

**W6OTX****W6ARA**PAARA NEWSLETTER  
VOLUME 63, NUMBER 5, May 2013**K6OTA****K6YQT**

# PAARAgraphs



The Official Newsletter of the

**Palo Alto Amateur Radio Association, Inc.**Celebrating 76 years as an *active* amateur radio club—Since 1937<http://www.paara.org/>

## Introduction to Radio Direction Finding Basic Tools and Techniques

**Mark Laubach, K6FJC**

Learn about basic direction finding techniques anyone can do using a handy talkie and a few more advanced DF techniques. The talk will include some hands on demonstrations and tactics hams can use to help our OOC locate jammers.

Mark Laubach, K6FJC, Amateur Extra Assistant District Emergency Coordinator (ADEC) Santa Clara County, Official Observer (OO) Santa Clara Valley Section, Director NARCC, Chief Engineer KFJC 89.7 FM, Technical Director Broadcom Corporation.

**May 3, 2013****7:00 pm****Cubberley Community Center****Room H-6****4000 Middlefield Road****Palo Alto, CA 94303**

to do a bit of ham radio related software hacking. And, last but not least, tee-shirts are here!

Field Day is the 4th weekend in June, the 21st through 23rd this year, and PAARA is preparing for another KB operation. As many of you know, last year our W6ARA 4A operation placed 9th in the nation, and 1st in 4A. This year we aim to do even better, and with the team that we have assembled, I know that we can do it. We have a great roster of operators, and a great setup and site. Doug, KG6LWE, our Field Day Coordinator, is fine-tuning what is already a fantastic layout of stations. If we can avoid the tower issue we had last year (and we definitely can), I think that we can immediately boost our score. With some extra attention to bonus points, catching some action on 10 meters, and other details, we'll be ready to KB this year too. I'm personally really looking forward to 4 elements on 40 meters all night long with coffee and fig newtons. I love stepping out for a break at 4am and seeing the planets and the stars shining brightly over the Bay as I sample the fresh night air. It's going to be great. We'll be signing up operators at the next meeting.

## President's Corner

May 2013

Field Day is almost upon us and propagation has been picking up a bit. We also have the PAARA sponsored ASVARO Flea Market coming up very soon, and a number of great contests coming up in May. It's time to get on the air! I've also had some time



The PAARA sponsored ASVARO Electronics Flea Market is coming up on May 11th. We will need your help. I'm sending out the mailings already, but it's not too late for you to volunteer to help out. This is a big fundraiser for the club, and it's also an important part of the Amateur Radio community in the Bay Area. It's the last electronics flea market around here. Your support is needed to keep it thriving. We need people to help with setup and cleanup, and with selling food and drinks. If you can help out, please contact me directly. My contact information is right in the

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PAARAgaphs masthead. The Electronics Flea Market opens at 0500 and closes at 1200. If you're helping out in the morning, plan to be there at about 0430 (a.k.a. oh-dark-thirty). More info at [electronicsfleamarket.com](http://electronicsfleamarket.com).

May is a good month for contesting. Whether you like DX-ing or contesting (I'll take either one, personally) it's a good time to get on HF and get your feet wet. There are state QSO parties almost every weekend, the 10-10 Spring CW Contest, the His Majesty King of Spain Contest CW, the EUCW Fraternizing CW QSO Party (wow), and finally the CQ WW WPX Contest, CW. That last is one of my favorites. These are all great opportunities to work a 'new one'. Even if the mode doesn't suit you, get on a day or two before the contest and see if you can catch the DX. This is how I caught some DX recently when I worked 5N7M, Ivan in Nigeria on 20m CW. I also had a classic DX-er experience on that day, right before I worked Ivan. I heard Dodecanese on just after I turned the radio on. Wow, that's a new one for me, I though, so I fired up the amplifier, moved off, and started to tune up. I have a manual tuner and a tube amp, so it takes me 2-3 minutes to get tuned up on the band. With everything tweaked to perfection, I tune back and I look for an opening to call, setting the split up. On the next call I hear, OK QRT NOW TNX ES 73. Oh, it was so frustrating! Get your contesting info at <http://www.hornucopia.com/contestcal/contestcal.html>

I did a bit of work on the iPad PSK app's mapping this month. It now can search for countries, as well as callsign prefixes. It's fun to search your way around the world and look for grid squares, CQ and ITU zones, and distances. Another ham in Germany Tobias, DH1TW, has adopted my plist format for the Country Files database that is now published by Jim, AD1C. All of this came from the iPad app.

Work has been so busy lately that I've had no time for working on my amps, sadly. Maybe next month. I've got the cantenna and amp taking up space in my living room right now. It's a scene only a ham would appreciate. Check out the tee-shirts at the next PAARA meeting. They're great! Anyway, that's all for this month. CU AT PAARA ES ON THE BANDS DE K6WX.

## Ham Radio Multimeter Selection

### By: Gary Barnes

Confucius say one measurement is worth more than 1000 guesses. This is why it is a good idea to use a meter to measure voltage, current, and resistance. A multimeter may have the following functions: voltmeter, ammeter and ohmmeter, and each function has many ranges. The two different types of multimeters are analog and digital. Analog multimeters are the oldest, and they are usually called Volt-Ohm-Meter or VOM. The two most common VOM's were the Simpson model 260 and the Triplet model 630.

The biggest problem with the analog meters is they do not have any protection against damage or misuse. If the input is greater than the range and function, the meter will be damaged. If you drop the meter, the meter movement will be damaged and the meter will need repair or replacement. However, if you are careful with the VOM, it will last you a lifetime.

Digital multimeters (DMM) can be dropped a few feet without damage, and if the wrong function or range is selected, the meter will usually function correctly once the correct range and function are selected. Neither type of meter will function if it is dropped from the top of your antenna tower.

One DMM specification is the number of digits. For example a 3-digit meter will be able to display 1,000, but nothing greater. A 3½-digit meter may be able to display 1,999. There are 4½-digit, 5½-digit, 6½-digit, 7½-digit, and 8½-digit DMMs. Some of these are hand held DMMs and some are bench type DMMs. The number of digits does not indicate the accuracy of the meter, only its resolution. I know of a DMM that had a resolution of 5½ digits, but had the accuracy of a 3½-digit meter, and it cost \$1300.

A 3½-digit meter might have a display count of 2,000, and a 4½-digit meter might have a display count of 20,000. Different manufacturers have different ideas as to the proper number of

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display counts for a DMM. For a 3½-digit meter, these can be between 1,600 and 5,200 counts.

Most DMMs have at least 5 functions. These are: DC voltage, AC voltage, DC current, AC current and Resistance. Some DMMs have additional functions such as capacitance, frequency, and temperature. The frequency measurement is limited to less than 1 Megahertz. For temperature measurement, an external thermocouple is required.

For ham radio use, the DC voltmeter function of a DMM should have a resolution of at least 0.0001 volts (0.1 mV or 100 µV). Most DMMs will have a maximum DC voltage range of 1000 volts. The AC voltage range maximum might be less than 750 volts. One problem when measuring AC voltage is voltage-frequency rate or slew rate. The greater the AC voltage-frequency product or slew rate, the lower the voltage that can be measured accurately. The greater the slew rate, then the greater the distortion and conversion error.

DMMs can be purchased from \$5 to over \$10,000. The 3½-digit DMM might cost between \$5 and more than \$280. The 4½-digit DMM will cost between \$70 and more than \$500. The higher cost DMMs have auto-ranging functions.

When DC voltage is applied to a heater, the heater will produce a certain amount of heat or BTUs. When the same RMS voltage is applied to the same heater, the heater will produce the same amount of heat or BTUs. A British Thermal Unit is the heat required to increase one pound of water one degree Fahrenheit. RMS is Root Mean Squared. One cycle is divided into many parts, and then the instantaneous value of each point is measured. Next, each value is squared, and then all of the values are averaged. Finally the square root is found. This method is used with expensive meters such as the Agilent 3458A.

DMMs have two different types of AC convert-

ers. One type is the average responding and the other is the true RMS type. Both will have an RMS voltage indication with a sine wave, but the average responding converter will have greater errors with other waveforms. The RMS converter has good accuracy with any type of waveform. The conversion accuracy for the RMS converter is called crest factor. The larger the crest factor value, the more accurate the conversion. A crest factor of 3 will yield good results. The same AC converter used for voltage is also used for AC current measurement.

The lower cost DMMs do not have auto-ranging, but this feature is standard for higher cost multimeters. Higher cost multimeters will have some protections built-in. One meter protection is for the resistance function when 120 volts, 60 Hertz is connected to the meter input terminals without causing any damage to the meter. Another protection is a fuse at the input. The owner of one DMM replaced the 0.044 Ampere fast blow fuse with a piece of #6 AWG bare copper wire!

Before I retired, I used DMMs with displays from 3½ digits to 7½ digits. I used a 7½-digit meter for most of my work and I used the 3½-digit meter for troubleshooting. Sometimes I would need to use more than one DMM. I would select the DMM I needed for the application and this might be 5½ digits or 6½ digits. I know other people who do the same thing. I still use a 3½-digit DMM for troubleshooting at home, but I also have 5½-digit and 6½-digit DMMs.

The DMM you select should be based on how you intend to use it. If the only use for your DMM is troubleshooting, then you should get a 3½-digit meter. I would buy the best meter you can afford. This can be used to check battery voltage or fuses. However, if you will need your meter for calibration and/or adjustment of your radio equipment, than I would buy a 4½-digit or better meter. DMMs with a frequency function will not be able to measure your transmitter's frequency. You will need a frequency counter.

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Another consideration for the selection of your DMM should be accuracy of the measurements. Most measuring equipment will have a specification table with the accuracy of each function and range listed. In the description of the DMM, you may find a statement that the typical accuracy is better than listed in the specification section. This will be only on one function and one range of the meter.

An analog meter for DC voltage or DC current will have only one specification for each function. This might be  $\pm 1\%$  of full scale, therefore on the 100-volt range the error would be  $\pm 1$  volt. Calibration laboratories will call this error an uncertainty. With 100 volts applied to the meter, the meter could have an indication between 99 and 101 volts. On the same voltage range with an input of 10 volts the meter could have an indication between 9 and 11 volts. AC voltage will have a greater tolerance because of the added uncertainty of the AC converter and its frequency response.

Digital meters have a more complicated specification than analog meters. The first part of the specification is accuracy of the range and function and the second part is an accuracy floor. A meter might list the accuracy as  $\pm 1\%$  of reading (or indication) plus 1 digit. For a  $3\frac{1}{2}$ -digit DMM on the 100-volt range with 100 volts on the input, the uncertainty will be  $\pm 1.1$  volts. With the same meter on the 100-volt range with 10 volts applied to the input, the uncertainty will be  $\pm 0.2$  volts. For a  $4\frac{1}{2}$ -digit DMM, the specification might be  $\pm 0.1\%$  of reading plus 1 digit. So on the 100-volt range with 100 volts on the input, the uncertainty will be  $\pm 0.11$  volts. Some manufacturers will use percentage of range in place of number digits. The AC function specifications will include limitations due to frequency.

Some manufacturers offer a DMM with a dual display. This is useful to monitor the DC output voltage of a power supply and the ripple voltage with only one meter. You can monitor AC voltage and frequency at the same time, or you could measure voltage and current at the same time. This feature could be used to check the

performance of a battery.

Some accessories you can get for your DMM are: high voltage probe, a current probe and external current shunt. When trying to measure high DC voltage on vacuum tube type equipment, a high voltage probe should be used for voltages above 600 volts. The probe will provide safety for both the operator and the meter. Two common probes for ham use are for 6 kilovolts and 15 kilovolts. These probes will reduce the voltage by a factor of 1/1000 of the applied voltage. Therefore, 6,000 volts will have an indication of 6 volts on the DMM. High voltage probe can also be used to measure high AC voltage, but the peak AC voltage can not exceed the voltage rating of the probe. This would be 4,200 volts AC for a 6,000-volt probe.

When the need exists to measure AC current above 2 Amperes, a current probe can be used. Current probes are available up to thousands of Amperes, but the most ham radio operators will need to measure is less than 200 Amperes. These probes will clip around a power lead. AC/DC current probes are also available, but these cost much more than only the AC current probe and they need to be powered with an internal battery. DC current probes also have greater amount of uncertainty than just a current shunt. Therefore, if possible use an external current shunt to measure DC current.

I would select a new DMM and any accessories from a well-known manufacturer that has been in business for a long time such as Fluke or Agilent.

A friend was trying to measure the screen grid voltage on a pair of 6146s vacuum tubes. He used two different meters and got two different results. One meter had an 11-Megaohm input impedance the other was a 20,000 ohms per volt VOM. The 11-Megaohm meter had a lower voltage indication than the VOM. A better way would be to use a differential voltmeter or an electrostatic voltmeter which would not place any load on the circuit. The 6146 screen grid was supplied by a 350-volt source through 240-

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kiloohm resistor. Each vacuum tube's screen grid had 0.01  $\mu$ Fd bypass capacitor.

A differential voltmeter has a calibrated voltage source and a null detector. The null detector is connected between the unknown voltage and the calibrated source. The calibrated voltage source is adjusted until the null detector has an indication of zero, then the calibrated voltage source will equal the unknown voltage. With zero voltage difference between the unknown and calibrated source, the current flow is zero and the impedance is infinite. A battery operated DMM can be used as null detector.

When measuring high AC voltage, a potential transformer might be used. The potential transformer (PT) will reduce a high voltage to about 120 volts. If the PT's input terminals are connected to 12,000 volts and the transformer's ratio is 100:1, and then the output voltage would be 120 volts. The normal AC voltmeter used for this measurement is an analog high burden type. It has 100 ohms per volt sensitivity or a 10 milliAmpere meter movement. When this meter was replaced with a 10-Megaohm DMM, the displayed voltage indication was erratic due to high voltage corona.

When trying to measure low resistance values, a special ohmmeter is required. This ohmmeter will use four-lead resistance measurement method. Two leads supply the test current and two leads measure the potential voltage. With a DC test current of 1-Ampere, each volt equals 1-ohm. Some low resistance ohmmeters use up to 100 Amperes of test current for resistance measurements of 600 microohms. Some use an AC current and measure the AC voltage to find the resistance. This ohmmeter can be used to about 1 milliohm.

Understanding the specifications of any meter can be difficult. I had an engineer wanting to use a DMM to measure a 1 millivolt signal at frequency of about 2700 Hertz. The AC digital voltmeter he wanted to use was no longer manufactured so he used a new digital voltmeter. However, the replacement meter was not

an appropriate choice. The replacement meters specification for the RMS converter was  $\pm 0.07\%$  of reading plus 70 digits. The lowest AC voltage range is 1 Volt, and the resolution on the 1-volt range is 10 microvolts. Therefore, the measurement uncertainty is  $\pm 0.70$  millivolts, or  $\pm 70\%$  of reading!

I suggested he use an analog AC voltmeter with 1 and 3 millivolt ranges and an accuracy of  $\pm 1\%$  of full scale. On the 3-millivolt range the uncertainty would be 30 microvolts. Therefore, the measurement for a 1 millivolt indication on the 3 millivolt range would be  $\pm 3\%$  of reading. He did not understand what I was telling him.

## ARRL Rookie Roundup SSB at W6YX

04/23/2013 | W6YX

Wow, great fun for the rookies and state QSO party folks this past weekend!!

Stanford W6YX recruited three rookies for this event, one first timer KK6CWV and a Father/Son returning pair Keith KJ6PUO and Peter KJ6PUN.

We started our runs out on 10, 15 and 20 to keep each station well separated from the others and soon realized that 10 was not going to work. Even though we were making contact with stations in Florida, there were not enough takers to make any good gains in QSO counts. We moved Peter KJ6PUN from 10 to 20 and his rate picked up significantly.

Amanda KK6CWV/W6YX a tech class op opened on 20 and stayed there through the whole event. This was her first time operating on the HF bands and she took to it like a fish in water. Rig: Yeasu FT-1000MkV at 100W and a 6-el Mono at 65'.

Keith KJ6PUO and Peter KJ6PUN, returning rookies and father/son pair had their choice of rigs at the open, Keith let Peter pick his station, a K-Line setup with a K3, P3-SVGA. and a 5-el 20m mono at 35'.

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Keith settled in on a Yeasu FT-1000MP and a Force12 C31XR for his run on 15.

It didn't take much to coach Amanda into the contest and exchanges, she took notes during our briefing and followed the prescribed exchange and subsequent request for fills to a tee.

Well into the contest, Dave AA6XV came by for a visit and proceeded to assist Peter with pulling calls and exchange information from the noise as well as providing some excellent mentoring on his technique.

Both Keith and Peter bettered their scores from the last time they worked this event and left feeling very satisfied with their accomplishment.

All-in-all, everyone had a great time.

Thanks to the Stanford Amateur Radio Club W6YX for the use of their station and to everyone who supported rookies across the country as participants, coaches and elmers.

-- N6DB

### 17 April 2013 PAARA Board Minutes

Meeting The Board Meeting was held at the Palo Alto Red Cross building, commencing at 7:15 PM on the 17<sup>th</sup> of April 2013. Attending were Kristen McIntyre K6WX (Pres), Rick Melrose K6RDM (Sec, Database), Rob Riley KI6INR (Dir), Larry Rebarchik N6DB (Dir) Darryl Presley KI6LDM (Dir), Gerry Tucker N6NV (Property Manager) and Joel Wilhite KD6W (Technical Coordinator). A quorum was present.

President's Report: Kristen K6WX told us that, per feedback received, the presentation at the April 5<sup>th</sup> meeting by Steve Olson KI6MYE on the TI5/KI6MYE (and his daughter Kjerstie "KJ") TI5/KI6VNG Costa Rica DXpedition in the summer of 2012, was well received. The Youth DX Adventure went to Costa Rica, where they made a ton of contacts and ignited considerable enthusiasm for ham radio among the coming generation.

Kristen noted that per comments from new members, our motto regarding being the "The Friendli-

est Club Around" seems well deserved. Other Board Members added that our club has, on numerous occasions, given assistance with antenna raisings (and lowerings) equipment de-bugging and so on, and been gratefully acknowledged for it. Apropos of that, Rick K6RDM suggested we might add a feature in PAARAgaphs, a help column, by means of which members could write up requests for advice or help with equipment or projects where other members might be able to lend a hand. The Board thought it a good idea so if anyone has any such, you can email Rick at <K6RDM@arrl.net> and we'll see what we can do. It seems like some of these projects might make good content for inclusion in future issues of PAARAgaphs, as we are still looking for articles on ham experiences to publish. Heard or told any good stories lately? Let us know and we'll see about getting it in print.

Club VP, Marty Wayne W6NEV wasn't able to make the meeting due to family commitments so Kristen passed on his comment that the club T-Shirts offered at the April 5<sup>th</sup> meeting created quite a buzz and were selling like... well, T-shirts. She went on to go over future meeting presentations scheduled through the year, including some of our PAARAtrips to be scheduled. We are still working on the prospective visits to the California Historical Radio Society and the PAVE PAWS mission at Beale AFB in Merced mentioned previously.

Kristen told us that the Radio Fest at the Moose Lodge in Monterey where PAARA had a table went very well with help Darryl Presley KI6LDM and participation by the Parachute Mobile guys. Leigh Klotz WA5ZNU was there with his new Arduino project book that was displayed at the April 5<sup>th</sup> meeting.

Secretary's Report: Rick K6RDM reported that there were 5 new members, 7 renewals and 1 re-joining at the April 5<sup>th</sup> meeting. The April issue of PAARAgaphs had the 2012 membership year circled to remind members who have not renewed for 2013.

Treasurer's Report: Ron W6AZ was unable to attend due to prior commitments. We are deferring the full "state of the club" financial report for the

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### Raffle Prize Winners (left to right)

4<sup>th</sup> Prize / Joe Weber / KJ6WYO / Antenna Book 22<sup>nd</sup> Edition

6<sup>th</sup> Prize / Dave Cooper / K6WA / LF01 LED Lite Flare

7<sup>th</sup> Prize / Ben Byer / K6BHB / Bongo Ties and Repeater Directory

5<sup>th</sup> Prize / Peter Chow / AF6DS / SMA to SO-239 / 18" Cable Adapter

1<sup>st</sup> Prize / Rick Huisman / N6DQ / Yaesu FT-60R Dual Band Handheld 5W VHF/UHF

2<sup>nd</sup> Prize / Doyle Kisler / KG6YUN / Super Antenna MP-1 / Portable HF 7-450 MHz

3<sup>rd</sup> Prize / Mike Gavin / W6WZ / DBJ-1 Dual Band J-Pole Antenna

8<sup>th</sup> Prize / Mike Gavin / W6WZ / Lemon Meringue Pie

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May Board Meeting. Preliminarily, it does look like we are in reasonably good shape for financing our projects this summer and through the rest of the year.

Our own PAARA sponsorship of the ham Flea Market this year will occur on May 11<sup>th</sup> at De Anza College. Kristen went over arrangements and the assignments for manning up our team. There's still time to volunteer to help out!

Field Day is fast approaching. It will be the weekend of the 22<sup>nd</sup> and 23<sup>rd</sup> of June this year. The Board discussed various logistic and technical aspects of our preparation. Given the exhaustive conditioning and testing of our networks and antenna systems last year (not that there weren't a few *minor* bugs), we are actually in a pretty good

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**PAARA May 3, 2013 Raffle Prizes**

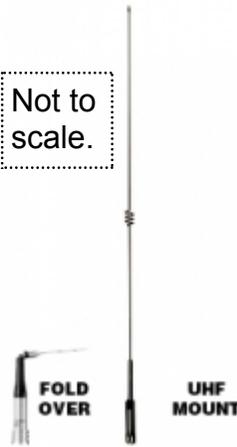
**1<sup>st</sup> Alinco DJ-V57T Dual Band Handheld 5W VHF/UHF**

1<sup>st</sup> Prize



**2<sup>nd</sup> Diamond NR-770HB Dualband VHF/UHF Mobile Antenna / Tilt-Over / 3 dB gain 2m / 5.5 dB gain 70 cm band PLUS / MFJ 335 BS / Max Strength Magnet Mount / with PL-259 connector & 17' RG-58 Coax**

Not to scale.



**3<sup>rd</sup> Arrow Yagi Portable Antenna / 3 Element VHF / 7 Element UHF**

**4<sup>th</sup> Battery Tender Junior / 12 Volt / 0.75 Amp / Battery Charger**

**5<sup>th</sup> Repeater Directory**

**6<sup>th</sup> Plastic Coax Seal Tape**

**7<sup>th</sup> Bongo Ties**



2<sup>nd</sup> Prize

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state of readiness for this year. An antenna meeting at Joel's KD6W and a testing session at Doug's KG6LWE will be scheduled to coordinate planning and implementation.

Rebar N6DB mentioned that there would be an ARRL "Rookie Round-Up" for hams with less than 3 years of license to get some on-the-air experience and connect up with veteran hams this coming Sunday. Sounds like fun – I hope some of us got in on it!

The meeting was adjourned at 8:45 PM.

There were 5 new members and 1 rejoining at the February meeting:

Ben Byer	K6BHB	San Jose
Ramiro Calvo	KE6BWF	Palo Alto
Kristin Paget	K6GCG	Sunnyvale
Nick Cassarino	N6NSA	San Jose

Steve Carmean	KB8AVJ	San Jose
Chris Olds	KI6NUN	San Jose

**PAARA Club badges ready for pick-up:**

K6FTF	Mark	San Jose
K6JSH	Josh	Castro Valley
K6TSR	George	Portola Valley
K6VVK	Vincent	Palo Alto
K6WRU	Walter	
KG6GYG	Art	San Jose
KG6QKN	Francis	Palo Alto
KG6QKO	Kali	Palo Alto
KI6JLS	Joanne	Palo Alto
KI6QWM	Scott	Palo Alto
KJ6GBE	Sreendish	Redwood City
KJ6POG	Rob	
KJ6SGT	Xiande	Campbell
KK6CCJ	Nancy	
KM6WP	Michael	
KF6SRD	Chuck	Palo Alto
N6JCY	Joani	San Jose

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### Appointed Positions

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Chaplain.....	<i>Position Vacant</i>	
Public Affairs .....	<i>Position Vacant</i>	
Station Trustee W6OTX, K6YQT, W6ARA	Gerry Tucker, N6NV	
Station Trustee K6OTA.....	Ron Chester, W6AZ	
Property Manager .....	Gerry Tucker, N6NV	
Fund Raising Coordinator..	Bob Korte, KD6KYT	408 396 4745
	bob@rgktechsales.com	
Badge Coordinator.....	Doug Teter, KG6LWE	650-367-6200
	dteter@wcwi.com	
HistorianPosition .....	<i>Position Vacant</i>	
Raffle Coordinator.....	Jim Rice, K6AK	650-851-2274
Ticket Master .....	Marty Wayne, W6NEV	408-246-7531
Field Day Coordinator .....	Doug Teter, KG6LWE	650-367-6200
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Webmaster.....	John Miller K6MM	
	webaron@gmail.com	
Technical Coordinator.....	Joel Wilhite, KD6W	650-325-8239
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QSL Manager.....	Rob Riley, KI6INR	650 799-1607 (cell)
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Speaker Coordinator.....	Marty Wayne, W6NEV	408-246-7531

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	jsinger@sbcglobal.net	

### Future PARRA Meeting Dates

June 7<sup>th</sup>, July 5<sup>th</sup>, Aug 2<sup>nd</sup>

## VE Exams

3rd Saturday each month, 10:30AM, 145.23- PL=100Hz  
 Redwood City Main Library, Community Conference Room  
 1044 Middlefield Road, Redwood City, CA  
 Contact: <http://amateur-radio.org> or Al, [WB6IMX@att.net](mailto:WB6IMX@att.net)

## Electronics Flea Market

Sponsorship by A.S.V.A.R.O. — Association of Silicon Valley Amateur Radio Organizations  
 Second Saturday of month, March-October, 6am-2pm  
 Howard M. Krawetz, N6HM 650-856-9761  
 Contact: <http://www.electronicfleamarket.com/>

## PAARA — Palo Alto Amateur Radio Association

Meets 1<sup>st</sup> Friday 7:00pm each month at Room H-6, Cubberley Community Center; Net 145.230 - PL 100Hz Mondays at 8:30. See our website at <http://www.paara.org> for more information or contact: Joel Wilhite KD6W, [kd6w@ARRL.NET](mailto:kd6w@ARRL.NET), 650-325-8239

## FARS — Foothills Amateur Radio Society

Meets 4<sup>th</sup> Friday each month at 7:30pm  
 Contact: <http://www.fars.k6va.org>

## NCDXC — Northern California DX Club

Meets 3<sup>rd</sup> Thursday 7:30pm each month,  
 Repeater for member info 147.360, Thursday 8:00PM  
 Contact: <http://ncdxc.org> or Mike Gavin W6WZ, (650) 851 8699

## QCWA Chapter 11

### Northern California Quarter Century Wireless Association

Meets third Wednesday monthly at Harry's Hofbrau in Redwood City @ 11:30 AM.  
 Guests are welcome. Saturday morning net on 146.850 MHz, PL 114.8

## NorCalQRP — Northern California QRP Club

Meets 1<sup>st</sup> Sunday each month  
 Contact: <http://www.norcalqrp.org>

## SPECS

### Southern Peninsula Emergency Communication System

Meets each Monday 8:00pm on Net 145.27, 440.80 MHz  
 Contact: <http://specsnet.org> or Tom Cascone, KF6LWZ, 650-688-0441

## SCARES

### South County Amateur Radio Emergency Service

Meets 3<sup>rd</sup> Thursday 7:30pm each month, Belmont EOC, Belmont City Hall, One Twin Pines Lane, Belmont CA 94002. Net is on 146.445 [PL 114.8] & 444.50 (PL-100) 7:30 Monday evenings. Contact: President Gary D. Aden, K6GDA 650-743-1265 (D), 650- 595-5590 (N)  
 Web: <http://k6mpn.org> E-mail: [pres@k6mpn.org](mailto:pres@k6mpn.org)

## SCCARA

### Santa Clara County Amateur Radio Association

Operates W6UUU & W6UU/R, repeater 146.985-pl  
 Nets: 2m, 7:30pm Mon; 70cm, 442.425+ (pl 107.2) Thur.  
 Meets 2<sup>nd</sup> Mon each month @ 7:30 PM.  
 Contact: <http://www.qsl.net/sccara> or Clark Murphy KE6KXO 408-262-9334  
 ARRL/VEC license testing contact 408-507-4698

## SVECS — Silicon Valley Emergency Communications

Operates AA6BT repeater (146.115 MHz+)  
 contact: <http://www.svecs.net> or Lou Stierer WA6QYS 408 241 7999

## TEARS — The Elmer Amateur Radio Society

Dedicated to operational training, knowledge building & FCC exam testing.  
 KV6R repeater under construction.  
 Contact: [AA6T@ARRL.NET](mailto:AA6T@ARRL.NET)  
 Most members are Extra Class or VE's. See QRZ dot com/kv6r for class info

## WVARA — West Valley Amateur Radio Association

W6PIY six-meter repeater on 52.58MHz. Normally, six-meters is linked with 147 and 223, while 441 and 1286 repeaters are linked.  
 VHF: 52.58 (-500) 151.4 ctcss UHF: 441.35 (+5.0) 88.5 ctcss  
 147.39 (+600) 151.4 ctcss 1286.20 (-12m) 100.0 ctcss  
 223.96 (+1.6) 156.7 ctcss  
 Meetings are 3<sup>rd</sup> Wednesday of every month.  
 Contact: <http://wvara.org>, Bill Ashby N6FFC, 408-267-3118, [N6FFC@Juno.com](mailto:N6FFC@Juno.com), or [N6FFC@ARRL.NET](mailto:N6FFC@ARRL.NET)

## American Red Cross, Santa Clara Valley Chapter

Contact: <http://santacalaravalley.redcross.org> or Scott Hensley KB6UOO, (408) 967 7924 [shensley@Novell.com](mailto:shensley@Novell.com)

(Please send changes to [PAARAgaphs editor](mailto:PAARAgaphs editor))

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**Badges are ready for pickup.**

If you would like to order a badge, see  
**Doug Teter, KG6LWE.**

**PAARA Weekly Radio Net**

Info and Swap Session  
every Monday evening at 8:30pm  
on the N6NFI 145.230 MHz repeater

<u>Week</u>	<u>Control Operator</u>
1 <sup>st</sup>	Open
2 <sup>nd</sup>	Doug - KG6LWE
3 <sup>rd</sup>	Jack - N1VSL
4 <sup>th</sup>	Marty - W6NEV
5 <sup>th</sup>	Up for Grabs!

If you're interested in trying out at Net Control, Contact Doug, KG6LWE. It's good practice, and lots o' fun! Give it a try.

Meeting Room H6

Row of trees

Enter @ unmarked driveway

CUBBERLEY COMMUNITY CENTER

**Cubberley Community Center**  
4000 Middlefield Road, Palo Alto, CA 94303  
650/329.2418  
650/856.8756 fax  
www.cityofpaloalto.org

Legend  
 Disabled Parking  
 Public Pay Telephone

**Meeting Location — Middlefield Road  
 between San Antonio and Charleston in Palo Alto.  
 4000 Middlefield Road**

<http://www.foto.mail.ru/list/shkurkin>

Vladimir Vladimirovich  
 SHKURKIN

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**Palo Alto Amateur Radio Association  
 P.O. Box 911, Menlo Park  
 California 94026-0911**

Club meetings are on the first Friday of each month, 7:00pm at the Room H-6, Cubberley Community Center.

Radio NET & Swap Session every Monday evening, at 8:30pm, on the 145.230 –600 MHz repeater, PL 100Hz.

Membership in PAARA is \$20.00 per calendar year, which includes one subscription to PAARAgaphs \$6 for each additional family member (no newsletter).

Make payment to the  
 Palo Alto Amateur Radio Association,  
 P.O. Box 911, Menlo Park, CA 94026-0911

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