

The Rochester VHF Group

The VHF



Journal

Volume 63, Issue 4

December, 2010

The next regular meeting of the Rochester VHF Group will be Friday, December 10<sup>th</sup> at 7:30 PM

Spencerport Wesleyan Church  
2653 Nichols St., Spencerport

Map and directions in back

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The Chairman Speaks!  
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**Topics:** Tune-Up Clinic

## The Chairman Speaks! Dave Hallidy K2DH

**Groupers:** First of all, let me say Happy Holidays to all of you! This is MY favorite season of the year (NOT winter, but Christmas time!) and I'm sure it is for many of you, too. This season in particular, we need to remember our troops stationed thousands of miles away in harm's way, serving us and protecting us from those who would like to hurt us. PLEASE keep them in your thoughts as you enjoy the season!

Our November meeting was very interesting! Jeff W2FU, owner of Green Heron Engineering, talked to us about his fine products- rotor controllers, a wireless rotor/antenna control system he calls GH Everywhere, and his newest product, the Radio Boss USB- which is a device allowing interface between a radio's analog input and output and a computer. Jeff gave us a fine demonstration of these pieces and it seems to me they are especially applicable to the VHF/UHF amateur, as they could really improve our ability to control the myriad of antennas, switches, and radios we all seem to have in our multi-band stations. An additional bonus to these products is that they were designed by a fellow amateur, so our concerns

Continued....

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# The Chairman Speaks! continued...

...about possible interference to our radios have been addressed. None of these products, in my evaluation of them, generated ANY potential interference to my radio operations! Thanks for the fine presentation Jeff, and also for your great Green Heron products!

Our December meeting will be our annual Tune-Up Clinic. Here is your opportunity to bring in your preamps, converters, even transmitters to have them checked out by the team, BEFORE you need them for the January VHF contest (and if they need a tweak or a repair, you have time to do that before the contest). We'll have a couple of Noise Figure meters, a Spectrum Analyzer, and at least one Power Meter with couplers and loads, so the capabilities will include the ability to measure Noise Figure and Gain of a preamp or down converter from 50MHz through 10GHz. We'll be able to look at spectral purity of a transmitter and raw power output, as well. This is always a fun evening, even for those who don't bring any gear to test, but just want to hang out, watch, and hopefully learn a bit about this aspect of our hobby.

The club's beacons have been removed from N2MLH's QTH and are scheduled to be relocated to the N2PA site. No date has been set yet for this, but it should be pretty easy, except that we'll have to reprogram the IDer with the new Grid location. Look for more news shortly on the restart of our club beacons!

That's about it for this month. I look forward to seeing you all at the meeting on December 10<sup>th</sup> at 7:30pm for the Tune-Up Clinic! Again, Happy Holidays to all, and if by chance you can't make it to this month's meeting, I'll hope to see you in the New Year!

73

Dave Hallidy K2DH

## Secretary Report

Tom Jennings, KV2X

### Rochester VHF Group Meeting Minutes for December 2010

Meeting called to order at 1947 by Dave, K2DH. Dave introduced Jeff, W2FU, tonight's program, and next month's tune up clinic. Dave ask if there was a motion to accept last month's minutes and treasurer report as published in the Journal. K2DB moved to accept and it was seconded by W2BYP.

Attending the meeting were: WB2BYP, N2KTU, AB2YI, Gloria Butterworth, N3LZG, WB2GFZ, K2MTH, K2DB, W2CNS, K2OS, W2FU, W3OAB, W2UAD, K2DH, KA2LIM, W9KXI, and KV2X. We went around the room with introductions and what we did VHF wise last month.

Ken ka2lim, gave short talk about his "Clean Sweep Award" for Rovers and FM award.

#### OLD BUSINESS

Dave also talked about the beacon status and getting it on the air at N2PA soon. It is a temporary location.

#### NEW BUSINESS

No new Business

K2DB motioned to adjourn the business portion of the meeting. K2MTH seconded the motion.

**Program**

Jeff, W2FU, gave a great talk on Green Heron Engineering products.

**Rochester VHF Group  
Treasurer's Report – November, 2010**

**CHECKING ACCOUNT**

<b><u>Previous Balance</u></b> (as of 11/08/2010):	<b>\$1,930.09</b>
Income:	
Membership dues	\$10.00
Expenses:	
	\$0.00
<b><u>Current Balance</u></b>	<b>\$1,940.09</b>

*Respectfully submitted,  
Tom Jennings, KV2X, Treasurer*

**The Vice Report December 2010**

Recalling our November 2010 RVHFG meeting, thanks go out to **Jeff Ach, W2FU**, for an interesting and informative presentation on recent developments in the Green Heron product line and how he has used wireless rotor controls at his contest station.

On **Friday December 10** we will host our yearly **Tune-Up Clinic**, with a variety of test equipment suited for measurement of preamplifier Noise Figure and Gain, as well as Converter/Transverter conversion gain and NF. We should have a wide range Power Meter and a Spectrum Analyzer good to 30 GHz. All are encouraged to bring in their gear and we will do our best to make measurements from 50 to 10368 MHz. This always is educational – if only to see how various homebrew and commercial preamplifiers fare side to side on a good commercial analyzer.

We are also going to set up and measure antenna return-loss (I'll qualify this with weather permitting), so if you have something you have built recently and would like to see how it looks in a swept return loss set-up, bring it along. The only limits are you have to be able to hold it up in the air.

The **Monday Night and Thursday night nets at 2100L on 144.260 USB** have continued to be well attended. Once again thanks to the usual suspects and some surprise visitors too: Ken W2UAD, Al KA2EKI, Mark K2CAN, John W3OAB, Bill KB2BLS, Mike WB2SQS, John

N2DCH, Len WA2ZNC, Dave K2DH, John N2DCH, Ken KA2LIM, Paul W2TAU, Mark K2QO, Freddie WB2GFZ, Len KC2PCD, Gary KC2TEP, David AA2YI, Carl WA2GAI and Al K2MPE. Some of the Ontario crew joining us have been Richard VE3BK, Walter VE3DXP, Paul VE3PAL, Robert VE3ROR, Paul VE3TAL and Steve VE3SV. Nice to hear the activity up north of us too!

Coming up **Friday January 14 2011** our meeting topic will be an open discussion on the topics of **Winter Contesting, Roving, and Contest Strategy**.

In February we are making plans for an evening **Discussion/Demonstration on the Flex 1500** with Freddy WB2GFZ and myself and our respective gear. Freddy has been looking forward to experimenting more on the QRP and digital side, and I have been doing some interfacing to VHF/UHF Transverters, so there should be a variety of things to see.

Spread the word about the meetings, and join us on the Monday and Thursday night nets.

See you on the air,

John

## **Notes on a Light Rover Mast**

**David Muller, AB2YI**

To begin with, this is not an article about one of those impressive rovers you've probably seen. Its just an account of getting a simple limited rover on the air with the best low-tech antenna system I could manage, using common, inexpensive materials. I do claim two fundamental ham traits: frugality and inventiveness, to use polite terms. Maybe there's an idea here you could use. You might find it amusing, or perhaps it may serve as a warning where roving can lead. Of course, anything you try is at your own risk.

Somehow this started when I got back into radio after a 40 year absence. Compared to my last 80 meter homebrew CW rig, the new FT-857D was like science fiction. I knew I had to try it on 432, and then I ran across a description of Kent Britain's cheap Yagi, which got me into the August 2009 UHF contest. But using a tripod mast outside my car door just didn't work well. I couldn't reach to tune and turn the antenna at the same time, but I did work a few stations. The mosquitoes bit and so did the VHF bug, so I began looking for a better plan.

I had some experience using telescoping steel and PVC conduit for tent frames and displays so I started with that concept for a push-up mast. But where should it be placed? I had no roof rack, and no rotor, but my Toyota Matrix did have a sunroof...hmmm.

I figured I could use a piece of plywood clamped over the open sunroof to support the mast. An improvised plum bob showed that I had a clear vertical drop to a little recess on the floor next to the passenger seat track. I taped some aluminum foil to the roof and rubbed the edge of the opening to make a pattern. Adding 1 inch to the outline for overlap, I cut the 1/2" plywood deck. Tracing just inside the pattern, I fashioned side blocks to center the deck. It turned out the roof had a compound curve, so when I attached the blocks, I shimmed them in

the middle to arch the plywood front to back. Carriage bolts on four corners drop through cleats at each side that snug up against the headliner bead, securing the deck. With foam weatherstripping, the plywood floats, and mounting it leaves no marks inside or out.



Detail--underside of deck.

So what do we have? Cut a 1" hole in the right place and we can drop 3/4 inch steel conduit through the sunroof which will reach to about 10 feet. A plywood floor plate with a projecting screw locates the bottom of the mast. It's a start, but I wanted to go higher than that.

While one could just turn the mast in place, by adding some vertical support, why not raise the mast base to deck level--up periscope, add 4 feet. It turns out those surplus 4 foot fiberglass mast sections will pass 3/4" conduit nicely. With three eye bolts anchored to tee-nuts in the deck, short chains and turnbuckles formed a tripod to adjust the fiberglass mast to vertical, providing a very stiff base, and new possibilities.

Let me clarify that this design is intended for light weight antennas. Cheap Yagis and Moxons weigh less than a pound, and have very little wind loading. Often the coax is the heaviest element in the design, when the mast pushes up over 20 feet--yeah, 20 feet! You see, with my first design, the 3/4" steel conduit itself was a guide for the 5/8" steel inside that carried the antennas.



First try on a PA hilltop--good antenna in a remote location.

With the outer steel mast pushed up, Dacron guy lines from the hood and rear hatch hinge mounts pulled snug, steadying the top. A plywood gate supported the outer mast base when it was in position. Now it was possible to load extensions onto the 5/8" inner mast, pushing it up further, as long as 18" or more remained inside. If the coax and guys were free, the operation was very quick, taking just a minute or two. To join the 5/8" extensions, I simply used a short dowel with two small screws that fit v-notches filed into the conduit for alignment. The only problem was when water swelled a dowel, making it hard to remove. I would recommend sealing them or using a material other than wood.



Gate detail--note bevel cut and coax port. Pivot bolt passes through deck.

One little item that helped a lot with the design--hose clamps. Consider 3/4" PVC slipped over 5/8" steel conduit: Cut four slots lengthwise in PVC conduit, add a hose clamp and you have a collet, or a telescoping joint. Cut a short piece of PVC, slice out a bit, add a hose clamp for a stop (or just use the hose clamp itself.) Cross two hose clamps at 90 degrees, tighten around mast and antenna boom and you have a u-bolt alternative without drilling the boom. Cheap, light, strong, resilient, versatile--I love 'em.



Detail: Collet and crossed clamp, stop and extension PVC, notched 5/8" and dowel pin.

Travel height on the road, depending on your nerves. and the roads you chose, is a maximum of 13'-6", but I prefer to run at 12' to 12'-6". Just use telescoping PVC with a hose clamp to set your top height.

Vertical real estate. Hoping to deprive my neighbors of a spectacle, I chose to drive elsewhere to set up. Carrying the mast in the car, limits its length to no more than 9'-8". Practically, usable mast space is a compromise between the base support and the payload area, considering how many antennas you need and their spacing. With a 4 foot fiberglass base atop the car, I was already at 9 feet elevation, with only about 3 feet usable payload. I decided to replace the fiberglass with 1" steel pipe set in a floor flange shimmed to level. The base was now just over a foot high, the outer mast was cut to 7'-8" and would now reach about 12'-6" extended. At maximum height, the inner mast could still go to 20 feet, plus a 2 foot extension, and would drop to 12'-6" when traveling.



Tripod chain with 1" pipe and floor flange, note coax port.

I now had about 4 feet of payload, but with mast extended, there was 4 feet of unused mast. Why not let antennas slide apart as the mast pushed up? After more complex attempts failed to track azimuth, I mounted the 2M Yagi and 432 stacked Yagis on sliding PVC tubes, and hung them from the 6M Moxon boom with Dacron line. That worked just fine, and rarely did the slack line snag an element.



**Left:** Mast down, 2M Moxon above 6M Moxon, 2M Yagi, and stacked 432. **Right** Mast up, guys tight, antennas spread, top about 16 ft without additional mast extension.

I think there are great advantages to an “armstrong” rotor. Nothing is faster at peaking a signal in the antenna pattern, and I like the feel of it. Nothing is cheaper. The transition from travel to operate is quick, but there can be problems with braking and accuracy. The dowel pin used for extensions can also mount a compass rose. For simple braking, a short bungee cord wrapped around the mast provides friction. To support the inner mast, I used a second steel gate that engages a stop on the conduit. Alternately, a longer mast extension can rest on the edge of my operating bench, but that sometimes gets in the way. Coax can be an issue. I tried Bury-flex, but it was just too stiff. On 6 meters, I used some Wireman low-loss 8x, but for everything else I prefer Times 240 ultra. Coax passes through a hole in the deck fitted with PVC, close to the mast to minimize drag. The biggest issue was guy lines and coax tangling while driving, which delayed pushing up the mast. I considered bungee cords to take up guy line slack, and tied in loops to clip the guys shorter while driving.

But then, I decided to simplify the entire design. I got rid of the guys and moved the support function to the inner mast with the antennas mounted outside on the 3/4" conduit. It's a compromise in that I only get 4 feet of extension, but that still reaches over 16 feet. The 5/8 conduit mounts to the floor, and the 3/4" slides up it, through the 1" support pipe. For convenience I've used one small vise-grip on the 3/4" as a handle/pointer, and another on the 5/8" mast to hold elevation. The payload now extends over 6 feet, no slides needed. The mast can be rotated while driving, and its instantly ready to elevate when stopped. This has worked well for sprints or my 2 bands on UHF, but either configuration can be used.

**(Important--**when inserting or removing the mast through the deck, drive a drywall screw between the conduits at the bottom to jam them together. Otherwise its a long lift!)

A couple notes on antenna mounting. I mount a 1" PVC mast extension over the 1/4" steel, and crossed hose clamps are spaced and aligned to accept the cheap yagis. I find 3/4" PVC with a strip cut out slides nicely over the 1/2"x3/4" wood boom as a reinforcing collar. On the 5/8" mast, I use 3/4" PVC as a short collet for the mount. It just takes closing one hose clamp to secure the antenna, which is nice if you happen to be standing on a ladder. Home Depot carries Velcro strips for extension cords that work great securing coax.

Could this be used without a sunroof? Yes, but its not quite as convenient. (Do you have a hole saw?) I've mounted a similar removable mast to a 2x2 post next to a window on my home. It might work with a roof rack but mounting top and bottom, guying, and access to rotate become issues.

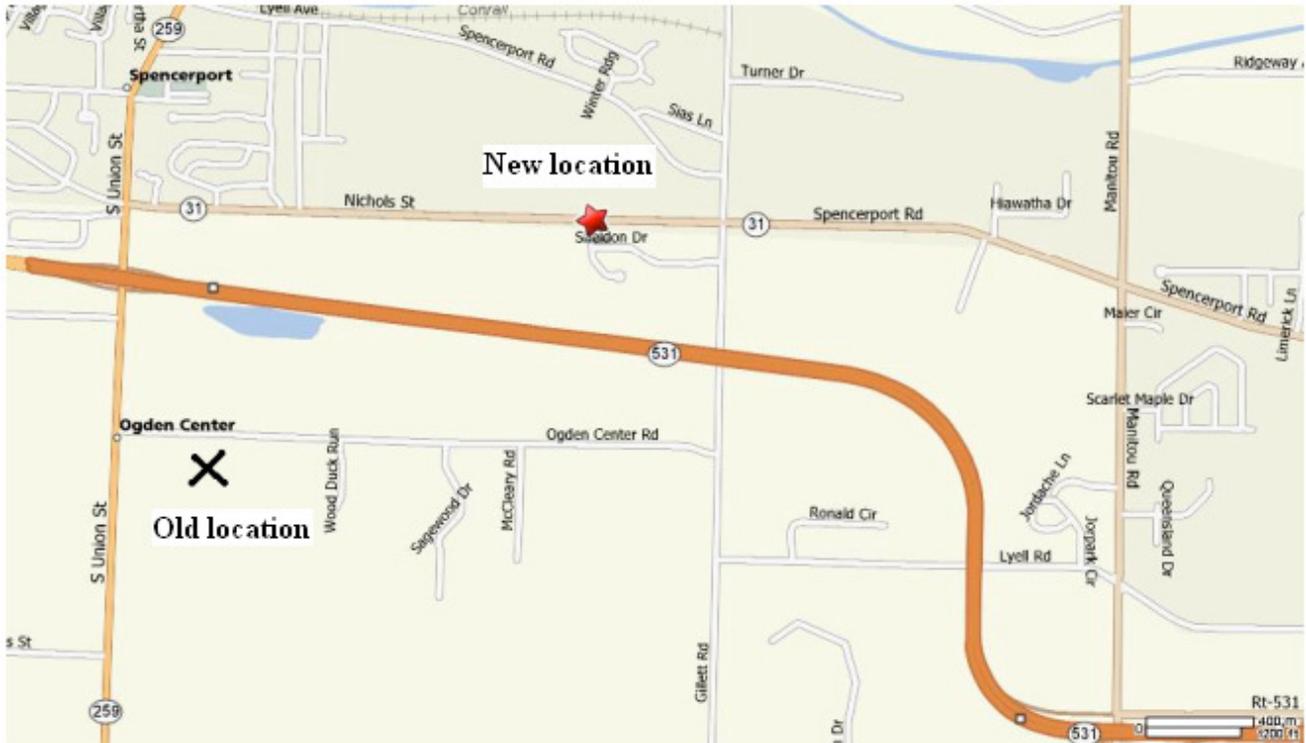
As for further development, and after spending some anxious moments in the rain, wind and dark, standing on top of my car, trying to separate a stuck mast extension (not a hose clamp, unfortunately), I'm considering pre-mounting the antennas to an secondary mast that would clip in atop the main mast, and secure with a single hose clamp at the bottom. It's much better to deal with problems like that on the ground.

If you take on any parts of this design, I wish you safety and success, and I hope you will share your experience. Rove on!

## **Classified Listings**

**None this month.** If you have something to sell or a want, please send an email and I will be happy to include it in the next issue of the Journa.

# Meeting Location and Directions



**Spencerport Wesleyan Church on 2653 Nichols St. (actually Hwy. 31).**

**Directions from Rochester:**

**531W exit RT. to 259N**

**259N turn Rt. on 31E (first Rt. at traffic light)**

**Look for Spencerport Schools Bus Garage on left**

**Take first Rt. on Sheldon at A-framed church, park in rear lot.**

**Enter gray metal door under fire escape.**