

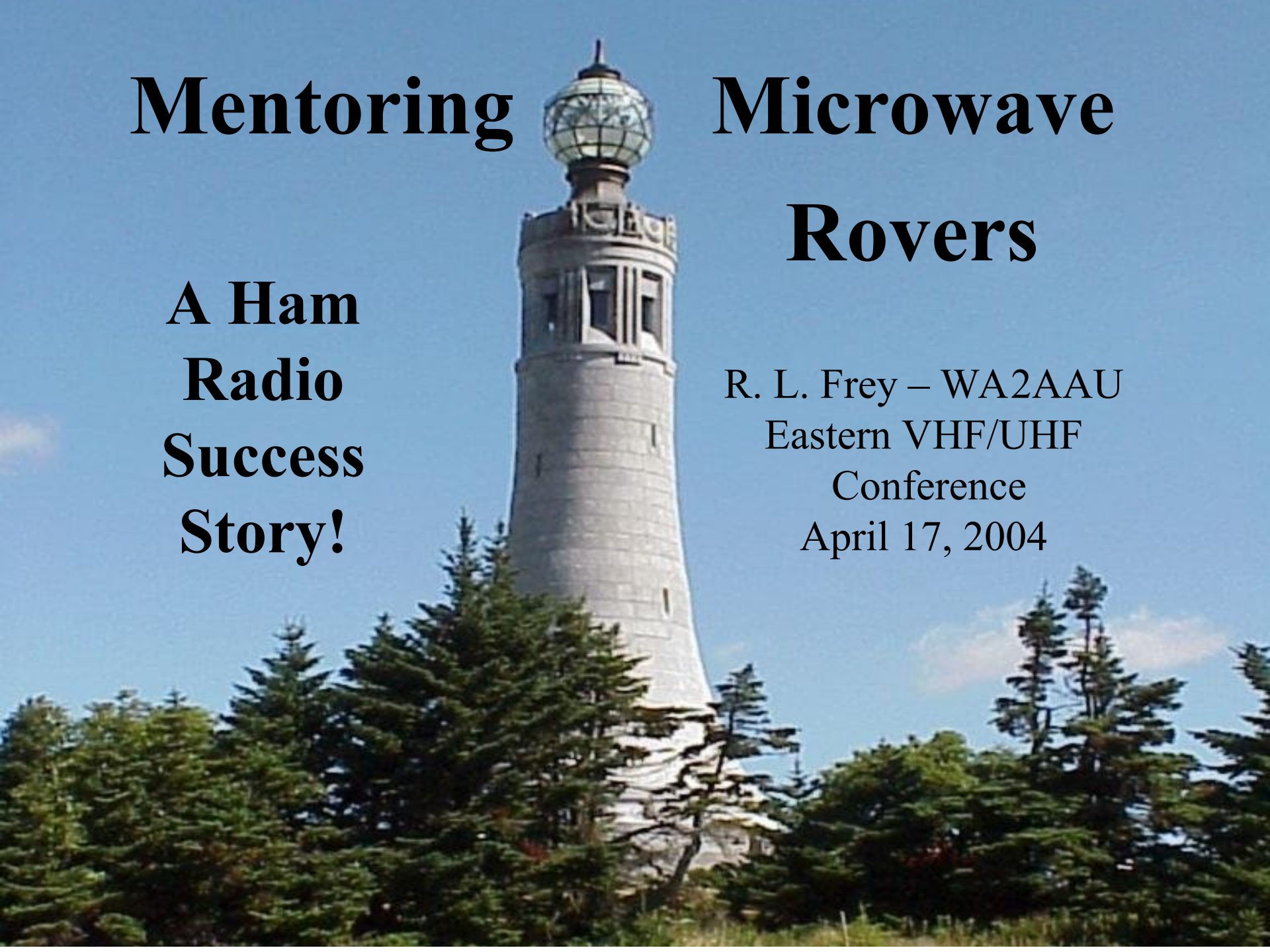
Mentoring

Microwave

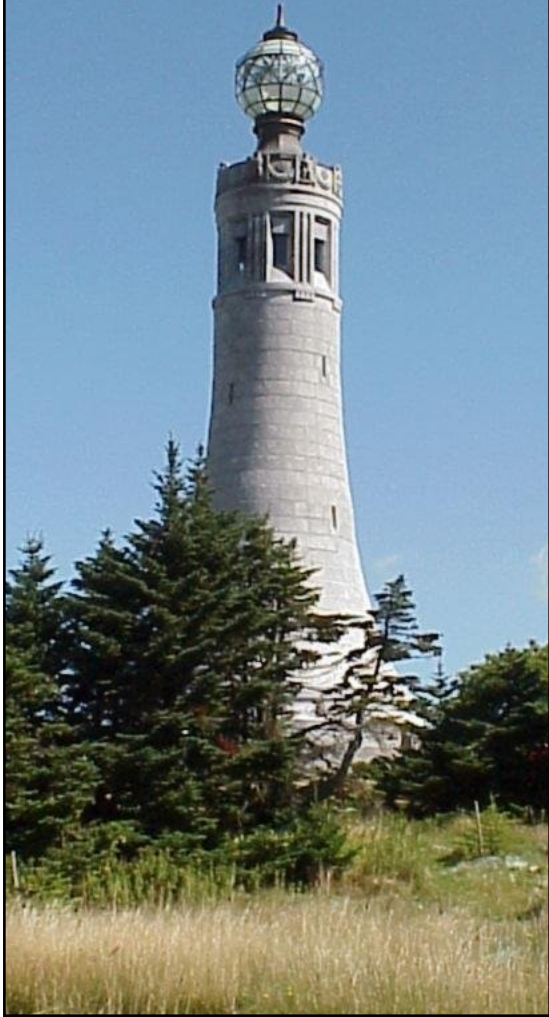
Rovers

**A Ham
Radio
Success
Story!**

**R. L. Frey – WA2AAU
Eastern VHF/UHF
Conference
April 17, 2004**



**W2SZ/1
(The MGEF)**



Introduction

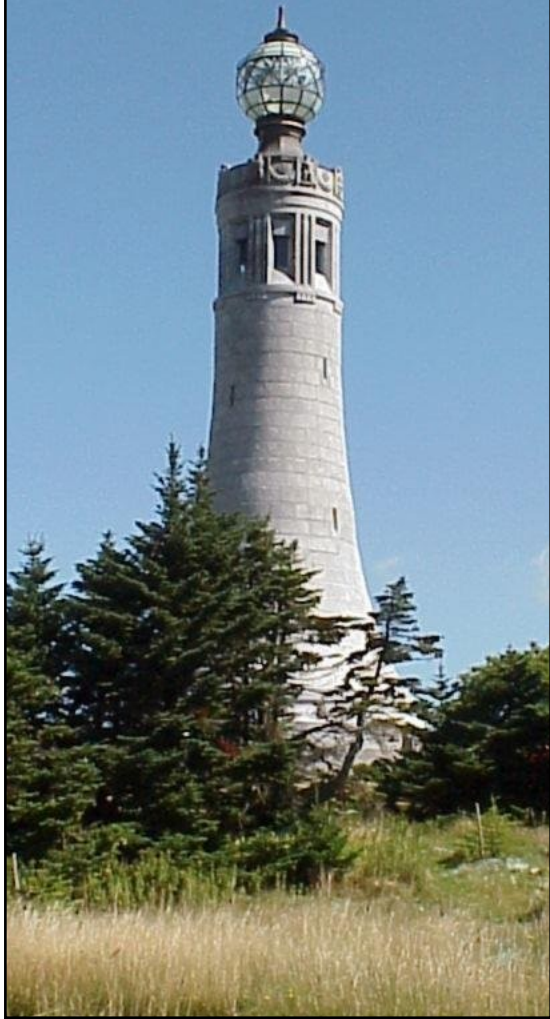
We Have Been Told About...

- Importance of “Elmering”
- Increasing Activity On Little-Used Bands

A True Story of How Responding to VHF Contest Rule Incentives >

- Long-Term Mentoring
- Great Personal Development
- World-Class Skill uWave Ops.

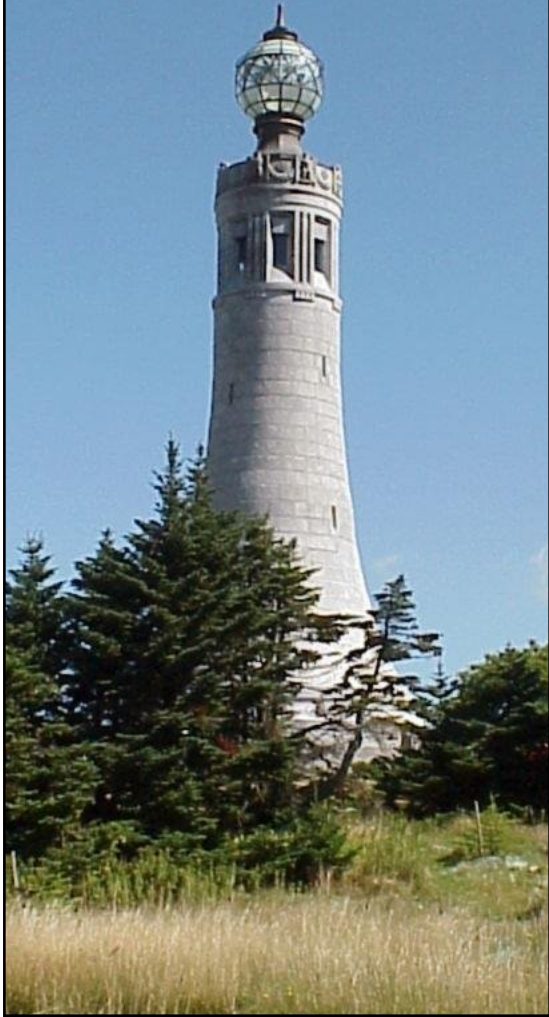
W2SZ/1 (The MGEF)



The Beginning

- Late 1970s Time Frame
- W2SZ/1 Doing Well, Most Bands
- Routinely Defeated by W1FC
- How Could That Happen???
- Exotic Microwave Bands!!!
- Built a Bunch of Stations
- Activated Nearby Sections
- Lots of Section Multipliers!!

**W2SZ/1
(The MGEF)**

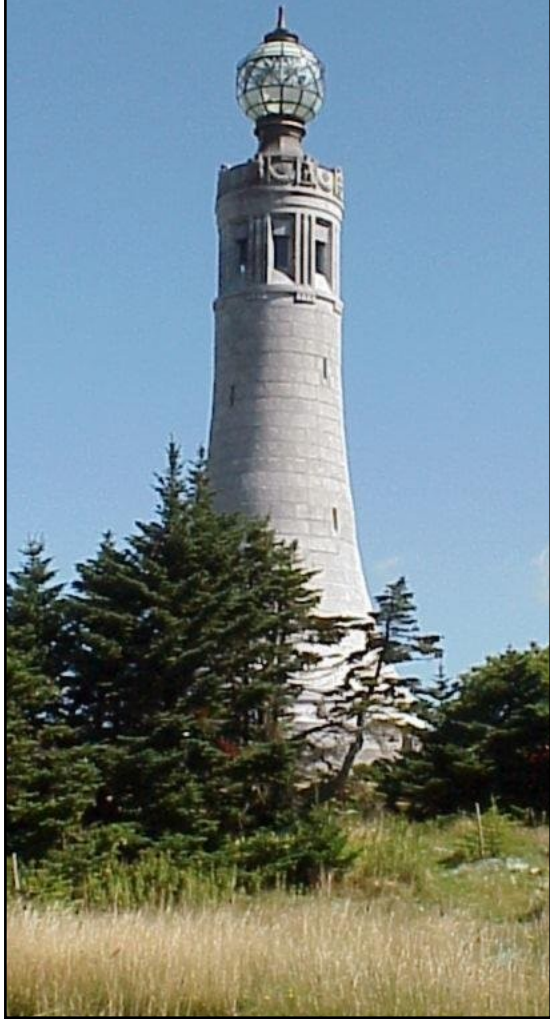


The Beginning

- Commercial uWave Company!!
- How Could We Compete??
- They Had All The Resources!!
- Unfair! Unfair! Unfair!
- They Created Their Own Activity
- Unfair!! Unfair!!
- But They Were Within The Rules

**Does This Remind You Of Noise
You've Heard Lately??????????**

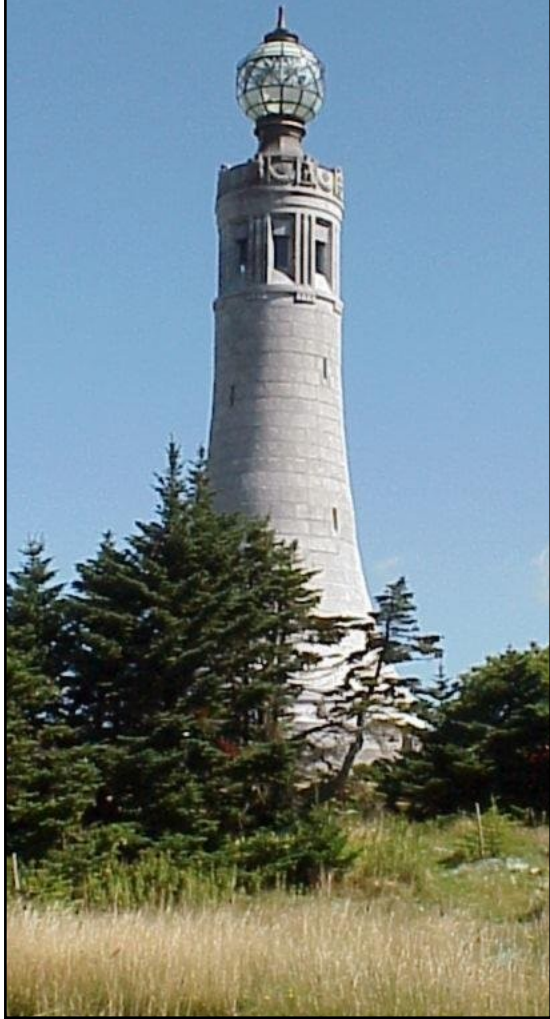
W2SZ/1 (The MGEF)



The Beginning

- Eventually We Got Over It
- Formed A Plan... To Beat Them At Their Own Game! 7 Sections! We Need Seven Sets Of Gear!?!
- Simple Equipment: 2-way Stuff
- Single Stable 1152 Source - 1 xtal
- Use As LO for 1296 Transverter
- Use Mults For 2304, 3456, 5760
- Radar Set For 10 GHz WBFM

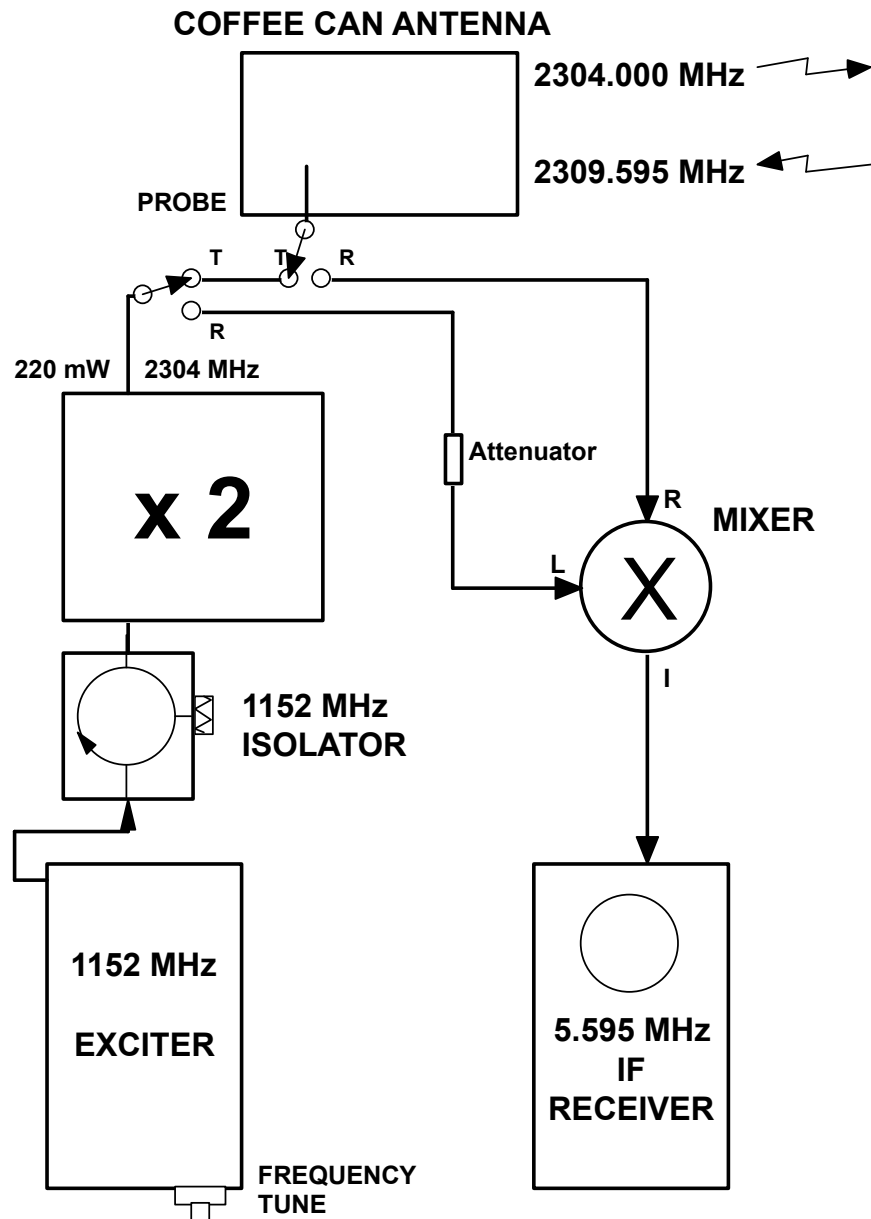
W2SZ/1 (The MGEF)



The Beginning

- Only 2 Experienced Engineers
- Everyone Else Had To Learn -
- Fabulous Club Project
- Huge Number of Hours
- 7 Exciters, 7 CW Receivers, 7 Doublers, 7 Triplers, 7 x5 Mults. 7 Sets of Mixers, 7 FM Receivers 7 Radar Sets, 7 Sets of Antennas
- AND All The Hilltop Gear !!!

SIMPLE 2304 MHz PORTABLE STATION



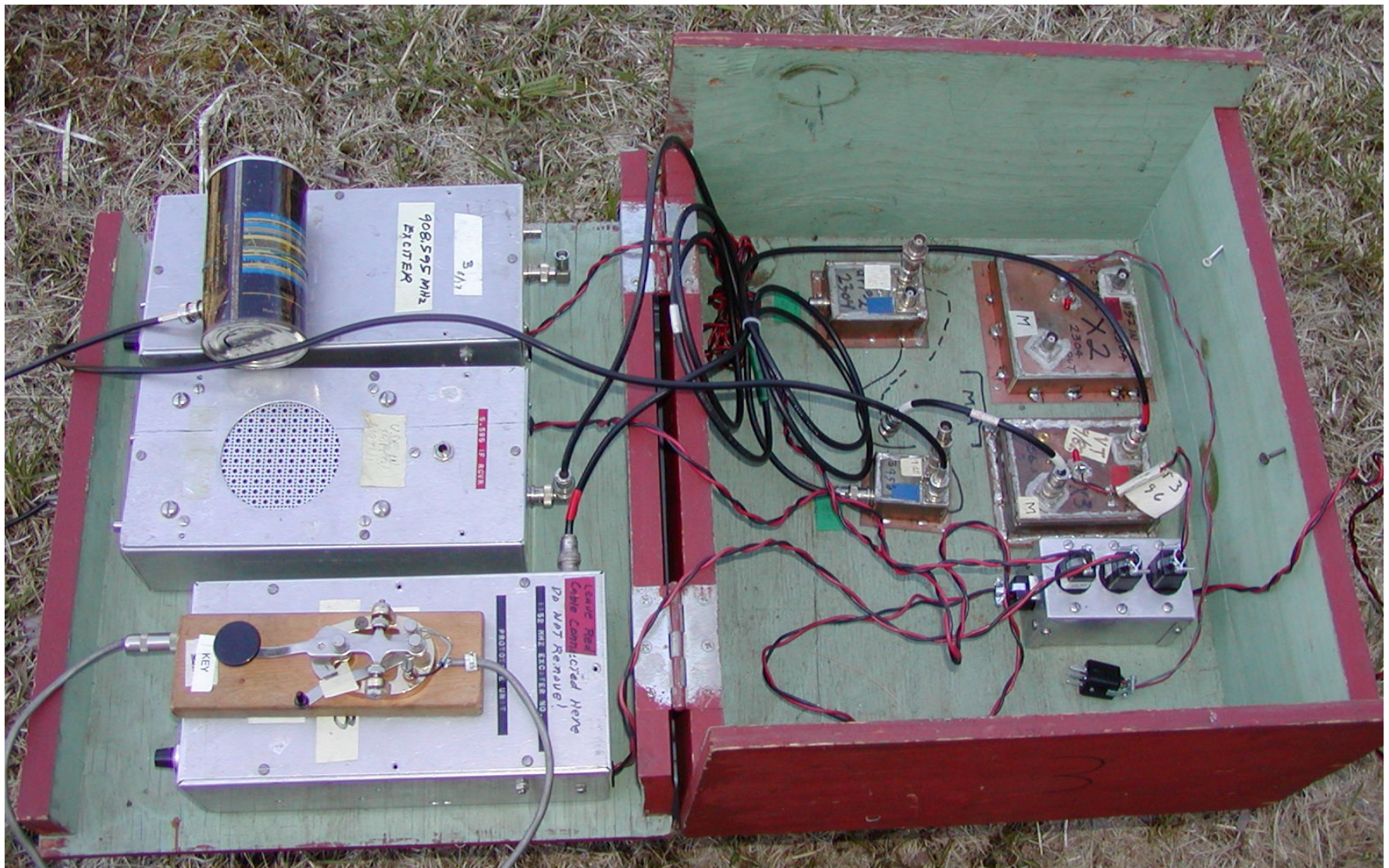
Crude, Simple, But Effective

Single Stable Oscillator

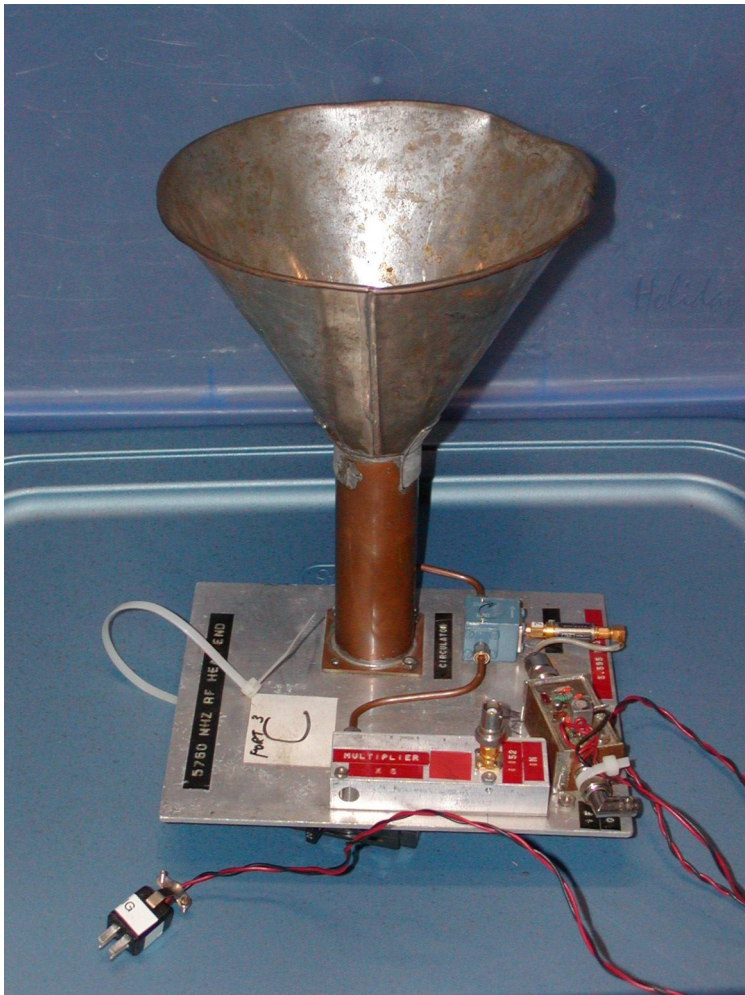
Very Inexpensive

Specifications For 2304 MHz

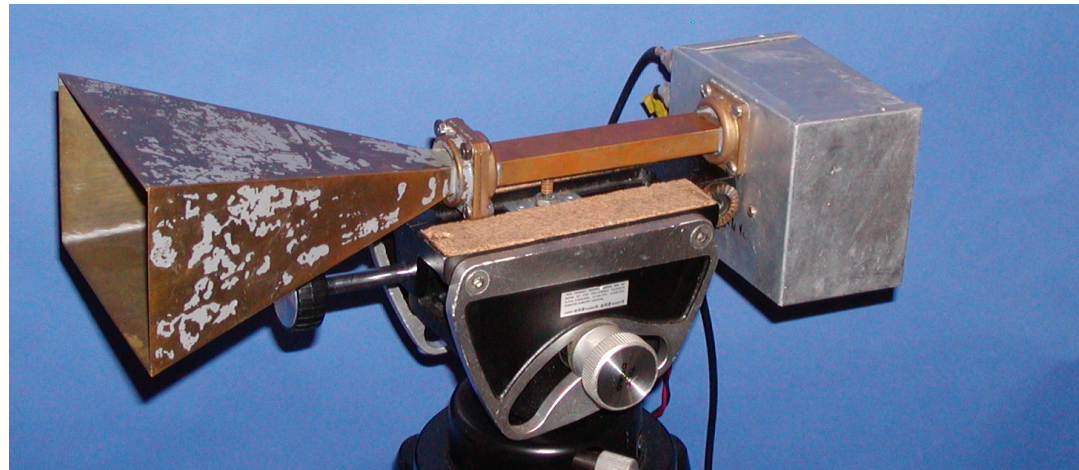
Tx Frequency	2304.0 MHz
Rx Frequency	2309.6 MHz
Tuning Range	~ +/- 20 kHz
Modulation	CW Only
Tx Power	250 mW
Receiver Noise Figure	~10 dB
Antenna	Coffee Can & 30" Dish
Range	Any LOS Path in NE Some 150-180 Mile Over the Horizon Paths



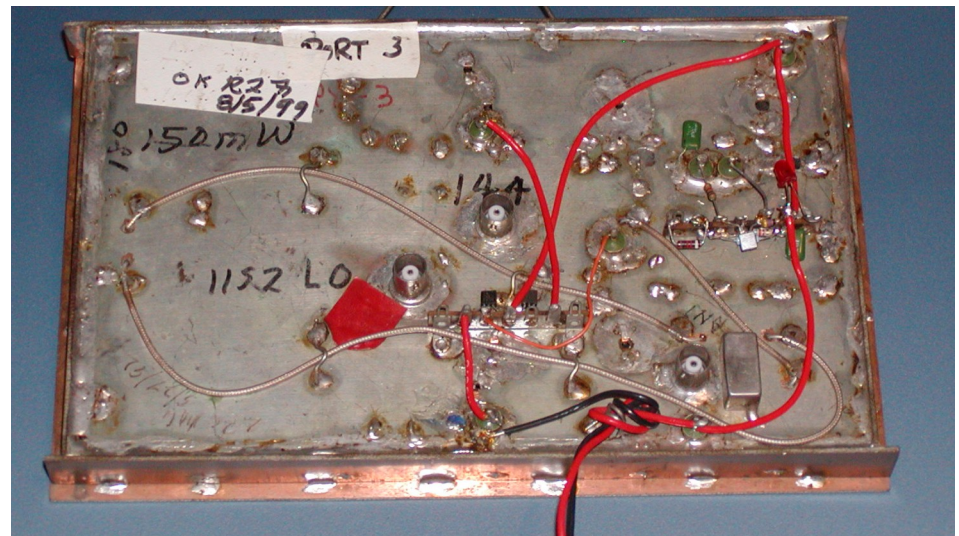
Main Box-Microwave Portable (Rover) Station



5760 MHz Band Module



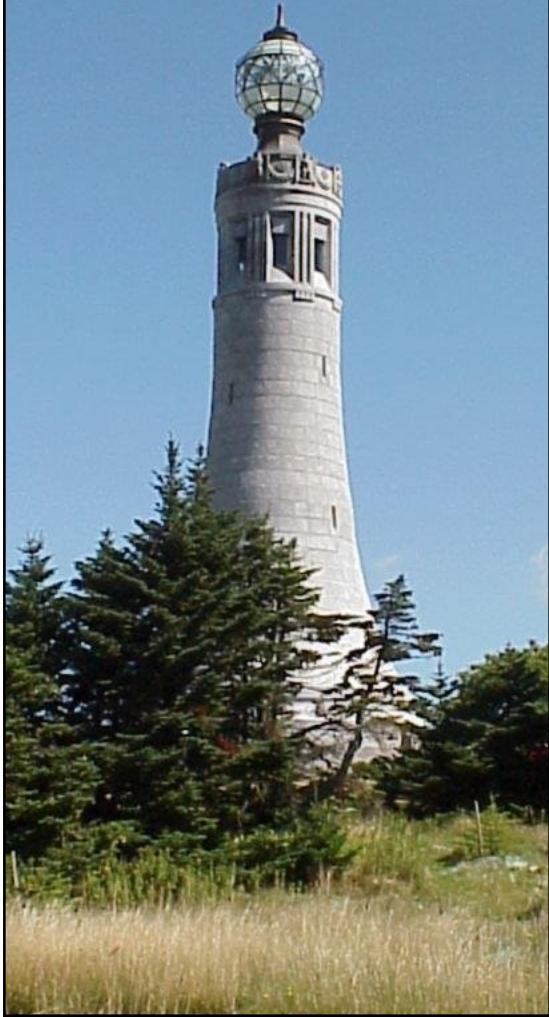
10 GHz WBFM Station



1296 MHz Transverter

Microwave Portable (Rover) Station - Extra Stuff

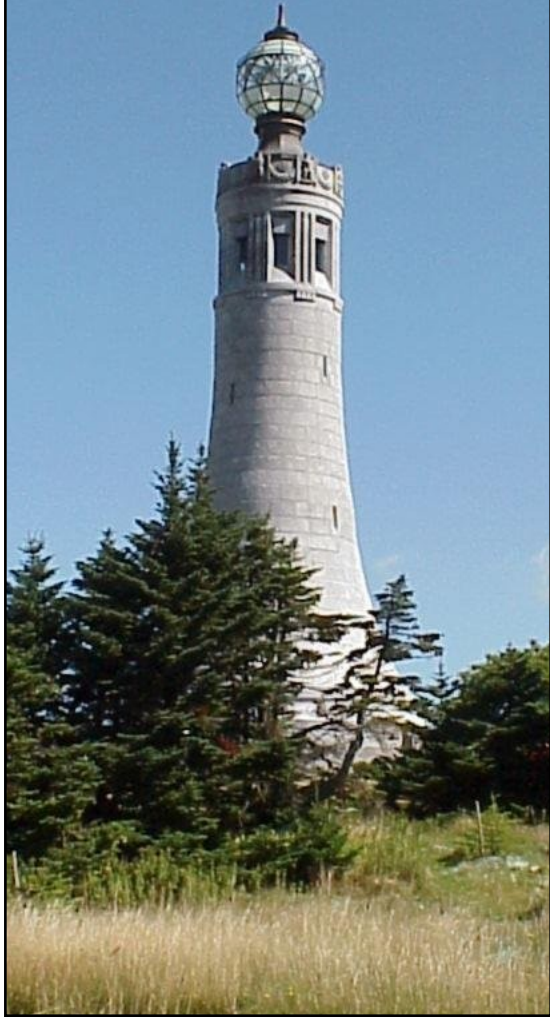
W2SZ/1 (The MGEF)



The Beginning

- We Need Operators! 7 Stations
- Call To Local Radio Clubs
- Wanna Try Something Crazy?
- Microwaves? We'll Show You!
- Only Can Go To One Location
- Still Made $7 \times 4 = 28$ Sections
- WMA, EMA, CT, NH, VT, ENY and WNY - 7 Sections, All LOS
- College Kids **BEAT THE PROS**

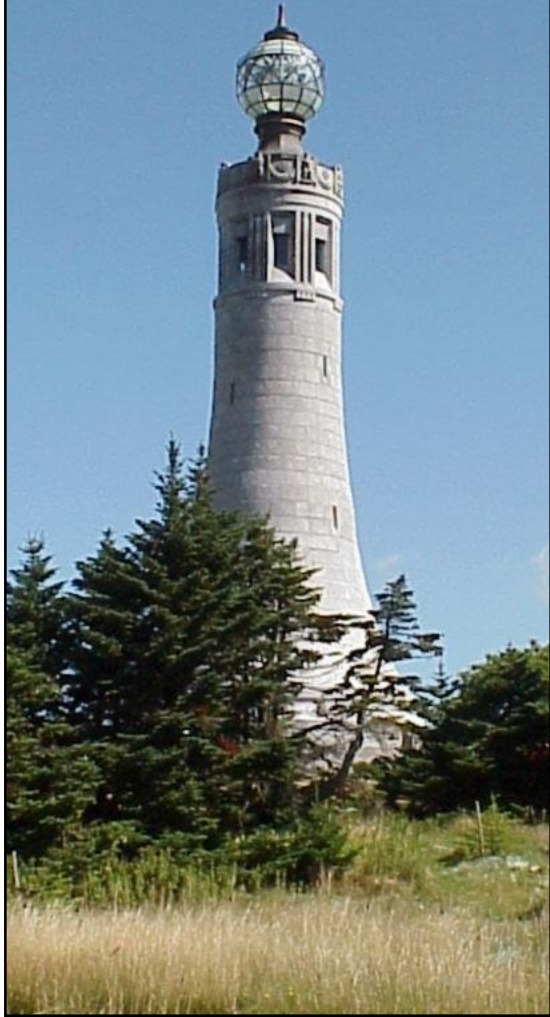
W2SZ/1 (The MGEF)



The Beginning

- Tremendous Team Building Exp.
- Completely Dominated Our Club Mindset for Over 2 Years
- Was Exactly What Ham Radio Contesting Can & Should Be...
 - Team Effort, - Got On New Bands
 - We Learned LOTS of New Things
 - Improved Building/Operating Skills
 - Improved Organization
 - Marvelous Success, More to Come!

W2SZ/1 (The MGEF)

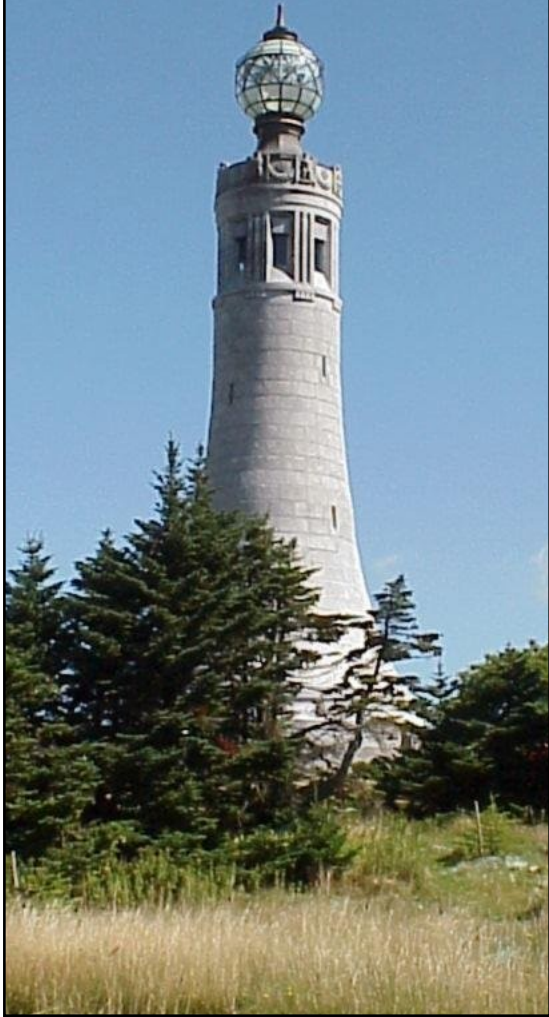


Introducing Rovers & Grids

In the Mid 1980s . . .

- W2SZ Continued Using Portables
 - Competition Asked for Relief
 - “Unfair!! Unfair!! Unfair!!
- Rovers Introduced
 - Let Portables Op From Many Grids
 - Solves Poor QTH; -Hey, It’s FUN!
 - Builds Activity -- QSOs & Mults.
- Microwaves + Rovers → Great For Activity and Development

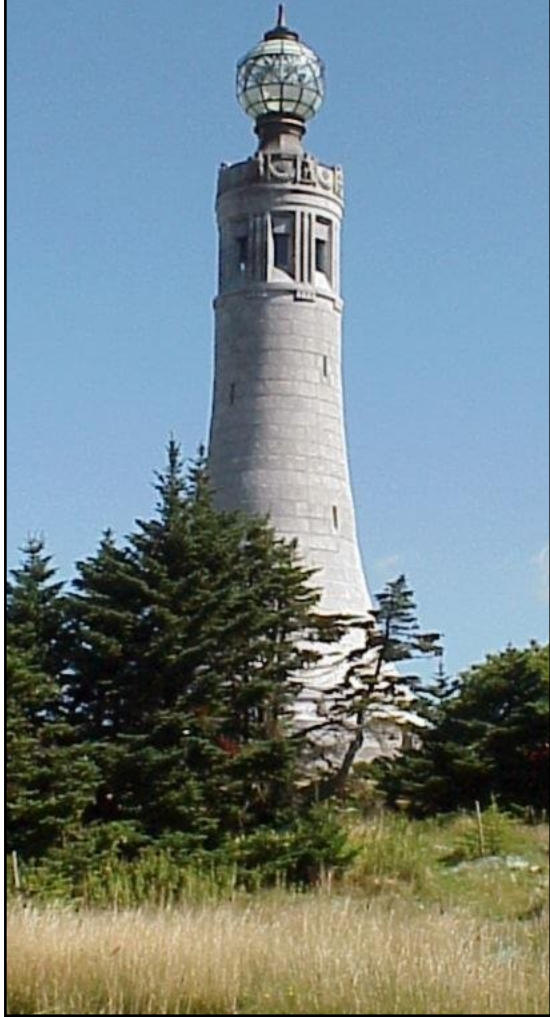
W2SZ/1 (The MGEF)



Introducing Rovers & Grids

- Maidenhead Grids Introduced
 - More Even Distribution of Mults
 - World-Wide Uniform System
 - Many More Multipliers Especially In the Larger ARRL Sections
 - Helped Level Playing Field
 - Give New Incentive to Get On Air
 - New Awards to Try For
- Start of Modern VHF Contest Era

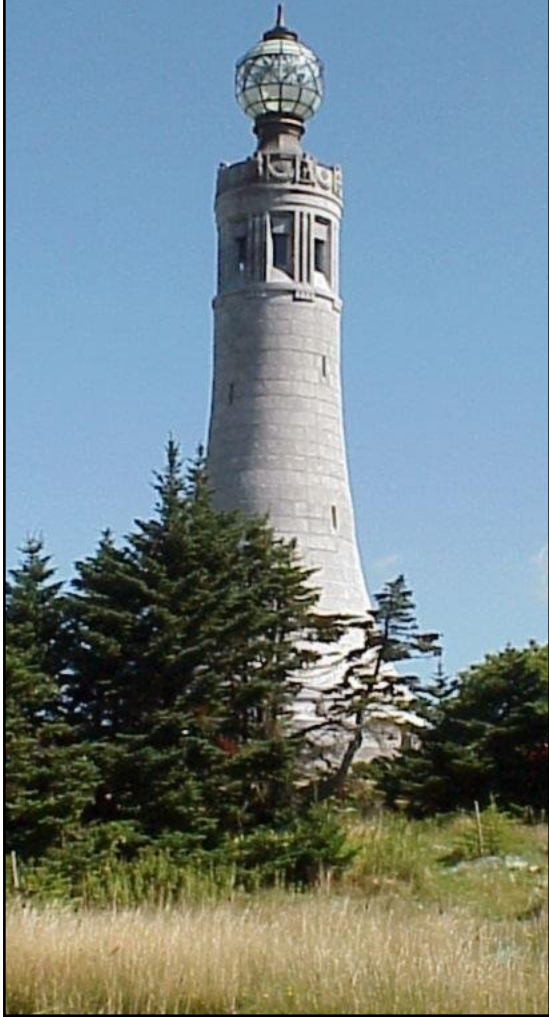
W2SZ/1 (The MGEF)



Introducing Rovers & Grids

- Microwaves, Rovers & Grid Sq.—
3-Way Marriage Of Convenience
& GREAT FOR HAM RADIO
 - Promotes uWave Activity
 - By The Creation of Rovers, and
 - Pushing Others to Field Rovers
 - Rovers help Fixed, Fixed Help Rov.
 - Populates Rare Grids & Rare Bands
 - Greatly Improves Technical Skill
 - Develops Operator Skill, Too.

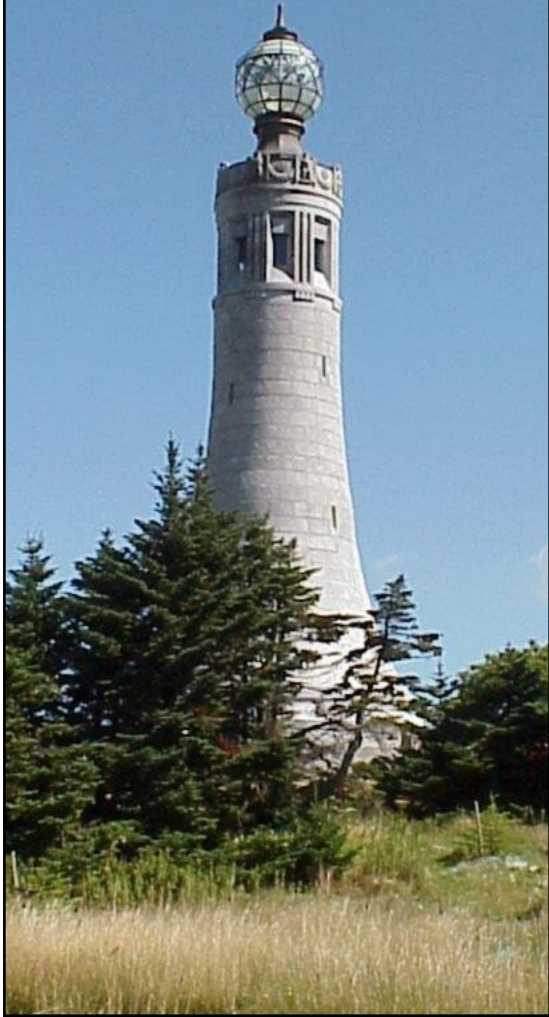
W2SZ/1 (The MGEF)



Introducing Rovers & Grids

- W2SZ Local Microwave Portable Stations → Rover Stations.
- Rover Equipment Enhanced
 - Amplifiers and LNAs Added
 - Dishes Added
- Simple Stations: 200 Mi Range!
 - Lots of Grids in a 200 Mi Circle
- Local Stations Transformed Into Full-Blown Rover Stations
- Operators Transformed, Too!

**W2SZ/1
(The MGEF)**



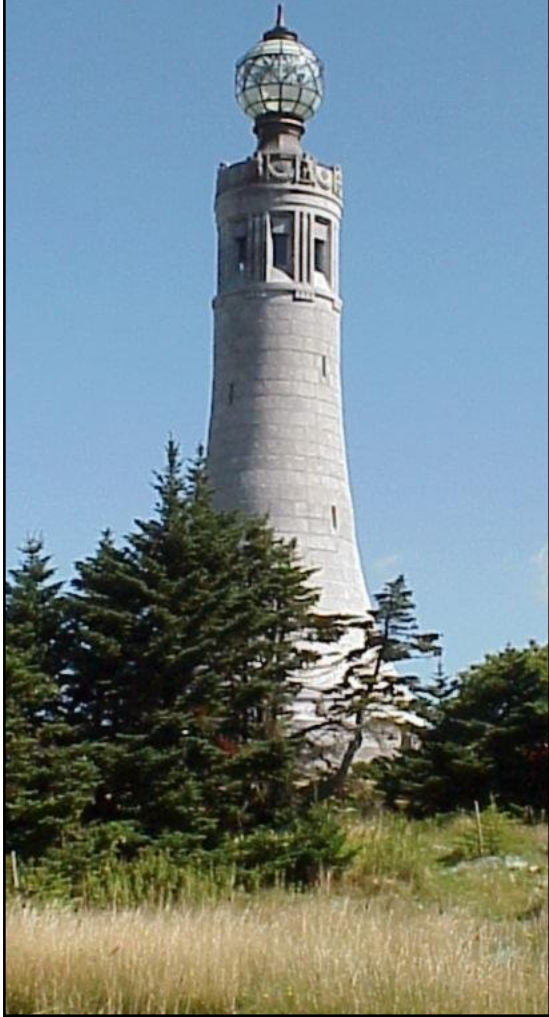
Introducing Rovers & Grids

- uW & Rovers Are Good For Ham Radio **Because Rules Incentives Reward The Activity With Points.**
This IS A GOOD THING.

Commercial Equipment Now Available
But Physics Still Prevails!!!

- Microwave QSOs Take Longer
 - Narrow Beams, Frequency Errors
- Power Levels on uW are Lower
- Calling CQ Doesn't Work
- Propagation Losses Are Higher
 - With Antennas You Can Point

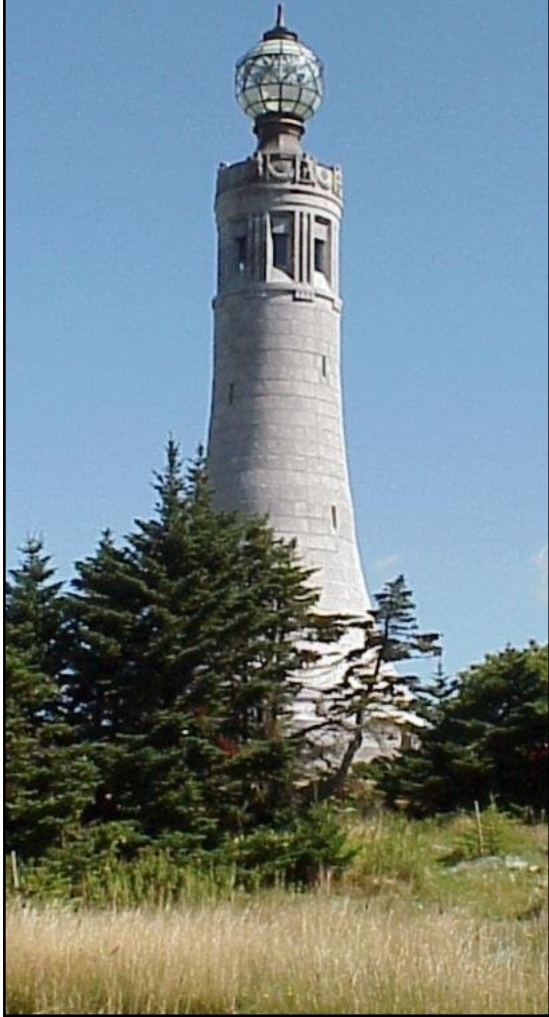
W2SZ/1 (The MGEF)



Mentoring - A Natural Evolution

- Rover Class + Grid Squares → Microwave Bands Important
- Recruits for SZ Rover Equipment
 - No Microwave Experience
 - Little or No Contesting Experience
 - Experienced People Do Their Own Thing - No Interest in “Pip Squeak” Microwave Stations!!
- Microwave Rover Recruits Are Typically New People

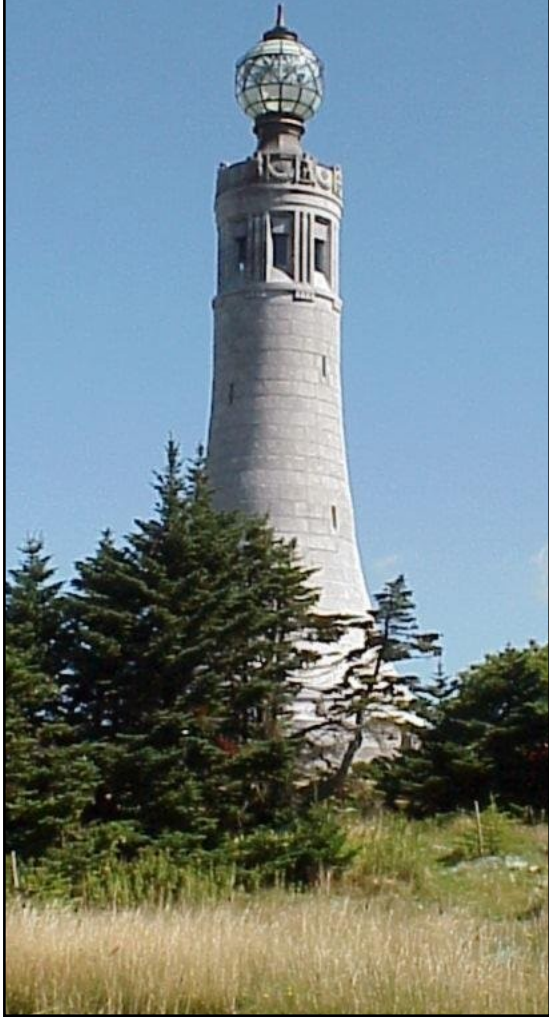
W2SZ/1 (The MGEF)



Mentoring - A Natural Evolution

- Interesting Group Dynamic....
 - We Invited New People Because No One Else Would Do It
 - Amazed By Simple Technology On Exotic Bands. ($mW + uW = \text{Miles}$)
 - **The Ops Came Back Pumped Up About Roving, VHF, Microwaves and Contesting!**
 - We Only Had To Give Them Some Gear To Try It Once to Hook 'Em

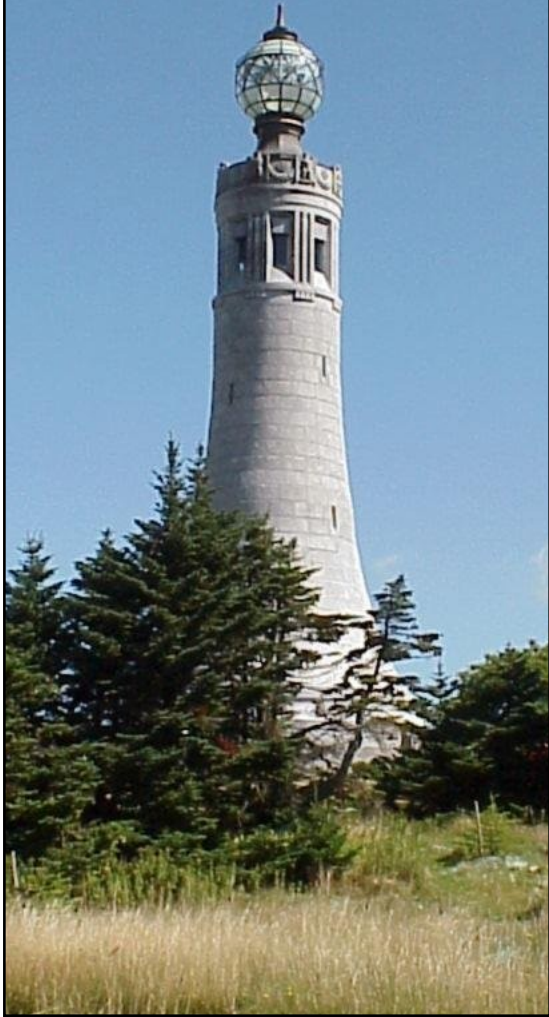
W2SZ/1 (The MGEF)



Mentoring - A Natural Evolution

- Hands-On Experience = Sold!
- “Hey This Is Great FUN!”
- “How Can We Get Our Own??”
- You Have 2 Choices – Build, Buy
 - Build: We have parts, We will help.
 - Buy: We can help you choose right.
- Most Chose To Build!!!
- They Had Seen Simple Stuff Work – “I can do it too!”

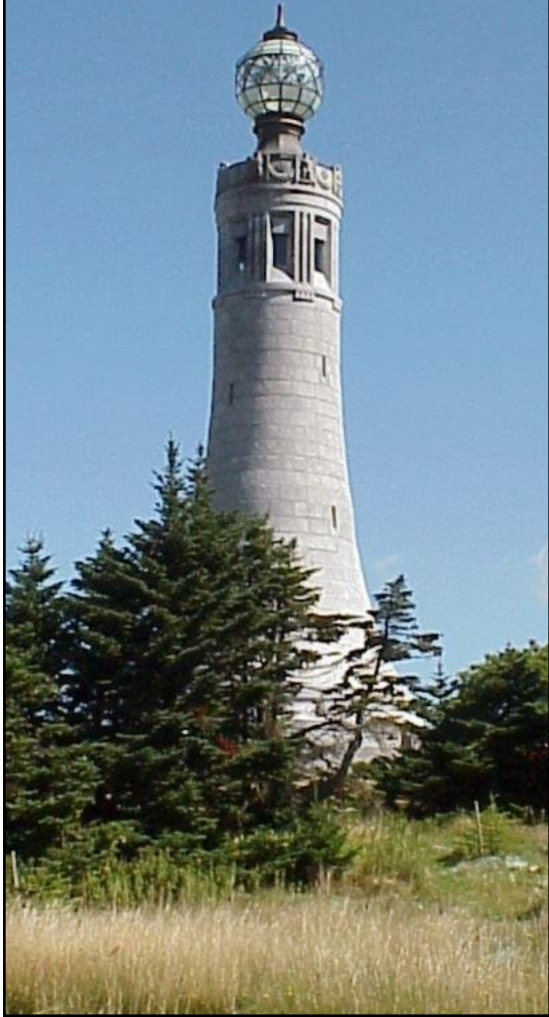
W2SZ/1 (The MGEF)



Mentoring - A Natural Evolution

- Personal Station → Standard Freq
- Routine Work Parties to Help
- Work on Own Projects at Own Pace, As Time Permitted
- Typically Takes Years To Finish
- Use Personal Station When Done
- Use Club Gear Until Finished And As Backup, Then Return It For Others To Use.

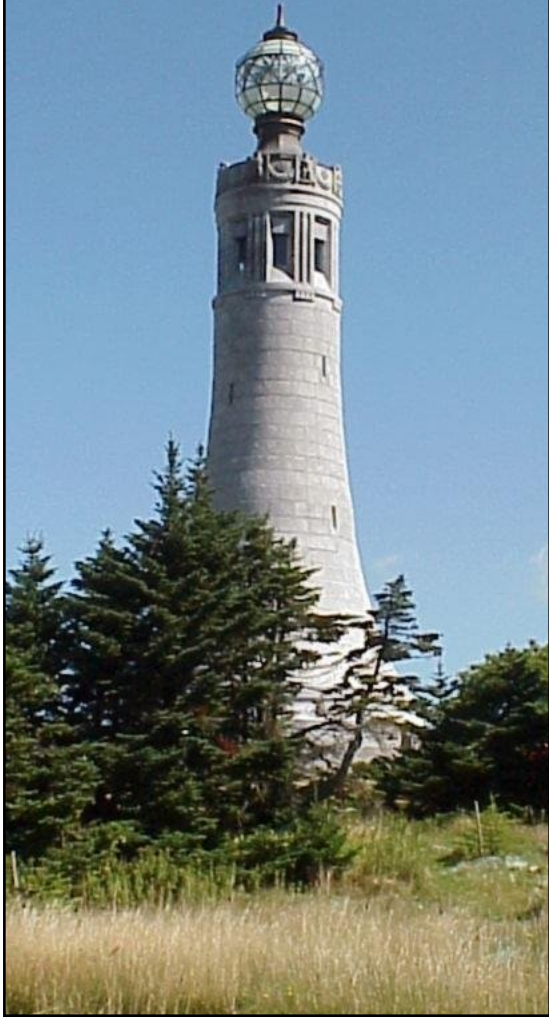
W2SZ/1 (The MGEF)



Mentoring - A Natural Evolution

- Process Was NOT Planned !
We Discovered It By Accident
- Encouraged By The Rules
- Help Ourselves → Help Others
Learn New Things. Get On The Air
- HANDS-ON EXPERIENCE
- Long Term Support → Success

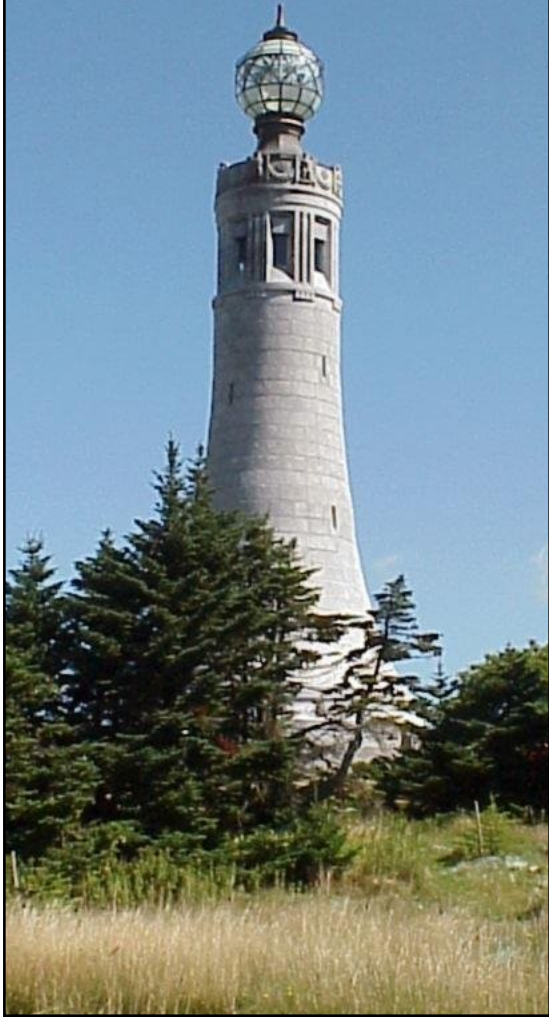
W2SZ/1 (The MGEF)



Critical Ingredients

- Any Group Can Do This
- INFECTIOUS ENTHUSIASM
- HANDS-ON EXPERIENCE
 - Provide the Equipment!
- LONG TERM SUPPORT
- CONSTANT MENTORING
- REGULAR WORK PARTIES
- Invite To Hamfests
- Invite To Conferences

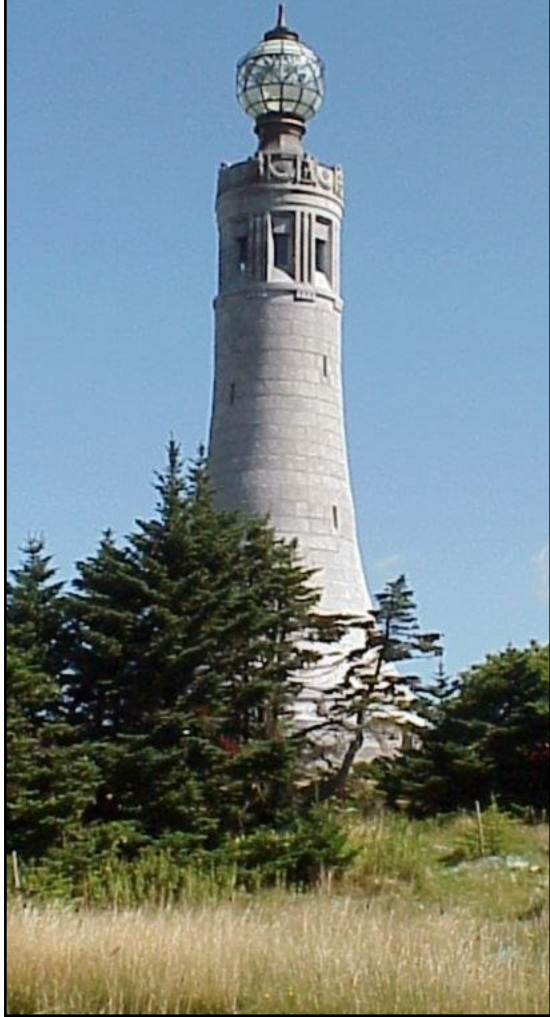
W2SZ/1 (The MGEF)



Summary—Attract New Hams

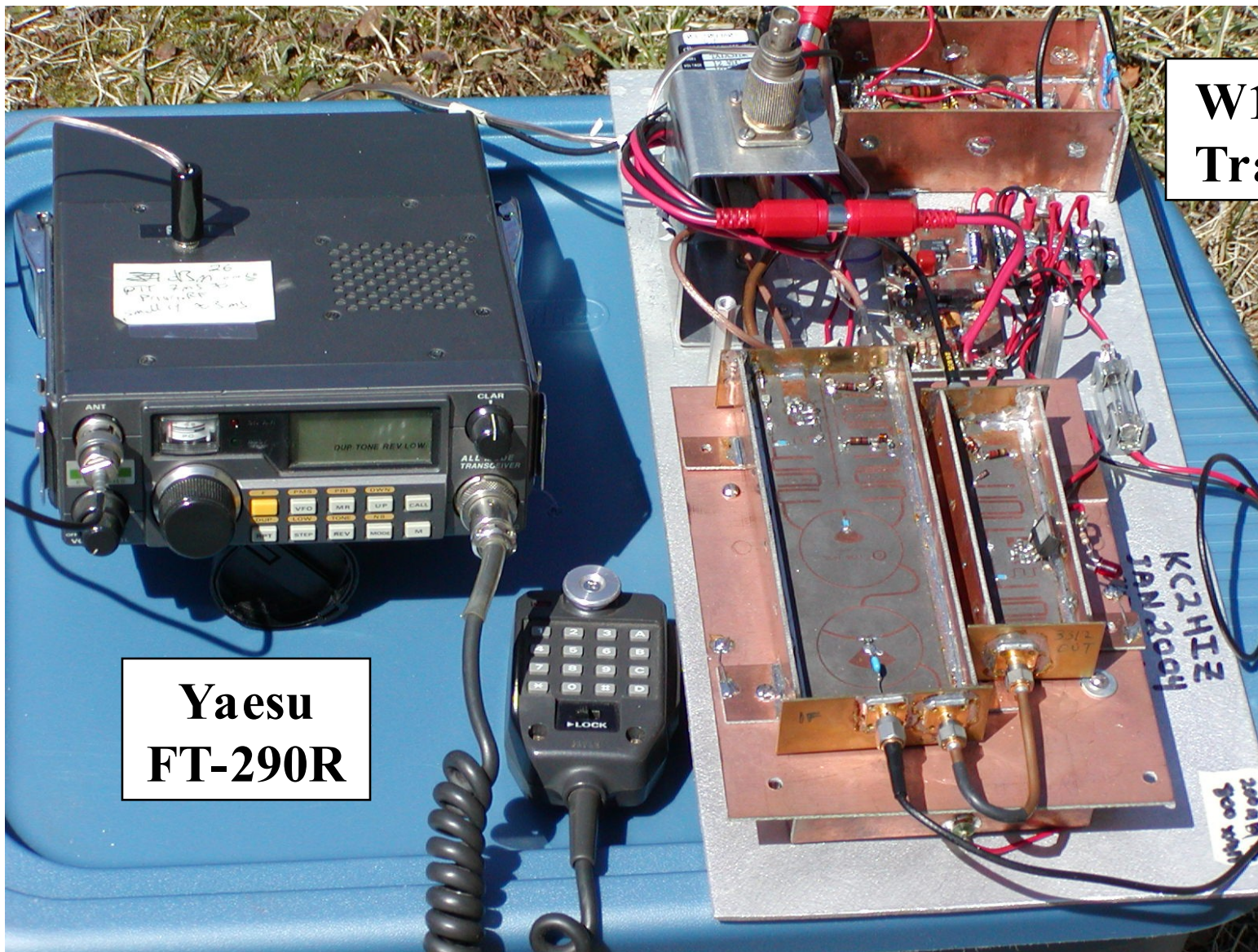
- Mentoring Essential Ingredient
- Contest Rules Provide Excellent Framework To Develop People Technical and Operating Skills
- Hands-On Experience = Hook
- Continuing Support – Clubs Best
- No Quick Fix To Attract New Hams – It's a Long, Steady Task But Gives GREAT Satisfaction

W2SZ/1 (The MGEF)



How To Work An MGEF Rover On Offset Frequencies

- Transverter For The Band
- Multimode IF Radio (out of band)
- Receive on xxxx.000 (2304.000)
 - IF Radio on 144.000 MHz (Rx)
- Tx 5.595 MHz Higher (2309.595)
 - IF Radio on 149.595 MHz (Tx)
 - Need To Enable Tx Out-of-Band
 - Usually Means Clipping a Part
 - Yaesu FT-290R Will Do The Job
 - Can Even Duplex on 2 VFOs



**W1VT 3456
Transverter**

**Yaesu
FT-290R**

This Multi-Mode + 3456 Transverter Can Work MGEF Rovers