



TALES FROM THE SWAMP

February 2021

Editor: Kevan Nason, N4XL

Thank you to our current group leadership.

President – Ed, K3DNE

Vice President - Dave, WN4AFP

Treasurer – Phil, NI7R

Secretary – Ed, WB4HRL

Dues are Due

From President Ed, K3DNE:

Dues are due for 2021. Still \$10 (optional additional donations are happily accepted). Our Treasurer, Phil NI7R, discussed dues at last week's annual meeting. I know some have already paid - thanks! We have the funds available to continue our CQWPX SSB plaque sponsorship in memory of Tom W1TEF again this year!

Payment can be made via PayPal (use the "friends" mode). The link on the SFCG web page is reportedly working now or you can use snail mail:

Make check payable to: Swamp Fox Contest Group

Address:

SFCG

Phil NI7R

4065 Egret Perch Crt

Ravenel, SC 29470

From the Reflector:

- Several SFCG members placed well in the 2020 IARU Championship. Dave, WN4AFP, posted his certificate showing his 1st Place South Carolina Section and 3rd place Roanoke division. Good job! Certificates for ARRL contests are available at <https://contests.arrl.org/certificates.php>
- There have been some 10, 15, and even 6 meter openings lately. Great to see the bands opening. Maybe it's getting time to factor that into our pre-contest planning?
- Scott, KG9V, had fun in the NAQP SSB with 125 q's. Now you have a goal to beat come the August repeat of that event.
- Scott, N2OG, is planning on making big waves with his new computer. Scott has also been exploring possible antenna changes. Looking forward to improved scores from you Scott.
- Scott, N2OG, has also made some of our group, including Matt, NU4E, very happy with new antenna launchers. Higher antennas means lower take off angles means more DX means higher scores.
- Marc, N4UFP, shared his vertical antenna configuration and that he has an inverted L for 630 meters. Sounds interesting.
- Kevan, N4XL, managed to replace a bad IC in his W2IHY microphone processor. He finds the audio to be clearer using that device rather than the internal processor in either of his TS590's.
- Scott, N2OG, managed to snag JH7MQD and YD9XR after playing with his radio controls a bit. Recent reflector chatter encouraged him to experiment with various settings and he was finally able to make the q. Good job, Scott.
- A surprisingly large number of Foxes enjoyed good 160 domestic conditions during the ARRL CQ 160 contest. DX proved a bit more elusive for some, but it was there as shown by Matt's, NU4E, claimed 41 countries.
- Ed, K3DNE, posted the following: Our two teams did well! SFCG Palmetto Pig Tails finished 23'rd and the SFCG Palmetto Pentodes finished 50'th (if I counted correctly). Both appear to be in the top half of all teams (out of ~106, again if I counted correctly).

Guest Article:

Where Have All The VHF Multi-ops Gone?

Ed Kucharski, K3DNE

I've been doing some research and data mining to look for a correlation associated with the affect FT8 and FT4 (FTx) has had on traditional weak signal modes (SSB/CW) in ARRL VHF contests. In the process, I noticed a dramatic decrease in both Limited Multi-op and Unlimited Multi-op activity and scores (September VHF Contests) since the mid-late 2000's and again since 2014. The authors of the ARRL results write-ups noted this as well but didn't offer an explanation. The data in the chart below looks specifically at multi-op activity (# of logs submitted) and *average score of the top 10* in both the Limited and Unlimited Multi Operator categories in September VHF contests. The average number of points per top 10 log (far right column) are significantly lower now than in the early to mid-2000's (82% decrease) and even as

recently as 2014 (25% higher when compared to 2018). What I find most disturbing associated with these data are the significant drop in *Unlimited* Multi-op log submissions (a 63% decrease between 2014 and 2018). Unlimited multi's often activate UHF and SHF bands – when their numbers drop it also affects other multi-ops, single-ops and rovers ability to make QSO's on those higher bands.

Limited Multi and Unlimited Multi, # Submitted Logs and Average Score of Top 10 in Each Category (September VHF Contests)							
Year	# Limited Multi	Average Score Limited Multi Top 10	#Unlimited Multi	#Total Multi-Ops	Average Score Unlimited Multi Top 10	Cumulative Average Score Top 10 (LM+UM)	Average # of Points Per Top 10 Log
2020*	21	48K	12	33	57K	105K	3182
2019	22	54K	17	39	60K	114K	2923
2018	22	45K	15	37	62K	107K	2892
2017	21	54K	15	36	83K	137K	3806
2015	17	75K	14	31	97K	172K	5548
2014	24	97K	41	65	152K	249K	3831
2010	23	78K	26	49	277K	355K	7249
2005	33	296K	29	62	695K	991K	15984
2000	53	246K	23	76	468K	714K	9395
* '20 Results possibly affected by Covid-19							
LM: Limited Multiple Operator							
UM: Unlimited Multiple Operator							

Why? What am I missing? FT8 didn't begin till 2017. I recently posted this question to the VHF Contesting Reflector: "Where have all the Multi's gone?" From the responses I received, the cause of decreased multi-op log submissions and scores are multi-factorial. Here are some of the potential causes I received:

1. Aging VHF+ contester population. Whether from a home station or more commonly from a mountaintop portable expedition, VHF multi-op contesting is associated with a lot of effort and hard work for set-up, take down and planning. Many are starting to "age-out" sitting it is just too much work to continue.
2. SK's. Several key members of multi-op groups have passed away and the multi-op lost their driving force and went QRT.
3. Work, family, health and personal obligations limiting or curtailing participation.
4. The Limited Multi-op category (maximum of 4 bands for score – most common entries in this category are on 50MHz, 144MHz, 222MHz, 432Mhz). The explanation I received include; having a multi-op category for only 4 bands decreased the number of Unlimited Multi's using SHF bands leading to less Unlimited Multi's.
5. The Single-Op 3 Band (SO3B) Category (50MHz, 144MHz, 432MHz). Same rationale for the above mentioned Limited Multi-op category. No emphasis on SHF bands which gives

less incentive for Unlimited Multi-ops and they end up leaving or become a Limited Multi-op.

6. Pack Rovers (I think mostly a west coast phenomenon but may have impacted roving and multi-op's in general). Pack Rovers are a group of rovers, usually associated and often equipped by one organizer or club where the rovers travel to and rotate through adjacent grids and communicate primarily only with each other (sometimes a fixed Single-op or Multi-op may be involved), often using odd frequencies or modes (FM). They benefit each other but rarely other stations in their operating areas. Outside multi-ops may be adversely affected since they don't QSO with the pack.
7. Captive Rovers (I don't think this has been an issue recently). This is when a multi-op will help equip, coordinate and sponsor rovers to activate and travel to surrounding grid squares and communicate back to the sponsoring Multi-op ("motherhip"). They benefit the sponsoring multi-op and rarely make QSO's with other stations in their areas – they were often reported to use odd frequencies and modes making it difficult for other stations to find and QSO with them.
8. Overall decrease in Rover's with UHF and SHF band capabilities. This is a chicken and the egg question; did the multi-ops decrease due to fewer rovers with UHF/SHF capability or did the number of rovers decrease due to fewer multi-ops to QSO with?
9. The 2015 ARRL VHF contest rule change which allows unlimited spotting including the use of internet, phone, text, email and chat rooms to schedule contacts in real time. Some multi's (especially if portable) are so remotely located that they don't have access to the internet (and sometimes cellular) and are unable to take advantage of this rule change and decided to stop competing.
10. Last but certainly not least: The impact of the digital modes FT4 and FT8. The charts below shows the dramatic percentage increase (and number) of QSO's which took place on 6 and 2 meters in the ARRL September VHF contests between 2017 and 2020. However, **in 2020 only 29% of 6 meter QSO's were made on legacy (SSB, CW, FM) modes and 63% of 2 meter QSO's were made on legacy modes.** If you subtract the non-weak signal mode of FM from the legacy category the percentage drops to 28% on 6m and 58% on 2m. Essentially only about ¼ of 6m QSO's and about ½ of 2m QSO's were made on a traditional (SSB/CW) weak signal mode. This compares with the 2017 (first year for FTx) event where 80% and 99% of QSO's were made via a legacy mode on 6m and 2m respectively. I'd hypothesize that prior to FTx both the 6m and 2m legacy percentages were well over 90%. Also of note is the significant decrease in QSO's in bands above 1296 MHz in 2020 and 2018 (44% decrease compared to their previous years respectively). What would put this chart in better perspective is to have data prior to FTx (2017). Unfortunately, I was not able to obtain those data.

QSO's by Band and Mode (September 2020 VHF Contest)

Band	Legacy (CW,FM,SSB)	Digital (all types)	Total	% Contacts by Band
50	29.13% (9200)	70.87% (22387)	31587	45.70%
144	63.93% (14211)	36.07% (8019)	22230	32.20%
222	95.34% (4047)	4.66% (198)	4245	6.15%
432	93.13% (6969)	6.87% (514)	7483	10.83%
902	99.79% (969)	0.21% (2)	971	1.41%
1296	97.60% (1645)	2.40% (40)	1665	2.41%
2304+	99.55% (890)	0.45% (4)	894	1.29%
Total	54.88% (37911)	45.12% (31164)	69075	

QSO's by Band and Mode (September 2019 VHF Contest)

Band	Legacy (CW FM, SSB)	Digital (all types)	Total	% Contacts by Band
50	41.22% (9277)	58.78%(13230)	22507	40.27%
144	73.02% (12656)	26.98% (4677)	17333	31.01%
222	97.39% (4558)	2.61% (122)	4680	8.37%
432	94.93% (6402)	5.07% (342)	6744	12.07%
902	99.85% (1333)	0.15% (2)	1333	2.38%
1296	98.43% (1626)	1.57% (26)	1652	2.96%
2304+	99.57% (1637)	0.43% (7)	1644	2.94%
Total	67.07% (37489)	53.85% (18413)	55893	

QSO's by Bands and Mode (September 2018 VHF Contest)

Band	Legacy (CW, FM,PH)	Digital % (All Types)	Total	% Contacts by Band
50	69.2% (10265)	30.8% (4568)	14833	33.16%
144	93.11% (14060)	6.89% (1040)	15100	33.76%
222	99.69% (4902)	0.31% (15)	4917	10.99%
432	99.8% (7187)	0.2% (14)	7141	15.97%
902	99.89% (888)	0.11% (1)	889	1.99%
1296	100% (1187)	0.00%	1187	2.65%
2304+	99.85% (658)	0.15%(1)	659	1.47%
Total	87.39% (39147)	12.61% (5639)	44726	

QSO's by Bands and Mode (September 2017 [first year FTx] VHF Contest)

Band	Legacy (CW, FM, PH)	Digital % (All Types)	Total	% Contacts by Band
50	79.79% (8868)	20.21% (2246)	11114	30.39%
144	98.56% (11936)	1.44% (174))	12110	33.04%
222	99.72% (3898)	0.28% (11)	3909	10.66%
432	99.4% (5650)	0.6% (34)	5684	15.51%
902	100% (986)	0% (0)	986	2.69%
1296	99.92% (1267)	0.08% (1)	1268	3.46%
2304+	99.8% (1583)	0.2% (3)	1586	4.33%
Total	93.26%	6.74%	36657	

Many of the responses I received stated that FTx has added an additional complexity that some multi-ops were not willing to take on (additional computers, monitors, power requirements, RFI prevention, etc.). Others mentioned the slower QSO rates available on FTx as compared to SSB/CW and the decreasing number of SSB/CW QSO's being made on 6 and 2 meters which also impacts the ability to pass stations to higher bands (the pre-populated exchange within FTx does not lend itself to easy QSY) which has an effect on the number of QSO's multi-ops make (especially on UHF and SHF) potentially contributing to less multi-ops operating.

Conclusion: I don't believe there is a single cause for the decline in VHF Multi-operator stations log submissions and scores. Anecdotal comments via the VHF Reflector gives rise to many potential causes. The data certainly shows a dramatic decrease since 2005 and again since 2014. I don't think that FTx is primarily responsible for the downturn but probably contributory.

Contest Tips:

K1AR Contest Tips

10 You will often find that rare DX does not want to be passed to another band. A last resort is to make a schedule with the station. The secret is to make multiple schedules with as many stations as reasonable for the same time/frequency. With 10-15 schedules arranged, the odds are good that two or three will actually show up, making the effort worthwhile. Nothing beats having a mini-pileup of multipliers calling you!

37 I'm amazed at the number of top notch CW contesters who can't copy conversational code. Sure, you can fire a call sign and exchange to them at 50 WPM, but don't dare ask what antenna they're using. In my book, code speed is more than ceremonial; it's one of the many factors that separate champions from everyone else. Never give up on improving your ability to copy QRQ CW. Finally, there's something that we learned from the 1980s that's worth remembering: faster IS better!

44 Are you continuously frustrated by your paddle moving about your operating desk? Now, I don't mean the kind of "virtual" movement that occurs after 48 hours of non-stop contesting, but the type that happens while you're trying to send "Mississippi." One friend recently suggested that you take a quality mouse pad and drill holes that align with the feet on your paddle. Not only will it provide a more comfortable operating position, it will hold that paddle exactly where it belongs!

55 Try to be more aggressive when a station calls you and you miss part of their call sign. Rather than saying "Alpha Radio, your call again?" take the high road and say "Alpha Radio you're 59001...your call?" More often than not, you'll eliminate an unnecessary round of transmissions, making your operating more efficient and productive.

Observations by the Editor:

- There is usually a reason for a contest rule. This CQ-Contest reflector comment from 1992 caught my eye. Explained some logic behind a rule and thoughts of how it may or may not affect off times during the CQ WPX contest. It is from Try Garlough and dated 3/30/1992
 - > K1CC made the point that low-band activity should be enhanced by the
 - > extra point value of the QSOs. Unfortunately, when one is confronted by
 - > the problem of finding 12 or 18 hours to take off ... the extra point value
 - > does not offset the need to take time off!

I disagree. The 2X point value of low band QSOs is a *huge* factor in operating strategy in WPX. Working 70/hr into Europe on 40 yields more points than working 135/hr on 20. This forces a lot of activity down to 40 meters. 2X isn't enough to make 80 and 160 worthwhile, but so what? The CW contest takes place within weeks of the summer solstice, making 80 and 160 painfully noisy. This forces a lot of activity up to 40 meters.

Furthermore there isn't enough darkness this time of year to make any quantity of interesting long distance QSOs on 80 and 160.

In fact, all this makes 40 meters the focal point of the entire event!

Furthermore, I think the lack of emphasis on 80 and 160 is better for competition, as these are the bands most severely influenced by big antennas and geographical factors. More on this later; I'm late for dinner.

--Trey

N1MM+ Tips:

RTTY Things

- CQ World Wide WPX contest – RTTY
Sample Function Key file available: see the file called CQWPXRTTY.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site
- From N1MM+ manual about RTTY macro files
RTTY
Digital file messages generally begin with {TX} and end with {RX}, except for program control macros.

The way the keys below are designed, they will work in many RTTY contests without any changes. Whether these particular ones suit your situation will depend on your antennas, your power, QTH, etc.; but maybe these will give you some ideas to work with:

```
F1 CQ,{TX} CQ TEST * * CQ {RX}
F2 EXCH,599 {EXCH} ! {RX}
F3 TU,{TX}{ENTERLF} ! TU * QRZ? {RX}
F4 {MYCALL},{TX} * {RX}
F5 His Call{TX}{ENTERLF}!
F6 QSO B4, {TX} QSO B4 * CQ {RX}
F7 Rpt Exch,{TX} {EXCH} {EXCH} {EXCH} {RX}
F8,{TX} AGN AGN * {RX}
F9,
F10,
F11,
F12,
F1 CQ,{TX} CQ TEST * * CQ {RX}
F2 EXCH,{TX}{ENTERLF} ! TU 599 {EXCH} {EXCH} {RX}
F3 TU,{TX} ! TU {RX}
F4 Call Him,{TX} * * {RX}
```

F5 1x1,{TX} ! * {RX}
F6 0x1,{TX} * {RX}
F7 Rpt Exch,{TX} {EXCH} {EXCH} {EXCH} {EXCH} {RX}
F8 Agn,{TX} AGN AGN {RX}
F9,
F10,
F11,
F12,

General RTTY example

When using the above keys it is assumed that ESM is on. The Run mode keys F5, F6 and F7 are not very useful when you are S&Ping, this is why I put those keys to better use by programming them differently from the Run mode keys.

Note also that you can use up to 24 additional buttons (mouse only, no keyboard access) on the digital interface window. For example, you can set up 0x1, 0x2, 0x3 and 0x4 calls, single, double and triple exchanges, separate requests for his zone and state and repeats for your zone only and for your state only, and so on.

F2 Exch,{TX}599 {EXCH} {EXCH} {TIME2} {TIME2} ! {RX}
F7 Rpt Exch,{TX} 599 {EXCH} {EXCH} {TIME2} {TIME2} {RX}
Example RTTY where the time is part of the exchange (like BARTG)

•

Add on Device

There are dozens of shortcut keys available within N1MM. Examples include CTRL+UP to grab the next Q in the Bandmap window, ALT+D removes a bad spot, ALT+Q jumps to your last CQ freq, the Down Arrow shifts the VFO down by a specified amount, and Shift+UpArrow jumps to the next unworked signal in the Spectrum Window. Gaming keypads and macro keyboards have been mentioned before as being a way to improve the efficiency of N1MM by allowing these functions to be accessed with the push of a single button.

A recent poster to the N1MM reflector talked about an add on USB device with knobs to turn and programmable buttons to push. Both can be programmed with N1MM shortcut keys. It is called a Contour Shuttle Express and is available on Amazon for \$59. It is described by a user to be "About 4.25" diameter, nicely weighted with small rubber feet, and has both a dimpled jog knob as well as a shuttle ring (think of the old Yaesu FT-1000MPs with an inner knob and outer ring)."



Here are some examples from the reflector thread about how it can be used.

- I now have it set up so that it tracks roughly with the 1KHz vfo full rotation on the FTDX-9000D and FTDX-5000MP on the N1MM bandmap.
- It makes an excellent "External VFO knob". And the programmable memories are great to execute multiple key presses; for example, setting split or turning on and off a sub receiver, or clearing RIT or {WIPE}. Also you can set Sprint frequency jumps with one button push and trim your QRG if you land on someone you've worked before

- Can the buttons be programmed for fine (.000) medium (.00) coarse (.0) and spot for the K3? In a sense, I believe they can be. There are 7 or 8 incremental settings on the knob. You first have to assign Up and Down to the Jog knob (Jog Left and Jog Right). The Shuttle part (this is the ring outside the knob just like the shuttle control on the Yaesu FT-1000MP) can also be assigned the same or similar settings to get variety or to speed up the movement.
- I think an interesting use for it would be to set either the ring or the jog knob to send Shift+up in one direction and Shift+down in the other. Then you could use the knobs to jump from signal to signal when the spectrum display is open. Another use is to use the same controls to issue Alt+A and Alt+Shift+A to scroll up and down in the Available window. When S&Ping assisted for Qs (not mults), you want to skip over stations that are not ready for you to call. When you hear "TU" and their call, that is when you stop tuning.

General Tips from PJ2T

PJ2T is a well known multi contest station that has likely given each one of us a mult at one time or another. KB7Q wrote a "Best Practices with N1MM+ Logger" paper to help their ops take advantage of program features. Although we've had some of these tips in our own newsletter too, here of some he thought important enough that all PJ2T ops know of them – which makes them worthy of being repeated here again. Some are specific to multi op, but we have members who do that too. At the end is a long discussion that might help both SO2R and multi ops pass stations to the second radio or an op on a different band.

Who is operating?

When you sit down to relieve another op make sure you do a CTRL + O and type your call in the window that appears. This allows us to do a better job tracking stats. If you are the op being relieved you can help the new op by hitting CTRL + O as you leave the seat.

Log Editing

If you enter a contact with the wrong information there are two ways to edit the log to correct it. You can grab the mouse and chase the contact up the screen as other PJ2T ops log contacts and double-click on the field you need to change, make the edit, and press Enter.

There is a better way. If you use CTRL + Q the last contact you made will populate the entry window again and you can edit it right there and press enter to complete the process.

No need to mess with the mouse or the log window. Bonus: Only the contacts logged at your operating position are presented. Each CTRL + Q command takes you another step back into your logged contacts. CTRL + A advances you back down the log. Enter to exit.

Function Keys

Run mode has 12 function keys, S&P has another 12 function keys for a total of 24. If you press SHIFT you can see and access the alternate set of function keys at anytime.

Keystrokes To Know

CTRL + Q quick edit your contact in the log

CTRL + W wipes all fields in your entry window

INSERT or ; repeat the QSO

ALT + Q jump back to your last run frequency from S&P

CTRL + ALT + ENTER force log a contact, with a note

The Space Bar is the preferred way to move from field to field in the entry window if need be

Odds and Ends

Stateside stations can send a zone that does not match their call prefix. W1ABC could be hiding out in Montana and be zone 4 instead of zone 5. N1MM+ will pre-fill the zone field with a best guess of 5. Wrong! Log what is sent.

When you enter a call and get a check mark next to it that means the call was found in the master.scp file indicating that call has been used in a contest before.

(Passing stations in a multi or SO2R situation)

Passing Multipliers

A complete array of passing keys for all six bands are found in the S&P set as F7 to F12.

In the Entry Window and you will see band buttons just to the left of the call entry field for the HF contest bands 160M thru 10M. As you log a contact on your band the other bands will change color to show if it is a needed multiplier on other bands, if appropriate you can pass the station to another PJ2T operating position.

Red = single multiplier

Green = double multiplier

Blue = not a multi, but can be worked

Gray = already worked on that band

N1MM+ Logger can automate passing multipliers with a few properly programmed function keys! Not only can it generate a CW message to the station you want to move telling him the exact frequency for his QSY; it can also automatically generate an in-house message for the

other PJ2T op to alert him of the arrival of the passed station on his band. The Info Window must be open to see these messages.

Here are two examples assuming the 40 meter position at PJ2T. F11 is programmed to pass to the band below (80M), and F12 to pass to the band above (20M).

```
F11 PASS 80M,! PSE QSY {PASS 3500}{PASSMSG 3500}  
F12 PASS 20M,! PSE QSY {PASS 14000}{PASSMSG 14000}
```

In both cases the radio/computer will send the other station's call (the ! macro), "PSE QSY" and automatically add the correct run frequency for our PJ2T op on 80 or 20 meters. Then it will also send a passing alert message to the respective PJ2T op's Info Window in big red letters.

N.B. If an operator is going to do a S&P sweep of his band he can set a pass frequency with ALT + Z or from the Action Tab in the Network status window so the other team members can still pass a multiplier his way. As long as he's keeping an eye on the Info Window he'll know he has a passed station arriving and go meet it. The quickest way to jump to the pass frequency for the S&P station would be to type it (in Khz) into the call entry window and press Enter.

```
#####  
# S&P Messages  
#####  
F1 CQ,CQ TEST {MYCALL}  
F2 EXCH,5NNN  
F3 TU,TU  
F4 {MYCALL},{MYCALL}  
F5 HIS CALL,!  
F6 AGN,AGN  
# PASS FUNCTION KEYS 160 THRU 10 METERS  
# PRESS SHIFT WHILE RUNNING TO ACCESS  
F7 P160,! PSE QSY {PASS 1800}{PASSMSG 1800}  
F8 P80,! PSE QSY {PASS 3500}{PASSMSG 3500}  
F9 P40,! PSE QSY {PASS 7000}{PASSMSG 7000}  
F10 P20,! PSE QSY {PASS 14000}{PASSMSG 14000}  
F11 P15,! PSE QSY {PASS 21000}{PASSMSG 21000}  
F12 P10,! PSE QSY {PASS 28000}{PASSMSG 28000}
```

(Note: PASSMSG is not needed for SO2R operations as there is only one operator)

Upcoming Contests: See WA7BNM webpages

SFOTA Current Leaderboard:

Feb-11-2021						
Current Leaderboard						
2021 OVERALL STANDINGS						
CALL	Contests	CW QSO'S	SSB QSO'S	DIGITAL QSO'S	RTTY QSO'S	TOTAL QSO'S
1) N4IQ	18	2447	0	20	1942	4409
2) WB4HRL	26	1612	391	56	912	2971
3) K3DNE	8	397	795	37	323	1552
4) AC4MC	8	828	469	4	0	1301
5) K7OM	5	257	80	0	696	1033
6) N4XL	3	914	1	0	0	915
7) KG4IGC	3	250	359	0	219	828
8) WN4AFP	10	582	198	0	0	780
9) KS4YX	3	120	14	28	368	530
10) N2OG	2	0	163	0	146	309
11) NI7R	1	224	0	0	0	224

2021 INDIVIDUAL MODE STANDINGS							
CALL	CW QSO'S	CALL	SSB QSO'S	CALL	DIGITAL QSO'S	CALL	RTTY QSO'S
N4IQ	2447	K3DNE	795	WB4HRL	56	N4IQ	1942
WB4HRL	1612	AC4MC	469	K3DNE	37	WB4HRL	912
N4XL	914	WB4HRL	391	KS4YX	28	K7OM	696
AC4MC	828	KG4IGC	359	N4IQ	20	KS4YX	368
WN4AFP	582	WN4AFP	198	AC4MC	4	K3DNE	323
K3DNE	397	N2OG	163			KG4IGC	219
K7OM	257	K7OM	80			N2OG	146
KG4IGC	250	KS4YX	14				
NI7R	224	N4XL	1				
KS4YX	120						

3830 Activity:

Timestamp	Call	Class	Power	Score
ARRL Jan VHF				
1/18/21	K3DNE	Single Op	HP	989
1/18/21	KS4YX	Single Op	LP	330
1/22/21	N4IQ	Single Op	HP	240
BARTG Sprint				
1/26/21	K7OM	Single Op	HP	13,770
1/24/21	WB4HRL	Single Op	HP	100,188
BC QSO				
2/7/21	AC4MC	Single OpMixed	HP	570
2/8/21	K3DNE	Single OpMixed	HP	700
2/8/21	WN4AFP	Single OpMixed	LP	776

CQ160 CW					
	1/31/21	AC4MC	Single Op	LP	29,563
	1/31/21	K3DNE	Single Op Assisted	HP	23,659
	1/31/21	K7OM	Single Op	HP	25,020
	1/31/21	N4IQ	Single Op Assisted	HP	155,628
	1/31/21	N4XL	Single Op	LP	14,652
	1/31/21	NI7R	Single Op	HP	24,158
	1/31/21	NU4E	Single Op Assisted	HP	241,200
MnQP					
	2/7/21	AC4MC	Single Op	HP	432
	2/7/21	K3DNE	Single Op	HP	4,836
	2/8/21	WN4AFP	Single Op	LP	1,218
NAQP SSB					
	1/17/21	AC4MC	Single Op	LP	55,632
	1/17/21	K3DNE	Single Op	LP	112,496
	1/17/21	K7OM	Single Op	LP	3,920
	1/17/21	KG4IGC	Single Op	LP	38,413
	1/17/21	KG9V	Single Op	LP	6,500
	1/17/21	N2OG	Single Op	LP	12,062
	1/17/21	N4XL	Single Op	LP	59,362
	1/19/21	WA2BCK	Single Op	LP	4,000
	1/17/21	WB4HRL	Single Op	LP	10,203
NCCC RY-Sprint					
	1/15/21	N4IQ	Single Op	LP	390
	2/5/21	N4IQ	Single Op	LP	204
VtQP					
	2/7/21	AC4MC	Single Op	HP	297
	2/8/21	K3DNE	Single Op	HP	147
	2/11/21	N4XL	Single Op	LP	2
	2/8/21	WN4AFP	Single Op	LP	4,224
WFD					
	2/1/21	KS4YX	1H	LP	3,528
	1/31/21	WB4HRL	1H	HP	1,872

XE RTTY					
2/8/21	K7OM	Single Op	HP	24,058	
2/8/21	KG4IGC	Single Op	LP	24,346	
2/8/21	N4IQ	Single Op	HP	87,024	
2/8/21	WB4HRL	Single Op	HP	29,250	

=====

73 es QRT de N4XL