Pacific Northwest SOTA Newsletter

January-February-March 2022 Crystal Mountain-W7W/RS-010 by Péter-AF7GL

Péter-AF7GL was on Crystal Mountain (W7W/RS-010) for the September VHF Contest and made 54 QSOs. Péter planned to operate both Saturday and Sunday, but ended up staying just five hours. The morning was windy but turned out to be very pleasant weather by the start of the contest. He operated Portable (10W max) using an IC-705 with a nine element yagi on 144MHz, 18 elements on 432MHz and a dipole on 50 MHz. Elevation was just shy of 7,000 feet.

A fun video on the History of Amateur Callsigns – https://www.youtube.com/watch?v=Su76QvChuEU

Is The Game Up for Baofeng in Europe? https://hackaday.com/2021/12/05/is-the-game-up-for-baofeng-in-europe/

Portlandia – Get the Gear! You can't be prepared enough… https://www.youtube.com/watch?v=R3SFqV0hMyo

Apollo 1960s S-Band technology – not "Portable" but fascinating **–** https://www.youtube.com/watch?v=v49ucdZcx9s

An interview with Manuel-HB9DQM, developer of SOTA ATLAS – https://www.youtube.com/watch?v=cFf18-a2y20

Here's a Summary Report for the Appalachian Trail (AT) On the Air Event that occurred in October 2021. This is my favorite photo from the report with Jean-AF1JS very comfortably working 2m FM. https://atontheair.com/summary-report/

"Greening" My SOTA Activations – by Darryl-WW7D

We usually think of resonance as a good thing. It makes our antennas efficient at receiving and transmitting electromagnetic radiation. But at times resonance can create problems. Consider, for example, the CO_2 molecule. It resonates at some frequencies within the infrared spectrum. As visible light from the sun is absorbed by objects at the surface of the earth, the energy is released in the infrared spectrum—so-called, black body radiation. That infrared energy is captured by CO_2 in the lower atmosphere and subsequently released as heat.

For most of the history of humans, this has been a very good thing. As Joseph Fourier (yes, that guy) correctly surmised in 1824, something in the lower atmosphere acts like an insulating blanket to keep the earth warmer than it ought to be for the light energy provided by the sun. By the late 1800s, scientists had figured out the role of CO_2 and other atmospheric gasses in capturing infrared radiation and turning it into a warming blanket over the earth's surface.

The other thing that happened in the 1800s was the development and systematic use of fossil fuels. And this is where resonance of the CO_2 molecule has become an issue. For the past 200 years, humans have taken vast stores of hydrocarbons trapped deep underground for hundreds of millions of years, and combusted them, converted the carbon into CO_2. Roughly 2,500 gigatons of CO_2 has been released this way since the late 1800s, of which 980 gigatons remains stored in the earth's atmosphere.

As a result of higher concentrations of CO_2, the average temperature near the surface has risen by about 2°F. Satellites have also documented that the upper atmosphere has been getting cooler since the 1970s, because less infrared radiation can make it through the lower atmosphere.

As an avid SOTA activator, I've struggled with the awareness that my hobby adds to the global CO_2 burden. A typical SOTA outing in my 4-cylinder 4x4 pick-up truck might involve burning 10 gallons of gasoline. In doing so, I use about 55 pounds of 400-million-year-old carbon stores, attach some oxygen molecules and release about 200 pounds of CO_2 into the atmosphere.

I've tried a number of strategies for reducing my SOTA CO_2 footprint. Some of these strategies are obvious, like carpooling and co-activating with a larger group of SOTA folks. These days I rarely activate solo. Activating with one other person halves our carbon footprint and adds a degree of safety and gear redundancy to the operation. I've increasingly activated with even larger groups. There are pros and cons for doing large group activations, but one of the very positive outcomes, besides fun, is a reduced per-person carbon footprint.

Another strategy is to activate multiple nearby summits into a single trip—either by making it a long day or by camping for a number of days. This is the philosophy for activators in France, for example.

What about strategies for reducing fuel consumption for each trip? I've tried doing this in several ways. In 2017, I started doing some of my activations by hauling a small (200 cc) dual-sport motorcycle in the back of my truck. The truck is used for the highway portion of the trip, and the motorcycle is used for the rougher forest service roads that lead to the trailhead. The motorcycle gets on the order of 75 MPG, compared to 20 MPG for the truck. Another advantage is that the motorcycle tends to have an easier time managing rough, rocky, rutted, or narrow roads. I suspect I've avoided years of wear and tear on my truck this way, as well. Finally, even with the overhead of loading and unloading the motorcycle, I can usually travel faster on the motorcycle on forest service roads, which sometimes allows me to squeeze in an extra summit.

A few years ago, I purchased a 2017 Toyota Prius (hybrid) as a fuel-efficient daily use vehicle. The Prius can get 50 MPG on the highway, so would be ideal to use for SOTA. The disadvantage of the Prius is that it is 2WD and has very low ground clearance, which rules out taking it to many trailheads that require a high clearance vehicle, and perhaps 4x4

capabilities. Still, there are many trailheads that can be easily accessed by Prius, particularly with some patience. I use the Prius for such activations when conditions allow.

An all-electric vehicle would reduce my carbon footprint even more. This is particularly so because the cleanest electric power on the continent is found in the Pacific Northwest, where over 90% of power generation is carbon-free. Clearly, an electric vehicle is in my future—and probably yours, as well. There are new electric vehicles covering different market niches being announced regularly. For now, there are some state and federal incentives that greatly reduce the initial cost of procuring a new electric vehicle. Perhaps the most difficult issue right now is finding a vehicle to purchase—we are in the middle of a vehicle shortage. But this will pass.

Last summer I decided to take a small plunge into the realm of electric vehicles. I put together an electric bicycle (e-bike) to experiment with as an off-highway vehicle that can be used with the Prius for activating summits.

The experiment was entirely successful. The e-bike provided enough assistance to, effectively, neutralize the hills. E-bikes effectively flatten the world while going uphill. The bike also had sufficient range and elevation gain capabilities to realistically use for SOTA. My first SOTA e-bike outing was to Snooze Peak (W7W/CW-085). With the e-bike hanging off the rack on the back of the Prius, I drove 65 miles east on Interstate 90, and parked just off the Stampede Pass exit. From there, I proceeded ten miles to the trailhead by e-bike.

The first five miles was a nicely paved road that gradually dropped about 400'. The next 5 miles was on forest service road that ranged from easy to rather difficult, with an elevation gain of about 2,000'. The electric assist allowed me to bicycle continuously without overexertion—and I was doing this in the middle of the infamous Heat Dome of 2021. I did stop twice, once to get around a fallen tree that would have blocked my truck two miles from the trailhead, and once for a short steep rocky section that I walked (using an electric-assist walking mode to propel the e-bike).

<< The panniers on the bike allow me to off-load weigh from my backpack.

At the trailhead, the display on the bike said I had 48% of the battery capacity remaining. But with a 2-hour rest during my hike and subsequent activation, the battery "recovered" to 60% capacity for the return trip. All told, I put 20.5 miles and climbed 2,500 feet for the round-trip on the bike. Back at the Prius, I still had 45% of the battery capacity remaining. Subsequent trips confirmed that the motor and battery capacity is easily sufficient for 25-mile, 3,000-foot gain adventures.

So how much can I reduce my carbon footprint using these strategies? The table below shows a fictitious trip, similar to my initial outing, with 65 miles of highway travel and 10 miles of off-highway travel each way. I've computed the gas mileage for my truck, the Prius, and the motorcycle under different conditions and computed total fuel consumption and the pounds of carbon emitted. Clearly, moving to a hybrid vehicle has the greatest impact, although

the circumstances where the Prius can travel all the way to the trail head are limited. The addition of the e-bike not only saves a bit more fuel but, in many cases, makes it practical to use the Prius for the highway portion of the trip.

Gasoline consumption and CO_2 emissions for a 150-mile round trip with two segments, 65 miles of highway travel and 10 miles of gravel road travel each way.

Vehicle combination	Gasoline used (gals.)	CO_2 emitted (lbs.)
Truck	6.9	138
Truck + Motorcycle	6.1	122
Prius	3.0	60
Prius + e-bike	2.6	50

If you are interested in using an e-bike for SOTA there are a few considerations, including the motor size, battery capacity and the configuration of the e-bike itself.

Configuration: E-bikes come in three configurations, (1) rear wheel hub motor, (2) front wheel hub motor, and (3) crank motor, commonly called mid-drive. The first two configurations are easy and inexpensive but are not well suited for extended up-hill stretches that would be typical for SOTA adventures. The mid-drive configuration allows for gear changes through the rear derailleur to keep the motor working efficiently.

Motor size: Motors of 1000-Watt or more are available for e-bikes. I chose a 750-Watt (1-HP) motor because it is the largest motor that keeps the bike legal for the most uses. E-bike laws vary considerably by state and differ among state and local land management agencies. Likewise, the three federal agencies that control most of the public lands we use for SOTA (Forest Service, National Park Service, and the Bureau of Land Management) have all undertaken semi-independent rule-making procedures for e-bike use. What most state and all federal agencies have in common, is that 750-Watt is the maximum size electric motor that allows an e-bike to be treated as a bicycle. Thus, if you plan on using your e-bike in places where your car is not allowed, but a bicycle is, don't go over 750-Watt. That is, an e-bike with a motor over 750-Watt is considered a motorcycle, and is allowed only where motorcycles are legal.

Battery size: My e-bike is equipped with a 48-Volt 13.5 Ah battery, which has proven sufficient for my uses. Larger capacity (20+ Ah) and higher voltage (52-Volts) battery packs are available to increase your range, for greater cost and weight. Battery quality is important. The experts recommend paying the premium for battery packs built from high-quality cells made by manufacturers like Panasonic, LG, or Samsung. An excellent discussion of e-bike batteries can be found at https://www.som-ev.com/blog/everything-about-e-bike-batteries-from-a-battery-engineer.

Build or buy: I chose to build my e-bike so that I could customize everything for my intended uses. I also saved a considerable amount of money doing so. A new 750-Watt mid-drive e-bike with a 13 Ah battery pack will likely cost more than $2,000. Realistically, with accessories, a better mountain bike, higher quality battery, and a few special tools, you would spend about $1,400. The big advantage of the build option is that you can customize everything: the battery voltage and capacity, removability of the battery, motor size and configuration, suspension type (full suspension, hard-tail, or hard-tail with a suspension seat), tire diameter and width, frame size, and brakes (rim, hydraulic, or cable disk).

Whether you build or buy, first do some research to find out the rules and limitations for the lands and purposes you have in mind for your e-bike.

The combination of a fuel-efficient hybrid car and an e-bike opens up many possibilities over just the hybrid for doing SOTA on a lower carbon budget. The same strategy would work with an electric car that may not be suited for travel on primitive roads. The combination of an electric car for the highway and an e-bike for the rough roads will enable us to truly "leave no trace" as we pursue this hobby with a compelling mix of outdoor adventure, exercise, and ham radio.

Avoiding RBN Spots to the Wrong Summit
If you are using CW on days that you plan on doing two summits and are depending on RBN to spot you, consider wildcards for your SOTAWatch Alert so you aren't inadvertently spotted with the wrong Summit Reference. Use XXX like this: W7W/PL-XXX. You can include the potential summit(s) in the comments, and share the actual reference with the first several Chasers you work. Hopefully one of them will spot you for all the Chasers that follow!

Origins of CQ – from the ARRL Contest Update
"Calling any station" is the general call when requesting a conversation with anyone. Like many other telegraph terms that originated on the landlines, CQ was brought over into radio and used as a general call to all ships by the Marconi Company. Other companies used "KA" until the London Convention of 1912, which adopted CQ as the international general call or "attention" signal.
But why the letters CQ? From the French, sécurité (which means "safety" or, as intended here, "pay attention"). The pronunciation of the first two syllables sounds like the English letters C and Q, which led to "CQ" becoming a call to attention for all stations.

Who Is Most Likely to Get Hurt in the Wilderness – from Backpacker Magazine:
https://www.backpacker.com/survival/survival-skills/first-aid/this-study-predicts-who-is-most-likely-to-get-hurt-in-the-wilderness/

The ARRL January VHF Contest is a chance to have fun, help your fellow hams make a few contacts on bands 6m and up, and gives SOTA Activators a chance to make four contacts using just a HT. Two-meter FM can work of course (start with 146.56 or 146.58) and be prepared to give out contacts on 70cm FM as well (446.00). The exchange is **grid square**. January 15th and 16th 2022, starting at 1900z: http://www.arrl.org/january-vhf.

The "Last" Radio Station – bummer that they imply that CW is over…
https://www.youtube.com/watch?v=zI9-SRqJrgE&feature=youtu.be

RST – Readability

The R stands for "Readability". Readability is a qualitative assessment of how easy or difficult it is to correctly copy the information being sent during the transmission. In a Morse code telegraphy transmission, readability refers to how easy or difficult it is to distinguish each of the characters in the text of the message being sent; in a voice transmission, readability refers to how easy or difficult it is for each spoken word to be understood correctly. Readability is measured on a scale of 1 to 5:

1-Unreadable
2-Barely readable, occasional words distinguishable
3-Readable with considerable difficulty
4-Readable with practically no difficulty
5-Perfectly readable

RST – Strength

The S stands for "Strength". Strength is an assessment of how powerful the received signal is at the receiving location. Although an accurate signal strength meter can determine a quantitative value for signal strength, in practice this portion of the RST code is a qualitative assessment, often made based on the S meter of the radio receiver at the location of signal reception. "Strength" is measured on a scale of 1 to 9.

1-Faint signal, barely perceptible
2-Very weak
3-Weak
4-Fair
5-Fairly good
6-Good
7-Moderately strong
8-Strong
9-Very strong signal

The Native Names of Pacific Northwest Mountains –
https://www.oregonlive.com/travel/2017/02/the_native_names_of_pacific_no.html

SOTA is a Volunteer-supported RadioSport –

The SOTA Management Team has always been all volunteers.
Those writing the code for SOTAWatch, summit updates, SOTAMaps, and for RBN, are all volunteers.
Those restarting SOTAData and SOTAWatch in the middle of the night...all volunteers.
Those writing newsletters, doing admin duty on reflectors, groups and elsewhere, are all volunteers.
Those maintaining regional and local resources for SOTA are all volunteers.
That guy that's providing and hosting the amazing worldwide resource of the SOTA Atlas, is a volunteer.
Those writing blogs, trip reports, sharing their knowledge, Elmering new SOTA folks, are all volunteers.

It really is --- **Amateur** Radio. Please make a donation to Summits on the Air to support the costs of servers, high speed internet connections, SMS numbers, etc. here: https://sota-shop.co.uk/donations.php.

The PNW SOTA Newsletter Welcomes SOTA Art – Video, Poetry and Drawing

Chris-ZL4RA, included very nice b-roll footage to his activation video of ZL3/OT-388 per our video arts editor, Tim-N7KOM: https://www.youtube.com/watch?v=IFA8QP-RWww. Do note, however, what Chris describes about 7:30 into his video is not a "PINE" tree at all, but an invasive PNW export, our own Douglas Fir, *pseudotsuga mendizii*.

Bill-WJ7WJ on his experience with W7O/CN-078 – Peak 6001:

There once was a trail named the Gumjuwac
It was a terrible switchback-dumb-attack
Yous did it on snowshoes
You way tough strong foos
For me it's one I'll never come back.

Petra Žugić, eight-year-old daughter of Dusan-YU4MNO, here shows her father "tossing the dipol into a tree."