Hamgram

Newsletter of the Winona Amateur Radio Club, Inc. May 2007

www.w0ne.org

Meeting Announcement

The May meeting of the Winona Amateur Radio Club, Inc. will be held on Thursday, May 17, 2007 in the lower conference room of the Courthouse Annex. The meeting will begin at 1900.

Minutes of the April 19, 2007 meeting of the Winona Amateur Radio Club, Inc.

Program Presentation: Portable APRS Station – Erik, WBØNIU

Erik discussed his reasoning in his approach to the design of a portable APRS station to be used in remote locations as a low power APRS digipeater. Using several off-the-shelf components from local hardware stores, Erik has put together quite an impressive package.

Program Presentation: DXing above HF – Matt, KFØK

Matt discussed several of the unique modes of propagation that are encountered on the VHF and above amateur bands. He discussed Aurora, ionospheric scatter, sporadic-E, rain scatter, meteor scatter, airplane scatter, F2 (ionospheric layer) and TE (trans-equatorial). He also talked about DX goals – namely grid squares.

Business Meeting: Called to order by Jim, KBØTHN at 2023

There was one non-ham visitor, Steve White.

The March Minutes were approved as published in the April 2007 ***Hamgram***.

The treasurer's report was approved as presented (approximately $711.)

Repeater Committee report (Erik, WBØNIU)
Progress continues on the permanent replacement for the 835 controller. The Hamtronics receiver with the recently enclosed GE preamp will also be placed into service.

Packet Committee (Clare, KØNY)

There was a malfunction of the node (Power was turned off.) Jim is considering adding a telemetry feature so that we can intervene before the batteries are completely drained of power in the event of another such outage.

Old Business

GRSF Special Events Station – No report.

Cannon Falls bike race – Lance plans a dry run of the APRS systems in late May.

Development Committee – There are over 20 subscribers to the WARC email listserve.

VE Session – Clare (KØNY) reports that three hams upgraded to general (100% of those who attempted) and two hams attempted Amateur Extra.

New Business

Field day - Matt (KFØQ) volunteered to be in charge of the VHF/UHF effort.

Club Equipment will be moved from 175 McConnon Drive to Winona Knitting Mills building on Saturday, April 21 after the club breakfast.

Shop Night will be by appointment from now on. Contact Jim (KBØTHN).

WEB site will soon feature a photo gallery thanks to Jim (KBØTHN).

A motion remains on the table: Les, KØBAD moved and **Erik, WBØNIU seconded** that the ***Hamgram*** be distributed automatically by email and that people be asked to pay a $5.95 yearly subscribe to obtain a copy by regular mail.

The meeting was adjourned at 2037.

Respectfully submitted,

Leslie D. Hittner

Leslie Hittner, Secretary

Attendance:

Les, KØBAD	Tom, WØMK	Erik, WBØNIU	Jim, KBØTHN
Matt, KFØQ	Jim, KCØTXJ	Ken, NØJP	Lance, KBØYJU
Len, KCØRSX	Dick, NØVV	Steve White	Shari, WA9IGK
Clare, KØNY			

The $99.99 dollar antenna…

Fact or ancient myth?

Matt Burt, KFØQ

The last couple of months I have talked about building your own antennas. While building is enjoyable it can take time to locate materials and tweak the design. Now that the antenna season is here some of us have little time for additional projects. What about using a commercial, or "plug and play" antenna for that new band or station enhancement? But how much do we want to spend? For most of us that answer may be "as little as possible".

You know how those marketing schemes work; price your product below some pre-conceived number and the mind of the consumer takes over with a false impression of spending less. So for amateur antennas here in '2007 what is that number? How about $100? Can the radio amateur today spend $100 or less and purchase a viable antenna for any band/bands that he/she wishes to operate, get on the air, or enhance station performance? If so what might we expect to find for this low of a cost?

It sure seems to me that money today does not go as far as it did just a couple of years ago. Cost adjusted for inflation an antenna that cost $79.95 in 1990 would make it $125.62 today[1] is this really the case? Can we still find anything out there for $100 or less? I set out to find an answer to this question and below are examples of what I learned. I do not intend to support any particular dealers … we all have our favorites. Please keep in mind those folks that provide pricing on their current web page are not always the lowest cost just as the folks that say "call for price" are not either.

HF Verticals:

HF verticals are a great way to get on the air fast. They can take up little room on a small lot or apartment and provide a working station for the low bands 80 through 10M. Back in the day (well almost) I paid $144.95 for my butternut HF6VX. With the cost of copper and aluminum and steel dramatically rising in the last few years the cost of the HF6 today is $359.95 ($389.99 at AES).[2]

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1 Street price ($90 list) of Cushcraft A50-3 *p. 64 CQ Amateur Radio 1990 Antenna Buyer's Guide*. Inflation calculator at: http://data.bls.gov/cgi-bin/cpicalc.pl

2 Burghardt Amateur Center http://www.burghardt-amateur.com Amateur Electronics Supply (AES) http://www.aesham.com/

For verticals you can look at the 4BTV by Hustler. It is a simple 40-10M 21' vertical that sells for $149.99 at AES, or the Hustler 5BTV, which is a 80,40,20,15,10 Meter vertical which sells for $169.95 (Burghardt). (Somebody must have liked the Hustler 5BTV HF vertical as it received a 5/5 at eham.net).

I also ran into a couple of offerings from Hygain. The AV-12AVQ is a 20-10 vertical ($149.95 Burghardt) and the AV14AVQ is another four band 40/20/15/10M 18' tall antenna ($169.99 AES).

The AV-12AVQ is a 13'5" tall trap HF vertical described as:[3]

> "This vertical antenna is designed for operation on 10, 15 and 20 meters. It is designed to work against earth ground or a radial ground system. When used in conjunction with a resonant radial system, the vertical antenna becomes very efficient with a low angle of radiation and excels in DX communications."

While researching the two above models I ran across this other model the Hygain AV-18S which sells for $89.95 (Burghardt) and is described as an 18 foot Base-Loaded 10/15/20/40/80 Meter HF Vertical Antenna capable of 1500W PEP. This antenna really caught my eye. I had to dig a little deeper; could you really get a brand new HF antenna for all these bands here in the 21st century for this low price?

The manual describes this unit:

> "The Hy-Gain Model 18V-S is a trapless, vertical antenna which is manually tuned to any band[4], 10 thru 80 meters, by a simple adjustment of the feed point on the base inductor. It is designed to be fed with 50 ohm coax, and

works efficiently for DX or local contacts. It now features stainless steel hardware for all electrical and most mechanical connections."

Review Summary for Hy-Gain AV-18VS:

> Reviews: 18 Average rating: 4.0/5

Other HF Antennas that make the $100 grade:

Even though the current solar cycle is close to a minimum [5] ten meters will start heat up soon with cycle 24. When that happens the AR10 10M Ringo vertical from Cushcraft can work some DX. It is 17.6' tall has

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3 on-line manual at: http://www.hy-gain.com Also noted several examples of phased verticals at the Hy-gain site.

4 "Manually tuned" means going outside and moving a jumper on a coil at the feedpoint to a different tap allowing the proper match for your band of operation.

5 See the history of the sunspots at: http://www.spacetoday.org/SolSys/Sun/Sunspots.html

HF Yagis:

Folks that have mono-band Yagis for HF tend to be serious DX'ers, contesters or just have the tower space. Even though the price is beyond that $100 mark here is a low cost example from Hy-Gain. The LJ103BA is a 3 element 7.9dB 10M beam with 8ft boom. The cost for one of these is listed as $159.99 (AES)

Of course the triband yagi is a real favorite but is one of the most expensive choices. The Hy-Gain TH3JRS is a 3 element 600W PEP yagi for 20/15/10M that sells for $359.99 (AES).

VHF SSB:

It is not cheap to set up a station for competitive weak signal SSB/CW or FM DX. The Cushcraft 13B2 is a great entry level 13 element 144-148MHz 14.2dB antenna with a 15 ft boom. It sells for $199.99 AES (179.95 Burghardt).

For premium weak signal work on 144 Mhz the M2 2M12 is a clean, mechanically strong computer optimized yagi with 12.8dB[6] gain and a 19FT 6 in boom. It sells for $209.95 (Burghardt)

6 Meters:

Looks like it can be a bit over $100 these days to get on 6 meters as well. One of the lowest cost antennas for 50Mhz is the M2 6M HO Loop. It boasts 4.4dB gain, and has a horizontally polarized omni- directional pattern. At $114.95 (Burghardt) it has a small footprint and will work great if the band is open!

Entry level yagis for six include the Cushcraft A50-3S 3 element 8dB, with 6 ft boom for $119.95 (Burghardt), and the 6M3 from M2 which is also 3 elements, 6.4dB ($170.99 AES, $169.95 Burhardt)

VHF FM:

For 2M FM work we appear to be in good shape. For under $100 there are several choices. The old standby from Cushcraft the ARX-2B Ringo Ranger II is a great 2 meter base style antenna that is listed as a 14' tall and has 7dB gain ($74.95 Burghardt).

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6 Some Mfg's use the higher dBi number for advertising their products. The better gain figure to use is dBd; equal to dBi minus 2.15. It is a bit a trouble for me to trace back what manufacturers claim. Buyer beware is this the case here as many of the products should have similar gain. There is a great link at :

http://www.arrl.org/ads/antenna/
That explains this exceptionally well.

Diamond offers a dual band base station antenna the X50A. It operates on both 2 meters and 70 cm (440MHz), has 4.5/7.2dB gain respectively is 5.6ft tall, and comes in right at $99.95 (Burghardt).

Another 2 meter antenna that a few of us are familiar with is the Hustler G6-144B which is a 6dB, 144-148 Mhz base antenna. These sell for $119.95 (Burghardt) today. A well built antenna but unfortunately exceeds the $100.

Lower cost HF wire Antennas:

For a really low investment the G5RV by Radiowavz is a 102 ft G5RV that is 32ft tall and sells for $36.99[7]

I have to say that I have not used this particular antenna but have worked many stations running a G5RV. They do require a tuner for multiband operation but do work. At such a low price how could anyone with the space for one resist?

(eham summary for Radio Wavz G5RV Mini):

> Reviews: 2 Average rating: 5.0/5 Description: A 40-10 meter dipole. Assembled with a 16 foot 300 ohm twin lead stub, with direct SO-239 hookup.

A few of us locally have the Alpha Delta DX-B Sloper. It is a 160M to 30M antenna made from solid copper building wire, and open air PVC traps that is 60 feet (18.3m) long and sells for $108.95 (AES). The first time I used it on 160 I was able to work stations in 24 states. Not bad! I did however; follow the recommendations and enhance my ground system accordingly. The eham review looks like this:

> Average rating: 3.9/5 Description: 160/80/40/30 Multiband Quarter Wave Sloper
>
> (I gave mine a 4.5 out of 5 rating …)

Another G5RV from Van Gordon is also 102 ft, operates from 3.5-30Mhz (with a tuner) and comes with 100ft of feedline for all of $60.99 (AES). A pretty good buy for a station starting out!

Conclusion:

Well, the $99.99 dollar antenna can still be found. We can work the VHF bands on FM, world wide DX with a wire antenna or low cost vertical on HF all in this price range knowing that we may have to make a compromise in gain, or sacrifice some performance. VHF DX is going to cost more, but

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7 (Note: they sell directly from their webpage. Simple wire antennas at low prices)

http://www.radiowavz.com/

still not too far out of reach. If we want to get a bit serious about DX and / or contesting on HF and want some gain we will have a pay a few hundred dollars for something new. In all cases we need to keep in mind that many of the antennas that we may want are available used. I purchased 2 of my favorite VHF antennas new, never used in the box for about half of today's cost. To get the most out of our antenna system make sure that the recommendations for grounding are followed. In most cases the best RF ground we can come up with will be worth the effort.

Good luck this antenna season and good DX!

Test Your Amateur Radio Knowledge

Len Litvan, KCØRSX

The following are from the FCC exam pool—Technician, General and Amateur Extra.

1. **What emissions do a transmitter using a reactance modulator produce?**
   A. CW
   B. Test
   C. Single-sideband, suppressed-carrier phone
   D. Phase-modulated phone

2. **How should the microphone gain control be adjusted on a single-sideband phone transmitter?**
   A. For full deflection of the ALC meter on modulation peaks
   B. For slight movement of the ALC meter on modulation peaks
   C. For 100% frequency deviation on modulation peaks
   D. For a dip in plate current

3. **What may be the penalty for a VE who fraudulently administers or certifies an examination?**
   A. Revocation of the VE's amateur station license grant and the suspension of the VE's amateur operator license grant
   B. A fine of up to $1000 per occurrence
   C. A sentence of up to one year in prison
   D. All of these choices are correct

4. **What happens to signals that take off vertically from the antenna and are higher in frequency than the critical frequency?**
   A. They pass through the ionosphere
   B. They are absorbed by the ionosphere
   C. Their frequency is changed by the ionosphere to be below the maximum usable frequency
   D. They are reflected back to their source

5. **Approximately how long is the driven element of a Yagi antenna for 14.0 MHz?**
   A. 17 feet
   B. 33 feet
   C. 35 feet
   D. 66 feet

6. **Which of the following is NOT a characteristic of FMTV (Frequency-Modulated Amateur Television) as compared to vestigial sideband AM television?**
   A. Immunity from fading due to limiting
   B. Poor weak signal performance
   C. Greater signal bandwidth
   D. Greater complexity of receiving equipment

Answers to Exam Pool Questions:
#1 - (D); #2 - (B); #3 - (A) [97.509(e)]; #4 - (A); #5 - (B) #6 – (A)

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Dues: $25.00 per calendar year per license holder.
$30.00 per calendar year for all licensed members of the same family within the same household.
Dues should be sent to: Richard Kolter, Treasurer

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Board meetings are announced in advance (WEPNet)

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