



The Spectrum

Issue 06

June 2007

Words from the President

It's that time of year again. Field Day is June 23rd & 24th at Deep Creek Locks Park. We are going to have radio, people & good food. We need to know if you are coming for lunch and/or dinner. Please send an email to w4car@yahoo.com so we know how much food to have on hand.

Our June meeting is a dinner meeting. As most know we are losing several folks this summer. Leo, KG4PWC, is moving to Oregon. Rich, N5RAG, and Reggie, W5SSB, are both moving to Texas and Leo, KC4LEO is moving to Cumberland County. We are taking this time to say farewell and good luck in the future. Please email prbuckwalter@cox.net to let him know how many people will be attending. This will be Monday, June 4th 6-6:30 pm at the Silver Diner on Battlefield.

Come out & have a good time. Jim, WB4UVH has agreed to fill the remainder of Rich's term as club treasurer. Thanks Jim. Welcome aboard!

73
Keith
KG4Z XK



Links of Interest

[Virginia Beach Amateur Radio Club](#)

[Portsmouth Amateur Radio Club](#)

[Home - KG4Z XK.COM - IRLP and much more!](#)

[South Hampton Roads Sky warn Net](#)

[ARRLWeb: New US Amateur Bands Chart](#)

[ARRLWeb: FCC ULS Modifies Customer Support Hotline Hours](#)

[QRP Amateur Radio Club International - Home](#)

[Field Day Rules](#)

[QRZ Ham Radio](#)

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Upcoming Events

CARS Public Service Meeting

The Silver Diner, Chesapeake
Monday June 4, 2007. Gather at about 6
pm for dinner; meeting to follow.

Monday, July 2, at 7:00 PM,
116 Reservation Rd.
Chesapeake, VA 23322

Shack Day

Saturday, June 9th, at 9:00AM
Saturday, July 8th at 9:00 AM

ARES and SKYWARN Training

3rd Wed Every Month

Field Day

Saturday, June 23

[Field Day Rules](#)

FIELD DAY 2006 PICTURES



LOCAL NETS

SKYWARN NET Wednesday 2000 Hours.	146.820 MHz
CARS 2M Net Sundays 2000 Hours	146.820 MHz
CARS 10 Meter Net 2000 hours on Mondays CARS doesn't meet	28.400 MHz
Hampton Roads Public Service Net Mon-Sat 2100 hours	146.970 MHz
VBARC 10 Meter Net 2000 hours on Thursdays VBARC doesn't meet	28.400 MHz
Portsmouth "RagChew" Net Monday & Wednesday 1930 hours	146.850 MHz
Southeastern Virginia Traffic Net Sun, Tues, Thurs @ 2000 hours	146.850 MHz
Portsmouth Amateur Radio Emergency Services Net Fridays 2000 hours	146.850 MHz
Tidewater Radio Association WT4RA net Thursday 1930 hours (code drill follows net)	147.195 MHz

A Moxon Antenna Project

I recently purchased my first VHF radio, initially to support the First Annual Chesapeake 'Swamp Stomp', and ultimately, for general 2m banter. My HT is a single band 2m unit with the traditional 'ear-swab' antenna. Truly a minimalist radio. I added a Comet SMA24 antenna; a thin, extremely flexible antenna that proved to be a major improvement over the original antenna (I can thank Jim, KG4WOJ, for the tip on the Comet antenna). But my antenna selection was still severely limited in range and gain, and, of course, I hadn't homebrewed one for the radio yet, as well!

I began searching for a better 2m antenna that could be mounted on a painter's extension pole and used in a portable situation (Field Day?), or at the home QTH indoor. One of my goals was to use the HT on medium or low power when at home to reach the CARS repeater for local communications. This would result in extended operation on a set of 6, 1.2v, 2500mA, NiMH, 'AA' batteries. The Moxon antenna kept showing up as an easy to build (important), high gain (of course), directional antenna (a bonus). I'm currently working on an Omni directional version for satellite (ISS) communication. More on that in another article!



After figuring out what a Moxon antenna looked like I needed to collect the necessary parts. Your friendly 'Homeowner's Hell' can provide all of the necessary componentry from the plumbing and electrical departments. Since I have been building several antennas over the past several months, I didn't need too much additional 'stuff' to complete the project. The following is a list of the items you'll need to build your own Moxon antenna for 2m:

- 1) One ½" ID PVC Pipe about 4' or so.
- 2) Two ½" cross junctions (if vert. & horiz. mounting)
- 3) One ½" T fitting (two if vert. mount only)
- 4) One ½" 90° fitting (not necessary for vert. only)
- 5) Two ½" threaded female fittings (one for vert. only)
- 6) One end cap for the feed point of the antenna (not shown)
- 7) About 8' of 10g solid copper wire (other dia. wire and materials can be substituted, but you must re-visit the software to arrive at the correct length based on your chosen material)
- 8) Four ring terminals
- 9) Misc. stainless hardware
- 10) Chosen 'method of connection' of the antenna to your rig

Tools required depend on your own level of self-sufficiency. You can cut the PVC with a hacksaw, chop saw, or, my personal favorite for small tubes, a ratcheting PVC tubing cutter (Harbor Freight's \$3 to \$5 model is perfect). Soldering iron, wire crimper, . . . You get the idea.

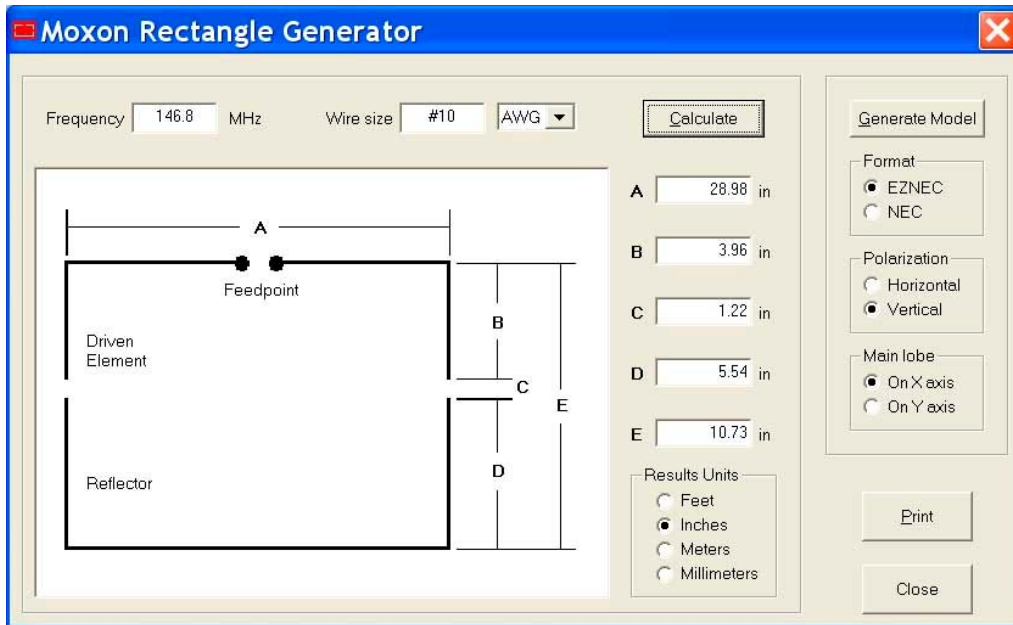
The actual construction is straightforward. I used ring terminals at both ends of the reflector and the non-feed ends of the driven elements. The total length of the various elements includes the ring terminals. The actual lengths of the various wires were as close as possible to the recommended lengths, generally rounded to the nearest ¼" as my bending skills and precision measurement system is no more accurate than that. Which reminds me of what one of my aero professors said to me one day while looking over my shoulder during an exam. I was using a BC (before computers) calculation tool to do my calculations (a slide rule to those under 50) and the professor said, "I don't know if the 8 digits after the decimal are correct, but the two before it are wrong!" One can only be as precise as the tools at hand.



The feed points on my unit were placed into a piece of 1/2" PVC to provide some support. Once the wires were inside the tube I bent them forward 90° and soldered the coax to the elements. Finally I capped off the end of the feed point to give the unit a finished look. I didn't glue the PVC as I can't ever seem to get the perfect alignment I want, so I press fit everything, twist align it, re-press, and, finally, drill small holes for some #6, 3/8" stainless screws to hold it all together. This method has the added benefit of allowing disassembly/reassembly of the original pieces if you forget to do something necessary during pre-preparation. *Don't ask!*



The software used is called MoxGen and can be obtained from The Moxon Project at this address: <http://www.moxonantennaproject.com/design.htm> Just click on the .zip file and download it to your computer. The Moxon Project contains a wealth of information on Moxon antennas of every description. If Moxons are in your future, you need to visit the Moxon Project. Additional information on the math behind the software can be found at the Moxon Project web site as well.



The above is a screen shot of the measurements of my Moxon antenna provided by the MoxGen software package.

Polarization is something I understand concerning light, bears, and politics but antenna radiation patterns are still somewhat of a mystery. All I knew, but not necessarily understood, was that 2m units worked best if the antenna polarization was vertical vice horizontal. Moxon's can be utilized for either polarization (software provided necessary length adjustment based on frequency desired), so to build a vertically polarized Moxon for 2m FM, I stood it up on end! Of course I was not going to build another version for horizontal polarization (2m SSB), I simply made the mounting system adaptable to both horizontal and vertical mounting. The total length difference was less than 3/8" total over about 8' of wire between 145 and 147MHz.



I tried the antenna on the CARS net on a recent Monday night and was pleasantly surprised at the ease of reaching the repeater and the 'full quieting' report from Leo, KG4PWC. All transmissions were made at medium power, 1.5 watts. I believe the antenna meets all of my expectations and probably exceeds my current ability to exploit them fully!

Meeting called to order at 7:32 pm. Attendance: 24 members and guests

Paul K4PRB read the minutes of the previous club meeting. Leo KC4LEO moved to approve as read. Seconded and approved.

Rich N5RAG emailed a brief Treasurer's report which Keith KG4ZXK read.

Repeaters: Paul K4PRB reported on the status of ongoing work on the repeaters.

ARES / PS: Leo KG4PWC reported there will be an emergency exhibit including CERT by the Mormon Church on Mt. Pleasant Rd. Friday, June 8.

Sean W5CDR exhibited and explained details of a Moxon antenna he had constructed. (See MOXGEN.EXE on Google.) He also pointed out how a pair of Moxon antennas can be the basis of satellite ground station antennas.

Barry K5VIP explained the importance of preventive maintenance in high energy circuits of linear amplifiers and displayed some failed components and explained the failure modes and how to prevent same.

Old Business:

Barry K5VIP moved that the club spend approximately \$100 for the Ham of the Year plaque that will be maintained in the clubhouse. Seconded and approved.

New Business:

Jim WB4UVH moved to have our June 4, '07 club meeting be a dinner meeting at the Silver Diner as a going away event for Leo KG4PWC, Rich N5RAG and Reggie W5SSB.

Keith KG4ZXK announced that Paul K4PRB is the new Skywarn coordinator and that net controllers are wanted.

The current draft of the new By Laws was presented to the membership and some discussion ensued. It was agreed that the new By Laws would either be approved at the next meeting or the meeting after that depending upon what questions / suggestions the members have.

Jim WB4UVH moved to change the starting time for regular club meetings to 7:30 pm from 7:00 pm. Seconded and approved.

Paul K4PRB won the 50/50 raffle, \$22.50/\$22.50 & donated his half to the club.

Meeting adjourned at 9:10 pm.

Letter from the Editor

Please submit articles prior to the 20th of the month. My email address is wrightwon_itt@hotmail.com

Thanks
Gavin KD7GJB

Amateur Radio Questions for June

Answers will be in July Issue

G1A09	What are the frequency privileges for a General Class control operator in the 17-meter band?
A	18068 - 18300-kHz
B	18025 - 18200-kHz
C	18100 - 18200-kHz
D	18068 - 18168-kHz

G1B09	What should you do to prevent your station from retransmitting music or signals from a non-amateur station?
A	Turn up the volume of your transceiver
B	Speak closer to the microphone to increase your signal strength
C	Turn down the volume of background audio
D	Adjust your transceiver noise blanker

G1D10	If you are a Technician Class operator with a CSCE for General Class operator privileges, on which of the following band segments must you include the special identifier "AG" after your call sign?
A	Whenever you operate from 18068 - 18168-kHz
B	Whenever you operate from 14025 - 14150-kHz and 14225 - 14350-kHz
C	Whenever you operate from 10100 - 10150-kHz
D	All of these choices are correct

G1E10	What protection from harmful interference caused by primary service users do amateur radio stations have while operating in the 60-meter band?
A	None
B	Stations in the mobile and fixed service must not interfere with amateur stations
C	Stations in the mobile and fixed service must not interfere if an amateur station is already on the frequency
D	Stations in the mobile and fixed service must not interfere with amateur stations if they are located in ITU Region 2

Answers for May Issue

G1A08 (A) G1B08 (D) G1C07 (A) G1E11 (A)

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Monthly newsletter of the Chesapeake
Amateur Radio Service (CARS)

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CARS : Repeaters

146.820 (PL 162.2) MHz
146.610 MHz (PL 100.0)
444.000 (PL 100.0)MHz

W4CAR Trustee: Bill Runyon WF4R

CARS OFFICERS & CHAIRPERSONS

President: Keith Ainsley KG4ZXK

Vice President: Bill Runyon WF4R

Secretary: Paul Buckwalter K4PRB

Treasurer: Rich Graham N5RAG

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Repeater Committee Chairman:

Bill Runyon WF4R

Spring Fest Coordinator:

Leo Kusuda KG4PWC