



Publication of the  
Northern California  
Contest Club



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## *NCCC - 50 years of Contesting Excellence*

### President's Report - WD6T

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**NCCC February ZOOM Meeting**  
**Tuesday Feb 16, 2021**  
**1830-2030**

#### **"The Elecraft K4 Transceiver"**

*Eric Swartz, WA6HHQ*

#### **"KB Competition Update"**

*Gary Johnson, NA6O*

*Details: See*

<http://nccc.cc/meetings.html>

### Here We Go Again! RTTY WPX

Of all the large DX contests, the WPX contests present the best opportunity to compete from the west coast. Based on the award offered by CQ Magazine for working call sign prefixes, the three WPX contests are in February (RTTY), March (SSB) and May (CW). The contests draw thousands of entries from around the world.

Prefixes may seem like an odd choice for a multiplier, but are they any odder than DXCC entities, some of which span multiple time zones, and others with area smaller than the city of San Francisco, to say nothing of uninhabited rocks? Are they more fair than DXCC? Yes. Do they level the playing field? No. There are still more prefixes and more hams in Europe and the eastern US than in Asia and the western US. But, despite all this, we won WPX RTTY in 2020!

There's a saying in the computer industry that if you really bust your butt, do a fantastic job and have a smashing success...then your reward is that you get to do it all over again. Well, having won WPX RTTY in 2020, it's time for an encore. Once more, with feeling!

How do win? First of all, we need to get on the air. If you did RTTY Roundup, we need you for WPX. If you didn't do RTTY Roundup, we need you even more for WPX. Now is the time to test your RTTY setup (even if it was working a month ago... gremlins may have come in and changed your COM ports or whatnot), do some practice (Thursday nights at 5:45 PM are a good opportunity), and plan your strategy.

How do we maximize our scores? The rules say that to contribute to our club competition, you must "reside" within the CQ club circle, where "reside" is defined as "to dwell permanently or continuously or to occupy a place as a per-



# Northern California Contest Club

*Excellence In Amateur Radio Contesting*

## Officers:

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<b>Director:</b>	<b>Rich Smith</b>	<b>N6KT</b>	<b>n6kt1@sbcglobal.net</b>

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## Thursday Night Sprint:

The Northern California Contest Club sponsors a Thursday Night Contesting session of thirty minutes duration.

Often, on Fridays prior to a major contest weekend, a special practice session is held.

Generally, on Thursday evenings, a special format is followed, called NS or "NCCC Sprint". The NS began in the summer of 2004 as a snappy, concise contest occurring most Thursday nights, North American time. The power limit is 100 watts. Occasionally multi-week ladder competitions are held. See [www.ncccsprint.com](http://www.ncccsprint.com) for details.

Thursday Night Contesting Director and Founder	Bill, N6ZFO
NCCC CW Sprint	Tom, N3ZZ (initially, Ken N6RO )
NCCC RTTY Sprint	Ken, K6MR
NCCC Sprint Ladder	Bill, N6ZFO
Sprint Web master <a href="http://www.ncccsprint.com">www.ncccsprint.com</a>	John, K6MM
Ladder Scores Manager	Tim N3QE
Thursday night Contesting Advisory Group:	N6ZFO, Bill (Chair)
	Mark K6UFO, (with W4NZ, N4AF, W9RE, K4BAI, N3BB, VE3YT and W0BH).
	Ken, N6RO
The Thursday night NCCC Net	



son's fixed, permanent, and principal home for legal purposes." However, the rules also stipulate that you need not \*operate\* from that location; you are free to travel (or remote) elsewhere. On the top of most "how to do best in a contest" lists are location, location, and location. So, if you have access to a good east coast or DX station, by all means, go for it!

After location, the next most important factor is your antenna situation. If you have been planning an upgrade, experiment or variation, this would be a good time to do it, particularly if it involves improving your coverage of the US, Japan and Europe. The RTTY contest is on 80-10 meters, while the SSB and CW contests include 160 meters as well. You can work stations once per band. Keep in mind that QSOs count double on 40m, 80m and 160m, so being on those bands is important.

Next comes power. If you can run high power, do it! Every time you double your power, you add 3 dB to your signal strength. Needless to say, the louder you are, the easier it is to run and break pileups. Of course, some operators prefer to compete in lower power categories. The point of contesting is to have a great time working a lot of stations and racking up points. However you do it is FB!

What about operating strategy? The WPX contests are primarily about running, because the number of multipliers is so large that a mult is less valuable than in other contests, such as Sweepstakes. Typically, a WPX prefix is worth about three QSOs. So, if it takes more time to get that prefix than it would take to make three QSOs, you're not maximizing your score by going for the prefix. If your station is loud enough to allow you to run, try to do as much of it as you can. Even smaller stations (such as my own home station) can run on the second day when everyone is hungry for "fresh meat." Having a unique prefix makes you more attractive still. If you need to borrow an exotic call sign, please post to the reflector.

More than any other major contest, WPX score is a function of the amount of time you can operate, because the score grows almost with the square of the number of QSOs. Try to put in as much time as you can. A single operator may operate 30 of the 48 hours in WPX RTTY (36 hours in the CW/SSB contests). If you know you will not be able to operate that much, consider partnering with someone to do a "distributed multi," a special new category for this year (Covid-19 accommodation). No computer synchronization is required if you each work on a different band. For example, if a diurnal person pairs with a night owl, you will produce a big score and still get lots of sleep.

Another important change to the rules this year is that there is no more "Unassisted" category, with the exception of the Single Operator Classic Overlay. Make sure your logger is showing packet and reverse beacon spots (it's easy to forget to check of the right band or mode and wonder why you're not seeing any.) For RTTY and CW, nearly every station that is CQ'ing will be shown. Review the logger key commands for jumping between spots, jumping between multipliers, etc.

Of course, you want to make sure you are running on the right band in the right direction at the right time. The principal source of both QSOs and prefixes will be the US, JA and Europe. It is critical to take advantage of the JA openings on 20m in the late afternoon and 40m after midnight. Similarly, it is essential to take advantage of the EU opening on 20m, shortly after sunrise. With some luck, 15m will be possible to EU as well. 40m can have a good EU opening beginning as early as mid-afternoon. Beyond that, don't look down your nose at US Qs. A US prefix is worth just as much as a European one. Prefixes count only once (not once per band), so if you know you can get a common prefix easily on another band, there's no point struggling to work it.

Like any contest, it's always a good idea to review the rules beforehand. Briefly, intercontinental QSOs are worth the most, then come QSOs between different countries. QSOs with the same country are worth the least, but as



there are so many US hams, they are important for a big score. If you are called by a PY, a VE and a W at the same time, you might want to take the PY first, then the VE, then the W. And, as mentioned previously, low band QSOs are worth double.

If you can, consider trying SO2R. This technique allows you to run and S&P at the same time, or run simultaneously on two bands. WPX RTTY is a particularly good contest for this, as RTTY SO2R is the "gateway drug" to the hard-core stuff! While setting up a full SO2R station can be complex, many stations can easily do a poor man's version. If you have two radios, both of which can have audio connections to a computer, and two antennas for different bands, you can do SO2R. Many stations have separate antennas for 20 meters and 40 meters, the two most productive bands. 40 meters has been opening extraordinarily early of late (I was working EU at 12:30 PM a few weekends ago). So 20/40 SO2R could nearly double your QSO count during the hours of overlap. And if you are running low power, you probably won't need band pass filters... just turn on VOX and you're good to go. CAT is not really needed, though it's a "nice to have," so you can click on packet spots. If you can have CAT to both radios, so much the better.

If you don't have the station capability to do SO2R, then you might try SO2V. This is simply a way of quickly going between running and S&P. Note that you can do the same thing with key commands. For example, in N1MM, <ALT>Q will return you to your CQ frequency. Of course, the risk of doing this is that someone else will have grabbed your frequency in the meantime. So you have to assess the risk, as a function of how busy the band is, etc.

Finally, be sure to reach out to the NCCC reflector if you need any help setting up RTTY, SO2R, or any other station engineering, or if you have questions about the best approach to operating.

Let's KB in WPX!

**73, Dave WD6T**





## Mitigating RFI from a Large UPS System Gary, NA6O

W6TCP and I share a remote station, W6SRR, in a place that is subject to frequent power interruptions, so we decided to add an uninterruptible power supply. To get the runtime that we needed, a model that supported external batteries was required. After extensive online research, I determined that UPS systems that support external batteries are at best certified as FCC Part 15 Class A (commercial), and never the quieter Class B (residential). This is probably because of the high ripple current in external cabling which the manufacturer has difficulty filtering. Some have no indication of FCC certification at all... Any time such a system is installed near amateur radio antennas, you can expect an RFI problem. In contrast, small single-box UPS system, such as the 1 kVA units from CyberPower, are in my experience RFI quiet and are unlikely to cause problems. But their runtime is limited.

The model we chose is a Tripp-Lite SU1000RTXL2UA [Ref. 1] (Fig. 1), which is rackmounted in an all-steel enclosure, 120 VAC, 1.0 kVA, 800 W, double-conversion (on-line inverter), networkable, and of course supports external batteries. The back of the main unit has 75 A PowerPole connectors where you can daisy-chain as many of their external battery packs as you can afford. The battery we chose is a BP24V36-2US. Total cost of this system was about \$1500.



*Figure 1. The Tripp-Lite UPS main unit. A network card plugs into a slot in the back on the far left. Additional batteries connect to the large PowerPoles on the right.*

### System Installation Description

We actually have two installations utilizing this UPS at the site. The first system (ours) consists of the UPS plus one of the manufacturer's external battery expansion units. It is located in the 20-foot Conex shipping container

that serves as our station. The second system belongs to the property owner and consists of the same UPS plus an ad-hoc set of four 6 V, 400 AH AGM batteries in series. This configuration is not something that the manufacturer supports, and in fact we advised him against this, but the owner decided that the large capacity was needed. It is located just next to our container inside a wooden building. Antennas are next to our container on a 30-foot tower with 14 feet of projecting mast. The consist is: JK Navassa 5, Optibeam 40/30m dipole, and half-slopers for 80 and 160 m. Very close proximity of the antennas is a worst-case scenario for RFI susceptibility. The tower is also loaded with commercial VHF, UHF, and microwave antennas. Our radio is a K3 with an LP-Pan panadapter.

## **RFI on the First System**

The first system was installed in our container. Ferrite common-mode chokes were preemptively installed:

- Input cord, 12 turns on 4-inch type 31 toroid.
- Output (load) cords(2 ea): 8-10 turns on 2.4-inch type 31 toroids.
- Ethernet cable: 14 turns 2.4-inch type 31 toroid.

At power-on, broadband RFI was immediately detected on all HF bands, increasing the noise floor by 6-10 dB, and was especially noticeable on the high bands. Audible signature was 120 Hz buzz. Using a sniffer probe and shortwave radio, the source was pinpointed as being the input line cord. Clearly a single choke was insufficient. An outlet box was assembled, containing a Delta 20DKBG5 EMI filter, plus an additional choke on the cord feeding that, 10 turns on a 2.4-inch type 31 toroid. This was sufficient to reduce the noise on all bands back to our baseline.

Experimentally, I proved that ferrite common-mode chokes alone are insufficient to cure RFI on the AC line input. Apparently there is a high level of normal-mode noise that needs to be removed, thus the use of a commercial EMI filter proved effective in this case. This is exactly the scenario I discovered when trying to address RFI from some LED light fixtures. Normal-mode noise, when injected into the unbalanced and untwisted power lines, can eventually radiate and has to be addressed by an appropriate filter. Also note that the commercial EMI filter is almost never sufficient on its own, because the green (grounding) wire bypasses the filter. An additional common-mode choke on the line side of the filter is usually required. Most devices that I've tested do not have this problem, and common-mode chokes are all that is needed.

We did not test the system with the external battery pack unplugged. The jumper cable to that pack is quite short (about 14 inches) and is made from a tight pair of #6 AWG wires with 75 A PowerPole connectors. Additional battery units can be daisy-chained, and that is the main reason we chose this UPS system in the first place.

## **RFI on the Second System**

The second system was installed with its 500-pound (!) external battery set (4 ea Full River DC400-6). Comprehensive RFI filtering was preemptively installed, based on experience with the first system:

- Input cord, 12 turns on 4-inch type 31 toroid, followed by a custom outlet box containing a Delta 20DKBG5 EMI filter, followed by a final choke similar to the first.
- Output (load) cord: 10 turns on 2.4-inch type 31 toroid plus a custom outlet assembly containing a Delta 03DKAW5 EMI filter.
- Ethernet cable: 14 turns on a 2.4-inch type 31 toroid.

At power-on, severe RFI was noted particularly on 80 and 160m, consisting of broadband 120 Hz buzz plus powerful noise carriers every 40 kHz, typical of heavy-duty switching supplies. Noise was S9+5 dB everywhere on 80 and 160, and S9+15 on the noise carriers. Broadband buzz was also apparent on higher bands. Clearly this is unacceptable!

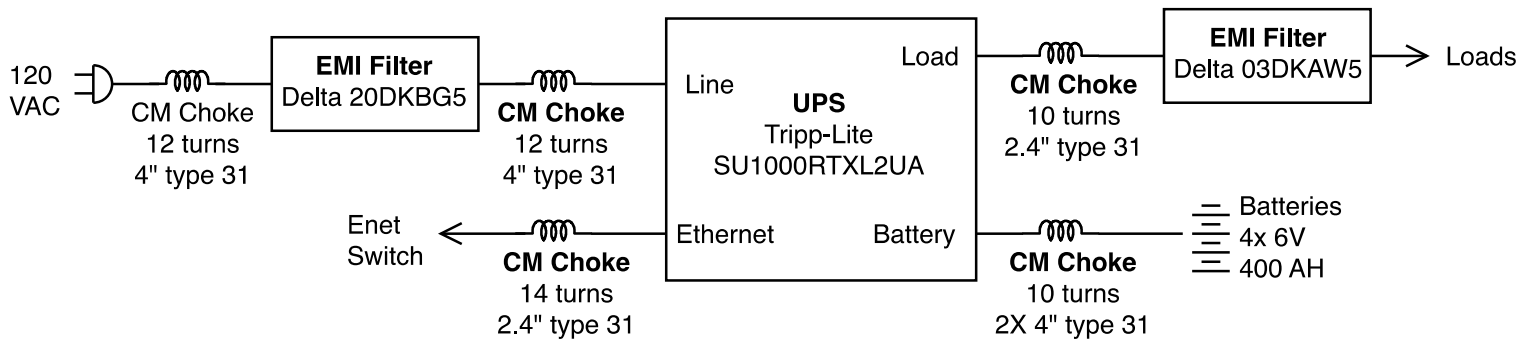
Testing proved that the external battery cabling was the source of the radiated noise. Unplugging the battery pack returned everything to the normal baseline noise level. A massive choke was fabricated (Fig. 2), consisting of two 4-inch type 31 toroids with 10 turns of #6 AWG paired cable and 75 A PowerPoles. More turns would be desirable but would not fit [Ref. 2]. This was plugged into the back of the UPS (with very short exposed wire length), then the bat-

teries were plugged into the choke. Also, excess cable to the batteries was twisted as tightly as possible. This eliminated the severe RFI.



**Figure 2. W6TCP holding the high-current battery choke.**

Basic measurements of common-mode current noise were performed with a portable spectrum analyzer and current probe. Installing the large choke reduced the current by at least 25 dB at 3.5 MHz.



**Figure 3. One-line diagram of RFI mitigation on the second UPS installation.**



Figure 4. The second UPS installation, with all filtering devices visible.

## Conclusion

This fairly expensive Tripp-Lite UPS system required extensive filtering on **all** cables to make it tolerable. This is not surprising from a Part 15(A) rated device. The manufacturer's battery packs are well-made, with steel enclosures and short cables. My opinion is that this works reasonably well from an RFI standpoint especially in contrast the the ad-hoc battery bank. If needed, it's possible to fabricate a large, expensive choke similar to what we did for the ad-hoc batteries.

Our station remains fairly noisy due to the presence of numerous commercial VHF, UHF, and microwave links plus likely residual RFI from the UPS systems and other nearby devices. *A word of warning:* Because our noise level is on the high side, the mitigation efforts described here may be insufficient in a quieter location. A lot of money and effort has been expended on filtering and optimal installation wherever possible and yet the noise floor increases with the addition of each new item. My new saying regarding noise floors is, "S5 is the new S1."

## References

1. Manufacturer's web link:

<https://www.tripplite.com/smartonline-120v-1kva-800w-double-conversion-ups-2u-rack-tower-extended-run-snmpwebcard-option-usb-db9-serial~SU1000RTXL2UA>

2. Jim Brown, K9YC, "A New Choke Cookbook for the 160–10M Bands," <http://k9yc.com/2018Cookbook.pdf>

Ferrite Toroids Used:

Toroid, 2.4" OD, type 31, Fair-Rite 2631803802

Toroid, 4.0" OD, type 31, Fair-Rite 2631814002



# NCCC's Rookie of the Year Bravely Confronts the NAQP SSB

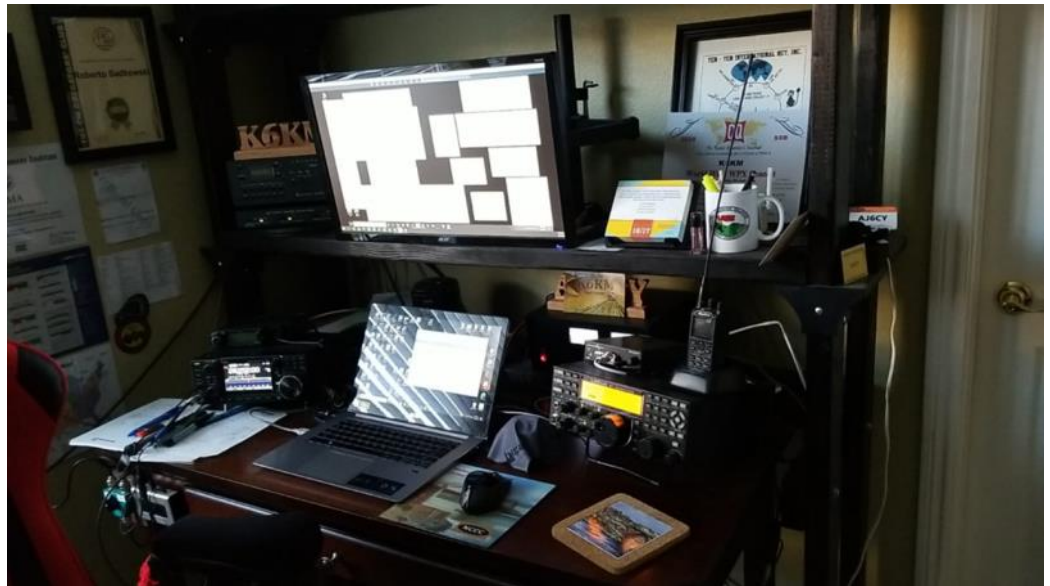
## Roberto, K6KM

SSB is, in my humble opinion, the worst contest mode. It is horribly wasteful of bandwidth. How many 3 kHz signals can you accommodate in 150 kHz? Because of the wide signal bandwidth, stations dig a hole between other stations cramming the band and QRM'ing each other. On CW or RTTY the bandwidth is much, much less. Digital modes, CW included, are more efficient and thus have better QRM resistance.

My station at home is a sea of human-generated interference with neighbors running who knows what. I have cleaned up my house of course, but have no control over others nor where to live at this point. So SSB at 100W max was going to be a nightmare for me. Gary, NA6O offered me access to his remote Station shared with Ian, W6TCP. The station is W6SRR, on top of the Sunol Ridge.

Gary lent me his K3S and his RemoteRig hardware. I installed a 2.4GHz extender to connect the RemoteRig to my local WIFI. I purchased a set of inexpensive Yamaha headphones that work great and voila!... after some training I was operational. The idea was to run like the Big Guns.

The NAQP is twelve hours but a single op can only operate ten hours, taking 30-minute minimum breaks. There is a lot of strategy on how to manage those breaks based on past contest results, current propagation conditions, station capabilities, personal commitments such as lunch with the family, and, ultimately, luck.



My plan was to use the first fifteen minutes on ten meters, hoping to get at least the California multiplier. That was the case. Next, I planned to move to 15m where hopefully I would be able to find a hole and run. That was also the case. And what run it was!!! In the first 15 minutes I had to remember what my name was, hit the right button and spell call signs phonetically at 100 words per minute! After 15 minutes it became rhythmic and natural. I was running at up to five or six QSOs per minute and wondering how I would survive doing this for ten hours. I was dreaming of making 1000 Q's in the contest. After the first hour, 45 minutes of which was running on 15 meters, I was at 120 QSOs and counting. Then the rate dropped quickly and I made the first mistake. Thinking that the action was on 20m and that I could have even a bigger run there, I abandoned 15 and moved to 20. Boy! There was not a 50 Hz hole in the band. Precious time was taken looking for a hole, pushing stations around, and calling next to others. I got a run but it was pitiful, with too much QRM. Stations were hard to copy, and it was challenging for them to figure out who they were talking to. This was a totally different experience. In desperation I moved back to 15m, but the crowd was fading. Then it was back to 20m — still not being able to run. At this point I was switching back and forth between the stress of running high rate and the stress of not being able to run. The latter was much worse. Frustrated, I took the first break and went lunch with the family. When I returned I still could not find a good running place but I managed to keep making QSOs.

Before 1500 I took my second 30-minute break to prepare for 40m, hoping the new band would provide another running opportunity. Well, it did but our friends on the east coast start working each other three hours before our propagation kicked in. That way the band was, guess what.... full again — crammed with stations and QRM. I wasn't going to be the loudest thing in town from here so the story repeated itself. Some cramming running and some search and pouncing looking for mults. This last strategy actually paid off at the end. Since I was not efficient running and got a boatload of QSOs at the beginning, getting multipliers was helping my score big time. I pursued this strategy until the end, going to 80m and 160m and looking for more states and provinces. Every multiplier increased my score more than getting a bunch of CA or TX stations.

I ended up operating nine hours and twenty minutes.

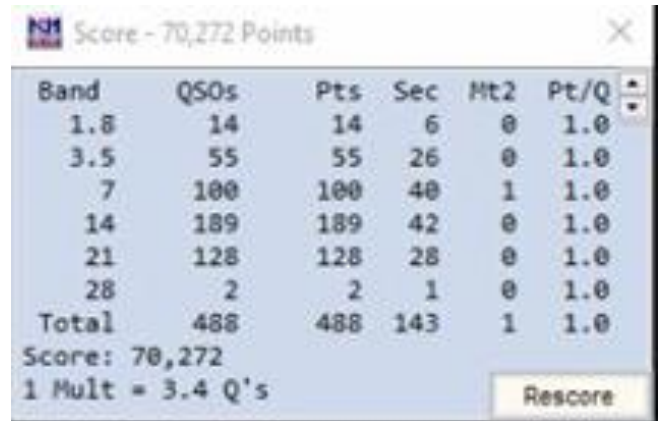
Here is the result of my effort. Others say it was great but know I could have done much better in hind sight, by changing the strategy. I should have stayed on 15m longer even with the rate dropping.

The moral of the story is that every time I move up on the food chain, the game changes completely. This keeps the interest alive and challenges the operator to learn and get better.

It was certainly more work than competing from home but a lot more fun to being able to hear stations and being heard better.

Here is the map of my contacts. I offer a big "THANK YOU" to Gary, NA6O and Ian, W6TCP for lending me the gear and station and encouraging me to participate.

**ROBERTO—K6KM**



Band	QSOs	Pts	Sec	Mt2	Pt/Q
1.8	14	14	6	0	1.0
3.5	55	55	26	0	1.0
7	100	100	40	1	1.0
14	189	189	42	0	1.0
21	128	128	28	0	1.0
28	2	2	1	0	1.0
Total	488	488	143	1	1.0

Score: 70,272  
1 Mult = 3.4 Q's

Rescore



*[We're pleased to publish this Guest Editorial on wildfire defense by Trinity County resident Don Mullen, K6CXF. For previous articles in the Wildfire series by K6XX, W6GJB, N6ZFO, K6MR and KU6F see the September and October 2020 and December 2017 JUG. We note that Don's article reflects only his views and not those of the Northern California Contest Club. Ed]*

## **Homes Lost to Wildfires — An Unnecessary Waste**

### **Don Mullen, K6CXF**

I read with interest in the NCCC publication about the various homes lost this year to wildfire. These well-written experiences conjured up great sympathy over their losses. From my observations, most of the houses were lost to wildfire for reasons that could have been avoided

First, some foundation for what follows. Following my retirement in 2000, my XYL and I moved from Los Angeles to Trinity Center, located in the Trinity Alps in Northern California. This followed a fairly intensive study to find the best place to live. Here we were able to check off all the boxes except for one – when living in the forest, which we love, there is always the danger of fires.

Having very little knowledge of forest fires, I talked to our new friends and neighbors who were on the volunteer fire department about our concerns -- XYL soon joined them as an EMT. Short version of their official protocol was; If a wall of windblown flames moves our way, about all one can do is evacuate and then deal with your insurance company later. Not liking that answer I started investigating other possibilities.

Having worked most of my life in research and development in various military and spacecraft projects promoted an attitude that nothing is impossible – short of violating the laws of physics. Therefore, there had to be a solution to the madness of letting it burn. You cannot assume that any emergency service will be there, especially when you first need them, as Bob K6XX experienced.

According to my research, if one is mentally and physically able, and has “his ducks lined up,” the house has a much better chance of surviving if the owner stays with it. Contrary to the “do-gooders” danger warnings, my searches on line could not find a single case of someone dying while staying to protect their house. However, it must have happened someplace. Many of those that stayed to protect their homes, also reported they had time to save one or more of their neighbor's houses, while all the others around them were lost.

There are those factions that continue saying that “your possessions are not worth losing your life over” – as if no one knows that. Problem is, that mantra morphs into possessions have no value, so anyone wanting to save them is an idiot. Yes, the insurance company will probably replace what can be purchased. But we all have many irreplaceable items – K6XX's vintage radios for example. And worse than that, it takes time to get reestablished to where you were. If that takes 5 years, then you have just lost 5 years of your life that cannot be replaced. So yes, my possessions are worth saving!

Based on what I've learned from countless on-line searches, doing tests of my own, personally touring the burned out areas of the Camp fire in Paradise, and the Carr fire in Redding (2018), talking to friends and relatives who were burned out, collecting and taking countless photos & videos, and writing many reports to friends and relatives, and our county newspaper - you can save your house! From what I've learned, these are my suggestions.

1. As a first step, follow the suggested information commonly published in the many free pamphlets about making your house fire resistant.
2. Beyond that – make plans to stay with your house - if it makes sense. By law, an owner cannot be forced to evacuate, even under mandatory conditions. If you stay, make sure you also have enough food and water to last a few weeks. Because, if you leave, they may not let you back in.

3. If you plan to evacuate, but are unable to take one or more of your vehicles, then first move them out to the center of a very large parking lot. There, they will be too far from burning structures to be damaged from radiated heat, and they're immune to blowing sparks.
4. It's been commonly reported that 90% of lost structures are ignited from blowing embers/sparks, not by flame contact or heat radiation. That is why structures are seen lighting up way ahead of the fire front. Therefore, remove anything flammable from your deck, rain gutters, or close to your house that could be ignited by showers of sparks. That includes firewood often seen openly stacked against a house or on the porch. Also, remove the wood chips from the flower beds next to the house, and tree debris accumulated under the deck, or the crawl space under the house. Seal any cracks, or holes in your structure where a spark could settle. According to published videos of full-scale test houses showered with sparks, they just bounce off sealed walls and fall harmlessly to the ground, even with wood siding.
5. Since most structure fires start very small from blowing sparks, it doesn't take much to put them out. I bought a water back-pack with a hand pump. Garden hose is, of course, the easiest if it's available.
6. Close all doors and windows, turn off ventilation systems and remove all interior window coverings -- they can be ignited through the glass from high heat, possibly radiated from a nearby tree becoming a huge torch. Dual pane windows are better than single pane in case the outer pane breaks from the heat. Wood or metal window frames are better than plastic, because plastic may melt allowing the glass to fall out.
7. Stop embers from entering your attic by installing ember proof vents, or temporarily covering them.
8. I have a 4-foot-wide roll of Radiant Barrier, a plastic thread reinforced aluminum foil commonly used in construction. Because of its high reflectance of radiated heat, it would work very well in covering widows, vents, or any heat sensitive objects. Foil reinforced with fiberglass is even better. There are companies that will wrap your whole house in aluminum foil, but It's pricy.

This is a closet window where I practiced covering it with Radiant Barrier foil.



Covering the window was fairly easy. Just don't leave any place for an ember to get inbetween the foil and window frame. I secured the foil with staples around the outside edge of the wooden frame.





Below is a simple test of radiant barrier strips stapled over 2 square feet of plywood. It was then placed very close to a good size camp fire for about 10 minutes. The temperature required to char plywood is reported to be well over 400 F, while a thermocouple mounted under one of the strips indicated a little over 100 F, with an outside air temperature of 65 F. Videos of full-scale tests can be found on line that are even more dramatic.



9. Probably, the ultimate fire protection for your home is rain bird type sprinklers on the roof. They are not for protecting your roof, which is probably already class A fire rated. The goal is to get the surrounding trees and other vegetation wet down before the embers arrive. Then the rain like condition creates an unfavorable atmosphere for the fire when it arrives. My 2-story home is located on a  $\frac{1}{4}$  acre lot in the middle of a small town. So, I have 3 brass agricultural rain birds mounted on 30-foot high pipes, equally spaced around the house. After about 10 minutes, water is dripping off everything including part of the neighbors property, and their overlapping patterns feel like it's raining. Contrary to my original intuition, water does not have to reach the top of the trees. When nearby trees are burning, they create a huge updraft pulling in surrounding air, and in this case very moist air, greatly reducing the temperature before reaching the immediate surrounding wet trees. If space permitted, I could write about hundreds of sprinklered structures found on line with virtually 100% success. But, the Achilles heel here is the source of water. If you are using city water, as I

am, eventually, the water will go away as other burning and collapsing buildings begin breaking pipes, draining away the water pressure. To mitigate that, I have stored a collapsible 1,600 gallon plastic water tank (looks like a kid's wading pool) to bring out and fill up. Then as the city pressure drops off, I can continue feeding the sprinklers from the tank with a gas-powered pump. The water supply can be stretched by modulating the run times of the pump, if needed.

The following photo shows one of my 3 rain bird type sprinklers, which is about 7 feet above the peak of the roof. The water pipe also supports the 5/8 wave, 2-meter, vertical, and the XM Radio antenna. The height of the sprinklers is limited by the pressure loss due to gravity. 30 feet up, costs about 13 PSI.



Below is one example of 80 cabins that were temporarily outfitted with rain bird roof sprinklers in Canada in 2003. Of those, 60 were actually confronted by the fire, and all 60 survived.

<http://www.onestopfire.com/sprinklers.htm>



Of all the steps listed above, only #9 could require more than minimal cost. So mostly, money is not a reason for being unprepared when a fire arrives. Also – if you do everything but sprinklers, your survival odds could still be more than 90%.

Another interesting detail is that when a fire is moving through a forest, it only occupies one place for about 1- to a few minutes. Following that, the hot front moves on leaving small spot fires behind. Therefore, if it gets too hot for humans, step inside your protected house for a few minutes, then go out and extinguish any outside threats remaining. Similar procedures can be found on line that official fire departments follow.

As near as I can determine, a burning house may take an hour(?) to be reduced to small spot fires. Therefore, a burning house will produce far more pollutants than an equal area of forest. Plus, there is the additional environmental impacts, from clearing the lot afterwards, landfills, future insurance rates, and the carbon footprint to rebuild, etc. Saving your house also means there is far less fire embers raining down on your neighbors properties. So, everyone benefits from you saving your house.

The day the Camp fire started in 2018, I happen to be south bound on Interstate 5, and about 50 miles SW of Paradise. I have never seen the sky so black. This is from all the manmade stuff burning, like tires, oil, composite roofs, plastic, etc., not forest vegetation. It was reported that this fire produced more pollution than all the vehicles in the state in a year.



If one is going to stay with their house, some form of smoke mask or hood, preferably one that removes carbon monoxide, could be a good investment given the possibility of one's prolonged exposure.

Most of what is written here can be found on the internet. So, I encourage everyone to do their own research to answer any doubts you may have.

Here are a couple of videos explaining the cause of structure fires and how to keep them from burning.

[https://www.youtube.com/watch?v=vL\\_syp1ZScM](https://www.youtube.com/watch?v=vL_syp1ZScM)

[https://www.youtube.com/watch?v=\\_eyl8713wqk](https://www.youtube.com/watch?v=_eyl8713wqk)

I would be happy to answer any questions. Contact me at –  
don9tds@gmail.com

# Point Generator Profile

## Tom Berson, ND2T

*Interviewed by Bob, W1RH*

When I first began doing the Point Generator Profile column for the Jug, my goal was to feature some of the lesser known members of the Northern California Contest Club; those KB'ers with the small stations who always contribute but are often overshadowed by the big guns and well known men and women in this great Club. Far be it from me, however, not to include one of our prominent members every few months, and such is the case this month.

ND2T, is not only a well-recognized callsign in NCCC but in the contesting and DX'ing worldwide. I'm sure Tom is often fondly greeted by fellow contesters in contests, such as NAQP, where you will often hear his call sign on all modes and nearly always with very respectable scores.

You'll see Tom's callsign in many contests besides NAQP. Most recently, Tom, along with K6UFO, WD6T and K6TD wowed us with a huge RTTY Roundup score, from a cutting-edge remote operation. ND2T was the callsign used in this multi-op, but you'll often hear ND2T as a single op in all modes, including FT8/FT4, and in both domestic and DX contests.

Speaking of DX, what I admire most about Tom has been his participation in several DXpeditions including Scarborough Reef, Midway Island, South Orkney Islands, Swains Island, Chesterfield Island, and Palmyra Atoll. Wow!

You've heard enough of my admirations of Tom's accomplishments in our hobby. Let's now hear from Tom:

**Name/Call Sign:** Tom Berson, ND2T

**Past calls:** WV2ASJ (1957), WA2ASJ, K1EQT, op at W6YX, K6IDX, K6MTU, BS7H, VP8ORK, TX0X, K4M (KH4), K5P (KH5), NH8S, and almost at KH1/KH7Z.

**Location:** Downtown Palo Alto, CA

**How much property do you have?** 100' x 150'

**Describe your antenna system:**

**Current:** An original 3 element SteppIR on a roof tower at 35', which is as high as local zoning allows. 15m dipole. 40m/80m dipole at 30'. HF2B with 160m coil, but not enough radials. For RX, a Pixel Pro mag loop, which is a great help in my noisy environment.

**Future:** Thinking of replacing the SteppIR with a light tri-bander to ease high band/high band SO2R. Also, a gain antenna for 40m.

**What's in your shack?** Home brew computers and a great internet connection. Elecraft K3/P3 x2, Acom 2000A, Elecraft KPA500. MicroHam MK2R+, TopTen RF switching fabric. RX amp and distribution system. There's a K4 in my future.

Separately, a remote operating point for the K6MTU contest station. Internet connection, computers, displays, FlexKnob, Internet Foot Switch and audio interface. Kevin, K6TD, invited me into this station's crew. K6MTU is loud on TX and quiet on RX, almost the opposite of my home shack. Also, it doesn't cause RFI in my house.



I still use WriteLog.

**What are your previous QTH's?** The Bronx, NY, where I had a 40m dipole on the roof of my apartment building at 60'. I first used it on the 40m and 15m novice bands. I was licensed at the height of Cycle 19. I naively thought propagation would always be like that. Later, I had a small station in Boston, MA. I lived in the UK for seven years, but was off the air.

**If you're working, what is your career? If not, what was your career?**

I'm a PhD Computer Scientist. I've worked at IBM Research, at Xerox PARC, at a defense contractor, and at startups, including a few of my own. These days I consult on cryptography and cyber conflict. My clients include public corporations and US Government agencies. I knew about cryptography from a young age. But ironically amateur radio, where cryptography is forbidden, gave me my first exposure to real ciphertext. Back when I was learning CW I copied the US Navy Fleet Broadcast for practice. It was then a mixture of plaintext and five letter groups. I tried to analyze the five letter groups, without success of course. But the crypto hook was set.

**How many DXCC entities have you worked?** 318 current. If you care about rare DX I hope you are a regular and generous contributor to NCDXF. NCDXF provides necessary support for well-organized DXpeditions to desirable DXCC entities. Cycle 25 is rising. There will be a lot of action on the bands. (Full disclosure: I am a Director of NCDXF).

**What's your favorite way to contest?**

I really like multi-op situations. You can learn skills from watching and talking with team-mates, both while on the air and off. (I thank many for this, especially W6OAT and N7MH). You can encourage one another with chatter. You can share problem solving. You can operate shorter BIC shifts while keeping the station QRV for the whole contest period.

Going on a DXpedition is multi-multi operating on steroids. Most multi-multi stations are constructed over years and operated for several days at a time. A DXpedition station is built during two days, operated for two weeks, and then completely dismantled. DXpeditions call for all sorts of problem solving: technical, logistic, financial, travel, operating, social, health, political, and regulatory, to name a few. They are true adventure vacations for nerds. Plus which, they put you at the sharp end of world-class pileups in any mode you choose on any band that is open.

**Any tips for testers?**

Plan your contest calendar. Know when you are training, and when you are competing.

When you are training, train your weaknesses. Weaknesses are the things you do not like to do but which you know would be good for your score. Two personal examples: moving mults, making phone Qs on a crowded band. (See my NCCC Contest Academy talk, *Train Your Weaknesses; Compete Your Strengths*).

When you are competing, compete using your strengths. It is about points, which are fungible. Extract as many points as possible from each Q by logging it as accurately as you can. (See my NCCC Contest Academy talk, *Error Control for Contesters*).

Also, when competing, use the online scoreboard at [contestonlinescore.com](http://contestonlinescore.com). It helps you to understand the race you are in, and may spur you to stay in the chair and work harder.

The last Q counts as much as the first Q. Finish strong.

**What would you like to see changed in NCCC?**

I think NCCC is running really well just now. Turnout at our meetings is at a record high because they are virtual. It's great to see members from all geos. The programs are high quality. The commute there and home is as easy as it could be. I hope that, post-pandemic, we will somehow keep virtual or hybrid meetings in the mix of NCCC events.

It might be helpful if the year's calendar of NCCC events and focus contests was published as a shared Google calendar.

**Any other hobbies besides ham radio?** Yes. In no particular order: my kettlebell workout, writing a cybersecurity strategy book, lockpicking, solving logical puzzles, playing 5-string banjo.



The big signal of ND2T, reaching for the clouds and beyond.



A big smile always gets a few more contest points for Tom



A gaggle of equipment, all well organized, at the ND2T home station on the SF Peninsula.

## Tube Of The Month

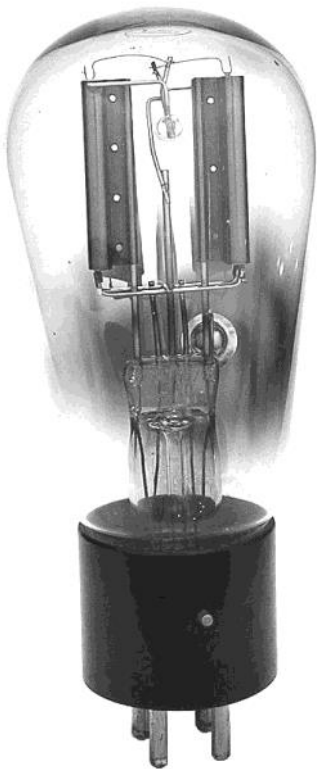
# UX-280-80

Norm, N6JV

If you want to build a small power supply today, you can take a couple silicon diodes and hook the cathodes together and you have a full wave rectifier. That wasn't the case in the early days of radio. When receiving tubes were developed that operated on AC filaments, a rectifier was needed for the plate supply. RCA announced the full wave UX-280 rectifier in 1927. The 80 would supply 275 VDC at 55 ma. All the early AC receivers I can remember used the 80 in their power supply. Consumers that had AC power, but their receivers were DC, could buy a "B" eliminator. Batteries that were high voltage for plate supplies were called "B" batteries. Automotive batteries could still light the filaments.

The 80 was used in many commercial and ham receivers like my RME-69 and most of home entertainment radios made in the 1930s. In 1932 the 80 was modified with mercury added for higher current and that became the 83. In 1935, the 80 got an octal base and became the 5Y3G. In the buildup for WWII, there were many pieces of electronic gear that required higher voltage and current than the 80 could handle. In 1936, the octal based 5U4 and its 4-pin version the 5Z3, could handle 1500 volts at 225 ma. In 1942, the 5R4 was designed to handle 2100 volts at 250 ma at high altitude. The 80 rectifier was still in common use into the 1970's.

The photo is of the early UX-280 version. The "B" eliminator shown here contains a transformer, the 80 rectifier and a small electrolytic capacitor. The knobs operate a pair of wire wound potentiometers that act as voltage dividers for the lower voltages.



*Visit the museum at  
<http://n6jv.com>*

*Norm, N6JV*



## NCCC Membership Information

If you wish to join NCCC, please fill out an [application for membership](#), which will be read and voted upon at our monthly meeting.

To join, you must reside within [club territory](#) which is defined as the maximum of:

- Northern California, anything north of the Tehachapi's up to the Oregon border, and
- A part of north-western Nevada (anything within our ARRL 175-mile radius circle centered at 10 miles North of Auburn on Highway 49).

Life Memberships.— \$250.00 Contact [secretary.nccc@gmail.com](mailto:secretary.nccc@gmail.com). The 80/20 Rule: Members who have reached 80 years of age have and been a NCCC Member for 20 years are eligible for Honorary life membership. Contact [secretary.nccc@gmail.com](mailto:secretary.nccc@gmail.com)

## JUG Articles Wanted!

Your help allows us to produce a quality newsletter. Please consider submitting an article!

The editor welcomes any and all relevant articles for inclusion in the JUG.

The preferred format is MS Word (.doc or .docx), Arial 11 point. Indicate the insertion point and title of diagrams and pictures in the text and attach photos separately. Pictures should be full resolution. Avoid PDF files and email text. Please contact us if that's your only format.

Send material to Bill, N6ZFO at [n6zfo@arrl.net](mailto:n6zfo@arrl.net) 415 209-3084

## Northern California Contest Club Reflector—Guidelines

The NCCC reflector is devoted to the discussion of contesting.

Topics include, for example, contests, station building, dx-peditions, technical questions, contesting questions, amateur radio equipment wants/sales, score posting, amateur radio meetings/conventions, and membership achievements.

Postings may not include personal attacks, politics, or off-subject posts. Such postings will be considered a violation of the Guidelines.



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