

# Palos Verdes Amateur Radio Club



# K6PV



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PVARC Meets Every third Wednesday at 7:30 p.m,  
Hesse Park, Hawthorne Blvd., Rancho Palos Verdes

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## Baker To Vegas

Have you been wanting to work this race but never quite figured out what it's about? Well, here's your chance to find out.

The Baker to Vegas Challenge Cup Relay is sponsored by the Los Angeles Police Revolver and Athletic club. Joy Matlack, KD6FJV has worked the event for 20 years as a ham operator and is now its Communications Director/Com1.

Joy, our speaker this month, believes that working this event provides a unique opportunity to explore and learn about multiple aspects of Ham radio under a wide range of conditions, vast terrain, and extreme weather, using primarily portable equipment and power.

It is also a great training ground toward honing skills that will be useful in disaster preparation and response, including frequency coordination and integrating civilian volunteers with sworn personnel.





# The President Paces Himself

Joe Pace, NZ6L

This Friday, May 14th, weather and gremlin mischief notwithstanding, the space shuttle Atlantis is embarking on its final planned mission in Earth orbit.

I'm certain that over the years, many of you have listened to shuttle/ground communications as I have, simulcast on amateur radio, to the direct air to ground communications at landing, and for the fortunate ones, at launch. Some of our club members have worked on the shuttle and its payloads, on the satellite communications systems which support it, and the flight systems that predated STS.



RF communications has been essential to the space program since the beginning, but it's only been in recent years (if 1981 seems recent) that person to person amateur radio has made it to space.

Although he attempted it in 1973 with Skylab-3, Astronaut Owen K. Garriott, W5LFL, made his history ten years later on Columbia flight STS-9 by being the first amateur radio operator in space to talk with amateurs on the ground.



"It was my good fortune to take the first amateur radio into space on STS-9 in November 1983," Garriott said. "In my spare time only, I managed to hold up an antenna to the window and to talk to amateurs on Earth." (See inset of Garriott with the first Motorola two meter FM ham radio in space.)

"I had specified particular times and frequencies beforehand," Garriott said. "Among others, I was able to speak with the Amateur Radio Club in my hometown of Enid, Oklahoma, with my mom, with Senator Goldwater, and with King Hussein, who was an avid ham."

"When in orbit over land, I could make a CQ, which is a general call, and see who responded," Garriott said. "I used a well-designed, hand-held antenna, known as a 'cavity antenna', which could be velcroed to the window (see inset). It was about 24 inches in diameter and looked somewhat like a large aluminum cake pan. The transceiver then connected to the antenna."

Shortly after, in 1985, Amateur TV made its first appearance in space onboard STS-51F with the second ham in space, Astronaut Tony England, W0ORE. And the first live TV ever received by a shuttle was made using amateur radio from Johnson Space Center station W5RRR.



Following 19 missions over next ten years, the SAREX (Shuttle Amateur Radio Experiment) matured, and in 1991, with SAREX II, Atlantis flight STS-37 was the first shuttle voyage in which the entire crew was composed of licensed amateur radio operators (see inset: Steven R. Nagel,

N5RAW; pilot Kenneth D. Cameron, KB5AWP; and mission specialists Jerome "Jay" Apt, N5QWL; Linda M. Godwin N5RAX; and Jerry L. Ross, N5SCW.)

Locally, we can hear shuttle communications on the JPL repeater: WR6JP 147.150 (+) 103.5.

73,

Joe, NZ6L



### Welcome! New Members

Melody Colbert, KI6SPA RHE  
 melcolbert@aol.com  
 Richard Fowlell, KJ6CBA RHE  
 rafowell@aol.com  
 (A husband and wife team who often  
 operate from the back of their horses)

And:  
 Donald Culler, KJ6FLI, PVE  
 dmpjculler@verizon.net

**CLUB NET:** On any given Tuesday @  
 19:30 is the PVARC Net on the K6PV re-  
 peater 447.120(-)100.0. In West PV, on cross-  
 band 145.710 (simplex) 71.9.

This is followed by an informal CW  
 Club net on 14.125 Mhz. For more informa-  
 tion on the CW net, contact Dan Colburn  
 W6DC or Homer Meek K6HKT.

### Treasurer's Report

Diana Feinberg, AI6DF

May 9 2010

PVARC Balance	\$2,632.91
John Alexander Fund:	\$1,043.00
Repeater Fund:	\$1,138.66
Total Bank Balance	<u>\$4,814.57</u>
Special Fund (included in PVARC Balance)	<u>\$ 188.52</u>
Membership 2009	129
Renewals 2010	91

PVARC currently has 127 members, including  
 six new members in 2010. In addition we have  
 one Silent Key this year, Bill Cagney,  
 KH6GC-SK.

Our Club had 127 members at the end  
 of 2009 and two Silent Keys that year: Steve  
 Chmurra, K6SAC; and Bob Landon, W0IYX.

### Board of Directors

President	Joe Pace, NZ6L
Vice President	Hal Lazar KI6SPB
Treasurer	Diana Feinberg, AI6DF
Secretary	Chuck McCown, K6CTM
Past President	Ginger Clark, KG6TAU
Director (1)	Mel Hughes, K6SY
Director (2)	Jeff Wolf, K6JW

### Appointed Offices

QRO Editor	Ginger Clark, KG6TAU
Asst to Editor	Paige Omoto, KI6MAH
QRO Proofreader	Rick Murray, K6WXA
Web Page Editor	John Freeman, WW6WW
Club Librarian	Bryant Winchell, W2RGG
VE Coordinator	Dave Scholler, KG6BPH
VE Liason	Diana Feinberg, AI6DF
LAACARC Rep	Joe Locascio, K5KT

### Contacts

QRO Editor	310-378-7894
WebMaster	310-541-6971



### Need a Club Badge?

Karen Freeman, KG6BNN  
 310-541-6971



### Need a Club Patch? Or a Club Jacket?

Dave Scholler, KG6BPH  
 310-373-3816



# Upcoming Events



ARRL Southwestern Division Convention 2010  
San Diego  
September 17th - 19th

<http://www.sandarc.net/Convention2010/links.htm>

## On May 15 Palos Verdes Marathon Enters Its 44th Year

Diana Feinberg, AI6DF

The Palos Verdes Amateur Radio Club is again overseeing radio communication for this year's Palos Verdes Marathon on May 15th. Now in its 44th year, the Palos Verdes Marathon remains the nation's second-longest continuously running Marathon after the Boston Marathon. By comparison, the Los Angeles Marathon just finished its 25th year.

In addition to many club members who volunteered to serve as radio operators along the route this year, PVARC has two members running in the Marathon. Bob Closson, W6HIP, is entered in the full Marathon and Bill Leighton, KG6WVF, is slated to run the Half Marathon. You go, guys!

PVARC's communication plan this year will use 2-meter simplex from the RVP ECC, with separate 440 cross-band circuits at the north and south ends of the Marathon to cover difficult operating locations.

*Proceeds from the Palos Verdes Marathon, sponsored by the Rolling Hills Estates Kiwanis Club, benefit various youth-related charitable organizations on the Peninsula and in San Pedro.*

## ALERT! PVAN - Thursday May 20th

PVAN training class scheduled for 7:00 p.m. on Thursday May 20, 2010. It will **NOT** be held at Hesse Park, For updated information, call Alan Soderberg, W8CU, at 310-377-9747

## Need some help here, please.

### Rolling Hills Estates 10K/5K

We can use a couple more folks to help with the radio communications for this event. If you'd like to spend a few short hours on trails in Rolling Hills Estates, please contact Walt, K1DFO, at [waltordway@juno.com](mailto:waltordway@juno.com)

This year's annual RHE 10K/5K event has been moved to Saturday, 14 August. The event starts and finishes at Ernie Howlett Park, just off of Hawthorne Blvd. This 10K/5K event is a bit different from other 10K/5K events. This one is run mostly on the horse trails in the City of Rolling Hills Estates, and also goes through the Botanical Gardens.

The 10K race will start at approximately 8:00 a.m. and the 5K at 8:05 a.m. the entire event will be completely finished by around 9:30 a.m..



## SPECIAL MEETING ANNOUNCEMENT from K6JW

Due to a steadily decreasing number of requests, K6JW will yet again present his much scorned but fortunately brief, cautionary tale of hard experience, "The Tao of Field Day," at the upcoming May meeting. This is an event you surely will want to miss, so plan to avoid it if you can.



# Safety Concerns In Amateur Radio

Jeff Wolf, K6JW, MD

Recently, a ham friend of mine was seriously injured when he slipped and fell from a roof. Although he was not engaged in an amateur radio-related activity at the time, it got me thinking about safety in our hobby, and I thought that with Field Day coming it might be useful to review a few basic rules to keep all of us safe as we pursue our passion for this wonderful hobby.

We're all pretty familiar with the requirement for RF safety – it's part of our rules and regulations. Honestly, I think those rules go somewhat overboard and, in some cases, particularly those related to HF emissions, make unwarranted assumptions about the harmful effects of RF exposure at levels we encounter in our usual activities, but the regs are the regs and we need to adhere to them. In fact, RF exposure is not really what I'm going to address in this short piece. I'm more concerned here with some other stuff that can bite you.

Let's start with electrical shock hazard. If you're operating with a balanced antenna that's set up and matched properly, you don't need to worry much about RF shocks, but plain old electrical shocks from your equipment developing shorts is a real risk. OK, perhaps not so much of a risk if you're just operating a 12 volt, solid state, 100 watt rig barefoot, but if you're running older, tube-type equipment or a tube-based linear amplifier, you may be dealing with potentially lethal shock hazards involving upwards of 1500 volts. So, here are the rules for working around such voltages:

- Never work around high voltage without someone else in the area who can cut the power and/or call 911 in an emergency.
- Turn the unit's power off, unplug it, and short any high voltage capacitors to ground using an insulated screwdriver



before touching any part of the unit with your bare hands.

- Try to work with one hand only as much as possible in order not to create a path for current flow across your chest.
- If possible, keep an earth ground connected to the unit while you're working on it. If an earth ground isn't available, you can run a wire to the third prong of a wall socket *as long as you are 100% CERTAIN that your house wiring has been done correctly.*
- When you're ready to test the equipment, put it back in its case before applying power.
- Never, ever, work on your radio gear in your bare feet. Rubber-soled shoes are recommended. (Exception: If you're handling ICs and you know that there's no electrical hazard present, be sure to work on an anti-static mat that's properly grounded and wear a wristband that's grounded to the mat.)

How about when you need to do some soldering? A few of good rules here are:

- Only work in a well ventilated area. If the area does not have cross ventilation, consider running a small fan to blow the solder-related fumes away from your face so you won't inhale them. Yes, the rosin smells wonderful, but fumes probably aren't very good for you.
- Since most of us still use lead-containing solder, be sure to wash your hands thoroughly after handling it. We don't want Club members getting lead poisoning!
- Be sure your soldering iron has a stand that will keep it from sliding or rolling off

the work surface. Having a hot soldering iron hit your thigh is distinctly unpleasant, and carpet burns aren't usually appreciated by one's spouse.

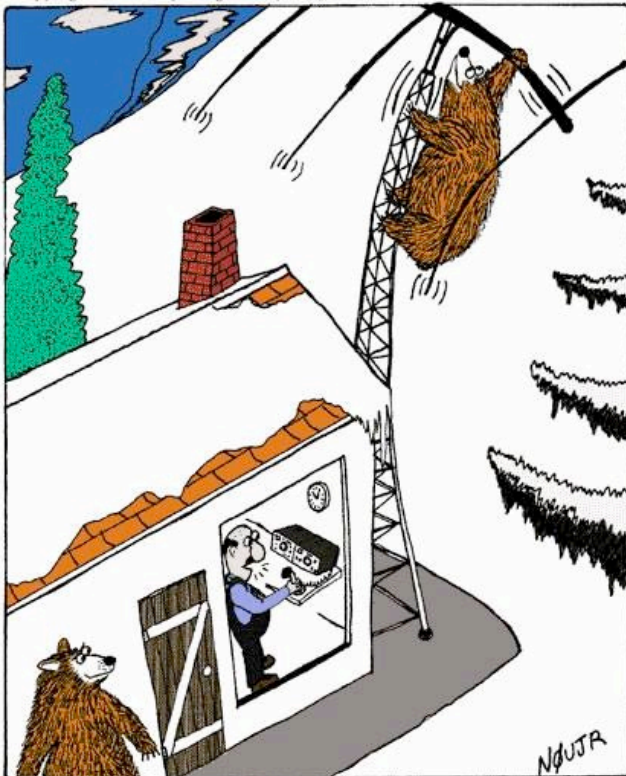
- Do not leave the soldering iron plugged in if you have to leave the project for any length of time, or if children or other uninitiated individuals might think to touch it.

Oh, and about climbing towers or onto your roof:

- If you're going to climb a tower, always wear (and properly use) a well-inspected climbing belt that's in good condition.
- Never climb a tower or onto your roof unless you have someone else present. That person may not be able to catch you if you fall, but he/she can stabilize a ladder or call 911 if necessary.
- Work slowly and deliberately, thinking about every move before you make it. You don't want to be like those cartoon

#### Other Possible Tower Hazards

Copyright © 1997 by Greg Trook, NOUJR



"Hang on a minute Larry...my SWR is jumping...I'm going outside and see what the problem is..."

characters who run off the cliff without thinking and, as soon as they look down and realize what they've done, plummet totally out of control.

I've seen an awful lot of errors made during Field Day operations, so here are a few recommendations for Club activities in the great outdoors:

- If you're not essential to an activity involving antenna-raising, keep clear of the work area and maintain a radius of separation that will keep you safe from anything that might fall.
- Look down as well as up. Cables stretched across the operation's venue can be hazardous. They should always be taped down, but *should* does not always happen.
- Never, never, never try to re-fuel a running generator unless you have a death wish. Always kill the generator before refueling, and by that I mean throw the kill switch and shut down the outlets or, at least, unplug the power cords. After refueling, be sure that no gasoline has spilled onto an area where a spark might ignite it.
- Never start a generator until everyone involved with the station(s) that will be supplied by the generator is ready and knows what you're about to do. (I had to stop someone in the Club from trying to fire up a generator at one of our FD events when he tried to do it while someone was in the process of connecting antenna feedline to a triband Yagi.)
- For any heavy lifting, climbing, or other activity that presents physical risk, be sure someone is available to help or "spot" you in case of trouble.

Most of what I've outlined is simple, common sense, but it's been said many times that the problem with common sense is that it isn't truly common. Think before acting and always remember: the life you save might be mine!\_

## Really Nice Elmering-Offer From Ray, N6HE

If anybody's interested in learning about the basics of message traffic handling and traffic net operation, please contact me, Ray, N6HE 310-541-7557 rayday@cox.net . It's a skill that can be quickly learned, and is, I feel, part of every ham's responsibility to his hobby and community - being able to step in when the stuff hits the fan and help facilitate the handling of radio messages, typically health-and-welfare messages. If anybody had a relative in the New Orleans area they couldn't locate (I did - took me a week to locate my sister), you know how important this is! If you didn't, imagine yourself worried about a relative or friend and not being able to get through to them or know if they're OK - and all the "official" channels jammed with disaster traffic.

There's lots of resources available - Elmer-types and internet and practice nets, too. Easy to get started, go only as far as you want to.

No expertise needed. No obligation. Can't hurt to have a skill that might help somebody someday. Why not? Contact me if you're interested...thanks!

### PVARC May 8th VE Session Results

Diana Feinberg, AI6DF

Congratulations go to Club members Clay Davis, KJ6FHN, and Donald Culler, KJ6FLI, for passing license upgrade exams at PVARC's May 8th VE session. Clay upgraded to Extra and Donald upgraded to General Class.

In addition to Clay and Donald, 20 other candidates took exams and 18 earned Technician licenses. This was our final VE session using the current pool of Technician Class questions; a new pool takes effect on July 1st.

PVARC's VE team for this test session was comprised of: Matt Cruse, N6MDC; Diana Feinberg, AI6DF; Bill Leighton, KG6WVF; Joe Locascio, K5KT; and Jeff Wolf, K6JW. Dave Scholler, KG6BPH, served as the session coordinator.

Walt Ordway, K1DFO, will teach his next courses on July 24 and July 31 at Hesse Park for both Technician and General Class licenses.

### FCC Seeks Comments on Newly Proposed Rules for Amateur Radio Operators and Emergency Drills

Submitted by Mel Hughes, K6SY

In March, the FCC released a Notice of Proposed Rulemaking (NPRM) that proposed to amend the Part 97 rules governing the Amateur Radio Service. The new rules would provide that, under certain limited conditions, Amateur Radio operators may transmit messages during emergency and disaster preparedness drills, regardless of whether the operators are employees of entities participating in the drill.

On April 22, a summary of the NPRM was published in the Federal Register and the FCC is seeking comments on it. Comments must be filed on or before May 24, 2010 (30 days after publication in the Federal Register); reply comments must be filed on or before June 7, 2010 (45 days after publication in the Federal Register).

Instructions on how to file comments are listed beginning on page 5 of the NPRM. The NPRM is available on the web in PDF format at, [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-10-45A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-45A1.pdf).

**Upcoming Event**

**ARRL EXPO at Dayton Hamvention®—May 14-16, 2010**

- Event News
- Exhibit and Activities Guide
- Blog

[▶ Learn More](#)



## On the Nature of Interacting Antennas

Wes Hardaker, WS6Z, has a M.S. in Electrical Engineering but got absorbed into a computer science career. HAM radio and antenna construction has been his method of bringing his electrical engineering skills back into his active skill set.

*(Parts of this article have live links to other web sites. I'm not certain they'll survive when the QRO is put into .pdf so the addresses are included- ed)*

As some of my friends know, I enjoy building antennas in my free time (whenever that occurs) for my [Amateur Radio](#) hobby (which keeps me from being bored during my free time). (<http://www.ws6z.com/>)



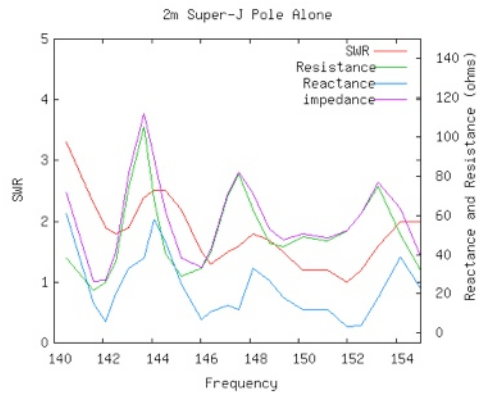
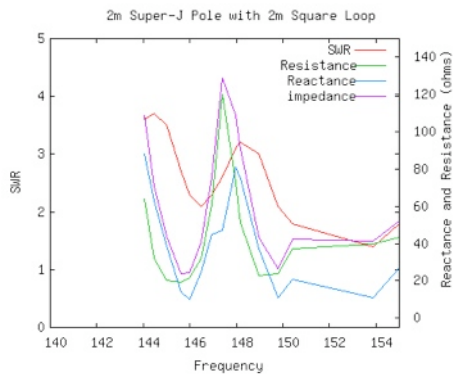
A while back I built a [2m Copper "Super-J-Pole"](#) antenna which I attached to my chimney and use on a daily basis. Then a friend of mine (AD6IL) was kind enough to supply me with a 2m square loop for horizontal work which I attached at the bottom of the J-pole (for lack of a better place at the time). AD6IL and I were debating how much of a problem it would be to have them so close together and I figured I'd give it a try and see how much they interacted. If nothing else I'd learn from it. After putting them both up they both performed adequately though I was pretty sure I could detect a performance difference in the J-pole after adding the square loop to its base. (<http://pontifications.hardakers.net/amateur-radio/2m-440-copper-pipe-super-j-pole/>)

Recently another friend (K9RTY) loaned me his antenna analyser and I measured the performance of both antennas as they were mounted together and then moved the square loop to the opposite corner of the chimney and remeasured them both again. The following 4 graphs show the results of these tests.

For those without much background in antenna theory the goal here is to achieve a SWR of 1 (impossible), which is shown in red and is reflected in the left-hand Y-axis. The reactance should ideally be 0 and the impedance and resistance should be 50 ohms (in this case at least) and are all reflected numerically in the right-hand Y-axis. No antenna is perfect, however, but the goal is to shoot for getting as close as possible to ideal near the frequency where you want to use the antenna. In my case, the desired center frequency of the J-pole is at 147.000MHz and the desired center frequency of the square loop is at 144.200MHz.

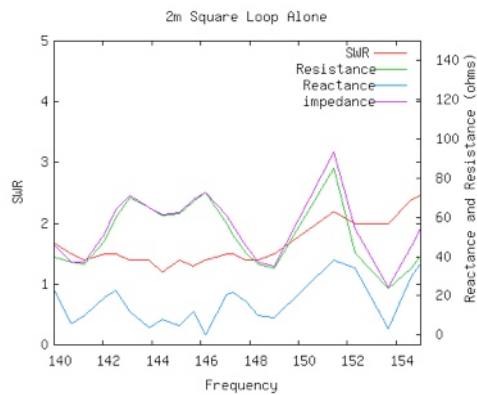
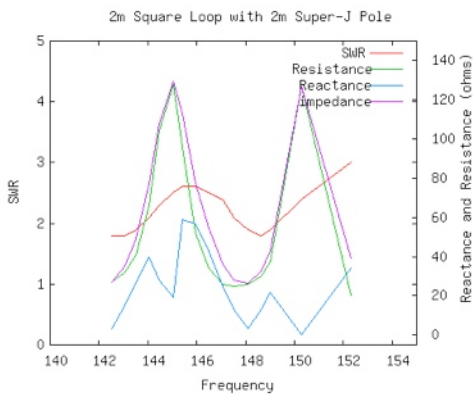


### 2m Super-J Pole Graphs



These two graphs show the measurements taken on the Super J-Pole before and after the separation.

### 2m Square Loop Graphs



These two show the measurements on the 2m Loop before and after the separation.

graphs measured taken Square and separation.

### Conclusions

It is, of course, a no-duh that antennas affect each other when placed in proximity to each other. But these graphs show this interaction clearly in a real-world scenario.

For the J-Pole, the SWR (the poor-mans antenna measurement figure) has definitely dropped to a better range in general. The reactance has also improved, which means the antenna is closer to resonance which is the ultimate goal of any antenna (especially for transmitting). The square loop shows similar (even slighter bigger) improvements.

### On the Air

Hooking them up to a radio and talking with friends (WB6ISO at ~20mi away and K6ERF at ~40mi away) I was told that my signals were definitely improved by an S-unit or two since the previous conversations. Of course, on-air measurements rely on constantly changing propagation conditions and thus require many more data points for a valid comparison but in this case they're backed up by graphs that likely indicate the small sampling of on-the-air measurements were likely accurate.

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May 2010						
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30	31					

June 2010						
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July 2010						
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August 2010						
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29	30	31				

September 2010						
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October 2010						
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31						

November 2010						
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28	29	30				

December 2010						
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19	20	21	22	23	24	25
26	27	28	29	30	31	

Schedule of Events	
May 1st	Tech Class Part 2
May 1st	Palos Verdes Loop Trail Relay
May 8th	VE Session at Hesse Park
May 15th	Palos Verdes Marathon
May 19th	General Meeting
June 16th	General Meeting
June 26th-27th	ARRL Field Day!
July 21st	General Meeting
August 14th	RHE 5K/10K Run/5K Walk
August 20th-22nd	Lighthouse Weekend
August 22nd	Summer Picnic at Pt. Vicente
September 15th	General Meeting
September 18-19th	Concours d'Elegance
October 20th	General Meeting
November 17th	General Meeting
December 15th	Holiday Dinner @ PVIC



## Palos Verdes Amateur Radio Club – Schedule of Events 2010



### Two Amateur Radio Courses

- FCC “Technician” course (entrée level)
- FCC “General” course (2<sup>nd</sup> level)

Each course is 2 sessions-- July 24 AND 31  
Technician 10:00 AM to 2:00 p.m. both Saturdays  
General 2:15 PM to 5:00 p.m. both Saturdays  
 FCC tests will be 10 a.m. to Noon on Aug 7

Hesse Park, 29301 Hawthorne Blvd. Rancho Palos Verdes

No pre-registration required, No fee for either course -  
 But taking the FCC Test is \$15 -

#### Optional Material

- Gordon West book with FCC test questions:  
 \$21 for Technician and \$23 for General
- Copy of my Power Point charts, \$15 -

Students (thru grade 12) who take this course and get their license will be reimbursed up to \$50 by the Palos Verdes Amateur Radio Club

For more information contact  
 Walt, K1DFO, at walt.ordway@yahoo.com

# Announcing the formation of the Amateur Radio Antenna Defense Foundation

### What is ARADF?

ARADF is a California corporation that has been approved by the Internal Revenue Service as a public charity under Section 501(c)(3) of the Internal Revenue Code.

### What is the purpose of the Foundation?

ARADF was formed to encourage the retention and expansion of approved Amateur Radio antenna installations by helping fund litigation by Amateurs against local jurisdictions that fail to comply with federal and state antenna preemption statutes

### Where will the money to do this come from?

Funding for ARADF's activities will come from donations (generally tax-deductible) by Radio Amateurs and by friends of Amateur Radio, both individual and corporate.

### Who runs the Foundation?

ARADF is run by a Board of Directors whose members include:

Marty Woll N6VI, Leonard Shaffer WA6QHD, Art Goddard W6XD and Gayle Olson K6GO.  
All directors of the Foundation serve without compensation.

### How will ARADF support help Amateurs in antenna-unfriendly cities?

Even in these days of shrinking municipal budgets, most cities, with attorneys on staff, can run up the time and cost for any Amateur seeking judicial relief from oppressive local antenna regulations. By providing financial support for lawsuits, ARADF can help level the financial imbalance that usually works in the city's favor. If one Amateur in a jurisdiction is successful, it is more likely that others in the same community won't have to resort to the courts in order to get reasonable accommodation and that noncompliant codes and ordinances will be amended.

### Will contributions be earmarked for specific cases?

In order to preserve the deductible nature of contributions, all amounts received will be kept in a general fund. This also provides the most flexibility in selecting cases to be supported and deciding on the extent of that support.

**Questions?** E-mail us at [ARADF@SOCAL.RR.COM](mailto:ARADF@SOCAL.RR.COM) or speak with any of our directors.

**Add to our "war chest"!** Make a contribution to ARADF. Simply fill in the form below and send it with your check to **ARADF, P.O. Box 5434, Chatsworth, CA 91313-5434**

Enclosed is my check for \$ \_\_\_\_\_ payable to Amateur Radio Antenna Defense Foundation

Name \_\_\_\_\_ Callsign \_\_\_\_\_ or Company \_\_\_\_\_

Mailing address \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

If you would like to receive updates on ARADF activities, please print your e-mail address below

E-mail: \_\_\_\_\_

Page 11 and Page 12 are Courtesy of Mel Hughes, K6SY -- Thanks, Mel!

**2010 ARRL Southwestern Division  
Amateur Radio Convention  
September 17, 18 & 19  
San Diego, California**



**Four Points, By Sheraton Hotel San Diego  
8110 Aero Drive, San Diego CA 92123 Phone: (858) 277-8888**

<http://www.sandarc.org/>

**Registration Form**

*Please list additional Attendees - ALL ATTENDEES MUST BE REGISTERED  
No charge for Children 16 or under when Accompanied by a Registered Adult*

How did you find out about the Convention?

Radio  Web search  Ham Club  News Paper  Other \_\_\_\_\_

Call Sign: \_\_\_\_\_ Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_

Address: \_\_\_\_\_ City \_\_\_\_\_

State: \_\_\_\_\_ Zip Code: \_\_\_\_\_ E-mail: \_\_\_\_\_

Kids / Adults Call Sign Name (please print)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Early Bird Dated before May 31, 2010	\$15.00 @ _____	ea. = \$ _____
Convention Pins Included (Limited Supplies)		
Pre Registration June 1, to Aug. 22, 2010	\$18.00 @ _____	ea. = \$ _____
At Door Registration	\$20.00 @ _____	ea. = \$ _____
Accompanied kids under 16 years Free		
DX Breakfast	\$23.00 @ _____	ea. = \$ _____
Banquet Tickets Dinner <input type="checkbox"/> Beef <input type="checkbox"/> Chicken <input type="checkbox"/> Vegetable	\$43.00 @ _____	ea. = \$ _____
Banquet Speaker: <i>To Be Announced</i>		
Convention Lunch	\$25.00 @ _____	ea. = \$ _____
Lunch Speaker:		
2010 Convention Pins	\$ 5.00 @ _____	ea. = \$ _____
2006 Convention Pins	\$ 3.00 @ _____	ea. = \$ _____
2002 Convention Pins	\$ 3.00 @ _____	ea. = \$ _____
QSL Card Checking		

Make Checks payable to:

**SANDARC Convention**  
C/O R. Boehme W2IRI  
10340 Everell Pl.  
Santee, CA 92071

Web Form ver 1.03

**Staff Use Only**

Registration	_____
Date	_____
Amount	_____
Check #	_____
# Pins given	_____
Receipt	_____
Signed up	_____
Other	_____
Other	_____