RADIO AMATEUR NEWS & VIEWS

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NEXT MEETING FEBRUARY 13th

Bob Brown **W4YFJ** will present a talk on the current Enhanced Statewide E911 system in Vermont. He will include some history as well as the current operation of the system.

WHAT'S HAPPENING AT HAM-CON?
Mitch W1SJ

The ARRL Vermont State Convention, known as HAM-CON, will take place Saturday, February 23rd, 8 AM until 1 PM at the Holiday Inn Convention Center in South Burlington.

Wuz happening??

Well, I'll tell you. Things have been changing big time at the ARRL with four new directors coming on board this year. One of those new directors is Fred Hopengarten **K1VR** representing the New England Division. Fred will discuss his vision for the ARRL and ham radio and what has recently transpired at the ARRL Board meeting last month. Fred is also an attorney who specializes in the legal aspects of antennas and he will fill us in on how to raise the big array – legally.

Speaking of antennas, how does one erect an antenna safely? Our own Bob Allen **KB1FRW** will talk about antennas, towers and OSHA regulations to make sure that you emerge in one piece from your antenna expeditions.

We'll have a new speaker this year, ARRL EMC Engineer Paul Cianciolo **W1VLF**. EMC stands for Electromagnetic Compatibility, or as we like to call it – RFI. He will be discussing how to deal with non-ham interference and sharing information on other technical topics during his talks.

John Grow **VE2EQL** is back with another pair of great forums. In the "Portable Ham", he will show what equipment, power sources, and antennas are used in a compact station. He

CONTACTS

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Dave	**KC1APK**, Editor davidblinvt@gmail.com

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US Mail:	PO Box 9392 South Burlington, VT 05407
Web:	www.RANV.org
Reflector:	RANV@groups.io
Meetings:	2nd Tuesday • 7:00 PM Wheeler House 1100 Dorset Street South Burlington
Repeater:	145.150, PL 100; WB1GQR

New Hams, Mentoring:
RANVMentor@gmail.com

VT State Parks On The Air:
https://www.facebook.com/groups/292829457810746/

Online Dues Payment:
www.ranv.org/ranvpay.html

will follow this up with something completely different, "The Raspberry PI 3B Ham", which will show how to use this computer board in ham radio applications. Want whipped cream with that?

We never stop hearing about the two digital modes sweeping ham radio – FT8 and DMR. Many are on these modes, but many are not and find them foreign. Are they amateur radio's savior or death knell? Good question. Mitch Stern **W1SJ** will introduce these modes for those unfamiliar with them and discuss whether they would be useful or not for you.

After hearing about FT8, we'll also provide a demonstration of it at our **W1V** special event station, where you can sit down and make contacts – digitally. After that, you can go on SSB and talk, non-digitally.

Add to all this, the vendor room, RANV Flea table, demonstrations, the tech table, VE session and hundreds of hams from the North County and you have one hell of a ham convention. Buy discount tickets at the next meeting or on the web site. Come early! And stay to the end, because we have LOTS of great prizes to give away. Be there!

VERMONT QSO PARTY 2019 – TOUGH CONDITIONS
Mitch W1SJ

With a sunspot number of a big fat zero, the conditions were certainly challenging. But the contacts were there to be made, if you had the tools and knowledge how to do it. This was not a good year to run low power or a low antenna. In these conditions, a superior antenna really, really makes a big difference.

The **W1NVT** multiop ended up with just shy of 1800 Q's, which is a not a high water mark, but not the lowest, either. The DX was there on Saturday morning, but not great. I logged 40 countries, which is down from the usual 55-60 that I can pick up in this event. I was helped out on Saturday by Paul **AA1SU**, Jim **KE1AZ** and Beverly **KI6ISG**. To sum it up, 20 meters between 9 AM and 6 PM was like shooting fish in a barrel. There were big rates all day long.

At other times, it was a different story. Friday night started slow, but a 2 hour run on 80 meters was nice. On Saturday night, after 20 meters stopped, things came pretty much to a halt. Saturday night was so poor, I watched TV for a while. Sunday morning was a disaster. The DX was hardly there - just a few weak signals from England. With little DX and stateside not quite in, none of the bands produced anything. The last hour on Sunday was wretched. Some 75% of the phone contacts were on 20 meters.

The saving grace (or death of ham radio, depending on your viewpoint) was FT8. When conditions got real slow on phone, I switched there and kept up a steady 20 QSOs per hour rate, but of course the points are double and plenty of multipliers are around. FT8 contacts were made late into the night - up to 3AM. The European sunrise opening Sunday morning on 80 meters was excellent. I even heard **K1BIF** on - I didn't know he was a night owl! During day, when I was on 20 meters, I put the 2nd radio on 40 meter FT8 and it kept plugging away, logging stations as I and others ran on 20 meter phone. Antenna limitations limited the amount of dual banding, however.

I logged 307 FT8 QSO's on FT8 in a part time operation. Of these, only 272 were good - many duplicate logging (FT8 logging is rather crude) or plain out dupes when guys called me several times. I had something like 169 grids logged, which results in 42 multipliers when the divide-by-4 calculation is applied. So FT8 was a saving grace. But it is likely cause of the lack of QSO's on phone and especially CW. Conditions weren't great, but they weren't totally horrible. I would be told that I was the loudest thing on the band (several times) yet I couldn't buy a contact at times. Why? Probably because everyone was screwing around on FT8 and they could have easily been worked on SSB or CW and a lot quicker.

Sadly, I didn't see all that much activity from Vermont stations, at least on the cluster. Of course, conditions were tough and 100 watts to a dipole would have been a real slog. I did see a lot of Vermont activity on FT8, though, so we were on the air and workable, if you knew where to look.

Thanks to **AA1SU**, **KE1AZ** and **KI6ISG** for doing the operating on Saturday, allowing me some much needed rest and relaxation time. Thanks to **K1BIF**/**AB1DD** and W1ZU/N1GVT for roving to some of the rarer counties. Thanks to everyone to got on to put Vermont on in the event.

And to those many, many stations who I could barely hear and perhaps got their call sign correct in the log – y'all should have put that antenna up higher!

Paul AA1SU shows off his FIVE Band WAC award at the Ham Breakfast – *photo courtesy of Duane WL7CVD*

W1ZU's car grows icy whiskers during his Rover outing. Wx got sketchy in the NEK Saturday evening. – Photo courtesy of Scott W1ZU

VTQP ROVER - GRAND ISLE AND FRANKLIN CO.
Bob K1BIF

At 7:30 I headed out for Grand Isle Co. I had scouted a good place to set up the rover station the day before. The spot was on the side of Route 2, past the lake and before South Hero, on the crest of the hill, just past the passing lane headed north. There was a wide (cleared) shoulder, so traffic didn't affect the setup. I set up the ham stick dipole 12 feet above the truck bed, for 40 meters. 20 meters was just a vertical ham stick attached to the side of the truck bed. My truck has a Kenwood TS480 in it, 100 W.

K1BIF and AB1DD Operate Rover
Photo courtesy of Bob K1BIF

It was 10 above 0 and quite windy. Carl, AB1DD showed up just as I finished setting up, and we began to try to make contacts. The sunspot number was 0 and there was a mild geomagnetic storm going on, so propagation was bad. After calling CQ on 40 meters for about an hour with no contacts, we switched to 20 meters. At first we searched the band for activity, and made contacts with a few big European stations, then settled into calling CQ. After about 3 ½ hours, my feet were numb and the contacts dried up, so we called it quits with only 14 contacts. Both of us headed home. After I ate lunch, and I could feel my feet again, I headed out to Franklin County. I parked in a large parking lot just off the Georgia exit on I-89.

After noting the S-7 noise level, I moved to the other side of the lot, away from the power lines. After an hour and a half of watching the snow pile up on the road, I left with 15 contacts (9 on 20m and 6 on 40m), all from calling CQ. It was interesting, and sometimes fun. But, the cold was a bit much for me, especially setting up and dismantling the hamstick dipole. In winter weather, a simple vertical which screws into a mount on the back of my truck avoids frostbite.

SECRETARY'S MINUTES
Duane WL7CVD

There were about 13 in attendance. The club president, Bob **KB1FRW**, called the meeting to order at 7:01 PM.

Ham Con
February 23rd, Holiday Inn, South Burlington. Need a volunteer coordinator. There will be no RANV table (no directory sales). Memberships can be renewed at ticket desk. Duane & Bob B. will staff the RANV flea market table.

General Items
Bob **W4YFJ** has a collections of magazines he is willing to give away.

The need for a club trailer was discussed. Recommended to be 12' long with a capacity of 1,700 pounds. Motion to Allocate Funds for Club Trailer - Dave **KC1APK** moved to authorize up to $4,500 to acquire a club trailer. Stu **KC1IFK** seconded. Passed.

Motion to Allocate Funds for a Digipeter Project.
Jeff moved to allocate $100 for this project. Larry **KB1ZEB** seconded. Passed.

Presentation
Bob **K1BIF** gave a presentation on railroad watches. This included an overview of how a wind-up watch words, the significance of jewels in a watch (the more jewels, the less friction), the specific characteristics of railroad watches. One feature is that the levers to set the time are protected under the glass face. Another feature is that the watch is balanced in such a way that it maintains accuracy in various physical orientations. Bob mentioned that time zones were invented to standardize time so rail traffic could be coordinated. This also gave rise to the need for the highly accurate watches.

Snacks
Jim agreed to bring snacks to the next meeting.

ANNUAL HAM BREAKFAST RECAP
Dave KC1APK

Once again, the annual ham breakfast held at JP's Diner in Essex was great success as we took over the back of the restaurant with 27 hams and guests in attendance. Service at JP's was fast, the food good, and the conversations at each table interesting. Many of the regulars were there in addition to several new hams. At the end, Mitch led the discussion about upcoming events including the VTQP and HamCon with everyone introducing themselves with a recap of activities over the past year. Hope to see you there next year!


Mitch leads the discussion – *Photo courtesy Dave KC1APK*

Ham Breakfast – *photo courtesy Dave KC1APK*

ANALOG DEVICES ADALM-PLUTO SOFTWARE DEFINED RADIO
Mike N1JEZ

Analog Devices has released a new teaching module. The ADALM-Pluto (Analog Devices Active Learning Module) is a software defined radio covering 325 MHz to 3.8 GHz. It was designed to be used as a teaching tool. This module is reasonably priced at around $150 - (shop around for deals - I got mine for $125)

Features

- Portable self-contained RF learning module
- Cost-effective experimentation platform
- Based on Analog Devices AD9363 Highly Integrated RF Agile Transceiver and Xilinx® Zynq Z-7010 FPGA
- RF coverage from 325MHz to 3.8GHz
- Up to 20MHz of instantaneous bandwidth
- Flexible rate, 12-bit ADC and DAC
- One transmitter and one receiver, half or full duplex
- MATLAB® Simulink® support
- GNU Radio sink and source blocks
- Libiio, a C, C++, C#, and Python API
- USB 2.0 Interface
- High quality plastic enclosure

RF Performance

- Tuning Range: 325MHz to 3800MHz
- Tx Power Output: 7dBm
- Rx Noise Figure: <3.5dB
- Rx and Tx Modulation Accuracy (EVM): –34dB (2%)
- RF Shielding: None

As you can see, there's a lot in this little package.
One of the toughest parts of these devices is finding suitable software to run them - especially transmitting. While most all will work with programs like GNU radio, the learning curve is steep for the average ham with no DSP background.

Lucky for us, Simon Brown comes to the rescue. Simon is the author of SDRConsole v3. This powerful Windows program supports the Pluto (and many other SDR's) in both receive and transmit. His software is free.

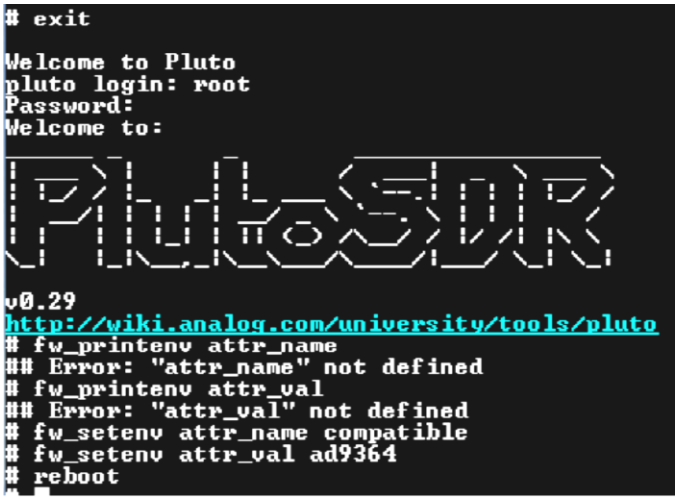
https://www.sdr-radio.com/

Once you receive your Pluto, you will need to install drivers for it. These can be downloaded here:

https://wiki.analog.com/university/tools/pluto/drivers/windows

While the frequency coverage is good, there is a 'hack' to make it even better. The Pluto uses the Analog Devices AD9363 RF transceiver. This covers 325 MHz to 3.8 GHz. We can trick the Pluto in to thinking it has an AD9364 chip inside. This extends the coverage from 70 MHz to 6 GHz. It turns out, the Pluto is shipped with an AD9364, but they call it an AD9363 because the part may not have met "spec".

To "hack" your Pluto, you will log in to the Console using a telnet client such as PuTTY or Tera Term. When you first installed the Windows drivers, it created a Comport. This is the port you will use to talk to the Pluto. Below you can see I've connected with Tera Term on COM4 at 115200 baud. Use root/analog for user/password. Then use the fw_printenv command to check your Pluto followed by the fw_setenv command to change the variables. See below.

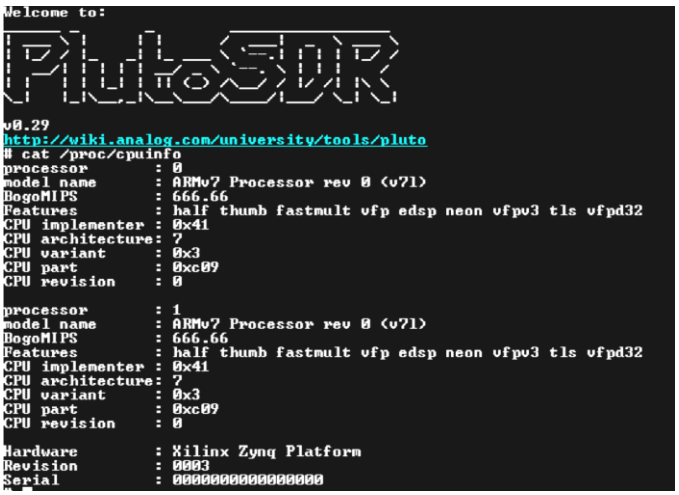


Once you've issued the commands, after a reboot, it should look like this after you interrogate it with the fw_printenv commands.

You now have the extended tuning range.

There is also a "hack" to enable a second core in the CPU. To do this, log in to the Console again and use the cat /proc/cpuinfo command to check your Pluto then use fw_setenv maxcpus to enable the second core.

It will look like this for dual cores. (processor 0 and 1 will be enabled)



There is one more thing you should do to your Pluto. Upgrade the Firmware. First download the latest firmware (0.30 at this time) from here.

https://github.com/analogdevicesinc/plutosdr-fw/releases/tag/v0.30

Download the plutosdr-fw-v0.30.zip file and extract it. The Windows drivers you installed will have also created a Pluto USB Drive on your machine. From the firmware file you extracted, copy pluto.frm to the Pluto USB Drive that was created. Next 'eject' the drive. It is very important to 'eject' not just remove the drive. Once you select 'eject', one of the blue LED's on the Pluto will start flashing fast. Let it finish and then it will reboot.

Next, open the Pluto USB drive again and select info.html This will bring up a webpage in your browser. Select the Firmware tab and you should see this screen showing the firmware revision. (build v0.30)

For audio input to SDRConsole, I use a Microsoft LifeChat USB Headset. These are cheap and easy and just work!

So far, I have transmitted on 6M (yes it's below the spec, but works!) 2M, 222, 432, 903, 1296, 2304, 3456 and 5760 with the Pluto. I've actually generated a signal on 10 GHz (10.368 GHz) as well using 3456 MHz. (3.456 x 3 = 10.368). It turns out, the odd order harmonic output (3, 5, 7 etc) of the Pluto are very high. So we use this to our advantage with proper filtering.

This has been a quick and dirty look at the Pluto. It's a lot of bang for the buck!

Editor's note: I did my best to reproduce Mike's screen shots. If you have difficulty reading the commands, please email Mike directly at n1jez@burlingtontelecom.net for an original copy of the article.

RANV FEATURED STATION
Thanks Bob W4YFJ for sharing pictures of your awesome station!!!


Left Side of Console – *photo courtesy of Bob W4YFJ*

Right Side of Console – *photo courtesy of Bob W4YFJ*

OPINION – Opposition to H.95 and BPL
Mike N1JEZ

I just got this from a newsletter on the VT Legislature:

The House Committee on Energy and Technology is reviewing two broadband initiatives. The first bill, H.94, proposes to increase funding to broadband initiatives, including increasing the Universal Service Charge for a limited time and using the funds raised to support the High-Cost Program, the Connectivity Initiative, and feasibility studies and technical assistance for municipalities in the process of developing a communications union district. The second bill, H.95, would require the Commissioner of Public Service to study the feasibility of electric companies providing broadband Internet access service using electric distribution and transmission infrastructure.

H.95 sounds suspiciously like BPL. We don't want that!!

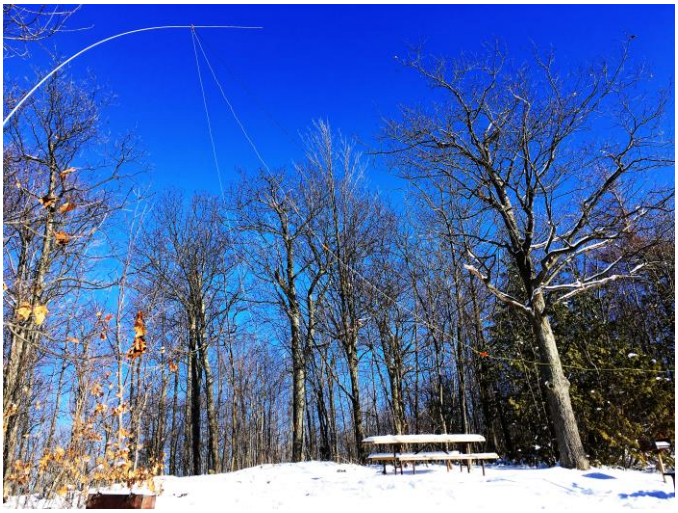
Mt Philo – An easy SOTA HIKE
Dave KC1APK

Looking for an easy hike to for a Summits On The Air (SOTA) activation? Try one of the most popular in Chittenden County – Mount Philo (W1/GM-149)

W1/GM-149 on a cold, crisp, and sunny day January 13th

At 990 feet of elevation and easy access via a half-mile trail or via a paved access road, Mount Philo State Park is open for hikers year round – car access only in the summer. Snowshoes or microspikes this time of year are useful, but you'll also find many hikers making the trek in just winter boots.

The top offers spectacular views into Addison County and across the Lake towards the Adirondacks.


30 foot SOTA Pole and 20 meter Inverted V – Picnic table makes a good spot to operate – photo courtesy Dave KC1APK

Not only is it a short drive from the Burlington area, it is easy to make contacts with many folks locally on VHF. With large open spaces, tall trees, and plenty of picnic tables, you can also easily set up an antenna and rig to work HF. All you need is 4 simplex contacts to earn a whopping 1 point as a SOTA activator!

For more information, visit: http://sota.org.uk

EDITOR NOTES
Dave KC1APK

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 25 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!

RANV
PO Box 9392
South Burlington, VT 05407

NEWS & VIEWS

INSIDE

NEXT MEETING

Tuesday • February 13TH • 7 pm

Statewide E911 System in VT

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