

*The News of the*  
**SWAMP FOX CONTEST GROUP**  
*Tales From the Swamp*

Editor: Scott Brown, N2OG

APRIL 2022

Stay Ready So You Don't have to get Ready!

By Scott N2OG

We are are entering a new era in world security. In Ukraine you can see how a small army with technology and strategy and backing from the world can defend off a larger invading army. Escalation of war could effect many people around the world and quickly bring war to our homes here in South Carolina without the invading army. By hacking into our power grid or with a electromagnetic pulse, ( EMP ) from a nuclear explosion above us. You can and should protect yourself against these type of attacks. Either of these attacks could result in long term loss of service.

What is a EMP? It is a explosion of a nuclear bomb high above a target. The resulting blast wave has enough energy in it to destroy sensitive electronic in your home, without killing humans on the ground. Our sun could also produce a Coronal Mass Ejection with enough energy if directed toward earth with the same results. EMP weapons have been tested and optimized to create maximum effect. The first test of a EMP above the Marshall Islands knocked out some services in Hawaii.

Either of these two events could have an affect on us for years.

These days we should always be protecting our computers. A hack into our power grid could take months to fix. If you unleash a virus in your computer that is a result of war, it may not be able to be fixed.

Electromagnetic Pulse Protection Devices are popular among survivalists and those who like to be prepared for natural disasters. These devices, also called EMP devices, can protect all kinds of electronic devices and tools, such as radios, cell phones, and even keyless entry fobs for vehicles. Those serious about preparing for natural disasters and protecting against EMP, which results from nuclear weaponry, might find products that will help to protect their electronics from these Electromagnetic Pulse waves to be very helpful. An Electromagnetic Pulse can occur after the launch of nuclear weapons, and since they detonate so high up in our atmosphere, it can cause a widespread knock out of all electronic devices, causing them to stop functioning altogether.

This is where Electromagnetic Pulse Protection Devices come in handy—they will provide protection from EMP, allowing your electronic devices to function as normal, as long as they were shielded from the Electromagnetic Pulse when it occurred. Many of these protective cases are called Faraday Cages, and they come in all shapes and sizes to protect all sorts of electronic items.

You can order many bags, cages, and boxes online to protect your radios and sensitive electronics online. Of course YouTube is a great resource. You can find many good videos on how to build one for your needs. If you have a metal gun safe you are most of the way there. Just tape a couple layers of aluminum tape over the door seam and you have a Faraday cage. If you have a metal building on your property you have a great start for protecting your most valued items like your vehicles, generators, down in size to your entire radio station.

Contesting grew out of other amateur radio activities in the 1920s and 1930s. As intercontinental communications with amateur radio became more common, competitions were formed to challenge stations to make as many contacts as possible with amateur radio

stations in other countries. Contests were also formed to provide opportunities for amateur radio operators to practice their message handling skills, used for routine or emergency communications across long distances.

Why should we be diligent in the protection of our systems? We are among the most skilled amateur radio operators in the world. Imagine a region like South Carolina or the entire world without any way to communicate. You could be pressed into service as a national traffic system operator. Can you imagine the amount of communication traffic you might be asked to pass. I can see radio operators working 8 hour shifts passing along welfare check messages and the like.

Here's a look an the NTS.

The National Traffic System (NTS) is an organized network of amateur radio operators sponsored by the ARRL for the purpose of relaying messages throughout the U.S. and Canada.

During normal times, these messages are routine greetings (“Happy birthday Aunt Mary”) and keep the system well oiled and the operators trained so that everything works when needed. When there is an emergency or disaster NTS works closely with the amateur radio emergency services to provide emergency communications. The most common type of disaster-related messages are “health and welfare” inquiries and notifications into and out of the area affected by the disaster. In time of disaster, it is easy to expand the system by simply creating additional meeting times for the nets with high volume, or by setting up a specific “trunk line” between two points.

Traffic passing by formal relay (via amateur radio) originates from the founding of the ARRL. The NTS as it exists today was first outlined by George Hart, W1NJM in “New National Traffic Plan: ARRL Maps New Traffic Organization for All Amateurs” as part of the September 1949 issue of QST. While traffic passing between amateur radio operators was nothing new, Hart’s system extended coverage of traffic capability in a uniform manner across the U.S. and Canada, creating formal section and area nets devoted to handling NTS-organized traffic.

NTS is defined using geographic areas. The U.S. is divided into *areas* that approximate time zones. Areas are divided into *regions*, and regions into *sections* that correspond to a state. Each of these subdivisions has nets for collecting and distributing traffic. A net is nothing more than a time of day and a radio frequency where the appropriate group of amateur operators can meet to send the messages on their way. ARRL Radiogram traffic typically begins and ends its journey at local nets, often through nearby repeaters. Local nets typically involve city or county-wide coverage on VHF (2-meter band) or UHF (70 cm band), and although the ARRL does not endorse a single mode for traffic passing, messages are typically relayed by voice at this level.

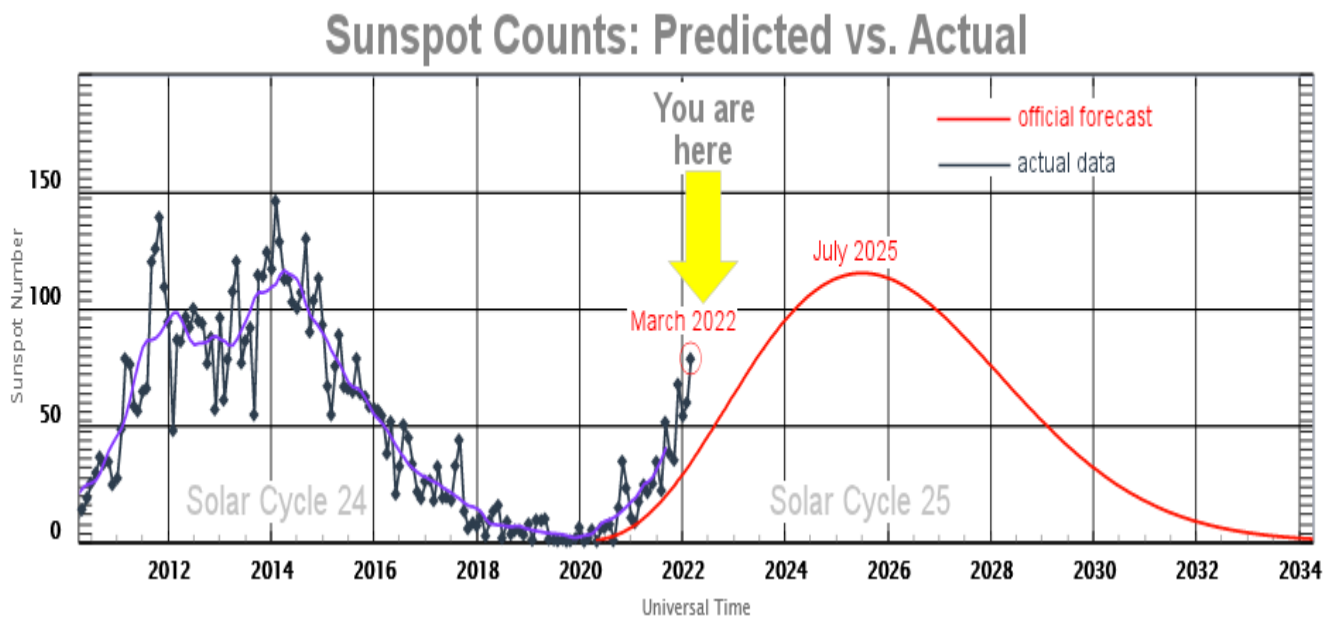
Representatives from *section* nets relay traffic collected from *local* nets up to the appropriate *region* net, or relay to a nearby section for further delivery. Messages are exchanged between section and *region* representatives, which are then passed to *area* nets, the highest level in the system. Nets at these upper levels usually take place on HF band modes for their distance capabilities (e.g. 80, 40 meters) and can be passed by voice, CW, digital, and even packet modes. As traffic trickles back down through the area, region, section, and local nets, messages are typically delivered via a local telephone call, depending on handling instructions. Messages can also be delivered by hand or via message carrier, including the postal service, however Part 97 dictates that ham radio operators cannot receive financial restitution for their service. If a message is deliverable, handling instructions may dictate that a service message be originated back to the sending station.

This is why we contest, to be able to be ready in an emergency. My short story into this hobby has grown into my mantra, Stay ready so you don't have to get ready. I was ambivalent about learning CW because, well why? I have come to realize the importance of learning this skill and I am preparing for my beginner class which starts next month. I want to be ready just in case.

I hope this information gives you a reason to think about the real possibility of a EMP or computer virus and get ready and stay ready before you are needed to help.

## OLD NEWS!

April 5, 2022: New sunspot counts from NOAA confirm that Solar Cycle 25 is racing ahead of the official forecast—and the gap is growing:



Sunspot counts have now exceeded predictions for 18 straight months. The monthly value at the end of March was more than twice the forecast, and the highest in nearly 7 years.

In March 2022, the sun produced 146 solar flares, including one X-flare and 13 M-flares. Auroras were sighted as far south as Colorado (+38N) and Nebraska (+42N). Multiple shortwave radio blackouts disrupted communications on ships at sea and airplanes flying over the poles. If current trends continue, April will be even busier. Stay tuned.

Recently I have noticed stronger signals from far away places and on bands I do not associate with DX. Like New Zealand on 12 Meters in

the afternoon. Africa on 10 Meters in the afternoon, What have you noticed? Solar cycle 25 is just coming on so get ready!

## CONTESTING

### The Balance Between QSOs and Multipliers

By Tim Shoppa, N3QE

Participation records continued to be smashed as amateur radio operators around the world chose to “stay safe” and operate in contests each weekend in the busy contest months of January and February 2021. There were 3,376 logs submitted for the 2021 CQWW 160 CW contest at the end of January, a 16% increase over the 2020 entries. In the WPX RTTY contest the second weekend of February, 3,854 logs were submitted, a 25% increase over the 2020 running.

In the 2021 running of the ARRL DX CW contest, several new record high scores are already clear from the claimed scores. Dan Craig, N6MJ, operating the Cayman Island station ZF1A remotely, reports 8,380 QSOs and more than 8.5 million points, both well above any previous DX effort. Dan writes, “I just couldn’t believe that it would happen in a relative down year propagation-wise.” You can see Dan’s full commentary and detailed statistics at <<https://3830scores.com>>.

The decline in DXpeditions has limited the number of exotic countries that have been available to be worked since March 2020. For example, in the February 2020 ARRL DX CW contest, Rick Davenport, KI1G, entered single-operator unlimited (assisted) and reports working 115 countries on the 20-meter band, but in 2021 in the same category, he only worked 106 countries on that band. At the same time, increased participation by contesters at home was noted by Rick. He writes, “I worked over 500 Germans; that certainly is the high mark.”

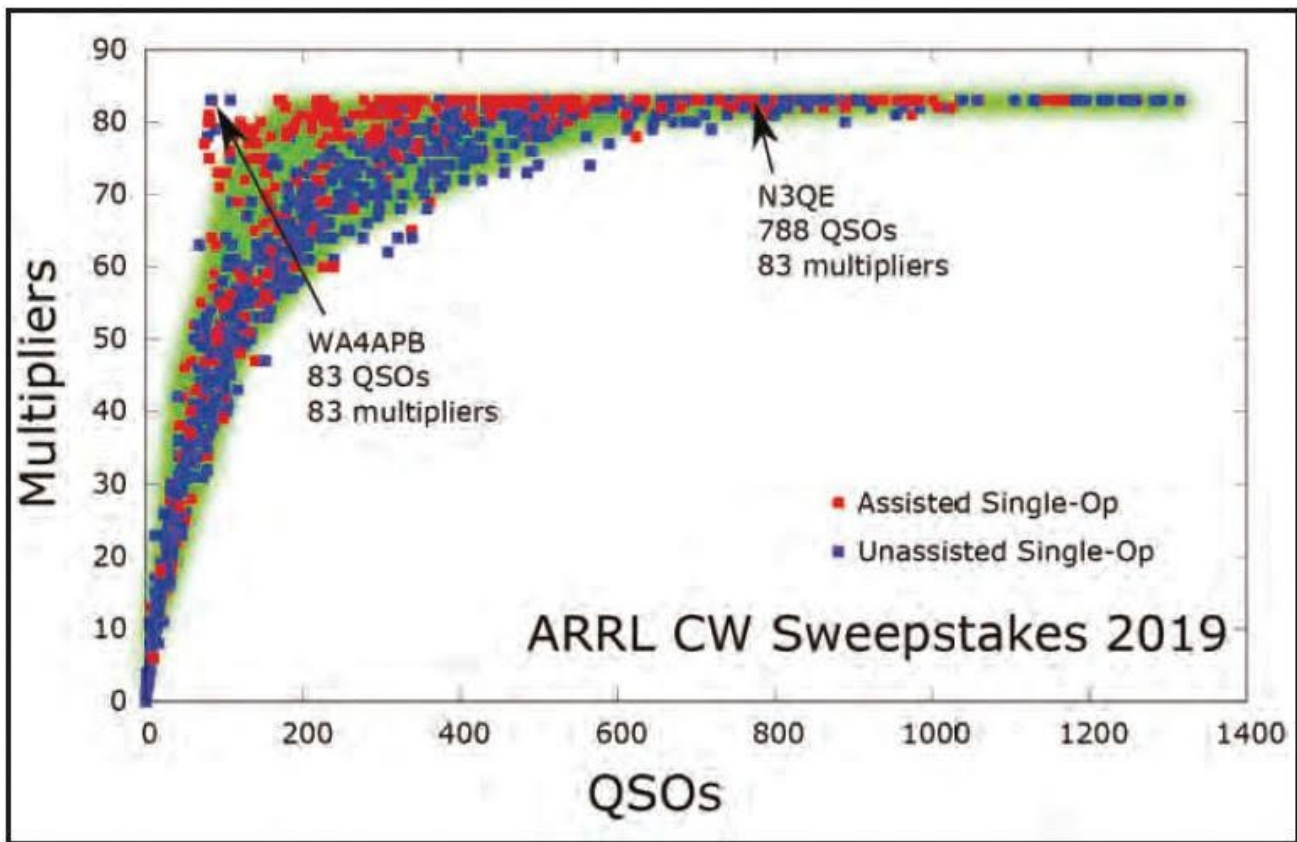
## **The Multiplier vs. QSO Cloud Illustrates the Variety of Multipliers in Contests**

Amateur radio contests have had multipliers since their earliest days. On page 38 of the December 1929 issue of QST, “The January Contest” was announced with detail, “the final score will be obtained by multiplying the sum of all points by the number of Sections worked [...] This will make our contest more interesting and general in its character.”

P E.L. Battey, W1UE, becomes even more excited about the multiplier concept in his May 1930 contest results, sparing no exclamation points: “As there are 68 sections, there was a possible multiplier of 68. Think what that meant!! There was no limit to the possible scores!”

Multipliers in contests do more than just increase the numeric final score. They make contesting more interesting by encouraging geographic diversity in the contacts made. In DX contests in which countries are often the multipliers, operators plan their stations, band usage, and operating hours to work exotic locations all over the world. In domestic contests like the ARRL Sweepstakes, the geographic diversity is about more than just distance — it may also include efforts to work a station in a single nearby section that is rare because it may be activated by only one or a handful of amateurs that weekend.

Many contests score multipliers once per band — the CQ World Wide DX Contest and the North American QSO Parties are popular examples. This obviously encourages operators to be on both during daytime and evening hours. Other contests, though, such as ARRL Sweepstakes and the CQ WPX Contests, count multipliers only once per contest. Because the low bands are best at shorter distances and working close-in multipliers, and high bands are best at longer distances and working multipliers farther away, band and time of operation diversity is still encouraged, even when multipliers are once-per-contest.

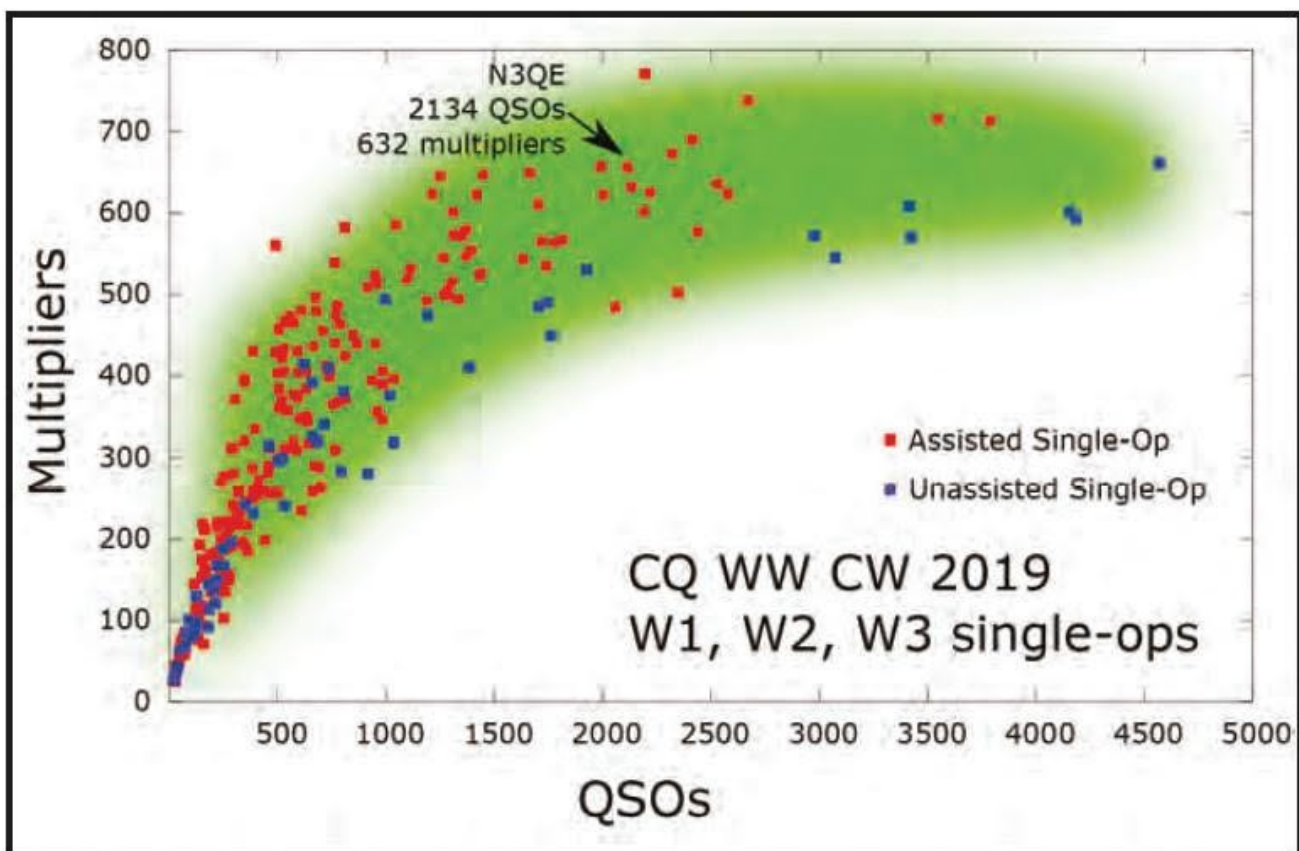


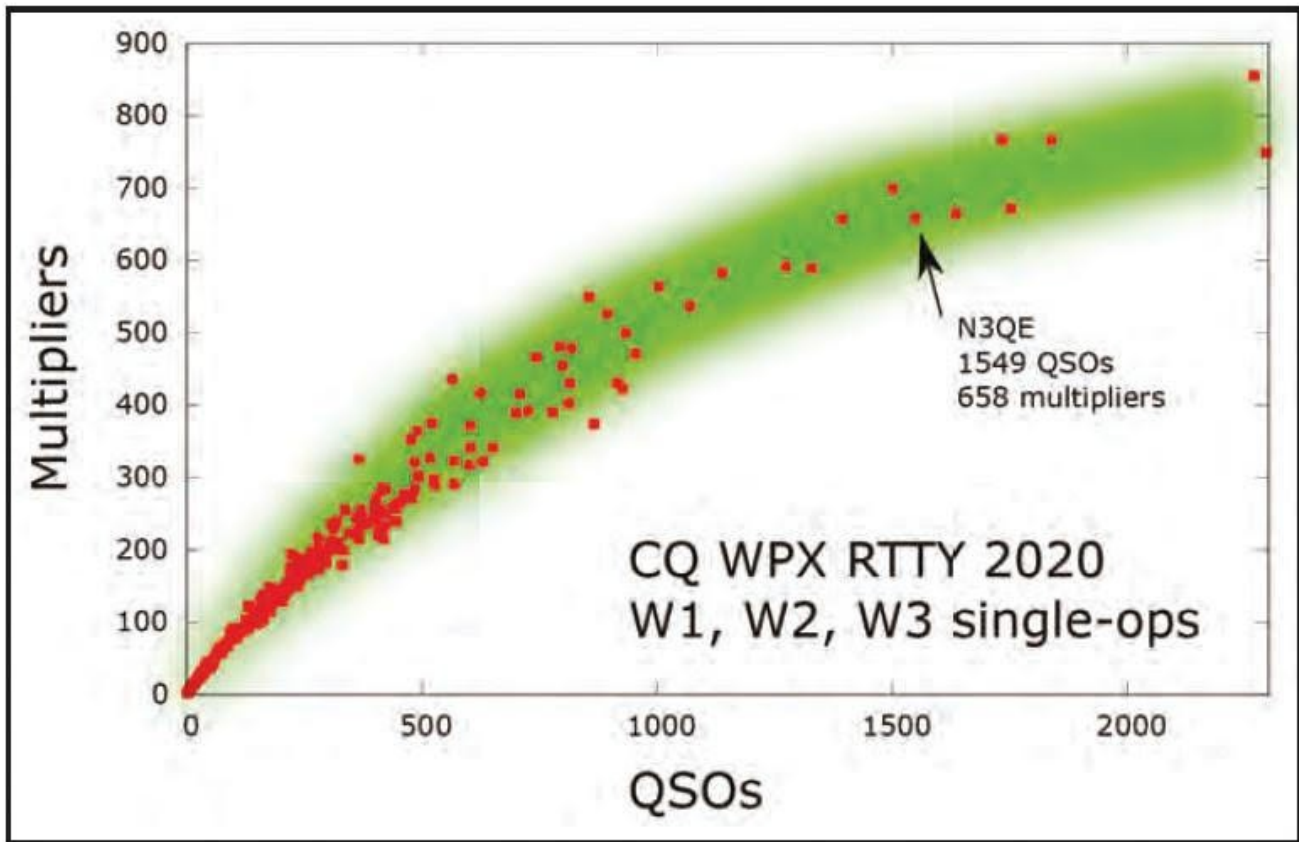
Ninety-one years after the first-ever amateur radio contest, almost all contests still maintain the same formula: Final score is the product of total QSO points and a multiplier count. But the relationship between QSOs and multipliers shows quite a variety depending on the multiplier rules chosen by the contest organizers. In Figures 1 through 3, I have produced scatter graphs for one large domestic contest (ARRL Sweepstakes CW 2019), the largest DX contest (CQWW CW 2019), and a contest that mixes DX and domestic activity (CQ WPX RTTY 2020). The X-axis shows QSOs, the Y-axis shows total multipliers, and the individual data points are from the final score summary results from the sponsors' websites. In the sections below, I use these graphs to explore the diversity of multipliers and the resulting contesting strategies that hams use in these large contests.

## In ARRL Sweepstakes, There is a Strict Upper Limit on Multipliers

For each single-operator entrant in the 2019 ARRL Sweepstakes CW, I drew a square point on the scatter graph of *Figure 1*, showing how many QSOs and multipliers each single-operator has confirmed in the final results. I drew a green cloud behind the data points to illustrate the typical relation between QSOs and multipliers for ARRL Sweepstakes.

I have color-coded the data points by whether the entrant was assisted (red) or unassisted (blue). We see an expected clustering of red points for high-multiplier assisted entries, especially for QSO counts from 70 through 600, that is above the blue points representing the unassisted entries in this part of the graph.





The blue unassisted points dominate *Figure 1*. Indeed, in 2019 there were 800 unassisted single-operator entries and 450 assisted entries in ARRL Sweepstakes CW.

Note that in 2019, the 83 ARRL/RAC sections form a very strict upper limit on multipliers. All stations working more than 1,030 QSOs worked all 83 sections that year, whether they were assisted or not, and the long streak of blue at the upper right shows that at the upper echelon of the contest, 14 of 15 entries were unassisted.

Note a cluster of both assisted and unassisted entries with 70-100 QSOs and multiplier counts above 75. These represent hams who made a special effort to work all 83 sections with a minimal number of QSOs. These efforts are in the upper left corner of the graph, outside the green cloud that encompasses more typical efforts in the contest. After log checking, Joe Monfort, WA4APB, emerged as the only

entrant who worked all 83 sections in 83 QSOs, a “clean sweep” achieved with the absolute minimum number of QSOs.

I’ve labeled my personal assisted entry in this contest, showing 788 QSOs and all 83 multipliers. This is the first year where I worked all ARRL sections in Sweepstakes CW; often I come up one or two sections short of the number possible. Several times in past years, one of the sections I’ve missed is not a distant section, but the geographically nearby (to me) Delaware section.

There is a very real “knee” in the graph around the vicinity of 200 QSOs. For many assisted Sweepstakes contesters, the knee at 200 QSOs corresponds to a multiplier count between 78 and 83. For the unassisted entrants, the knee at 200 QSOs is between 60 and 73 sections.

## **The CQ World Wide DX Contests Have Zone and Country Multipliers Per Band**

*Figure 2* shows — for U.S. single-operator stations in the Northeast and Mid-Atlantic regions W1, W2, and W3, the relation between QSOs and multipliers in the final results of the 2019 CQWW CW contest. I maintain the same color convention for assisted (red) and unassisted (blue) entrants used in the previous figure.

The scale of the multiplier axis on *Figure 2* is radically different than it was in *Figure 1*, as there are up to 10 times as many multipliers worked. The CQ World Wide DX Contest counts multipliers per band. The first QSO you make on a new band results in a “double multiplier” because the contact is guaranteed to be both a new zone and a new country for that band. Because of the double multipliers, entrants with a very small number of QSOs could have twice as many multipliers as QSOs.

The “knee” in CQWW DX takes place around 1,000 QSOs. Unassisted operators with around 1,000 QSOs have between 300 and 500 multipliers; assisted operators have between 350 and 600. Note that the green cloud is especially broad for this contest, as the multiplier number varies a lot between unassisted single-ops and assisted operators who made multiplier-chasing a priority.

I entered the 2019 CQWW contest in the Assisted category and I've labeled my 2,134 QSO, 632 multiplier effort. I extensively used the spotting network to chase multipliers in this contest. The axes chosen for the graph allow me to compare my effort relative to other contesters in my area. To the right of my data point, you see that 20 stations in W1, W2, and W3 areas had more QSOs than I did. But above my data point, you see that only nine stations worked more multipliers than I did, and that eight of those stations were assisted like me. This represents my "assisted philosophy" of chasing multipliers where possible, especially later in the contest when my run rate may be lower.

### **The CQ WPX Contests – Where New Multipliers Never Stop Coming**

The CQ WPX award program has, since the mid-20th century, encouraged hams to work a diversity of amateur callsign prefixes, a truly innovative concept. Callsign prefixes are closely related to geographic diversity but they also reflect a diversity in the time that each amateur received his/her license. As more amateurs have been licensed in the U.S. and worldwide, more prefixes have been assigned by the licensing authorities.

In 1973, the WPX award prefix concept was adopted as the multiplier for the first CQ WPX contest, which at first was an SSB-only event. A CW weekend was added in 1979, and in 1995 the WPX RTTY Contest was added. In the WPX contests, a new prefix counts as a multiplier only once-per-contest, not once-per-band.

*Figure 3* shows, for the 2019 running of the WPX RTTY contest, how the nearly unbounded pool of available multipliers results in a distinctive relation between QSOs and multipliers. In the WPX RTTY results, there is no distinction between assisted and unassisted operators, so I have drawn all the data points using the same color (red) used for assisted entrants on the other graphs. Unlike *Figures 1* and *2*, the WPX multiplier count shows much less scatter and is quite tightly grouped for stations making any number of QSOs.

It is difficult for me to identify any kind of knee in the multiplier vs. QSO relation for the CQ WPX contests. Yet, the graph shows that as you work more QSOs, your rate of new multipliers slows down.

A station in my region who made 500 QSOs had 250 prefix multipliers. Following the trend of the data, at 1,000 QSOs, most stations had worked over 400 prefixes. If I double my operating time, not only does the number of QSOs nearly double, but the number of multipliers will almost double as well. The net result is almost quadrupling my total score. This simple mathematical relation works as a great incentive to maximize your operating time for the WPX contests.

### **Multiplier Categories for Other Contests**

The examples shown in *Figures 1-3* can be used to understand multipliers in many other contests.

In state QSO parties where counties count once per contest, the strict-upper-limit illustrated in *Figure 1* for ARRL Sweepstakes is largely applicable.

If multipliers can be independently accumulated on multiple bands, the relation shown in *Figure 2* will often be applicable. This class includes a large number of domestic contests like the North American QSO Parties, as well as many international contests such as Worked All Europe. The relationship shown in *Figure 3* for the WPX Contests, in which there is not even a soft limit on multipliers, applies to a handful of other events, most notably the Wednesday CWOps CWT sessions. The CWT multiplier is the callsign (once per contest, not once per band), so I think of it as an even more extreme example of unbounded multipliers than the WPX contests. Rob Brownstein, K6RB, writes of the CWT multiplier structure: "The idea was to encourage people to work many different calls rather than several of the same calls on different bands." Like some other enthusiastic SO1R (single-op one radio) operators, I often enter the CWT hours with a plan to stick to a single band with no band changes. The net result is that multipliers are exactly equal to QSOs, and it's always satisfying to think of how I've maximized the number of new calls I could work on that one band.

# DX WORLD DOT NET

I ran across this website recently. It has a great little interactive calendar with current Dxpeditons on the air. Check it out the next time you are looking at chasing some DX.

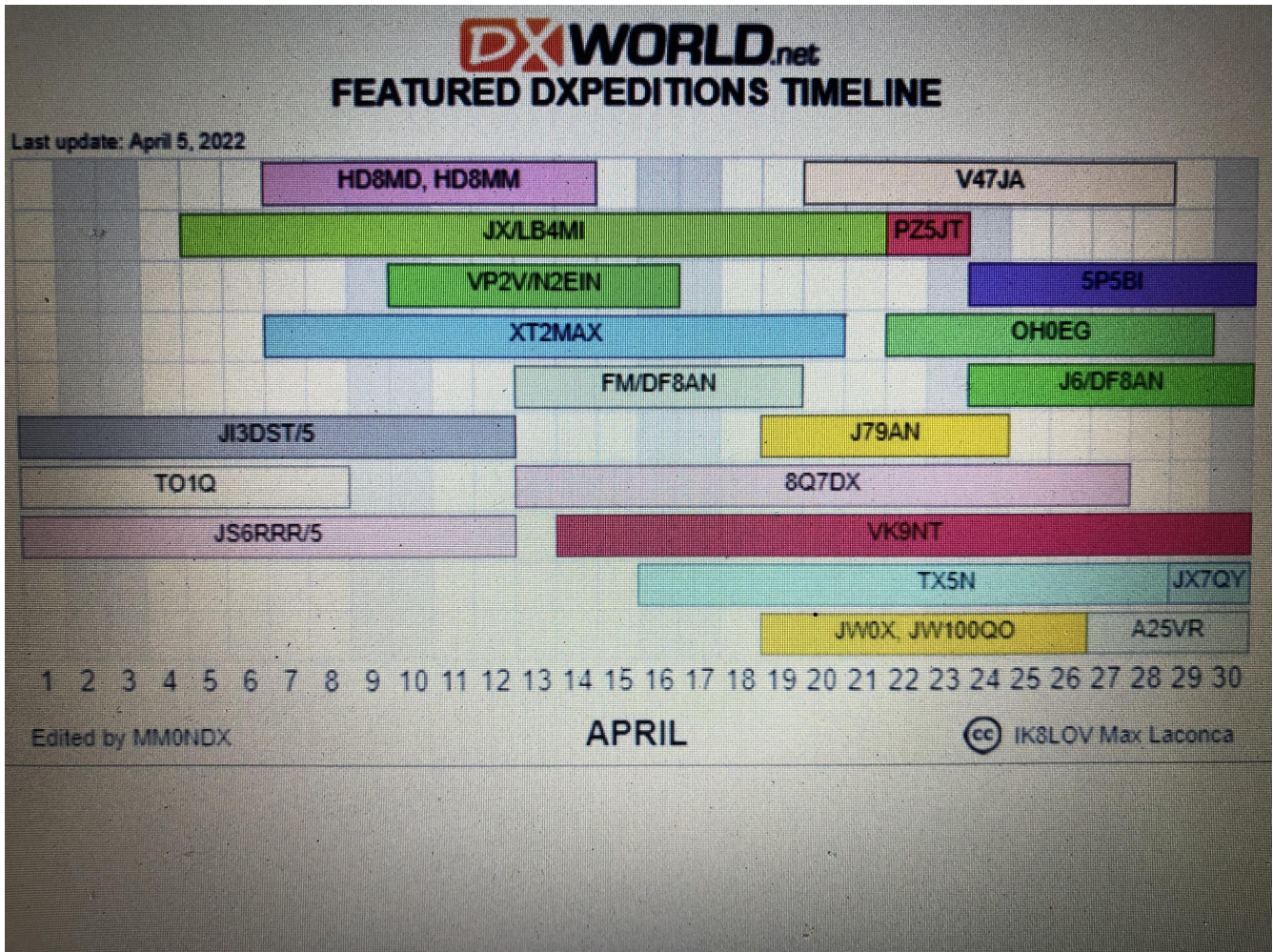


Photo of their online interactive calendar

## Multiple Configurations for N1MM+

By Kevan Nason N4XL

Contest efficiency increases if you take the time to tweak N1MM for the event you are entering. N1MM saves those settings in a file called N1MM Logger.ini. It is loaded each time you start N1MM with the configuration you last used. If you copy and rename that file to something like CW.ini, RTTY.ini, or FT8.ini you can tell N1MM to load with the specific configuration for whatever it is you want to do. (You probably don't want to simply change the name for N1MM Logger.ini as it is good practice to have a the required default ini file available for general use). The big picture of how multiple ini's are used in Windows is to create a copy of shortcut to N1MMLogger.net.exe on your desktop. That is the startup file for N1MM. Then right click on the shortcut and add the modifier Ini=cw.ini (or whatever) to the shortcut. N1MM will start up using the designated ini file. Details can be found at:

<https://n1mmwp.hamdocs.com/setup/software-setup/#multiple-ini-files>

## Logging Multiple Simultaneous Contests with N1MM+

By Kevan Nason N4XL

I hope to enter the Michigan QSO party this weekend. The Ontario and newly recreated Quebec QSO party are also happening. While calling "CQ Michigan" last year several VE's took advantage of the opportunity to snag the SC mult and called me. Happy to oblige, I kept track of them on a separate piece of paper. I'd sometimes lose them because a Michigan station would answer the CQ before I captured all the logging info for the VE. No biggie for me as I wasn't entering the ON QSO party and have VE confirmed a few hundred (or thousand?) times, but it would be good to send a log to the sponsors for log checking and to LOTW for whoever might need our contact confirmed. It is easy to quickly shift contests with N1MM. Simply open and set up a log for each contest you will be (or might be) involved in. Then start

your primary one. ALT+F brings up a list of options which includes a numbered list of the last several contests you have opened. Pressing the displayed number for a different contest loads it and replaces your current contest in just a second or two. Sorting the VE's between ON and QC might be a challenge for this particular weekend, but Alt+F will make it much easier.

## VOACAP as a Planning Tool

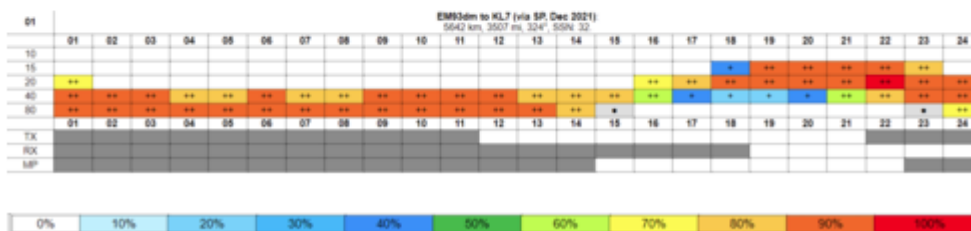
### By Kevan N4XL

Dave, WB5NHL, mentioned using VOACAP's Planning tool for pre contest preps. It looks like a great suggestion and the site even has an option to use the format I like to use during contests too. From Dave's reflector comment the Planning tool gave him a readout like this:

Propagation Planner Settings

DX sites:  CQ Zones       DXCC Asia  
 ITU Zones       DXCC Europe  
 DXCC All Continents       DXCC North America  
 DXCC Africa       DXCC Oceania  
 DXCC Antarctica       DXCC South America

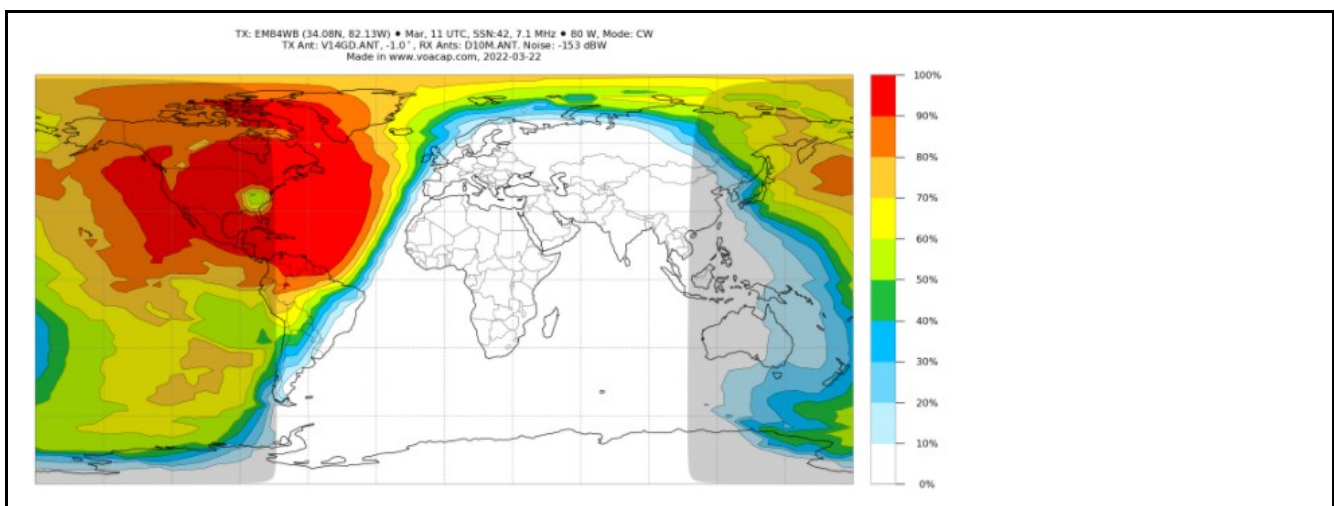
Here is an example for KL7 CQ zone. Grey bars show night.



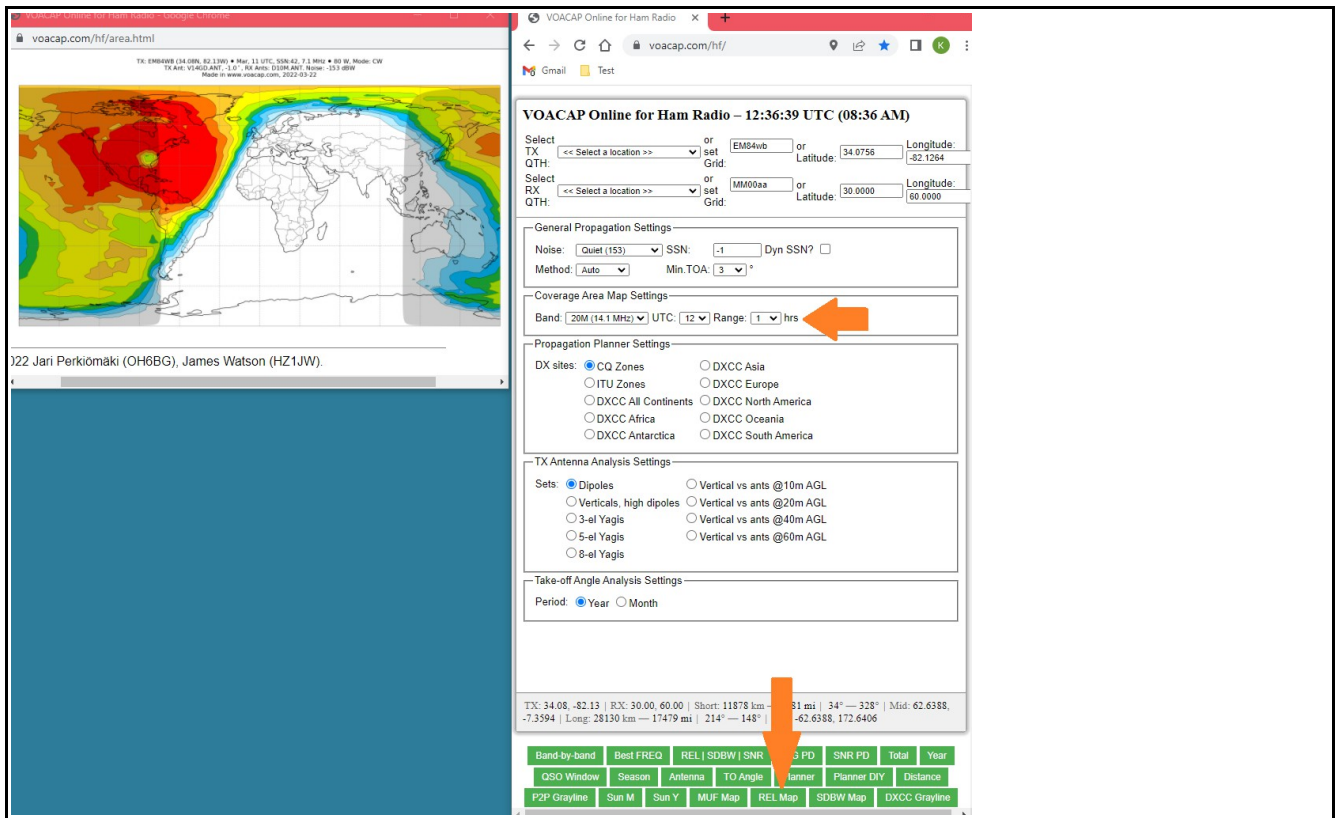
That looks great for developing an “attack” plan ahead of contest time. You would look at several of these charts to get a feel for coverage to different areas of the world. VOACAP also lets you look at many other

prediction display formats and data.

I've always liked the HAMCAP version of displaying propagation prediction which shows the entire world at once for a given hour. You can do that from the website too. Where integration between IONOPROBE and HAMCAP used to be seamless and updated automatically each hour you now must use drop down selection boxes, but it lets me see propagation predictions looking like this which I find more useful.



Thank you, Dave for pointing me toward this tool. I'm going to try this in the next few contests. I'll use some extra monitor real estate space and keep the VOACAP drop down menu open next to the propagation display. That way I can quickly get to the selection choice drop down boxes for frequency selection during the contest. I'll overlay something more useful over the top of the selection window when it isn't being used. The two side by side will look like this. Then All I have to do is activate the selection window, select the band of interest, verify UTC time is correct (change if not) and click the "REL Map" button to get an updated propagation prediction.



Kevan N4XL

From the Reflector

Portable Operators listen up

Mike, I used the car battery when I did my first trips up to the mountain with a paper log and only the radio and a key + microphone. The last time I had a small amplifier with me and also a laptop with a bad battery. I borrowed a generator from a Gary, W4EEY.

Depends on what you want to do, 4h operating at 50W or more will drain the battery quickly, I regularly started the car to charge it a bit. I connected directly to the car's battery, the little outlets inside the car were not capable for some higher power. Next trip I choose a generator and a little brick amp with 150W, don't like the noise from the generator but this gave me more power and I wasn't scarred to

drain my car battery With my current car I can barely access the 12V battery so I have to come up with a plan for this time.

--

Matt NU4E

Hey Matt,

Thanks for the detailed message. There are a number of scenarios that I'm kicking around for portable operation, but one that I know I'd like to do for sure is POTA. When I start thinking about what is needed, I keep getting stuck on the power source. I hear LiFePO4 batteries are the way to go, but they have a limited run time and take a while to charge. Thought about using the car like you're doing, but I drive a hybrid and I've heard they are notorious for RFI. If that's true, then that leaves me with two options and both are expensive – buy a generator, or buy 2 LiFePO4 batteries and a solar charger.

I should probably test running off the car battery to see how much RFI there is.

Thanks again!

Burton  
KY4ID



Loaded for the VHF Contest

Rumblings about a possible club Multi OP contest in our future

Let's do Frank. We talked about RTTY in the past. Do you want to run a multi op with a major contest? Let me know and I can come down during a lesser event to practice and to prep for the biggie event. My number is the same....843-468-3919

Best 73,  
AI

I too would like to be a part of a Multi Op competition!

Definitely AI, I will get together with you in the near future and we can make some plans.

Frank KG4IGC

### [PVRC] Free Operating Classes on Zoom Starting April 7

We are once again doing our “Operating Classes” sponsored by the Amateur Radio Club of the National Electronics Museum. Please publicize.

Free weekly 3-hour Zoom sessions providing info on a wide range of Amateur Radio Operating Activities will start on Thursday April 7 and run through June 9 at 6:30 PM Eastern time. Session will be taught by experts, and the subjects include:

- All About Operating--A general Introduction
- Amateur Radio Organizations—Local to International
- Ham Radio Awards
- DXing-History and Tips from the Experts
- QSLing-How to get that needed card for DXCC or WAS
- VHF/UHF Weak Signal Work and “Roving”
- Image Operating—Slow Scan and Fast Scan TV
- Remote Station control over internet
- Learning CW in the no-code era
- Digital Modes—From RTTY to FT8 and beyond
- Contesting—How to get started, tips for the beginner and intermediated contester
- Logging Software—What’s available, how to use
- Propagation—A general intro to HF Propagation
- Amateur Satellites—How to get started
- Portable (backpacking) operation—Tips from an expert
- Setting Up a Modern (or not so modern) HF Station
  - Lightning Protection and Grounding
- Traffic Handling

## Public Service, Emergency Communications

A detailed syllabus will be published before the classes begin. Attend them all, or any that you like, but you must register for the classes. To receive registration information, contact Rol Anders, K3RA, at [roland.anders@comcast.net](mailto:roland.anders@comcast.net).

Thanks,  
Rol, K3RA  
Thanks Ed for that very useful link to some great classes

I'd like to operate in this mobile!  
That's a huge antenna array.



The height for your antenna looks about the same as you used to have so you would feel right at home with a dipole on top.

KevanN4XL

I'm having trouble modeling this on Yagicad. What's the boom diameter?

Ed K3DNE

Multi OP Team Ready



Thanks for reading, 73 and see you on the air.

N2OG Scott