



Bonner County Amateur Radio Club

Meeting January 11, 2023

VFW Post

1325 Pine Street, Sandpoint, ID 83864

18:00 hrs. – Informal Discussions & Eyeball QSO's

18:30 hrs. - Meeting

Why Are We Here? Per the Bylaws BCARC

- 1. Facilitate communication and fellowship among amateur radio operators*
- 2. Increase the number of licensed amateur radio operators through training and community awareness and promote active use of the hobby, and provide assistance to new operators to help them get on the air*

Introductions - Guests, New Members, Members

Current Membership

4th Quarter 2022

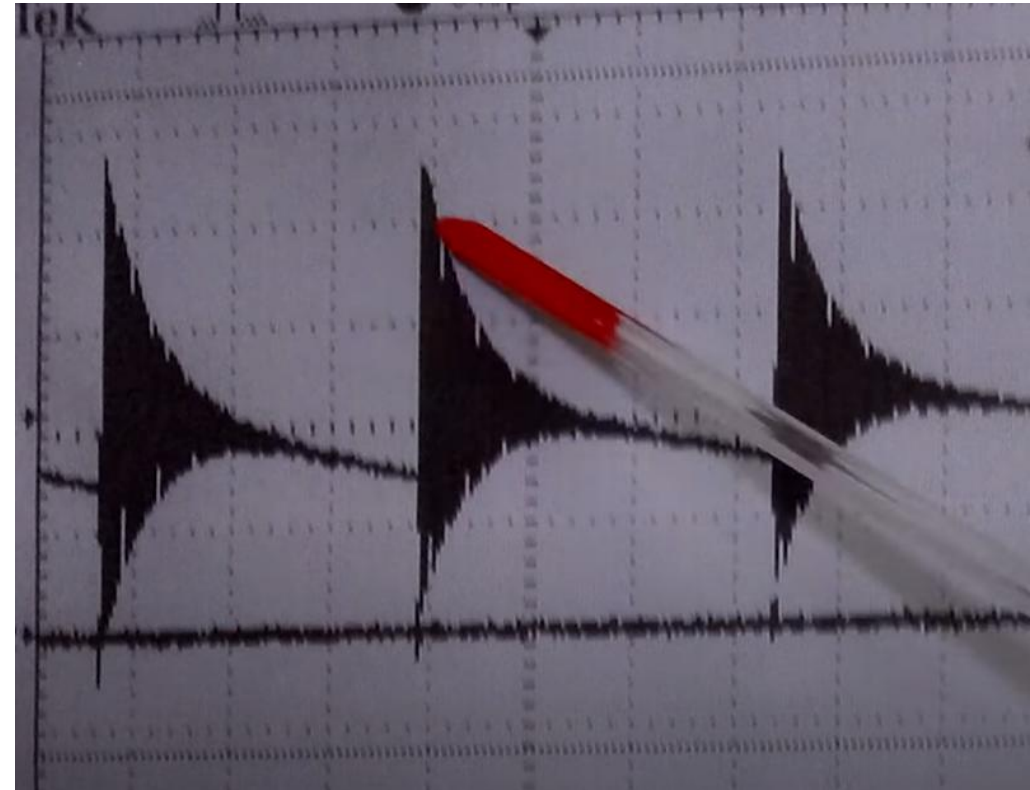
Total	44
Extra	11
General	20
Technician	13

VHF/UHF Modes
or
Is There Life Beyond Repeaters?

John Kludt, K7SYS
BCARC Program Manager

Basics – How Did We Get Here?

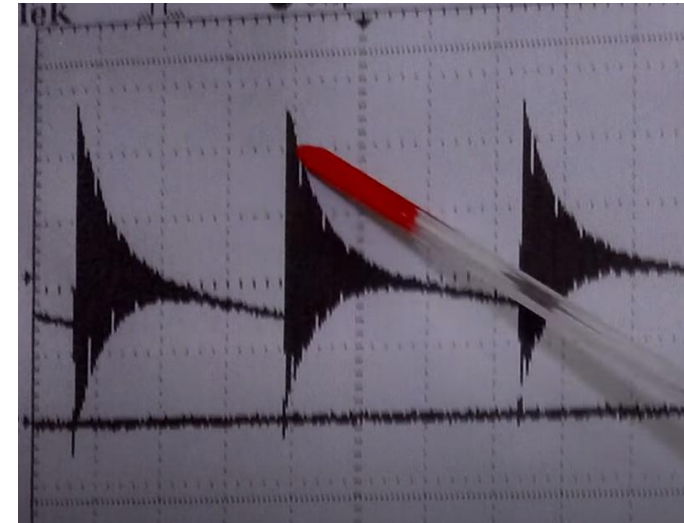
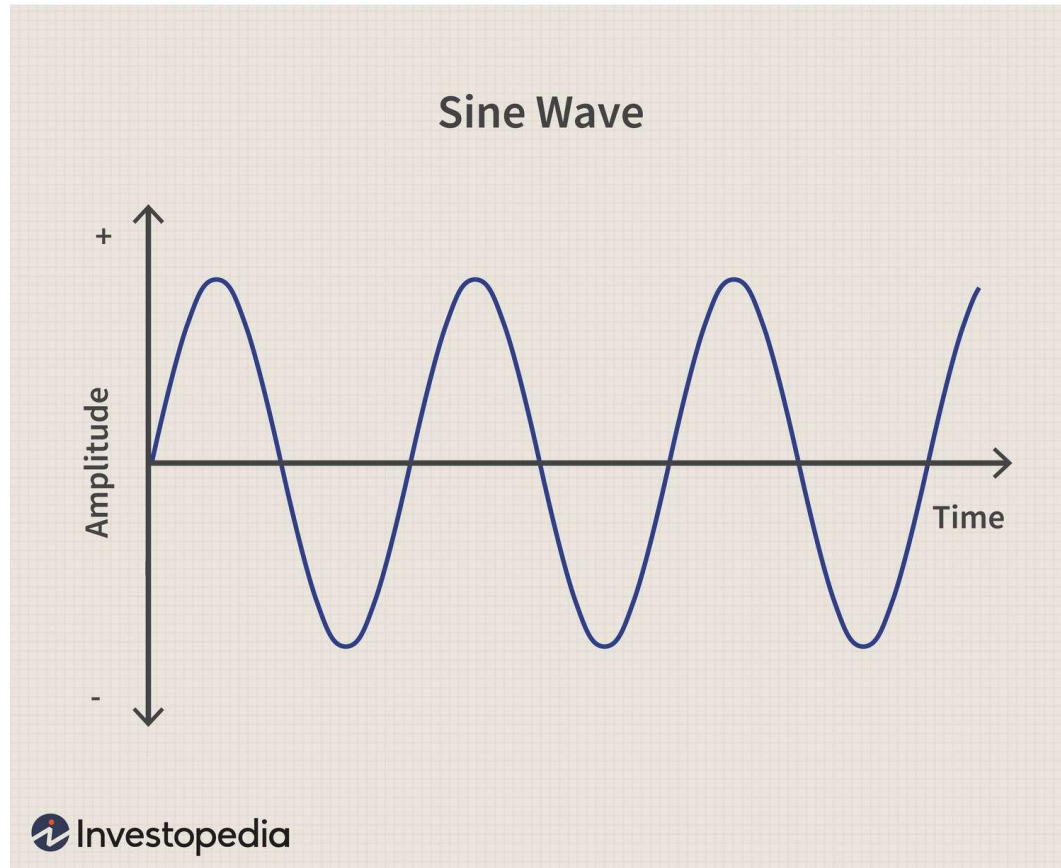
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 - Bursts of sinusoid RF energy
 - Quickly goes to zero, hence very wide band



Basics – How Did We Get Here?

- Spark Gap
 - Bursts of sinusoid RF energy
 - Quickly goes to zero, hence very wide band
 - Morse code only
 - Spark, “damped wave transmissions”, outlawed in 1934
- Continuous Wave
 - Required electronics – “valves” or vacuum tubes a.k.a. “hollow state”
 - 1913 vacuum tube oscillator
 - Edwin Armstrong
 - Alexander Meissner
 - Does not go to zero – in theory zero bandwidth
 - “Carrier wave” with amplitude and frequency
 - Problem – contains no information

Sinusoidal Wave – Continuous Wave v. Spark



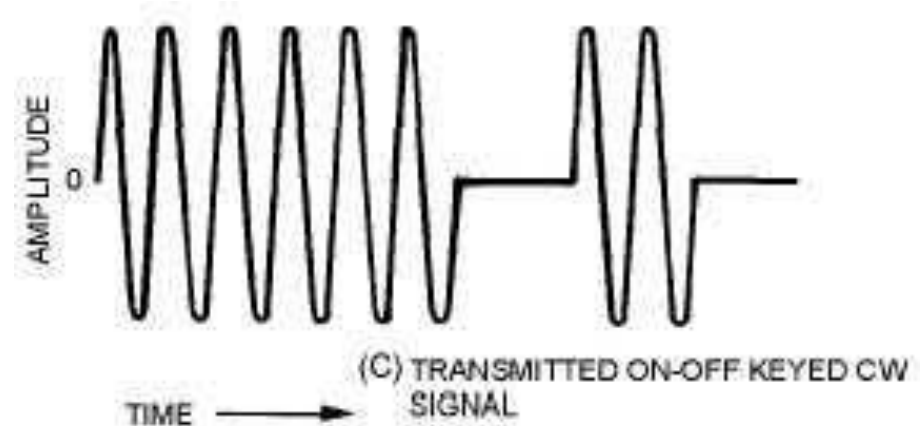
Modulation – Adding Information to the Continuous Wave

- Restrict discussion to most common amateur radio applications
 - Turn the signal on and off with some known pattern

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CW



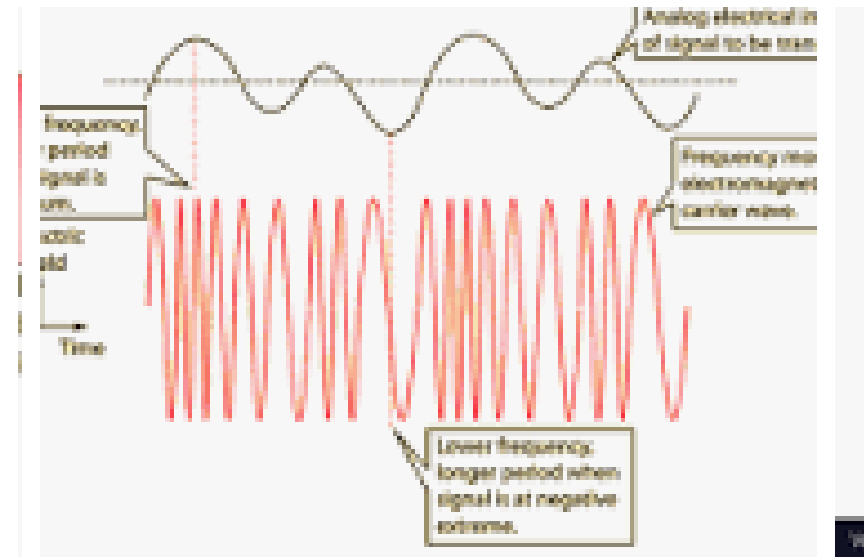
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FM



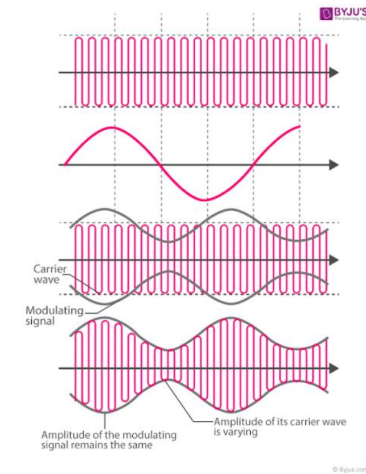
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 - Vary the size (amplitude) of the sine wave based on some external parameter

Modulation – Adding Information to the Continuous Wave

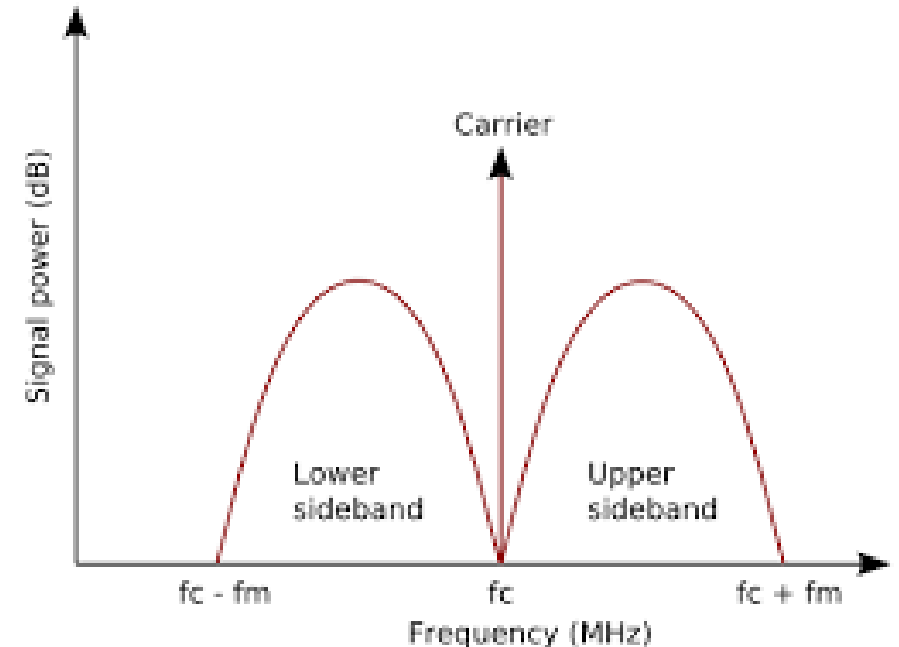
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Amplitude Modulation



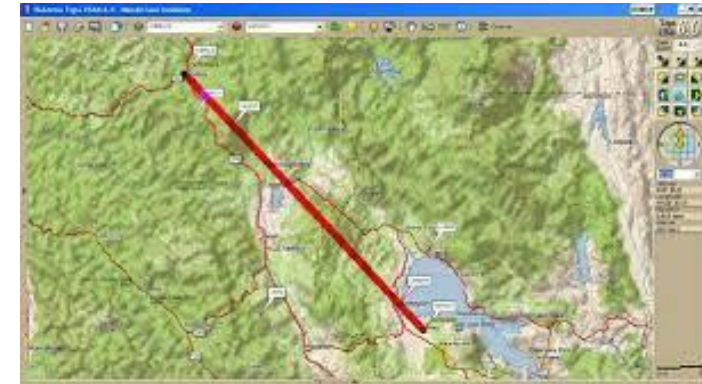
Modulation – Adding Information to the Continuous Wave

- Restrict discussion to most common amateur radio applications
 - Turn the signal on and off with some known pattern- **Morse code**
 - Vary the frequency of the sine wave based on some external parameter – **Frequency Modulation**
 - Vary the size (amplitude) of the sine wave based on some external parameter – **Amplitude Modulation** and all its variants
 - AM
 - Double Sideband
 - Single Sideband
 - Lower sideband
 - Upper sideband

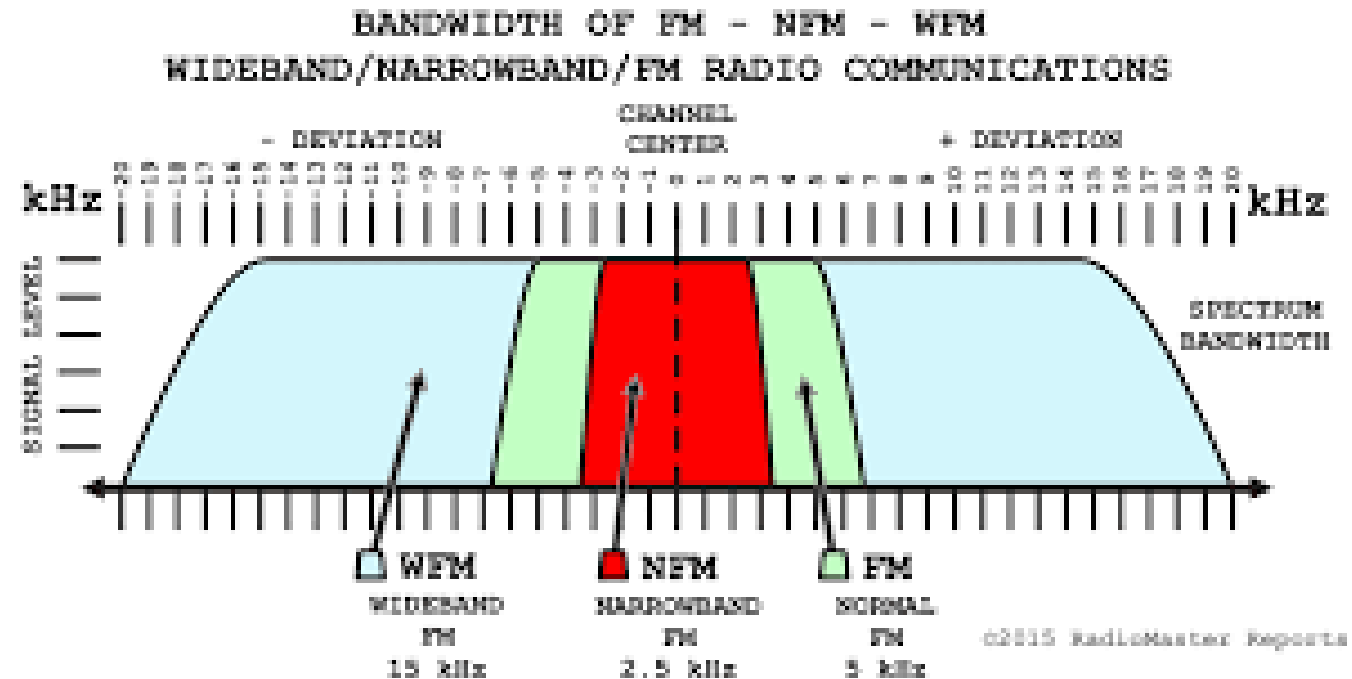


FM Use VHF and UHF

- FM on 10m,6m, 2m, 1.25m, 70cm and up
 - Origins with mobile radio systems
 - Usually, vertically polarized
 - Usually line of sight



- Amateur Radio FM
 - Narrow band +/- 2.5 KHz
 - “Normal Band” +/- 5.0 KHz
 - Wideband +/- 15 KHz



Extending Range FM Transmissions

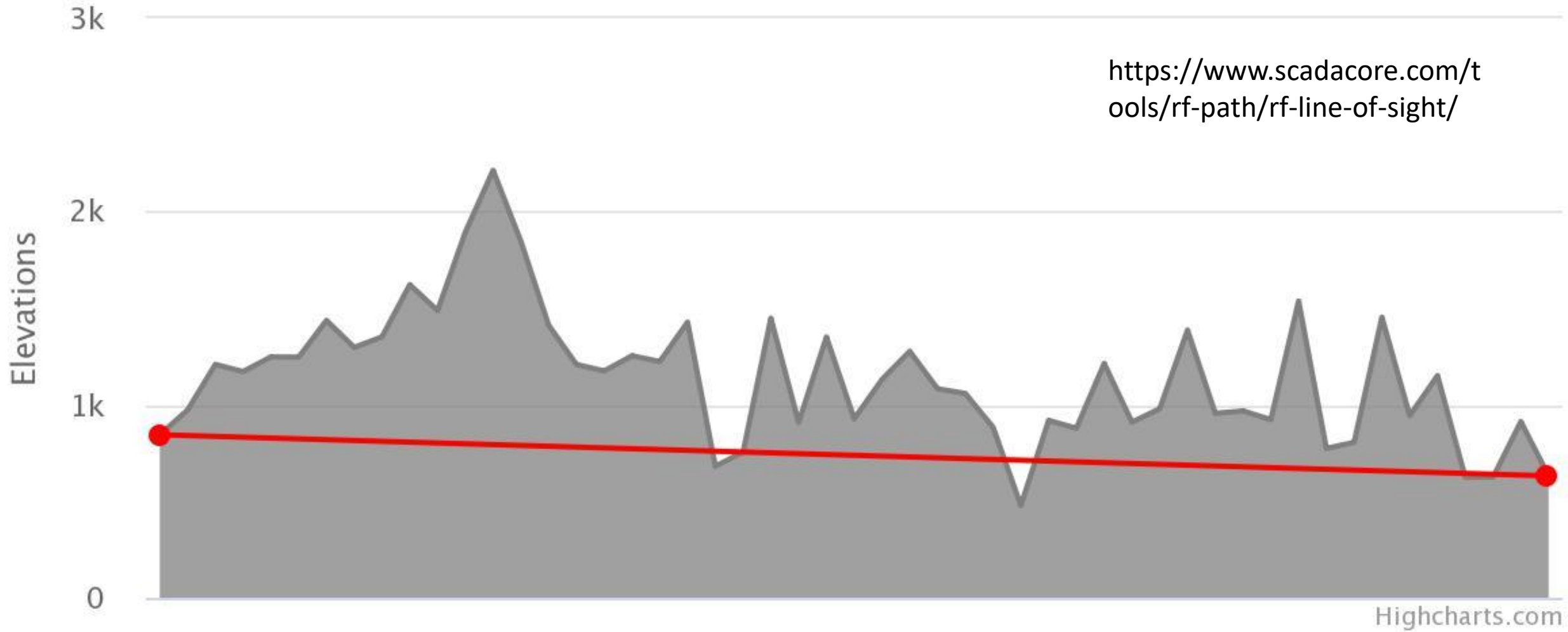
- Increased antenna height
- Use directional Antennas
- Increase power (?)
 - Better feedline
 - Power amplifier
- Look for band openings
 - Monitor beacons <http://www.pnwvhfs.org/beacons.html>
 - More on that next month!



Radio Path Study

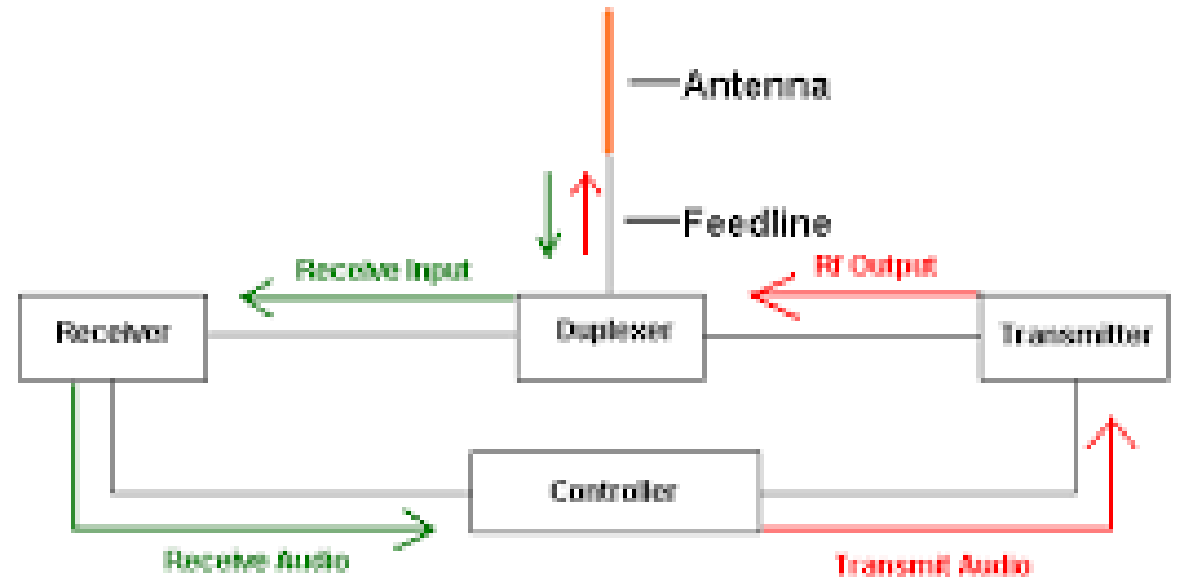
Distance: 520.17 (km)

<https://www.scadacore.com/tools/rf-path/rf-line-of-sight/>



Quickly - Repeaters

- How do they work?
- Why PL (Private Line) or CTCSS?



BASIC REPEATER BLOCK DIAGRAM

Other Things To Do with VHF FM

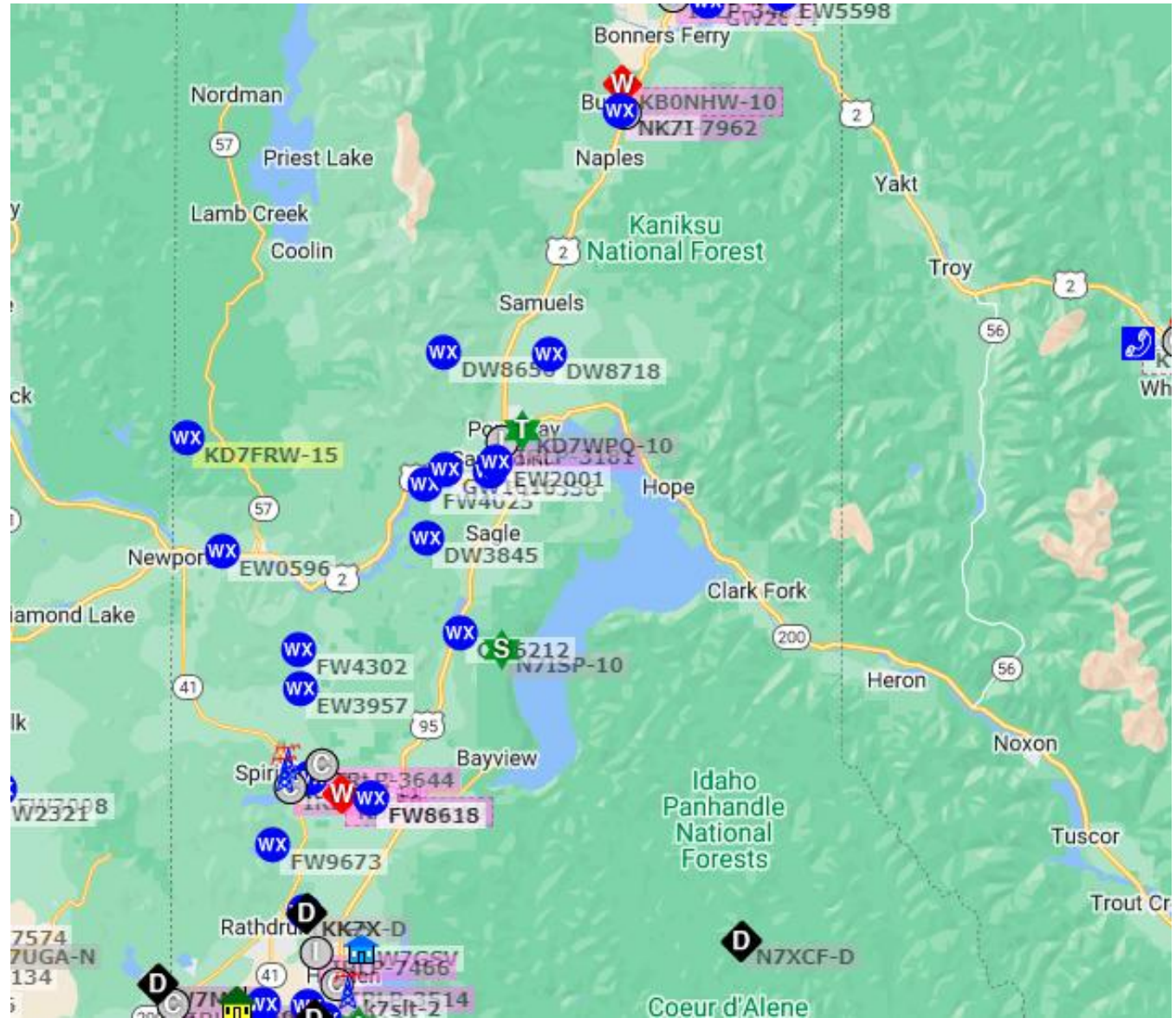
- HT or Base Station
 - Work satellites
 - Increasing numbers
 - Doppler shift - +/- 3.5 KHz at 2m & +/- 10KHz on 70cm (So why don't you have to change frequency as the satellite passes on 2m but you do on 70cm?)

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 - APRS (Automatic Packet Reporting System)
 - Requires a simple modem and software <http://uz7.ho.ua/packetradio.htm>
 - 144.390 MHz North America
 - 145.825 MHz ISS
 - Author Bob Bruninga WB4APR (SK)

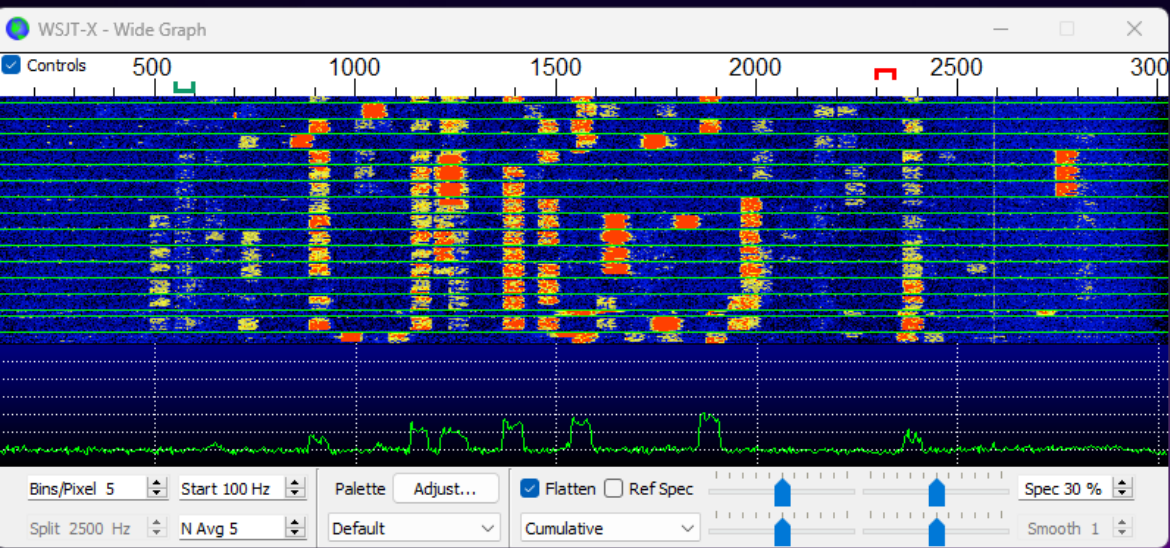
<https://aprs.fi/#!lat=48.31480&lng=-116.52910>

<https://www.byonics.com/tinytrak3> (\$45 to \$110)



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 - Digital Modes
 - FLDigi for chatting, FT8 for DX



Callsigns #1

CQ decodes

K2PS FL U.S.A. N9BQA MO U.S.A.

Callers : Alert

Alerts Only

BG4TRN China

WSJT-X v2.5.4 by K1JT, G4WJS, K9AN, and IV3NWW

File Configurations View Mode Decode Save Tools Help

Band Activity

UTC	dB	DT	Freq	Message
231845	-4	0.4	1555	~ CQ DX N9BQA EM38 U.S.A
231845	-14	0.4	2145	~ VE7JKZ WB2JEP R-10
231845	-17	0.4	2205	~ CQ K2PS EL98 U.S.A
231845	-16	0.4	1755	~ KJ2U BG4TRN 73
----- 17m -----				
231900	2	0.4	1862	~ <VR25XMT> K5DNL EM15
231900	0	0.7	1543	~ W3RFK JA9BFN PM86
231900	-9	0.5	1143	~ CQ NS1E EM11 U.S.A
231900	1	0.3	889	~ JHORN N9XG 73
231900	-2	0.4	1459	~ K4IJQ JA4RED RR73
231900	-4	0.3	1216	~ <VR25XMT> KD9FQC EM58
231900	-7	0.4	2367	~ JA1OHP KV4T R-06
231900	-12	0.4	1993	~ AESVB JN3SAC PM74
231900	-13	0.3	1002	~ CQ KCOWSE EM37 U.S.A
231900	-17	0.3	1048	~ BG4TRN JE1DFM QM05
231900	-9	0.4	1235	~ CQ W5XC EM10 U.S.A
----- 17m -----				
231915	12	0.3	1026	~ KC2DMC K6BRN DM03
231915	-10	0.4	2145	~ VE7JKZ WB2JEP 73
231915	-6	0.4	1555	~ CQ DX N9BQA EM38 U.S.A
231915	-12	-0.4	1422	~ VA7SKO NP3XF -01
231915	-13	0.4	2205	~ CQ K2PS EL98 U.S.A
231915	-14	0.4	1755	~ JE1DFM BG4TRN -02
231915	-11	0.3	1612	~ JA4RED ADORW EN41
231915	-20	0.6	712	~ JA4RED KB9DFE EN53
231915	-20	0.6	2208	~ WT7R N4FTD R-16

Rx Frequency

UTC	dB	DT	Freq	Message
231300	-6	0.3	1459	~ NV6B JA4RED -10
231320	Tx		2297	~ JA4RED K7SYS DN18
231330	-5	0.4	1459	~ NV6B JA4RED RR73
231349	Tx		2297	~ JA4RED K7SYS DN18
231415	Tx		2297	~ JA4RED K7SYS DN18
231430	-1	0.3	1459	~ K7SYS JA4RED -10
231445	Tx		2297	~ JA4RED K7SYS R-01
231500	-3	0.4	1459	~ K7SYS JA4RED RR73
231500	-11	0.4	719	~ K7SYS PY4FD -18
231515	Tx		2297	~ JA4RED K7SYS 73
231526	Tx		2297	~ PY4FD K7SYS R-11
231530	-14	0.4	719	~ K7SYS PY4FD -18
231545	Tx		2297	~ PY4FD K7SYS R-11
231600	-11	0.4	720	~ K7SYS PY4FD RR73
231615	Tx		2297	~ PY4FD K7SYS 73
231600	-17	0.9	553	~ CQ JA3FQO PM74 Japan
231630	-20	0.9	553	~ CQ JA3FQO PM74 Japan
231645	Tx		2297	~ JA3FQO K7SYS DN18
231700	-17	0.9	553	~ CQ JA3FQO PM74 Japan
231715	Tx		2297	~ JA3FQO K7SYS DN18
231730	-18	0.9	553	~ K7SYS JA3FQO -16
231745	Tx		2297	~ JA3FQO K7SYS R-18
231800	-20	0.9	552	~ K7SYS JA3FQO RR73
231815	Tx		2297	~ JA3FQO K7SYS 73
231830	-16	0.9	553	~ K7SYS JA3FQO 73

CQ only Log QSO Stop Monitor Erase Decode Enable Tx Halt Tx Tune Menus

17m **S** 18.100 000 Tx even/1st Hold Tx Freq
 Tx 2297 Hz
 DX Call DX Grid
 JA3FQO PM74 Rx 552 Hz
 Az: 306 5232 mi Report -18
 Lookup Add Auto Seq Call 1st

Generate Std Msgs Next Now Pwr
 JA3FQO K7SYS DN18 Tx 1
 JA3FQO K7SYS -18 Tx 2
 JA3FQO K7SYS R-18 Tx 3
 JA3FQO K7SYS RRR Tx 4
 JA3FQO K7SYS 73 Tx 5
 CQ JA K7SYS DN18 Tx 6

Receiving 6700 FT8 Last Tx: JA3FQO K7SYS 73 9 8/15 WD:5m

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 - Digital Modes
 - FLDigi for chatting, FT8 for DX
 - Transmitter hunting
 - Simple equipment
 - Useful to have for open mic/deliberate QRM with repeaters



Ham Radio Hidd
Transmitter Hu



More images

CW on 2 meters

- Mostly used during contests
 - Lower end of band (144.000 – 144.100 MHz CW only)
 - Beacons almost always CW (144.200 – 144.300 MHz)
 - Mostly replaced by FT8, JT65, Q65
- MCW
 - Modulated CW for FM
 - Generate audio tone via CW and then to FM transmitter
 - Great for CW practice via a repeater on a “Learning CW” net

Ways to get on VHF/UHF Weak Signal Modes



Weak Signal VHF/UHF Antennas



80 Meter Dipole on 6m!

AM on 2m – “Benton Harbor Lunch Box”

- 2.5 watts
- Super-regenerative receiver
- Converted military (SCR-522)
- No longer “on the air”
- Not even in bandplan



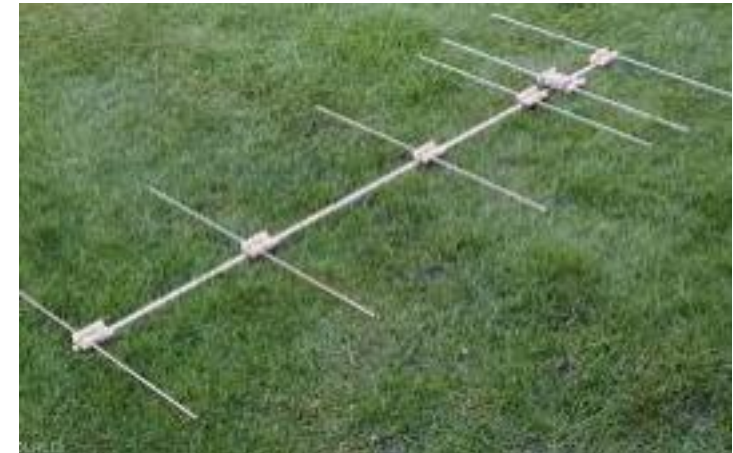
2 Meters (144-148 MHz)

144.00-144.05	EME (CW)
144.05-144.10	General CW and weak signals
144.10-144.20	EME and weak-signal SSB
144.200	National calling frequency
144.200-144.275	General SSB operation
144.275-144.300	Propagation beacons
144.30-144.50	New OSCAR subband
144.50-144.60	Linear translator inputs
144.60-144.90	FM repeater inputs
144.90-145.10	Weak signal and FM simplex (145.01,03,05,07,09 are widely used for packet)
145.10-145.20	Linear translator outputs
145.20-145.50	FM repeater outputs
145.50-145.80	Miscellaneous and experimental modes
145.80-146.00	OSCAR subband
146.01-146.37	Repeater inputs
146.40-146.58	Simplex
146.52	National Simplex Calling Frequency
146.61-146.97	Repeater outputs
147.00-147.39	Repeater outputs
147.42-147.57	Simplex
147.60-147.99	Repeater inputs

Notes: The frequency 146.40 MHz is used in some areas as a repeater input. This band plan has been proposed by the ARRL VHF-UHF Advisory Committee.

SSB on 2m

- Again, mostly used during contests
 - ARRL January, June and September
 - Activity days or nights
- Always USB (Upper Side Band)
 - 144.100 – 144.200 MHz
 - 144.120 MHz common calling frequency
- 100 watts to start (or whatever you have)
- Directional antennas with gain
- Interest is DX (measured in miles)
- “Tropo” “TEP” – come back next month!



Digital Modes on VHF/UHF

- Major modes for weak signal work 6m and up.
- WSJT-X suite designed specifically for weak signal work
 - FT8/FT4 - terrestrial work
 - 6m 50.313 MHz
 - 2m 144.174 MHz
 - JT65/Q65 – EME and long-haul terrestrial
 - Per schedule (N0UK logger, HB9Q logger, etc.)
 - MSK144 – meteor scatter (“Ping Jockey’s”)
 - 6m USB radio, 100 watts, dipole or three element beam(better)
 - Switch to MSK144 on wsjt-x mode drop down
 - Point your antenna toward the station you want to work



For Another Day - EME

- Earth - Moon - Earth
- WSJT-X much more accessible
- Bands
 - 6m – moonrise
 - 2m – most popular
 - 70cm – “lockout “
 - 1296 MHz – very doable



VHF/UHF Activities Proposal

- 6m Loop Build (<https://www.pa3hcm.nl/?p=312>)
 - Copper pipe
 - Garage to build them in
 - Enough interest to make it worth the effort
- 6m Sideband and/or activity night
 - Weekly
 - Tuesdays at 19:00 local (?)
- Expand to other bands if 6m successful
- Activity Leaders – that's you!
 - Band activity nights
 - Antenna builds
 - T-hunts
 - Simplex contests/ARRL contests



Next month: VHF/UHF Propagation Modes

- F2
 - Single Hop
 - Double Hop
- Sporadic E
- Transequatorial Propagation (TEP)
- Tropospheric Ducting
- Scatter
 - Mountains
 - Rain
 - Aircraft
- Combination modes

Annual Meeting Business Items

- Annual Business Meeting
 - Call to order
 - Confirmation of Quorum
 - Meetings Article VI (c) “Twenty-five percent (25%) of members holding Membership and no less than five Members will constitute a quorum for a business meeting.”
 - Election of Officer for 2023
 - John Ailport, K7BSV –President
 - Jim Morford, KJ7SEN – Vice President
 - Ken Conradi , KF7FDN – Secretary
 - Pat Cox, KJ7SJU – Treasurer
 - Call for vote

Bylaws Amendment: Dues: Article IV (A)

- Current Bylaw:
 - Dues must be paid to any elected BCARC Officer on or before the first meeting of the year. A grace period may be extended to the third meeting of the year.
- Proposed Bylaws Change
 - Dues must be paid to ~~any elected BCARC Officer~~ *the Treasurer or their specific designee as appointed by the Treasurer if the Treasurer is absent* on or before the first meeting of the year. A grace period may be extended to the third meeting of the year *for renewal of membership. Membership payments for new or renewing members shall be accompanied by the appropriate documentation as detailed on the BCARC website www.k7jep.org*

Bylaws Amendment: Dues: Article IV (D)

- Current Bylaw

- Newly licensed hams with licenses of less than one year joining the club have no dues during the first calendar year of their membership. Full dues are then required for the following calendar year. Thus, the length of the "free" period depends on when the New Member joins the club.

- Proposed Bylaws Change

- Eliminate section D. in its entirety
- ~~• Newly licensed hams with licenses of less than one year joining the club have no dues during the first calendar year of their membership. Full dues are then required for the following calendar year. Thus, the length of the "free" period depends on when the New Member joins the club.~~

Increase in Dues for 2023

- Authority – Bylaws Dues, Article IV. (C)
 - Dues may be changed at any time with a majority vote of members present at an official Business Meeting.
- Current dues are \$15.00
 - Whereas dues have not been increased for several years
 - Whereas costs to BCARC have increased over those same years
 - Be it proposed that dues be increased to:
 - \$25.00 for individual members
 - \$35.00 for family members
 - Call for adoption
- Call to adjourn the Annual Business Meeting

February Special Activity 18:00 – 18:30

- Mini Swap Fest

- If you have been a ham for more than a couple of months, you probably have something on the shelf you no longer need
- “One person’s junk is another person’s treasure”
- Bring those items to the February meeting
- We will have tables in the back room
- Items should be clean and in working order or if not working, clearly so indicated
- Suggest the price or OBO “Or Best Offer” be attached to the item
- Trades or barter are up to the seller and buyer
- Might want to come a bit early to setup
- Swap Fest closes at 18:30 hrs
- If it doesn’t move to the next garage, it goes back to yours!

Breakfast at Connie's
January 28, 2023
09:00 hrs.

Next Meeting
February 8, 2023
VFW Post, Sandpoint, ID
18:00 hrs. Informal Discussions and Eyeball QSO's
18:30 hrs. Meeting
Topic: VHF/UHF Propagation
John K7SYS and Doug W6AXR



CW Bingo!