Observations on FM Contesting.

Preparing to win and lessons from losing.



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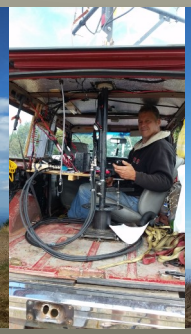






Topics

- What does it take to do well?
- 2 Strategies & a common theme
- 3 Case Studies
- Preparing to win
- Lessons Learned from Losing

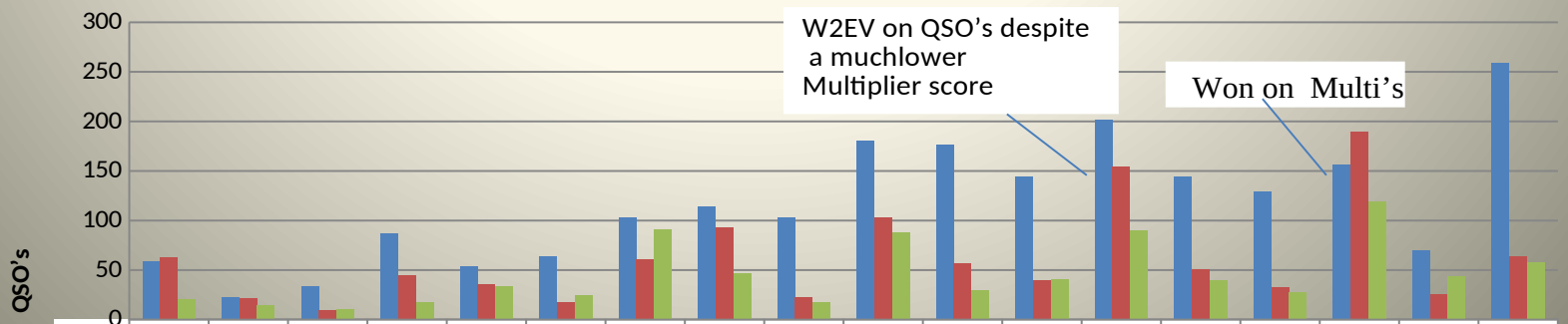
FM Category

- Lowest bar for entry of all VHF/UHF contest classes
  - A great on ramp for new Technicians to be introduced to contesting
  - Slow paced, almost conversational, a fun weekend on the radio
- Very few entrants, ~20 logs submitted each contest
  - Many ARRL divisions and sections get no entrants
- QSO's are local, 90% are under 100 miles
  - It's a "local" event
  - Few if any will know there is a contest going on
  - Often need to explain the exchange, give people their grid
- A second or third place national finish is achievable with a little planning, coordination and effort.

Lets set some goals

Analysis of QSO's (40-60)

QSO's Top 3 in FM
Average QSO': 1st 117, 2nd 61, 3rd 45
Median since 2016 is 1st 144, 2nd 51, 3rd 41



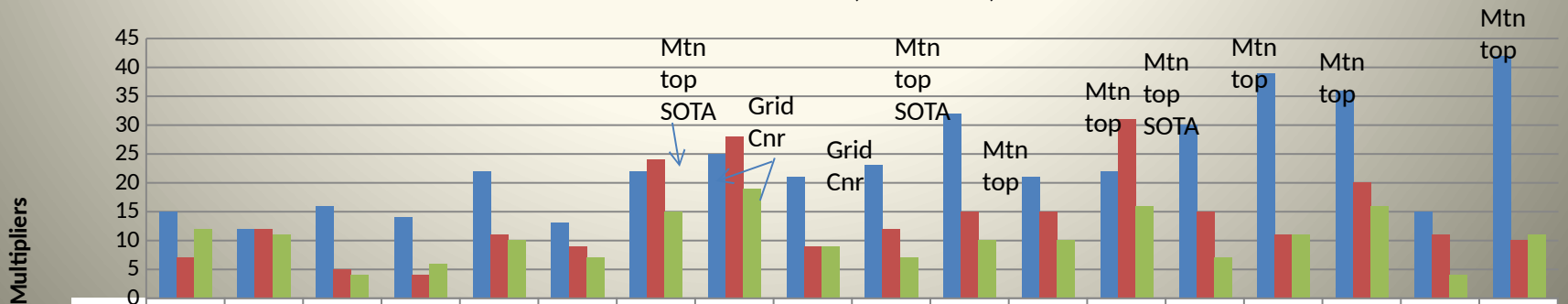
	Jan 13	June 13	Sep 13	Jan 14	June 14	Sept 14	Jan 15	June 15	Sept 15	Jan 16	June 16	Sept 16	Jan 17	June 17	Sept 17	Jan 18	June 18	Sept 18
1st	59	23	34	87	54	64	103	114	103	181	176	144	202	144	129	156	70	259
2nd	63	22	10	45	36	18	61	93	23	103	57	40	154	51	33	190	26	64
3rd	21	15	11	18	34	25	91	47	18	88	30	41	90	40	28	119	44	58

- Grid corner 2 band station top 3 finish: 45 contacts.
- 30 stations on 2m, QSY half of them (15) to 70cm for 45 contacts.
  - 30 pts on 2m+ 15x2pts 70 cm = 60 QSO pts.
- FM simplex can be a desert: Let people know your on the air

Pre Contest Coordination is Essential: Get 30 club members on the air

Analysis of Multipliers (10-15)

Multipliers Top 3 in FM
Average: 1st 23, 2nd 14, 3rd 10
Median since 2016: 1st 30, 2nd 15, 3rd 10



	Jan 13	June 13	Sep 13	Jan 14	June 14	Sept 14	Jan 15	June 15	Sept 15	Jan 16	June 16	Sept 16	Jan 17	June 17	Sept 17	Jan 18	June 18	Sept 18
1st	15	12	16	14	22	13	22	25	21	23	32	21	22	30	39	36	15	42
2nd	7	12	5	4	11	9	24	28	9	12	15	15	31	15	11	20	11	10
3rd	12	11	4	6	10	7	15	19	9	7	10	10	16	7	11	16	4	11

- 10 to 15 multipliers needed for a top 3 finish
  - 2 band station at a low altitude grid corner gets an easy 8 multi's.
  - Set up on a North-South Grid line 10-30 miles from the grid corner
  - Rover tracking or a grid corner at altitude gets 3 or 4 more.
- The big multiplier scores require a mountain top and 4 bands

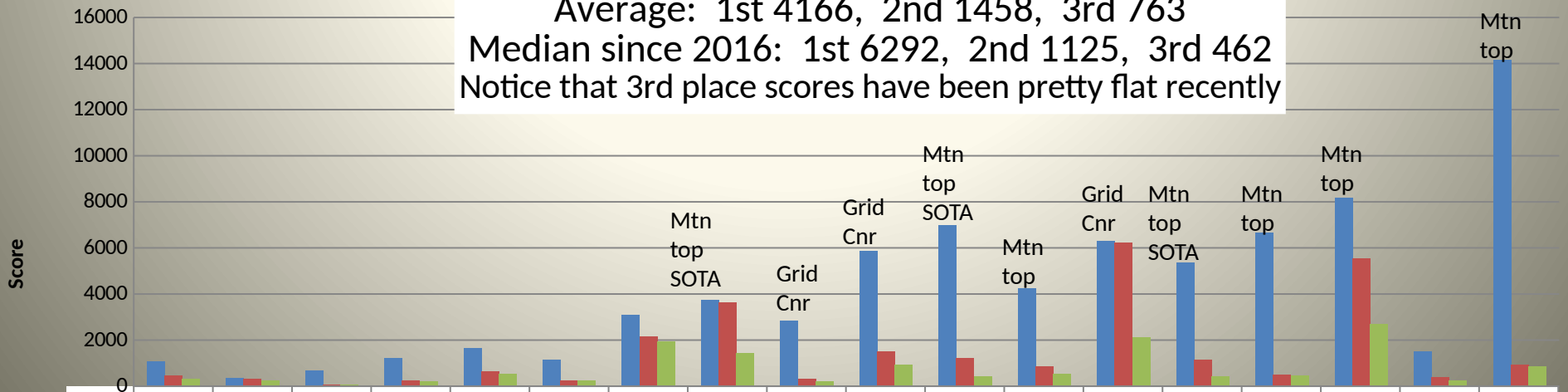
Analysis of Scores

Scores Top 3

Average: 1st 4166, 2nd 1458, 3rd 763

Median since 2016: 1st 6292, 2nd 1125, 3rd 462

Notice that 3rd place scores have been pretty flat recently



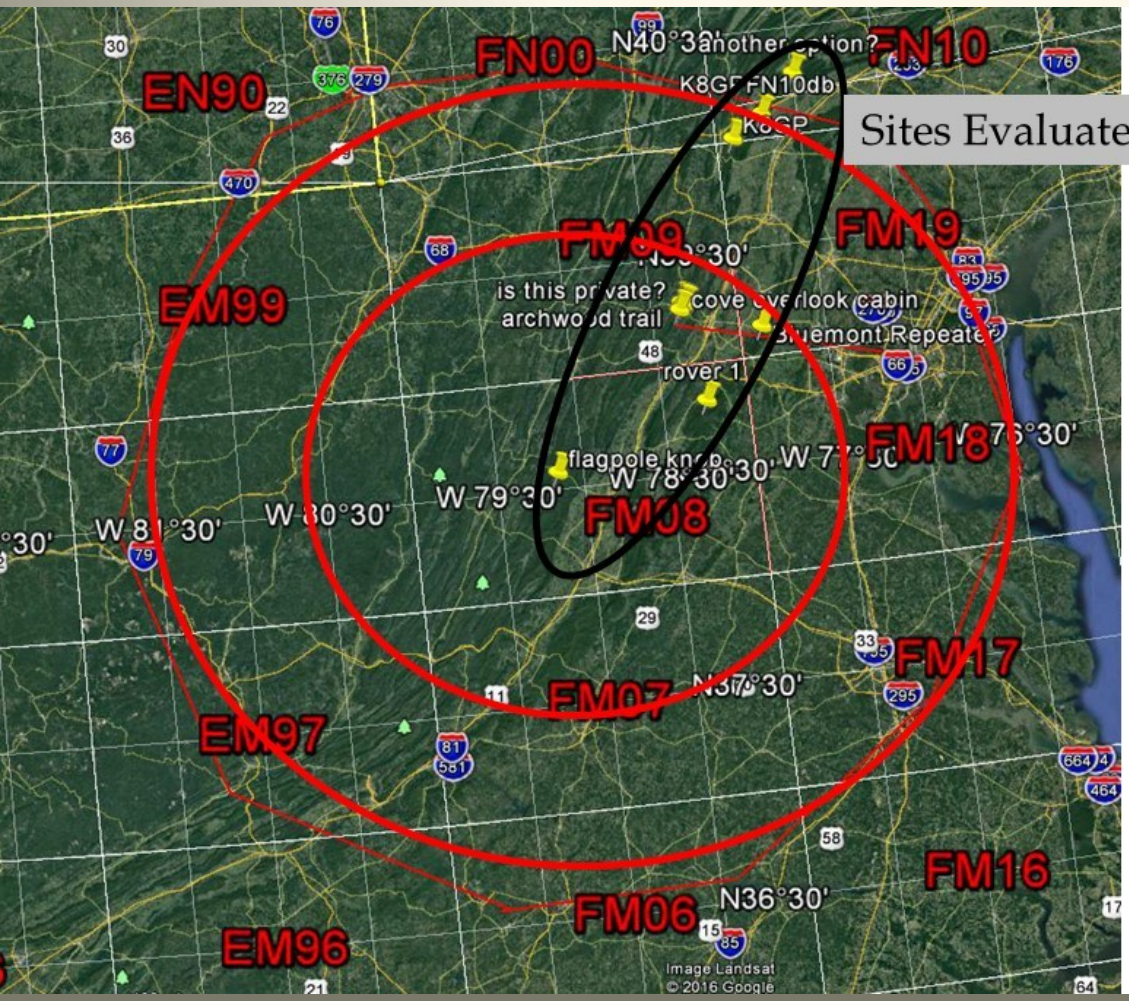
	Jan 13	June 13	Sep 13	Jan 14	June 14	Sept 14	Jan 15	June 15	Sept 15	Jan 16	June 16	Sept 16	Jan 17	June 17	Sept 17	Jan 18	June 18	Sept 18
1st	1080	360	688	1218	1650	1157	3080	3725	2835	5842	6976	4221	6292	5370	6669	8172	1500	14154
2nd	441	321	75	232	616	243	2136	3612	306	1500	1215	855	6231	1125	506	5520	396	920
3rd	324	242	56	189	510	224	1935	1425	189	924	430	530	2098	406	462	2704	244	847

- 2 Bands at grid corner: 11 Multi's , 60 QSO points (660 score) 3rd place, maybe 2nd.
- 3 Bands on a grid corner: 15 Multi's, 60 QSO points (900 score) 2nd place.
- The lowest scoring contest (2nd & 3rd) is June.

Pre Contest Coordination is Essential

Example Analysis of FM Multiplier Goals: 2 Bands

Range 2M (125mi) & 70cm (70mi) from 4,200’ ASL



Flagpole Knob 70cm Grids

Five at High Confidence

FM 07,08, 09, 18, 19

Four at Low Confidence

EM99. 98. 97 & FM 17

Flagpole Knob 2 Meter Grids

Eleven at High Confidence

FM 06, 07, 08, 09, 17, 18, 19

EM 97, 98, 99, FN00

Four at Low Confidence

FM16, FN10, EN90, EM96

Use the Pasternack Link Margin Calculator to estimate range. Assume a 3dB omni, 25W & 3dB losses for the other station.

Use Google Earth to plot elevation profiles to population centers and rover stops

2 Strategies & a Common Theme

- #1 Location Near a Grid Corner with Population
  - Set up near a grid corner on a N-S grid line near population center
  - Pre contest coordination with local club(s) & previous contacts
    - This is the recipe for W2EV's consistent success.
  - Track the rovers. You may be low altitude but they ARE NOT. Extra Multi's.
    - "FM Rovers". Friends taking the XYL out for scenic drive (into grids you need)

- #2 Get Altitude
  - If near a grid corner all the better. (KK4SOG)
  - Remote mountain tops are worthless for FM.
    - You need population within your demonstrated Tx & Rx range to omni's @ 35w
    - Let people know where you are. Nobody in Colorado does well in FM.

- **A Common Theme: Pre Contest Coordination**
  - FM Simplex can be a real desert. Every contact is golden.
  - 25 to 35 contacts is all you need for a top 3 finish (don't forget to QSY)
  - Get your club active on FM. Everyone has it.
  - Few know there is a VHF/UHF contest going on unless you tell them.

Pre Contest Coordination is Essential

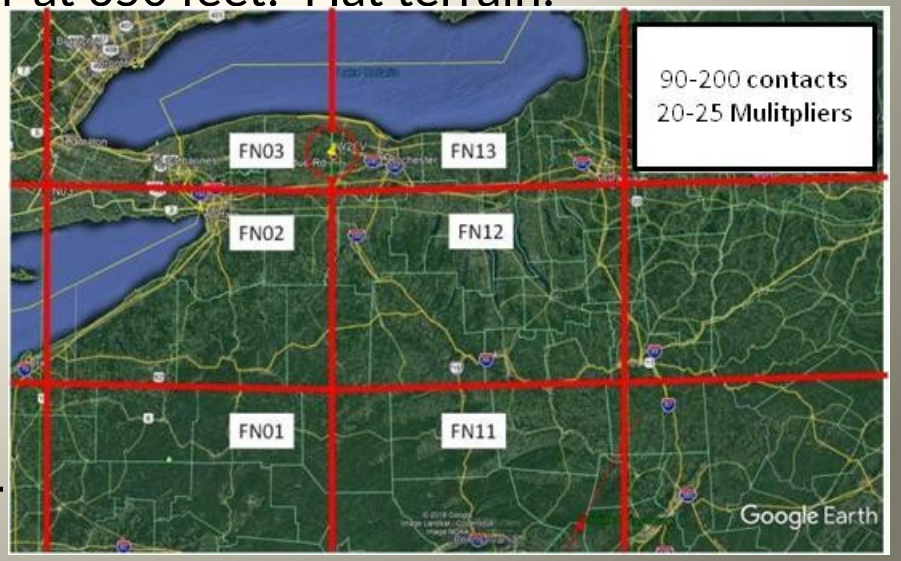
3 Case Studies

- W2EV:
  - The perennial winner (Rochester VHF/UHF club)
- KK4OSG (now WG4I)
  - “The Iron Ham”
- KM4KMU
  - Mad Max’s Shrimp Boat

Pre Contest Coordination is Essential

W2EV (QTH Station): 7-1st and 3-2nd Places

- **Geography:** 10 miles from a Grid Corner at 650 feet. Flat terrain.

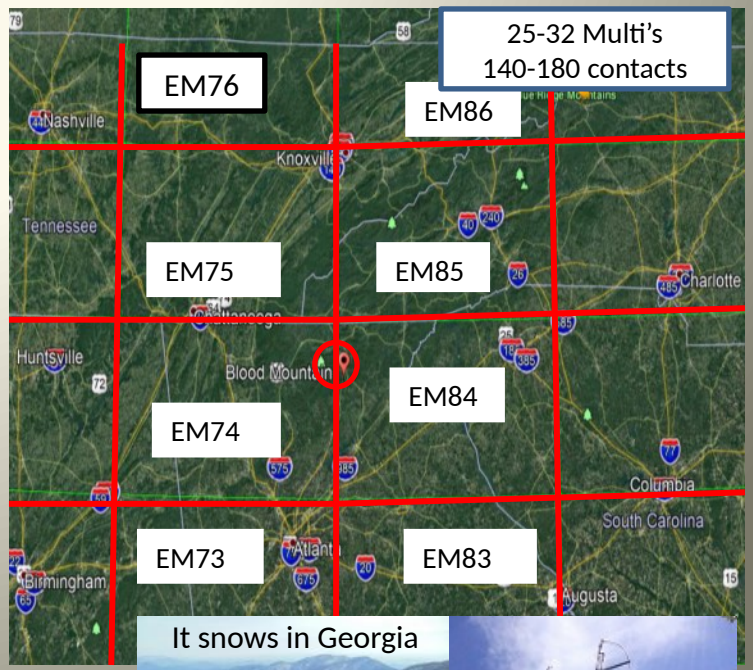


- **Antenna's:** Omni's all four bands
  - Loads a 10m vertical for 6m.
- **Station:** QTH
- **<u>Coordination:</u>** <u>Rochester VHF UHF club</u>
  - Sponsors a **Rover Blitz. 6-10 rovers**.
  - **Pre-runs** contest to verify rover location effectiveness. Checks QTH to QTH paths and Rover to QTH paths.
  - **Passes out HT's** for FM roving and hill topping to new hams.

No one does pre-contest planning and coordination better than Rochester VHF/UHF
Study their news letters and web site
(Pacific North West VHF Society does a pretty darn good job too. Keep and eye on them)

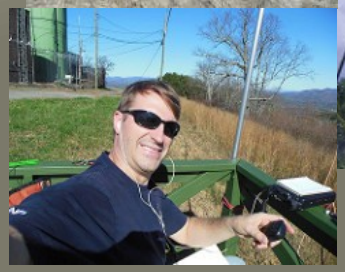
KK4OSG (WG4I) FM "SOTA" Station: 3-first place finishes

- **Geography:** 4,660 ft. Blood Mountain
  - 20 miles from a grid corner,
  - 70 miles from Atlanta
- **Antenna's**
  - Roll up j-pole 220 , dipole 6m,
  - 5-ele Elk dual band Yagi 2m/70cm.
  - Push up mast.
- **Station:** SOTA. 60 lbs including batteries.
  - Packs everything in. Batteries are a big deal.
  - Hand logs (Golden Logs, must be nice!!)
  - FT-8900 + borrowed 220 rig.
- **Coordination:** Supportive club and friends.
  - Does not go to the extremes of the other 3 examples.







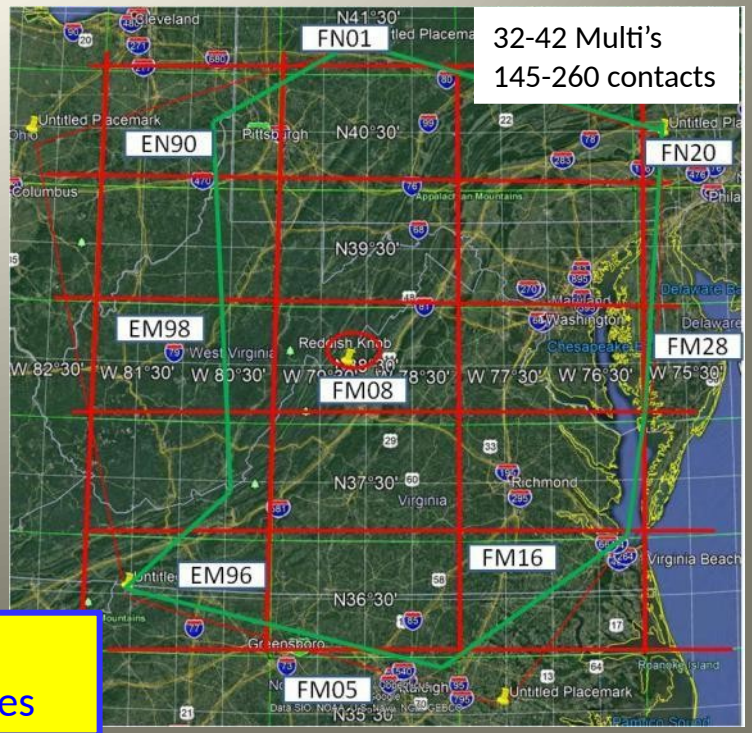


Altitude + grid corner + Population: 6 Line of sight grids
Good propagation: Reaches from SW Florida to Boston
Held record high score 2016-2018

KM4KMU Temporary High Altitude Fixed Site



- **Geography:** 4,400 ft. Reddish Knob. Center of grid FM08JL
  - Inside National Radio Quiet Zone. Zero squelch tolerable, zero QRM
  - 180 mile to 250 mile contacts are common. Best is 301 miles.
  - 80% of contacts are rural in Shenandoah Valley under 100miles.
- **Antenna's:**
  - 12 foot boom beams all bands. 45 Deg polarization.
  - 45 deg pol to work H pol "big guns" at long range.
- **Station:** "Expedition" fixed site
  - 100W all bands. Mast mounted pre-amp on 70cm.
- **Coordination:**
  - Emails all previous contacts requesting a QSO.
  - List gets longer every year, currently ~300 hams



Station built to chase grids/multipliers from FM08JL
Never wins January due to either weather or stupid mistakes

Preparing to Win

Doing Well: A top 3 finish

- Get near a grid corner & population center (10-40 miles)
  - Use Omnis as your primary antenna near a grid corner. Easy QSY
  - Save the beams for working more distant grids
- Coordinate with your club members
  - One FM mobile (rover) circling your corner and going to high spots in other grids can get you all the multipliers you need.
  - Use Google Earth to lay out lines of sight & Pasternack for link margins
- Track the rovers to get grids beyond the grid corner.
- Having 3 bands is a huge help
  - I prefer 223.5 over 6m, 2pt QSO's, very quiet, propagates better, smaller antenna
  - Low cost at ham fests or you can borrow one from a club member.
- Mount topping is not required but it is desirable.

Precontest Coordination is Essential: Otherwise simplex can be a desert

Lessons Learned From Losing

Lessons Learned From Losing

- Log all your contacts.
  - Even if they are not submitting logs they will count.
  - 11th vs 4th Jan 2016
- Hand Logging?
  - Take the time to write clearly. Don't loose a log sheet.
  - 2nd vs 1st Jan 2017 (lost to W2EV by 1%)
- Recon your site. Check for Noise
  - Used a popular June-Sept Rover site (ski resort) January 2018
  - S-7 noise from lift motors, car ignitions and LED flood lights
  - I was QRT in 9 hours. Everyone heard me, I heard very very few.
- Keep It Simple Stupid
  - Minimize nuts, bolts, tools, set up time (practice)

Lessons Learned From Losing (Jan 2019)

- Always bring Omnis When working populated grid corners
  - Tried to work a heavily populated grid corner January 2019 using beams from 2,500ft ASL
  - A copy of W2EV's set up but I brought beams not omni's (BIG MISTAKE)
  - Massive turn out. Huge pile ups on 146.520. FM mobiles everywhere.
  - Impossible to QSY everyone. Lost 2/3rds of my 2m contacts on the QSY to 70cm.

- Always bring Omnis When Ice Threatens
  - Beams iced up in 3 hours and I went QRT.
  - I did not bring any easy to de-ice omni's.
  - 1,300 pts in 3 hrs is not bad but I could have stayed on the air with omni's.

- You learn more by losing.

Ice really screws up the VSWR



CQB with a Barrett .50. Antenna firepower was a disadvantage
I should have brought mag mount whips, easy to QSY, easy to de-ice
Working a Grid Corner? Use Omni's!!

Lessons Learned From Losing

- Mark a road Atlas with grids 300 miles all directions.
  - On FM many people don't know their grid squares.
  - You need to give people their grid squares.

- Butt In Chair. 2nd place vs 1st January 2017
  - I abandoned my mountain top site when ice started forming.
  - I was weak. I wanted a hotel room instead of a tent.
  - 16 hrs on air over 2 days. I lost by 61 pts.
  - 10 more minutes on the air would have given me first place.

What is Unique About FM?

- **Coordination is ESSENTIAL to get people on the air.**
  - More important on short range FM than SSB.
  - Clubs, repeaters, emails. Get the word out
- **FM is more "genteel"**
  - Slower paced than SSB, few if any contesters. You can give them Mike Fright.
- **Be polite, be interesting, relax & laugh a little, create a pile up**
  - You're on their turf, disrupting their daily routine. Make it fun for them, you are unique!
  - Do a couple of rounds. **Your station is cool**, they are curious, be conversational
  - There are many listening, they will call if you make it fun.
  - Hams will jump in mobiles to give you new grids & higher bands *if they like you*
- **Be Patient**
  - Explain contesting, explain the exchange, be ready to give them their grid.

Don't hammer the calling freq with "CQ Contest" every 10 seconds
Be honey not vinegar You will get some pile ups

A challenge to **YOU**

Get 1 Technician on the Air in June



Credits:

W4IY: Woodbridge Wireless Contest Group
K8GP/R: Terry & Andy
K2EZ/R: Andrea
KW4EP: Jacek & his magic spectrum analyzer
Chaos Fab Shop: AK & Vince

Most importantly
The XYL, Jo





Questions?

Answers !