

On these pages in 2002 I wrote about the art and joys of mobile contesting ("Road Warriors," March/April 2002 *NCJ*). Since then my fellow road warrior Jim Snell, W8DRZ, and I have been out regularly in the Ohio, Michigan and Pennsylvania State QSO parties, and have also done one trip each in West Virginia and Indiana. In addition, when Jim was unable to make the trip for the 2005 PAQP, I teamed up with Hal Offutt, W1NN, who has been doing mobile contesting for about a sunspot cycle longer than anybody else.

In short, it's still a great way to contest, trading the ham shack walls for a window on the world, while being a new guy on the band with a fresh pileup every half hour or so. More people have discovered this in the past four years, and also that it can be a lot of fun chasing the mobiles and others while operating from outside the featured state.

Here's an update on what I've observed and learned in the last four years.

## Station Improvements

My biggest single improvement since 2002 was solving the computer power supply noise problem. Back then I was using a dc to ac inverter to power the laptop 120 V power supply. The combination made a lot of noise, as inverters (or at least most of them) simply make a 60 Hz square wave that gives the same RMS power as a 120 V sine wave. I had been forced into such techniques as

turning the inverter on or off depending where the RF spurs happened to be.

I now use a "Car Adapter", a dc to dc converter, to provide the 18 volts for the laptop. These are readily available on eBay for \$30 or so. The computer noise is now entirely gone. One caveat: having had a supply of 12 V, 26 A/h batteries that had been pulled from UPS service, I used one of these for the computer, mostly to avoid a tangle of wiring into the car's electrical system. When I suggested the car adapter idea to K8CC, Dave tried it but still had serious noise with it powered from his car's electrical system. He then tried it with a separate battery and his noise was gone. Apparently keeping the car adapter isolated from the vehicle ground is necessary to keep the noise down.

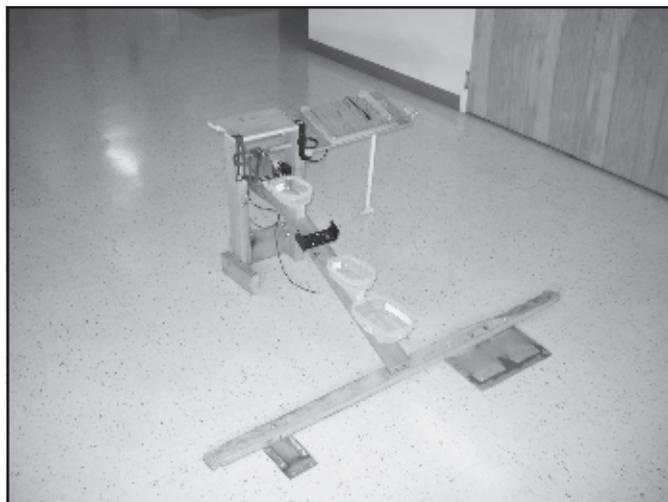
A 26 A/h battery will run the laptop for a 12 hour contest, but without much to spare. I was reminded of that the hard way in the 2005 Indiana QSO Party. I forgot that I had been running the laptop for 3 hours before the start of the contest while operating the MARAC county hunters contest on the drive out to Indiana. With an hour left in the IQP the laptop died in mid pileup! I soon diagnosed the problem, hooked up a spare (external) battery, and got back on, though minus the pileup.

I still believe that the HamStick line of antennas gives the best bang for the buck, but there are times during a contest when having three bands available

at the same time (and maybe more when the sunspots return) is a significant advantage. Therefore I've acquired a Hustler antenna with a triple resonator mount. This is a larger, heavier system that requires extra mechanical support when used with a magnetic mount. I use Dacron rope guys tied to the front of the roof rack on each side of the car. With careful driving this will likely be good enough, but after a VHF rover effort with even heavier antennas (another story for another time), I've recently added some sideways bracing with PVC pipe. With this PVC mount the hinged fold over feature is not useable, so I take a six foot step ladder to climb onto the van roof to change resonators or do other antenna adjustments.

The Hustler antennas do not have as wide a bandwidth as the HamSticks. This is an issue only on 40 meters, where the IC-746 tuner will cover both SSB and CW on the HamStick, but not on the Hustler. Therefore I now use the 40 meter HamStick full time on the front of the van, and the Hustlers for 80-20-15 on the rear. For 80 meters I have used a 75 meter resonator with added top hat loading wires for CW, similar to what I described for the HamStick in my original article. However, after using W1NN's 80 meter (CW) resonator in the 2005 PA test, I've acquired my own for use in future trips.

I have made some changes in the operating position. Originally I had sup-



The operating console removed from the car. The computer "car adapter" power supply is attached to the right hand leg. A headphone splitter is tied to the underside of the rear brace.



Hal, W1NN, has been at the mobile contesting game for about a sunspot cycle longer than anyone else. He wrote about his first trip (the 1988 Pennsylvania QSO Party) in the January/February 1990 *NCJ*. Here he is out with K8MR as W3USA/M in the 2005 Pennsylvania QSO Party.

ported most of the computer shelf on the wrap around dashboard in the Ford Windstar. I wanted to get the computer a bit lower for several reasons: to get it a bit more out of the way of an exploding airbag, as well as to let my arms drop a bit more naturally by my side when operating. I have bolted a piece of 2 x 2 wood to the main radio shelf in the center to support the left side, and fashioned a hook from some 2-inch aluminum tubing to fit into the door handle on the right side. This arrangement is likely applicable to more vehicles than my original dashboard support. It does require lifting the table to open the door, so I take along a small piece of PVC pipe to prop up the table when opening the door. The left side is pinned with a single 1/4-inch bolt, without a nut, to keep the shelf in place. The whole shelf can also be easily lifted out of place for easy exit and entry.

The wooden support brace running to the back seat represented wasted space that is now put to good use. I've mounted several plastic storage containers on wooden wedges to make them level. They provide a great place for sunglasses, cell phones, and all the other junk that one seems to have while driving. I also mount a VHF FM radio on the brace, detaching the front panel and mounting it so the driver can see it.

Originally this brace was hinged to a cross piece that sat on the floor against the middle seats. I now remove the seats to get more storage space, and bolt the cross piece to metal plates that are in turn held to the van's seat attachment points by hook bolts.

I also now secure the bottom of the radio shelf with wire looped around the bottom of the front seats on each side, to keep things more or less in place in case of a rollover.

In 2002 I was using a Bencher paddle. Again the thought of this flying around in an accident was scary. So I am now using the tiny K9LU Bulldog paddle, with the magnetic base. I attach a large flat washer to the right of the computer to hold the paddle. The paddle stays in place very nicely through all the bumps of the road. I can also pick it up and stick it to the side of the IC-746 to hold it out of the way.

Nighttime lighting had been from the ceiling light. This is still best when I need to see the small radio controls, but otherwise to minimize distraction to the driver I use either a battery powered reading light clipped to the strap that holds down the radio, or a LED flashlight held on the visor with a spring clamp.

W8DRZ now brings his GPS unit on our trips. While we still largely rely on paper maps for navigation, the GPS is



**K8BL with a plethora of plaques from the 2004 Ohio QSO Party, his own for top Ohio single op and one for the Lake County Amateur Radio Association for top Ohio club score.**



**K8MR presenting N4PN with the 2004 Ohio QSO Party plaque for top out-of-state station.**

very helpful to know just where we are, and to know which direction we are headed in the dark.

### Backup

I keep a dedicated travel kit using an inexpensive plastic toolbox. This includes various accessories dedicated to the mobile station, including a keyer interface, a homebrew ICOM CI-V interface, the computer car kit power supply, etc. It also carries the emergency supplies like spare fuses, paper and pens, a hand microphone, snap on ferrites, etc. I carry a separate tool kit for possible field emergencies.

Since we have them available and have plenty of room in the back of the minivan, we take a spare rig and spare HamSticks. Fortunately we've never had to use the spares. Of course we take car battery jumper cables. I also take the battery from my lawn tractor, figuring it

would be enough to start a warm engine in warm weather. And I give my driver an extra car key.

My computer is a rather old, though comfortable and familiar, IBM Thinkpad. I carry a 3.5-inch DOS boot disk with the necessary NA files so that I could, in case of a hard drive failure, run NA from the floppy.

In the Ohio and Michigan parties, we collect and share cell phone numbers among the mobiles for use in an emergency. Should problems arise it might be possible to get someone to cover a county that might otherwise go uncovered, or maybe even hitch a ride from the boondocks. We've also been known to call after the contest ends to share late night observations.

### Software

I'm still using NA for my mobile operations. It took me a couple of years to figure it out, but I was spending an hour or so before each contest setting up QDF files for counties I visit year after year. I now keep a separate DOS directory where I set up the blank files one time for each county, and then copy the unused files to the directory I use during the contest. The blank ones are then still there for next time.

The perfect mobile software remains to be written. Though in general I like NA, it requires separate files for each county, so I don't have information available from previous QSOs. It also is a major inconvenience dealing with twenty or more log files after a contest.

Here's what I am looking for in the perfect software for mobile contesting:

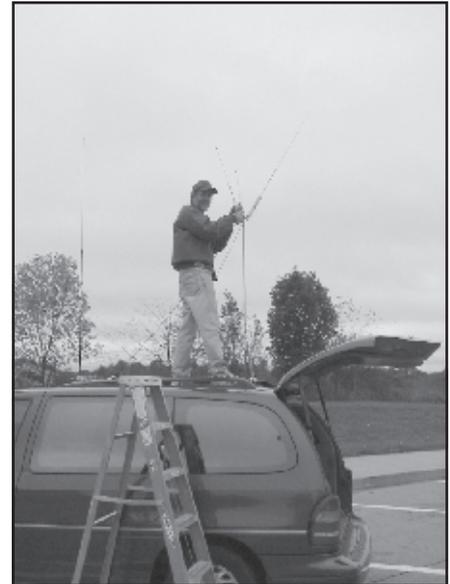
- Use of a master file, so information shows up from previous QSOs.
- Keeps score both overall and for each county.
- Keeps separate serial number sequences for each county, including the ability to automatically pick up at the proper number if re-entering a county.
- Changes counties quickly, including all the related information such as message memories.
- Do it all without use of a mouse. (Ever try using one on a rough road?)

There is another software issue that directly affects the home stations and indirectly the mobiles: the ability to support multiple contests simultaneously. There are more state QSO parties than there are free weekends, so there are often two or more going on at the same time. So long as different contests use the same exchange, it makes no operating difference which state you are working. You just send the same 599 CA or whatever. But as a practical matter, the present software forces one to pick one contest and avoid the others.

Last May W8DRZ and I did the



Road Warriors W8DRZ and K8MR (and K8MR's minivan) are still going like crazy after all these years. Here they are about to head out on the road for the 2005 Michigan QSO Party.



K8MR making some last minute adjustments to the Hustler triple resonator system before the 2005 Pennsylvania QSO Party.

Indiana QSO party, which was the same weekend as the New England, Nevada, Oregon and the MARAC CW (county hunters) contests. (In 2006, this weekend will have the 7-land QSO Party as well). After the contest I noted several usually active out-of-state guys who we did not work, but who reported serious activity in the New England QSO Party. I believe that with suitable software that covered both (all) the contests, they would have worked us as well, and had more fun by racking up extra QSOs in those other contests.

Until the software guys get on the job, contest sponsors could help work around this problem if they would generate inclusive multiplier files covering all the contests on their weekend. In processing their logs they would then have to be able to sort out QSOs from outside their state. Ambitious software writers might figure out a way that users could merge multiple contests into one operating log, and an easy way for the users sort it all out before sending the logs to the sponsors.

Solving this simultaneous contest problem could open an interesting new competition: an overall contest involving several independent contests. In addition to the individual contest results, one would compute a score based on the total QSOs and multipliers in the several target states. QSOs made by in-state stations with non-target states would not count. The contests would not have to have concurrent hours, though only QSOs during the particular state's contest hours would count in the overall

contest. I'd think such an overall contest would be a lot of fun for out-of-state guys, which in turn would make a lot more activity for the in-state people.

#### Operating from the Road

In my 2002 article I mentioned a goal of breaking 1000 QSOs in a 12 hour contest. We achieved that goal, though only once, in the 2004 Michigan QSO Party, where we made 1052 QSOs. Several of the recent contests have suffered from the bottom of the sunspot cycle blues, including little or no in-state propagation on 40 meters. It hurts not to be able to work your fellow in-state competitors who can be a major source of QSOs, not to mention multipliers. Even the 2004 MQP had limited in-state propagation, resulting in fewer multipliers and a lower score than in previous years in spite of our record number of QSOs.

This propagation situation has led me to a re-evaluation of one band: 75 meters. I had long figured that 75 SSB was pretty useless for a mobile, but at least for the low sunspot years I've changed my opinion. But there is one catch: it is useable, but it is a *daytime* band. In the hours before sunset (and at the start on Sunday, at 1300z, in the Pennsylvania QSO Party), there is often decent activity which can be a good source of in-state county multipliers, especially in those contests that have multipliers by mode.

After sunset, however, activity picks up, both from the contest and from the usual evening nets and ragchewers.

Finding a spot between these or being heard over it is still difficult, so I don't make much effort on 75 meters after dark.

To fully appreciate the potential as a mobile, one just needs to check out what happens when one of the WRTC-certified best contest operators in the world takes to the highways. In the 2005 Florida QSO Party, Dan, K1TO, operating with and as N4TO, nearly broke the 3000 QSO mark, with 2983 QSOs in 20 hours of all CW operation. That rate for 48 hours would be over 7100 QSOs—serious offshore DX contest numbers!

Speaking of "records", my favorite is from the 2005 Michigan QSO Party. Operating on 80-meter CW, I pushed the NA Last-10 QSO rate meter to 223 per hour. With my 7 foot long HamStick, that worked out to a peak rate of 8842 QSOs per hour per wavelength of antenna. I don't think that's ever been done from KC1XX!

#### Roving

Though not purely mobile, several states such as Ohio, Pennsylvania and Indiana have a "Rover" category for portable operations from multiple counties. We have done several of these, setting up a dipole at several locations in addition to our mobile activity. A simple full size antenna, such as a 40 meter dipole up as little as 20 feet, makes a much louder signal than a mobile whip. This is especially helpful on SSB, permitting great rates that seldom happen as a mobile. If you are a phone-only operator, I'd recommend this category in those

contests that permit it. I think it is also a good choice if you operate alone and don't want to operate while driving. The rate you gain as a loud signal easily makes up for the QSOs lost while setting up an antenna.

Even if a rover category does not exist, you can always submit separate single operator logs from each county, enjoying the fun of being out on the road and frequently being a new station in a possibly rare county.

### Resources

The Web sites for the various QSO Parties are a good source of information on contest plans, past results, records, etc. Many provide excellent maps of planned mobile routes. Many parties also have e-mail reflectors that also provide up-to-date information on planned activity, both by mobiles and others. Googling on "Ohio QSO Party" (or whatever state) is always enough to easily find the proper Web site.

I make a point to inform the county hunter community of my mobile plans, using K3IMC's County Hunter Web site, [www.cquest.com/ch/](http://www.cquest.com/ch/), under the "Planned Trips" section. I always point out that in the QSO Party there will be many other mobiles active from many other counties as well.

A great operating aid is a state map showing the counties. An excellent source for all the states is the US Census bureau at [www.census.gov/geo/www/maps/stco\\_02.htm](http://www.census.gov/geo/www/maps/stco_02.htm). Such maps give you county names, help you anticipate mobile routes, and make a good multiplier check sheet. In the car I'm usually too busy to keep up a multiplier list, but when operating from home this is a very useful item.

### Operating from Home

Of course it is the guys from home who let us mobiles have so much fun. And a good mobile turnout is what makes a contest a lot of fun for the guys at home.

Operating from home in the better state QSO parties offers classic retro contesting, as in the days before keeping and defending a CQ frequency became the name of the contesting game. A mix of search and pounce, CQing, and moving guys is what makes a good score. In most states there are a lot of counties, and therefore a lot of available multipliers, especially in those contests that have multipliers for each mode. That makes for interesting strategic decisions, such as whether one should be running on a good frequency or catching the 20 minute "opening" to Oscoda County.

Spotting, while allowed for single operators in many QSO parties, is not as prevalent as with the "spot anything that moves" ethos in many DX contests. In QSO parties "anything that moves" also has a different meaning, as the mobiles often have come and gone before anyone spots them. So it is skill and attention that finds the good stuff, not an Internet connection. (And the mobiles, of course, don't have Internet spotting. No worries about us self-spotting. Heck, in some rural areas we can't even find cell phone service!)

For those of you who are hopelessly addicted Internet users, you might check the alternate spotting universe of the county hunters. They have their own county hunting site at [ch.w6rk.com/](http://ch.w6rk.com/). My post contest reviews show that there is a good deal of activity during the QSO Parties. It also features real time maps of mobile routes generated from recent

spots of the particular mobile.

Although out-of-state people typically don't do much CQing, it can be a reasonable and effective thing to do. This is especially true on bands where intrastate propagation is poor or nonexistent, and especially on SSB. For in-state home stations, while running is the bread and butter, it is also critical to work in-state counties, many of which are covered by mobiles who will only be there for a short time. So good SO2R techniques are very valuable.

In contests where there are multipliers for each mode, lots of multipliers can be made if you can get a mobile to QSY to the other mode. Typically this means moving from CW to SSB. Though I don't want folks busting up a good pileup, for me it is very easy to QSY and it is a lot better than otherwise unanswered CQs. I've also been known to switch bands for extra QSOs when things are slow. On 80 meters, I can't go between modes without switching antennas, but I have moved from 80 CW to 40 SSB when there was propagation on both bands.

State QSO Parties remain body-friendly events. Most are now single day contests, and except for the California QSO Party, those that are two days have an eight to ten hour break overnight.

The 2006 QSO Party season is now underway, having started in early February in Minnesota, of all places. The season runs through the Illinois QSO party, traditionally the weekend before the DX contest season begins with the CQ WW SSB contest in October. W8DRZ and I will be out for certain in the Ohio party on August 26 and the Pennsylvania party on October 14-15. I hope you'll stop by in these or other contests to see the fun the mobiles are having—or better yet, get your own mobile station going in your own state party!

**NCJ**