Activating Parks and Summits on 10W (or less!)

April 12, 2022
W6TRW ARC Meeting

Photograph: Devin KN6PHZ

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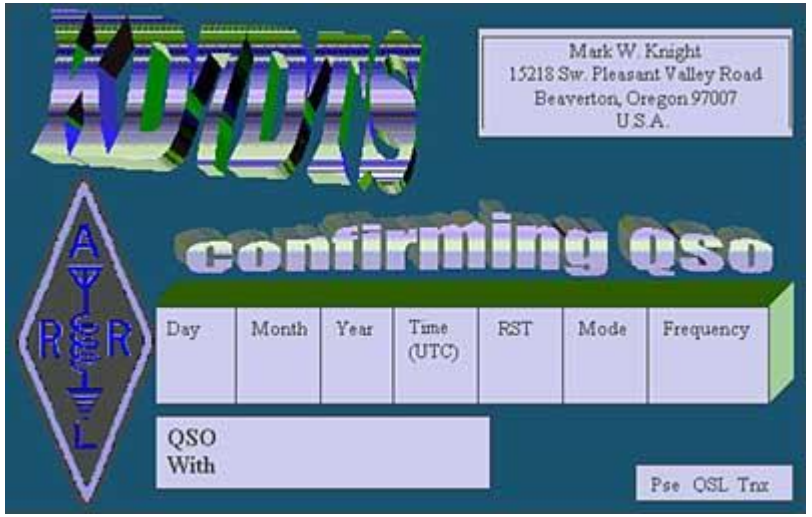
Why Operate from a Park or Summit?

- Operating outdoors is beautiful!
- Fun community (learn the locals who play radio outdoors!)
- Pandemic compatible
- Small apartments & HOA restrictions = not much home base station

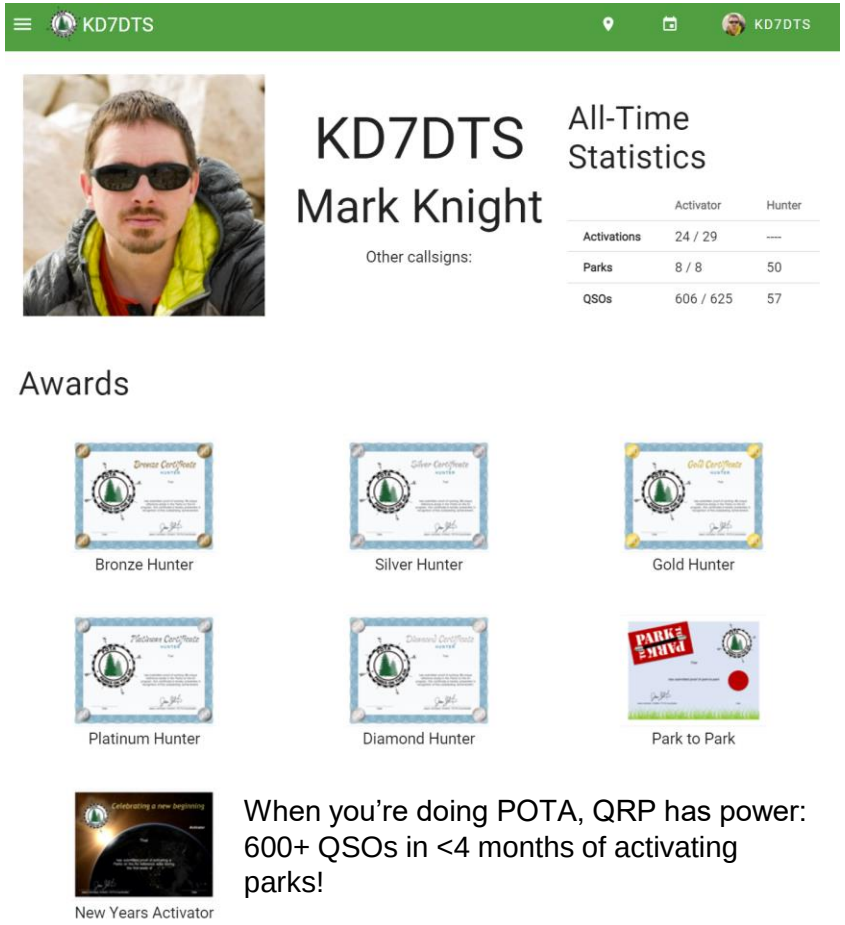
How’d I get into SOTA/POTA?

- Licensed in the late 1990s during high school; needed a reliable form of communication during boy scout expeditions
- Fell out of contact with amateur radio throughout college, graduate school, and some time overseas in Europe
- After moving to California, I started volunteering as a forest ranger with the San Gorgornio Wilderness Association (SGWA). Part of being a ranger is keeping in radio contact with the Forest Service to respond to emergencies. Rather than buy a new radio, or borrow one, I modified my original Yaesu FT50R.
- With my ham kit on in the mountains, I heard stations calling “CQ SOTA” – the entire community of outdoor operators had really emerged since I was last operating.
- SOTA/POTA are now a part of nearly all my outdoor outings; my QRP go-kit fits into my bike panniers, day pack, and backpacking kit



Original High School QSL Card

Original Oregon Shack



When you’re doing POTA, QRP has power: 600+ QSOs in <4 months of activating parks!

Essentials for Outdoor Operation

- Parks and summits are outdoor environments
- Taking care of the operator (yourself!) is essential to getting on the air… and getting home afterwards

Long-form article on the outdoor essentials
https://www.rei.com/learn/expert-advice/ten-essentials.html

Ten Essentials

1. Navigation
2. Headlamp
3. Sun protection
4. First aid
5. Knife
6. Fire
7. Shelter
8. Extra Food
9. Extra Water
10. Extra Clothes

My Base Kit

- VHF/UHF: Yaesu FT5DR – APRS for spotting

- HF rig: Xiegu X100 – all HF/6m bands, all modes
- Random-wire antenna (QRPguys kit) – allows band hopping to maximize points; works with internal tuner on X6100 for all bands from 60m to 6m
- Parachute cord for masting off trees/bushes/etc
- Earphones for windy days
- 20’ RG316 feedline + RG316 stub with Mix31 ferrites
- 3 Ah Bioenno battery
- Miniature CW keys (straight & iambic) + cable
- Notebook + pen
- Tenba Toolkit bags for organization
- Repair kit (screwdriver, wirecutters/stripper)
- BCI filter (N1OR Butterworth design)
- Solar-charging phone battery

BASE HF KIT WEIGHT: 2.8 kg (6.2 lbs)

Parks on the Air (POTA)

Official site:
https://parksontheair.com/
Spotting: https://pota.app/

- POTA is a program for international portable amateur radio operations that promote emergency awareness and communications from national/federal and state/provincial level parks.
  - POTA encourages its activators to be ambassadors for the hobby
  - POTA is not a contest, which means WARC bands are available for use. This is really handy on contest weekends!
  - Typical station types: backpack, picnic table, campground, vehicle mobile, and Field Day
- Terms
  - Activator – amateur operator in a POTA-designated park
  - Hunter – amateur operator seeking contact with activators

Parks on the Air (POTA)

How do you participate? Start with hunting!

- Check pota.app for activators, then contact them. That's it!
- Only activators submit logs – chasing is easy!

Ready to run a pileup? Try activating!

- Go to a state or federal park listed on the POTA map (see https://pota.app/#/map)
- Set up your portable station (POTA allows all station types, but parks may have restrictions or require approvals)
- Call CQ CQ CQ Parks on the Air… This is [call sign] from K-#### standing by and listening.
- Log your contacts (must be in ADIF format). No information besides a call sign is needed, but signal reports are standard.
- 10 contacts required to activate successfully. The same station on a different band, or on a different mode, counts as a separate contact!
- Mail contacts to your regional coordinator (for a call sign with a 6 in it, send it to K6@parksontheair.com)
- Wait a few days (or weeks) for your log to get validated and uploaded, and then you'll see the activation on your account

<u>Important notes</u>

- To 'activate' a park, must make 10 QSOs within the same day in Zulu Time 00:00 – 23:59
- One log can span multiple days; only one park per log
- Can clubs participate in POTA? YES! Trustee just needs to register the club with POTA, and then both the club & operator get credit for an activation!
- Reverse beacon network – if you've scheduled an activation on the pota.app website, and call CQ using CW, the POTA app will automatically spot you!
- Can activate any given park as many times per year as you want

POTA Logging & Multi-Location Activations

Tips on logging, courtesy of regional coordinator WA7SKG - Michael (US-OR)

1. Always check you are using the latest version of HAMRS. Updates are frequent and fix a lot of problems.

2. Use the POTA Template for activations. It has safeguards built in to ensure proper log formats.

3. Name your log with the POTA filename format of CALL@PARK-YYYYMMDD. Do not use the .adi extension, that will be added automatically on export.

4. HAMRS is mostly designed for use during the activation. It is not the best tool for transcribing paper logs after the fact.

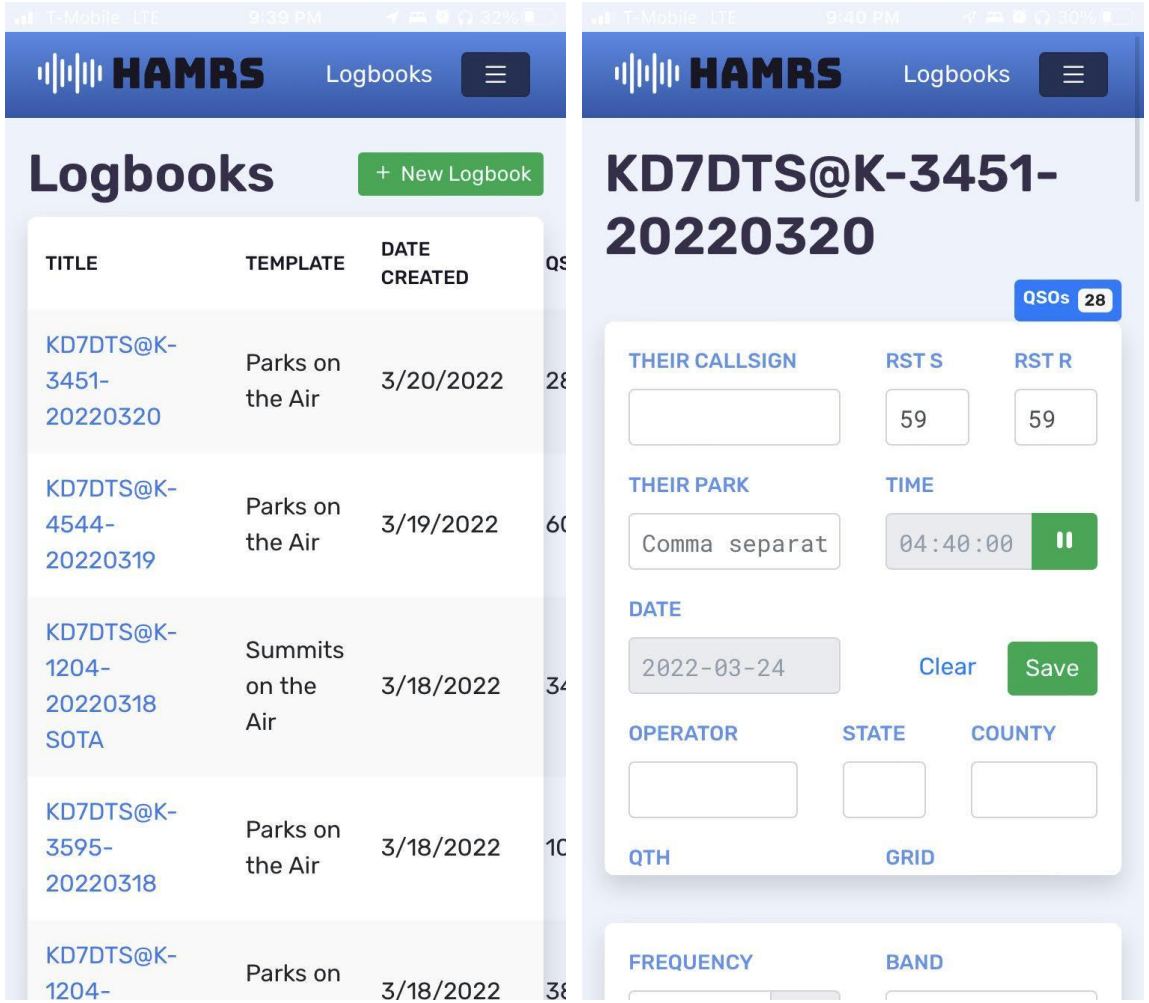
5. At the end of your activation, export the adi sending it to yourself. Do not send to POTA directly from HAMRS. Save and review on your home computer for accuracy and completeness before submitting to POTA.

6. Do not use HAMRS for editing or modifying logs. There are much better programs like ADIF Master for that purpose.

7. Be sure to configure and select your profile to retain certain entries for all contacts.

Multi-location activations

- You can do both SOTA and POTA at the same time!
- POTA can be done from multiple references simultaneously
- Example: Temescal Peak (SOTA reference W6/CT-218) is part of Topanga State Park (K-1204), and also within the Santa Monica Montains (K-0648)
- After the activation:
  - SOTA ADIF, with SOTA contacts only, can be uploaded to the SOTA database: https://www.sotadata.org.uk/en/
  - POTA ADIF must be created for each park, with the separate park names in both the file titles *and* in the MY_SIG_INFO column. Send all your files to your regional coordinator in a single email: K6@parksontheair.com



Summits on the Air (SOTA)

Official site: https://www.sota.org.uk/

- SOTA is an award scheme for radio amateurs that encourages portable operation in mountainous areas
  - SOTA is for everyone!
  - Awards for activators (those who ascend to the summits) and chasers (operators who talk to activators)

- How to get started:
  - Read the intro materials online – easy tutorials: https://www.sota.org.uk/Joining-In
  - No sign up, and no membership fee to participate (just like POTA)
  - **Try chasing!** Go to SOTAwatch to see who's been spotted on the air, and try to contact them: https://sotawatch.sota.org.uk/en/
  - **Try activating!** Find a SOTA-recognized summit on SOTAmaps.org: https://www.sotamaps.org/. Note that Los Angeles is in the W6 association. Climb it. Get on the air once you're at the summit!
    - 4 contacts required to activate successfully
  - Can only get points for activating a given summit once per calendar year
  - Once you've made contact with folks, either as an activator or a chaser, make sure to log your contacts on the SOTA database: https://www.sotadata.org.uk/en/
  - Unlike with POTA, both chasers & activators need to submit their logs!

Summits on the Air (SOTA)

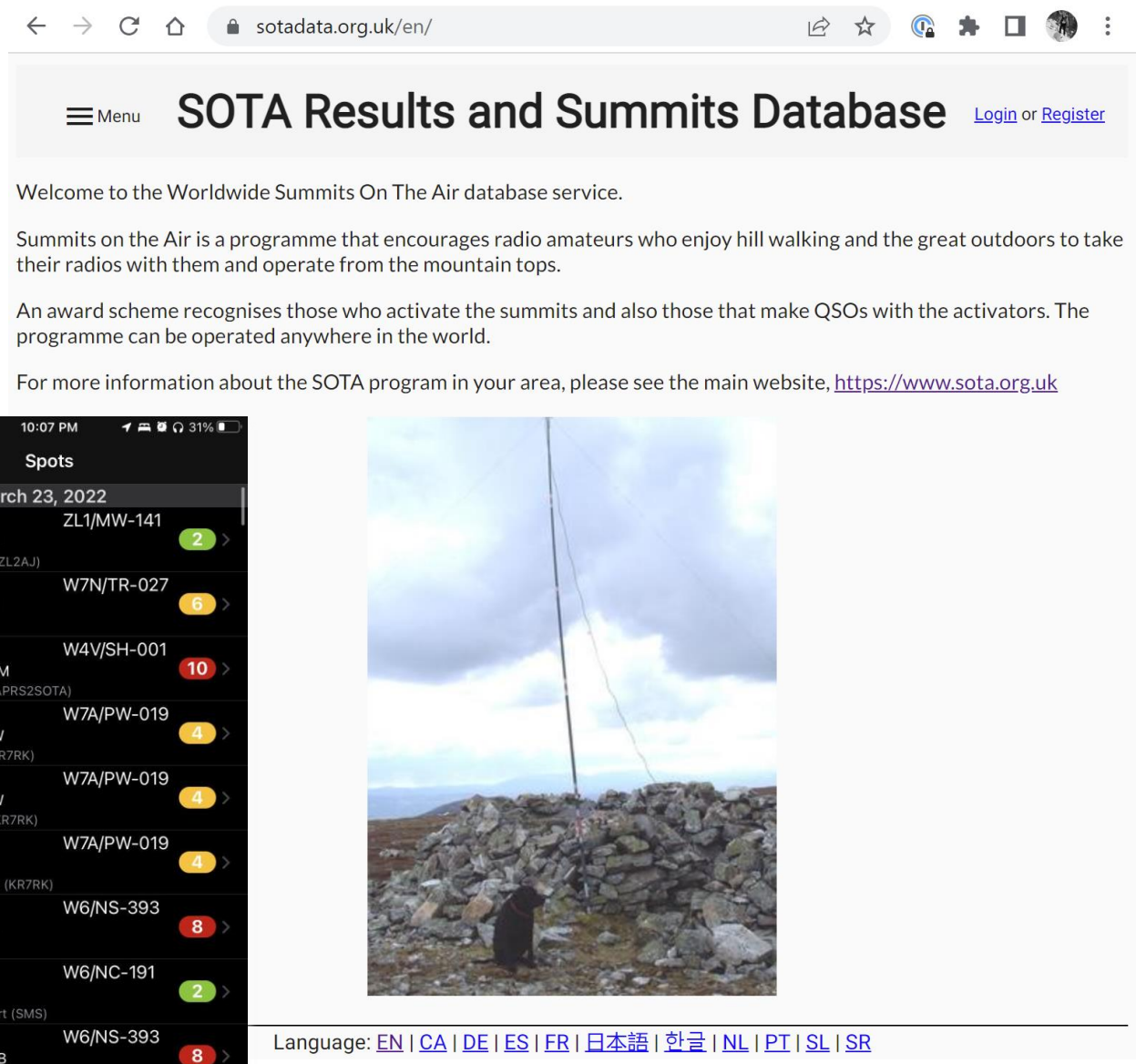
Official site: https://www.sota.org.uk/

- Key apps for your phone:
  - SOTA Goat (iOS only)– has maps of all the local peaks, spots, and alerts. Really useful!
  - SOTA Spotter (Android) - works pretty much like SOTA Goat
  - HAMRS – as with POTA, it has a log mode designed to work perfectly with SOTA (tracking summit-to-summit contacts is important to maximize points!)

- Typical frequency for 2m activators:
  North American Adventure Frequency - 146.58 MHz
  - As 'best practice', folks tend to avoid national calling on 146.52 MHz

- APRS2SOTA: gateway between the Amateur Radio APRS system and SOTAwatch
  - https://www.sotaspots.co.uk/
  - APRS is great for self-spotting when you're out of cell phone range

SOTA Database



SOTA Goat

Learn Morse Code

- **POTA**: since you can drive up to the activation site, activators tend to use relatively high-power stations (~50+ W) with large antennas

- **SOTA**: requires you to carry all your gear up a mountain, and operate independently of a vehicle, so activators tend to use the lightest equipment that they can get away with. Typically this is:
  - Power: 10 W or less
  - Compromise antenna (wire, loaded whip)
  - Minimal, if any, masting

- Result? SOTA operators tend to use CW... even if slowly. A lot more power per slice of bandwidth for the same mass!
  - Whether activating or chasing, remember to be patient with your fellow explorers!

POTA & SOTA Both Have Awards!

POTA

- There are numerous categories based on number of parks, geographic area, and so on. Always more being added, and a handy database to let you know how close you are to each of them.
- No application needed – the POTA database automatically figures out what you're qualifying for, and shows you what you've earned!

Award Examples

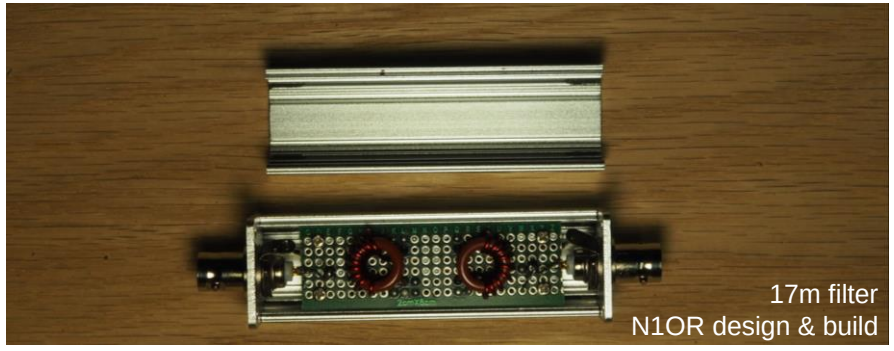
- Activators
  - Bronze Award: work from 10 different reference areas.
  - Silver Award: work from 20 different reference areas.
  - Gold Award: work from 30 different reference areas.
  - Platinum Award: work from 40 different reference areas.
  - Diamond Award: work from 50 different reference areas.
  - Sapphire Award: work from 75 different reference areas.
- Hunters
  - Bronze Award: work 10 different reference areas.
  - Silver Award: work 20 different reference areas.
  - Gold Award: work 30 different reference areas.
  - Platinum Award: work 40 different reference areas.
  - Diamond Award: work 50 different reference areas.
  - Sapphire Award: work 75 different reference areas.

SOTA

- Certificates are available for gaining 100, 250, 500, 1000 points (Activators and Chasers)
  - Additional certificates for 2,500, 5,000, and 10,000… and beyond!
- Endorsements such as "All CW" or "VHF" can be added to certificates on request
- Shack Sloth and Mountain Goat: at 1,000 points Activators achieve "Mountain Goat" status and Chasers/SWLs are "Shack Sloths".
- Other award categories:
  - Summit-to-summit: mountaintop to mountaintop
  - Mountain explorer: activations in multiple associations (5, 10, 15…)
  - Mountain Hunter: 2+ contacts in each of multiple associations (5, 10…)
  - Microwave: 50+ km contact from a mountaintop using microwave
  - Summit complete: 100 (or more) summits which have been both activated and chased successfully

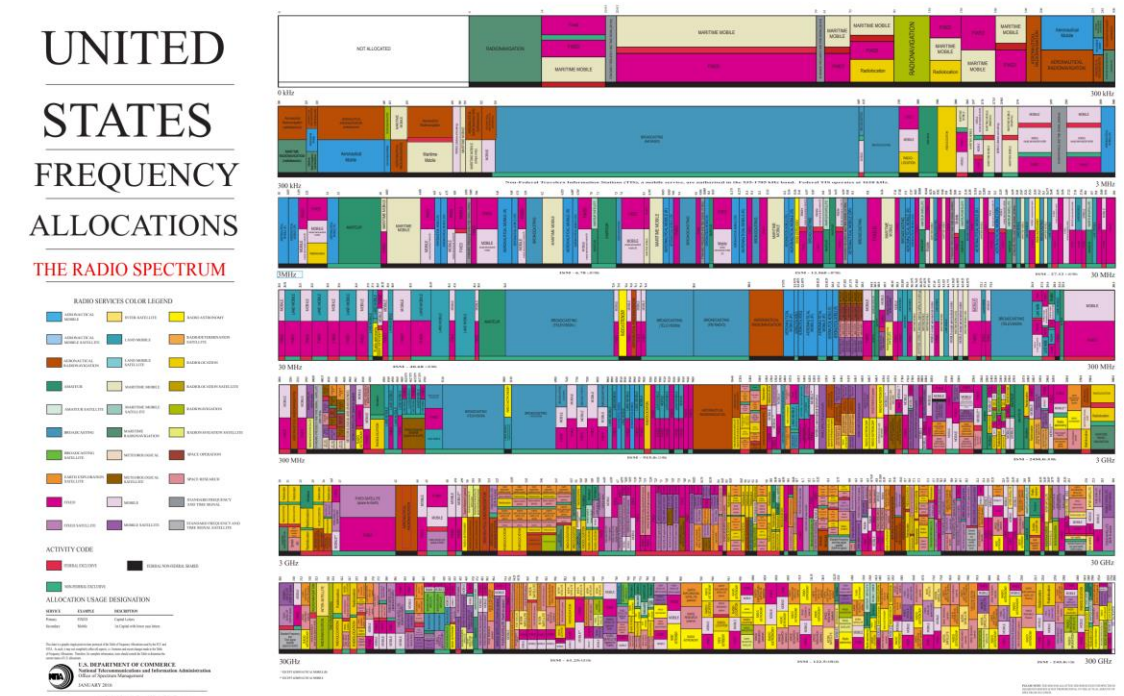
Mitigating Broadcast Interference

- Where there are good hills for POTA/SOTA… there are also broadcast towers
- For an RF-filled QTH, you can improve the odds of a successful activation using:
  - Broadband antennas - use alternate frequencies to dodge the interference (if your front-end is still working)
  - Resonant narrowband antennas – avoid receiving the EMI efficiently (prevents front-end overload)
  - Filters (prevents front-end overload)
    - AM filters: cutting out everything below 1.8 MHz will fix most issues since AM stations are numerous and high power in the LA area
    - Bandpass filters – they're a hammer, but sometimes there really is a nail
    - Not many commercial filters available for QRP; good excuse to learn to homebrew!


17m filter
N1OR design & build

Mitigating Broadcast Interference: Case Study at K-3451

- tinySA (Spectrum Analyzer) is a useful & affordable tool for understanding which frequencies of RFI are causing issues in your specific location
- Case Study: at Kenneth Hahn State Rec. Area there are numerous broadcast frequencies causing interference, including a strong 161 MHz marine frequency that sends databursts that wipe out the 2m ham band, and multiple AM broadcast stations that have harmonics which interfere across the lower ham bands)
- US Frequency Allocations Chart can be used to identify likely emitters https://www.ntia.doc.gov/page/2011/united-states-frequency-allocation-chart



AM Radio Broadcast (0.535-1.705 MHz)

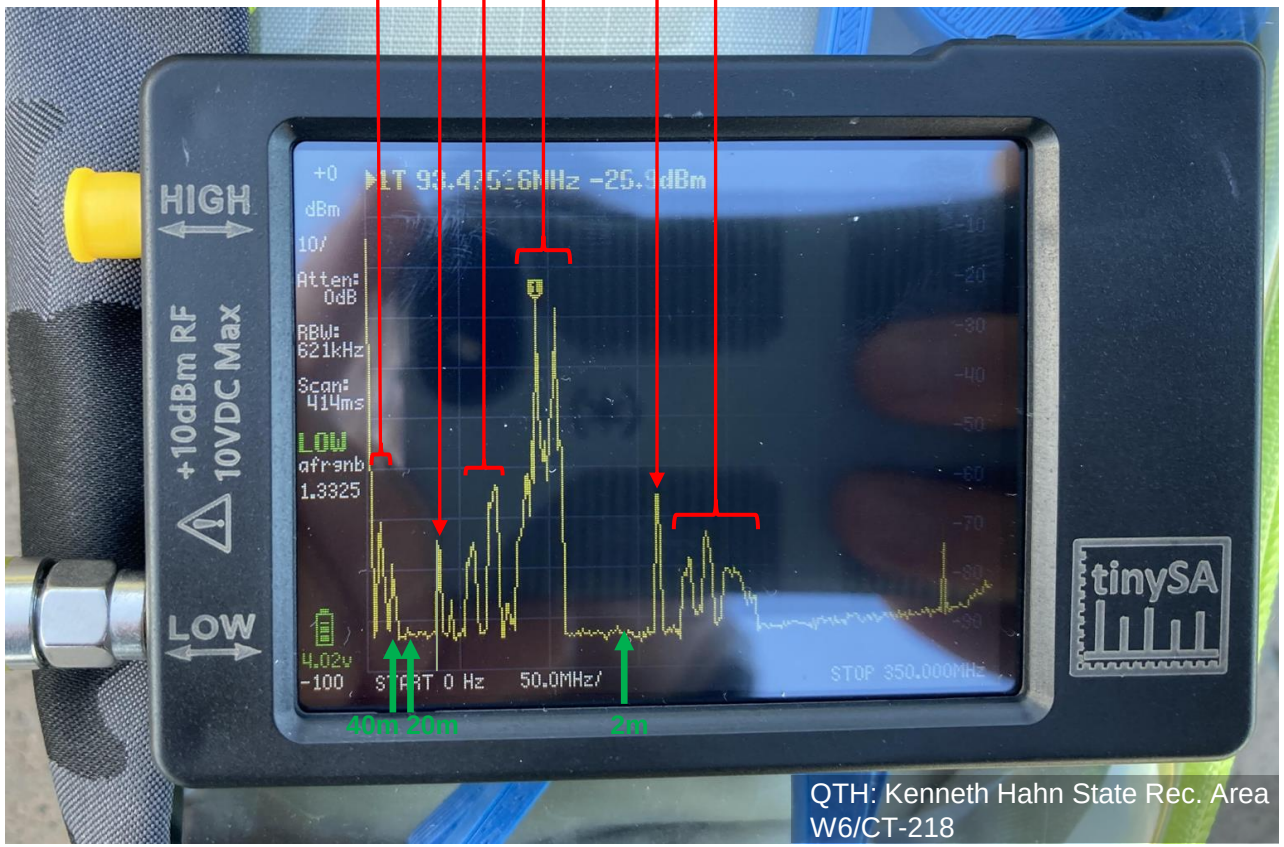
Land Mobile (~40 MHz)

TV Broadcast, Ch. 7-13 (174-216 MHz)

FM Radio Broadcast (88-108 MHz)

Maritime Mobile / Land Mobile (~160 MHz)

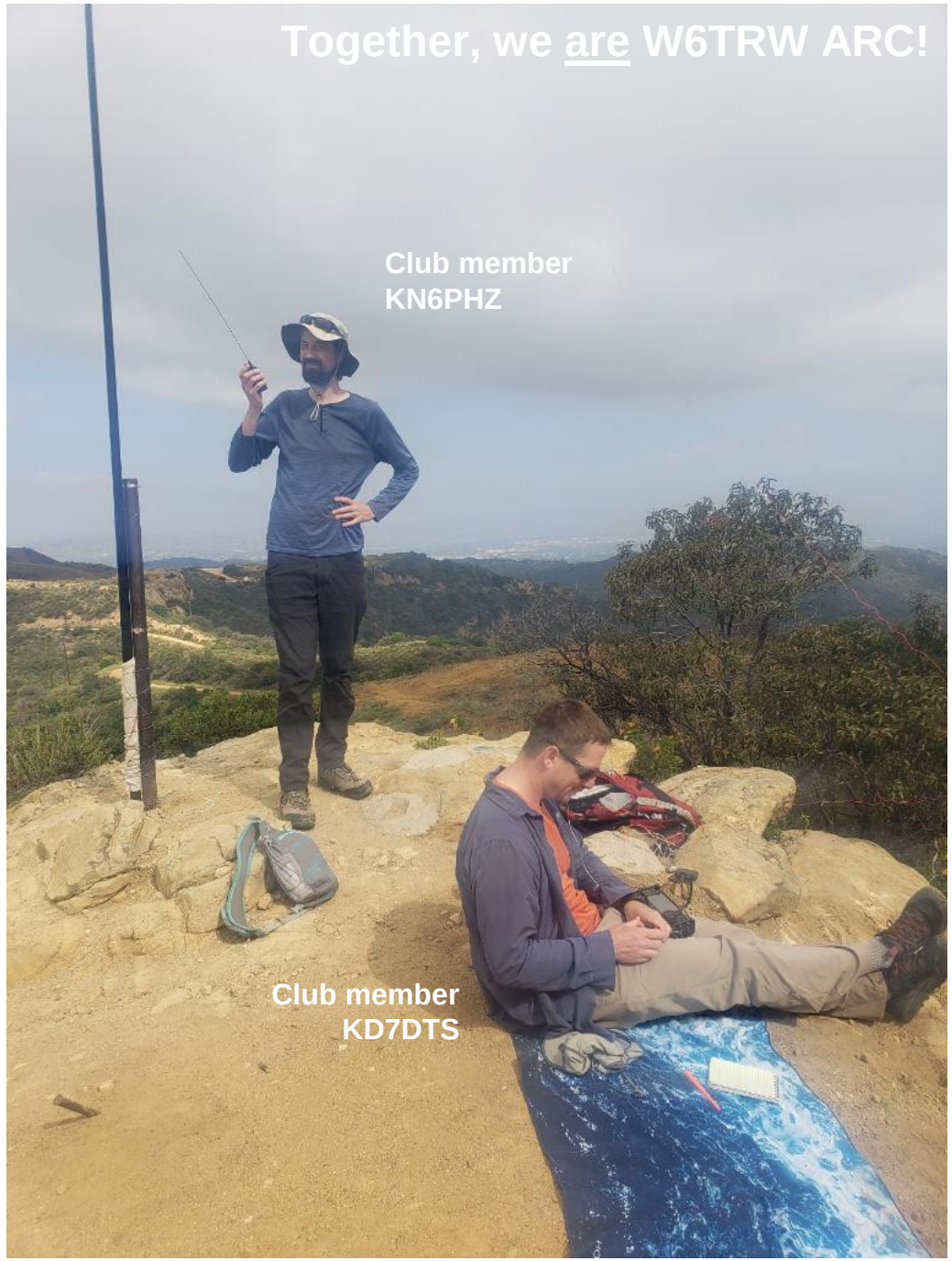
TV Broadcast, Ch. 7-13 (174-216 MHz)



QTH: Kenneth Hahn State Rec. Area
W6/CT-218

Activate POTA as W6TRW!

- W6TRW has a club POTA account: https://pota.app/#/profile/W6TRW
- As an active club member, you can run an activation under the W6TRW club callsign
  - Multiple activators? Each operator can maintain their own log. The POTA system will combine it all for you!
  - Both your individual operators, AND the club gets credit!
- For logging:
  - Enter W6TRW in the STATION_CALLSIGN field
  - Put your own call sign in the OPERATOR field
  - Email logs (checked for accuracy with ADIF Master) to K6@parksontheair.com



ADIFMaster - C:\Users\carle\Downloads\W6TRW@K-1204-20220401.adi

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Line	BAND	CALL	FREQ	MODE	MY_GRIDSQUARE	MY_SOTA_REF	OPERATOR	QSO_DATE	QSO_DATE_OFF	RST_RCVD	RST_SENT	SOTA_REF	STATION_CALLSIGN	TIME_ON	TX_PWR	GRIDSQUARE	MY_SIG	SIG_INFO	STATE
1	2m	NA6MG	146.580	FM	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	59	59	W6/CT-244	KD7DTS	160546	5	DM04rc	POTA	K-1204	CA
2	2m	K6LDQ	146.580	FM	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	59	59		KD7DTS	161808	5	DM04rc	POTA	K-1204	CA
3	20m	K6IAS	14.323	SSB	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	55	59		W6TRW	162045	10	DM04rc	POTA	K-1204	CA
4	20m	W0MNA	14.323	SSB	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	59	57		W6TRW	162247	10	DM04rc	POTA	K-1204	CA
5	20m	WA9STI	14.323	SSB	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	59	59		W6TRW	162657	8	DM04rc	POTA	K-1204	CA
6	20m	K6LDQ	14.323	SSB	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	53	59		W6TRW	162933	8	DM04rc	POTA	K-1204	CA
7	2m	N6AN	146.580	FM	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	55	55	W6/CT-226	W6TRW	164506	5	DM04rc	POTA	K-1204	CA
8	30m	N6AN	10.111	CW	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	539	559	W6/CT-226	W6TRW	165040	8	DM04rc	POTA	K-1204	CA
9	30m	K6LDQ	10.111	CW	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	539	599		W6TRW	165051	8	DM04rc	POTA	K-1204	CA
10	2m	K6HZR	146.580	FM	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	59	59		W6TRW	165558	8	DM04rc	POTA	K-1204	CA
11	40m	K6LDQ	7.044	CW	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	559	599		W6TRW	170533	10	DM04rc	POTA	K-1204	CA
12	2m	KM6BRY	146.580	FM	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	59	35	W6/SC-338	W6TRW	170933	5	DM04rc	POTA	K-1204	CA
13	40m	K6QK	7.044	CW	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	539	559		W6TRW	171346	5	DM04rc	POTA	K-1204	CA
14	40m	AG6N	7.044	CW	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	579	579		W6TRW	171645	5	DM04rc	POTA	K-1204	CA
15	40m	WA6KYR	7.044	CW	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	239	439		W6TRW	172137	10	DM04rc	POTA	K-1204	CA
16	17m	W6LEN	18.088	CW	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	239	599		W6TRW	173717	10	DM04rc	POTA	K-1204	CA
17	2m	WB6MPH	146.520	FM	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	59	59		W6TRW	174543	5	DM04rc	POTA	K-1204	CA
18	2m	N6JZT	146.580	FM	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	59	59		W6TRW	175037	5	DM04rc	POTA	K-1204	CA
19	2m	KK6M	146.580	FM	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	55	55		W6TRW	175118	5	DM04rc	POTA	K-1204	CA
20	17m	KK6M	18.088	CW	DM04rc	W6/CT-218	KD7DTS	20220401	20220401	579	599		W6TRW	180708	10	DM04rc	POTA	K-1204	CA

Ready QSOs: 20

Let’s Play Radio!

POTA Rules

- The activator and all the equipment you use must be within the perimeters of the park, and on public property. Activators cannot attempt to activate from any private property as the spirit of the POTA program is to get out of the house and operate, but you can do it from a vehicle/park bench/various methods etc. The park must be OPEN. A park is open when the public has civil and legal access to the public lands as defined by the park boundary map, in compliance with any other specific civil or legal restrictions mentioned by the governing agency/website. A park is closed when the governing agency/website clearly says that public access is prohibited, or when the park itself ceases to exist. Seasonal closure of facilities, concessions, offices, certain gates, or even large portions of the park does not usually mean that the park cannot otherwise be lawfully accessed for day use. If a doubt exists, please call the park office/administrator. Use the map on the POTA site in combination with Google Maps, and official park sites to find the official boundaries. If the park is part of a trail system or river, you need to be within 100 feet of the trail or river. You may never trespass on private property to access state/provincial or federal lands without permission. You are taking part in this program at your own risk to following the proper law, and injury/death. The hunter can contact the activator from home or any other property.

- Simultaneous activations of multiple references (“Multi-loc” or “two-fer”, “three-fer” etc) are possible with POTA. This should be considered an intermediate level skill as putting a multi-loc on the air may generate significant interest by hunters. Activators should be comfortable with running pile-ups and proper logging of single references before attempting to run multiple parks at once.
  a. All standard POTA rules apply to park boundaries for each reference area being activated. It is the activator’s responsibility to determine that operating location for their activation is valid for each reference area being activated.
  b. Separate log files must be submitted for each of the references being activated.

- You must make a minimum of 10 QSOs for your activity to count toward a POTA activation. This must be done within the same day in Zulu Time 00:00 – 23:59.

- Hunters still gain credit, even if the activator hasn’t reached 10 QSOs. For hunters and activators to gain credit though, the activator MUST send the log in.

- One log can cover multiple days of activity, this includes club call signs and multiple operators. One log per park please.

- Land repeaters are NOT allowed, but satellite contacts, and all other types are permitted.

- POTA is operated by a small group of volunteers with limited resources, so there is a limited capacity to add new parks. POTA applies the following qualification rules for adding new parks…
  a. All new parks must be owned and operated by a State/Provincial or Federal/National agency. We cannot include parks that have part/shared ownership, sponsorship, or are operated by private organizations or local governments (ex. City Parks, Sierra Club, Nature Conservancy, etc.)
  b. POTA does not create “sub-parks” within existing parks if both parks are owned and operated by the same State/Provincial or Federal/National agency.
  c. POTA requires the activator to research the park to determine that activation is within official park boundaries, and to determine that the park is open and safe to access. Any parks that do not offer an informational website and/or recent boundary map cannot be included.

POTA Code of Conduct

To take part in Parks on the Air program, one must register on the parksontheair.com website. Parks on the Air, Inc. reserves the right to remove all access, and/or data, if one does not adhere to our Code of Conduct. The decision of the Administration Team/President will be final.

Examples of breaking the Code of Conduct:

1. Threatening or abusing members of the Administration Team or any other POTA participants in any manner.
2. Any post from any POTA site/forum will be deleted if it is:

- Discourteous
- Offensive
- Argumentative
- Infringing copyright
- Contains advertisements of any product, or posts about other portable radio park programs because it causes too much confusion… (SOTA/IOTA/BOTA/US Islands etc.. are fine though.)

Please keep posts on topic in the Parks on the Air Facebook/Slack groups. We're working hard to keep the signal to noise ratio high, and we appreciate your help. We understand that these are unprecedented times, so take care and be safe!

For rule 2, you will receive one warning, after which you may be suspended from participating in POTA for a proper amount of time, at the discretion of the POTA Administrator.

If you have a dispute regarding a moderated post, then please send a message directly to the POTA Administrator with applicable details. The decision of the POTA Administrator is final, and there will be no public discussion. All disputes must be sent via e-mail directly to the POTA Administrator.

3. Hacking/phishing attempts of POTA websites.
4. Behavior that discredits the integrity of the POTA program.
5. Operating outside of the ARRL's operating ethics: http://www.arrl.org/operating-ethics.
6. Operating outside of the DX Code of Conduct: https://rsgb.org/main/operating/dx-code-of-conduct/

POTA Resources

Parks on the Air provides some video and online guides suitable for in-depth study for both activators and hunters.

Activator Training

- POTA Activator Course (YouTube)
- POTA Activator Guide (Online)
- Logging Guide by One of Our Call Area Managers

Activator References

- Field logging sheets
- N3FJP setup guide
- POTA 1 page handout

Hunter Training

- POTA Hunter Course (YouTube)
- POTA Hunter Guide (PDF)

Social Media

- Slack
- Facebook

Community Resources

Friends of POTA: The POTA community has a wealth of resources available to both activators and hunters. These contributors have demonstrated a commitment to POTA have produced content showing their activations, radios, antennas, and helpful hints for portable amateur radio.

- Ham Radio 2.0 (YouTube)
- KB9VBR Antennas (YouTube)
- K8MRD Radio Stuff (YouTube)
- Outdoors On The Air (YouTube)

* Opinions expressed are those of the channels creators and their guests. Refer to the POTA rules for authoritative guidance.