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Since I enjoy working the sats while portable, I volunteered to do some demos at PACIFCON/ARRL National Convention in Santa Clara, October 2012. It was fun being able to use the call W1AW/6. Before the demos I contacted one of our experts on portable operations – Patrick, WD9EWK. After getting some pointers and files to use as handouts, we started talking about John, K8YSE, only needing 9 more grids to complete contacts in all 488 Maidenhead Grid Squares within the 48 contiguous United States. Thinking that a grid expedition might be fun, I contacted John, who seemed very interested in the prospect. Patrick had volunteered to go to Washington for one of the grids, so eight remained. One of these, CN72, is on the southern Oregon coast, and seemed like it required a separate trip. The remaining seven grids clustered around NW Nevada, SE Oregon & northern California, and consisted of DN02, DN10, DN11, DN12, CN81, CN91 & CN92. This seemed like a good excuse to go on a grid expedition and get these 7 grids for John, and also for other hams as these are rare grids.

Not being familiar with the area, I had to buy three sets of map books that show latitude & longitude and that I could mark up with the grid boundaries. Then I had to look at a route and what campgrounds or hotels there might be along the way. This turned out to be a much bigger task than I expected as some of the places we would be traveling to were remote.

## Equipment

At PACIFCON I had run the demos of linear satellites using a twin Yaesu FT-817 setup similar to the setup from Dave, KB5WIA. Each radio was connected to an Arrow antenna via coax cables with BNC connectors. I also used the Arrow duplexer mounted inside the boom, on the 2-meter coax as a low-pass filter. This setup worked well. I then decided to swap out one FT-817 with an FT-897, but it seemed that no matter what I tried, I was never satisfied with the results, so I went back to the twin FT-817s at the last minute. One thing I did change was that I ran both radios and preamps from an external 28 Ah SLA/AGM battery instead of using the internal batteries. This way I could run several days without worrying about low voltage. Since it looked like the portable work could be done based out of my pickup, I tried mounting the radios &



KA6SIP Equipment setup for linear sats



Day 3: Linear Operation from DN10/DN11



Day 4: SO-50 from DN12



**Day 6: SO-50 from DN02 traveling to Goose Lake, OR**



**Day 7: AO-07b from CN92**



**Day 8: Sad sight of top section of Arrow antenna after driving over it**

preamps to a board that could travel pretty much as-is between locations and cut down on the set up time.

For SO-50 I decided it would be nice to run my original setup: Arrow antenna, ICOM IC-W32 dual-band radio and Hamtronics 440 preamp. This served me well when HO-68, AO-51 & AO-27 were still available. This setup is mounted on a tripod along with a clipboard to hold my paper log and a small digital recorder. It's nice that I can carry the entire setup around if needed, and proved to be very helpful at one point on the trip.

### **Day 1, Thursday May 30th**

After getting frazzled gathering up all the radio and camping gear, and then loading it all into the truck & trailer, we were finally off late in the day to drive I-80 over the Sierras to Boomtown KOA just west of Reno, Nevada.

### **Day 2, Friday May 31st**

After breakfast and a quick trip to Cabela's, we're off to Winnemucca, Nevada, via I-80. After setting up our trailer we tried an AO-7 pass from our campsite on the south side of I-80 in DN10, with two contacts. At least we knew the gear was running OK! All was well so far, so for the next pass because the RV park was getting full, we found a spot near our campground but on the north side of I-80. Just before 9 PM five contacts were made on FO-29, including K8YSE for grid #1 of 7. We were off to a good start.

### **Day 3, Saturday June 1st**

This ended up being a very busy and tiring day. We scheduled 7 passes and found out that was too many for us to handle in one day. I started out across I-80 again in DN10 around 8 AM with a VO-52 pass. Only two contacts there. I then drove down a dirt road to look for the DN10/DN11 grid line. I was very pleasantly surprised to find it at the intersection of two dirt roads in a turn-around dirt area. After marking the line in the dirt I headed back to camp. Debbie and I would head out there 6 more times that day and make contact with K8YSE for grid #2. The last pass was on VO-52, and I decided then that it was taking too long to find myself on the downlink for only a few contacts and so decided not to try anymore VO-52 passes. With 42 contacts for the day things were looking positive.

### **Day 4, Sunday June 2nd**

This was the day to drive 75 miles north to get into grid DN12. A quick operation



from DN10/DN11 on FO-29 was made after breakfast. After getting gas and coffee, we hit the road and then realized we were running late. This wasn't a good start to the day. Pushing the speed limit a little, we were able to get to the small town of McDermitt, on the border of Nevada and Oregon in plenty of time. Traveling north about one mile past the border we found a dirt road to make our first pass from DN12. This was a SO-50 pass to the east and 13 contacts were made, including grid #3 for K8YSE. The next pass, also SO-50 but now to the west, started out fine but then the battery in the IC-W32A started going dead. I thought the battery was fully charged before the trip but now it was looking like I should have charged it the night before! After a frantic search in the travel bag, the backup battery was found and put into service. We were back on the air for a few more contacts making a total of 6 contacts. I was so relieved that this didn't happen during the first pass to the east. We headed into town for a quick late lunch and then back out to the dirt road. This time we drove about a mile down the road to get away from power lines. We made 9 contacts on AO-7.

We then headed back to our camp in Winnemucca only to find that the wind had really come up. Because we left the windows open in our trailer we found a nice coating of fine sand on most everything. Ten more contacts were made on an evening pass of FO-29 from the DN10/DN11 grid boundary.

**Day 5, Monday June 3rd**

This was a travel day to Denio Junction, Nevada, and to the town of Denio, Oregon, just to the north. This was a very desolate drive but interesting country. After checking into the 7-room hotel (our only non-camping night), we headed north to get into DN02. Finding a dirt road leading off to the east, we set up for a pass of SO-50, with 12 contacts. We made contact with K8YSE for grid #4. A total of four passes, including AO-7 and FO-29, were made that day This included operating from DN01 in the middle of a dirt airfield at Denio Junction. Fortunately for us, the airfield doesn't see much action these days.

**Day 6, Tuesday June 4th**

A morning pass of FO-29 was made from DN10 in the middle of the airfield again. Then after breakfast at the cafe, we headed to Goose Lake State Park in Oregon, just south of Lakeview Oregon. A stop was made along the way in DN02 to operate SO-50. The pass



**Day 9: SO-50 from CN81/CN91 grid boundary**



**Day 10: Last Pass - FO-29 from CN91**



**Follow up mini-expedition: AO-7 Mode B from CN72 - grid #488 for John, K8YSE**

was quiet at first and I got the chance to talk with Kerry, WC7V, for a short while.

It turns out that Goose Lake SP sits right on the California/Oregon border, and we could drive right to the edge of the lake to operate from CN91. We operated on one pass of FO-29 that evening to check things out and were lucky enough to make a contact with K8YSE for grid #5.

### Day 7, Wednesday June 5th

Today was an easier day with only 2 passes from CN91 from right at the park, and one from CN92. To get to CN92, we had to drive several miles north, but then the mountains to the east looked like they might interfere with passes. We drove down a county dirt road near the top of the lake to try to get farther away from the mountains. Finding a spot close to when AO-7 would be coming, we set up for the AO-7 pass. Contact with K8YSE was made for grid #6. We were starting to feel confident that maybe we would really be able to make all 7 grids for John on this trip.

### Day 8, Thursday June 6th

Debbie decided to stay at the campsite while I operated at the lake shore. Things seemed to be going well. I operated an FO-29 pass around 10:30 AM. After the pass, I had to climb into the back of the pickup, which had a camper shell, to get a bag of clothes at the front. I was leaning on some boxes when one gave way and I fell onto the top section of the split-boom Arrow antenna for the linear radio setup. Fortunately, I was able to bend the elements back into shape. One of the elements really hit my stomach area and left a sore spot for several days. But at least all the equipment seemed to be 100%. I had moved the top section of the Arrow antenna for the dual FT-817 radios to the side of the truck. Not fully checking the area, I backed up the truck to head back to the campsite. Hearing something outside the truck, I stopped only to find that I had driven over the top section! It was a very sad sight! Several elements had broken off, including the 2 Meter gamma matching element. It was clear that this top section was now non-operational!

I tried using the remaining top section with the bottom section for the FT-817s but a burr inside the boom was interfering. Not having a file in the tool kit, I was able to use the inside gripping part of a long-nose pliers as a file to get rid of the burr. Now I was down to one and a half working antennas. This equipment failure and my sore spot had me

wondering if we were going to be able to get the remaining grid for John. One more pass on SO-50 was made before leaving Goose Lake.

After breaking camp we headed to a KOA in Klamath Falls, Oregon. The scenery was interesting going through big farming valleys and forests. I thought Klamath Falls was in the mountains but we found that it is in another huge farming valley, and was hot. We found a nearby sports complex to operate from CN92, and on an evening pass made 9 contacts on SO-50.

### Day 9, Friday June 7th

Having operated from CN91 and CN92, I decided we needed to make a trip south back into California to try for CN81 – the last grid needed for K8YSE on this trip. If we had problems we would be able to come back on Day 10. We left late morning to drive to the small town of Macdoel, where the only business is a gas station. Farm fields were all around. We arrived late and at first headed west but found that power lines might be a problem. We then drove across the highway heading east. Thinking we were in good shape, we found a farm road heading south that was clear of power lines. Fortunately, Debbie noticed on the GPS that we had gone too far and were back in CN91, not the CN81 we were there for. After backing up a quarter of a mile, we headed back west. As soon as we got back into CN81 we stopped and set up for the SO-50 pass. I then realized that the satellite was 15 minutes later than what I remembered. So, I walked back down the road to find the CN81/CN91 grid line. It turned out we were only about 200 feet away, so I carried the IC-W32A radio gear

on the tripod down the road to the grid line. Contact was made with K8YSE for grid #7! We finally had grid #7 of 7 in the bag! After the pass, we marked the location and headed to the gas station for a stop and lunch in the shade nearby.

We then headed back to the grid line for an AO-7 pass. There was a farm worker there monitoring a drip irrigation system and I think he really wondered what we were doing. After the pass we headed back to Klamath Falls for a celebratory dinner at Sizzler, and one more CN92 pass.

### Day 10, Saturday June 8th

This was going to be a backup day for CN81 but since we were successful the day before we decided to stay in Klamath Falls. Three passes were made from the sports complex. Hector, CO6CBF, e-mailed from Cuba about operating from CN91 and so we decided to go south just across the California border into CN91 for the evening FO-29 pass. We made contact – California to Cuba with QRP gear! With the pass right at sunset we enjoyed watching the sun setting on a lake next to us and hills to the east. Unfortunately, there were hungry mosquitos taking advantage of us. This was pass #33 and our last pass!

### Day 11, Sunday June 9th

We were going to try to operate from CN90 this day, but we had a long travel day ahead. We cancelled out on any passes. We drove from Klamath Falls to Lake Tahoe, which was around 350 miles. It was quite a day! We drove through forests and back down to upper desert. At one point it was 103° F. We



FO-29 Sunset Operation from CN71 - Crescent City, CA



could see a storm brewing to the south, and sure enough, we ended up going through it, but after the worst was over. We saw one bolt of lightning strike a ridge and then a short time later noticed it had started a fire. We stopped at a farm road and reported the fire to 911.

Continuing south on highway 395, we decided we had enough gas to make it to Carson City before heading over the mountains into Lake Tahoe. When we arrived, the power was out due to the storm. The traffic lights were also out. We stopped at a Starbucks without power and they gave me a free cup of coffee. I used my flashlight to make a pit stop before we headed out for gas. The station we stopped at didn't have power so we continued south until we found a station with power. Now we were ready to head to Tahoe! However, a station attendant had heard that highway 50 on the Tahoe side was blocked by a fatal accident. So we had to continue south to another pass. We finally made it to Tahoe late evening for 3 nights of rest and recreation before heading back home! Since I operate from Tahoe once in a while, Debbie said no more satellite passes for this trip. After activating 8 grids, I couldn't argue.

## Summary

During our grid expedition we operated 33 satellite passes with 246 contacts, all with QRP gear and mostly on linear birds. We were fortunate that AO-7 stayed in mode B for the entire trip. Here are the statistics:

- Grids: 8 total - DN10, DN11, DN12, DN01, DN02, CN81, CN91 & CN92
- Passes: 33 total
- AO-7 Mode B: 10, 78 contacts
- FO-29: 12, 91 contacts
- SO-50: 9, 78 contacts
- VO-52: 2, 4 contacts

This was a fun trip and my wife and I got to see country that we would probably have never ventured into. As you can see, it doesn't take a lot of gear, but it never hurts to have backups! If you haven't tried operating portable, I hope you give it a try, both for your excitement as well as making grids available for other satellite operators.

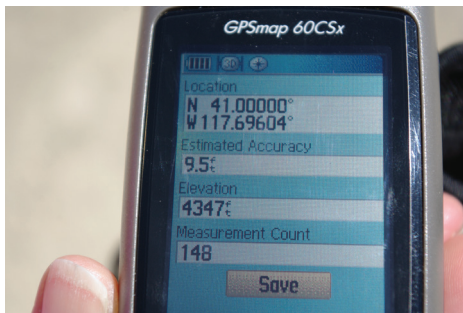
I need to thank Frank, K4FEG, for all his help in getting grid/pass information posted on the internet. There were several times I ended up calling him in the middle of the night with pass information.

## Follow up Mini-Grid Expedition

After our grid expedition, Bob, W7LRD, traveled to CN77 to give John his next to last grid and now only CN72 was needed. So, after a vacation with Debbie, I decided to make a quick trip to Brookings, Oregon and operate from CN72, and also CN71 from northern California. This was a short 3-night tent camping trip with meals mostly from McDonalds and Denny's. I was able to put CN72 on the air on AO-7 Mode B and FO-29 Tuesday afternoon August 20<sup>th</sup>, and made contact with John on both passes. Now John had contacts in all 488 grids! It was exciting to make the final contact and definitely worth the 1,000 mile trip. A total of 12 passes were worked with 93 contacts.

## A Happy Ending

I want to add a big thank you to Arrow Antenna! Since my grid expedition I contacted Arrow Antenna about a replacement for the damaged top section. After hearing about the catastrophe and seeing the sad pictures, Tim Chapman, KB7MDF, the owner of Arrow Antenna, graciously sent a replacement antenna! Can't beat that for customer service! Thanks Tim!



(top, left) Using GPS to confirm operation from the DN10 - DN11 grid boundary.

(top, right) Mt. Shasta from the CN81 - CN91 border.

(left) Smokey the Bear visited the campground to investigate who was burning up the bands.



## The USA Lower 48 Worked all 488 Grids non-Award

Some of the active grid chasers on the birds are aware that KA6SIP just gave me my last USA grid when he operated from CN72 in Oregon. And I thought it might be interesting to look at the stats and how one manages to work and confirm all 488 USA lower 48 States grids.

Satellite operators come and go and grids come and go with them. A grid might have a very active operator in it and then it is off the air when that person goes away for whatever reason. Interestingly, about half of the 488 grids that were worked were from those operating portable, not in the sense of using a radio with batteries, but in the traditional sense of operating away from their home station location. Once you have experienced being on the other end of a small pileup, you will want to do it again. Just ask W7LRD who tried it recently and is planning another trip (Bob wrote about his trip in the September/November 2013 AMSAT Journal). Here is a list of operators who exited the comfort of their home station and put a grid on the air. The callsign is followed by the number of new grids they gave me towards the goal of working all 488. Others may have been worked but these totals represent the first time a new grid was confirmed.

Jim, ND9M, is a seasoned grid expeditioner. Along with working satellites he is also active on the county hunters nets. Most of his activity was between 2009 and 2011. He was also active from a cargo ship and gave out the very rare DM02. Jim would travel for months at a time and worked from a few hundred grids. Most of that operating was done on FM birds rather than linear ones. It was great to have many daily FM passes when AO-27 and AO-51 were active. HO-68 and SO-67 were in the mix for a while too. 54 new grids came from Jim and he tops the list with working me from 54 grids.

Most everyone knows Patrick WD9EWK. He has done a lot of traveling both in the US and Canada and he gave me 27 new grids. He was very active on the birds until recently. He was an alternate on the AMSAT Board of Directors and was recently appointed to oversee the AMSAT Area Coordinator program. He virtually has no home station and most all local contacts were made from a park near his apartment in Phoenix. He knows how to do it and he is a meticulous planner.

Next on the list is Kerry WC7V. He lives in sparsely populated Montana and travels around by car and in his light aircraft. He went to many grids at my request and made a lot of us very happy by operating from many rare locations. He is in slot number 3 with 19 grids.

Next on the list is Rob KD4ZGW/m. Rob drove an 18 wheeler and we all heard him on a satellite one day. He didn't know his grid square but he knew his milepost on the interstate. From there we had the grid square. Rob went on to improve his mobile station and activated over 100 grid squares. He is no longer driving on long hauls and has not been active for some time. He is fourth on the list with 16 grids.

The next three are very special because they all became new operators during the quest to work all 488. Gail KB0RZD is very active today, usually operating with a handie-talkie. He went to 10 grids around him and sent some photo QSL cards that were just outstanding. He worked me from 9 grids.

KC0YBM operated from his home location for a long time before I realized he was very close to other grids. Chris didn't have portable equipment so I suggested he look into an AC inverter for the car. He did just that and soon he was operating portable from some new grids. This speaks to the ham radio culture that you find a way to operate with what you have. Chris continues to be active and hands out grids in the US and Canada.

And then there is Ted, AA5CK with 8 grids for me. He has operated in grids around his home QTH as well as some rare ones in New Mexico. He lives in EM04, not far from EM05 where I made my first grid expedition contact with KD8CAO from EM05 in front of the White Dog Ranch on old Route 66. I remember Ted's first sat contact.

There are a few very special operators that can't be left out. My son, KD8CAO, provided 8 new grids for his dad. He knows how to operate portable and gives out the grids when he travels. Then there was Richard N2SPI with 6 new grids for me. I asked him about some grids in Maine that hadn't been on and he took the challenge and drove to all of them, getting back to his dad's place during the first snow of the season. Dave KB5WIA made quite the trip by backpacking into CM79. It took two trips to transport the equipment into the grid. His unique trek earned me 4 very rare ones. He has a video of it on YouTube.

I started with satellites in June 2006 and only had 47 USA grids by August, 2008. From August, 2008 till January, 2009 I worked another 109. In 2009 199 were worked. 2010 was 76 and 2011 was 44. Only 4 new grids were worked in 2012 and 9 were snagged in 2013. Eight of those final 9 grids were handed out by Tom KA6SIP. He heard about the need and decided to make a grid expedition to put them on the air. He did 7 of them in one trip. Then Bob W7LRD went to the beach in CN77, operating away from home for the first time. That left CN72. Tom just got back from Hawaii and quickly made plans to camp out in CN72 and gave me the final grid on AO-7B, 20 August 2013 at 2332z. Then he put CN71 on the air on 22-23 August, also a very rare grid square but one that I already had. Many others worked him there.

There is no award for working all 488 grids on satellites as there is for six meters (FFMA). The ARRL awards committee has looked at it and will implement it if someone on the Board of Directors brings it up for a vote and it passes. Hopefully that will happen soon. Having that type of award gives everyone something to work for. It promotes grid expeditions and interest in working through the satellites. If we all contact our ARRL Director, it might just happen.

There may be others who have already worked all 488 grids on satellites. K6YK might be one of them. I know there are several others who are getting close. It is not any easy thing to accomplish even if you operate every day. It is something you can work towards over the years.

I want to thank everyone that made satellite contacts with me that ultimately led to working all 488. Many went out of their way to put on a grid. Over half of the grids worked were from grid expeditions! If you haven't experienced operating away from home, please consider it. With new operators showing up on the birds every day, there is always a need for an uncommon grid. And you will have a lot of fun doing it! Just ask anyone on my list.

73,  
John, K8YSE

