



RADIO AMATEUR NEWS & VIEWS

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JT65, JT9, and FT8 – what's all the buzz - October 10th

Dave **KC1APK** will lead a short presentation on how you can make worldwide contacts with even the most modest station and no more than 30 watts. All you need is a way to connect a computer to your rig, a soundcard, and a way to activate your PTT. We will discuss the WSJT-X program and some useful add-ons including JT-Alert and PSK-Reporter. With some luck, we may also have a live demonstration.

BUTTON BAY STATE PARK ACTIVATION

Bob KB1WXM

On the 24th of September, **W1SJ**, **AB1DD**, and **KB1WXM** activated Button Bay State Park in Vergennes for the Vermont Parks on the Air.

The weather was summer-like (mid to upper 80s) with few clouds and almost no wind. We got a 20 meter dipole up about 50 feet north-south, and the 40 meter up about 60 feet, east-west. Within minutes there was a pile-up on 20 that lasted almost five hours, with about 600 contacts. Europe was just as loud as the US, and the west coast stations were real 55 to 59. Most of the 20 meter contacts were SSB, with a few on FT-8. All three of us had our time on 20 meters, and, from my perspective, it was relentless, and frustrating at times. Mitch, however, was in his element.

Carl and I manned the 40 meter station, which had a much slower rate, with a little over 150 contacts in 4 ½ hours. We made it into 23 states, with 4 Vermont contacts. We were loud into PA, with contacts as far west as WI and MN and as far south as FL.

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<https://www.facebook.com/groups/292829457810746/>

The surprise on this activation was 20 meters. The propagation forecast for the day was fair to poor, but our experience with 20 meters proves that you can't always believe forecasts; just call CQ and judge for yourself.



Photo courtesy of KB1WXM

You can see a short video of the day here:

https://www.youtube.com/watch?v=1_in0TxFCZY

The VPOTA events will continue into the next few years, and I hope other hams, and clubs, will start to activate parks. It's fun to get outdoor and play with radios. Remember to post activation dates on the Facebook page,

<https://www.facebook.com/groups/292829457810746/>



Photo courtesy of KB1WXM

Also, use the WWFF park numbers when activating.

<https://wwff-kff.com/> The Word Wide Flora and Fauna chasers really want to get our parks since they are rare entities.

BUTTON BAY ACTIVATION

Mitch WISJ

On September 24, some of us had a MAD moment. MAD is a relatively new ham radio term which means Must Activate Day. It's a day in which we must get to park - any park - and activate the sucker. And so we did. Bob KB1WXM, Carl AB1DD and I set out for Button Bay State Park in Ferrisburgh on this particular Sunday. Prior to that, we had a long ranging discussion of which park we should activate and I decided since it was going to be hot, I wanted to be on the shore.

Did I mention hot? It was a real stinker out there - 87 degrees and a lot of humidity and no wind. Recall that when we last did Missisquoi in December it was a balmy 11 degrees. But we had an air-conditioned site under the trees which was quite comfortable. And with this being a late season activation, the insect air force had already left town.



Photo courtesy of WISJ

Although there were only 3 of us, we have gotten real quick at this game and in short order we had 20 and 40 meter dipoles 50 feet up, along with 500 watt Elecraft stations. To try something different, I started on FT8 to see how it would work out in a portable setting. It worked quite well netting 11 QSO's in 30 minutes. At noon, I switched to 20 SSB, made one CQ call, and had an insane pileup for the rest of the day. Bob reports it was relentless and frustrating, but I thoroughly enjoyed myself! The average rate was 125 QSO's per hour, more than 2 per minute. Despite the propagation forecast calling for fair to poor, conditions were tremendous into Europe - in fact, half of our 20 meter QSO's were DX. We ended up with 39 DXCC countries, with virtually every country in Europe showing up in the log - even some of the rare ones.

Things were a bit more reserved on 40 meters with quick runs and then quiet. But we logged 152 stations in the eastern half of the country who would likely not have worked us short skip on 20 meters. All told, we put a total of 748 QSO's in the log in 4 1/2 hours of fun.

Next month, I'll have a detailed summary of the Vermont Parks on the Air program in 2017, but to date, W1NVT has activated 8 parks to the tune of 4200 QSO's, KB1WXM has put on activations from 3 parks and other activators another 4-5 more. Only 40 or so more Vermont State Parks to get to! We'll put a few more parks on the air this year, and continue into next year!

FT8 – New Mode, Faster than JT65 or JT9

Dave KCIAPK

I recently discovered a fun new mode that is easy to use and extremely effective at working DX under some difficult conditions. FT8 has been helping me to increase my country count - Samoa, Fiji, Liechtenstein, Dodecanese, Mauritius among others! This mode is hugely popular right now!



40 meter waterfall showing the popularity of FT8 – note the short 15 second intervals and faint bands near the noise floor.

In the [March, 2016 Newsletter](#) I described how with a modest station and few watts you could effectively work DX using a computer, a soundcard, and the WSJT-X program.

With the June 2017 release, WSJT-X has added a new mode. Named after its designers, Steve **F**ranke (K9AN) and Joe **T**aylor (K1JT), it utilizes **8** discrete tones - also known as frequency shift keying (FSK).

A narrow bandwidth, the ability to decode signals well below the noise floor, and forward error correction (FEC) - FT8 excels at working extremely weak signals under the most challenging conditions – perfect for working DX on the HF bands during the solar minimum!

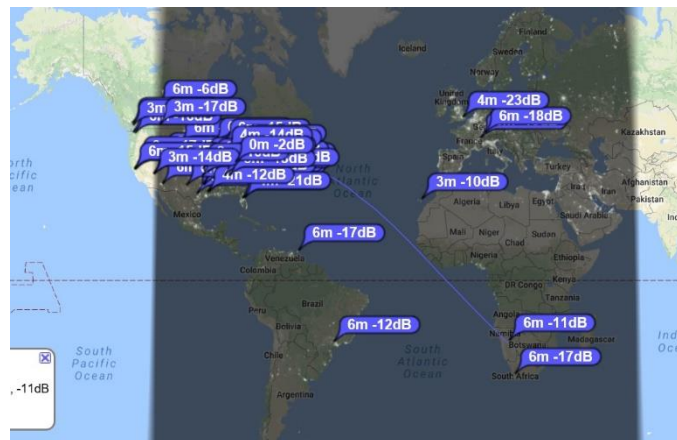
So why is FT8 so popular? Because it is fast, and the program handles much of the exchange.

Whereas JT65/JT9 alternates transmitting and receiving every minute, FT8 has 15 second T/R intervals. A contact takes as little as 60 to 90 seconds – much shorter than the typical 4 to 6 minute JT65/JT9 QSO!

Because you don't have sufficient time to react between transmissions, the auto-sequence feature takes care of advancing you through the QSO. Simply send out a CQ and wait for a response. As soon as someone replies, the program

manages the exchange consisting of grid square, signal report, confirmation, and a parting “73” – A great way to make rapid contacts.

One small thing to remember is that you may need to add FT8 as a recognized mode to your logging program. My version of Ham Radio Deluxe did not have it, probably because FT8 was only released a couple months ago.



PSK Reporter showing stations picking up my transmission. Note the -11 dB into South Africa

	FT65	JT9	FT8
Release Date	2003	2013	6/2017
Tones	65	9	8
Bandwidth (Hz)	178	16	50
Sensitivity - S/N (dB)	-25	-27	-21
Transmit/Receive Interval	1 minute	1 minute	15 seconds
QSO Duration	4-6 minutes	4-6 minutes	60-90 seconds

For additional information, check out the two part tutorial on WSJT-X starting in the October 2017 issue of QST.

To learn more about WSJT-X and to download a free version of the software, visit:

<https://www.physics.princeton.edu/pulsar/K1JT/wsjsx.html>

FT8 TAKES HAM RADIO BY STORM

Mich W1SJ

FT8 has become the big word in ham radio, after being introduced only a few months ago. I set up on this mode to help pick up new grid squares on 6 meters during the VHF QSO Party. In playing with the mode, I found a tremendous amount of activity on all the bands. In this piece, I'll cover the items a successful operator needs to know to use it wisely.

First thing is to remember that this is not a rag chew mode! You get 13 characters per transmission and each transmission takes 15 seconds. Its purpose is to make QSO's possible when signals are in, or below the noise. While FT8 is quite a bit faster than other digital modes like JT65, it still is on the slow side. Under good conditions, I can hold a rate of 20 QSO's per hour on FT8. But at the same time, I can do 50-60 QSO's per

hour on CW, and over 100 QSO's per hour on phone. However, if conditions are super poor, phone may not produce anything and FT8 would end up being quicker.

To use FT8, you will need to download and install the WSJT-X V1.8 software which is widely available. You will then need an interface cable between the computer and the radio. Some pay a lot of money to get something like a Rig Blaster unit, but this is not necessary. The interface essentially connects the computer audio out to the radio's microphone input and the radio's audio out (or headphone out) to the computer's microphone input. The cables will need some resistance in them to keep from overdriving the inputs – I've found a 100K series and a 10K parallel resistor good ballpark values. Finally you will have to decide how to key the transmitter. You can key the radio using VOX, or else build a small circuit to key the radio from a serial port (on my old buzzard computer) or USB port. There is plenty advice for this on line.

It is imperative that your computer's clock is set to the exact time. Local time is fine – the program knows how to calculate UTC. Everyone must be synchronized or chaos will rule. FT8 works in an A-B mode. One group of operators transmits the first 15 seconds, and the second group transmits the second 15 seconds. Don't worry about this – the program will figure it out for you – but your clock must be set correctly.

Then you have to know the exact frequencies to use. Each of the various digital modes has their own palette of frequencies across the bands. The software makes this easy – just pick the mode (FT8 in this case), and when you choose a band, WSJT will tell you the frequency to use. You MUST use UPPER sideband – so be ready to switch to the opposite sideband mode when on 40 or 80 or 160 meters.

When you tune to an FT8 frequency, you will hear a mess of drifting carriers and you'll wonder how anyone can be copied in all that mess. FT8 locks onto a chunk of audio spectrum which is 50 Hz wide. If you have the proper audio level going into the program, as indicated by the audio meter to the left of the screen, you should start decoding some signals. Remember FT8 only decodes at the END of each station's transmission. The table on the left of your screen shows everyone in the receiver's pass band and shows their specific audio frequency. The table on the right shows stations on your audio frequency, which is set up in the box towards the bottom of the screen. Alternatively, you can use the waterfall to look at signals, just like in PSK-31, but I prefer the table.

Your station will not transmit until you click on the TX Enable button, so don't worry about messing up. But once that button is active, you will be on the air in 15-second sequences.

When someone calls CQ, their information comes up in green. If you click on that line, two things happen. First, your audio frequency is shifted to their calling frequency. Second your transmitter will come on in the correct time sequence and answer the CQ automatically. If the other station hears you, they will respond with a signal report in db above or below the

noise. If your station decodes this, the software will automatically respond with your own signal report. Then the other station sends "RRR" and your station sends "73". During this entire time (about 90 seconds) you have done nothing – the software has done it all for you! It is semiautomatic operation – but you must initiate and end the exchange.

DON'T CALL someone if they are in QSO with another station! If you do this, you will interfere with the station they are trying to work (yes, just like we see on SSB). Instead, WAIT until the station you desire sends "73" or better yet, call them on a different audio frequency. In that way you will not QRM their QSO, and the screen will highlight your call to them in red so that they see you are waiting to work them.

Some things bear mentioning. While FT8 and the digital modes are very good at picking up signals in the noise, your first goal is always to build a decent ham station. Don't use FT8 because you are too lazy to put up a decent antenna. While you do not need a Yagi on a big tower and tons of power, you should set up a good station with proper grounding and a good outside wire antenna before doing digital. RF can and does get into audio cables and computers, so it is imperative that you have everything set up properly and not end up fighting RF interference because of a poor installation.

If conditions are real good and signals are copiable, there isn't much point to using FT8. Instead, use SSB and enjoy. When I get on FT8 on 40 meters at night, virtually all the signals I hear are several S-units out of the noise. However, the signals on 15 and 17 meters these days are all quite weak and that's where FT8 shines. I've found FT8 to be great in knocking off new states and countries on the WARC bands of 30, 17 and 12 meters. We cannot contest there, but FT8 is the perfect mode to pick up new multipliers. The software has its own logging facility which generates an ADIF file ready for upload to Logbook of the World. And one very important thing – the LOTW upload rate for FT8 ops is on the order of 75%, so if you work them, you will likely confirm them!

We'll be having several demos of this mode in upcoming months. But don't wait, download the program and get set up on this new exciting mode. In a short time, you will get really good at it.

CONGRATULATIONS!

Congratulations to the following new licensees:

- **KC1ICT** – Michael Fiske (Burlington) - TECHNICIAN
- **KC1ICU** – Jason Cecchetti (Colchester) – GENERAL
- **KC1HZI** – Evan Yandell (Williston) – TECHNICIAN
- **KC1HZJ** – Mark Delbeck (Colchester) - TECHNICIAN

FEATURED PLATE OF THE MONTH



Thanks Adam!

Got a ham plate or Amateur related vanity? Send us a picture, and we'll feature it one of the upcoming newsletters.

WINVT ACCOLADES

Mitch W1SJ

Many of us have been involved with WINVT operations from Field Day, the Vermont QSO Party and Vermont Park activations. All logs from WINVT, and special event station W1V, along with my call signs W1SJ and WB1GQR and my portable operations from various places, are uploaded to Log Book of the World. Did you ever wonder about results of all of this?

The call signs I manage currently (as of September 30) include 265,477 QSO's, which result in 88,863 electronic QSL from logs going back around 20 years. WINVT has credit for 82 DXCC countries. That's right, just 18 more DX countries and we qualify for DXCC! WINVT easily has Worked All States (WAS). In fact we are only 8 shy of FIVE BAND Worked All States – we need 1 state on 80 meters and 7 on 10 meters. Heck, we even have 34 states confirmed on 6 meters! While we will not pick up WAS on 6 meters anytime soon, we already qualify for VUCC on 6 meters with 108 grids confirmed. Wow! One of these days, I'll get around to applying for the awards.

We have been systematically uploading logs to the Worldwide Flora and Fauna database, which keeps track of the Parks on the Air program. We qualify for several awards in that program, including: Activations, Parks Worked and Park to Park QSO's.

WINVT is a very well-known call sign from our Field Day operations and park activations. Folks remember us from previous activations and often complement us on a fine job of working everyone. And we will continue to do activations. Why? Because it is a load of fun!

OCTOBER NOMINATIONS NOVEMBER ELECTIONS

At this month's meeting, we will be taking nominations for club officers with elections to be held in November

GOOD LUCK AND BEST WISHES TO K1WAL

Dave KCIAPK

Kathi **K1WAL** and Stacy have announced that they will be moving to Franklin, NC over the next few weeks. Kathi has been a very important member of our club and after many years will be stepping down as our current RANV Secretary. As such, we will be seeking nominations for her replacement. In the meanwhile, please join me in wishing Kathi all the best – hope to work you in NC!

EDITOR NOTES

Dave KCIAPK

THANK YOU BOB BROWN!!

Please join me in thanking Bob Brown **W4YFJ** for all his assistance with folding, sealing, addressing, and mailing the monthly newsletter. This is a very time consuming process, and we wouldn't be successful without his help! **THANK YOU BOB!!!!**

WE WANT TO HEAR FROM YOU!

This is your club newsletter. Feel free to submit articles! Items of interest can be short, long, technical, anecdotal, etc. Share your experiences and stories!

NEWS & VIEWS VIA YOUR INBOX

Did you know that 20 of our members have signed up for electronic delivery of the newsletter?

To enroll, just send me an email at davidblin@aol.com. You'll get fast delivery, the club saves a dollar each month, AND the pictures look GREAT!



NEWS & VIEWS

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NEXT MEETING JT65, JT9, & FT8 Presentation Officer Nominations

Tuesday • October 10th • 7:00 pm
Wheeler House, 1100 Dorset Street
South Burlington, VT

Upcoming, Notices, & Misc

- Steering Wheel: 3rd Tues 6:30; Ninety-Nine Restaurant, Taft Corners, Williston
- VE Exams every 2nd Friday; Red Cross Building 29 Mansfield Ave, Burlington
- Dues due? Pay online at www.ranv.org/ranvpay.html