# Roving in VHF Contests

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July 2, 2020

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- 4 major VHF contests each year
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# ABØYM's First Rover (June 2009)

# ABØYM's Current Rover setup for ARRL contests

# ABØYM's Current Rover

# AB0YM/R CQ contest antenna

# ABØYM's Current Rover

# January 2012 ARRL VHF

Rover Limited -1st Place Colorado, 1st Place Rocky Mtn Division, 3rd Place US and Canada, set the current record for the Rocky Mountain Division

# 4 Major VHF Contests

- 3 ARRL - January, June, September
  - 3 Rover Classes – Limited, Classic, Unlimited
- CQ (July)
  - 1 Rover Class – 6 and 2 meters only
- Several minor contests
- “Assistance” is ok

# Contest Objectives

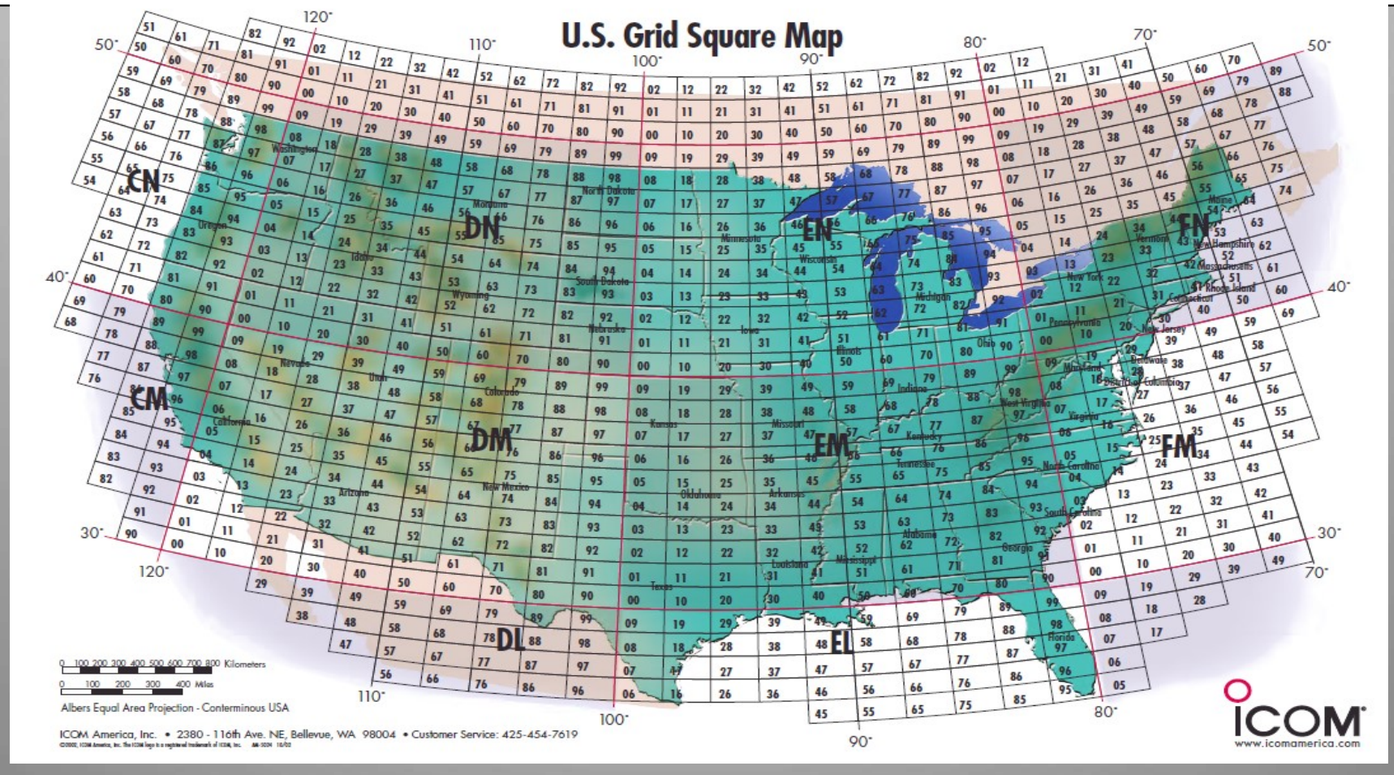
- Contact as many stations as possible from each grid square activated.
- Each station is an eligible QSO from the new grid square.
- Grid squares are multipliers.

# What is Roving?

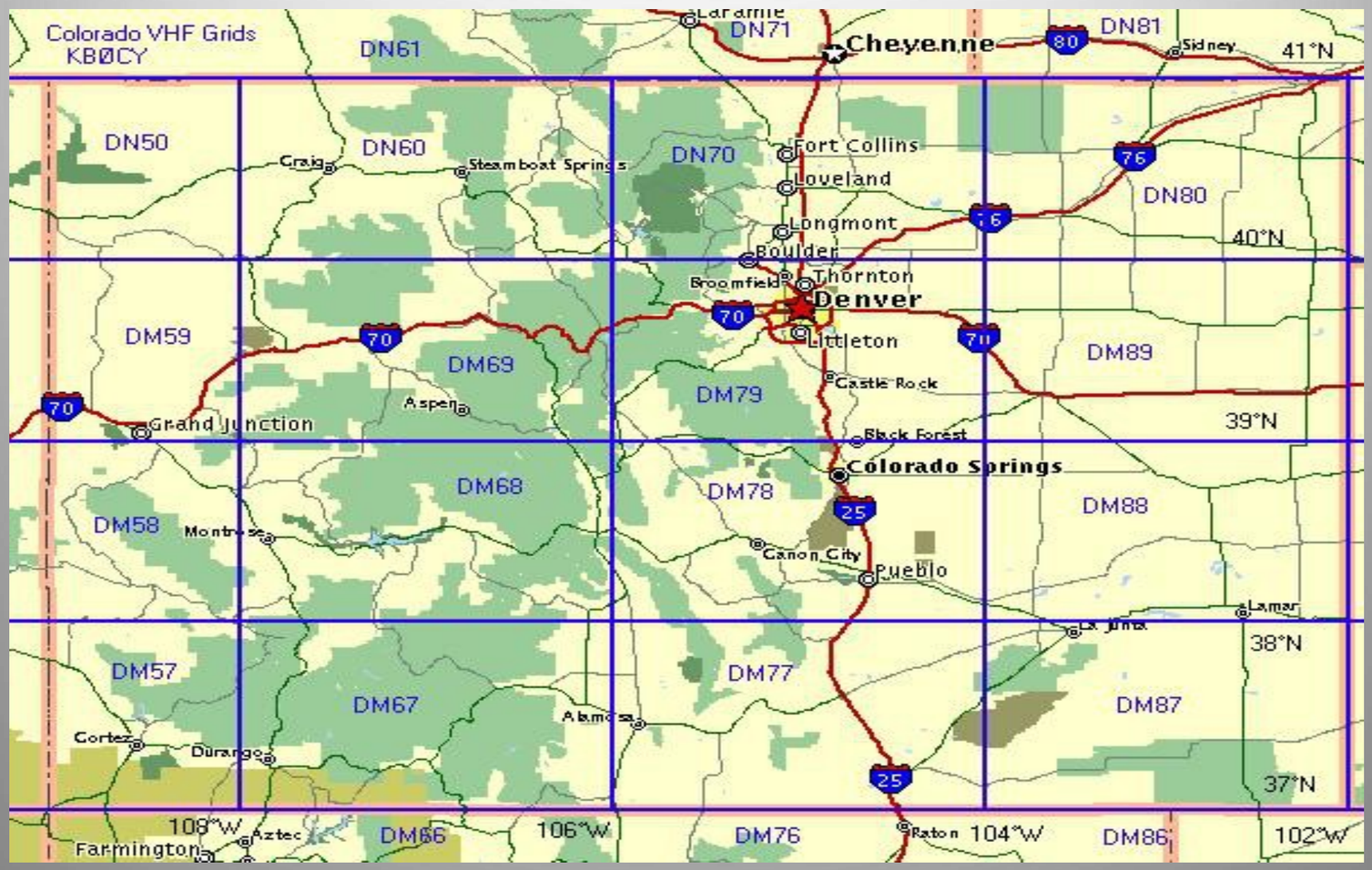
- Category in VHF Contests
- A Rover must activate at least 2 grid squares
- Entire station must arrive and leave with rover
- Exceptions in unlimited class.
- Mobile? (not necessarily)

# Maidenhead Grid squares

- Each grid square is 1 degree latitude by 2 degrees longitude.



# Grid Squares in Colorado



# Operating Strategy – Initial Questions

- Operating style
  - Stop and shoot – stationary operation
  - Run and gun – operate in motion
- Roving route – where are likely stations?
- Type of vehicle
  - Does NOT have to be street legal when stopped.
- Budget
  - Many good antenna designs you can build

# Modes and Frequencies

- SSB on 50.125 and 144.200
- CW near bottom end of CW segment 6m, 2m
- Digital – mostly FT8/FT4 and MSK144
- Frequency strategy will vary by contest/season

# Operating Strategy – Route and stops

- Take into consideration grid lines and corners
- Terrain. (elevation, obstacles, power lines)
- Seasonal considerations.
- Determine likely large stations based on last year's results – plot the bearing to these stations from your stops
- Call CQ or Search and Pounce

# Selecting Equipment – Initial Questions

- #1 Priority – Safety!
- Which contest and class
  - ARRL (January, June, September)
    - Rover limited
    - Rover
    - Rover unlimited
  - CQ (July)
    - One rover class
    - 6m and 2m only

# Selecting Equipment – others

- Pre-amps
- Power control
- Linear amps
- Transverters

# Selecting Antenna Equipment

- Omni or Gain? (or both)
  - Summer – omni may be ok if mostly 6m
  - Fall / Winter – gain almost a must for 2m and above
- Rotator?
  - Not usually necessary on the Front Range
  - Very helpful in some other parts of the country

# Antenna – on a budget

- Watch for used equipment
- Build your own
- Search for “cheap vhf ham yagi”

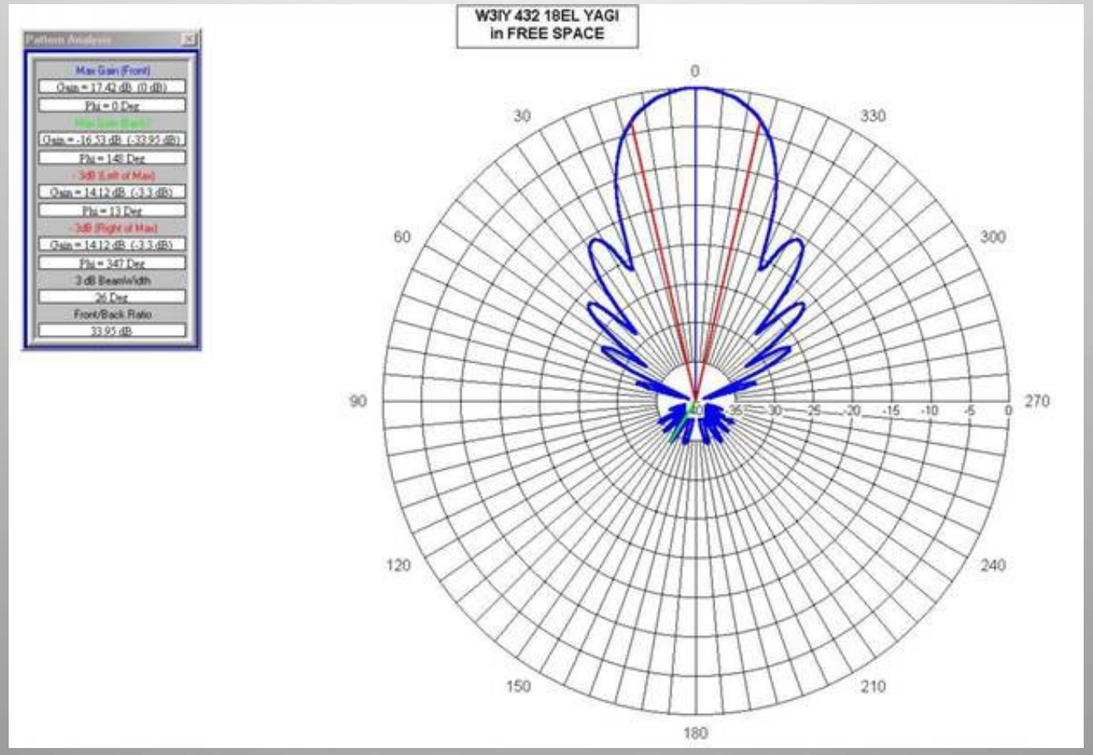
# Stacking Yagis

- Performance loss due to closeness
  - Only slight loss – about 0.5 dB with 2ft separation
  - Research by W3IY (sk)
    - Modeling
    - Field testing

  Limited by distance from top of vehicle to legal height limit

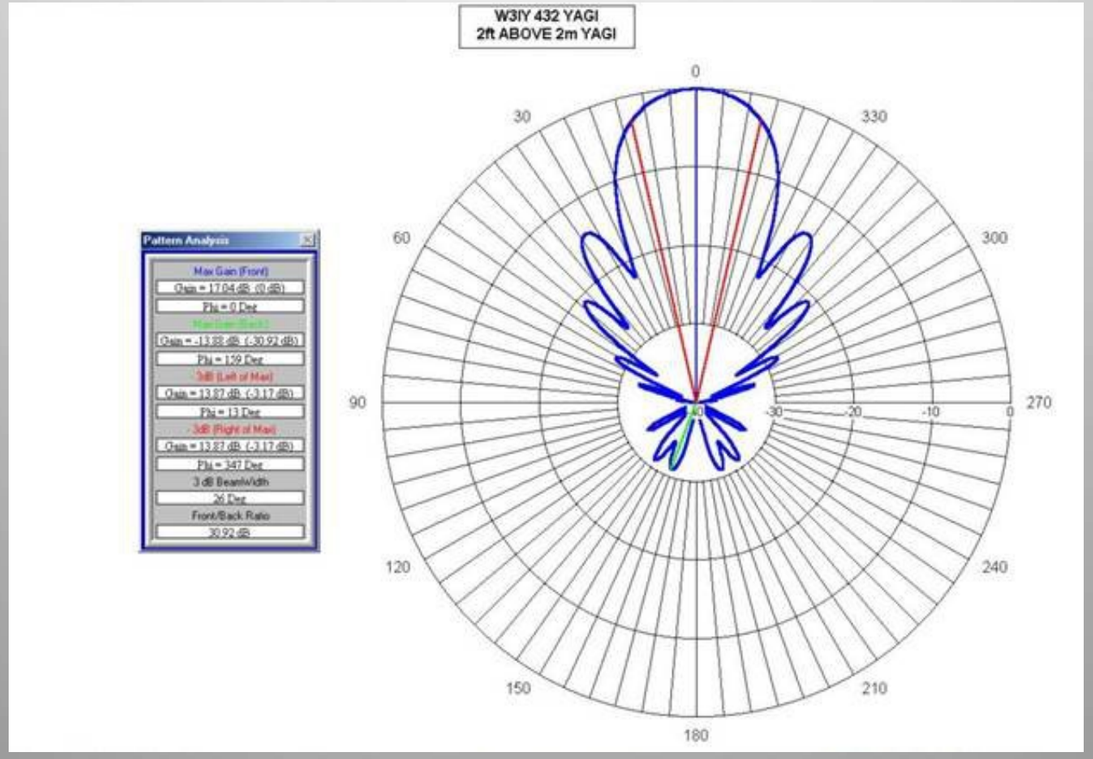
# W3IY Yagi in free space

from Antenna Application Note 47899.11 by Bill Seabreeze

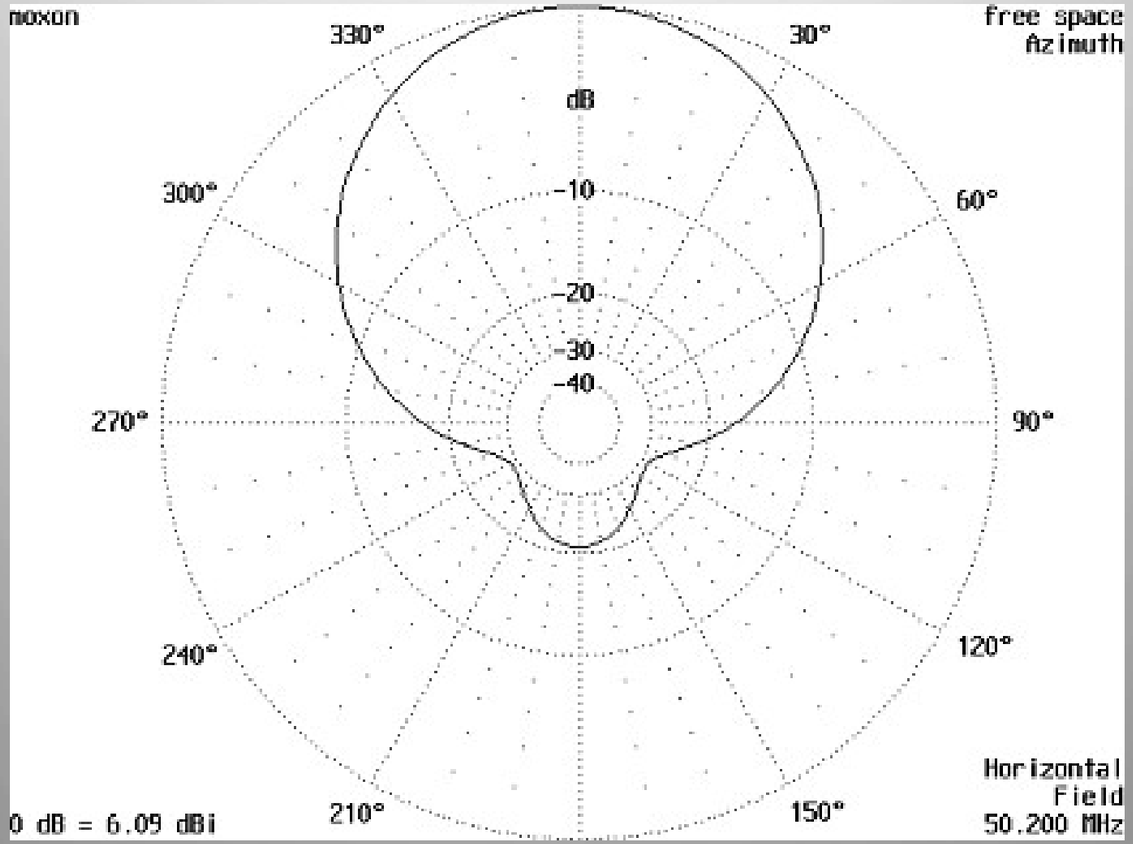


# W3IY Yagi w/ 2 ft spacing

from Antenna Application Note 47899.11  by Bill Seabreeze



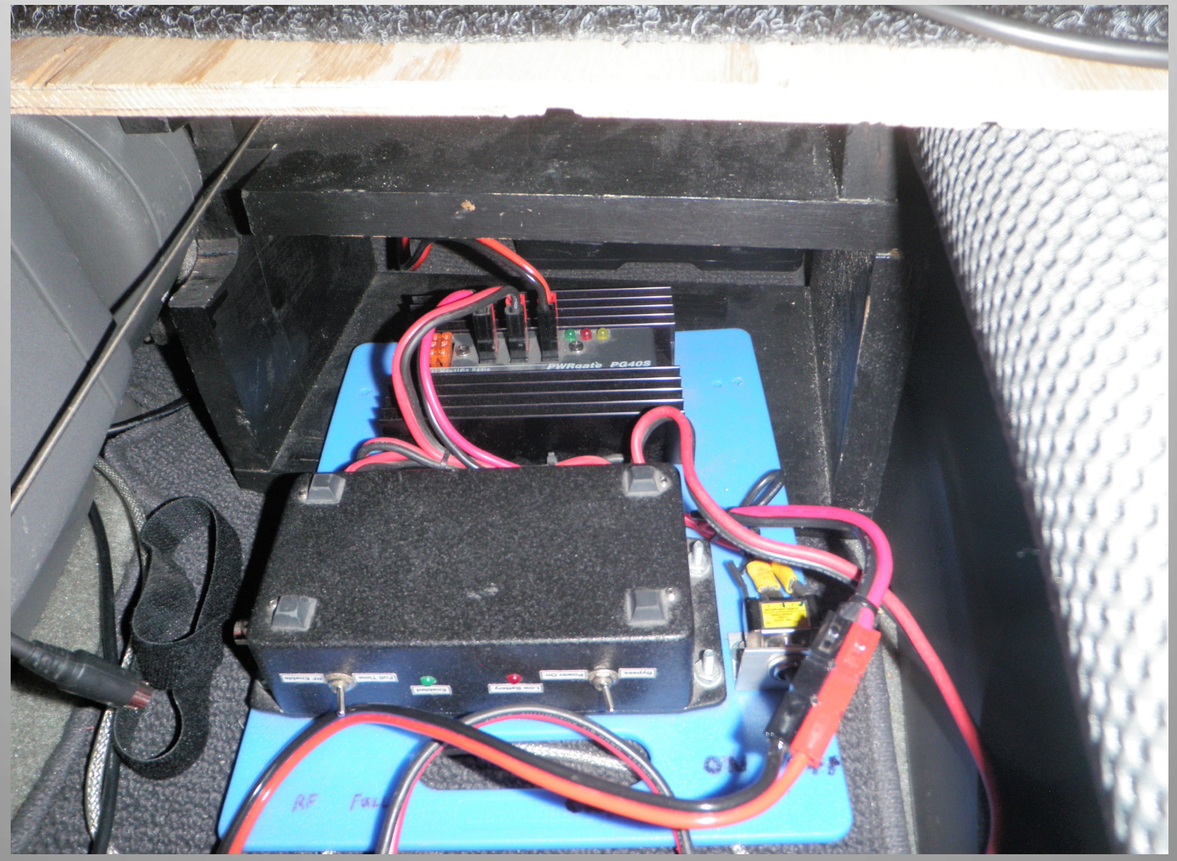
# Par Moxon pattern



# Power

- Use vehicle battery?
- How much are you willing to run the engine?
- Second battery considerations
  - Charging
  - Safety
- Some rover stations use 100% battery
- 120 vac equipment? (Charging laptop?)
- Noise

# PWRgate and Voltage booster



# Rover and Mobile Issues

- Static – grounding
- Power line noise
- Common mode currents
- Mechanical ruggedness
- Weather / water /dust
- Clock sync for FT8
- IR voltage drop from vehicle battery
- Use lots of ferrite beads

# Rover and Mobile Issues (con’t)

- Bond everything
- Tie down everything
- Spares for cables, fuses, connectors

# Static and Bonding/Grounding

# Common Mode Currents

# Logging and QSLs

- Logging
  - Paper
  - Computer
  - Rover log (software)
- QSLs
  - LoTW
  - eQSL
  - Paper

# ABØYM Rover

Writelog for logging – coupled to transceiver

# ABØYM Rover (ARRL contests)

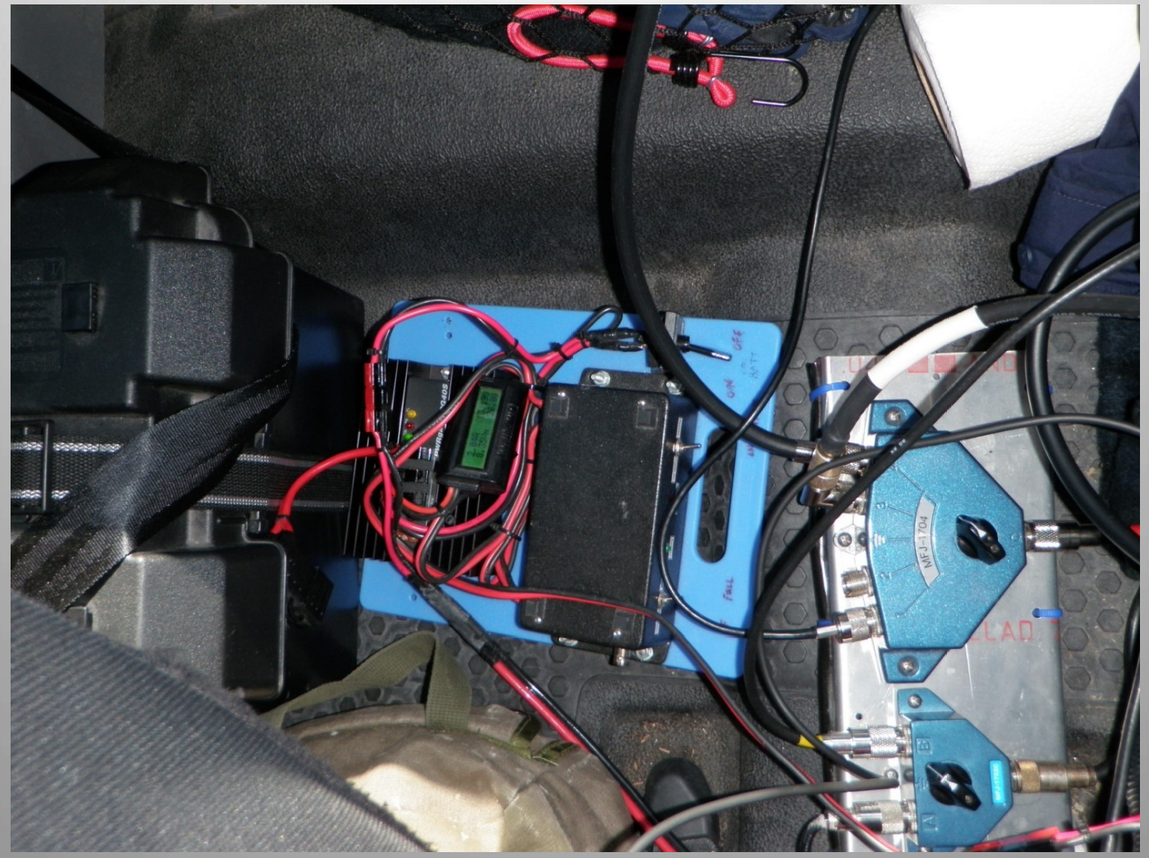
- Transceiver – FT857 (6m, 2m, 70cm)
- Elecraft XV222 (1.25m)
- Antennae
  - 6m – PAR Moxon, ¼ wave whip
  - 2m - Directive Systems DS144-6RS, KU4AB 2 band loop
  - 1.25m - DSFO222-10RS , Whip for FM
  - 70cm - DSFO432 + KU4AB 2 band Loop

# ABØYM Rover (CQ contest)

- Transceiver – FT857 (6m, 2m)
- Elecraft XV222 (1.25m)
- Antennae
  - 6m – PAR Moxon, ¼ wave whip
  - 2m - Directive Systems DS144-6RS, KU4AB 2 band loop

# ABØYM Rover

Power and coax switching



# NØLP and ABØYM Rover

# Tripod mount

# Mast lowered – can work on antennae while standing on the ground

# Antennae mounted

# Antennae raised into position

# Glue Joint Failure

Antenna system is designed to crumple into the truck bed if it fails.

# Glue Joint Failure

Switched to one piece metal mast next year

# Fatigue Failure of Feed Wire

# Temporary Fix

# Permanent Fix

Replaced solid wire, added plastic brace

# KRØVER Rover

# W3DHJ Rover

# A Gaggle of Rovers

# Wish List

- Gain antenna on 6m
- SDR Receiver/Transceiver
- Pan adapter

# Resources

- This slide deck (pdf) http://www.qsl.net/ab0ym/rover-vhf_2020.pdf
- W3DHJ https://w3dhj.net
- Article by K0NR http://www.k0nr.comrwitte/rover.html
- N6NB http://n6nb.com/rover.htm
- K7BWH https://www.coilgun.info/hamradio/home.htm
- Central States VHF Society https://www.csvhf.org
- CQ VHF Contest rules https://www.cqww-vhf.com/rules.htm
- ARRL http://www.arrl.org

# Questions?

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