

# Having Fun With Summits On The Air

**Bob Witte, KØNR**  
**Steve Galchutt WGØAT**



# Agenda: Summits On The Air

- Summits On The Air (SOTA) Program -Bob
- VHF Operating -Bob
- HF Operating -Steve
- Chasing is Fun -Steve
- Some easy local summits -Steve/Bob
- Q&A -Steve/Bob



# Safety First

Hiking/Climbing In the Mountains has risk:

- Lightning
- Getting Lost
- Gravity
- Temperature
- others



**Warning: Climbing mountains is inherently a dangerous activity. Do not attempt this without proper training, equipment and preparation.**



# Summits On The Air (SOTA)

- Two ways to participate
  - Activator
  - Chaser
- Points and Award System
- 1805 SOTA summits in Colorado
- A wide variety of difficulty and elevation
  - From 5324 feet to 14,443 feet
- SOTA activation requirements:
  - summit must be on the SOTA list
  - Activation Zone (AZ) is within 25m (82 ft) of the summit
  - equipment must be carried (no minimum distance)
  - portable power (no fossil fuel generators)



# SOTA Scoring

Based on ASL elevation of a qualified peak

May include a “seasonal bonus” for activators

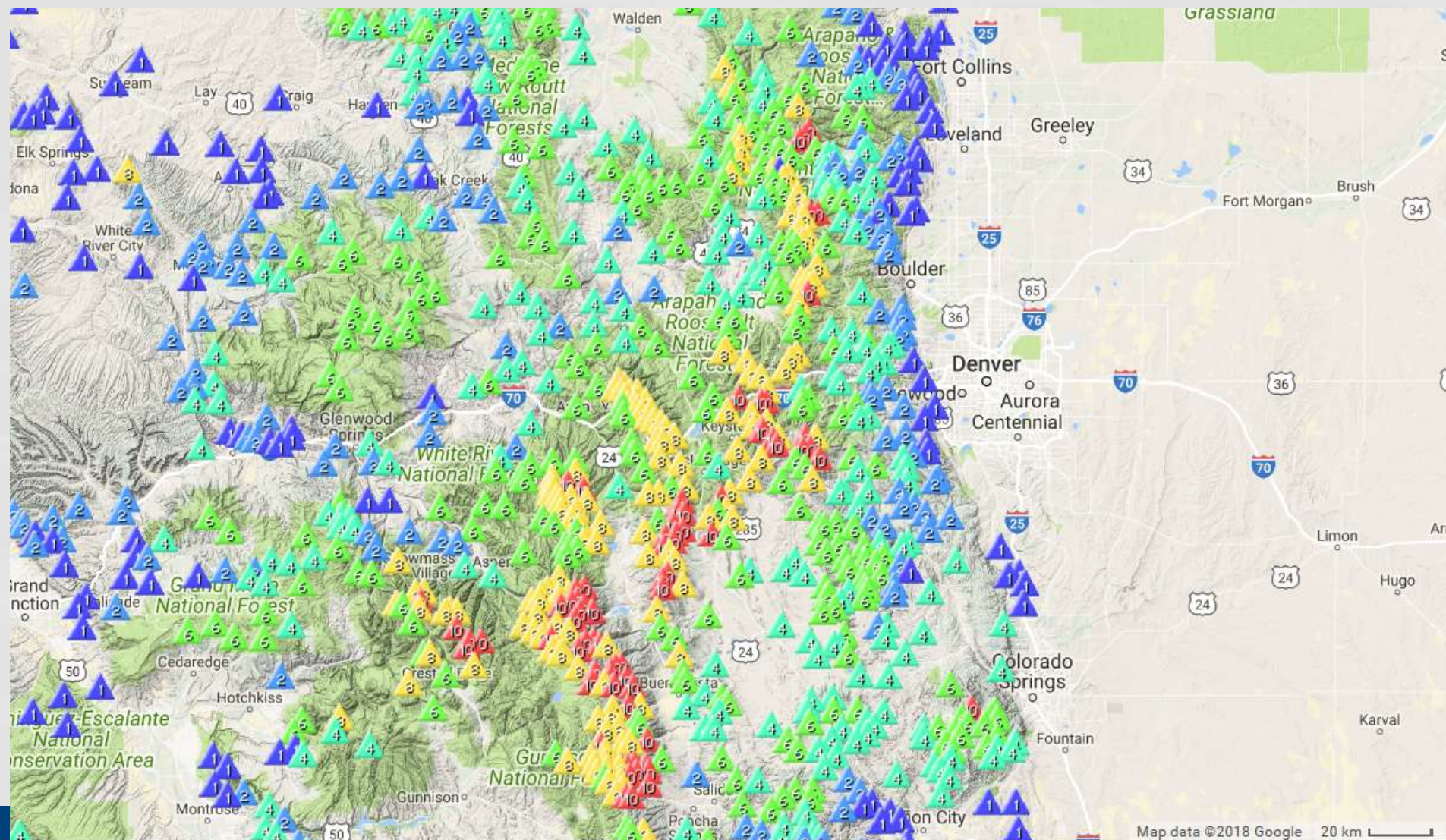
Scoring for WØC – Colorado:

Under 8000'	1 point	(225 peaks)
8000' to <9000'	2 points	(245 peaks)
9000' to <10500'	4 points	(360 peaks)
10500' to <12500'	6 points	(440 peaks)
12500' to <13500'	8 points	(345 peaks)
13500' +	10 points	(181 peaks)





# SOTA Summits in Colorado







# WØC Activators

Position	Activator Callsign	Summits	Points	Seasonal Bonus	Total Score	Avg. points per Expedition	View Log
1	KXØR	768	3245	450	3695	4.81	<a href="#">View</a>
2	WØCCA	189	1465	75	1540	8.15	<a href="#">View</a>
3	KØMOS	245	1335	180	1515	6.18	<a href="#">View</a>
4	KØJQZ	278	1295	213	1508	5.42	<a href="#">View</a>
5	WØØAT	266	1135	309	1444	5.43	<a href="#">View</a>
6	WØCP	204	1200	153	1353	6.63	<a href="#">View</a>
7	NØTA	261	1156	159	1315	5.04	<a href="#">View</a>
8	K7PX	197	935	255	1190	6.04	<a href="#">View</a>
9	KCØYQF	189	1007	156	1163	6.15	<a href="#">View</a>
10	KC5CW	198	1083	36	1119	5.65	<a href="#">View</a>
11	WØ6MM	140	1012	102	1114	7.96	<a href="#">View</a>
12	KDØYOB	171	737	39	776	4.54	<a href="#">View</a>
13	KØNR	100	553	54	607	6.07	<a href="#">View</a>
14	NØBCB	77	348	36	384	4.99	<a href="#">View</a>
15	WØMNA	62	336	0	336	5.42	<a href="#">View</a>
16	WØERI	59	330	0	330	5.59	<a href="#">View</a>
17	N6UHB	48	268	57	325	6.77	<a href="#">View</a>
18	ADØKE	47	251	51	302	6.43	<a href="#">View</a>
19	KØJJW	71	271	27	298	4.20	<a href="#">View</a>
20	KDØPNK	43	219	60	279	6.49	<a href="#">View</a>
21	N1ØIE	40	200	33	233	5.83	<a href="#">View</a>
22	NØMTN	38	160	15	175	4.61	<a href="#">View</a>
23	KØFTC	32	128	3	131	4.09	<a href="#">View</a>
24	KØZV	19	105	21	126	6.63	<a href="#">View</a>
25	KI6YMZ	11	106	9	115	10.45	<a href="#">View</a>
26	KIØG	24	75	15	90	3.75	<a href="#">View</a>
27	KD2FPP	10	80	0	80	8.00	<a href="#">View</a>
28	KØØBV	11	66	12	78	7.09	<a href="#">View</a>
29	NØXDW	11	67	3	70	6.36	<a href="#">View</a>
30	NØYE	15	62	3	65	4.33	<a href="#">View</a>
31	AEØAX	12	45	18	63	5.25	<a href="#">View</a>
32	AI8Z	10	56	0	56	5.60	<a href="#">View</a>
33	W4XEN	7	36	18	54	7.71	<a href="#">View</a>
34	ADØKI	9	47	3	50	5.56	<a href="#">View</a>
35	WØECE	8	49	0	49	6.13	<a href="#">View</a>
≈35	NØEMU	6	34	15	49	8.17	<a href="#">View</a>
37	AG5CQ	12	46	0	46	3.83	<a href="#">View</a>
38	KEØHNW	12	43	0	43	3.58	<a href="#">View</a>

Questions for the audience:

1. Who has activated a SOTA summit?
2. Who has made contact with (chased) a SOTA summit?

<http://www.sotadata.org.uk/activatorresults.aspx>



bob@k0nr.com



# The Colorado 14er Event is:

- Held the First Full Weekend in August (August 4-5, 2018)
- Primarily focused on the 54 official 14,000 foot summits in Colorado
- Includes the 1805 SOTA peaks in Colorado
- Includes VHF, HF, all modes
- Activate summits and chase summits



# VHF Operating



# How Far Will My Signal Go on VHF?



- Optical horizon from Pikes Peak: 120 miles, plus 15% for radio horizon = 138 miles
- Mt Sunflower (highest spot in Kansas) is easily worked on 2m FM from Pikes Peak (160 miles)
- Best DX between two 14er summits on 2m FM (Colorado 14er Event):  
Andy AAØCM on Longs Peak to Jan W3GEY on Sunshine Peak (188 miles)
- Best 2m FM DX during Colorado 14er Event: Phil NØKE on Mt Bross to Larry NØLL near Smith Center, KS (375 miles)





# Easy VHF SOTA Activation

Also known as “take along a 2M handheld on a hike”



Kaufman Ridge HP  
(WØ/SP-081)

10,765 feet elevation



# No Rubber Duck Antennas

A rubber duck antenna is the world's most convenient crappy antenna.

Bad bad bad bad bad bad bad bad bad  
bad bad bad bad bad bad bad bad bad  
bad bad bad bad bad bad bad bad bad  
bad bad bad bad bad bad bad bad bad  
bad bad bad bad bad bad bad bad bad  
bad bad bad bad bad bad bad bad bad  
bad bad bad bad bad bad bad bad bad  
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bad bad bad bad bad bad bad bad bad  
bad bad bad bad bad bad bad bad bad  
bad bad bad bad bad bad bad bad bad

**BAD**



**New Improved!**  
**Dualband 2m/70cm**  
**halfwave antenna**  
**Search amazon for**  
**TWAYRDIO RH770**

**SMA (male or female)**  
**BNC**

**\$17 delivered**





# Improved VHF SOTA Activation

Also known as “bring along a small 2-Meter Yagi antenna”



Aspen Ridge  
(WØC/SP-084)

10,740 feet  
elevation

Arrow 3-element  
Yagi for 2m



# Operating Tips for VHF

## Who do you usually find on

Radio ops that hang out  
Mobile stations  
SOTA chasers

## Use the FM calling frequency

“CQ 2 meters, this is KØNR”

## Consider your location:

Front range summit near  
Generally no problem  
More remote summits:

There may not be anyone around on 2m FM  
Weekends are usually better than weekdays

## Send Invitations:

SOTAwatch.org  
Email your friends  
Make a specific schedule with other radio operators

If you are struggling for 2m fm contacts:

- Be patient and keep calling
- Call on other 2m fm frequencies (146.46, 146.49, 146.55, 146.58, etc.)
- Ask for help on a local 2m repeater
- Have your hiking partner hike down out of the activation zone and call you (desperation move)



# Arrow II 146/437 Yagi Antenna



**Bob KØNR**  
**Mt Sneffels**

**Crossed Yagi Design**

**Two antenna  
connections, or use  
duplexer**

**\$83 to 89**

2m gain= 5.9 dBd  
70cm gain= 8.2 dBd  
(2009 CSVHFS)





# Elk Log Periodic Antenna 2M/440L5



**Scott ACØFQ  
San Luis Peak**

**One feedline  
connection for  
2m & 70 cm**

**Same  
polarization on  
both bands**

**\$125 to 150**

2m gain= 6.6 dBd  
70cm gain= 7.0 dBd  
(Mfg datasheet)



# Portable VHF Transceivers



**Yaesu FT-817ND**  
HF, 6m, 2m, 70cm



**Any old  
FM  
handheld**



**Elecraft KX3**  
HF through 6m  
Optional 2m Module





Mt Herman  
WØC/FR-063  
9063 feet



VHF Contest plus SOTA  
2016 January VHF Contest (KØNR)  
2m & 70cm fm and ssb  
Use of 146.52 MHz now allowed in  
contest  
17 QSOs in about one hour  
Best DX: Wyoming DN71 (140 miles)



# Summits

in association with U



## Microwa

Band: 23cm

# Bob K0



In recognition of  
54 km in the A

50 - 200km



Certificate No.: SMA-016



# Steve WGØAT at 14,000 Feet



# David KI6YMZ and Ben KDØPNS on Mt Shavano





# Peter K3OG on Grays Peak

Note: Yagi for 2m and 70 cm

Maxon for 6m



# David KI6YMZ on Mt Elbert 2015



# Steve WGØAT and Guy N7UN



It's Not Always  
Warm and Sunny





# Steve WGØAT on Handies Peak



Handies Peak  
((WØ/SJ-001)

14,048 feet elevation













# HF or VHF?

## Take Your Pick, Or Do Both

### VHF/UHF

Height Above Average Terrain

Basic/compact equipment: Handheld Transceiver (HT)

Dependent on local chasers

FM most common, SSB for VHF contests

Technician Licensees can play

### HF

Classic QRP operating (CW and SSB)

Longer distance contacts

More radio contacts

Recommended: General License Class or higher



# HF SOTA Equipment

# HF SOTA Equipment

- Radios
- Antennas
- Operator Tools



*Silver Peak - WA*



- + 'Swiss Army Knife'
- + 160m -70cm!
- + All Modes! (2.5 lbs)
- .5A/H on RX!
- Lacks ATU!

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- + 160-6m (+2m)
- + All modes (1.5-lbs)
- + .3A/H on RX
- + ATU, paddle





- + 80-10m (13-oz!)
- + All modes
- + .2A/H on RX!
- + ATU, paddle





**+ Excellent ATUs  
+ Optional plug-in Paddle**









# Other

- ATS, MTR
- RockMite
- Pixies







22-oz



14-oz



17-oz

**Station  
Weights**





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Pack weight  
< 20 lbs



- Dipole vs EFHW
- ATUs
- Deploying
- Packaging

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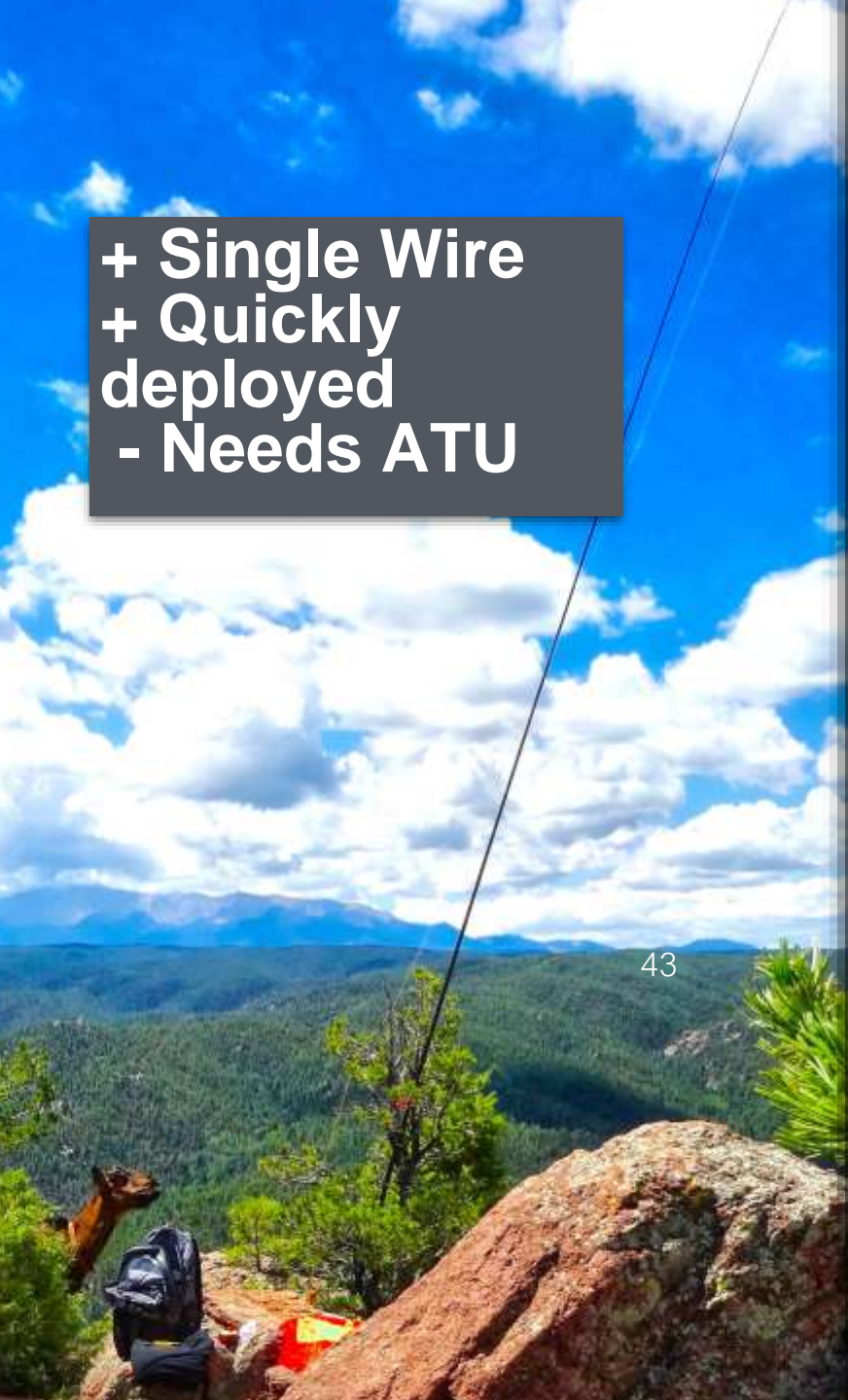
- 50-70ohms
- no ATU
- Center support
- Coax





- + Single Wire
- + Quickly deployed
- Needs ATU

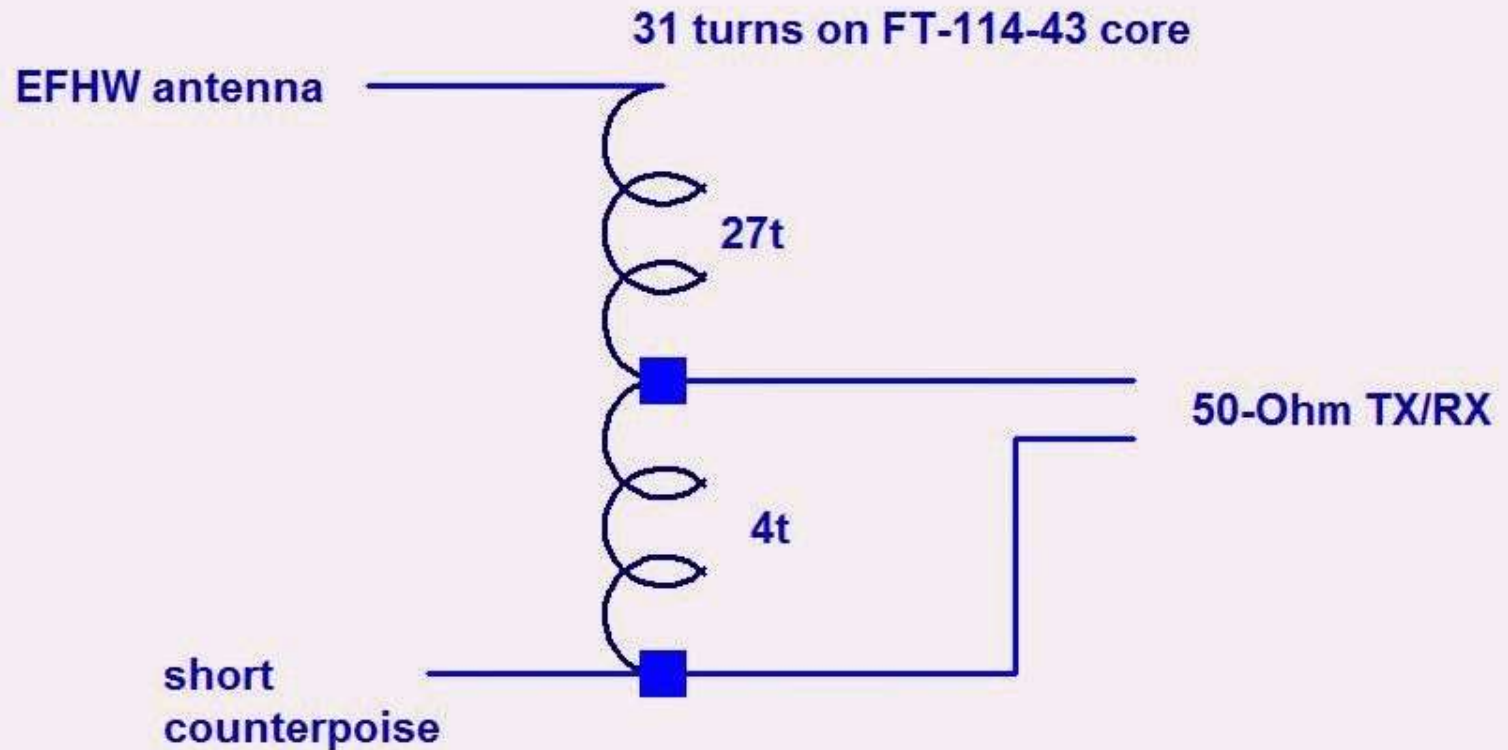
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E

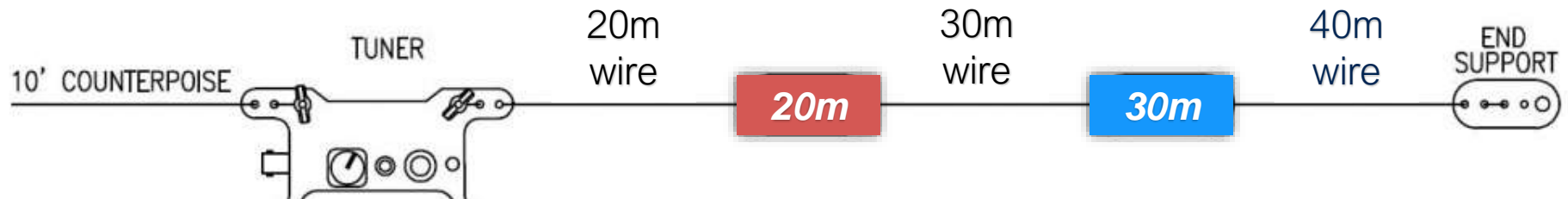
## "NO TUNE" EFHW MATCHER



Tap 31 turn coil 4-turns from the ground end  
Alternately, use 31 turn primary and separate 4 turn secondary

- Single Wire with 2-traps
- Fix matching unit

# FHW-trapper





# Operator Tools

- Operating
- Antennas
- Staying Warm





# Antennas

- Masts
- Spools/winders
- Throw weights



29' 35.5' 41' 58' 71' 84'

<http://www.hamuniverse.com/randomwireantennalengths.html>



# Antennas

Big twist ties  
Gear Snake @  
Walmart





# Dry/Warm!

- Bothy
- Umbrella
- Tarps





# Navigation Tools

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iOS app *TopoMaps+*





# SOTA Chasing

- Why Chase
- Tools
- Awards

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# Why Chase?

[main@nasota.groups.io](mailto:main@nasota.groups.io)

*Is it the points/awards? ...Bragging rights?*

*Fine tuning and keeping your station/  
antenna in peaked performance?*

*Respect? Payback for being chased?*

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*Why is it FUN for you??*

# Why Chase Responses

*Larry K0RS writes:*

*Chasing QRP stations with improvised antennas...frequently on another continent...**is a real DX challenge.** Pulling a weak signal from the noise teaches one how to **get the most from one's radio** as well as **fundamentals of <sup>53</sup>propagation.** And a dose of patience as well. The problem is, SOTA is addicting.*

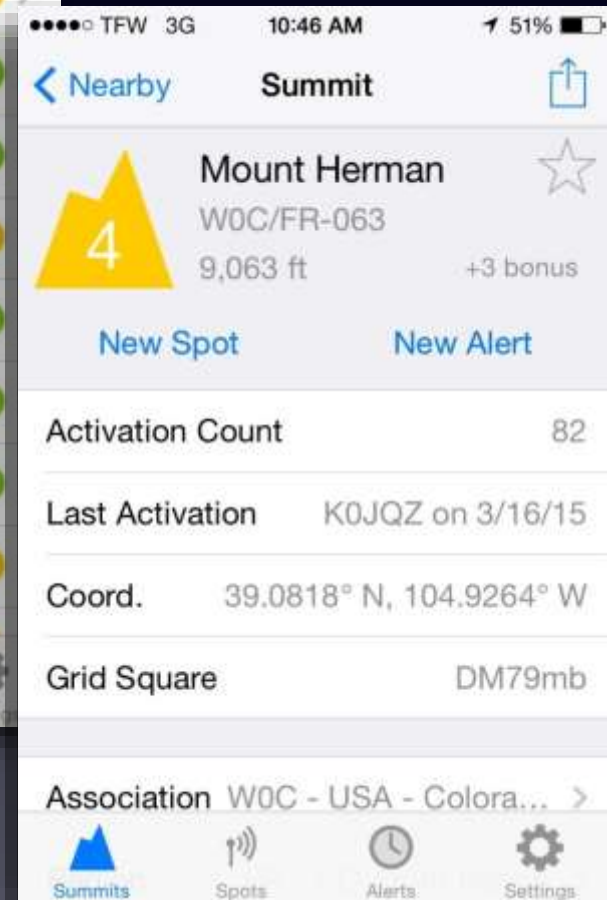
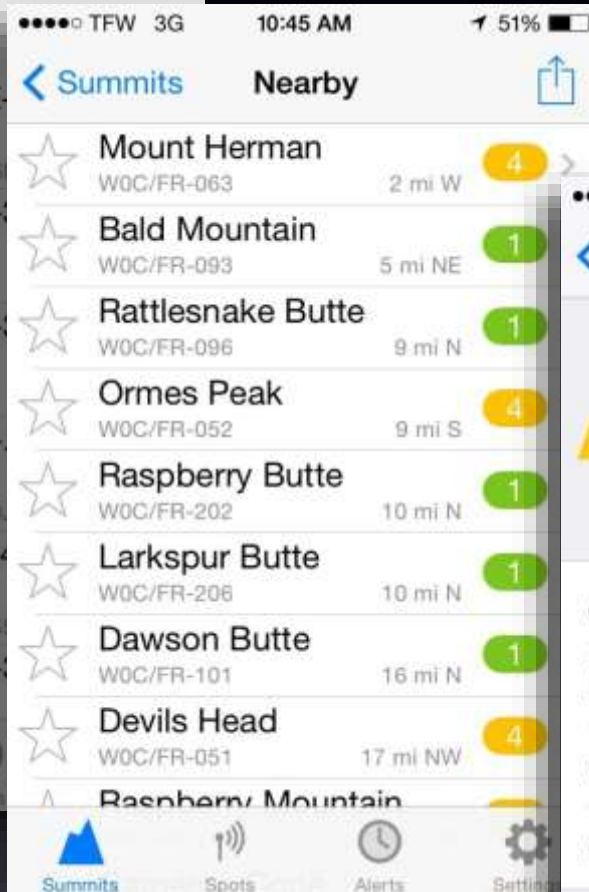
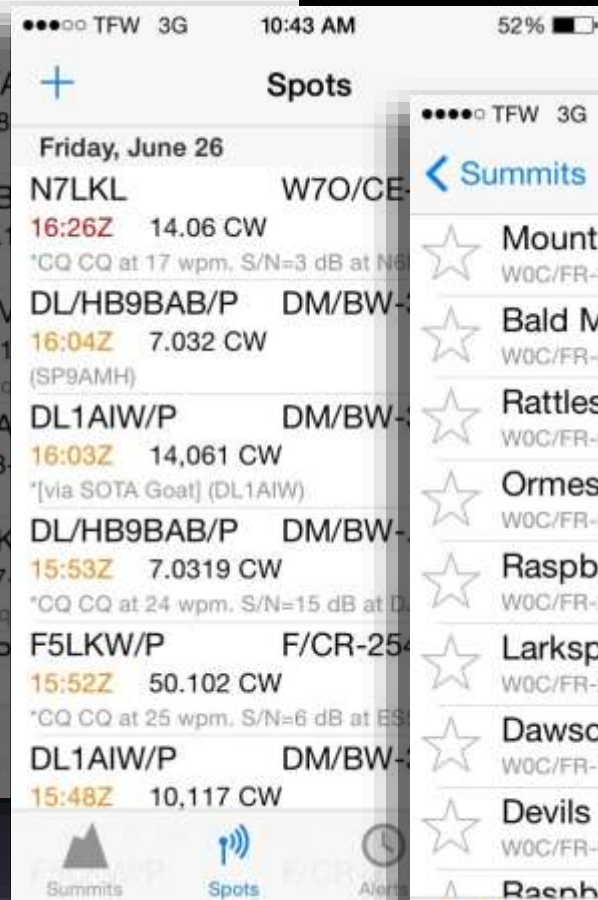
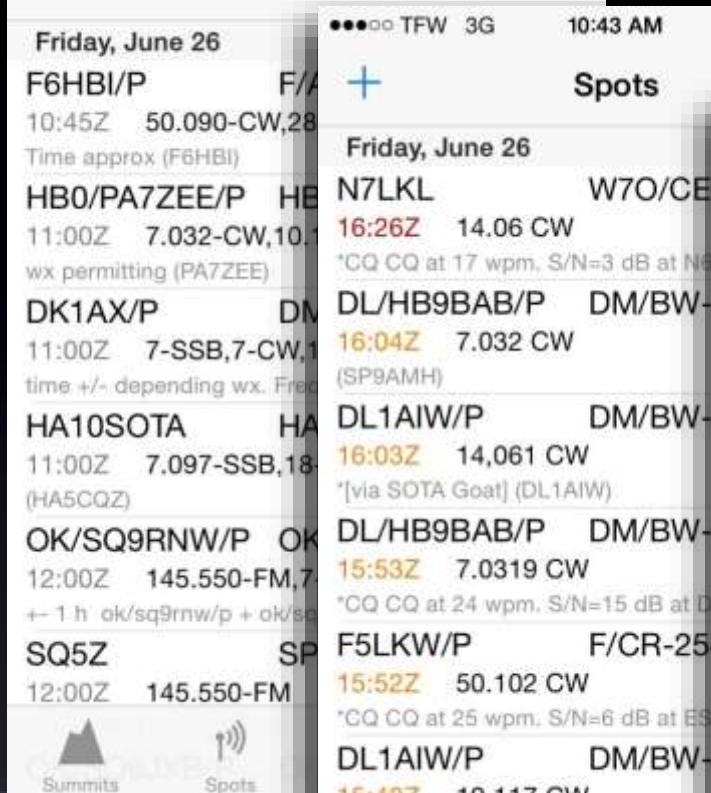
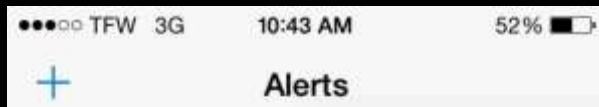


*Paula K9IR writes:*

*When you chase summit activators, you can:*

- 1. Join over **6,300 other hams in the chase** (nearly 4,000 of whom also activate summits).*
- 2. Enjoy making contacts and qualifying for awards without needing a **super-station**.*
- 3. Improve your ability to tune in, hear and work **weak signal stations**.*
- 4. Help **activators**<sup>56</sup> **log** the required minimum **4 QSOs** to qualify for **activation points**.*
- 5. **Understand** how to use **APRS**.*

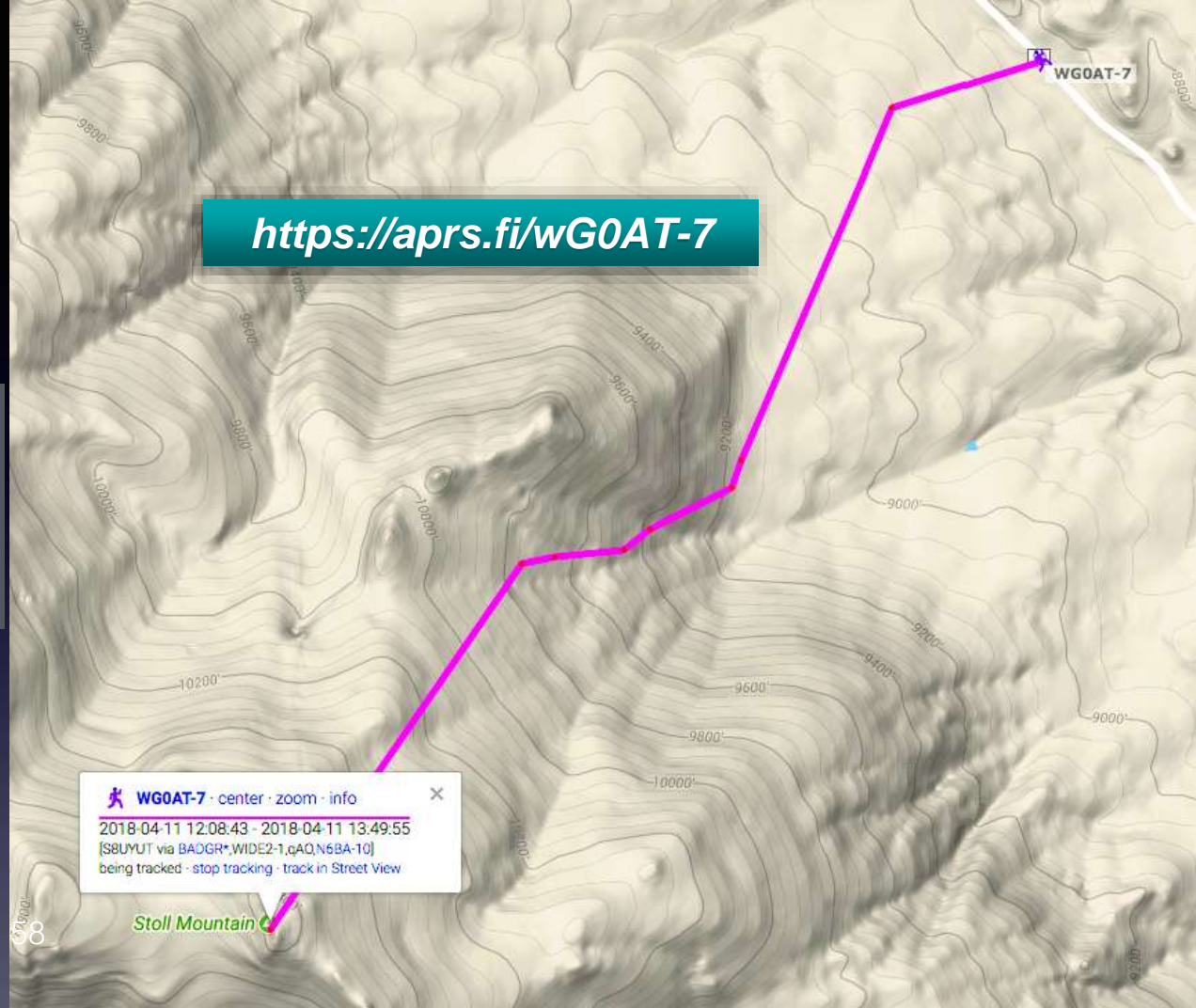
# SotaGoat App for iOS & Android





# Chaser Tools

- APRS
- ALERTs/SPOTs



# “Easy” Summits

- **Pikes Peak** (W0C/FR-004) – drive up
- **Mt Evans** (W0C/FR-003)- drive up then ¼ -mile, 130 feet vertical hike
- **Trail Ridge** (W0C/FR-123) – 0.8 miles, 300 vertical feet
- **Genesee Mountain** (W0C/FR-194) – drive up then 200 ft hike
- **Chief Mountain** (W0C/FR-030) – 1 mile hike, 700 feet vertical
- **Prospect Mountain** (W0C/FR-069) – take the tram, then 300 feet vertical
- **Monarch Ridge South** (W0C/SP-058) – take the tram
- **Mount Bailey** (W0C/FR-062) - local park trailhead 1-mile hike, 500 feet vertical



A black and white goat with a red collar stands on a rocky cliff edge, looking towards the camera. The background is a vast, scenic view of a valley with green fields, a winding river, and distant mountains under a blue sky. The goat is positioned in the foreground, slightly to the right of the center. The text "Questions" is overlaid in large, bold, yellow letters across the middle of the image, partially obscuring the goat's body. A small number "60" is visible below the first letter of "Questions".

# Questions

?