

Dixie Ham Radio Newsletter January 2018



**Amateur Radio works...
...when all else fails!**

We are an ARRL Affiliated Club

Officers (positions not yet determined):

Board Member..... Harold Wells, KE7OZG

Board Member..... Bob Vosper, KZ1B

Board Member. Lynden Kendrick, KG7SXQ

Board Member..... Deborah Porter, KE3FY

Board Member Justin Grenier, KE7JJG

*For information or comments send to:
Lynden.Kendrick@gmail.com or
Text 801-598-1618.*

Notice: *Articles, statements and opinions are those of the authors. The Club is not responsible for accuracy of the information contained herein.*

Ham Radio Special events:

The Dixie Amateur Radio Club meets on the 3rd Wednesday at 7 PM at the St. George Community Building. It is found at the Southwest corner of Washington County's Gayle M. & Mary Aldred Senior Citizens Center property, which is located at 245 North 200 West, St. George, Utah. **The next Club meeting is on Wednesday, January 17, 2018.**

This year, the WCARES (Washington County ARES) monthly training meeting will be held on the 3rd Saturday each month at 9:30 AM at the Washington County EOC training room located in the basement area of 197 E. Tabernacle in St George.

Jim Ashby, resigned as (EC) Emergency Coordinator as of November 22nd after serving five successful years. He has served the community as a technical authority and friend to many. Jeremy Cox, K2STG, will replace him as EC. He has been a ARES AEC for many years, a DARC Sunday night net control operator and he also ran the Marathon Net Control for several years.

Learn more or how to join Washington County ARES at <http://ares-wc.org/blog/>.

Activities

By Lyn Kendrick, KG7SXQ

At the November Club meeting, Lyn Kendrick and Mac Harmer made a joint presentation about antenna analyzers and how helpful they can be for tuning purchased or home-made antennas. The Power Points demonstrated graphs and examples of before and after tuning some dipoles, long wire and mobile HF antennas. Mac awed members with his technical information about matching antennas using an array of analyzers.

Also in November, final nominations were held. We had a total of 6 members nominated to run for the Three open Board slots: (Bob Vosper, Jim Ashby, Brady MacPherson, Tom Staten, Justin Grenier and Harold Wells...Jim withdrew his name before the voting). At the Year-end Dinner at the Golden Corral, votes were tallied and Justin, Bob and Harold won the new Board Member positions. (At the first Board Meeting on January 4th, President and other officers will be determined).

Some great prizes were given out. Among them were two solar panels, two drones, some TYT handheld and base radios, a Yaesu FT-60 handheld and several other first-class items. The Club purchased these from Brady at a considerable discount. Many thanks, Brady.

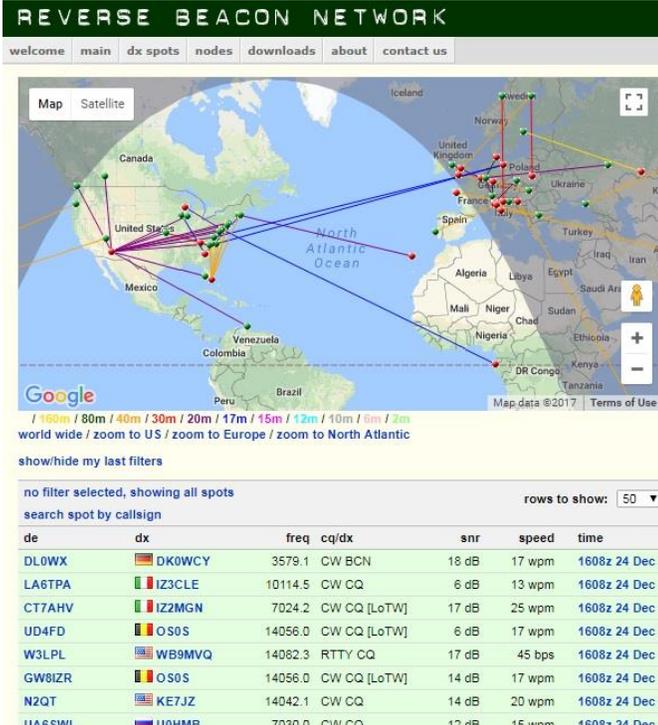
Whispers over the Wireless

(Editor: "Whispers over the Wireless" is for qrp, SOTA and cw related articles since these operators often whisper using 2 to 5 watts)

The Reverse Beacon Network (RBN)

By Mike Cartmill, ACØPR

The Reverse Beacon Network (found at www.reversebeacon.net) is a near-real-time tool that spots individual callsigns. "Instead of beacons actively transmitting signals, the RBN is a network of stations listening to the bands and reporting what stations they hear, when and how well." This accomplishes a number of things. First, you can check and see if your signal is getting out. This is especially helpful when you get a new radio, put up a new antenna, or just doubt you're being heard. It will even give you the SNR (signal to noise ratio) in dB from the listening station so you know if you're loud (high dB) or down in the noise.



The screenshot shows the Reverse Beacon Network website interface. At the top, there's a navigation bar with links: welcome, main, dx spots, nodes, downloads, about, contact us. Below that is a map of the world with various colored lines representing signal paths between different locations. A table below the map lists detected spots with columns for de, dx, freq, cq/dx, snr, speed, and time.

de	dx	freq	cq/dx	snr	speed	time
DL0WX	DK0WCY	3579.1	CW BCN	18 dB	17 wpm	1608z 24 Dec
LA6TPA	I23CLE	10114.5	CW CQ	6 dB	13 wpm	1608z 24 Dec
CT7AHV	I2ZMGN	7024.2	CW CQ [LoTW]	17 dB	25 wpm	1608z 24 Dec
UD4FD	O50S	14056.0	CW CQ [LoTW]	6 dB	17 wpm	1608z 24 Dec
W3LPL	WB9MVQ	14082.3	RTTY CQ	17 dB	45 bps	1608z 24 Dec
GW8IZR	O50S	14056.0	CW CQ [LoTW]	14 dB	17 wpm	1608z 24 Dec
N2QT	KE7JZ	14042.1	CW CQ	14 dB	20 wpm	1608z 24 Dec
UA6SWL	U0HMB	7030.0	CW CQ	12 dB	15 wpm	1608z 24 Dec

Next, even without transmitting at all, you can see what bands people are on and which ones are frequently reported (meaning the band is open). There is also a world-wide map which shows the paths of the transmitting station and the listening station, color-coded by band. All of

these spots are dependent on volunteer stations participating in the network (172 at last check).

It can be used to chase DX or to see if certain countries are being heard in the US and where. There is also a searchable database to check for specific callsigns for a limited time period. As this network relies on skimmers as opposed to people just sitting and listening, only CW and certain DATA modes are spotted on the network. (Yet one more reason to explore other modes beyond SSB).

Personally, I use the RBN when I'm on a mountain top and have zero internet or cell service—with Summits on the Air if you post an alert before going out, when the RBN spots your signal, you also get spotted to the SOTA website. Within a minute of being heard by a station on the RBN, I'm getting calls from all over, even being QRP.

Enjoy this and many other online tools for ham radio operators, 73!

Other Club Articles

Why I use a remote antenna tuner Steve Peterson, KI7L

Simple answer: "Because I get more power to the antenna".

A more complicated answer: "But with some understanding I hope".

A lot of modern transceivers have a built in antenna tuner. So why would I want an external or remote AT? The built in tuners generally have a very limited ability to tune, actually they 'match', an antenna to the transceiver, but with a 3 to 1 SWR or less capability. There are exceptions, for example the ATs in most Elecraft radios can match about a 10 to 1 SWR. OK, so I might need an external tuner to match my end fed wire or homemade vertical. Perusing the HRO catalog I see there are inside ATs as well as outside ATs, that is remote ATs.

What do ATs actually do? They take a load, your antenna, and transform (match) its impedance to 50 ohms which is what your radio wants to see. They do this by inserting inductance or capacitance between the radio and the antenna. There are several ways to do this, using 'pi' circuits, 'L' circuits, or 'T' circuits. Inside the tuner you will find lots of capacitors and inductors and a lot of relays to switch these parts into various combinations until a combination is found that results in a 'good' match. As you push the 'tune' button you'll hear a lot of clickity clack as the tuner does its thing. Important, the tuner tries to match whatever is connected to its output to the radio.

Most antennas do not present a 50 ohm load to the radio. A half wave dipole, for example (in free space), looks like 73 ohms at resonance while a vertical over a good ground plane looks like 37 ohms. Real world objects interact with the antenna causing antenna impedance to vary from these values, thus the need for a tuner. Further, these ohmic values are true only at antenna resonance. If you tune a bit away from resonance the antenna load becomes 'complex', that is in addition to the resistive component the antenna will show a reactive (capacitive or inductive) component. Most of the HF antennas I use are not resonant where I use them so I need antenna tuners.

Let's go back to: the tuner tries to match whatever is connected to its output. That includes the coax, any balun or unun and the antenna, as the load, if we have placed the tuner next to the radio. Tuners are designed to look like 50 ohms to the radio so all the power the radio puts out is 'absorbed' by the tuner then hopefully to be transferred to the now matched load. Suppose the antenna looks like 300 ohms (a folded dipole) and we have 100 ft of coax connecting the antenna and the tuner. It is a good tuner and can make the load, coax and antenna, look like 50 ohms to the radio. But there is still a big mismatch between the coax and the antenna (6:1). RF traveling down the coax will see the mismatch and some of the power will be reflected back down the coax to the tuner and some radiated by the

antenna. That reflected power will heat up, and dissipate in the coax because the coax is lossy. Whatever power makes it back to the tuner will again be reflected at the tuner and travel back towards the antenna but more power will be lost as it travels back and forth up and down the coax. If, however, I put the tuner between the coax and the antenna, the tuner makes the antenna look like 50 ohms and no reflection occurs, all the power is radiated by the antenna (minus small resistive losses)! The radio 'sees' the 50 ohm coax which 'sees' the 50 input impedance of the tuner which makes the 300 ohm antenna look like 50 ohms. This is the condition for maximum power transfer.

In reality things are not perfect and there will be a little loss in the coax, a little loss going through the tuner but maximum power will be transferred to the antenna, which is what we want.

All this wonderful solution has a catch; you have to run power out to the tuner as well as the RF. Once powered up, the remote tuner does its thing automatically but usually needs reduced RF power while tuning since the initial mismatch can damage the tuner.

My ICOM AH-4 remote tuner, at the base of my 33 ft flagpole vertical requires a 4 conductor cable to supply power and to communicate with the radio.





(Editor: I added examples of MFJ and Icom AH-4 remote tuners.)

There is a better way, design the tuner to receive power via the coax. The MFJ series of remote tuners and other brands do this. At the station end of the coax you insert a 'power injector' which is an L/C circuit. A capacitor is inserted in the center conductor to allow RF through the coax and an inductance (choke) on the antenna side of the cap to allow DC to flow into the coax but prevent RF from going back into the power supply. The opposite 'power retriever' circuit in the tuner gets the DC needed by the tuner and passes the RF to the tuner circuitry. So even though it is more complicated to implement and a bit more expensive, a remote tuner provides better transfer of power to the antenna. 73!

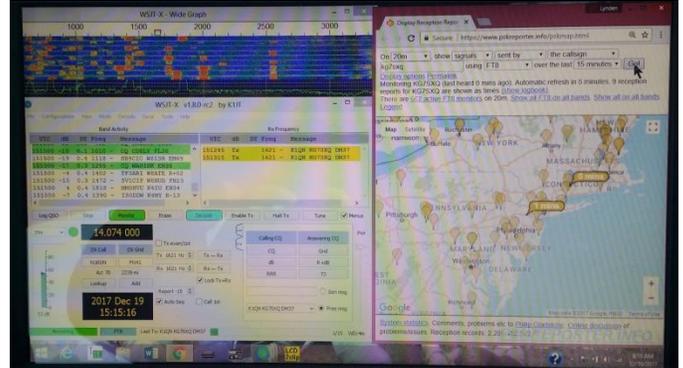
The Rhode Island Connection

By Lyn Kendrick, KG7SXQ

I've been attempting to contact every state with my 15 year-old Icom 703 (using digital modes JT65 or FT8). Rhode Island (RI) was one of the last states I needed but it seemed like I could never find anyone at "home." This is a story about the challenges of dealing with only 5 or 10 watts and a few thousand miles.

I use the PSKReporter map to see which stations are on the air. It shows different colored balloons for 20m, 40m, etc. for these stations. PSKReporter also shows if my signal is reaching these stations and at what signal strength. I could see 3 or 4 stations in RI, but

usually my CQ's were not lighting up their station. When the bounce was right and I could hit their station, I wasn't getting a return on my CQ. (Maybe their radio was on but they were talking to someone else, or they were eating, or they didn't care to connect with someone in Utah?)



(Above photo is a screenshot of laptop display)

I had been writing down callsigns on an envelope on my desk but I could see I had to get more organized. I created a spreadsheet for the 5 states I still needed and listed callsigns and when I saw them on the air. I also noted whether I saw them on 40m or 20m.

From the software QRZ, I saw K1QN, Albert Gerheim's email address and contacted him to set up a scheduled time to get in touch. After 53 emails back and forth and two weeks, we finally made contact. Here's the rest of the story:

1. I have a 35 ft mast with a 40m/20m inverted V dipole on my house BUT the background noise limits my ability to hear weak signals.
2. I initially thought it was just me, but by talking to other operators I found it's just part of city life.
3. I decided to go up to the old airport with a "portable" 20m dipole. Noise, I thought would be less, and it was.
4. Albert and I scheduled 11 AM to talk on the Monday before Christmas. I set up and was ready by about 10:30 AM. Ugh, I was thinking 11 AM Mountain Time, Albert was thinking Eastern Time. He was the one who was

correct. I missed him. Via email, he said let's try it even though I was late. He could hear me, but I couldn't hear him.

5. Also, I was in my hybrid SUV with the engine running since it was cold and I had my laptop plugged into the cigarette lighter. It has a down converter from 12v to 5.5v or whatever. Both the car and the converter were creating some QRM--probably.

6. Tuesday morning, I oriented my 20m dipole towards 70° (Monday I had it pointed for directly East). I turned off the car. I moved the converter down low and away from my radio. Since my portable dipole tunes to about 1.2 SWR, I disconnected my LDG IT-100 tuner and hooked the coax directly to my 703--think it would be one less loss point.

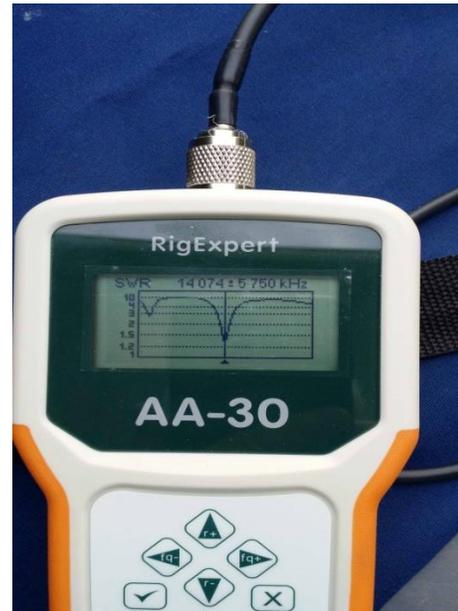
7. It all worked. We completed the contact. He was as excited as was I.

Through all this, Albert was patient and encouraging. I asked for and received permission to use his name. He uses a long wire antenna and works all bands. His station has a Proficio SDR rig and a Hardrock 50 amp. He was using about 30 watts that day. He mentioned he also has a 35 year-old 740 and a Health Kit SB221 Amp.

Until this summer, I wasn't interested in HF. It's challenging and a lot of fun. I recommend tinkering with it whether you have a 1000 watts or 10 watts.



Picture of portable 20m antenna rolled up



20m tuned to 14.074 MHz

Pick up in the "Chase"

By Lyn Kendrick, KG7SXQ

Many of you have already joined in the ARRL Grid Chase. In case you don't know what I'm talking about let me help.

This year starting on New Year's day, ARRL is promoting a huge contest that will last all year. The object of the contest is to contact as many stations in as many Grids as you can. Operators can use CW, Phone or Digital on any band (except 60m).

Each operator's station is located in one of thousands of labeled grids. I'm in Grid DM37. Someone in Logan is in DM41. These grids are known as Maidenhead Grids and are 1° latitude x 2° longitude squares. I have a map of the US Grids that ICOM published.

So if someone answers my CQ from Grid FL96, I know they are located on the West side of the tip of Florida. It's a handy way of telling QTH's. I keep the Grid map next to my radio.

For more information, go to <http://www.arrl.org/news/announcing-the-arrl-international-grid-chase> The Club will have more information also in the future.

Here are two spreadsheets showing the results of all Volunteer Exam Sessions held in 2017:

DIXIE AMATEUR RADIO CLUB, INC. ARRL -VEC TEST SESSIONS - 2017 REPORT													
Test Session Date	Test Session Location	Total Number of Individual Candidates at the Session	Total Number of Exam Elements Taken at Session	Passed Tech	Failed Tech	Passed General	Failed General	Passed Extra	Failed Extra	Total Funds Collected	Funds Retained for "necessary and eligible" V.E. Test Session Expenses	Funds Forwarded to ARRL-VEC at ARRL Hdqtrs.	Number of ARRL Certified V.E. Volunteers Serving at Each Test Session
Jan. 18	St. George, UT	6	7	4	0	1	0	1	1	\$90.00	\$0.00	\$90.00	8
Feb. 11	Hurricane, UT	8	9	5	1	0	1	2	0	\$120.00	\$0.00	\$120.00	5
Feb. 15	St. George, UT	7	7	3	2	1	1	0	0	\$105.00	\$0.00	\$105.00	7
Mar. 15	St. George, UT	3	3	2	0	1	0	0	0	\$45.00	\$0.00	\$45.00	8
April 8	Hurricane, UT	2	3	2	0	1	0	0	0	\$30.00	\$0.00	\$30.00	5
April 19	St. George, UT	5	8	3	1	1	2	0	1	\$75.00	\$0.00	\$75.00	7
May 17	St. George, UT	8	10	4	1	1	2	1	1	\$120.00	\$0.00	\$120.00	8
June 10	Hurricane, UT	1	2	1	0	1	0	0	0	\$15.00	\$0.00	\$15.00	4
June 21	St. George, UT	3	6	2	0	2	1	0	1	\$45.00	\$0.00	\$45.00	7
July 19	St. George, UT	2	3	1	0	1	0	1	0	\$30.00	\$0.00	\$30.00	6
Aug. 12	Hurricane, UT	0	0	0	0	0	0	0	0	\$0.00	\$0.00	\$0.00	4
Aug. 16	St. George, UT	1	1	1	0	0	0	0	0	\$15.00	\$0.00	\$15.00	8
Sept. 20	St. George, UT	1	1	1	0	0	0	0	0	\$15.00	\$0.00	\$15.00	8
Oct. 14	Hurricane, UT	1	1	0	0	0	0	1	0	\$15.00	\$0.00	\$15.00	5
Oct. 18	St. George, UT	2	2	1	1	0	1	0	0	\$30.00	\$0.00	\$30.00	7
Nov. 15	St. George, UT	2	2	1	0	1	0	0	0	\$30.00	\$0.00	\$30.00	9
Dec. 9	Hurricane, UT	5	6	3	0	1	2	0	0	\$75.00	\$0.00	\$75.00	4
TOTALS		57	71	34	6	12	10	6	4	\$855.00	\$0.00	\$855.00	

VOLUNTEER EXAMINER, CALLSIGNS	Seventeen (17) separate Volunteer Exam Sessions were held in 2017 Service were provided by fifteen (15) ARRL-VEC Certified Volunteer Examiners at the indicated sessions																	
	Jan. 18 SG	Feb. 11 Hur	Feb. 15 SG	Mar. 15 SG	Apr. 8 Hur	Apr. 19 SG	May 17 SG	Jun. 10 Hur	Jun. 21 SG	Jul. 19 SG	Aug. 12 Hur	Aug. 16 SG	Sep. 20 SG	Oct. 14 Hur	Oct. 18 SG	Nov 15 SG	Dec. 9 Hur	# of sessions served at by each volunteer:
Gary Zabriskie, N7ARE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	17
Bob Vosper, AE7HY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	17
Robert Palambo, K9ZWH	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	17
Michael Blenderman, K7IC	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y		Y	Y	Y	15
Jeffrey Porter, A17D	Y		Y	Y		Y	Y		Y	Y		Y	Y		Y	Y		11
Bindy Boylin, KB6UJR	Y		Y	Y		Y	Y		Y	Y		Y	Y		Y	Y		11
Mac Harmer, K8NG				Y		Y	Y					Y	Y		Y	Y		7
Michael Cartmill, AC0PR	Y		Y				Y		Y	Y		Y						6
Thyma Dykes, KI7IQN				Y	Y													2
Alma Jessop, KG7FOT													Y			Y		2
Deborah Porter, KE3FY	Y																	1
Charles Wolcott, KF7F		Y																1
Raymond Porter, AE7HX														Y				1
Sharlene Porter, KF7LMX														Y				1
Wayne Jack, KK7TT																Y		1
# OF VE'S AT EACH SESSION:	8	5	7	8	5	7	8	4	7	6	4	8	8	5	7	9	4	

Key to Session Locations: SG = St. George Community Building; St. George, UT Hur = Hurricane Branch Library; Hurricane, UT

Look on our web page to compare 2017 to previous years: <http://www.dixieham.org/meetings.html>