

# ***Flying Pigs QRP Club – BBQ***

## ***Bacon Bits Quarterly***

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FPQRP [membership](#) is open to all licensed QRP operators who reside within 12,000 nautical miles of Cincinnati, Ohio.



Well gang, summer is well into full swing now, and we have Dayton, FDIM, Field Day and the always busy Independence Day weekend behind us. It's been very busy around here since our last issue, I only hope we can get all the "stuff" crammed into this issue! You Flying Pigs have been BUSY!

We'll try to cover all the main biggie events that have happened since April, thanks to many of you Flying Pigs we've received a lot of positive feedback and great stories from the field and the shows. This issue is going to be a big one! Read on and enjoy!

### **W8PIG Field Day Adventure!**

Brian Murrey, KB9BVN, (FP# -57)

The Flying Pigs QRP Club International invaded Caesar's Creek State Park in Waynesville Ohio for Field Day 2005. We had 14 or so active participants and 9 total operators. Being a QRP Club we were logging mainly CW contacts. However, Judith KC8BOM and Robert WA1FXT drove down from near Cleveland with a fabulous homemade 6m Quad. This antenna along with a couple of field made dipoles served the group well all weekend. Our major obstacle this weekend was the oppressive Ohio heat. We saw temps in the upper 90's all weekend, and night time it dipped into the low 70's.

When we first arrived on Friday, we found ALL the picnic tables had been stacked in the fire ring and burned by whoever had been camping there the day before. I called the park office and within an hour or so they were on the spot with a couple new picnic tables. Luckily WB8ABE and WB6JBM had the good sense to bring a couple of their own tables "just in case".

Our CW operating rigs were Elecraft K2's working one 88ft dipole and a 110ft dipole. The 6m QRP rig was on the Quad.

Logging was a breeze this year, as we were using the N3FJP Field Day logging software. Very very nice.

Being camped in the Horseman Campground we were able to demonstrate Amateur Radio to about 25 different folks that were using the public bridle trails.

This year our Field Day team was made from hams traveling to the site from three different states. We know how to have a good time! Among the group was Perry WA8THK from Flint Michigan, Mike WB8ICN from Jackson MI, Brian KB9BVN from New Whiteland Indiana, ringleader Rick WB6JBM from Ohio (many Ohio hams were on the scene) along with Randy WV9N, Ryan NZ0Z, Tom K8CZ, Phil WB8ABE, Matthew AA9YH, Hank N8XX, Bink KB8JRB, Matt K8KLP, Judith KC8BOM and Robert WA1FXT. The Flying Pigs are always a GREAT group to go to the field with.

Power was provided by a number of marine type batteries, being topped off by a homebrew gasoline genset every three or four hours. As usual the food was tasty and bountiful. We look forward to the ARRL Field Day event in 2006, plans are underway already.



72 es OO de KB9BVN



## A First Timer's Trip to Dayton

Rob Matherly W0JRM (FP -330)

It started with an e-mail sent to the Flyin' Pigs list around three-thirty AM central time. "Hi-ho, hi-ho, it's off to Dayton we go!" With a quick good-bye to the pets and a quick check to make sure we didn't leave anything ready to burn down the building, Denise and I hopped in the Cavalier and headed to Interstate-80.

It wasn't long before my first missed exit of many reared its ugly head. As we hit Des Moines, I missed the exit which apparently took me from I-80 to I-80 and wound up on I-235. Right in the middle of rush hour, right in the middle of road construction which took an eight-lane road down to one in each direction. That was also the first of many road construction delays.

After getting through what I thought would be the worst traffic snarl of the day (boy was I wrong) we were back on I-80 (it all comes out in the end, I guess) and on our way to the lovely Quad Cities. Once again we ran into road work. Once again, Rob missed an exit.

After realizing I was going around in circles, a quick glance at the GPS informed me that I had been driving around Rock Island for the better part of twenty minutes. So after a quick stop at a somewhat disturbing gas station (the urinal had "aliens are satanic overlords" scratched on the wall), it was back on track and back to Dayton.

The next eight hours or so of the drive weren't so bad. Illinois went fairly quick, as did half of Indiana. Then Denise said she wanted to see downtown Indianapolis. I went along, as I was kinda interested myself. Only problem - we hit it right at five o'clock.

Wow - talk about horrendous! For a simple country boy such as myself who was raised on two-lane dirt roads, this was God-awful. Never before have I felt so sick in my entire life. The bobbing, the weaving, it was like I was Jeff Gordon stuck in a crowd of Earnhardt fans. (Speaking of Jeffie - I was so happy I got to flip off the "Jeff Gordon Boulevard" sign outside Indy. I wish Denise could have taken a picture of me mooning it.)

Twenty minutes later we were out of hell and back on the way (once again) to Dayton. Then it hit - twelve miles of one-lane interstate traffic at forty-five miles per hour, right at rush hour. Ugh.

The rest of the trip is kind of a blur. I think I may have fallen asleep or something. I somewhat recall trying to reach one of the piggies on a repeater, before realizing I was hitting an Indy repeater and not one in Dayton. Oh well.

Finally, forty-five minutes late, we arrived at Ryan's for the get-together. Who was the first to greet us but none other than Lloyd, followed by Dan and Matt? I don't recall too much of the meal, other than I only made one trip to the buffet and drank lots and lots of bubbly liquid products. There is a picture of me picking my nose at the table floating around out there somewhere.

Now that we had made it there safely, it was time for one of the most important things one must do when arriving in a new location - find a Wal-Mart. Matt gave us plenty of directions; unfortunately I couldn't decipher them half as well as I could decipher the Rosetta Stone.

Lloyd led us to the hotel, and bid us good night. And a good night it was - nothing feels better than a bed when you've just driven twelve hours on four hours sleep.

Thursday was a day just for Denise and I. We chose to skip the FDIM proceedings and spend the day together, as this trip was our honeymoon. (While passing through Illinois, a guy on 2m congratulated me for managing to talk the Mrs. into going to Hamvention for our honeymoon.)

We made a few stops around town, checked out the mall, and much to Denise's pleasure, took a dip in the pool at the Holiday Inn next door.

Thursday night, I was able to accomplish one of my life's goals - watching television in a different time zone. I was a bit let down - it didn't seem to be as big of a deal as I thought it would be. Perhaps it was because we had just come off of the time change. I dunno. Simple things intrigue you when you don't do much.

Friday, we got up at six and made our way to Salem Mall. Or should I say the parking lot behind what was left of Salem Mall. Good Lord, talk about depressing. Between that and the excitement over almost being at Hara Arena, I was distracted to say the least (more on that later).

After the quick bus ride (another first for me) we were there. Right smack dab in the middle of the largest event of it's kind. One word - wow.

The elation didn't last long, however, when I saw the prices these guys wanted for their stuff. I'm not opposed to buying junk. I am however opposed to paying full-price for it. I suppose this is why some people get their shorts in a wad over E-Bay.

Not finding anything worth nearly what people were charging for it (although I did almost get a Geiger Counter just for the heck of it), we got back on the bus to head home.

As we got off the bus and headed to the car, I stuck my hand in my pocket for the car keys. Discovering they weren't there, I stuck my hand in the other pocket. Not there either.

Oh poopie.

A quick check of the jacket and backpack revealed that my keys were nowhere on my person.

"Denise," I said, "I don't have the car keys." Accustomed to a joke I often play on her, Denise didn't believe me. Then she saw the look on my face.

We walked to the car, not quite sure what to do. Were the keys inside? Had I dropped them somewhere at Hara? What were we to do? As we approached the car, I noticed a note on the windshield. I made the mistake of reading it aloud to Denise.

"You locked your keys in the car with the engine running. The keys are at the bus tent. Signed, Trotwood P.D." Good Lord, talk about feeling like an idiot. The tent attendants were courteous enough, only mocking us a little bit.

"Before I give you your keys," said the man dangling my keys enticingly before us, "tell me what state you're from." Without a beat I replied "Missouri."

"Your plates looked like they said Iowa to me."

"Inside joke. We're from Iowa."

Okay, what's your license plate number? "It's (Omitted for national security reasons)."

"Okay, here you go." With that, he tossed my keys back at me and guaranteed me a lifetime of embarrassment at the hands of Denise. It didn't take long. After he asked if we'd be back tomorrow, Denise replied "yes, and I'll make sure he turns the car off this time."

Saturday was much better. The prices were lower, as were the temps, and the piggies were out in force. Bound and determined to spend money, Denise and I found a booth selling keys and keyers. Denise, the wonderful wife she is, picked me out a lovely keyer and a Code Warrior Jr. key. She was even nice enough to let me get all the goodies I needed to run the friend loaner pig-rig mobile on the way home.

Then came the ARCI banquet. I had heard of these things on the list. Dignified, refined, and polite, save for the two tables which mysteriously enough are always the furthest from the stage. This year was a special one however, as apparently the hotel was being fumigated and we were forced to dine in a tent.

The events started off with a bang. Matt (k8klp) brought a pig ball with him, and didn't hesitate starting a game of dodge ball which resulted in numerous spilled beers. Ed did a strip tease, and Lloyd and I got in a fight with the leftover napkins from the spilled beer. (He got me real good too – he cheated and tied the dang thing in a knot before he slammed me in the side of the neck with it.)

After the speeches, food, and giveaways, it was time for the pig picture. One last hoo-hah with all the pigs. Denise and I then slipped away to prepare for the twelve hour drive home.

This is where I thought the story would end. I was wrong. You see, I'm a particularly huge fan of The Simpsons, and I absolutely had to be home by seven. Passing through Illinois, we were slowed a bit by road work and I decided to push the limit a little to make up for time.

It wasn't long before one of Illinois' finest had me over on the side of the road.

The first words out of his mouth: "Could you possibly fit another antenna on the back of your car?"

I got off somewhat easy, I suppose. The first thing he did was issue me a warning for driving in the passing lane. "Since you were going so fast you were passing people, so I can't write you a ticket for that one, just a warning." I did manage to score a nice fine for doing 83 in a 65.

As I write this, it's a month later and the memories of Dayton are still fresh in my mind, as is the dent in my wallet. Meeting the guys and gals was great, and Denise and I can't wait to do it again next year.

Hopefully I'll learn how to operate a car properly by then. – ROB



## **How I came to be in the 2005 CW WPX Contest**

Jim Sheldon, W0EB, FP#-616

Several years ago (3 to be exact) I decided that I'd just about stopped having fun in ham radio. My HF rig was a Yaesu FT-847 160 meters thru 70 centimeters all mode transceiver. It had some major issues for me as I'm primarily a CW operator. First and foremost was the lack of good QSK (full break-in) due to relay type switching, and a very poor noise floor on receive.

Now, I've never really been a contester, but I have operated in my share of them. I used to like Field Day, the November CW ARRL Sweepstakes, and occasionally I'd operate in one of the DX contests, but usually never sent my log in as I was keeping it on paper and it was too much of a hassle to prepare the dupe sheet and other required stuff to submit them. Then came Log-EQF and Win-EQF which have some reasonably good contest logging modes and I decided to try my hand in the February 2000, ARRL International DX competition.

My station consisted of the aforementioned FT-847 and a GAP Challenger vertical. Band conditions were almost perfect for this contest, and everything was open. I wound up spending most of my time on 20 and 10 meters, and managed to work DXCC in that weekend. (Worked, not confirmed). I had 250+ QSO's and 154 DXCC entities worked by the time the contest was over. Not a huge score, but the best I'd done in any contest to date. I did submit the log and did receive the DXCC Millennium Award.

After that effort, I decided that I needed some other challenge in ham radio and was re-introduced to QRP by Henry, W0IE who had just built an SWL Rock Mite. I kind of laughed at him at first, but then

I read the article in QST and decided it might be fun to build one. I ordered the 20 meter version and waited and waited and waited. Finally it arrived; I built it, and managed a couple of contacts with it. I became a member of the Flying Pigs about this time.

“Hey, this is kinda fun”, I thought. I started saving my bucks for another QRP rig and finally wound up with an SW-20+ and an SW-30+ for starters. After a few months of that and building/modifying a PSK-20 to become an all mode rig, I had the QRP bug bad. I saw an ad for the Elecraft K2 in QST and since I like to build things, I started asking around. Finally, the 847 went on the selling block, and I used the money I got for it to buy a K2, which now has everything I plan to put in it. 160 meter board, noise blanker, RS-232 board, auto-tuner, audio filter and yes, even the SSB board (needed for RTTY and PSK-31).

I had a pretty decent antenna system by this time, having acquired a 40 foot tower, a Cushcraft A3S tri-band yagi and a B & W BWD-90 broadband folded dipole. This gave me decent QRP signals on 80-10 meters, but 160 eluded me for the better part of a year. Then came the ARRL DX contest in February 2005, and I was determined to at least make a couple of QRP contacts on 160. I got out my trusty roll of #22 PVC insulated hookup wire and ran me what I thought was enough wire in an inverted L configuration. (Up 25 feet on a mast, out roughly 60-70 feet to a pine tree in the front yard.). Doggone thing wouldn't load for anything on ANY band. Length was just wrong for everything, so I dropped it and added another 25 feet to the far end. This I brought straight down from the insulator and tied it off to the trunk of the tree with a chunk of poly rope. I ran about 20 feet of coax from the rig out through the shack window, attached the center conductor to the antenna wire, and attached the coax shield to an 8 foot ground rod right at the feed point which is the only ground/counterpoise in the system, period. BINGO! Not only did it load using the tuner in the K2, I measured it with my Autek Research VA-1 vector analyzer, and the SWR was 1.7:1 with an impedance of 64 ohms at 1.845 MHz.

Contest starts, and I check 160 first. Heard, called and worked VP2A and P40W for the K2's first DX on 160. Heard a loud POP in the receiver, and it went mostly deaf. I went outside, and the far end vertical piece of the wire was on the ground. Wind had come up and busted it. So much for 160 in the DX contest, but I did manage to contacts and both were DX. (After the contest, I re-strung the antenna with #12 THHN solid copper electrical wire and it's been up and working ever since.) I didn't really get serious in this contest, just tried to work a few new ones and did that. Turned the log in as a check log anyway.

Next contest I got into was the QRP ARCI spring QSO party, and I worked quite a few stations in that one. Last I looked, I was somewhere between #16 and #20 in the standings.

Here comes the 2005 CW portion of the CQ WPX contest. I see in the rules that QRP stations are only competing against other QRP stations, so “what the heck” I decided to give it a shot.

I settled down Friday night with a Diet-Pepsi, my trusty K2 and a set of home brew paddles, N3FJP's CQWPX logger program and when the contest started, 20 meters was ALIVE with signals. I decided that since I was QRP only, I wasn't going to even try to hold a frequency calling CQ and would work the whole contest S & P (search and pounce) for those non-contesters out there. The band was open to most of Europe, and even into Asiatic Russia that first night, so I stayed on 20 meters. I had worked ALL of the stations I had heard by 10:30, so I decided to shut down for the night.

Saturday morning, I was up at 4:30, hit the shower, made coffee and turned the rig on about 5:30. There were already JA's coming in on 20 meters, so worked a few of them and then left about 6:10 for our weekly ham breakfast at a local restaurant. Got back home around 9:30 or so, and sat back down at the rig. 20 was cranking by then, and I ran another couple of sweeps, working mostly new prefixes

stateside, and the few new EU and South American stations I heard. I decided to check 15 meters and it was starting to open. I swung the beam a few times, and accidentally switched to the 160 meter inverted U. Wow, this antenna has some serious gain on 15 meters. I was hearing SA stations better with the U than on the beam. I believe this is due to the fact that it operates almost like a half-square on 15 and the flat-top portion is over a quarter wave high. The beam is only at 25 feet. Anyway, I worked mostly 15 meters until Saturday afternoon when I thought to check 10 meters. Caribbean and South American stations were coming in strong on 10, so I grabbed all I could there. Periodically I'd check 20 and 15 and work a few on each band before going back to 10.

Saturday evening, I went to 40 meters for a while and worked a few stations, including some of the Caribbean stations, but there were some Thunderstorms to the West of here, and 160, 80 and 40 were too noisy for my lazy ears, so I went back up on 20. It was still open into Europe, and I kept working them until about 9:00 when I called it quits for the day.

Sunday morning, I got up around 5:00. My wife had coffee made already so I turned on the rig and tuned around 160 – Nada, 80, worked 1 station, 40 worked a half dozen JA's, 2 ZL stations and heard Hawaii, but he must have either had horrendous QRN or a lousy receiver, because he never heard me. He was S8 into Kansas, so I know he should have heard me if the ZL stations did, and they were S7 to S8 here. Never heard Australia at all.

I took frequent breaks and after each break I started at the bottom of 20 meters and slowly worked my way to the top around 14.070 or so. After that, I'd switch to 15 and sweep the band. About 9:00 a.m. or so, 15 started opening up domestically, and I picked up a bunch of the US prefixes, and since I was using S & P, I worked pretty much only the new ones during this run. After hitting about 21.080-85, I'd run a quick check on 10 meters but for the most part I found it either dead, or populated with a few Central and South American stations that I'd already worked, so I'd run 15 meters backwards from 21.080 to the bottom and 20 the same way. This went on all day. Nothing spectacular, just steadily increasing the Q tally and picking up prefixes here and there. There were always new stations coming on as I noticed very low serial numbers on the new prefixes.

Finally on Sunday evening, I managed to catch Latvia, Bulgaria, Cyprus, Puerto Rico, Portugal, Aland islands (OH0R) and Luxembourg. From that point on, I concentrated on grabbing the US Prefixes I didn't have as 20 started dying down to overseas and 40 was still pretty much too noisy. Finally 2359Z arrived, and I wound up with 394 QSO's, 283 prefixes and a grand total point score of 223,853 in 21 hours and 4 minutes of total operating time.

I never used a DX spotting service, and I keyed all my QSO numbers manually, I didn't use the keyer in my logging program. The logging program I used was designed specially for the WPX contest by Scott, N3FJP, and it was a joy to use. I was totally flabbergasted when I checked the electronic log entries at the cqwp.com website on Tuesday morning to find that I was in 2<sup>nd</sup> place Single Op, All Band QRP in the US and #10 in the world. I don't expect this to hold up once all the logs are finally in, but I may be lucky enough to be in the top 20 worldwide and maybe the top 5 or 10 in the US. Not too shabby for what I consider a "casual" contester.

W0EB  
FP#-616



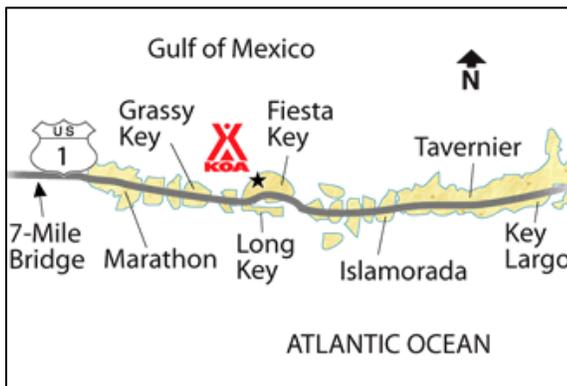
## BooBoo, Is Mr. Ranger going to let us put up our antenna?(Part two)

By Nelson Winter - NE4LS

When we last left our intrepid trekkers they were heading north from Key West on their way back to Palm Beach county. Let's pick up where we left off... shall we?

Tom and I were pretty tired and we chatted about this and that as Tom's truck wound its way up the keys northward in the dark. At Mile Marker 70 we saw the Fiesta Key KOA. We started talking about another notable QRPer who often sets up his operation at Fiesta Key and does quite well. About 10 miles into this conversation Tom asks me, "So do you want to turn around and check it out?" I was so stunned I didn't even answer. Tom said "never mind, forget it." Of course then my beleaguered brain kicked in and I said, "Sure, let's go." There was some more banter but I'll spare you the details.

So Tom turned the truck around at the next opportunity and we drove the 10 or so miles back to Fiesta Key.



For those of you who are unfamiliar with Fiesta Key, it is a resort/campground on a small 30 acre key. The key was originally called Jewfish Bush Key. It was bought by the Greyhound Bus Company in the late 1940s and was used as a rest stop/terminal in the 1950s and 60's. The company officially renamed it to Greyhound Key in 1955.

<http://www.strayhound.com/island.htm>



In 1966 the island was sold to the KOA Corporation and renamed to Fiesta Key. It is now one of the company's most popular destinations.

We parked at the entrance and Tom went over to talk with the proprietor about prices and obtaining permission to operate our radios. Tom came back with a smile so I knew all was well. He told me that the lady at the booth knew all about us 'radio people' and she had given Tom the heads up on the prime operating spot. This was VERY good.

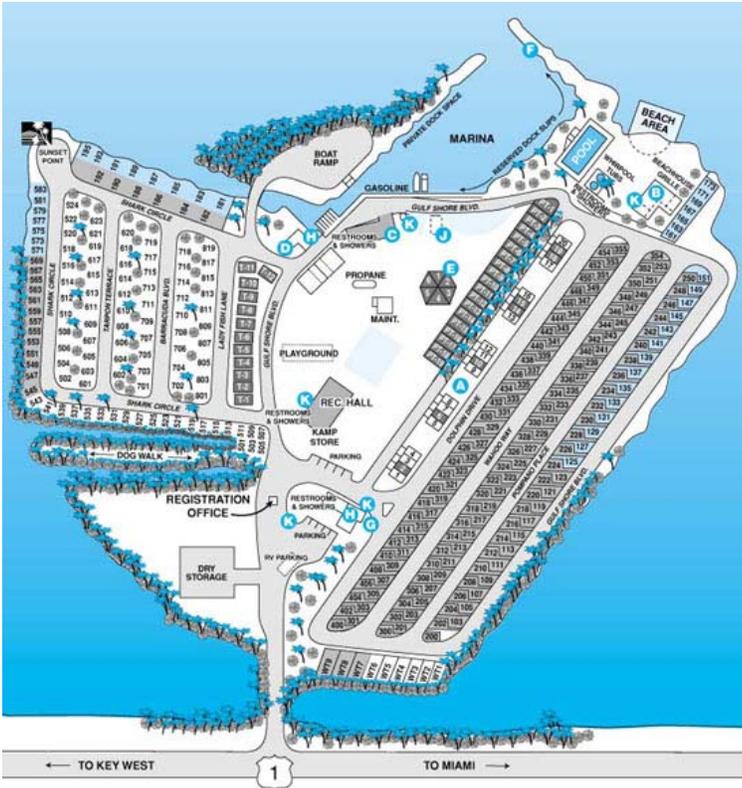
After paying we entered the facility and found our camping spot. It was already pretty late by now so we knew we weren't going to get any operating in that night. We set up camp and cooked another meal on the Mini-Q

(<http://users.adelphia.net/~thenels/THEMINQ.pdf>).

After dinner we set out to explore a little and check out the spot that the lady at the front had described. We walked about 100 yards over to a palapa covered picnic bench surrounded two-thirds by salt water. This was definitely THE spot.

The next morning we got off to a slow start but by 9am had most of the station set up. The rigs were Tom's K1 and my AT Sprint II. The first antenna to go up was my  $\frac{1}{2}$  wave wire vertical which I lashed to the side of the palapa. The other antenna was a modified MP1. Let me take a moment to talk about this antenna.

A few weeks prior to starting out on this journey we had mutually agreed that a  $\frac{1}{4}$  wave vertical above seawater was about the best antenna we could want and would be compact and lightweight for the trip to the fort. In the picture below, our spot is the point at the top left called Sunset Point



We decided to take my MP1 and modify it so that it could be used on either 15 or 20 meters without the coil as a straight  $\frac{1}{4}$  wave vertical.

This was accomplished by taking three 4' sections of  $\frac{3}{8}$ " aluminum rods and tapping them using a  $\frac{3}{8}$  X 24 TPI die. Couplers would be used to join the various pieces together. Depending on whether we wanted to operate 15 or 20 meters we would just add or remove sections.

The telescoping part was placed on the top and used to "tune" the antenna. This antenna would be fed directly with 50 ohm coax – no tuner. For radials we would just throw some wire into the salt water. Here are some pictures of the process:



The picture on the left is the die that Tom used to cut the threads into the rod. The picture on the right shows two of the top sections put together with the couplings and the disc that we fashioned into a support for guying.

We decided to start the  $\frac{1}{4}$  wave vertical on 15 meters and so we assembled it accordingly and guyed it as best we could. We utilized Tom's 'KD1JV Tenna Dipper' to tune the antenna up as close as we could to the QRP calling frequency. For grins we double-checked the match against the built in tuner in Tom's K1... 1.0:1. We must have been doing something right!

Tom offered to let me operate 15 meters first. On my first call I landed Yugoslavia! Wow, this was great! Tom came back so I handed the K1 over to him and I fired up my AT Sprint II. I made a few more contacts on 20 while Tom operated on 15. A couple hours later Tom wanted to take a break so I went back to the K1 on 15 meters. My next contact was with WA8ZBT in Texas who was running 20mw! Tom also worked this same guy later in the day on 20 meters.

The AT Sprint was a great rig to operate. Unfortunately it was suffering from blocking when Tom was operating also. Tom's K1 didn't seem to suffer from this malady.

As the morning turned into afternoon the wind started to pick up briskly and clouds started rolling in from the North. It was actually getting chilly. But being the stick-to-it kind of guys we are, we kept operating and having a load of fun.

Right around sunset the wind started to get fierce. Despite that, we decided to reconfigure the antennas. The Aluminum vertical was reconfigured for 20 meters. I decided to see if I could load up the 34' wire on 40 meters like it was a  $\frac{1}{4}$  wave vertical. I figured with the radials in the water it would work just fine. I was right! I had only made one Q on 40 meters though when a very strong gust blew down the aluminum vertical despite guying.

Both of us had enough so we brought the truck back to the point and loaded up our gear.

Back at the campsite we reveled over our accomplishments of the day. I had made 13 contacts and Tom had made 19. Both of us had several DX contacts. These were each full rag chew QSOs – not the quick RST + SPC type exchange. The weather was getting increasingly rough so we had an early dinner and then went to sleep.

That night it rained quite a bit and the wind was terrible – at one point it blew the tent flat. But the poles popped it back up again. We managed to stay dry inside despite the horrible weather outside.



The next morning we packed up the remaining gear, made one last batch of coffee on the Mini-Q and then headed out onto the highway northward again.

We certainly learned a lot about what TO and what NOT TO do and take on an expedition. Some day I would like to take another stab at operating from Ft. Jefferson and I'll be quite a bit better prepared.



## Software Tools for the Homebrewer

By Jay Henson AJ4AY (FP -115)

### **BACKGROUND:**

Over the last couple of years, much of my amateur radioing time has been spent taking my Multi Pig+ to newer levels. Don't take that as a negative comment about the MP+ rig. To the contrary, it is a very capable receiver and a more than ample transmitter. For those of us that like to build and tinker with the innards of a radio, Diz (W8DIZ) did a fantastic job designing the MP+. My efforts have been directed at providing the same capabilities with minimal user intervention.

My first pass at this project was completed last year and was successful. The main thrust of my efforts was to automate specific pieces and parts of the Multi Pig+ with an Atmel microprocessor and custom programming. Contacts have been made with the rig on 20m and I am quite happy with the results.

I am currently working on revision 2 of my MP+. This is a radical departure from my version 1. It appears that this may be my "never-to-be-completed" project. I manage to put a few weeks of work into it and then put it aside for a while.

With all of that in mind, I am writing this article for others that like to build pieces and parts of their amateur station. For us, there is a wealth of software tools available and at more than reasonable amateur prices.

My apologies to the X users out there, but I am a Windows user. All of the software that I will be discussing in this article is Windows based. If you know of, or are aware of, comparable software that runs on an X machine, please let everyone know.

My philosophy of everything is KISS. I am a firm and absolute believer in this principle. For those not familiar with this (all both of you), it stands for Keep It Simple Stupid. I have tried to keep my focus narrow and simple with respect to my software needs and have found the applications mentioned here to best suit my needs. Hopefully, you will find something of interest here, also.

### **SOFTWARE REQUIREMENTS:**

In my opinion, and in keeping with KISS, software applications should:

1. Be easy to install, require no "special" computer hardware, and do little to the operating system.
2. Be intuitive and simple to use. It should not require a degree in computer science or engineering to accomplish simple tasks.
3. Be priced appropriately.

Many of the items that radio amateurs decide to add to existing radio station equipment are usually kits that others have designed and provided. I do believe in supporting others by buying their products and using them in amateur radio. Not re-inventing the wheel (unless you have to) is the first corollary to KISS.

Occasionally, however, I find myself breaking new (to me at least) ground. Only when I decide to tackle a project from scratch, be it small or large, does the usefulness and value of software tools become obvious.

So what kinds of software tools might a homebrewer use to tackle a project? Supporting a “from scratch” project (one that is in our heads) requires a different approach than building a kit. Scratch project tasks that should be addressed are:

- Documenting the project.
- Preparing a working schematic.
- Developing a parts list.
- Developing a component layout and building a board(s).
- Developing a project layout.

So let's get started on each of these tasks and see what I have come to appreciate as “useful” software tools.

### **DOCUMENTING THE PROJECT:**

Any word processing software that YOU are comfortable with using can satisfy this need. All Windows operating systems have a document editor of some type. These include Notepad and Wordpad. Both are more than capable of handling this task. My software of choice for the documenting is WORD.

In starting my plans for a project, I like to brainstorm and randomly place thoughts in the document. At this time, no detail or thought is too small or insignificant that it shouldn't be included. Using “cut and paste” and moving thoughts around on the page, it doesn't take long to develop a well organized document that can be used for planning.

At the very least, the initial document should include a definition of what you are trying to accomplish, problem areas that you can foresee, and your plans on how to address them.

All that I know about my latest MP+ project is contained in my planning document. It is a reference that is in continuous development. As changes in my thinking occur, changes are made in the document. Included is a project definition, Atmega32 pin assignments, various modules and their purpose, interconnections between modules, interconnections between the Atmega32 processor and the modules, radio controls, LCD display formats, etc. It is in this document.

### **PREPARING A WORKING SCHEMATIC:**

Any built from scratch project requires a working schematic that indicates all of the inter-connects between components, as well as component values. My software of choice is ExpressSCH.exe.

<http://www.expresspcb.com/ExpressPCBHtml/Download.htm>

There are two very useful pieces of software included with the single download, ExpressSCH and ExpressPCB. ExpressPCB, the company, provides this software as a development tool for designers. It is their hope that their PC board services will be used to make single or multiple versions of boards that we users develop.

Some of the benefits of the schematic drawing software that I have found are:

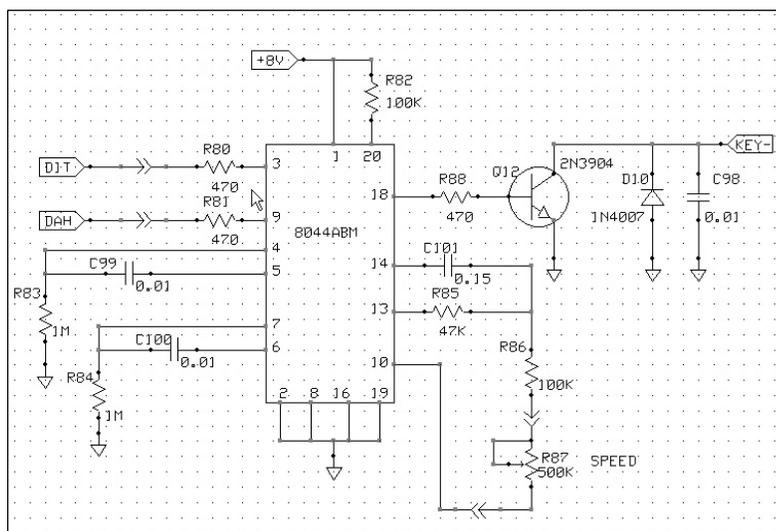
- A large component and symbols library.
- The ability to develop custom components and symbols.
- Multiple drawing sheets for large projects.
- The ability to organize multiple sheets.
- The software very intuitive and easy to use. (Remember KISS)
- Error checking, primarily components with the same ID.
- Symbols and/or labels can be rotated.
- Exporting a bill of materials.
- Exports a schematic sheet as a bmp file.

The one thing that I find lacking in the software is that it does not support the mouse roller for scrolling.

There is a wealth of pre-built components in the library that can meet almost any homebrewer's needs. On those occasions when a needed component is not available (i.e., a trifilar wound inductor), I have found that a pre-built component that is "close" to what I need can be ungrouped, edited, and saved as a custom component.

This is truly "drag and drop" software. Components are selected from the component library and placed on the drawing sheet. Lines are added connecting components. Part ID's (i.e. C24, R15) can be manually assigned by you or Auto Assigned by the software. This is a nice feature. If you are duplicating a schematic in ExpressSCH, then you probably want to keep the same part ID's as the original so manually assign them. Otherwise, let the software Auto assign the ID's. This will prevent duplication errors.

This is part of a schematic which details an 8044ABM keyer circuit that I have been working on. The 8044ABM chip is a custom component that I built and added to the application.



You will notice that the drawing surface has a grid. I highly recommend using the "snap to grid" option at all times, particularly when developing custom components. The printed document for schematic sheet does not contain the grid.

One handy feature of the application is the checking for schematic errors. This check will review all sheets in a project and alert you if there are duplicated component ID's.

### **DEVELOPING A PARTS LIST:**

Assembling a list of components, their values, and ID's can be a daunting effort for a large project. Without hesitation, EXCEL is my software of choice for this task. It is a perfect application for the massaging data. Tasks such as sorting and filtering data lists are easily performed with a minimal of user effort. I haven't found too many things that I couldn't do using Excel. For example, my homebrewed QSL card was designed using Excel.

If there is a weak point with Excel, it is that the learning curve for a first time user is a little steep. Complex tasks tend to be difficult and not intuitive. These shortcomings are easily overcome by spending a few minutes with an "elmer" or getting one of the many "for Dummies" books. The very simple needs for data massaging are quickly learned after first seeing the steps to be done.

One of the really nice features of the ExpressSCH schematic drawing software is the ability to produce a bill of materials for ALL components on ALL sheets in the project. This bill of materials includes the part ID's and part names. The output is placed on the clipboard and can be pasted into a WORD document, an Excel spreadsheet, or similar application.

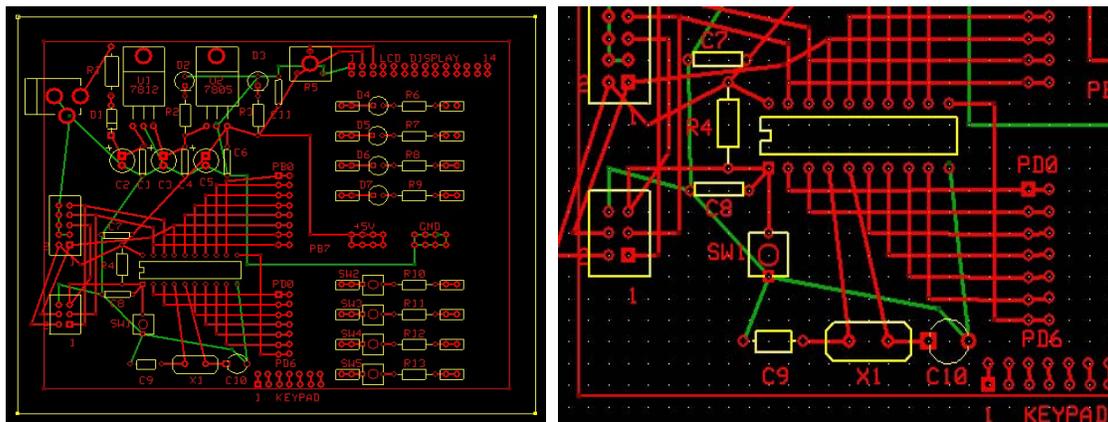
Pasting the BOM (bill of materials) for my MP+ into Excel indicates that my parts list includes 101 capacitors, 18 diodes, 10 inductors, 15 transistors, 88 resistors, etc. With Excel, it is a simple task to root out the various values and how many of each value is needed for the project. By adding more columns of "junk box" information, it was very easy for me to determine which components I already have versus those that I needed to order. Excel really excels (pun intended) at doing this.

### **DEVELOPING A COMPONENT LAYOUT AND BUILDING A BOARD(S).**

One of the major problems I have with building projects is the inability to picture, in real space, how individual pieces and parts fit together and how much PC board will be required. If I can look at a piece of paper that has true dimensions, the placement of components becomes more obvious and I am more comfortable with the final results.

The software application that I have used to help me develop this picture is ExpressPCB, the second piece of software that is downloaded from ExpressPCB. It has been said that a picture is worth a thousand words. That really applies to ExpressPCB. Take a look at this example.

This is an ExpressPCB picture of my AVR development board. Although it is not apparent in this picture, dimensions are in real world values. A print of the picture is in actual size dimensions. Have a look at this enlarged view of a region of the board.



The grid is on 0.1" centers. The chip socket is a 20 pin DIP for an Atmel AT90S2313 microprocessor. R4 is a ¼ watt resistor that actually occupies approximately ½" of board space. C7 and C8 are 0.1uF capacitors and their physical dimensions fit exactly what is displayed in this example.

With very little effort, I have taken a schematic and converted it to a "real world" PC board layout utilizing ExpressPCB. The AVR development board example that you see was designed by me and is used to develop and debug programs for Atmel 90S2313 microprocessors.

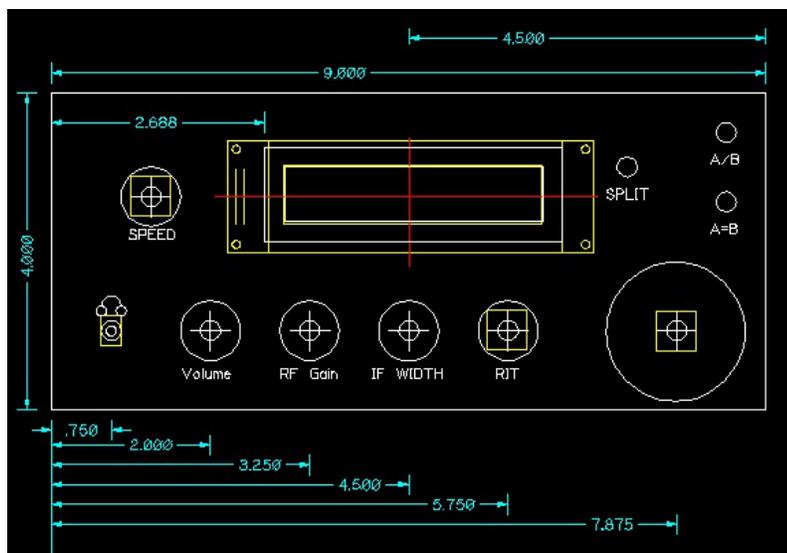
### **DEVELOPING A PROJECT LAYOUT:**

So far, I have written a document, drawn a schematic, generated a parts list, rounded up all of my parts, and developed a component layout for PC boards. Now, I have to tie all of this together so that everything fits in a box. I have to take into consideration the controls and display on the front panel, the connections on the back panel, and the mounting and placement of PC boards inside the box. I have already stated that I am spatially challenged so I need a piece of paper that shows me how all of this fits together. What is really needed is a simple CAD program. In keeping with my KISS principles, let me present:

<http://www.cadstd.com/lite.php>

CadStd Lite is a somewhat crippled version of CadStd Pro. Some of the bells and whistles available in the Pro version are not available in the lite version. However, I believe you will be able to do almost anything required in the Lite version, crippled or not. The most important advantage of this application is that you do not need to be a practicing design engineer to benefit from the software. It is very intuitive and has a very slight learning curve.

This is my front panel for my first MP+. As you can tell, I am definitely not a CAD master. But, there is enough information in this drawing for me to be able to build this front panel out of double sided PC board.



The complexity of the front panel is not obvious in this front on view. A top down view of the panel shows three layers of PC boards combined into one assembly; the front panel, the Atmel microprocessor board, and the NJQRP DDS board. Added to this are the LCD display and the various controls. The complete front panel was designed in three dimensions using CadStd Lite before the first hole was drilled. The ability to locate pieces and parts in real space using this application makes it an invaluable tool for me.

### **SUMMARY:**

I have barely scratched the surface on the abilities of the software applications that I have discussed in this article. I hope that you have found something of interest. At the very least, I hope that I have

stirred your curiosity about homebrewing and what software tools are readily available to make the job a little easier. I have a follow up article in the works in which I will use these tools to build a sidetone oscillator using "island" construction. Stay tuned for that.

ExpressPCB and CadStdLite are free downloads and can be found at:

ExpressSCH and ExpressPCB

<http://www.expresspcb.com/ExpressPCBhtm/Download.htm>

CadStd

<http://www.cadstd.com/lite.php>

72 es Enjoy!! Until we meet again, happy building.



## Kansas Contingent of the Flying Pigs Field Day after action report

Jim Sheldon, W0EB, FP#-616

Dwight (N3ARU), FP#-1053 and Jim (W0EB), FP#-616, representing the Kansas contingent of the Flying Pigs, loaded up Friday morning the 24th, for the 3+ hour drive to beautiful Twin Bridges State Park in Northeast Oklahoma to participate in Field Day 2005.

We left Wichita about 7:45 a.m. and arrived at the park somewhere between 11:00 and 11:30 a.m. Tom Severt, N2UHC of the 4 State QRP group was already there holding down the "Echo Hollow" campsite to we pulled in a couple of spaces to the North of him.

First things first, we moved the movable picnic tables under the shade trees and then proceeded to set up the tent and the comfort items such as the coffee pot, propane stove and a few other items.

Next, Dwight set up his SGC SG-2020 and a PAC-12 antenna, and I set up my K2 and a PAC-12 for a quick check of propagation and a few general QSO's. Nothing spectacular happening on any band right then, so we finished unpacking things and getting the batteries connected to our solar panels to insure everything would work properly.

Then Ed Meyer, WG5F arrived with his camper and set up in the space between us and Tom. Perfect! Now we won't have any non-ham types grabbing spaces and interfering with our ease of movement etc.



(Now Tom and Ed weren't FP members at this time, but I took care of that after I got home, and also recruited Ed's wife Karen W5KKM).

Once the early setup time rolled around, I hauled out the air-operated "spud gun" line launcher for it's baptism of fire. First "poink" launched my 130' inverted U up over a 100' tree. Second "poink" launched the top end of Ed's 20 meter coaxial dipole into a big tree and he rigged it to his camper on the other end as a sloper.

Tom used the old "sling a 2 liter bottle of water" trick to

get his 40/20 fan inverted vee up next to his camper. Somewhere around this time Tom grabbed his camera and started taking a few pix of the operation.

The rest of Friday afternoon was taken up with general BS, wringing out antennas and finally FOOD! I cooked a few burgers for supper that night, and lots of WATER was drunk - it was too hot even for beer, and there was very little breeze. Temps soared to 90 and very humid in the shade and about 95 or better in the sun. Next year I'm bringing the BIIIIIGGGGG fan instead of the little one. Kinda hard to put an A/C in the tent, and all the operating positions were outside on picnic tables. Later that evening, Dave Bixler W0CH, FP#-32 and also one of the founders of the 4SQRP group arrived. He stayed till around dark and since he only lives 8 miles from the park, went home for the night. I fired up my laptop with the DeLorme Earthmate plug-in GPS and got the lat/long of the operating site, and Dave posted the coordinates to the 4SQRP website at [www.4sqr.com](http://www.4sqr.com).



Everyone turned in shortly after it got dark Friday night. Saturday dawned bright and early, and since we had a campsite with electricity, I got a pot of coffee brewed and Dwight made some scrambled eggs with some of the best sausage I've had lately.

About 9 a.m., W0CH returned to the site and picked his operating spot. Out comes the "poinker" again and I launched lines for him. Dwight had his camera in play, and actually managed to capture the slug from the spud-gun in flight. I didn't have enough air pressure in the reservoir, and it only went through the tree rather than over it, so had to shoot it again. Second time I had about 60 pounds of air in it and it went over two trees. That was fun! We got Dave's 88' EDZ up, and everyone wanted the URL for the "spud gun" plans. Too bad - I didn't build it, and didn't have the data for 'em.



1800Z rolled around and we got started in the test. I used my call and ran 1B Battery with continuous solar charging and the K2 on CW, Dwight used his call and did the same with his battery and solar panel as well. He's got 60 watts of Solar and I've got a 30 watt panel. Both of used deep-cycle marine batteries, and never had the voltage drop below 12.5. As long as the sun was up (not necessarily shining directly on the panels), the solar voltage was high enough (14 volts) to maintain a charge on the batteries. 20 was the main band, but later that afternoon, 15 opened up to all over the place. KP2AA in the Virgin Islands and KH6J in Hawaii were both LOUD and stayed LOUD (59+ on the K2) all

afternoon and were still LOUD when I shut down for the night at about 10 p.m.

WG5F, N2UHC and W0CH operated under W0CH in 3A Battery for the 4SQRP group and as I said earlier, N3ARU and I operated under our own calls in 1B Battery.

Saturday lunch was some real good salami, raw baby carrots, celery sticks and some real good Italian olives provided by N3ARU and the Saturday evening meal was grilled Johnsonville Brats with Koop's Duseldorf German Mustard and assorted veggies.



All equipment performed flawlessly - W0CH ran a K1, N2UHC ran several Small Wonder Labs rigs - SW40+ and SW20+, WG5F ran a K1 and an FT-817 (PSK-31), N3ARU ran a SGC-2020 and I ran my K2. N3ARU's K2 kit is scheduled for arrival Monday (the 27th). He had a chance to play with my K2 long enough to remark that the 2020 was going on the block as soon as he finished building the K2.

Sunday morning dawned bright, calm and HOT! Dwight and I broke camp and departed about 7:30 to head back to Wichita before it got too much hotter and arrived home around 11:15 a.m.

I ran the cleanup program and submitted my log by email, and then the wife and I went out to Il Vicino for a pizza dinner. Thus endeth Field Day 2005 - A good time was had by all, and other than the oppressive heat, I wouldn't change anything.

W0EB - FP#-616



## Analysis of Solar Active Regions – NA5N

When I was at FDIM/Dayton, several guys asked if I would fully explain one of the NOAA RSGA (Solar & Geomagnetic Activity) reports on qrp-l someday. Well, today's M4 solar flare produced all sorts of neat and nifty solar activity and physics, making it a very good report to dissect. Hopefully it will help some of you understand the terminology and "what it means" from these useful reports.

**72,Paul Harden NA5N**

Joint USAF/NOAA Report of Solar and Geophysical Activity SDF Number 167 Issued at 2200Z on 16 Jun 2005

IA. Analysis of Solar Active Regions and Activity from 15/2100Z to 16/2100Z: Solar activity was moderate. Region 775 (N10W86) produced an M4.0 flare at 16/2022 UTC

If you look at the SOLAR X-RAY PLOT from the GOES satellites at:

<http://www.sec.noaa.gov/today>

You will clearly see today's M4 flare occurring on 16Jun at 2200 UTC. Note how the scale on the right hand of the chart indicates the approximate intensity of the flare, i.e. M4. Also note how this flare

produced x-ray energy for over an hour. This makes it a "long duration flare." Often, long duration flares can be very energetic, ejecting copious amounts of electrons and protons. Look at the 2nd chart on the webpage entitled SATELLITE ENVIRONMENT PLOT and the PROTON FLUX. Note the sudden increase in protons arriving at earth very shortly after the M4 flare. This is somewhat unusual. Usually, the electrons and protons travel towards earth along with the solar wind, taking 2+ days to get here. In this case, the protons arrived almost immediately. These are protons traveling at the SPEED OF LIGHT, or nearly so. They leave the sun at the speed of light, then get trapped in the sun's magnetic field, spiraling around the field lines. While traveling at the speed of light, their forward motion, due to the spiraling, is a bit less. Still, they travel from the sun to the earth in tens of minutes, not days.

These protons are now hitting the earth, traveling along our own magnetic field lines, and dumping into the polar regions, where the earth's field lines are the weakest. This means our QRP buddies up north are now experiencing a Polar Cap Absorption event, a near total absorption of HF energy. They are in a virtual blackout right now. These protons can also enhance the auroral activity.

The arrival of this ionizing radiation ionizes the E and F layers slightly above normal. 20M may remain open tonight a little longer than usual. It also means the D-layer is extra ionized, attenuating HF signals more than normal. Fortunately, this ceases almost immediately at sundown. (If you can't see the sun, there ain't no ionizing radiation hitting ya!) If you were on HF this afternoon and the bands seemed kinda sluggish and weak, now you know why.

Region 775, produced the flare, and is located on the western limb of the sun and will rotate out of view by tomorrow. THIS IS IMPORTANT.

With the active region near the limb, there is no way the shockwave from the flare and CME will strike the earth. In spite of the hysteria you will probably hear on Art Bell tonight, this flare will NOT effect earth with a geomagnetic storm. The solar flare has to occur near the center of the sun for the shockwave to be propelled towards earth to trigger a geomagnetic storm. Only the speed of light stuff is affecting us out of this flare with associated Type II (989 km/s) and Type IV radio sweeps.

The massive explosion of a solar flare produces a huge shockwave that travels outward from the sun. As mentioned above, this shockwave is near the limb of the sun and not headed towards the earth. However, as this shockwave travels outward, it "punches" through the sun's strong magnetic fields. As it does so, it produces bursts of radio energy from around 300MHz down to around 30MHz. These bursts are called a TYPE II storm, as mentioned in today's RSGA report. The farther away from the sun the shockwave travels, the LOWER in frequency the bursts occur. Usually, the bursts are first noticed in the 150-300MHz range. As they travel outward, they "sweep" downward in frequency to around 30 MHz ... even down to 10MHz or below in the case of very energetic flares. Solar scientists measure the time it takes for the burst to appear at one frequency, then appearing at a lower frequency. This is a measure of how fast the shockwave is traveling through the sun's magnetic field lines as they escape out into space. This is how they estimate the speed of the shockwave, and when it will impact the earth (if it is headed our way, which this one isn't).

Repeating the RSGA report:  
with associated Type II (989 km/s) and Type IV radio sweeps.

In this case, the shockwave indeed produced a Type II storm (sounding like ignition noise for 20 minutes or so following the flare) and it was measured at nearly 1000 km/sec. ... or a fairly respectable shockwave.

Were this to hit earth, it would arrive at around 800-859 km/sec., more than sufficient to trigger a major geomagnetic storm. If this shockwave/CME were headed for the earth (which it isn't), when would it arrive?

$989 \text{ km/sec.} = 625 \text{ miles per sec.} \times 3600 = 2,250,000 \text{ mph}$ . The shockwave loses about 20% of its velocity by the time it hits earth, or  $80\% \times 2,250,000 \text{ mph} = 1.8 \text{ million miles per hour}$  when it reaches earth!

The sun is about 93 million miles away. Therefore the shockwave would take about 51-52 hours to get here. From 16 June at 2200 UTC, that means an impact time of 19 June about 0100 UTC (which it won't).

A 170 sfu Tenflare and a CME were also associated with this event.

The solar flux is measured at a frequency of 2880 MHz, or 10cm wavelength. This frequency was chosen as a solar flare seldom effects the solar output power much above around 2 GHz. However, once in a while it does, and when it does, it is called a TENFLARE. This means that this solar flare caused increased radiation at TEN cm. (2880 MHz). This is informing you that today's solar flux value has been contaminated by the flare, and may be artificially high.

But ... for QRPers, this \*IS\* indicating planet earth received additional ionization. This is a hint the E/F layers may be more reflective to check the higher bands (like 15M) and 20M may be open longer than usual. When the E/F layers are more reflective, particularly at night when the D-layer absorption is gone, QRP signals \*can\* have better than normal signal-to-noise ratios. In other words, right after a solar flare, particularly a TENFLARE, is a great opportunity for QRPers to work DX.

Region 775 also produced a long duration C1.7 flare at 16/0905 UTC. Region 779 (S17W05) continues to show growth, but is developing more slowly.

This is referring to the smaller long-duration C-class flare occurring earlier in the UTC day. Since this also came from region 775 on the limb, it also will not effect the earth with a geomagnetic storm. Region 779 is the region currently near the center of the sun, and continues to grow. Should this region produce a fairly large flare over the next two days, its shockwave \*WILL\* impact the earth. Watch this region for a high C-class (C5 or greater) or M class flare over the next 2-3 days. If so, it will trigger a geomagnetic storm 2+ days later.

IB. Solar Activity Forecast: Solar activity is expected to be low. There is a slight chance for another M-class flare from Region 775 as it rotates around the west limb. But again, being on the limb of the sun, it poses no threat to earth except for the short-duration speed of light stuff immediately following a solar flare.

IIA. Geophysical Activity Summary 15/2100Z to 16/2100Z: The geomagnetic field ranged from quiet to major storm levels. Transient material associated with the CME activity on 14 June impacted the ACE spacecraft at approximately 16/0830 UTC.

Look again at the SATELLITE ENVIRONMENT PLOT on the sec.noaa website. Notice the K-index went RED (K=6) around 0900. This has NOTHING to do with today's M-class flare, but is the shockwave arriving at earth from a flare earlier in the week, on 14 June. This was when active region 775 was near the center of the sun, and its shockwave belched out towards earth. The arriving shockwave triggered today's major geomagnetic storm. It was not a very strong shockwave, which is why the geomagnetic storm did not last very long, and has since returned to normal.

The ACE spacecraft detects the arrival of the shockwave about 15 minutes before it impacts earth's magnetic field, giving us a little bit of warning. A short-lived period of southward IMF Bz to near -16 nT resulted in a major storm from 0900 to 1200 UTC.

The IMF, the Interplanetary Magnetic Field, is how the shockwave/CME travels from the sun outward to the planets. When the shockwave hits earth, it triggers a geomagnetic storm. If the magnetic vector is southward pointing, -Bz, or opposite to the magnetic vector of the earth, it can greatly disturb our magnetic field, causing a strong geomagnetic storm. Looking at the "Goes HP" chart on [sec.noaa.gov](http://sec.noaa.gov), SATELLITE ENVIRONMENT PLOT, notice how the magnetic field (Hp) took a negative, or outward dip, and immediately following the K=6 geomagnetic storm was triggered.

A -Bz shockwave also triggers strong auroral activity.

A greater than 10 and greater than 100 MeV proton enhancement began following today's M4 flare.

The 10 and 100 MeV (Million Electron Volts) are different energy levels of the protons. The enhancement" began shortly after today's M4 flare as discussed above because they are arriving at nearly the speed of light. A 100 million volt electron smacking into your forehead at the speed of light can definitely be considered "energetic." :-) In fact, this is ionizing radiation. In some cases, these energetic electrons and protons can reach the earth's surface. This is kinda bad, since this is ionizing radiation reaching the earth's surface, slow cooking your lawn to mankind. This can also be especially threatening to astronauts in space and airline passengers if it persists for long periods.

One more reason to hide in your shack, put on your lead hat, and work some QRP DX.

At the time of issue, the protons were slowly rising, but had not yet reached event thresholds. The greater than 2 MeV electrons at geosynchronous orbit reached high levels today. The event thresholds are where the ionizing radiation effects from these electrons and protons can be a biological threat, as just discussed. While at high levels, they have not (yet) reached levels to be a concern. The 2MeV electrons will not penetrate far into our atmosphere, but can cause problems or damage to satellites by building up a large voltage potentials across the surfaces. This "alert" is intended mostly for the operators of satellites. For the QRPers, with high MeV proton activity, it simply tells you why ESPN just went dead or your ATM quit working. The satellites just got zapped or temporarily impaired.

IIB. Geophysical Activity Forecast: The geomagnetic field is expected to be active with isolated minor storming on 17 June due to the CME activity on 14 June. Again, this is due to the shockwave from the flare on 14 June, NOT today's M4 flare.

Conditions should decrease to predominantly unsettled on 18 June, with quiet to unsettled conditions expected on 19 June. This is because there is nothing heading our way at the moment, not even from today's M4 flare on the limb. (See, I told you).

The greater than 10 and greater than 100 MeV protons are expected to exceed event thresholds early in the period. This just means better wear your radiation proof hardhat to work tomorrow! Seriously, this will not be a "ground level event" (GLE) causing problems on the earth's surface. It is, however, an alert to people dealing with things farther up in our atmosphere, such as airline pilots (and passengers), operators of satellites, and indicating these energetic particles will continue dumping into our poles, causing continued poor HF conditions (or blackout) to enhanced auroras. Auroral activity, of course, means an elevation to HF noise levels.

Event Probabilities 17 Jun-19 Jun

Class M 10/05/05

Class X 01/01/01

Proton 90/20/05

PCAF Green

There is a 10% chance of an M-class flare tomorrow, and a 5% chance for the two days after that. Pretty small. The proton event is not expected to last much after tomorrow. The PCAF (Polar Cap Absorption Factor) is green, meaning no increased absorption in the polar regions YET. But, if the particle radiation increases to "event thresholds" tomorrow as predicted, the PCAF may change to YELLOW (meaning minor polar region absorption) or RED (meaning severe absorption is being experienced). This is particularly important to QRPers living in the northern latitudes, >60 degrees N/S.

Penticton 10.7 cm Flux

Observed 16 Jun 098

Predicted 17 Jun-19 Jun 095/095/090

90 Day Mean 16 Jun 093

Today's OBSERVED solar flux was 98. Actually, in today's case, this is not strictly true. Today's ACTUAL measured solar flux was about 120, due to the TENFLARE discussed above. The 98 value above is NOAA's best guess as to what today's solar flux was, had it not been contaminated by the solar flare.

As can be seen from the 3-day PREDICTED values, solar flux is dropping from 95 to 90, heading into the 28-day minimum. We'll be out of the minimum and heading towards the 28-day maximum shortly, which is why a solar flux around 95 is predicted for Field Day. It might be a little higher.

#### Geomagnetic A Indices

Observed Afr/Ap 15 Jun 014/021

Estimated Afr/Ap 16 Jun 018/025

Predicted Afr/Ap 17 Jun-19 Jun 018/025-010/015-005/010

This part of the RSGA report seems to give many some confusion. Note the OBSERVED Ap (planetary A index) was 21 (stormy). But, also note the date ... 15 June. Today, NOAA released the A-index for YESTERDAY. The A-index is the 24-hour average of our magnetic field for the PAST UTC day. It tells us what happened YESTERDAY, not today. TODAY's A-index is estimated to be 25 (due to today's geomagnetic storm) and 25, 15, and 10 over the next 3 days. You'll have to wait until tomorrow's NOAA RSGA report to find out what TODAY's A-index really ended up being with the geomagnetic storm.

If you are operating, check the K-index to see what conditions are like RIGHT NOW. Yesterday's A-Index means nothing about right now. However, the PREDICTED Ap-Index does give you a general idea of what conditions will be like over the next three days.

#### Geomagnetic Activity Probabilities 17 Jun-19 Jun

Middle Latitudes

Active 35/25/20

Minor storm 25/10/10

Major-severe storm 10/05/05

For middle latitudes, there is a 35% chance of active conditions tomorrow, and only a 10% chance of a major storm. If NOAA is expecting something to arrive, such as a CME, a coronal hole stream or IMF

boundry crossing, it will predict a higher percentage. For example, earth may be passing through a coronal hole stream around June 24-25, \*IF\* the coronal hole is still there when that part of the sun rotates into view next week. This is why the long range forecast for the A-Index is 20 for Field Day. It is in anticipation of a minor storm due to a reoccurring coronal hole. And, several days before FD, you'll see the above Probabilities show a higher percentage for a Minor storm ... again, purely in anticipation of the reoccurring coronal hole. If the coronal hole does not reappear, then conditions for FD could be quite nice, the A index well below 20.

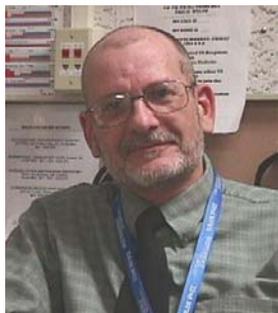
#### High Latitudes

Active 40/30/25  
 Minor storm 30/15/10  
 Major-severe storm 15/05/05

Ditto for the higher latitudes. The higher latitudes are always much more sensitive and vulnerable to geomagnetic activity, and the percentages of storms are always higher than us folks in the middle latitudes. And if you live above the Arctic Circle, it gets even worse.

Hopefully, this helped take out some of the mystery of these daily reports. To keep this post from getting giagantic, I know I glossed over a couple of things. But if I did omit to explain something you're still curious about, feel free to email privately or pose the question on qrp-l. I'll answer it sometime tomorrow when I get a chance.

72, Paul NA5N



### **An Introduction to: Digital Signal Processing (DSP)**

Dennis Doran, WB8WTU, (FP #-138)

Over the past ten years or so, a new feature began appearing on commercial amateur radio transceivers called DSP. DSP stands for Digital Signal Processing. Basically, the DSP feature converts an analog signal to a digital signal, performs a function, and then converts the processed digital signal back to analog again. It is used in both the receiver and transmitter portions of a radio, but for the purpose of this article, the focus will be on how DSP is used

in the receive section.

Radio manufacturers implement DSP in different ways to perform different functions. This can be confusing when reading the advertisements or specifications of various makes and models of ham radios. There are two criteria to remember when looking at a radio that has DSP:

1. Function of the DSP
2. Where it is applied within the receiver?

Remember that DSP converts analog to digital, performs a function, and converts the signal back again. DSP performs three (3) basic functions in a radio receiver:

1. Noise reduction
2. Notch filtering
3. Bandpass filtering

**NOISE REDUCTION:** Sometimes this is referred to, or labeled on the front panel or menu, as "NR". Noise reduction (NR) should not be confused with noise blanker (NB). Generally, noise blankers (NB) are meant to filter out noise caused by automobile ignition systems when operating mobile. The spark plug "pop" and the alternator "whine" are what noise blankers are designed for. Noise blankers are usually analog in nature and perform from good to poor, depending on the design of the circuit and the auto or truck involved.

DSP noise reduction (NR) is designed to reduce or eliminate RF noise found on the ham bands, especially on 20 meters and below. By using a digital process, the DSP removes or reduces the band noise while leaving the CW or SSB signal intact. The result is that the operator can copy signals of interest without being "buried" in the noise. Noise reduction also works well in reducing the effects of power line noise. Generally the level of noise reduction can be adjusted by the operator to fit conditions or personal taste.

Depending on the level of noise reduction selected, the resulting audio may have a "watery" or "shimmering" sound. Either lowering the level of noise reduction or turning the RF gain control back a little can reduce this. Even then, some operators find the resulting processed audio to be objectionable. Each individual operator needs to weigh the advantages and disadvantages of DSP noise reduction. DSP noise reduction does work, however, and can make the difference on an otherwise noisy band.

**NOTCH FILTERING:** The purpose of any notch filter is to reduce or eliminate the high-pitched heterodyne noise caused by shortwave broadcast stations or dead-carrier "tuner-uppers". SSB operators generally use notch filters but a skilled CW op can use it just as effectively. Again, by using a digital process, DSP notch filters "zero in" on a heterodyne tone and eliminates it from the audio. Some DSP notch filters can attack several different tones simultaneously and reduce them as a source of interference. Generally, DSP notch filters are "auto notch", meaning that they require no adjustment as analog notch filters do. Some operators find "auto notch" to be a handicap and prefer to manually tune out the offending noise.

**BANDPASS FILTERING:** For the CW operator, DSP bandpass filtering is the greatest thing since sliced bread - or is it? The answer is both yes and no. DSP bandpass filtering uses a digital process to imitate the function of a CW crystal or mechanical filter. It narrows the bandpass just like the optional CW filter. While crystal or mechanical filters usually come in 500 Hz or 250 Hz bandwidths, DSP bandpass filtering can narrow the bandpass to 180 Hz, 80 Hz, or even 50 Hz bandwidth. At first glance it would appear that this is a good alternative for those expensive optional crystal filters. However one needs to understand the second criteria of DSP - where it is used in the receiver.

DSP can be used in either the I.F. stages of a receiver, or in the audio sections.

**Audio section or audio DSP:** This is the easiest and cheapest way of applying DSP. Audio DSP simply samples the receiver audio, before it gets to the speaker, and performs its digital process. The audio section is the easiest to work with and the DSP can even be "outboard" to the radio itself. It is cheaper because all digital signal processing is done at audio frequencies, which are easier to work with. But since all processing is performed in the audio section, after the automatic gain control (AGC), this sometimes causes a problem. The AGC section hears a strong signal and tells the I.F. section to reduce gain. Since the AGC and audio DSP do not communicate with each other, a strong signal will reduce receiver gain and cause "pumping" of the received audio signal. You may never actually hear that strong signal since the audio DSP has narrowed your bandwidth, but your receiver still hears it and reacts accordingly. Simply put, on an empty band, audio DSP bandpass filtering works very well. But on a crowded band it is much less effective.

The intermediate frequency section, or I.F. DSP: This type of DSP is harder to apply and much more expensive to implement. With I.F. DSP, the digital processing is done in the actual I.F. section of the receiver. Frequencies are much higher than audio frequencies, which requires more complex and expensive digital electronics. Since this DSP bandpass filter is part of the I.F. chain, much like an optional crystal filter, the filtering occurs before the AGC section and signal "pumping" is not a problem.

With respect to DSP bandpass filtering, both are intended to perform basically the same function. However, I.F. DSP is usually found in higher end transceivers. Just because a radio features DSP does not mean it offers all three functions discussed. Check the specifications to see what DSP functions are offered and if it is audio or I.F. DSP.

Currently, the trend is to use both old and new technology. Higher end transceivers utilize a crystal or ceramic I.F. filter prior to I.F. DSP. Less expensive rigs use crystal filters in the I.F. and audio DSP. In both instances, the key is to narrow the bandwidth BEFORE the DSP section. When used in this manner, DSP adds flexibility in the form of multi-bandwidth choices as opposed to just 500 Hz or 250 Hz filtering.

Digital Signal Processing can be a great operating tool. It is, however, not the answer to everything. A good set of ears is still the best tool for digging out those sometimes-weak QRP signals.



## FD Report Via N7MFB

Bill Todd (FP # -419)

"Hello Piggies!"

First of all, did anyone hear WA7FP? I kept listening for W8PIG but didn't hear that particular critter, so I was wondering if there is some "grand design" that QRPers can't talk to each other during Field Day (lol).

The SW Washington Chapter of the Flying Pigs did indeed have a Field Day! Yahoo! I was getting pretty depressed Friday evening when everyone seemed to be canceling out, but Fred, KD7T (FP #977) and Floyd, K7POS (FP #1129) saved the day with their presence and their cool equipment too.

We decided NOT to have my wife's famous oyster stew on Saturday evening. We compared notes and decided that none of us likes oysters (lol).

Our main antenna on 20 and 40 meter CW was a "Y" antenna. That is what Fred, KD7T called it. It is a part wire, part coax, part wire antenna fed with 300 ohm twin lead. I built it from an article in CQ last year but I think it was called a "mystery" antenna in the article.

Fred used a Kanga loop antenna on a Kanga graphite telescoping mast. It was very cool, and Fred used that antenna for most of his 40 and 15 meter SSB contacts. The other antenna was a vertical dipole kind of antenna that Floyd, K7POS bought back from Dayton this year. It seemed to work very well on both 20 meter and 80 meter SSB.

My rig on 20 and 40 CW was a Yaesu 817 with a very nice Bull Dog paddle. For only about \$26.00, this little paddle worked flawlessly. Fred and Floyd used Icom 703's.

We had three visitors, Earl, WA7OM (he shows up every year for Field Day but never operates), and my new Tech plus neighbors, Jeri, KE7DVX and Paul, KE7DVY. Floyd, Fred and I tried to get these new hams on the air, but it never seemed to happen. Jeri wanted to learn more about electronic theory and antenna design while she talked Floyd's ears off but he was patient with his instruction. Paul was finally willing to try some CW contacts at about 11 PM last night, but the skip was pretty long on 80 meters so we decided not to try it this time - maybe next year.

The final score? Heck, I am not sure at this point. I am still trying to total up all the contacts, but a rough guess would place us with about 100 CW QSO's on all bands and about 60 SSB QSO's. We also copied the FD message, were in a public park, advance publicity, emergency power-battery, etc.

73's - Bill, N7MFB (FP# 419)



Photo above shows Floyd (K7POS) on the left and me (N7MFB) on the right, looking up at Fred's (KD7T) cool Kanga Quad antenna.



## **Cedar Forest QRP Group - W4DIT - FPgrp #1144**

Greg Tomerlin, K4KO, (FP #-517)

### **Field Day 2005**

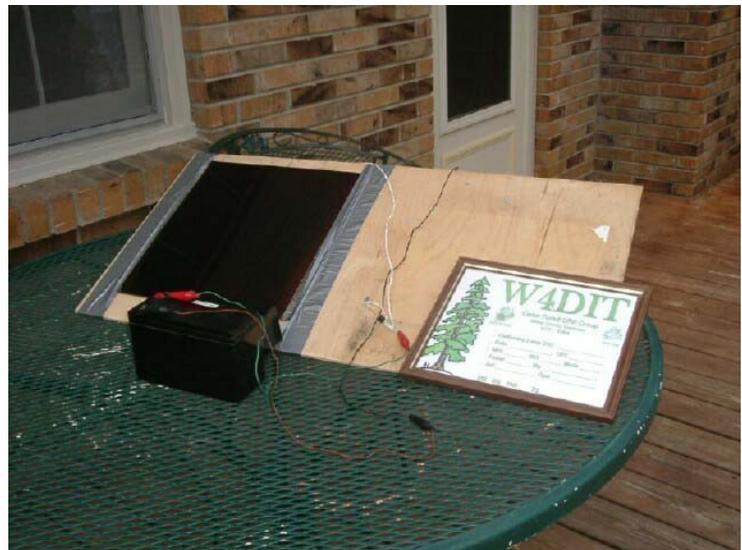
This was the first Field Day for the Cedar Forest QRP Group and by all accounts it was a success. We didn't break any records but we did break a sweat. With temperatures in the mid-90s and humidity to match, we tallied a few bonus points and wound up with a total claimed score of 1550 points. The

truth is, we really didn't spend much time on the radio. But we did have good food, plenty to drink and, despite the oppressive heat (I always heard it's not the heat that gets you, it's the stupidity) we had big fun. In attendance were Sam Shields - WB4CSG, Bob Learmont - W9AZM, John Gwin - W4SK and Greg Tomerlin - K4KO (FP #517).



these current hogs we used two SLA batteries, one 3.5 ah and the other 7 ah. Prior to Field Day, both batteries were discharged down to about 8 volts, then recharged using a 12" x 12" solar panel equipped with a Shottky diode to prevent discharge when the output voltage of the panel dropped below that of the battery. In full sun the panel produced just over 17 volts and charged the batteries at a rate between 30 and 60 milliamps.

For an antenna we used inverted-V dipoles with legs cut for the bottom of 40M and 20M, and fed this contraption with a single 100' run of RG-174 (would that be a four-legged dipole or a two-headed dipole?). The feed-point was about 20' above ground in the fork of a hackberry tree growing out of a three acre slab of solid limestone. Since we never left the bottom of 40 and 20M, we didn't need a tuner (though the K1 had one). We were amazed at how well this field antenna performed. Though we

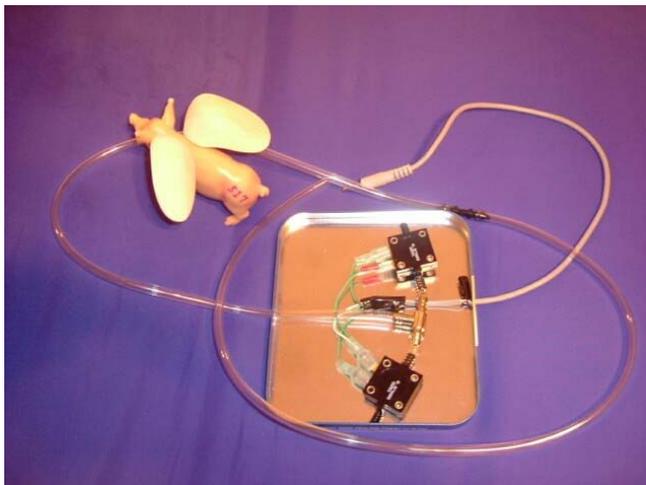


heard only one 6-land station and two 7-landers, we worked all three. In fact, we worked every station we called and most with no fills required.

In the end, W4DIT logged 120 QSOs consisting of 47 ARRL Sections, 38 States, one Canadian Province and Uruguay. Most of those were logged on 40M (104) with the remainder on 20M. The 40M QSOs were made with 3 to 5 watts PEP (depending on the state of the battery and the ambient temperature) while the 20M QSOs were

QRPP at about 700 milliwatts.

In addition, all but three of our QSOs were made with a homebrew sip-n-puff key. The sip-n-puff device is contained in a discarded AOL software tin and made with two World Magnetics PSF-100A pressure switches, some 3/16" I.D. vinyl tubing and a brass T-connector. The three remaining QSOs were made using a homebrew side-swiper "cootie key" on the 20M transceiver.



For photographs of our Field Day soiree, visit our web page at <http://w4dit.wilsonarc.org>

72 00

Cedar Forest QRP Group, W4DIT  
Wilson County, Tennessee - EM66  
FP #1144

Finally, as a group this was our first venture into the field (if you call a screened-in porch with a ceiling fan the field) but it won't be our last. And the best part is, we hooked us a new QRPer (W9AZM). Sure, he's an old goat but he'll make a fine Flying Pig.



## Field Day with the Kids - 2005

Doug Jones, N6LMX, (FP #-1041)

I didn't participate in field day last year, mainly due to not having any sort of HF rig that I could use. Also, my first experience with it the year before left me not wanting to participate.

This year, after my club's plans for field day fell through, I decided I would go check out some other field day encampments in the area and see if I could make some contacts while portable. I classified myself as a 1B station because

I wanted to see what I could do with my NVIS antenna, which also attached to my car. Since it needed to be deployed, I couldn't classify myself as 1C. Thus, my classification was 1B EB (East Bay).

At around 11:00am PDT (1800 UTC), my kids and I headed towards the San Francisco Bay peninsula. Along the way, I used my ICOM IC-703, running off of a SLA battery rather than the car battery, and tried to make some contacts. The battery was also hooked up to a solar panel for charging. I was able to catch a station in Arizona and one in British Columbia, both on 20m phone.

We visited the site of the field day run by the Palo Alto Amateur Radio Association (PAARA), which was being run out of a park on the bay in Menlo Park. They were operating 5A SCV under the call W6OTX. When we got there, their GOTA station was not set up yet so my kids, Halia age 6 and

Travon age 4, didn't get a chance to talk on the radio. There was no place to deploy my NVIS antenna, so I spent the time talking with friends who were not operating and helping put up an antenna mast.

After we left, we headed to Cupertino to visit the Foothill Amateur Radio Society (FARS) at their field day site, which was a residence that had been converted for gatherings. They were set up in a field behind the place. On the way there, I managed to get a one more contact on 20m phone, which was a local EOC. The FARS operation was not as big as the PAARA operation, but I heard them making contacts. They had two tents set up with two to three operators per tent, with two pretty decent-sized antennas, along with some smaller antennas. They were operating 2A SCV under the call K6YA.

Since my wife gave a time that we had to be home, we headed for home and I was able to make one more contact into British Columbia on the way there. After my wife left for work that evening (around 1800 PDT, 0100 UTC), I set up the NVIS antenna in my yard off of my car and went to work on 40m phone. I was able to only make one contact in the time I had before I had to call the kids in for dinner and bed. After I got the kids to bed, I was too tired to go back out to the car and do some more operating. So, I continued the next morning and tried to also get PSK-31 working on 20m. I was never able to get it working, which is really embarrassing because it turns out that I had the speaker and the mic plugs switched going into my laptop.

Up until the time my wife came home from work at 0730 PDT (1430 UTC), I managed another fifteen contacts on both 20m and 40m phone. I did try some 80m phone, but everyone down there was ragchewing. I did not have enough confidence to call CQ, so I was just doing search and pounce. All in all, I felt I did pretty well and I had fun doing it. As of right now, I haven't added up the total number of points I received, but I'm guessing I'm somewhere around 500 points. I'll know better when I look at the form and finalize my total. But, I would say I had a great time this year operating and I'm looking forward to next year.



## Field Day 2005 – QRPp Style!

Monte Northrup, N5ESE, (FP #-1045)

Well, I had an interesting Field Day. I decided to combine my search for the perfect wire antenna with my interest in QRPp operating during this weekend's Field Day. I did the "Lone Ranger" thing again this year, setting up on the shaded corner of my brother-in-law's summer house on Lake Travis. As the primary rig, I used the Elecraft K2 running on battery power, and cranked down to 0.5 watts (yes, 1/2 watt for the entire FD).

For an antenna I erected two doublets at right angles, but these were not your run-of-the-mill dipoles. Using some surplus 22 AWG silver plated stranded Teflon wire I had purchased from N2GO back in September (Thanks, Jim!), I constructed a 374 foot doublet (187 ft each leg) AND a 176 ft doublet (88 ft each leg). Each was fed independently with 22 ft of 300-ohm ladder line. To support both of these at the center, I used the 32 ft DK9SQ Fiberglass telescoping mast, with the center insulators at about 25 ft. I bungee-corded the mast to the deck support at about 15 ft up; it stayed in place solidly the entire FD.

Mind you, this is not your "quick and easy" portable antenna. These antennas took me 4 hours to erect by myself in the Texas Sun. (The brother-in law and XYL somehow remembered things they just \*had\* to do HI HI). I used a sling shot coupled to a Zebco reel to launch lines over the oak and cedar to pull the antenna wire. Eventually, while consuming about two gallons of water, the wire was up, and with a minimal of cussing. Installed, the the longer doublet ran north-south, and the shorter doublet east-west.

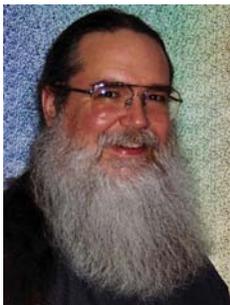
Fortunately, the K2 (with the 160 Meter option kit) has a built-in antenna switch which accommodates two antennas with the press of a button on the front panel. We installed two of our infamous Altoids baluns, one at each antenna jack of the K2. The K2 tuned both antennas on all bands (160-10) to less than 1.2:1. I did notice that 17 meters would not tune to less than 2.5:1 on the longer antenna, but we weren't using the WARC bands anyway.

When I finally got around to operating around 3 PM Saturday, I was determined to start out at 1/2 watt, but I was also ready to switch to a full gallon QRP if results really stunk. Fortunately, I didn't have to, as the antennas did their jobs very nicely, and we barely struggled all weekend at the QRPP level.

We eliminated the 'CQ' as an operating option at 1/2-watt. We've garnered more QSO's using that technique at the 5-watt level, but we stuck to "hunt-and-pounce" as our sole operating modus all weekend.

Having two antennas at the touch of a finger was an operating luxury for me, and I was surprised at the results. The 374 foot doublet performed superbly on 80 through 40, outperforming the shorter antenna in about 80-90 percent of contacts. On the other hand, the shorter antenna outperformed the longer on 20 meters, in about 75 percent of the contacts. For about 25 percent of all cases, the difference between the antennas was as much as 3 or 4 s-units. Most of the time though, the difference was only an s-unit or so, or there was no difference at all. Surprisingly, if there was any dominant directionality at all, I couldn't tell by correlating observed antenna performance and contact location.

QRPP de N5ESE



## Having Fun With Radio – Just Do It!

Jim Glover, WB5UDE, (FP #-1036)

If you're a ham, you've proven that you're willing to put out some effort for the sake of reaching a goal. Still, one of the more persistent obstacles between a given ham and more fun is that it's often challenging to bring an idea to the point where the RF hits the antenna (so to speak). There may be more left to do before the fun can begin, or, perhaps more frequently, it only seems so. In either case, the key to having more fun is the same: Just do it!

There are three things that are truly essential to having fun with amateur radio--and we can fudge a little on one or two of them! We all need a license, some gear, and enough time to do something. If you are still in need of a license, or if you need an upgrade to pursue whatever's caught your fancy in the vast world of amateur radio, then: Just do it!

Meanwhile, you don't have to wait to get started. You can read, study, and discuss things with other hams who like to do what you've developed an interest in. If you do these things now, later on you'll be able to get busy without waiting to play catch-up with the research. Also, work on collecting the gear you'll need. Don't forget the little things, like feedlines, connectors, and so forth.

Once you get your hot little hands on some gear, you can go ahead and begin listening. You're bound to learn things that will help you later, plus you'll probably find that you're already having fun, even without transmitting. Alternatively, you may already own some radio gear, such as a scanner or SWL receiver; if you do, start listening! Likewise, if you're getting ready for a new mode, band, or activity, but aren't ready to get on the air with it yet, you may enjoy listening around a bit first.

Now if you're having trouble finding the time to have the radio fun you want, I don't have any useful suggestions. I haven't figured this one out, yet, myself! But sometimes, you have to beg, borrow or steal the time you need. If that's what it takes, don't feel bad. You deserve a little time to pursue your hobby interests. Just do it!

You may need to develop some new skills to support your interests. Perhaps you need to learn how to program the memories on your new transceiver (or one you've had for a while!), shoot a line over a tall tree, find where the DX is listening, solder, read a circuit diagram, call a session of the local net, deploy an antenna in a motel room, predict the most likely times to catch a band opening, or master Morse. Whatever it is you need to learn, once you've finished any necessary research phase, what's left is practice. In other words: Just do it!

All too often, the biggest hurdle is the "not good enough yet" syndrome. Perhaps the most common form of this phenomenon is the situation so many hams find themselves in when it comes to selecting and installing an antenna system. After reading and asking around, they realize that there are a lot of options to choose from. Not only is there the type of antenna, but also the materials to make it from, what to use for supports, what kind of feedline, whether to use a balun or not, and on and on. Differing opinions abound, and are often expressed so as to suggest that making the wrong choice will result in an antenna which simply will not work. The truth is that so long as you don't make an obvious compromise if you can help it (like a very low antenna, a high SWR on a lossy feedline, a ground-mounted vertical without radials, or similar) whatever you put up, within reason, will allow you to make plenty of contacts, and have lots of fun. Go ahead and put up a reasonable antenna, and start having fun now! Worry about tweaking the antenna later. (Bonus: Antenna enhancements are a lot more fun if you're already using and enjoying the antenna.)

The "not good enough yet" syndrome also sets in where selecting equipment is concerned. Some of us seem to enjoy the hunt as much as the "kill" when it comes to acquiring new ham gear, but sometimes we just plain agonize about it too much. We ask for opinions (and usually we hear a multitude of them), read reviews, mull over features, compare prices, ask for some more opinions, and worry about what may become of us if we make a poor choice.

It may help to remember that ham gear--especially gear purchased used—holds its value remarkably well over a year or two. Why not go ahead and buy something used, try it out, and if you don't like it, sell it? You'll probably get most of your money back, and can move on try something else. After you've been through the process of obtaining and getting to know a piece of used gear several times over, you'll probably have a good idea what you'd prefer in something new. And meanwhile, you've been having fun using and enjoying an interesting variety of gear. Have you been thinking about operating on a new band? Is there a mode you've been meaning to try? Do you need to put up a new antenna? Are you trying to decide what gear to buy? Is there a skill you need to develop? Have you been wanting to try building something? Would a license upgrade help you reach a goal or two? Have you been thinking about trying a new operating activity?

If so, just... well, you know!

The secret to having fun with radio is to keep it fascinating by trying and doing new things. While it is useful to learn the basics and do a little planning when breaking new ground, there comes a time to shoot first, and ask questions later! It can be fun to think and plan, but nothing beats the entertainment and learning, too, that comes with the experience of going ahead and doing it. If you could use a little more excitement in your radio hobby life, give it a try. You'll probably be glad you did.

**Hey look at these Pictures!**

Papa Pig Rides in STYLE!

Diz calls this beauty the “Flying Pig” and man does it look great. Thanks for the pictures Diz!





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**OUR MISSION:**

- 1: Have Fun.
- 2: No rules.
- 3: Have a group of Friendly Hams who enjoy Amateur Radio, and sharing their skills with their fellow Hams.

**CLUB EMAIL POLICY:**

These are not rules, just common sense.  
Club email is not moderated, as we are not a stuffy group. You can send off topic messages about most subjects, but please keep it clean and in good taste. We do like good-natured ribbing and joking with each other, but we will not tolerate flaming other members or spamming the group. We will remove offenders who abuse our open policy. The word eBay is allowed.

**CLUB WEB PAGE:**

The club web page is our forum for sharing projects, and information about us. You are encouraged to submit your ideas and projects to be added to the web page.

<http://www.fpqrp.com>

**OUR MONTHLY CONTEST – RUN FOR THE BACON SPRINT:**

This event is held on the 3<sup>rd</sup> Sunday Night (EST) of the month. For full details on how to participate, see the website address of: <http://www.fpqrp.com/fpqrprun.html>

**PROBLEM REPORTING:**

If you are having problems with email, the web pages, or a fellow club member, please report this to either:

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