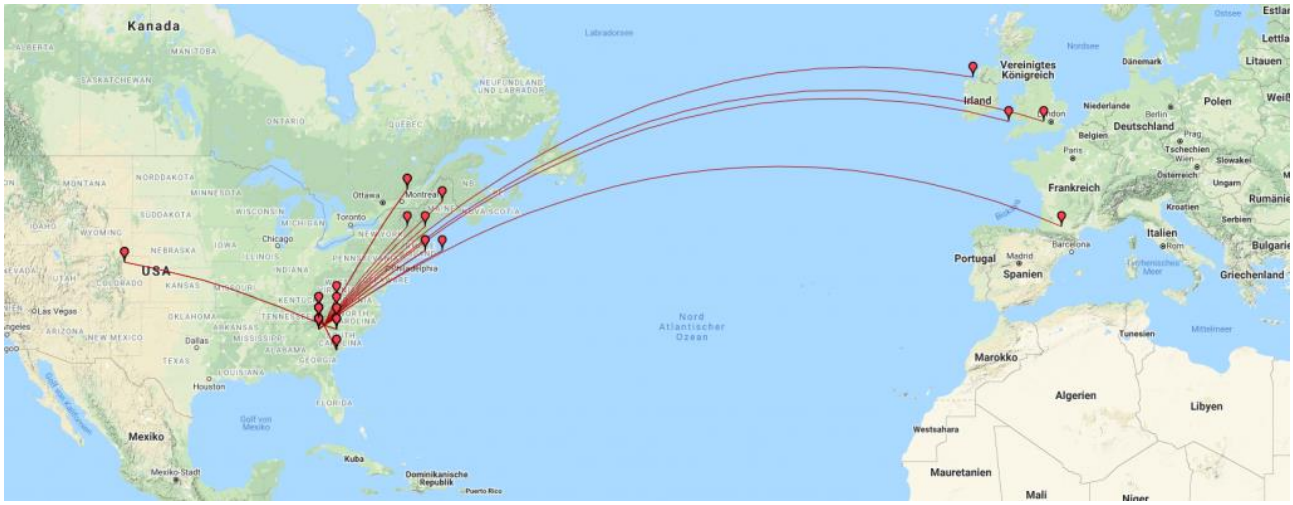
EM84TV – Paris Mountain State Park

We met on Saturday morning and drove to Paris Mountain State Park. Once we arrived we could park at exactly the same spot like last year. It was a nice sunny day and we started to install the antennas. We hat two mast, the 6m mast was on the back of the truck and the 2m / 70cm mast was Gary's new Mastwerk Tripod and Mast so we were able to rotate the antenna with a small wrench from the bottom without opening clamps from the mast.

We installed 2x 2 elements on 6m, about 6ft apart. The initial plan was to have them looking 90° apart but we discovered heavy noise from most of the directions at Paris Mountain. The only directions we could use were NE and SW, so we adjusted the antennas 180° and hoped the bands will open to the "right" areas.

EM84TV – Paris Mountain State Park

We tried to find a strong QRM source without success. We had lunch and started the contest at 18z. Nothing to hear on SSB and CW so we QSY'ed to FT8. Slowly we got some QSOs in our log but by far slower than we hoped and as compared to last year. We heard lots of stations calling CQ DX in FT8 and close stations were more interested in DX then in contest QSOs. As our only direction without QRM was NE we tried to see what's it all about and found EU signals. Of course, whenever we called them another station was stronger and we were not heard. Anyway, we had fun we could RX Europe and we were also spotted on PSK Reporter, so we knew we could make it, one day … or maybe today? You have to be persistent 🙂 we got EI, YEAH! Oh no! Wait, the QSO



disappeared 🙁 before we could complete. But then there was another EI and we finally made our first 6m EU QSO. Now we had found the right “pipeline”. After the EI we got 2x G and one station from France. Wow, amazing, 100W with a small 2 element antenna. We closed the station for this day and hoped that the next day would be better, without that amazing strong QRM. Saturday was very disappointing with some EU highlights but before we drive back for another rover activity to Paris Mountain that QRM needs to be identified.

NE – our only possible direction

NU4E/R - EM84TV

DN70	EM84	EM85	EM86	EM92	EM94	EM95	EM96	EM97	FN33
FN36	FN41	FN43	FN51	FN55	IO54	IO71	IO91	JN03	

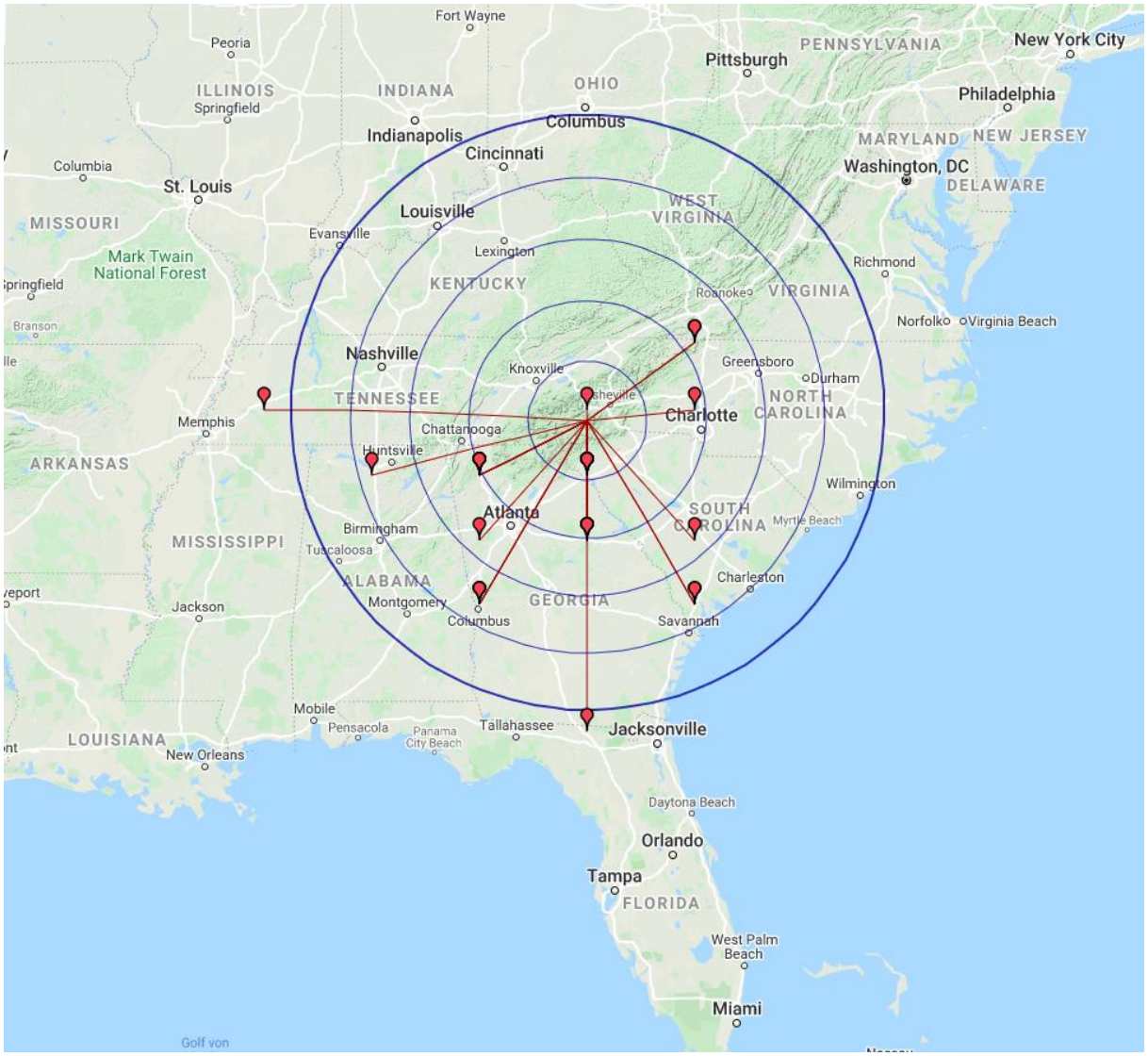
19 squares in the log

37 QSOs from 19 grid squares, 4x Europe

EM85MI – Blue Ridge Parkway

On Sunday morning we met early and drove from SC to the Blue Ridge Parkway in NC. We choose the same QTH like last year, and like Saturday we could use the very same parking lot as a year ago. The weather at 6020 ft was totally different. It was cold, some clouds but we thought it will be warmer and sunny later that day. After installing the antennas and the station we wanted to start but had a problem with one 6m antenna. We had to take it down and check the connections. We then raised it again and everything was okay. We installed it this time like planned, 90° offset, so less mast turning and only switch between these antennas, once its still not enough we could walk to the mast and turn it by our “armstrong” rotor 🙂.

The first signals were from W5 and some W8, the 90° setup seemed to work. I started in SSB and got a nice little run for about 30 minutes. No big pile up but much better than Saturday. Less W5 stations called and we turned one antenna to W8 and one to W2, still hoping on EU :-). Gary did some FT8 and finally we got into FT4. Much better, faster, more fun and we bounced in between FT4 and FT8 on 6m and 2m. We were surprised that 2m had so “many” FT8 signals, compared to last year and this year we had only 3 elements compared to 6 elements on 2m last year. 70cm was also 3 elements (10 elements last year).



2m and 70cm QSOs
150W into 3 elements on 2m
50W into 3 elements on 70cm

Gary and I changed seats every hour. I walked a small trail at the Haywood Jackson Overlook, Gary was mostly explaining our setup to visitors while I was at the station. In the early afternoon I tried some SSB CQ calls and all of a sudden we had heavy QRM, not the same type like on Saturday, it were stations left and right from us and they were so loud we could not copy anything, so I needed to QSY. I found a rather clear spot and called some CQ and had the best hour running W9 and W2 at the same time, after 60 minutes we logged 157 QSOs. Clouds were rolling in and thunder came closer, it started to rain with some hail. But we were still doing a good rate and we both decided to stay “online”. But the rain caused heavy static and the rate dropped to almost nothing.

W4EEY pushing up the 6m mast

Smokey Mountains

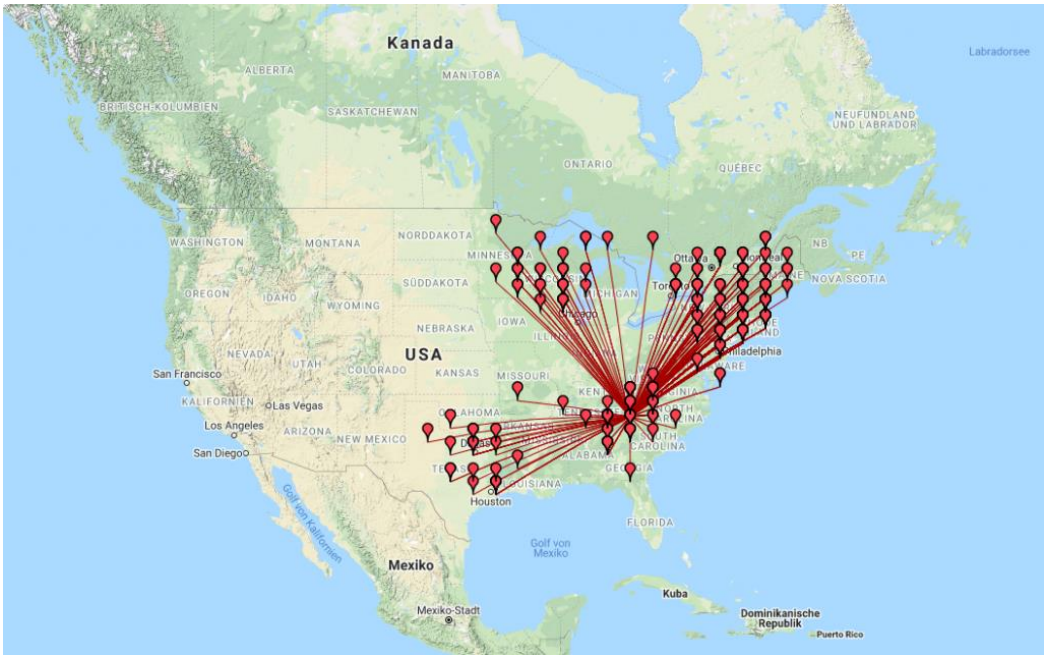
Little hike during ARRL VHF

Clouds coming in

Clouds coming in

Every once in a while, we could copy strong signals, but we had to stop for a while until the static noise was over. The rain washed away the condx, no SSB signals on the band anymore once the thunderstorm was gone. We tried FT8 and FT4 again, we could still do some nice contacts there but then decided to close the station once the rain stopped completely.

A little summary from Sunday, totally different to Saturday, without the noise and with great condx, mostly US some VE. One CO called but disappeared in QSB.



NU4E/R - EM85MI

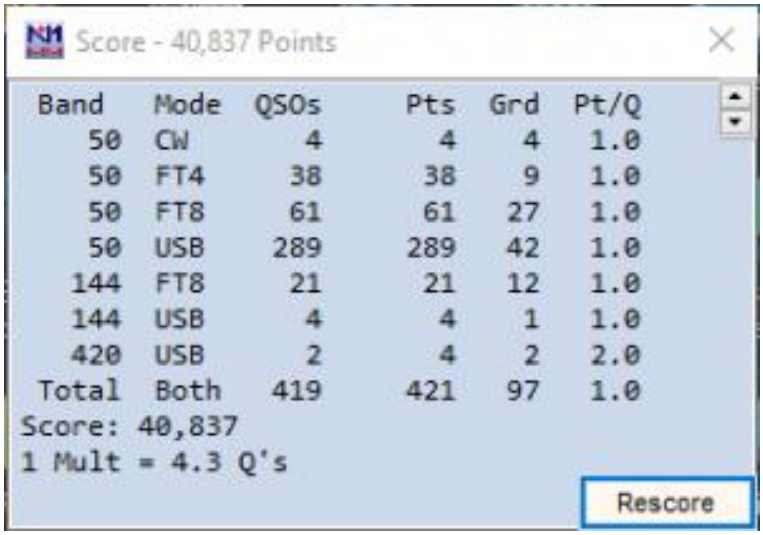
DM93	EL19	EL29	EM00	EM02	EM04	EM10	EM12	EM13	EM20
EM22	EM23	EM31	EM36	EM55	EM64	EM72	EM73	EM74	EM75
EM80	EM83	EM84	EM85	EM86	EM93	EM94	EM95	EM96	EM97
EN24	EN27	EN33	EN34	EN35	EN42	EN43	EN44	EN46	EN52
EN53	EN54	EN55	EN63	EN64	EN66	EN76	EN96	FM04	FM18
FM27	FM29	FN03	FN04	FN10	FN11	FN12	FN13	FN14	FN15
FN20	FN21	FN22	FN23	FN25	FN30	FN31	FN32	FN33	FN34
FN35	FN41	FN42	FN43	FN44	FN45	FN46	FN53	FN54	FN55

80 squares in the log

We finished with 419 QSOs from both grid squares, 25 QSOs on 2m, 2 QSOs on 70cm and the rest on 6m. We were QRV in SSB, CW, FT8 and FT4. We made more than twice the QSOs and score from last year, but we are a bit short on multipliers because we had no luck on Saturday.

For 70cm we had to rewire our 2m station and only did that once for a sked and got 2 QSOs. We have no 1.25m and could not QSY when we were asked, we have already identified some improvements for the next time, stay tuned …

We´ve been QRV for almost 8 hours (less than 2019) and spent quite some time on the road and setting up the station. We had a fun weekend handing out these the squares. Thanks for all QSOs and Gary for all the work he did to prepare the station.



Claimed score

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ARRL VHF QSO Party (June) - 2020-06-13 1800Z to 2020-06-15 0300Z - 428 QSOs
NU4E Max Rates:

2020-06-14 1821Z - 5.0 per minute  (1 minute(s)), 300 per hour by
2020-06-14 1828Z - 3.2 per minute  (10 minute(s)), 192 per hour by
2020-06-14 1859Z - 2.6 per minute  (60 minute(s)), 157 per hour by
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Thanks for all QSOs, hope to catch you in the next VHF contest
W4EEY and NU4E

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73 es QRT de N4XL