The LongPath

Contents:

Contributors:
AC4G
K3FRK
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NG3K

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From the President
By Bruce Smith, AC4G

It is so good to see DXpeditions galore active and on the air. This past weekend (29 and 30 April) yielded C37RC (Andorra), Maldives (8Q7KB), Uganda (5X2I), DX0NE (Spratly Islands) and others. I do not know about you, but I can use any of these DXpeditions to gain some new band/mode countries for my DXCC. I hope every member is actively pursuing DX, especially since 10m has awakened from its sleep after so many years. Worldwide DX on 10m can be achieved with only a few watts. Give it a try. It's only going to get better.

However, if you have been active on the bands in recent days, you have noticed that the sun has been very active recently and propagation still continues to allow for worldwide HF communications. However, with this said, 10m and 12m has not been as active to some of the better DX entities, for example, from my QTH to Southeast Asia as seen a few weeks ago, but I know the sun will settle down enough for long-haul communications to be established with some of the good DX we have already seen this year. As we all know, we have seen peaks and declines in solar activity and will continue to do so, but we are at the mercy of the sun.

Our NADXC budget is on track to allow the club to meet our goals this year. We have funded three DXpeditions and provided $100 funding to each as follows: Sable Island (CY0S); Monaco (3A/IW1RBI); and Lakshadweep Islands (VU7W) all of which have gone and past. I hope we all were able to make time to make some QSOs with each of these DXpeditions. I know a few members who made multiple QSOS with VU7W and Sable Island. We continue to receive NADXC club dues, and I thank each of you for paying your dues. If you have not paid, please try to take time to do so as your dues help to meet our budget goals by hosting an annual DX Club banquet, have a picnic, and fund some of the DXpeditions occurring around the world. The NADXC Web Page has a link to PayPal to make paying your dues much easier than paying by cash or check in person at the club meetings. If PayPal is not your choice of payment method, you can always send a check to Barry Barton (WA4HR) our club Secretary/Treasurer or pay with cash at our next meeting. The web page will also allow you to see if you have paid your dues for 2023. Also, a big thanks to AI4U, Chris Reed and KQ4VT, Jared Cassidy for getting our NADXC web site membership roster page updated.

I want to send my thanks to Kevin Hibbs (KG4TEI) for last month's presentation on 3D printing and how he relates 3D printing to ham radio. I learned a lot since I have not ever been around this latest technology. Kevin's presentation gave me many ideas to consider for projects. My next endeavor would be to convince my XYL to allow me to purchase one of these printers. However, I am not holding my breath on obtaining a 3D printer soon.

This month our speaker will be Mike Rozar (N4CNZ). Mike will be showing and explaining some RFI issues he was able to solve in the Taft area last year. The RFI issues played havoc on two of our very own NADXC members. If you are able, please come out and listen to Mike in person on Tuesday, May 9 at 6:30 p.m. at the Museum of Information Exchange (MIE) at 1806 University Drive for our regular club business meeting, then on to our presentation which will follow. Hopefully, Mike's program is piquing your interest to see what Mike has to say and who the two NADXC members were that Mike solved RFI issues for. As always, we will be transmitting the meeting over ZOOM (details to follow in a separate email). We hope to see each and every one of our members at the meeting.

The SWR on My Coax is 1.5. That's Way Too High! - Part 2
By Bob DePierre, K8KI

Anyone who has ever spoken to me about antennas knows that I have a bias – against non-resonant antennas in favor of resonant ones. There's a reason: DXing and contesting are opportunities for us to compete, and I need all the help I can get. Resonant antennas have gains and antenna patterns that are just hard to beat.

Don't get me wrong. I have a transceiver and amp that both have auto-tuners installed. My transceiver has a typical digital tuner that you see on most all transceivers today. My amp has a grounded-grid tube and a pi-filter at the output. The pi-filter is similar to what you would find on any tube amp, except that mine has motors and auto-tunes itself. Its spec says it matches anything up to SWR=3.0:1. And it does. I don't own a box called an "antenna tuner." All my antennas are resonant ones, although 75m is another story. Yet hardly a day goes by that I don't have some discussion on SWR. That's an important story, and I think it is little understood.

SWR is a sorta complex story, but on hf, the thing to be concerned over is how much power is reflected back into your transceiver. To start out, you have to decide for yourself how much is too much. Say you have a 100-watt transmitter. Here's how much power would be reflected for a given SWR – if you don't include transmission line losses:

Pr	SWR
1	1.22
4	1.50
11	1.99
25	3.00
36	4.00
45	5.08

This is derived from the relationship in the ARRL Handbook (Equation 10B in any issue):

$$SWR = \frac{1 + \sqrt{\frac{P_r}{P_f}}}{1 - \sqrt{\frac{P_r}{P_f}}}$$

The SWR on My Coax is 1.5. That's Way Too High! - Part 2 (continued)

If you decide that a quarter of the total power (i.e., 25 watts) is your limit, then you should cap your SWR at 3.0 (see table above). For the case of wire dipoles above 75m, this is a design consideration that is pretty easy to achieve. Actually, tuning a 40m dipole to keep the SWR below 2:1 is pretty easy.

But this relationship is for a no-loss transmission line. I don't have any of those. What happens in the case of line loss? In this case you use the Total Mismatched Line Loss (TMLL) Equation 11 where:

$$\rho = \sqrt{\frac{P_r}{P_f}}$$

$$TMLL_{dB} = 10\log\left(\frac{a^2 - |\rho^2|}{a(1-|\rho^2|)}\right)$$

where

$$a = 10^{ML/10}$$

In this case ML is the matched line loss taken from the cable characteristics table in the Handbook. So, let's try a typical case where you are using RG213, whose length is 100 feet, and you choose the 100MHz loss as the worst case for HF. That value is 2.1dB.

Let's examine the case for SWR= 3.0. So a = 1.62 and ρ = 0.33. The TMLL works out to 2.42dB. So, 2.42dB loss at 100 watts works out to 42.7 watts. With no SWR, you would have lost 2.1dB, or 38.3 watts, so the SWR accounts for an additional 4.4 watts of loss. Thus, the power to your load is 100 - 42.7 = 57.3 watts. Use the reflection coefficient ρ to find the actual reflected power of 11.0 watts. You might notice that not all of the power reaching the antenna is radiated, since those 11 watts are reflected. So, you only get 57.3 - 11.0 = 46.3 watts to radiate!

And finally, you want to know how much power gets absorbed back at your rig. So, you take those 11 watts and subtract off the 2.42dB of TMLL, which now amounts to 11.0 - 4.7 = 6.3 watts.

Now you go to the table I calculated above. You had determined that the max SWR you would stand was 3.0, so that you would have 25 watts incident on your rig. But that doesn't happen at all. You just calculated that after all the extra line loss due to the SWR, only 6.8 watts hit the rig, not 25 watts! Your rig doesn't have to suffer nearly as much as you had thought - the power incident on it is about the same as if the SWR was only 1.8.

And your tuner box won't help this in the least. "Antenna Tuner" is a famous misnomer.

Reader homework: I'll give 3 gold stars to the first member who correctly calculates the same situation using LMR500 coax at 10MHz. You'll be surprised at the results.

New Tower Installation - Part 2
By Fred Kepner, K3FRK

Last month I wrote about my experience acquiring the tower that had belonged to Tom, KG4CUY (SK) and removing it with the help of a small group of hams. A month has gone by, and I've made some progress on preparing to raise the tower outside my shack. I admit that progress has been slower than I'd hoped, but things are definitely moving in the right direction.

US Tower provided very detailed engineering plans with measurements, materials specifications, and instructions. The tower is freestanding, so it requires quite a bit of concrete. The required hole is 6.5 ft deep, 4.5 ft wide, and 4.5 ft long. That is a lot of dirt! I decided to rent a mini excavator to make the job easier. The rental company helped me pick a model capable of digging a 7ft 2in hole. I measured and marked out the spot I had selected in the yard, I called 811 and waited for the "all clear" from the utility companies, and then started digging. The controls took a little getting used to, but it was relatively easy. I had 3 carts/wheelbarrows I could fill to save trips on and off the machine. I quickly determined that only my wheelbarrow was capable of prolonged use hauling the heavy dirt. Since the wheelbarrow held about 2 ½ scoops from the excavator, I did end up making many trips in and out of the seat.

The rented excavator made digging a lot easier.

Regardless, the first half of the hole went pretty quickly. The second half was a little more difficult. Digging deeper in the hole, where the bucket wasn't visible, required more patience and attention. I also learned that the 7 ft 2 in. maximum depth rating of the excavator was misleading. The machine was really only capable of digging a hole of my width down to about 6 ft. That meant that the last 6 inches or so would need to be dug by hand. My first lesson learned, spending $30 more on the next bigger size excavator would have been a VERY wise investment.

The excavator was only able to reach about 6 ft. below the surface.

I spent about 6-8 hours digging with the excavator the first day. The last 6 inches or so took me about 3 2-hour sessions. I filled and carried about 70 5-gallon buckets of dirt (actually it was clay) up and out of the hole. It was difficult work, and I was very happy when it was complete.

The next step was to build a concrete form around the top of the hole. I purchased 2 x 6's at Lowes, measured, cut, and placed them with the bottom about 2 inches below the surface of the ground. I used scrap wood to cover some of the

A concrete form was built after digging the bottom of the hole out by hand.

areas near the top where dirt had collapsed in the hole so that concrete did not rise and fill in that area. By covering those gaps, I will be able to keep the desired shape of the concrete slab and fill in the holes with dirt when I remove the concrete form.

After tidying up the hole, I covered it up and started working on the required rebar cage. The US Tower instructions contained very specific requirements for the shape of the rebar pieces. It consists of 2 pieces of 6.5 ft. long #6 rebar in each corner with 10 – 3.5 ft. x 3.5 ft. #3 rebar squares oriented horizontally and spaced at specific vertical distances apart from each other. Inside the rebar cage is a second similar but smaller square, rotated 45 degrees with its corners attached to the center of outer square. The inner squares are 2.5 ft. x 2.5 ft. and vertically spaced in an identical fashion to the outer cage.

Bending the rebar to the right shape and dimensions requires specialized equipment or a lot of patience, time, and sweat. I didn't have any of those things, so I found a construction supply company who bent them to my specifications for free. I was amazed that the 240 linear feet of #3 rebar, cut to size and bent 80 times, only cost me $83 with sales tax. That was an incredible bargain.

Tying the rebar pieces together was a time consuming and dirty job. I spent about 8-10 hours completing the cage. Once the cage was built, I needed to get it into the hole. I devised a method for a friend and I to do that slowly and without hurting ourselves but I decided to let the concrete contractor do it since the extra cost on top of my

The completed rebar cage is ready to lower into the hole. US Tower provided very specific instructions on the dimensions, shape, and type of rebar required.

concrete pour was minimal. The concrete workers will be lowering the cage into the hole, mounting the tower base on the top of the concrete form (under my supervision to ensure it is level and at the proper/specified height above the concrete), and smoothing/finishing the concrete surface. The concrete will then need to cure for a month before I am able to begin attaching and raising the tower. In the meantime, I will work on preparing the antennas, coax/rotator cable runs, grounding equipment, etc. If all goes well, I should have the tower up and part 3 of this series ready for the July LongPath.

Discussion of FT8 Fox-Hound Mode Versus Multistream Mode
By Bruce Smith, AC4G

It is a fact that the old days of DXpeditions operating RTTY has been replaced with the DXpeditions using the latest technology, FT8/FT4 and other newly, innovative digital modes. Many DXpeditions since KH1/KH7Z, Baker Howland Islands back in July 2018 began using FT8 as their primary digital mode instead of RTTY. I know this because I had planned to work the Baker Howland Islands DXpedition on RTTY to add a new DXCC entity to my RTTY (Digital mode) DXCC; however, I quickly learned that the KH1/KH7Z team operated entirely with the FT8 mode. I had not done my homework to get setup for FT8, which resulted in my missing Baker Howland Islands on the digital modes. To this day, I still need Baker Howland Islands on either RTTY or FT8 digital mode for my DXCC. I do remember N4KH working this team on FT8 along with other NADXC members, leaving me as one of those DXers who did not jump on the bandwagon for this new mode when I should have done so.

Why do DXpeditions operate FT8/FT4 instead of RTTY? The answer is simple. FT8 in Fox-Hound mode allows the DX to transmit multiple streams allowing the DX to make transmissions with five (5) or more ham stations in a single transmission sequence. For example, the current Lakshadweep Island DXpedition (VU7W), which the North Alabama DX Club (NADXC) supported is almost entirely using FT8 allowing that team to make many more QSOs than he would if working RTTY. Secondly, FT8 allows for stations with weaker than normal signals or with somewhat bad propagation or simply by distant location (QTH) to be worked by decoding these signals. So, I get why DXpeditions use FT8 now. But since WSJT-X software was developed and released for general amateur radio use, there has evolved another FT8 scheme to allow for multiple streams in a single transmission called Multistream (MHSV) mode. Again, this allows DXpeditions to work many more ham stations in a single transmission sequence than the RTTY "onesie" and "twosie" approach. Reference the table which shows VU7W made more QSOs using FT8 mode than any other modes of communications. In this case, the other mode turned out to be "CW". Table shown was from CLUBLOG.

Band	FT8	CW	Total	Total %
160	167	0	167	0.4%
80	1495	98	1593	4.0%
60	164	5	169	0.4%
40	2824	63	2887	7.2%
30	4269	26	4295	10.7%
20	5049	169	5218	13.0%
17	5439	841	6280	15.7%
15	6221	870	7091	17.7%
12	5073	504	5577	13.9%
10	5471	1201	6672	16.6%
6	161	0	161	0.4%
Totals	36333	3777	40110	

Table: CLUBLOG Comparison of VU7W FT8 QSOs versus Other Modes

This article will not attempt to provide explanation in the operating differences of using Fox-Hound and MHSV, but may be addressed at a later time in a different article. The intention of this article is to provide explanation to a single question recently asked of me. I was recently asked by a fellow DXer to explain how a ham radio operator can tell if a DXpedition is using "Fox-Hound" mode versus MHSV mode. I will attempt to do so in this article.

Discussion of FT8 Fox-Hound Mode Versus Multistream Mode (continued)

Many times, DXers are not sure which mode a DXpedition is using and it would be helpful to know which mode to use before attempting to work a DXpedition. Also, ham operators trying to work the DX are using both Fox-Hound mode, while others are using MHSV mode causing much confusion to the DXers. It is apparent that a simple answer to this dilemma is needed due to the number of ham stations continually transmitting during the wrong sequence (Fox-Hound) or are actually transmitting very close to the DX station (MHSV allows this) during a digital FT8 pileup.

The answer to this question is very simple if one observes the messages being sent by the DX station. One just needs to understand that the DX in Fox-Hound mode can transmit two different messages to two different stations at the same time in the same audio frequency. This does not happen in MHSV mode. Since I only use WSJT-X, my explanation is only applicable to the hams who use WSJT-X, not JTDX or other decoding/encoding applications/software for transmitting and decoding FT8 signals.
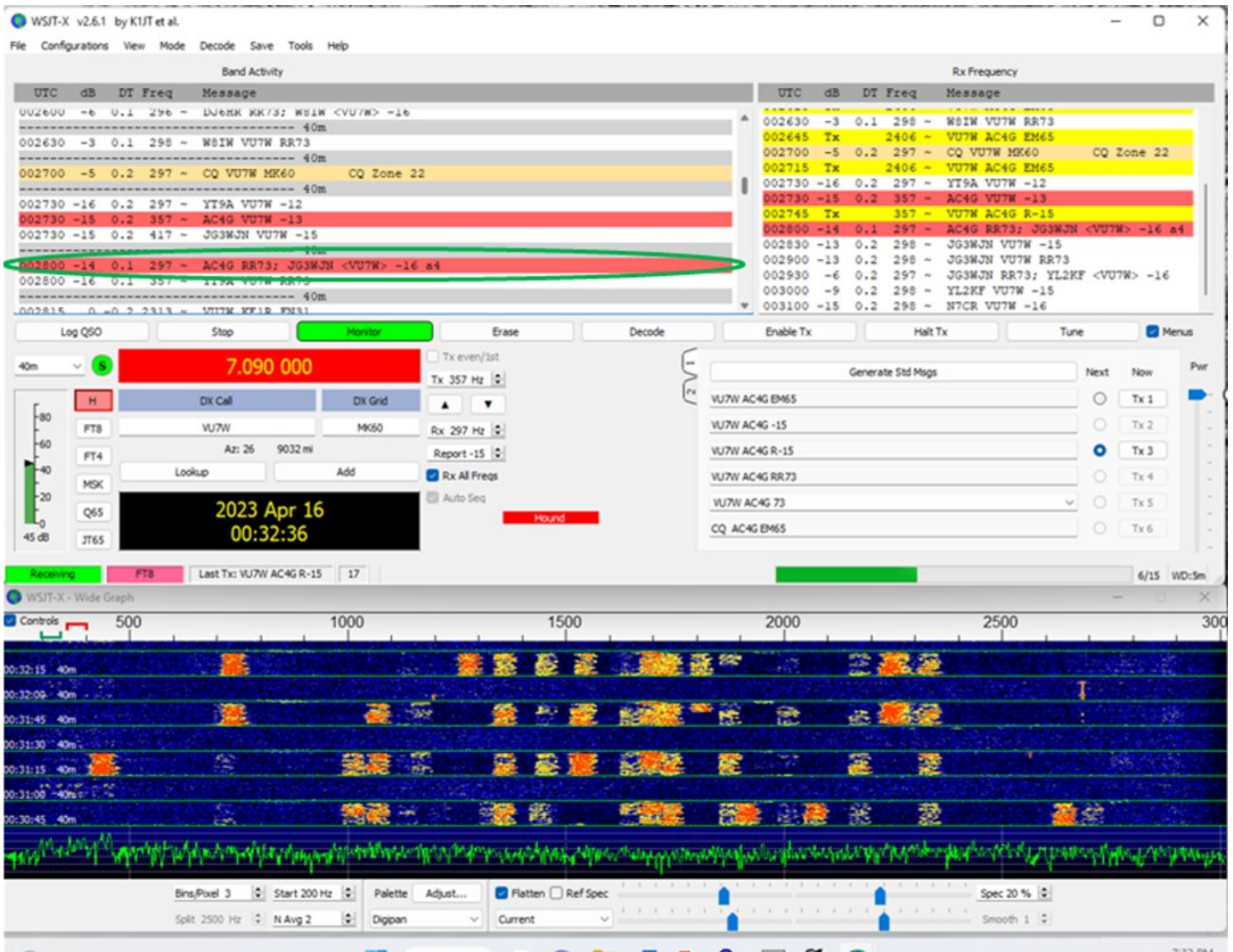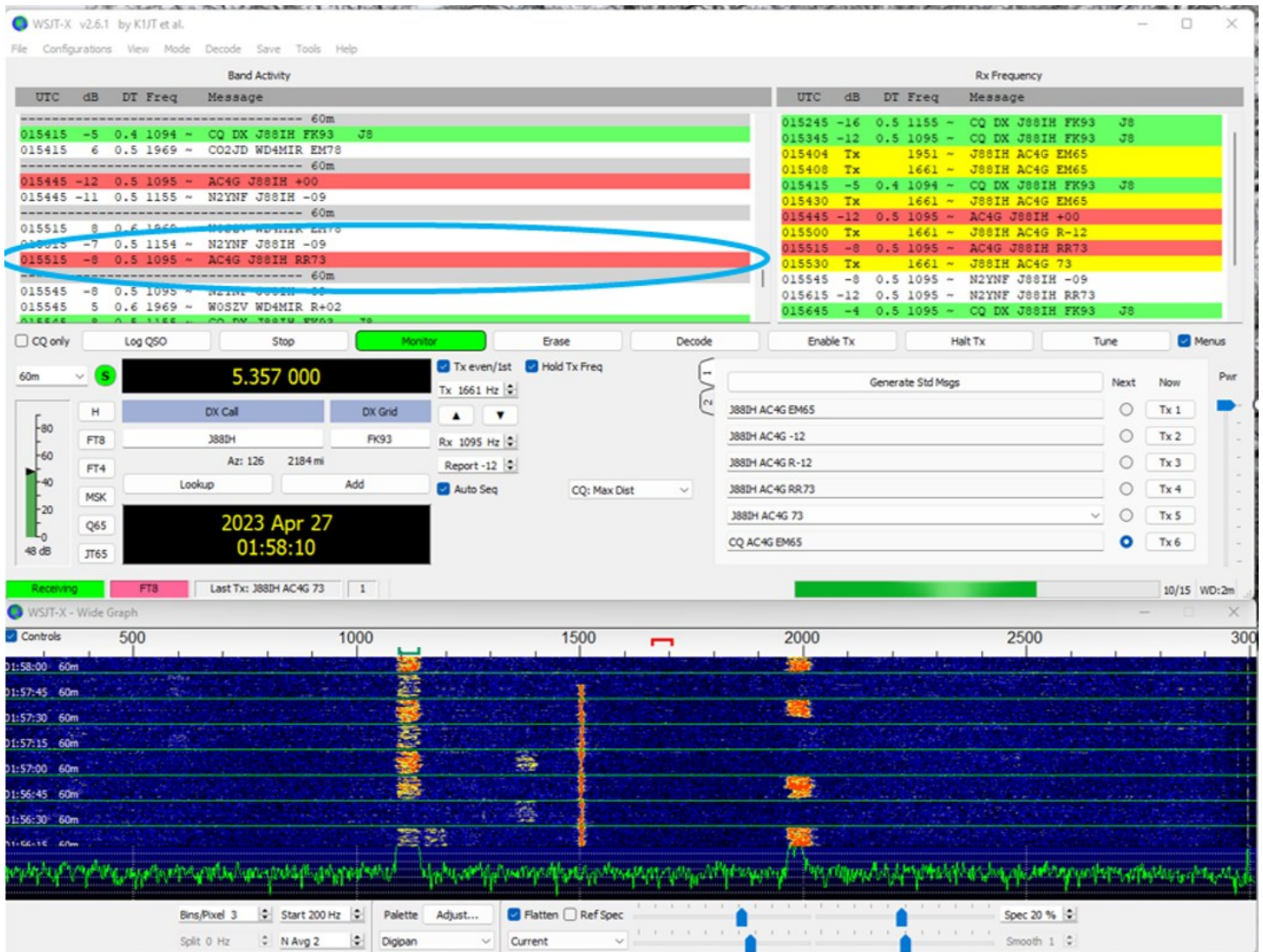

Picture 1: Example of a Fox-Hound FT8 QSO

Discussion of FT8 Fox-Hound Mode Versus Multistream Mode (continued)

Fox-Hound mode requires one to transmit above 1000Hz on the waterfall and not close to or on either side of the DX station attempting to work. In this example, please note Picture 1 and the green circle highlighting that VU7W is transmitting three streams on audio frequencies 297, 357, and 417 Hz, but the stream on 297 Hz (circled in green) contains two different messages. One message is "RR73" to AC4G, while the other is a signal report to JO3WJN. This shows without

a doubt that VU7W is using Fox-Hound. One thing to note is that in Fox-Hound mode, the DX station (Fox) can only transmit on "EVEN" time periods, while we ham operators trying to work DX can transmit on the "ODD" time sequence.

In this example of Multistream (MHSV), one can see that the DX station, J88IH is sending two different streams for each station being worked. Note the blue highlighted transmission in Picture 2 below. On one stream (1154 Hz) the signal report of "-09" for N2YNF is sent. On stream two (1095 Hz), the DXpedition is sending "RR73" to AC4G. No other information is sent. Note that each stream is specifically for each sta-

Picture 2: Example of a Multistream (MHSV) FT8 QSO

Discussion of FT8 Fox-Hound Mode Versus Multistream Mode (continued)

tion being worked and does not include data to any other station unlike Fox-Hound Mode. DXpeditions using MHSV can transmit on either "EVEN" or "ODD" time sequence. This forces DX chasers to transmit on the opposite time sequence. Note: A DX station using MHSV can work you if you are using "standard" mode or if you are in "Hound" mode.

Things to Remember:

Fox-Hound Mode: DXers must remember to transmit during "ODD" time sequence (WSJT-X default); and must call above 1000 Hz in order to be decoded by the "FOX" (DX station) station. The DXpedition using FOX mode automatically transmits on the "Even" time sequence because WSJT-X defaults to the even time sequence.

Multistream MHSV Mode: DXers do not have to worry about which mode (Fox-Hound or MHSV) to use if the DXpedition is utilizing Multistream (MHSV). DXers can call on any frequency within the bandwidth of the waterfall. DX stations do have to worry about which even or odd sequence they transmit. DXers must be on the opposite time sequence. If the DXpedition using Multistream uses the even time sequence, the DXer can use Hound mode to make their QSO. In other words, the DXer can use either Hound mode or Standard mode to make a QSO.

On another note, I have recently seen DXpeditions using the standard designated FT8 frequencies. In my humble opinion, this should never occur. DXpeditions should move off standard FT8 frequencies to allow the non-DXers to en-

joy the bands without getting interference from DXers. This can only cause troublesome messages to be sent by the DXers and casual operators only magnifying chaos and deliberate QRM. With the upswing of the solar cycle, I continually see multiple DXpeditions using the same frequencies. This can be quite confusing. DXpeditions should space out their FT8 pileups on different frequencies since there is plenty of bandwidth.

In summary, I hope this basic article helps each of us as DXers understand whether the DXpedition is using Fox-Hound mode or Multistream mode whenever we run across an FT8 pileup while on the air. Some basic details just discussed will help DXers realize which mode the DXpedition is using and which mode DXers should respond with.   Good luck working a new one and I hope by observing the streams being transmitted based on the basic information provided above, we all will be able to gain an edge in any FT8 pileup!

April 2023 Meeting Minutes and Financial Report
by Bob DePierre, K8KI

- Club President Bruce Smith, AC4G called the meeting to order at 6:30pm

- Bruce spoke about the various DX club members worked.

- Barry, WA4HR Treasurer gave the monthly treasury report for March.

- The club voted three new members in: Jerry Rossano N4JR, Jacob Sharp KY4UD and Robert Beaudoin WA1FCN

- The club agreed to send $100.00 to Monaco, 3A and Lakshadweep Islands, VU7W for their upcoming DXpeditions during April. Also, the club decided to take a closer look at further upcoming DXPeditions as our own Steve Werner, AG4W is going on a DXpedition. The club has sponsored four DXpeditions so far this year.

- Bruce spoke about getting a speaker for the upcoming DX Banquet. Adrian was a popular choice, but it was brought to the clubs' attention he will be in Japan during the DX Banquet.

- Steve Werner spoke about Bouvet operating conditions as a major contributing factor as to why the DXpedtioin was cut short.

- Mark Brown, N4BCD mentioned it would be a great idea to announce our speaker at the upcoming Dayton Hamvention.

- Meeting was adjourned at 7:03pm

- Following the meeting, Kevin Hibbs KG4TEI gave an excellent and very informative presentation on 3D printing. During the presentation he printed a small, but very loud whistle, which took approximately 28 minutes to print.

- It was mentioned that the Museum of Information Explosion has been renamed to Signals – Museum of Information Explosion. To access the museums web site, go to signals-museum.org

2023 NADXC Financial Status– April 1

Budget Category	Targets	Year Totals	April Subtotals
Year Start	8,365.65	8,365.65	8,886.94
Dues In	1,000	889.58	206.41
Recurring Exp	-683.00		
repeater elect	-160		
web hosting/domain service	-73	-16.88	
repeater maintenance	-100		
to HARC for Zoom	-50		
use of museum	-300	-300	-300
Bank checks		-22.5	22.5
Donation of equipment to sell			
Dxpeditions	-1,000	-305.00	-205.00
Picnic	-160		
DX Banquet	380.00		
venue	-600	-600.00	-600.00
food	-2,350		
speaker	-400		
tickets	3,800		
raffle	700		
grand prize	-390		
beer/wine	-250		
insurance	-130		
EOY Bank Delta	-463		
Year End Bank Balance	7,903	8010.85	8010.85

ARI International DX Contest (CW, SSB, DIG), 80-10M

May 6, 1200Z to May 7, 1159Z

Exchange: RS(T), plus Serial # or 2-letter province

See page 73, May QST and www.ari.it

CQ-M Intl. DX Contest (CW & SSB), 160-10M

May 13, 1200Z to May 14, 1159Z

Exchange: RS(T) plus Serial #

See page 73, May QST and www.cqm.srr.ru/en-rules

Volta WW RTTY DX Contest (DIG), 80-10M

May 13, 1200Z to May 14, 1200Z

Exchange: RST, plus S/N, and CQ zone

See page 73, May QST and www.contestvolta.com

His Majesty King of Spain Contest, (CW), 160 – 10M

May 20, 1200Z to May 21, 1200Z

Exchange: RS(T) plus Serial # or EA Province

See page 73, May QST and https://concursos.ure.es/en/s-m-el-rey-de-espana-cw/bases/

UN DX Contest, (CW & SSB), 80 -10M

May 20, 0600z to May 20, 2100Z

Exchange: RS(T) plus serial or Kazakhstan district code

See page 73, May QST and www.undxc.kz/rules-eng

EU PSK DX Contest, (DIG) 80– 10M

May 20, 1200Z to May 21, 1200Z

Exchange: RST plus Serial or EU area

See page 73, May QST and www.eupsk.club/eupskdx/eupskdxrules.pdf

Baltic Contest, (CW & SSB), 80M

May 20, 2100Z to May 21, 0200Z

Exchange: RS(T) plus serial

See http://www.lrsf.lt/en/balticcontestrules/

CQ WPX CW Contest (CW), 160-10M

May. 27, 0000Z to May 28, 2359Z

Exchange: RST plus serial #

See www.cqwpx.com/rules.htm

ARRL International Digital Contest, (DIG), 160 – 6M

June 3, 1800z to June 4, 2400Z

Exchange: 4-character grid square

See https://contests.arrl.org/dig/

Asia-Pacific Sprint (SSB), 20 & 15M

June 10, 1100Z to 1300z

Exchange: RS plus serial #

See http://jsfc.org/apsprint/aprule.txt

Dates & times often change or are misprinted in the journals; beware.

Congratulations Bruce, AC4G!

Bruce received his plaque for being the W/Ve Single Operator QRP Winner in the 2022 ARRL International DX Contest radio.

2023 May01	2023 May05	Fiji	3D2LYC	VE3LYC (B/d)	By VE3LYC fm Yanuca I (IOTA OC-189); 30-10m; CW SSB
2023 May01	2023 Jun15	Niger	5UA99WS	LoTW	By IU5HWS fm Niammey; 40-10m; mainly FT8, some SSB; multiband dipole; QSL via EA5GL
2023 May02	2023 May05	Malta	9H6XX	DL2JRM	By DL2JRM; 80-10m; CW
2023 May03	2023 May07	Corsica	TK	IS0JXO Buro	By IS0JXO as TK/IS0JXO; HF VHF; CW SSB
2023 May04	2023 May11	San Andreas & Providencias	HK0	LoTW	By PY8WW as HK0/PY8WW, PY7XC and PY7RP likewise; 40-6m; SSB CW FT8; 100w; QSL via Club Log OQRS or h/c direct
2023 May05	2023 May15	Rwanda	9X2AW	LoTW	By DF2WO fm nr Kigali (KI48xb); HF + 6m; QSL via M0OXO
2023 May20	2023 May27	Market Reef	OJ0	EA5GL	By LB5SH as OJ0/LB5SH fm San Andres I (JP90nh); 80-6m; SSB CW FT4 FT8
2023 May20	2023 Jun04	Maldives	8Q7VJ	LoTW	By HB9VCJ fm Ookolhufinolhu, Lhaviyani Atoll; 40-6m; SSB + FM on 10m; 5 or 10w
2023 May23	2023 Jun07	St Kitts & Nevis	V47JA	LoTW	By W5JON fm Calypso Bay; 160-6m; SSB FT8; yagi, verticals; QSL also OK via W5JON direct
2023 May23	2023 Jun14	Rwanda	9X2AW	M0OXO	By DF2WO fm Kigali; 160-10m; CW SSB + digital
2023 Jun23	2023 Jun29	Br Virgin Is	VP2V	W9DR Direct	By W9DR as VP2V/W9DR fm Anegada I (FK78tr); 6m; FT8 Q65 SSB CW; 1kw; 5 ele yagi
2023 May23	2023 May30	Turks & Caicos	VP5	K4QPL Direct	By K4BAI as VP5/K4BAI fm Providenciales I; HF; VP5M in CQ WPX CW; M/S
2023 May24	2023 Jun01	Anguilla	VP2E	LoTW	By KE1B and W6NN as VP2EAQ and VP2EAR; 40-10m, perhaps 6m; CW SSB FT8 FT4; 100w; Buddipole; VP2EAQ in WPX CW Contest