



October 2007 Volume 37, Number 10

October Club Meeting

Date: Friday, October 26, 2007
Time: Socializing at 7 pm, Meeting at 7:30
Place: Covington School, 205 Covington Road, Los Altos
Topic: Modulation and Deviation - or - Sidebands, Splatter, and Such Stuff

Summary: Dave Platt, AE6EO, will discuss common signal modulation schemes, including AM, sideband, and FM. These modulations differ in their means of generation, detection, their use of the radio spectrum, their resistance to different forms of interference, and the ways in which mis-adjusted modulators can cause interference to other radio operators.

The talk will include a basic discussion of each modulation, waveform displays, spectrum-analyzer plots, and some scary mathematical equations. (There is no quiz afterwards, although extra brownie points will be given to anyone who brings a slide rule to the talk.)

An FM deviation meter or service monitor will be made available for people who wish to check the modulation/deviation level of their portable radios.

About the Speaker: Dave has been fascinated by radio and electronics since his 10th birthday, when he was given a crystal radio kit to build. Detoured for years into digital electronics and computers, he finally got his ham ticket in 2002 and has been enjoying the hobby greatly since. He recently helped build and program the new W6ASH repeater system at El Camino Hospital.

Two great prizes will be raffled at this meeting: The main prize this month is an Alinco DM-330MV Switching power supply, max output 32 Amps. See later in this relay for more information on this power supply. The second prize is to be announced.

The club offers refreshments at the meeting. Be sure to attend for an enjoyable evening. Get your name in the Relay: bring your toughest questions for Dr. Know-It-All.

Upcoming Events

- Oct 26 7:00 PM, Club meeting, Covington School
Nov 1 7:30 PM, Board Mtg at the Los Altos Town Crier
Nov 3 8 AM to 9 PM, Am-Tech Day, SLAC, 8AM-9PM
Nov 16 7:00 PM, Club meeting, Covington School
Dec 6 7:30 PM, Board Mtg at the Los Altos Town Crier
Dec 8 8 AM to 9 PM, Am-Tech Day, SLAC, 8AM-9PM
Dec 14 7:00 PM, Club meeting, Covington School
Jan 3 '08 7:30 PM, Board Mtg at the Los Altos Town Crier
Jan 25 '08 FARS/PAARA Winter Banquet 2008
Thursdays 8:00 PM, FARS net, 145.230(-), 100 Hz PL
See more events, FARS Calendar <http://www.fars.k6ya.org/events/calendar>

President's Corner

Membership Meeting. Our next meeting is Friday, October 26th at 7pm (http://www.fars.k6ya.org/meeting). This month's speaker is Dave Platt, AE6EO whose talk is "Modulation and Deviation - or - Sidebands, Splatter, and Such Stuff."

Bring your transceiver to have its frequency accuracy and FM modulation levels measured. We will also be testing output power and portable antenna performance.

Am-Tech Day. The next Amateur Radio Technology Day is scheduled for Saturday, November 3rd at the Stanford Linear Accelerator Center. Check the FARS web site (www.fars.k6ya.org/amtechday/) for the program schedule, directions, and the latest news. Subscribe to the FARS Announcement list (www.fars.k6ya.org/mail/) to make sure you get an email reminder for this and other FARS activities.

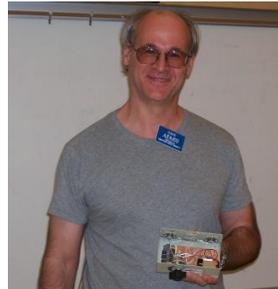
FARS/PAARA Winter Banquet 2008. The banquet is set for January 25th at Michael's at Shoreline in Mountain View. We are again teaming up with PAARA to make this event the big to do that it is. We are planning to have \$1,000 in prizes for the raffle, a great meal, and of course our speaker. Our speaker is Martin Knutson, W0BBV. Marty was a U-2 pilot during the cold war and later went to work for NASA where he stayed until he retired in 1997. He will talk about some of his experiences as a U-2 pilot. Mark your calendars for that date and check out the details at http://www.fars.k6ya.org/events/banquet.

On-line Roster. The membership roster is on-line, so you can update your information on-line. You can also use the on-line roster to find out how to contact other FARS members and to renew your membership (www.fars.k6ya.org/cgi-bin/r-edit). You can also renew your membership on-line via PayPal.

- de Mikel, KN6QI

September Meeting Report

September was the FARS Annual Home Brew Contest. There were seven presentations. See later in this Relay for descriptions of the presentations. Dave Platt, AE6EO, won first place for his presentation of a 50 Ohm Noise Bridge/Antenna Tuner. See Dave's article later in this Relay for a description of his winning project.



Dave Platt, AE6EO
1st Place Home Brew Contest



Scott Overstreet, N6NXI, & Del Harbold, K6JPX

Del Harbold, K6JPX, won the raffle and took home the automatic antenna tuner, an LDG Z-100 Memory Tuner 0.1 to 125 Watts (50 watts on 6 meters) 160-6 Meters. Scott, N6NXI, won the second place prize, the Red-Dee-2 Connect PS-8 (power block for connecting Anderson Power Poles with 8 connections). The Wish You Were Here number for Del, KGJPX, was chosen and he took home the WYWH prize as well.

## FARS / PAARA 2008 Winter Banquet

Mark your calendars. The FARS / PAARA annual banquet will take place on Friday evening, January 25, 2008. FARS is again teaming up with [PAARA](#) (Palo Alto Amateur Radio Association) to put on this special Ham Radio event. By popular demand we are returning to Michael's at Shoreline:

**Where:** Michael's at Shoreline  
2960 No. Shoreline Blvd  
Mountain View, CA  
650-962-1014

**When:** 6:00pm - Open Bar (No Host)  
7:00pm - Dinner  
8:00pm - Presentation  
9:00 pm - Announcements, Awards, Raffle

Our **speaker** is **Martin Knutson, W0BBV**. Marty was a U-2 pilot during the cold war and later went to work for NASA where he stayed until he retired in 1997. He will talk about some of his experiences as a U-2 pilot.

Note that unlike regular meetings, attendance at the banquet is by reservation only. To attend this event, fill out the Banquet Signup form in this newsletter and include payment for the appropriate amount. You can also use the [Paper Signup](#) or [On-line Signup](#) at the FARS website. You can renew your FARS membership if you have not already done so.

**Raffle Prizes:** We are planning to raffle over \$1,000 in prizes at the banquet.

**Menu:** We have decided on the following menu choices:

Menu Choice	Price
Roast Prime Rib of Beef	\$40
Breast of Chicken Florentine	\$31
Broiled Salmon Lemon Beurre Blanc	\$35
Vegetarian Brochette w/Wild Rice	\$27

Each entree is served with seasonal greens, fresh vegetables, potato du jour, French rolls and coffee. For dessert we have an ice cream parfait. Prices include all taxes and service.

We will have a NO HOST BAR for soft drinks, wine, beer, etc.

**Don't Miss it!** This is going to be a fun time for everyone, so let's make it a big turnout. See you there! For reference you might want to print out a copy of the [Banquet Flyer](#) (from the FARS website) which includes a map.

### October Meeting Raffle Prize

The October Raffle will be the Alinco DM-330MV Switching power supply. It has a maximum output current of 32 Amps, 30 Amps continuous. The output voltage is variable from 5 to 15 VDC with a variation of less than 2%. It has a single volt/current meter that is back-lit and weighs approximately 2 Kg.



## CLUB INFORMATION

President: Mikel Lechner, KN6QI  
Vice President: Steve Stearns, K6OIK  
Treasurer: David Cooper KE6PFF  
Secretary: Rob Riley, KI6INR  
Radio Officer: Phil Hawkins, KA6MZE  
Training Officer: Kevin Weiler, K6XXX  
Relay Editor: Mark Hardy, AF6DO

FARS Board: Dick Baldwinson N6ATD, Robert Flemate KE6TFU, Pink Foster KG6ILA Ron Green KG6RLG, Kristen McIntyre K6WX, Barbara Neuhauser AE6RM.

Station Trustee: Stan Kuhl, K6MA  
FARS Web Page: <http://www.fars.k6ya.org>  
Download Relay: <http://www.fars.k6ya.org/relay>

Club members and non-members are encouraged to subscribe to the FARS Announcement list by browsing [www.fars.k6ya.org/mail](http://www.fars.k6ya.org/mail), clicking on Subscribe/Unsubscribe and following the instructions under "Subscribing to fars-announce."

You may submit announcements to the FARS Announcement at [fars-announce@svpal.org](mailto:fars-announce@svpal.org). The list is moderated and messages will be posted as approved by the list moderator.

The FARS board of directors may be reached at [fars-board@svpal.org](mailto:fars-board@svpal.org)

Club meetings are held at 7 PM on the fourth Friday of each month except January (Winter Banquet); and sometimes there are changes for June (for field day) and Nov. & Dec (for holidays).

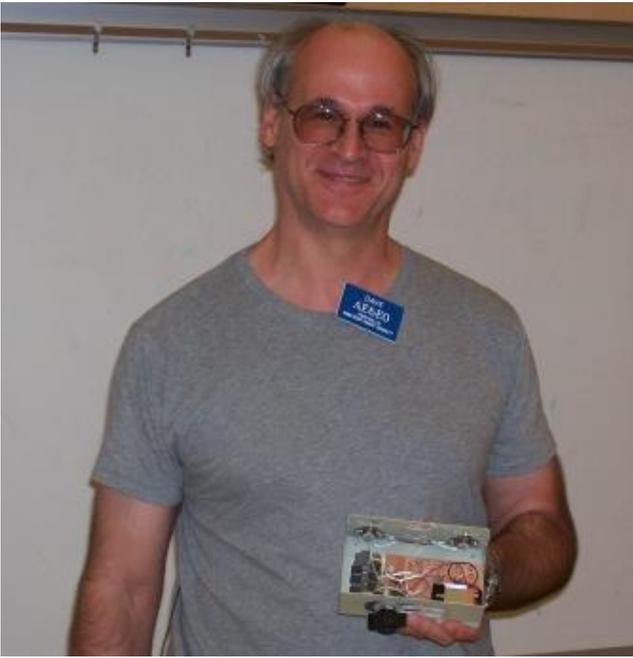
Annual club membership is \$20. Club badges are \$8. Visitors are always welcome! Directions in this newsletter. Talk-in: N6NFI (145.23-, 100 Hz) or W6ASH repeater (145.27-, 100 Hz).

FARS *Relay* is the official monthly newsletter of the Foothills Amateur Radio Society. Contributions to the newsletter from members, family, and guests are earnestly solicited! Contributions are subject to editing and/or compression. All readable forms welcome.

Here is how to reach the editor:

Mark Hardy, AF6DO  
Mail: 2998 Jerald Avenue  
Santa Clara, CA 95051  
Voice: 408-243-0701 (Before 9 PM, preferred)  
Email: [kg6grr@arrl.net](mailto:kg6grr@arrl.net), At FARS meetings.

## FARS 2007 Home Brew Contest



**First Place:** Dave Platt, AE6EO, presented a 50  $\Omega$  Noise Bridge / Antenna Tuner that was made from surplus parts. The article later in this Relay describes this project. The First Place prize was \$40.



**Third Place:** Ross Anderson, W1HBQ, showed a “curtain quad” antenna – a thirteen element, 2.4 GHz antenna. The design was based upon 1/2 wavelength wires. The wires were from fencing and cut to fit. Ross offered pieces for those who wished to construct this antenna for themselves. You can see more of this and other antennas at [http://home.comcast.net/~ross\\_anderson/](http://home.comcast.net/~ross_anderson/). Third place netted \$20 for Ross’s project.



**Second Place:** Nimit Hongyim, KI6JLD, demonstrated a portable station for EchoLink. He used downloaded software on his own laptop computer. He built his own interface using the serial port of the computer that uses a Ramsey kit and his own design. Nimit took home \$30 for Second Place.



**Fourth Place:** Rich Stiebel, W6APZ, won the fourth place prize for his emergency antenna. The antenna was made from a tripod purchased on sale for \$10, a swimming pool cleaning pole, and a modified j-pole antenna (3 – piece foldable antenna for easy transport) that Rich is holding in the photo. Rich took home a \$10 prize.

## FARS 2007 Home Brew Contest (cont.)



**Dave Flack, W6DLF**, presented a portable 40 m wire antenna.



**Peter Chow, AF6DS**, brought a grab-n-go kit in a case that contained a mobile radio, a TNC, accessories, and a Palm (then part of US Robotics) Pilot 1000 handheld for doing packet. He said that the packet palm software was available on the web



**Del Harbold, W6JPX**, presented a mounted power pole crimper that made the crimping job much easier and a portable 2 m mobile setup.

### ARRL Pacific Division Election

from the ARRL Website

<http://www.arrl.org/news/stories/2007/08/27/100/>

“In the Pacific Division, Bob Vallio, W6RGG, of Castro Valley, California, was named Director for another three year term; Vallio was running unopposed. The rules state that if a candidate is running unopposed, he or she shall be declared the winner without balloting. Vallio has been Pacific Division Director since February 2003.... For Vice Director in the Pacific Division, incumbent Andy Oppel, N6AJO, of Alameda, California will face Rob Brownstein, K6RB, of Santa Cruz, California.” ARRL members should receive voting information by mail. Please remember to read about the candidates and vote.

## 50 Ω Noise Bridge / Antenna Tuner by Dave Platt FARS 2007 Homebrew Winner

I'd suggest that interested readers take a look at the page at <http://www.qsl.net/wq1rp/noisebrg.htm> - this shows the design and construction of a more general-purpose noise bridge which can be used to actually measure an antenna system's impedance. It's something akin to a "poor ham's MFJ-259". This circuit was the primary inspiration for my own version.

The noise bridge consists of several building blocks:

- An RF noise generator (Q3's base/emitter junction, reverse-biased into avalanche breakdown) and broadband RF amplifier chain (Q4 through Q6)
- An astable multivibrator (Q1 and Q2) which switches the amplifier chain on and off several times per second,
- A transmission-line transformer (L1 through L3), and
- An attenuator and dummy load (R14 and R15)

There isn't much that's critical about this circuit, and it can be made to work with many readily-available and junk-box parts substitutes. It can be constructed directly on an un-etched piece of PC-board material, "Manhattan-style". Keep transistor leads short.

Q1 and Q2 can be almost any NPN general-purpose transistors. Q3 through Q6 should be fast NPN (f(T) of 400 MHz or more) for best output in the upper HF bands, but jellybean transistors like 2N2222 or 2N3904 will probably work well enough. S1 is a 3PDT switch whose contacts can pass the full RF current when transmitting... a ceramic wafer switch is best, but a hefty toggle switch can be used. R13 is a small PC-mount trimpot.

L1, L2, and L3 are three windings of 4-5 turns each, on a single ferrite toroid or a two-hole balun core... ideally, wound together in trifilar style, or made from a short piece of three-

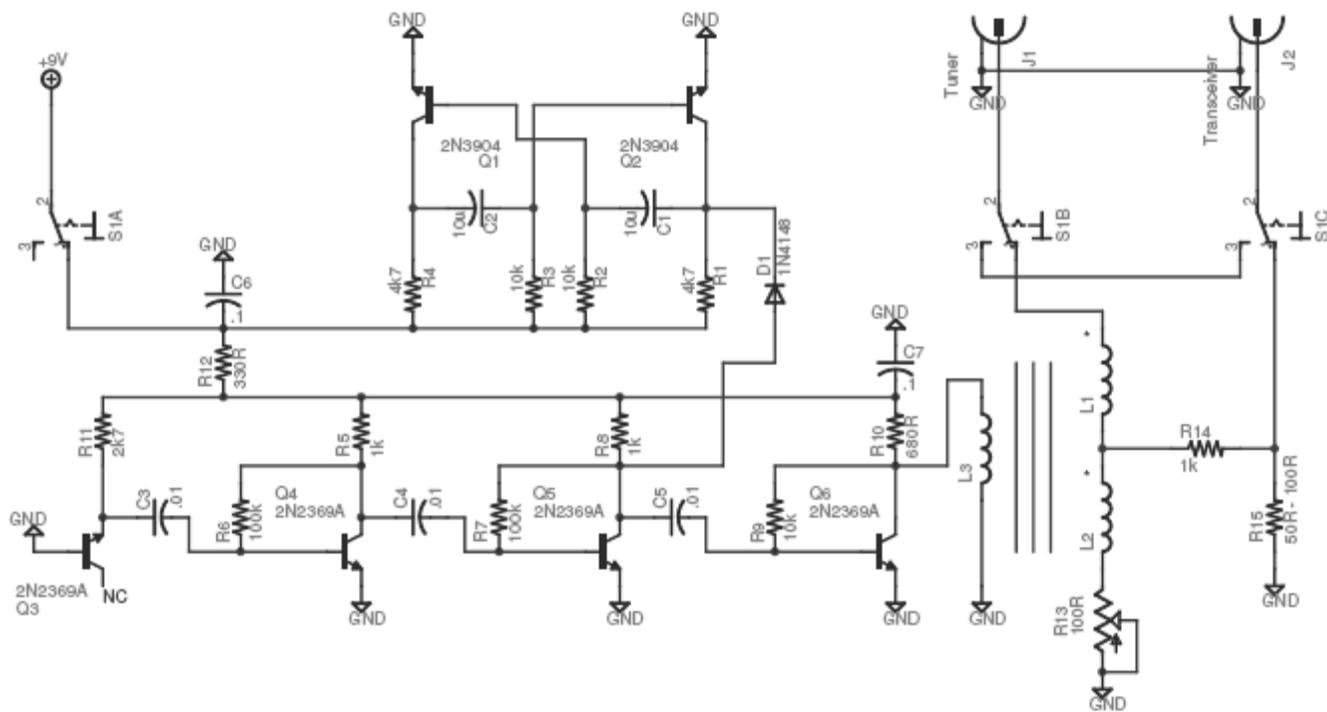
conductor ribbon cable. Observe the polarity markings on L1 and L2 - the start of L1 and the end of L2 should be connected together and to the R14 attenuator.

The NEQRP noise bridge, and commercial versions from MFJ and Palomar connect the center of the bridge directly to the transceiver. This gives the best sensitivity, but leaves the bridge vulnerable to operator error - accidentally keying the transmitter will dump much of the output power into the impedance-adjustment potentiometer and probably destroy it instantly. My version isolates the bridge from the transceiver using R14 (thus protecting the circuit) and adds a third noise-amplifier stage to make up for the losses in the attenuator. It also includes a crude dummy load (R15) to protect the transmitter. R15 should use high-wattage resistors and should include some form of heatsinking (I wired six 12-ohm resistors in series and epoxied them to the cabinet with JB Weld).

Calibration is easy. Connect the bridge to the transceiver, leave the "tuner" jack unconnected, install a battery, set the switch to the

TUNE position (as pictured in the schematic) and set the transceiver to your favorite HF band. You should hear a distinct pulsing sound in from the transceiver's speaker. Connect a good 50-ohm dummy load to the "tuner" jack, and adjust R13 to minimize or eliminate the pulsing noise. You're done!

To use it: connect between transceiver and tuner. Tune radio to desired frequency. Set switch to TUNE. Adjust antenna tuner to minimize or eliminate the pulsing noise. Set switch to OPERATE, which bypasses the noise bridge and turns off the power. You should find that the rig sees a nice, low SWR (probably 1.2:1 or lower).



FARS 2008 MEMBERSHIP RENEWAL FORM Date: \_\_\_\_\_

PLEASE fill out the form for all new/renewal memberships.

Name(s) & Callsign(s) & Class (E-A-G-T-N-None): \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Home phone: \_\_\_\_\_ Work phone: \_\_\_\_\_

Fax (H or W?) \_\_\_\_\_ Packet BBS Address: \_\_\_\_\_

E-mail: \_\_\_\_\_ ARRL Exp Date(s): \_\_\_\_\_

Preferred modes: (e.g. HF-SSB/VHF/QRP/Other): \_\_\_\_\_

I'm willing to Elmer new hams with: \_\_\_\_\_

Special topics of interest / suggestions for club meeting speakers:

Dues: \$20 per year, new members add \$8 for badge fee. **Please note:** Membership runs from January 1 to December 31.

**FARS/PAARA 2008 WINTER BANQUET SIGNUP (January 25, 2008 at Michael's at Shoreline)**

<u>Name &amp; Call</u>	<u>Meal Choice</u>	<u>Amount</u>
You _____	_____	_____
Email _____		
Guest1 _____	_____	_____
Guest2 _____	_____	_____
Guest3 _____	_____	_____
Guest4 _____	_____	_____
	Total	_____

This form may be used for membership renewal, banquet signup or both.

**Send your check payable to FARS, to:**

David A. Cooper  
PMB 41  
270 Redwood Shores Parkway  
Redwood City, CA 94065-1173

<b>Choice</b>	<b>Menu Description</b>	<b>Price</b>
Beef	Roast Prime Rib of Beef	\$ 40
Chicken	Breast of Chicken, Florentine	\$ 31
Fish	Broiled Salmon, Lemon Beurre Blanc	\$ 35
Veg	Vegetarian Brochette w/ Wild Rice	\$ 27



### How to get to FARS Club meetings (Visitors always welcome)

Meetings are held on the fourth Friday at Covington Elementary School (directions below), 205 Covington Road, Los Altos. Socializing at 7:00 PM with the regular meeting at 7:30 PM. There may be changes in the meeting dates for January, June, November, and December.

#### **DIRECTIONS:**

**From Interstate 280.** take the El Monte exit Northeast. Cross Foothill Expressway. (A) At the first traffic light turn right on Covington. (B) Immediately at the fork take the left street (Covington). Go about 1/10th of a mile. Turn left into the parking lot. The gym is the tall building to your right with red and white stripes.

**From Foothill Expwy.,** take the El Monte exit and go Northeast; then follow directions as above at point (A).

**From US101 or El Camino:** take San Antonio Road west (to Foothill Expressway). Then follow directions above at point (A).

**TALK-IN** via the [N6NFI](#) (145.230-; 100Hz PL) repeater or the [W6ASH](#) 145.27- (100Hz PL) repeater.

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## FARS Meeting FRIDAY 26 October 2007 Covington School