



# QRO

MONTHLY NEWSLETTER OF THE PALOS VERDES AMATEUR RADIO CLUB

JULY 2019



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## No Meeting on July 4th, Independence Day

**Next meeting:  
Thursday, August 1, 2019**

6:30 pm:

- 1) "What's Next?" group...all ham radio questions welcome, and 2) separate "DMR Basics" group

**7:30 pm: Main meeting**

"Field Day: ARRL Los Angeles Section" and "International Light-house & Lightship Weekend"

Fred Hesse Community Park  
(McTaggart Hall)  
29301 Hawthorne Blvd.  
Rancho Palos Verdes, CA  
*Visitors always welcome*

## PVARC's upcoming meeting topics...

We say again...there is no PVARC monthly meeting on Thursday, July 4th, due to Independence Day.

The PVARC is holding a rare August meeting on **Thursday, August 1st, at 7:30 pm** in our usual Hesse Park room. Our "What's Next?" and "Getting on DMR" help groups will meet at 6:30 pm, including offering initial DMR programming for owners of the three HT radios PVARC initially supports.



Our August 1 meeting will have two highly-illustrated presentations by your **QRO** Editor: 1) A new video about 2019 ARRL Field Day throughout the ARRL Los Angeles Section including new sites and K6PV operations at Soleado Elementary School in Rancho Palos Verdes, and 2) a new presentation about International Lighthouse and Lightship Weekend. Elsewhere in this **QRO** issue you'll find full coverage of the PVARC's Field Day.

The U.S. Coast Guard has approved PVARC's application to use Pt. Vicente Lighthouse grounds for our radio operation and Sunday picnic during this year's International Lighthouse and Lightship Weekend (August 16-18). We've registered Pt. Vicente Lighthouse with the ILLW organization alongside 245 other lighthouses worldwide as of July 1. Typically 450 to 550 lighthouses are active for each ILLW but many register during the final weeks as local amateur radio groups secure approvals or develop plans.

The PVARC's **September 5** meeting is devoted to Digital Mobile Radio (DMR) and experiences since K6PV became a dual-mode repeater in late March. Our club directors and others are already working on a very-understandable presentation about DMR to demystify much of its complexity while clearly explaining DMR's many advantages. We will also have members show various DMR radios and present their knowledge or tips for becoming more proficient. To repeat: no one is obligated to purchase a DMR radio...your existing analog FM radios still work on K6PV although they cannot reach any DMR talkgroups.

As a meeting prelude the September **QRO** issue will have a unique article reviewing from a different perspective the three DMR HT radios our club supports. Your **QRO** Editor initially bought a TERA TR-7400 HT...but through quirks of fate due to involvement with other groups she needed to purchase both the AnyTone UV878 and TYT UV-380 HTs as well. Some technical specifications differentiating the three radios were published in recent **QRO** newsletters. However there are subtle yet significant ergonomic and user-friendliness differences among these radios that only become apparent by owning/operating all three brands.

Our October and November meeting topics are being planned...so stay tuned. ■



The ILLW logo  
([www.illw.net](http://www.illw.net))



**Larry, Moe, and Curly Joe?** No, the only stooge was your **QRO** Editor who ended up owning (from left) the AnyTone UV878, the TERA TR-7400, and TYT UV380 DMR handheld transceivers. Watch for a side-by-side review in the September **QRO**.

PHOTO: DIANA FEINBERG, AI6DF

# PVARC's Soleado School Field Day had a great score, almost 200 more contacts than 2017/2018, our first use of FT8 and 160-meters

Field Day Year <small>* FD operations disrupted by sprinklers over-night</small>	(A) K6PV (2A Station) Total Points	(B) K6PV Rank Nationwide of all Field Day stations (all classes)	(C) K6PV Rank of all 2A stations in ARRL Southwestern Division	(D) K6PV Rank of all 2A stations, ARRL LAX Section
2019	5,284	???	???	???
2018	4,288	305 <sup>th</sup> of 2,902	3 <sup>rd</sup> of 24	1 <sup>st</sup> of 8
2017	4,238	338 <sup>th</sup> of 2,965	3 <sup>rd</sup> of 28	2 <sup>nd</sup> of 10
2016	4,742	243 <sup>rd</sup> of 2,696	2 <sup>nd</sup> of 31	1 <sup>st</sup> of 9
2015	5,780	193 <sup>rd</sup> of 2,270	4 <sup>th</sup> of 27	3 <sup>rd</sup> of 9
2014	4,932	252 <sup>nd</sup> of 2,686	4 <sup>th</sup> of 32	2 <sup>nd</sup> of 9
2013*	4,248	331 <sup>st</sup> of 2,548	5 <sup>th</sup> of 26	1 <sup>st</sup> of 5
2012	5,188	259 <sup>th</sup> of 2,617	5 <sup>th</sup> of 24	1 <sup>st</sup> of 8
2011*	4,492	341 <sup>st</sup> of 2,632	6 <sup>th</sup> of 24	1 <sup>st</sup> of 5
2010	5,468	219 <sup>th</sup> of 2,617	5 <sup>th</sup> of 31	1 <sup>st</sup> of 8
2009*	3,930	391 <sup>st</sup> of 2,603	9 <sup>th</sup> of 27	3 <sup>rd</sup> of 7
2008	4,160	332 <sup>nd</sup> of 2,409	4 <sup>th</sup> of 27	1 <sup>st</sup> of 9
2007	3,216	511 <sup>th</sup> of 2,331	6 <sup>th</sup> of 28	2 <sup>nd</sup> of 7
2006	5,242	223 <sup>rd</sup> of 2,169	4 <sup>th</sup> of 30	2 <sup>nd</sup> of 5
2005	6,216	162 <sup>nd</sup> of 2,199	3 <sup>rd</sup> of 32	2 <sup>nd</sup> of 8
2004	7,118	126 <sup>th</sup> of 2,242	3 <sup>rd</sup> of 30	2 <sup>nd</sup> of 7
2003	6,192	126 <sup>th</sup> of 2,079	4 <sup>th</sup> of 37	3 <sup>rd</sup> of 8
2002	6,246	194 <sup>th</sup> of 2,099	3 <sup>rd</sup> of 28	1 <sup>st</sup> of 7

Our K6PV 2019 Field Day stations performed extremely well considering weak HF solar conditions. We achieved nearly 200 more contacts this year than in 2017 or 2018, yielding 5,284 points vs. 4,288 last year.

As shown on the next page, CW continued as our dominant mode, making 61% of K6PV's contacts. Phone contacts were 21% of our total while digital contacts using FT8 comprised 18%.

By band, we achieved 57% of our contacts on 20-meters and 21% on 40-meters, with 10-meters totally dormant.

The 2019 Field Day marked the first time we (and other stations) could use the FT8 digital mode. Additionally we set up a long-wire antenna for operating on 160-meters but found no other stations there.

We also extensively used band-pass filters and better planning to allow adjacent transmitters operating simultaneously.

Thanks go to everyone who helped with our Field Day...and to Rocco, N6KN, for leading our efforts. ■

## K6PV Field Day Contacts, 2011-2019, by Band and Mode

Total QSOs	2011	2012	2013	2014	2015	2016	2017	2018	2019
Digital	-	12	-	-	-	-	-	-	234
Phone	441	723	575	763	562	234	395	454	273
CW	715	708	582	594	874	931	692	640	788
<b>All Modes</b>	<b>1,156</b>	<b>1,443</b>	<b>1,157</b>	<b>1,357</b>	<b>1,436</b>	<b>1,165</b>	<b>1,087</b>	<b>1,094</b>	<b>1,295</b>
<b>80 meters</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Digital	-	-	-	-	-	-	-	-	54
Phone	10	31	53	24	99	-	115	75	4
CW	6	-	-	-	-	64	-	-	31
<b>All Modes</b>	<b>16</b>	<b>31</b>	<b>53</b>	<b>24</b>	<b>99</b>	<b>64</b>	<b>115</b>	<b>75</b>	<b>89</b>
<b>40 meters</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Digital	-	-	-	-	-	-	-	-	6
Phone	17	24	27	107	19	55	-	66	86
CW	179	-	206	160	121	150	257	175	181
<b>All Modes</b>	<b>196</b>	<b>24</b>	<b>233</b>	<b>267</b>	<b>140</b>	<b>205</b>	<b>257</b>	<b>241</b>	<b>273</b>
<b>20 meters</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Digital	-	12	-	-	-	-	-	-	160
Phone	198	310	297	241	172	118	217	132	102
CW	203	319	209	208	371	608	400	330	485
<b>All Modes</b>	<b>401</b>	<b>641</b>	<b>506</b>	<b>449</b>	<b>543</b>	<b>726</b>	<b>617</b>	<b>462</b>	<b>747</b>
<b>15 meters</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Digital	-	-	-	-	-	-	-	-	4
Phone	58	273	90	211	113	9	3	100	31
CW	256	389	167	180	364	104	35	121	91
<b>All Modes</b>	<b>314</b>	<b>662</b>	<b>257</b>	<b>391</b>	<b>477</b>	<b>113</b>	<b>38</b>	<b>221</b>	<b>126</b>
<b>10 meters</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Digital	-	-	-	-	-	-	-	-	-
Phone	18	1	3	-	-	-	-	-	-
CW	71	-	-	46	18	5	-	14	-
<b>All Modes</b>	<b>89</b>	<b>1</b>	<b>3</b>	<b>46</b>	<b>18</b>	<b>5</b>	<b>-</b>	<b>14</b>	<b>-</b>
<b>6 meters</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Digital	-	-	-	-	-	-	-	-	10
Phone	108	47	55	115	99	28	27	41	-
<b>All Modes</b>	<b>108</b>	<b>47</b>	<b>55</b>	<b>115</b>	<b>99</b>	<b>28</b>	<b>27</b>	<b>41</b>	<b>10</b>
<b>2 meters &amp; up</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Phone	32	36	24	18	9	24	33	40	50
<b>All Modes</b>	<b>32</b>	<b>36</b>	<b>24</b>	<b>18</b>	<b>9</b>	<b>24</b>	<b>33</b>	<b>40</b>	<b>50</b>
<b>Other</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Satellite	1	1	-	1	1	-	-	-	-
GOTA	-	-	25	46	50	-	-	-	-
	1	1	25	47	51	-	-	-	-

# Scenes from the PVARC's 2019 Field Day



Set-up Time on Saturday

**Every which way but up:** (L-R) PVARC members Diana, AI6DF; Clay, AB9A; Gary, WA6MEM; Rick, KM6GXZ; and Bob, AC6RM, survey our set-up scene. PHOTO: BOB CLOSSON, W6HIP



**VHF/UHF Station:** Daisy and Bob Millard, AC6RM, handling operation of K6PV VHF/UHF station. PHOTO: DAVID CALLOWAY, K6DKC



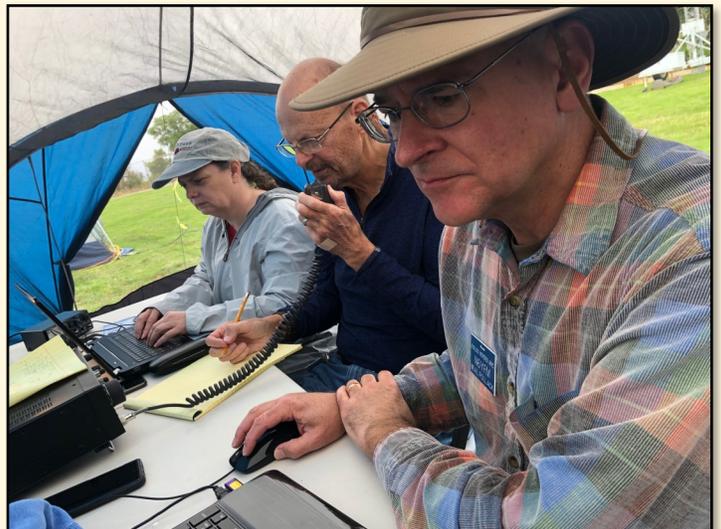
**CW Station:** Rocco, N6KN, operating CW while Georgiann, KM6YGM, handles logging. PHOTO: GARY LOPES, WA6MEM



**CW Station:** Rocco, N6KN, served as our Field Day Chair and made CW look easy (in this picture he's logging while listening to fast code). PHOTO: BOB CLOSSON, W6HIP



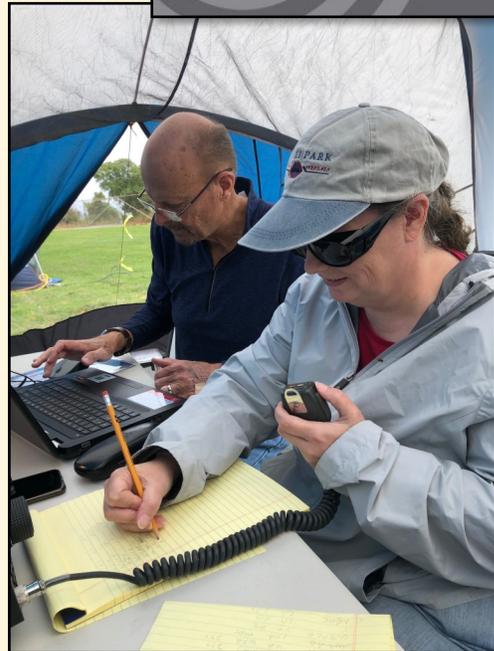
**SSB & FT8 Station:** (L-R) Annalise, KM6YGS, logs as Peter, KE6JPM, operates SSB and Neal, N6YFM (foreground) monitors the FT8 situation. PHOTO: GARY LOPES, WA6MEM



# More scenes from PVARC's Field Day



**Generator Alley:** Four compact Honda generators powered K6PV at Field Day, including the external fuel tank (center) of Jerry, NG6R, which allows continuous operation of up to 72 hours. PHOTO: GARY LOPES, WA6MEM



**SSB Station:** Now Annalise, KM6YGS, is operating while Peter, KE6JPM, logs. PHOTO: GARY LOPES, WA6MEM



**Oops:** Fiberglass mast for K6PV 160-meter antenna starts to bend before being corrected. This year was our first-ever attempt using 160-meters during Field Day but we heard no other stations. PHOTO: MALIN DOLLINGER, KO6MD



**K6PV Tower Trailer:** This year our CW, SSB, and FT8 stations operated from a common hexbeam and 80/40 wire dipoles with bandpass filters. This accelerated our setup on Saturday, with only three hours between initial site access and the 11 am start of contacts. PHOTO: MALIN DOLLINGER, KO6MD

# Thank you to everyone who made our 2019 Field Day possible

## PVARC Participants

Annalise Little, KM6YGS  
 Bill McClure, W7QLI  
 Bob Closson, W6HIP  
 Bob Millard, AC6RM  
 Bob Sylvest, AB6SY  
 Clay Davis, AB9A  
 Daisy Millard, AC6RM XYL  
 Dale Hanks, N6NNW  
 David Calloway, K6DKC  
 Diana Feinberg, AI6DF  
 Fran Wielin, KF6QFG  
 Gary Lopes, WA6MEM  
 Georgiann Keller, KM6YGM  
 Jeff Wolf, K6JW  
 Jerry Kendrick, NG6R  
 Larry Shapiro, K6RO  
 Lenore Dollinger, KO6MD XYL  
 Malin Dollinger, KO6MD  
 Mike Caulfield, AF6VT  
 Neal Pollack, N6YFM  
 Peter Landon, KE6JPM  
 Rick Heaston, KM6GXH  
 Richard Fowell, KJ6CBA  
 Robert Keefer, KO6UA  
 Rocco Lardiere, N6KN (FD Chair)  
 Sid Wielin, KF6QFH  
 Walt Ordway, K1DFO

Additional participants included several other hams, plus relatives and visitors.

Our apology if you are not shown, perhaps you did not sign-in on one of our lists. If we made a mistake please let us know at: [ai6df@arrl.net](mailto:ai6df@arrl.net)



## K6PV Field Day score package submittal to ARRL

Jeff Wolf, K6JW



## Equipment Providers

### Transceivers

Bob Millard, AC6RM  
 Diana Feinberg, AI6DF  
 Neal Pollack, N6YFM  
 Rocco Lardiere, N6KN

### Antennas, Masts, Coax

Bob Closson, W6HIP  
 Bob Millard, AC6RM  
 Dale Hanks, N6NNW  
 Diana Feinberg, AI6DF  
 Jerry Kendrick, NG6R  
 Rocco Lardiere, N6KN

### Station equipment

Bob Closson, W6HIP  
 Clay Davis, AB9A  
 Jerry Kendrick, NG6R  
 Peter Landon, KE6JPM  
 Rocco Lardiere, N6KN

### Generators

Bob Closson, W6HIP  
 Bob Sylvest, AB6SY  
 Dale Hanks, N6NNW  
 Jerry Kendrick, NG6R

### Solar array and battery

Bob Closson, W6HIP

### Electric cables, ropes, ladders

Bob Closson, W6HIP  
 Dale Hanks, N6NNW  
 Diana Feinberg, AI6DF  
 Jerry Kendrick, NG6R

### Tents and Furniture

Bob Millard, AC6RM  
 Diana Feinberg, AI6DF  
 Fran Wielin, KF6QFG  
 Peter Landon, KE6JPM  
 Sid Wielin, KF6QFH

### Computers

Bob Millard, AC6RM  
 Neal Pollack, N6YFM  
 Peter Landon, KE6JPM  
 Rocco Lardiere, N6KN

A special thank you to Kris Stafford of the Palos Verdes Peninsula Unified School District and to Soleado Elementary School for use of their campus during 2019 Field Day.

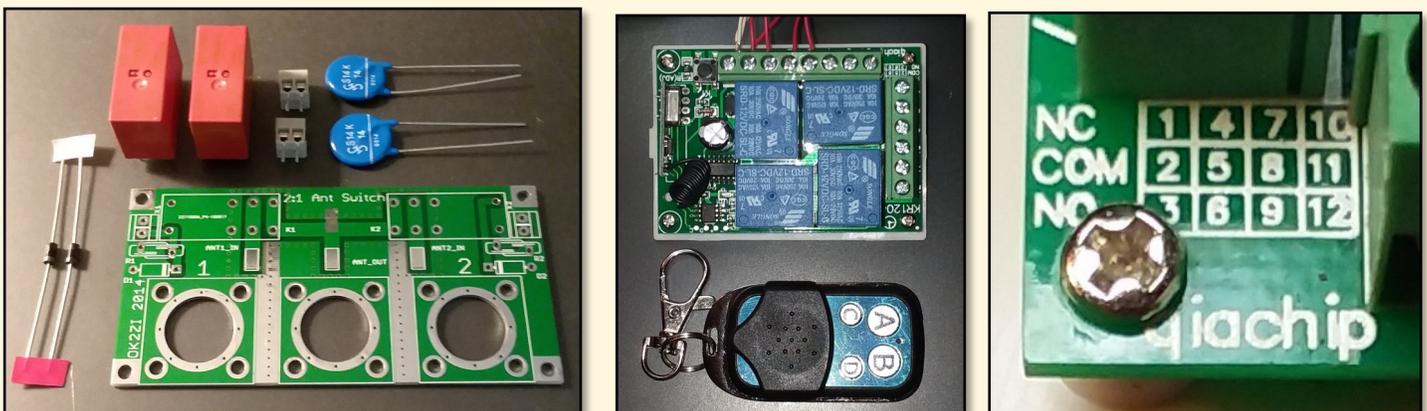
# Wireless-remote-controlled RF switch for HF antennas

By Jerry Kendrick, NG6R

I would like to install another HF antenna in the backyard—an end-fed long wire (EFLW) and 9:1 UNUN to work 160m. “Top Band” is the last band remaining in the pursuit of ARRL’s coveted 9-Band DXCC award. (The DXCC plaque for eight bands—80m through 10m, including the three WARC bands—is prominently displayed on the “brag wall.”) But, after determining that I couldn’t squeeze even one more RG-213 cable inside the large diameter “decorative” PVC pipe exiting through the ceiling in one corner of the shack—to snake its way across a very cramped attic space and to be placed there by crawling on aging knees—I knew that a more innovative approach was needed. Hence the solution described in this article.

## CONCEPT

The basic idea is to install a single-pole-double-throw (SPDT) RF switch (i.e., one input, two outputs) under the roof eave near the rear of the house. The existing outside-exiting coax cable (whose PL-259 connector now screws into the balun of the 30m/40m/80m fan dipole stretched across the backyard) would be detached from that antenna balun and placed as the common input on this RF switch; then, one of the two output coaxes from the switch would route to that fan dipole and the other coax to the newly installed EFLW. A remote control fob, similar to a small garage door opener, would be activated with armchair comfort from the shack to wirelessly select one of the two antennas. This wireless approach also avoids running a control wire cable in the attic. Commercial RF switches, even those with wireless remote capability, are available online. But then the very natural ham urge to assemble and integrate the various pieces as a do-it-yourself (DIY) project would go unsatisfied. The two main components—the SPDT RF switch in kit form (less unsupplied SO-239 connectors) and the wireless remote control unit—both purchased inexpensively via eBay, are shown in Figure 1.



**Figure 1.** (Left) The 2:1 RF antenna switch in kit form (minus the three unsupplied SO-239 connectors) was purchased via eBay. The simple symmetric PCB kit with 12V relays, diodes, varistors and small 2-port wire terminals (two of each component type) as received from the vendor. (Middle) Preassembled four-channel wireless control board and keychain fob. Four channels is overkill for this application, but price differences from less capable units are minimal; allows for growth if a second or more complex RF antenna switch is needed in the future. (Right) Wiring key for the 12 relay screw terminals; enlargement shows terminal numbers for normally open (NO), normally closed (NC) and common (COM) contacts for the four relays.

## RF ANTENNA SWITCH (FIGURE 1, LEFT)

This 2:1 antenna switch PCB was designed and produced in the Czech Republic, although there is at least one US producer of similar products advertising on eBay. This Czech version is capable of switching >1.5KW CW/RTTY or 3KW PEP. The kit construction was simple, just soldering four components each on the two halves of the symmetrical board. A diode (1N4007) is placed across each relay coil for “flyback” protection so care must be taken (in the absence of DC terminal polarity markings stamped on the board!) to observe correct polarity when attaching 12V DC coil power lines to the two relays. [Flyback is a voltage spike created across an

*Continued on next page* ▶

## Wireless-remote-controlled RF switch for HF antennas

► *Continued from previous page*

inductor when supply current is suddenly reduced or interrupted.] Since the protective flyback diode operates most of the time in reverse (not forward) bias, we must assure that the +12V coil terminal lead is connected to the cathode end of the diode (the end with the white stripe).

The operation of the RF switch is very simple. When 12V DC is applied to relay coil #1, that relay activates and connects the center pin of the middle SO-239 to the center pin of the SO-239 labeled #1 in Figure 1 (left). Similarly for relay #2. While it is not an operational mode needed for this project, both output SO-239s could be connected to the input SO-239 connector if 12V were to be applied to both relays simultaneously, rather than just one at a time.

The blue components in Figure 1 (left) that look like disc capacitors are actually varistors, which are designed to have a variable resistance depending upon the applied voltage. Just like the flyback diode mentioned above, the varistor is also placed directly across the relay coil to suppress voltage surges. Since the relay coil is an inductance, and an inductor's voltage is proportional to the rate of change of current going through it, a sudden removal of current can result in an unintended voltage spike appearing across the inductor. So, the varistor will instantly change its resistance from its normally high value to a very low value, thus tamping down the resulting voltage spike, prolonging the life of the relay coil and mitigating relay contact bounce.

### PROGRAMMING THE REMOTE CONTROL UNIT (FIGURE 1, MIDDLE)

The wireless remote control unit is also powered by 12V DC. The remote control unit is basically a UHF receiver (operating at about 433MHz) that responds to four different signals that are transmitted from the companion fob by pushing either button A, B, C or D. A close-up of the UHF receiver and antenna (the black loosely coiled wire) can be seen in Figure 2. That antenna coil can be unrolled and extended if the application allows and thus provide greater RF range. When fob button A is pushed, then the relay associated with button A is activated—call it relay A. The screw terminals around the edge of the board are grouped as follows: terminals 1, 2 and 3 are associated with relay A; terminals 4, 5 and 6 are associated with the relay normally activated by fob button B; and so forth. You can see the mapping of the normally open and normally closed contacts for these four relays in Figure 1 (right). In our application we won't be using the full capability of this board, as we only want to switch between two antennas, so we'll use only relay A. Now we need to make a decision on how to program the relays, as discussed in the next paragraph.



**Figure 2.** The tiny (1" x 2") UHF receiver circuit picks up signals from the key fob and activates the appropriate relay circuit.

## Wireless-remote-controlled RF switch for HF antennas

► *Continued from previous page*

Although inexpensive (~\$7), this unit is quite sophisticated in how it can be programmed to respond to the fob buttons. There is a small “learning key button” on the board (near the lower left corner of Figure 2) and an LED indicator to provide programming feedback responses. A push of that button switch 8 times will reset the programming so that a new program can be entered. Following a reset, a single push of that learning key button switch will place the unit in **momentary** mode: When fob button A (or B or C or D) is pushed and held, relay A (or B or C or D) will be activated, but when that fob button is released, then the relay goes back to its inactivated state. This would not be a good mode for our application. Now if, after a reset, the learning key button is pushed two times, the unit will be placed in **toggle** mode: A push then on fob button A (or B or C or D) will activate relay A (or B or C or D) and a subsequent push on that same fob button will immediately deactivate that relay. This might be a tempting mode choice for our application, but there would be no feedback of exactly which antenna had been selected; you’d just have to keep track of whether you’d last pushed an even or odd number of times—not a good mode for our application either. Finally, following a reset, if the learning key button switch is pushed three times, the unit will be placed in **latching** mode: A push on fob button A will activate relay A; a subsequent push on fob button A will have no effect; but, a push on fob button B will deactivate relay A. This is the mode we’ll select for our application. Since the fan dipole will be the more frequently used antenna (vs. the 160m antenna), we’d like the no-relay-coil-current, or relay-relaxed, mode of the relay to occur when the fan dipole selection is desired. In order to select the EFLW antenna, just push on fob button A (which energizes relay A); and to select the 30m/40m/80m fan dipole, push on fob button B (which relaxes or de-energizes relay A). Simple and easy to remember. For our application (and in the latching mode), we don’t have to be concerned with what happens with fob buttons C and D, as they won’t be used (nor will relays B, C and D). Also, the unit “remembers” the programmed mode (latching, in our case) if power is removed.

### INTEGRATING THE COMPLETE REMOTE ANTENNA SWITCH UNIT

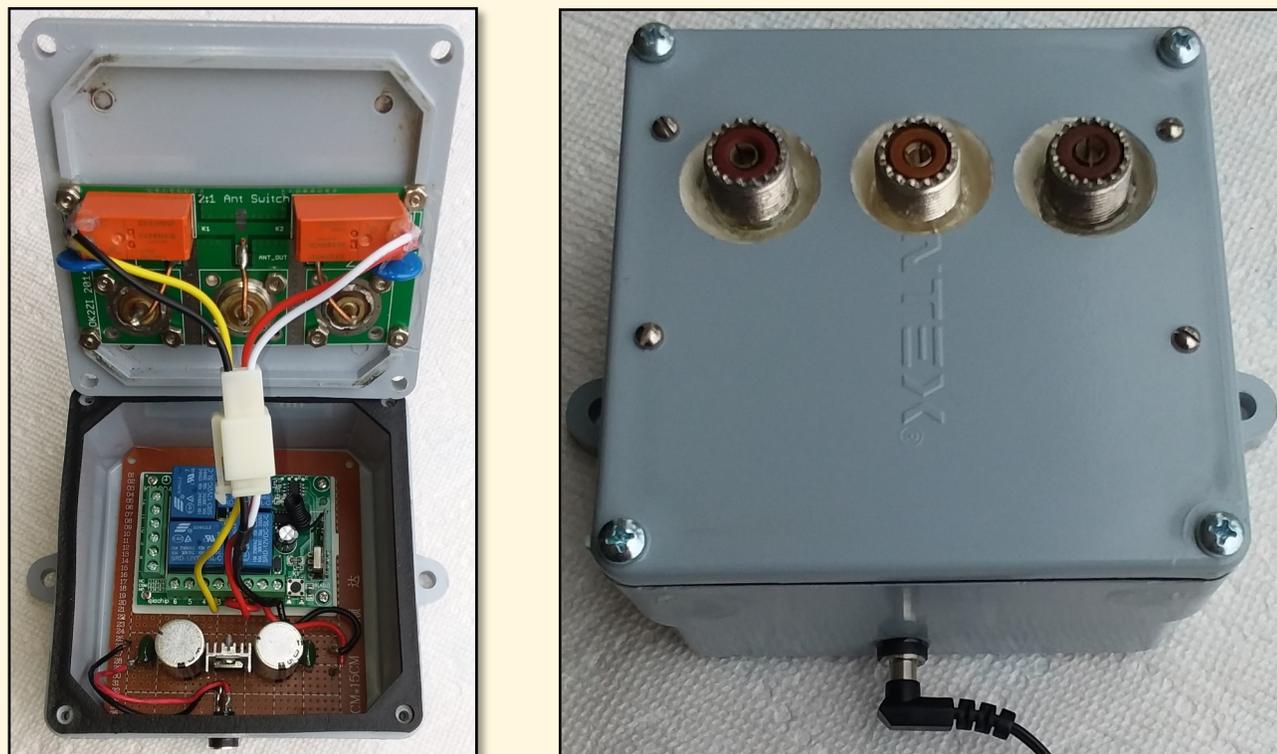
Although the relay coils have substantial tolerance for voltage variation around 12 volts, it seems less worrisome to employ a simple 12V DC voltage regulator, since the weatherized wall wart we’ll be using as the power source for this outdoor unit is unregulated. [See the description of this voltage regulator circuit in last month’s QRO: page 4, [http://www.n6rpv.net/n6rpvpage/pvarc/2019QRO/QRO\\_Jun\\_2019.pdf](http://www.n6rpv.net/n6rpvpage/pvarc/2019QRO/QRO_Jun_2019.pdf).] Figure 3 (left) below shows the two circuit boards placed inside a Cantex 4”x4”x2” weather-sealed electrical junction box from the local hardware store; the remote control unit along with the voltage regulator components are nestled inside the box, whereas the RF switch is secured to the lid of the box to facilitate external connection of the three coax cables. A DC voltage interconnect cable joins the two boards.

In this integrated unit, we have a relay on one board activating two relays on a second board, configured as follows. Referring back to Figure 1 (right), we’ll place a jumper wire from the incoming regulated +12V supply line to terminal #2 common for relay A. We’ll attach the “fan dipole” relay coil power line to terminal #1 (normally closed relay contacts) and the “EFLW” relay coil power line to terminal #3 (normally open relay contacts). When fob button A is pushed (meaning we’ve selected the EFLW antenna), the relay A associated with that button causes the normally open contacts to close and 12V is sent out terminal #3 to the RF switch “EFLW relay.” Similarly, when we push fob button B (to select the fan dipole), the relay A relaxes (i.e., deactivates) and 12V is now sent out on terminal #1 to the RF switch “pan dipole relay.” Note that only terminal #1 or terminal #3 can be active at one time, not both at the same time (so either the fan dipole or the EFLW will be connected, but not both together). Note that if power is removed from the unit, as in a power outage, neither of the two relays in the RF switch are active, so no antenna will be connected to the coax coming back into the shack.

*Continued on next page* ►

## Wireless-remote-controlled RF switch for HF antennas

► Continued from previous page



**Figure 3.** (Left) RF switching board, wireless UHF relay control board and simple 12V voltage regulator circuit are enclosed within a weather sealed electrical box purchased from the local hardware store. (Right) Complete switching unit ready for installation under the house eave. The three SO-239 connector base surfaces are weather sealed using silicone sealer, which is allowed to dry and then coated with two-part fast-setting liquid epoxy. The uniform circular holes were drilled with a Forstner bit for smooth even holes through the ¼"-thick PVC lid.

### FINAL THOUGHTS

A quick range test of the fob shows that with an unobstructed view of the sealed box, an RF range of over 50 feet is achievable, thus obviating the need to extend the internal coiled UHF receive antenna. While the application here is one transceiver and two antennas, other applications are possible. PVARC member George AJ6JG (formerly WA6YBR) saw my demonstration of this RF switch at a recent HF Enthusiasts Group meeting, purchased the same switch and configured his unit to switch a single antenna between two transceivers in different locations. Whenever the need arises to remotely switch an RF source to two different destinations, and running a wire cable to control that RF switch is impractical, consider employing the DIY wireless switch approach described in this article. ■

**QRO Editor's Note:** This remote-controlled RF antenna switch was also discussed at the June 8 PVARC HF Enthusiasts Group meeting (see page 12 of this issue.)

## Next HF Enthusiasts Group meeting at PV Library is July 13

Whether you have an item to show or discuss...or just want to observe...all are welcome at the PVARC's HF Enthusiasts Group monthly meetings on 2nd Saturdays. The Group next meets on July 13 from 10:00 am to Noon at the Palos Verdes Library's main branch (701 Silver Spur Rd / 650 Deep Valley Dr.) in the Purcell Room in the corner behind the Reference Desk. Free parking is on the Library roof, in a parking structure on Deep Valley Drive, or a small inside parking area accessed from Silver Spur Rd.

Here are some of the topics discussed at the June 8 HFEG meeting (thanks to Ray Day, N6HE, for this recap):

**Jerry NG6R** announced he finally achieved #1 status of all SOTA "chasers" in California! He also demonstrated an RF-controlled remote antenna switch, and has a 50-foot fiberglass mast to be used at Field Day for 160-meters.

**Carlos WD6Y** reported he is "stuck" at 92 for his FT8 DXCC account. He, like all of us, needs sunspots and is putting together gear for a moon bounce station! There is, overall, a 250 db loss on this signal path!

**George AJ6JG** reports great success operating from the K6AA station at the Los Angeles Harbor Maritime Museum from 10 AM to 1 PM on Tuesdays. Give him a call—it's great being close to the water.

**Don WG6E** reminded the group he has a projector that can connect to iPhone/iPad/laptops for any presentations the HFE group wants to make, showed off a "Pelican case"-style protective box with pre-cut foam, passed around an MFJ tuner with comments about the quality control, and gave us his report on his antenna progress.

**Ray N6HE** showed a page on how to create iPhone "Ringtones" to announce the calling of a ham friend by playing their call in CW. He also informed the group about the newly-available Icom IC-7300 "ham how to" book, started a discussion on coax crimp connector tools and connectors, and passed around his "my first QSO" article that was published in the K9YA newsletter.

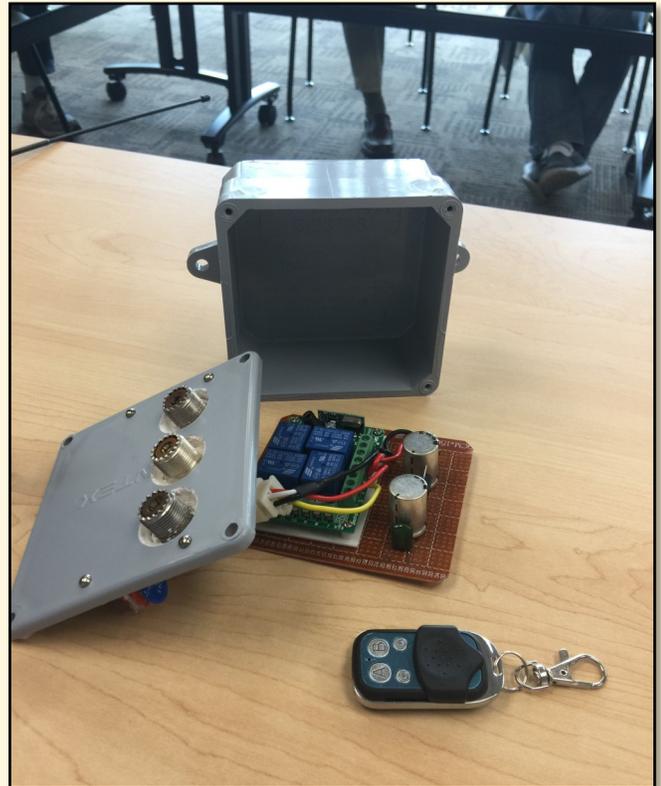
**Jeff K6JW** reported on his MARCO cruise where he operated HQ9D from Honduras. He is also undertaking the complete rejuvenation of his tower and SteppIR and tuner.

**Neil N6YFM** has worked 113 DXCC countries with 98 confirmed so far. He will be sending out emails to try to get those last ones confirmed. Also, he told the group about how even an antenna analyzer generates enough voltage with the "massive transformer" qualities of a loop to cause a shock at the capacitors at the top.

**Clay AB9A** said with no sunspots he is spending most of his time with DMR. He has installed a mobile DMR transceiver in his Jeep.

**Mike AF6VT** is experimenting with his DMR handheld radio.

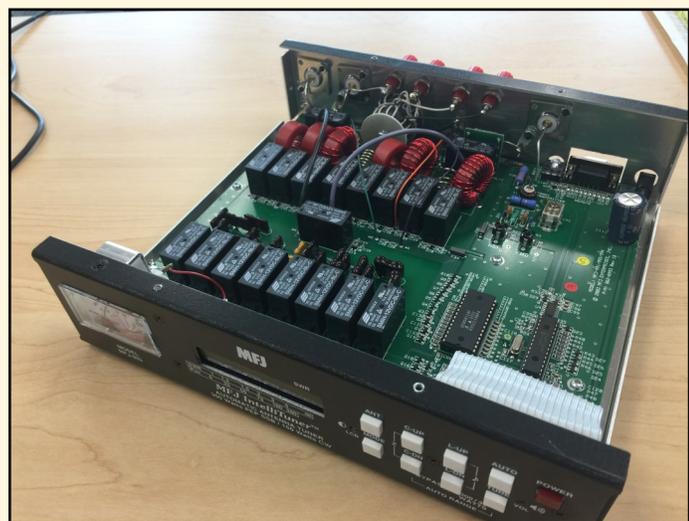
**Bob AC6RM** said he is working a lot of FT8, has his new-to-him amp connected, and highly recommends the new software SDR RUNUNO. ■



**Above:** Jerry NG6R showed his remote controlled remote antenna switch that he built.

**Bottom:** Don WG6E showed this MFJ tuner to the group with some caveats.

PHOTOS: RAY DAY, N6HE



## PVARC Club News

### Consider being an ARRL member

Please consider joining the American Radio Relay League (ARRL) if not currently a member. The ARRL is the only national organization representing amateur radio and has another significance for the PVARC: We receive benefits from being an ARRL-affiliated club. But being an ARRL-affiliated club requires at least 51% of club members also be ARRL members. Annual ARRL membership costs \$49 and includes the monthly QST magazine as well as access to numerous web-based materials and assistance with ham radio issues. Visit: [www.arrl.org/](http://www.arrl.org/) then click "Join/Renew." ■

### PVARC badges await pickup at next monthly meeting...or another time

Gary Lopes, WA6MEM, has the following new PVARC badges ready for distribution at our August 1, 2019 monthly meeting at Hesse Park or by special arrangement.

- AJ6JG
- K6MU
- KI6YMD
- KM6YGQ
- NJ6I
- W6BMD
- W7QLI
- WJ1P / DU1X

To make special arrangements with Gary (or to order a badge) contact him at: [gary@wa6mem.com](mailto:gary@wa6mem.com). ■

### Embroidered PVARC patches available at monthly meetings

PVARC club patches are available at our monthly meetings for \$4 each. They may be sewn on any cap, jacket, shirt, or bag.



The four illustrations in the patch center are emblems of the Palos Verdes Peninsula's four cities (clockwise from top left: Palos Verdes Estates, Rolling Hills Estates, Rancho Palos Verdes and Rolling Hills.) ■

## Palos Verdes Amateur Radio Club

An American Radio Relay League Affiliated Club

### Board of Directors:

President	Diana Feinberg, AI6DF
Vice President	Ray Day, N6HE
Treasurer	Peter Landon, KE6JPM
Secretary	Ron Wagner, AC6RW
Directors	Clay Davis, AB9A Gary Lopes, WA6MEM Bob Sylvest, AB6SY
Past Vice President	

### Appointed Offices:

QRO Editor	Diana Feinberg, AI6DF
Webmaster	Kel Vanderlip, W6KCV
K6PV QSL Manager	Jeff Wolf, K6JW
K6PV Repeater Trustee	Mel Hughes, K6SY
LAACARC Delegate	Jeff Wolf, K6JW
VE Coordinator	Dave Scholler, KG6BPH
VE ARRL Liaison	Jerry Shaw, KI6RRD
Net Control Operators	Malin Dollinger, KO6MD; Dale Hanks, N6NNW; Bob Sylvest, AB6SY; Ron Wagner, AC6RW; Dan Yang, K6DPY

### Contacts:

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Webmaster: 310-742-6123, [kelvin@vanderlip.org](mailto:kelvin@vanderlip.org)

Email us: [k6pv@arrl.net](mailto:k6pv@arrl.net)

Website: [www.k6pv.org](http://www.k6pv.org)

### Mailing Address:

Palos Verdes Amateur Radio Club  
PO Box 2316  
Palos Verdes Peninsula, CA 90274-8316

### Monthly Meetings:

1<sup>st</sup> Thursday (except July and December in 2019) at 7:30 pm at Fred Hesse Park, 29301 Hawthorne Blvd., Rancho Palos Verdes, CA. Visitors always welcome.

### Repeaters (Open, though often listed as "Closed"):

**PVARC:** K6PV, 447.120 MHz

- Analog FM: (-), PL 100.0, CTCSS
- Digital DMR: Talkgroup 31060, Color Code 1, Time Slot 2

**"PV-West":** K6IUM, 449.980 MHz (-), PL 173.8, CTCSS

### To order a Club badge:

Gary Lopes, WA6MEM, [gary@wa6mem.com](mailto:gary@wa6mem.com)

### To order a Club jacket or patch:

Dave Scholler, KG6BPH, 310-373-8166

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Front page photo — Pt. Vicente Lighthouse catches the last rays of Sun on June 29, 2019. PHOTO: DIANA FEINBERG, AI6DF

## PVARC Club News

### PVARC upcoming dates in 2019

- ◆ **PVARC monthly meeting at Hesse Park, McTaggart Hall**  
1st Thursday each month, 7:30-9:30 pm, except in August and December. 6:30-7:25 pm, "What's Next?" group for newer hams and "DMR Basics".  
  
In 2019 only: No monthly meeting on July 4 due to Independence Day; special meeting August 1.
- ◆ **HF Enthusiasts Group meetings at Palos Verdes Library, Peninsula Center main branch**  
2nd Saturday every month, 10 am to Noon in the Purcell Room.
- ◆ **Walt Ordway, K1DFO, Technician and General amateur radio license classes at Hesse Park**  
Saturdays, November 2 and 9, 2019; license exam, November 16.
- ◆ **Public service events in 2019:**  
  
Hills Are Alive 10K/5K Rolling Hills Estates, **August 10.**  
  
Conquer the Bridge run/walk at Los Angeles Harbor across Vincent Thomas Bridge, **Labor Day, September 2.**  
  
Palos Verdes Half Marathon-10K-5K, **November 16.**  
  
**2019 International Lighthouse & Lightship Weekend**, Pt. Vicente Lighthouse, August 16-18.  
  
**PVARC 2019 Holiday Dinner:** Dec. 12, Los Verdes Golf Course, Rancho Palos Verdes.

#### Non-PVARC Events of Note:

- ◆ **W6TRW Swap Meet:** last Saturday of each month, Northrop Grumman Space Park, North Redondo Beach, 7:00-11:30 am
- ◆ **PACIFICON** (ARRL Pacific Division Convention) October 18-20, San Ramon, CA ■

### WELCOME NEW MEMBERS OF THE PALOS VERDES AMATEUR RADIO CLUB IN 2018-2019

Debra Shrader, KM6QVX  
Daniel Shrader, KM6QXC  
Baldomero Fernandez, KM6QVV  
Brian Keen, KM6QWC  
Emanuele Rodrigues-Berardini, KM6QVZ  
Neal Pollack, N6YFM  
Daniella Ward, KM6TRC  
Talbot Knighton, KM6TDF  
Dylan Brown, KM6TDI  
Robert Cullinan, NJ6I  
Ellen Tessitore, N6XJM  
Michael Vulpilat, KJ6RVU  
Brian Clebowicz, K6BRN  
Warren Arata, KM6YGR  
Chris Sundlee, N6CGS  
Brad Rachielle, KC6NNV  
Georgiann Keller, KM6YGM  
Annalise Little, KM6YGS  
Tim Couture, KM6QWA  
Frank Brown, KM6YGQ  
Charlie Hansen, AJ6HZ  
Diana DiDomenico, KM6IQN  
William McClure, W7QLI  
Rick Shigio, K6RTS  
David Calloway, K6DKC  
Jon Kuoyama, K6LDQ  
Ray Grace, WA6OWM

## A reminder about K6PV DMR Usage Guidelines

K6PV is an open repeater. As with all repeaters—open or private—the repeater owner and trustee may set usage rules. We have just a few rules besides abiding by FCC regulations and common decency standards.



ANALOG



DIGITAL

**K6PV analog or digital usage is on a first-come, first-served basis...use the mode you wish if the repeater frequency is clear.** Look for any signal bars in your radio's display as someone else might be on K6PV using the other mode. Any RF received on 447.120 MHz will show up as signal bars. Push your MONI (Monitor) button or turn the Squelch dial to open the squelch—you might hear an analog or DMR signal...or maybe just the other 447.120 MHz repeater in SoCal located on 8,000-foot Snow Peak above Banning.

**Do not use DMR on K6PV during the following times when analog-only nets are operating...**



ANALOG



NO  
DIGITAL

- ◆ **Monday evenings, 6:45-7:30 pm**, during weekly analog City of Rancho Palos Verdes PVAN nets
- ◆ **Tuesday evenings, 7:15-8:00 pm**, during analog PVARC Weekly Nets
- ◆ **When the Rancho Palos Verdes Emergency Communications Center is activated** for a disaster, scheduled training event, or scheduled public service event using analog FM such as the Palos Verdes Half Marathon.



NO  
ANALOG



DIGITAL

**...and do not use Analog on K6PV during the following times when DMR nets are operating**

- ◆ **Tuesday evenings, 8:00-8:45 pm** during PVARC Weekly DMR Nets ■

### K6PV DMR Repeater Information

**Model:** Hytera RD982i-U1, dual-mode DMR/analog with network connectivity

**Purchased new** by the Palos Verdes Amateur Radio Club, February 2019

**Duplexer:** Celwave 633-6A-2 six-cavity UHF duplexer, donated to PVARC by Gary Lopes, WA6MEM

**K6PV DMR fully operational:** March 22, 2019

**Repeater site:** One of higher points on the Palos Verdes Peninsula

**DMR Network:** Brandmeister (<https://brandmeister.network/>)

**Radio settings (in a DMR transceiver you will want both Analog and Digital channels):**

**Analog FM:** 447.120 MHz, -5.0 MHz TX shift, Tone Squelch (a.k.a. Encode-Decode), PL 100.0 (same as always.) Bandwidth is 25 kHz (single channel), i.e., "Wide FM"

**Digital Mobile Radio (DMR):** 447.120 MHz RX, 442.120 MHz TX, Color Code 1

Time Slot 2: PVARC Talk Group (TG 31060)

Time Slot 2: Local (TG9)

(Note: Time Slot 1 will be configured at a later date)

Bandwidth is 12.5 kHz (two separate and simultaneous channel capability)

## PVARC Calendar

July 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2 PVARC weekly net on K6PV repeater & cross-band, 7:30 pm (analog); 8:00 pm (DMR only)	3	4 Independence Day...No PVARC monthly meeting, Hesse Park's building closed.	5	6
7	8	9 PVARC weekly net on K6PV repeater & cross-band, 7:30 pm (analog); 8:00 pm (DMR only)	10	11	12	13 PVARC HF Enthusiasts Meeting, 10 am-Noon, Palos Verdes Library Peninsula Center
14	15	16 PVARC weekly net on K6PV repeater & cross-band, 7:30 pm (analog); 8:00 pm (DMR only)	17	18	19	20
21	22	23 PVARC weekly net on K6PV repeater & cross-band, 7:30 pm (analog); 8:00 pm (DMR only)	24	25	26	27 W6TRW Swap Meet, 7:00-11:30 am at Northrop Grumman, North Redondo Beach.
28	29	30 PVARC weekly net on K6PV repeater & cross-band, 7:30 pm (analog); 8:00 pm (DMR only)	31	August 1 PVARC monthly meeting, Hesse Park. 6:30 pm, "What's Next?" and DMR Basics; 7:30 pm main		

Tell your friends and family about our upcoming ham license classes at Hesse Park

## Two Free Amateur Radio Courses

FCC "**Technician**" course (entry level)

FCC "**General**" course (2<sup>nd</sup> level)

Each course is 2 sessions

The sessions will be on 2 and 9 November 2019

**Technician** 9:30 AM to 1:30 PM both Saturdays (bring your lunch)

**General** 1:45 PM to 5:00 PM both Saturdays

The FCC tests will be 10:30 AM to noon on 16 November 2019

At the start of the 2 November Technician course, the Palos Verdes Amateur Radio Club will give a 30 minute presentation on how to get further involved with amateur radio.

The class location is at Fred Hesse Community Park,  
29301 Hawthorne Blvd., Rancho Palos Verdes, CA 90275

**Confirm your attendance to Walt, K1DFO at [waltordway@juno.com](mailto:waltordway@juno.com)**

There is no fee for either course.

Taking the FCC test is \$15.

### Optional Material (sold at cost)

Gordon West books with all the FCC test questions,

\$26 for the Technician and \$26 for the General

Paper copy of Walt's Power Point charts,

\$22 for the Technician and \$18 for the General

For courses sponsored by the Palos Verdes Amateur Radio Club, students thru grade 12 who pass their examination at a PVARC VE test session will, upon application to the Club, be eligible for reimbursement up to a maximum of \$50 to cover the cost of materials and the examination fee.

Everyone who obtains their first ham radio license through a PVARC VE test session, regardless of age, will receive a free membership in the Palos Verdes Amateur Radio Club for the remainder of the current calendar year.



Palos Verdes Amateur Radio Club
P.O. Box 2316
Palos Verdes Peninsula, CA 90274
www.n6rpv.net/pvarc or k6pv.org

NEW MEMBER & MEMBERSHIP RENEWAL FORM

NEW: \_\_\_\_\_ or RENEWAL: \_\_\_\_\_ MEMBERSHIP DATE: \_\_\_\_\_

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_ Spouse: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: Home \_\_\_\_\_ Work \_\_\_\_\_ Cell \_\_\_\_\_

Email address: \_\_\_\_\_

(Unless otherwise noted emails will be sent to the applying member only)

License Call: \_\_\_\_\_ License Class: \_\_\_\_\_ ARRL Member? \_\_\_\_\_ Birth Mo./Day: \_\_\_\_\_

Other amateur radio groups you belong to: \_\_\_\_\_

Additional Household and/or Family Members (if Applicable):

Name \_\_\_\_\_ Call \_\_\_\_\_ Class \_\_\_\_\_ ARRL \_\_\_\_\_ Birth Mo./Day: \_\_\_\_\_

Name \_\_\_\_\_ Call \_\_\_\_\_ Class \_\_\_\_\_ ARRL \_\_\_\_\_ Birth Mo./Day: \_\_\_\_\_

Name \_\_\_\_\_ Call \_\_\_\_\_ Class \_\_\_\_\_ ARRL \_\_\_\_\_ Birth Mo./Day: \_\_\_\_\_

Individual membership (\$20.00) \$ \_\_\_\_\_

Household and/or Family membership (\$25.00) \$ \_\_\_\_\_

Additional donation to support PVARC activities \$ \_\_\_\_\_

Cash: \_\_\_\_\_ or Check #: \_\_\_\_\_ Date \_\_\_\_\_ TOTAL \$ \_\_\_\_\_

Please make checks payable to: Palos Verdes Amateur Radio Club; Dues based on January 1st to December 31st year.

All New and Renewal Member applications must be signed below.

I am applying for a new or renewal membership in the Palos Verdes Amateur Radio Club and understand that by accepting membership I agree to abide by the Club's constitution and by-laws (available on-line at: http://www.n6rpv.net/pvarc/constitution.htm or upon request.)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Family Member Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Family Member Signature: \_\_\_\_\_ Date: \_\_\_\_\_