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# The WACOM HAM

JUNE  
2005



WACOM  
Seen At  
**Dayton  
Hamvention  
® 2005!**

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Above: Jane, Kevin, Ed & Dave enjoying lunch inside the HARA Arena



Right: Dave & Jane next to their Trusty Explorer on their Twenty Ninth Wedding Anniversary at the University of Dayton suites (yes, they spent their anniversary at Hamvention!)

Photos courtesy of and Copyright ©2005 Jacqué Gosselin N3ZEL

## UPCOMING MEETINGS!



*Next WACOM Monthly Meeting:*  
Thursday, June 2, 2005, 7:30 PM  
→ **Field Day June 25 & 26 — Plans to be finalized at the meeting!**

*Next WACOM Board of Directors Meeting:*  
Thursday, June 30, 7:30 PM

*Meeting Location:* Room 103, Washington County Building, Downtown Washington. *All Welcome!*

# General Membership Meeting Minutes for May 5

Susan Robishaw KB3JHQ, Secretary, WACOM

The President, Jacque, N3ZEL called the meeting to order at 7:38 P.M. at the County Building.

Minutes: Dan, KB3HVN made a motion to approve the April minutes, seconded Bill, N3WYS, approved.

Treasurer: The Treasurers Report is filed in the Archives.

Repeater: Tom, KA3NIY reported that the repeater was up and working. Possible nightly code practice to assist in code training prior to a General Class.

Merchandise: Patches are here. The price is \$5.00 each.

RACES: Still working with the Hospital regarding emergency communications. Official approval has not been given yet.

ARES: June 4, Bentleyville is having a walkathon. Potentially we would provide communications.

Amateur Radio Class:

Committee: Bob, KB3IN chair, with members, Carl, KB3FZS, and Bud, N3TIR.

Graduates: Kathy, KB3MDP and Ben, KB3MDO.

Hamfest: Prize list: ICOM 706, mobile radio, dual band HT radio, and satellite radio. The date is November 6 at the Washington County Fairgrounds. There is a Gun Show on the same date.

Equipment: No report.

Sportsman Show: Making QSL cards for the contacts that

were made.

Field Day: June 25-26, 2005. Tom, KA3NIY to organize food. Jacque, N3ZEL to call Allen, KB3EUQ regarding the Gun Club availability.

Unfinished Business:

Tubes: \$44.16 of tubes sold in March.

Picnic: Carl, KB3FZS volunteered his house as location for the annual picnic on August 6.

New Business:

Boy Scout Merit Badge: Jim, KC3HW proposed a two part program for a merit badge for a Boy Scout group. He would do the theoretical portion and Bill, KB3LIX volunteered to do the project session at Field Days. Bud, N3TIR volunteered solder and a soldering station. Ed, N3ZNI will get information from ARRL. Research for a project to do is ongoing.

June 2 Membership Meeting: ARRL Section Manager Rich is scheduled to speak at the meeting.

Meeting adjourned at 8:35 P.M. (Tom, KA3NIY/Sam, W3CYO).

There were 17 people present for the meeting.

Tom, KA3NIY had a solidstate air cooled tube talk at the end of the meeting.

## Hams Encouraged by Motorola's New "Powerline LV" BPL System

ARRL Web Extra courtesy of the American Radio Relay League

Newington, Conn., May 23, 2005 — ARRL, the national association for Amateur Radio, announced today that "The ARRL is pleased to hear Motorola's announcement of its Powerline LV system. This is the first Access Broadband over Power Line (BPL) system that has been designed from the start with radio interference concerns in mind."

Motorola's Powerline LV system avoids using the medium-voltage (MV) power lines and introduces broadband signals only on the low-voltage (LV) side of the power transformer. This greatly reduces the potential for interference to and from radio users, especially radio amateurs. ARRL Chief Executive Officer David Sumner commented, "We know that medium-voltage (MV) power lines are no place for broadband energy, since there is overwhelming technical evidence that radio interference from BPL is unavoidable if MV lines are used. By confining their Access BPL system to LV lines and by adding hardware notch filters for additional protection to amateur radio frequency allocations, Motorola has addressed our interference concerns."

While sometimes pictured by BPL proponents as opposing all BPL implementation, the ARRL has always maintained that radio amateur "hams" are not interested in blocking new technology but are justifiably concerned about pollution of the radio spectrum. Significant interference has been documented at numerous sites

where other BPL systems are being tested, and other BPL developers have been unwilling to share information about their systems. By contrast, Motorola

invited ARRL's suggestions and welcomed its input during product development.

Sumner concluded, "We look forward to seeing the first Powerline LV system in operation, and to continuing to work with Motorola to ensure that their new product is indeed the first BPL system that is a solution, not a problem."

There are approximately 670,000 Amateur Radio operators in the United States. Many other countries are watching events unfold in the US as they plan their own BPL systems.

There are approximately 2.5 million Amateur Radio operators around the world. If the new Motorola system lives up to its initial promise in actual deployment, this new "shortwave-friendly" system will have many advocates.

A CHARITY WALK will be held in Bentleyville on June 4th. WACOM has been asked to provide communications for this event. Please join us! This is great experience, a chance to help with a worthy cause, and good public relations for WACOM and for Amateur Radio.

More information will be available at the June meeting.

ARRL WebExtra courtesy of the American Radio Relay League

NEWINGTON, CT, May 25, 2005 — FCC Wireless Telecommunications Bureau staff member Bill Cross, W3TN, told the FCC Forum at Dayton Hamvention May 21 that there's "still a lot of uncertainty surrounding BPL—its technical and financial viability, where, how and if it will fit into the communications future." Cross works in the WTB's Public Safety and Critical Infrastructure Division, and much of his work directly involves the Amateur Radio Service. Devoting nearly a quarter of his remarks to the standing-room-only audience to BPL, Cross discussed various aspects of the FCC's October 14, 2004, *Report and Order* in ET Docket 04-37. The R&O established new Part 15 rules to implement BPL systems. Cross said the Commission's expressed a lot of "potentials" and "coulds" in outlining its rationale for promoting BPL as another competing broadband pipeline.

"Whether BPL catches on will be a decision made by economics, both for those who want to provide the service and consumers who have to decide it is better for them than other broadband services,"

Cross said. He also said the FCC recognizes BPL's potential to interfere with Amateur Radio and other radio services.

Also note that BPL is coming on the scene, at best, as the fifth player in a field already crowded with heavy hitters," he said. "Currently we have cable, satellite, non-satellite wireless broadband and telephone lines available and providing broadband service." Cross said telephone companies already are looking at installing fiber optic cable to the home to expand available bandwidth for consumers. At the same time, he said, cable companies "have been spending gazillions of dollars upgrading their systems to digital systems so they can provide services other than traditional TV service."

Citing the current heavy level of advertising and even price-cutting by industry players for a bigger piece of a "fixed pot of dollars," Cross asked, "Where does BPL fit in?" Cross said he didn't believe anyone was now getting a barrage of offers for BPL-provided services. "Nor will we be anytime soon, from what I have read in the communications press."

(W3TN on BPL Continued on page 5)



*Congratulations*

*New Hams!*

Here are the two most recent graduates of our Technician licensing class, Ben KB3MDP & Kathy KB3MDO (Hard to tell which one is prouder of the other, the mother or the son!)

Photo courtesy of and Copyright ©2005 Jacqué Gosselin N3ZEL

## Upcoming Events

- June 4 — Charity Walk in Bentleyville
- June 5 — Breezeshooter's Hamfest
- June 11 & 12 — ARRL June VHF Contest
- June 11 & 12 — MS 150 "Escape to the Lake"
- June 25 & 26 — ARRL Field Day
- July 10 — North Hills ARC Hamfest
- July 16, 17 — Pittsburgh Vintage Grand Prix
- July 17 — Somerset Co ARC Hamfest
- August 6 — WACOM Picnic
- August 28 — Skyview RS Hamfest
- September 3 — Uniontown ARC W3PIE Gabfest
- September 11 — Butler Co ARA Hamfest
- September 24 & 25 — Mid-Atlantic VHF Conference & HAMARAMA, sponsored by the Mt. Airy VHF Society
- October 1 & 2 — California QSO Party
- October 8 & 9 — Pennsylvania QSO Party
- November 6 — WACOM Hamfest
- May 19, 20, & 21, 2006 — Dayton Hamvention

# JOIN WACOM ON THE AIR

2 meter net: Every Tuesday at 8:30 PM on the W3CYO repeaters 145.49 and 443.3 MHz

10 meter net: Every Tuesday at 9:00 PM on 28.340 MHz

## FYI Networks

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CONTACT FYI AT 1-877-FYI-4NET OR WWW.FYI.NET

MENTION THAT YOU ARE A WACOM MEMBER FOR A SPECIAL PRICE OF \$18 / MONTH.



# The Satellite Beacon: Improving Satellite Reception, Part 2

Emily Clarke WØEEC courtesy of the Project OSCAR Amateur Radio Club

Last month we discussed receivers, antennas and coax. This month topic is dedicated completely to the subject of pre-amplifiers or preamps.

Pre-amplifiers are generally the most important addition to any satellite receive subsystem. HF operators will swear “preamps only amplify noise” but they usually refer to preamps built into the rig itself and not preamps mounted at the antenna.

Satellite operators always refer to preamps that are mounted on the antenna mast or boom, and are literally as close to the antenna as feasible.

The primary role of a mast-mounted preamp in a satellite station is to overcome coaxial cable losses and improve the strength of the signal. For example, if you have a 100 foot length of 9913 cable between the 70 cm antenna and radio, the loss from the cable will be almost 3 db (plus probably .5 db for each of the connectors.) This means more than 1/2 of the signal received at the antenna will be lost by the time it reaches the radio. Considering some smaller satellites are transmitting as little as 10 mw, 3 db of cable loss is not trivial. By inserting a preamp it will boost the signal to overcome the loss. While preamps can increase noise, especially in urban environments, most mast-mounted preamps will help particularly if you have smaller beam antennas.

Pre-amplifiers are generally designed for a specific amateur band and optimized to receive signals only in that band. This means if you are planning on working both 2 M and 70 cm you will need two separate preamps. If you think about it this makes sense for two reasons. By limiting itself to a specific band it will reject out of band signals that could saturate the amplifier. It is important to select a preamp optimized for the satellite portion of the band you are using. Also, since you generally have two antennas, one for each band switching a preamp from one antenna to the other would be cumbersome.

There are a number of other factors to consider when choosing a preamp. The first is how to power the preamp, now located far from the shack. Preamps are powered by DC voltage and in many cases, DC power can be provided through the coax from either the radio or by using a bias -T to inject DC into the coax. In some cases you will be required to run DC power up to the preamp separately.

When unpowered the preamp will generally bypass its internal electronics and switch the coax directly to the antenna. It is only when the preamp is powered up that a relay engages and switches the receive signal through the amplifier. If the preamp's delicate circuitry is not bypassed during transmission

it will damage the components that are not designed to handle transmitted power. But be careful – some preamps are sold for “RX ONLY”.

Some rigs will turn off power a few milliseconds before keying up it's transmitter to allow the preamp to be bypassed. This is a safety feature that allows you to transmit through the preamp while protecting the circuitry. This is also called the Push-To-Talk or PTT method. In other designs the preamp will sense RF coming from the radio and will automatically bypass itself when the power reaches a certain point (also called the VOX method). When selecting a preamp it is important to know which method your preamp uses and make sure it is matched to your rig.

The next factor in selecting a preamp is noise figure. This is the contribution of the device itself to thermal noise in the system. This is typically less than .8 db for devices with GaAsFet amplifiers, but some lower cost preamps that use MMIC devices can be as much as 3.5 db. I was appalled at Dayton to find that one kit vendor was selling a “Low Noise Preamp” that had a noise figure of 5.5 db! That's a tremendous amount of noise for the satellite signal to overcome. Although you are overcoming 4.5 db loss in your 9913, you are replacing it with 5.5 db of noise! So when selecting a preamp you should consider one that has a lower noise figure. A good GaAsFet preamp will cost a bit more, but the differences are highly noticeable.

The last factor in selecting a preamp is gain. Many preamps will have 20 db or more of gain, so this is not a big problem since even in the worse case (100 feet of RG-58) loss would be about 11 db. However, if you have very good coax, you may want to use a preamp with a lower noise figure and lower gain. A feature in some preamps is adjustable gain, so matching gain to coaxial loss is a good strategy. I prefer to have my preamp adjusted so that the background noise level is at S-0. That way when I see an S-9 signal, I know it is S-9 over the noise level.

To my knowledge Icom is the only radio manufacturer who offers preamps that are built specifically for their radios. Most people will use an after-market preamp. Here is a list of other preamps and vendors.

Kuhne Electronic GmbH - <http://www.kuhne-electronic.de/> - low noise preamps

SSB Electronics – <http://www.ssbusa.com>: SSB ultra low noise and distributor for Kuhne preamps

Down East Microwave (DEMI) – Low noise preamp kits (note – generally receive only.)

WiMo - <http://www.wimo.com/>: distributes SSB and MicroSet preamps

A 1/4 wave vertical ground mounted has lobes from 10 to 55 degrees and has gain of approximately 3 to 10 dBd. The lift off angle, which is not often mentioned, is 0.35 wavelength from the base of the antenna, where the current is maximum. This portion should be free and clear of any objects to absorb, reflect or distort the waveform.

- At a take off angle of 10 degrees, the isotropic gain is calculated to be 11.459 dBi. This gain is 11.459 over a isotropic source. In dB, the gain is 10.59 dBd.
- At the 55 degree angle, the gain over an isotropic will be 2.118 dBi or 3.18 dBd.
- At the 45 degree angle, the gain over an isotropic will be 2.546 or 4.116 dBd.

Reasons not often explained are because the ionosphere and the 'D', 'E' layers of high absorption for the low wave angle that a vertical produces.

The dBd is in decibels; the dBi is isotropic gain over a isotrope/ isotropic source.

In the evening when the F layer splits into the F1 and F2 layers, this is where the fun begins. The amount of 15 radials is plentiful for any ground mounted vertical antenna, no matter what anyone else will tell you. Although, you may ad as many as you want, it will do no harm.

The cost is very small for the benefit you will derive

— Vito Chiarappa W6TH courtesy of [www.eham.net](http://www.eham.net)

# **51<sup>st</sup> Annual Breezeshooter's Hamfest**

**Sunday, June 5<sup>th</sup>, 2005 8:00 AM to 3:00 PM**

**Sponsored by the Breezeshooters**

**Butler Farm Show Grounds / Roe Airport, State Route 66, Butler PA**

(The Farm Show Grounds are West of Butler between Butler and Evans City)

**Talk-In on W3UDX/R 147.360+ Repeater**

**Prize Tickets \$2.00 Each or 3/\$5.00, 7/\$10, 15/\$20**

**For more information & updated list of 2004 Hamfest Prizes please go to**

**<http://www.breezeshooters.net/hamfest/hamfest.htm>**

## **North Hills ARC Hamfest**

**Sunday, July 10<sup>th</sup> 8:00 AM to 2:00 PM**

**Northland Public Library, Cumberland Road, Wexford**

**Between McKnight Road & Perry Highway (Route 19)**

**Talk-in on 147.090 MHz**

**For more information, go to <http://www.nharc.pgh.pa.us>**

*(W3TN on BPL Continued from page 3)*

Cross pointed out that FCC Part 15 rules require that licensed radio services such as Amateur Radio must be protected from harmful interference. He also noted that the FCC was careful to carve out reservations and set specific prohibitions regarding BPL deployment on certain parts of the spectrum allocated to federal government users, in addition to imposing some strict requirements to mitigate interference.

"You wonder, with all these restrictions — including some that prohibit BPL deployment in what appear to be very profitable areas — a reasonable question might be, "Who would want to go into this business?"

The current tug of war, he said, is between the three or four companies interested in BPL— who want less onerous restrictions — and the ARRL and other users who don't believe the restrictions go far enough. Both sides have filed petitions for reconsideration.

"Those petitions are pending, and whatever is decided on them

will affect the final rules for BPL and may very well affect its viability," Cross concluded.

Regarding Amateur Radio proceedings now before the Commission, Cross was unable to pin down for FCC Forum attendees when they might expect to see a *Notice of Proposed Rule Making* in response to 18 petitions for rule making filed by ARRL, other Amateur Radio organizations and individual licensees. The primary hot-button issue in that proceeding is the future of the Morse code requirement for access to HF amateur bands. The FCC also is considering proposals to create a new entry-level license class and to implement some additional Amateur Radio license restructuring, including automatic upgrades from Technician to General and Advanced to Extra.

Cross said he anticipates the FCC will combine the 18 petitions into one *NPRM* and invite another round of comments from the amateur community. "I suspect the proposed rule making will be coming out in late summer or this fall," Cross said. The comment period could extend into early 2006, he added, after which a *Report and Order* would be written.

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*We're On the Web!*  
[www.wacomarc.org](http://www.wacomarc.org)

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The editor welcomes articles and timely information of interest to members and the general amateur community.

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## PLEASE SEND YOUR 2005 DUES AND APPLICATION INFORMATION

Annual WACOM membership dues are only \$15 .  
A couple pays only \$22.50.

Send your check payable to WACOM to:

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## WACOM e-Mail Reflector

An e-mail reflector has been set up for WACOM members.

What's a reflector? It's a mailing list which lets you send one e-mail message to the list address — [wa3com@yahoogroups.com](mailto:wa3com@yahoogroups.com) — and have it "reflect" to all members of the list. Unlike a personal mailing list, you don't need to know all of the e-mail addresses for every single member of the list. Only group members can send e-mail to other members of the reflector — no spam allowed!

E-mail reflectors are being used by many area Amateur Radio clubs as a means to facilitate news and information at a moments notice. Yahoo! Groups (formerly eGroups) provides this service for free to anyone who wants to avail themselves of their list server. Yahoo! also provides calendar, file storage, & additional services.

To join the WACOM reflector, simply send a blank e-mail to:

[wa3com-subscribe@yahoogroups.com](mailto:wa3com-subscribe@yahoogroups.com)