August 2019

County of Orange RACES
NetControl

Newsletter of the County of Orange Radio Amateur Civil Emergency Service

Next OCRACES Meeting

**Monday,
August 5, 2019,
at 1930 Hours**

**840 N. Eckhoff Street,
Suite 104,
Orange**

Reporting Earthquake Intensity via OCRACES 2-Meter Repeater

Orange County Sheriff's Department Communications & Technology Division

Captain's Corner
by RACES Captain Ken Bourne, W6HK, Chief Radio Officer

Digital Messages: Good or Bad?

In the May 2019 issue of *NetControl* we ran an article about the FCC accepting comments on a *Petition for Rule Making* (RM-11831) seeking to amend Part 97 rules that require all ham radio digital transmissions to use techniques "whose technical characteristics have been documented publicly." The petition, filed by Ron Kolarik, KØIDT, expresses concerns that some currently used digital modes are not readily and freely able to be decoded, and it asks the FCC to require all digital codes to use protocols that "can be monitored in [their] entirety by third parties with freely available, open source software," per §97.113(a)(4).

An *IEEE Spectrum* article by Julianne Pepitone on July 8, 2019 ("Is Ham Radio a Hobby, a Utility...or Both? A Battle Over Spectrum Heats Up"), addressed both sides of the issue, acknowledging that some think automated radio e-mails are "mucking up the spectrum reserved for amateur radio," while others say these new digital offerings provide a useful service.

Kolarik claims that encrypted messages have begun to infiltrate the amateur bands in ways that are antithetical to the spirit of his beloved hobby. His petition also proposes to amend §97.309(a)(4) to ease monitoring of certain digital transmissions. "Without open, over-the-air interception capability for all transmissions in the Amateur Radio spectrum, there is no way to determine if there is commercial or other prohibited, inappropriate content in ongoing communications…," Kolarik's Petition asserts. He said problems arise when "protocols and devices used in commercial, government, and marine services are used in the Amateur Service with

no adequate means to fully decode transmissions," thwarting any efforts at self-policing of such transmissions. He said simplifying the language "would remove ambiguity about what constitutes 'publicly documented technical characteristics' by requiring any protocol to be freely decodable," and lead to "amateur digital mode transparency, present and future."

There are strong objections to Kolarik's proposal. In our May article, we mentioned that the Amateur Radio Safety Foundation, Inc. (ARSFI), whose primary project is Winlink, claims that RM-11831, if adopted, would shut Winlink down in the US amateur bands. According to ARSFI (Winlink), RM-11831 also suggests that all unattended operations under 500 Hz would be cramped into the FCC §97.221(b) sub-bands with the elimination of FCC §97.221(c). As an example, that would put all such operations within the current band space on 40 meters of only 5 kHz, and up to 15 kHz maximum for other §97.221 sub-bands. That would be for all such operations, and not just Winlink. With no space and only "open protocols," it would also render these operations useless for US radio amateurs.

Pepitone says Kolarik's proposal has stirred up heated debate "that goes straight to the heart of what ham radio is, and ought to be." She identifies the core questions: "Should amateur radio—and its precious spectrum—be protected purely as a hobby, or is it a utility that delivers data traffic? Or is it both? And who gets to decide?"

Kolarik says, "Transparency is a core part of ham radio. And yet, you can find tons of traffic from automatic[ally controlled digi-

Captain's Corner *Continued from page 1*

tal] stations that are extremely difficult to identify, if you can identify them at all, and they cause interference."

Kolarik also wants the rule change to reduce the interference that services such as Winlink can create between amateur-to-amateur stations—by relegating the often-unattended automatic stations to operate solely on narrower sub-bands. Automatically controlled digital stations (ACDS) that Kolarik refers to are the heart of services such as Winlink, a "global radio e-mail" system, which uses amateur and government radio frequencies. Users initiate the transmission through an Internet connection, or communicate without the Internet by using radio relays such as the three OCRACES RMS sites. With Winlink, we can send e-mail with attachments, messages containing positions, and weather and information bulletins. Winlink gives OCRACES and city RACES units an added communications tool for emergency and disaster communications.

ARSFI President Loring Kutchins, W3QA, says he believes Kolarik's petition is "well intentioned in its basis. But the fundamental conflict is between people who believe amateur radio is about hobby, not about utility. But nowhere do the FCC rules use the word 'hobby.'"

Kutchins believes that age is a factor in the conflict between hobbyists and utilitarians. "Younger people who have come along tend to see amateur radio as a service, as it's defined by FCC rules, which outline the purpose of amateur radio—especially as it relates to emergency operations," he says. He sees his view as abiding by the current FCC rules. "Why is e-mail inappropriate for amateur radio? Why should utilitarian purposes not be part of amateur radio?"

A viewpoint contrary to Kutchins is held by Ted Rappaport, N9NB, a professor and the director of a wireless research center at NYU's Tandon School of Engineering. He calls Kolarik's proposed rule change vital to "safeguard the national security of the United States," and key to attracting young people to ham radio. He also accuses Winlink users of flouting FCC rules. For example, he said these services are used "often by boat owners to avoid other readily available commercial means for sending private e-mail (a violation of numerous FCC rules which explicitly prohibit bypassing other commercial means and prohibit pecuniary interest)."

Kutchins, however, disagrees with Rappaport. He wrote to the FCC that "Theodore Rappaport and the opponents he informs offer an emotional, layman's conjecture in their assertions that hard-to-monitor, advanced digital protocols used in the amateur radio service will encourage crime, terrorism, and are a threat to national security. They clearly do not know or appreciate what monitoring and inspection routinely occurs, and are thus not qualified to judge."

Kutchins said Winlink has system operators who monitor traffic for illegal activity, and though every group has bad actors, he argues that "people on Rappaport's side have

gone through and picked out anything that could be a violation, rather than use the amateur radio principle that we're supposed to be self-regulating. We call each other out when somebody does something wrong: Inform the violator and educate how you think they have violated the rules."

Kutchins said any licensee can read any message sent through a U.S. station on amateur radio frequencies in plain text via a message viewer that is open and available online. He said Winlink has a reporting program established at the FCC's request.

Rappaport said he is mainly concerned "that the proliferation of illegal, effectively encrypted data will turn the hobby of ham radio into a mean-spirited, non-technical dummied-down mosh pit of signals that eventually becomes a high-frequency Internet access point in the sky."

He fears "that many applications and transmissions will be closed and controlled by a tiny group of individuals who do not share the vision or incentive for providing transparency of all activities—or technology—in amateur radio. How will that attract youth and help the STEM effort in America?"

If you are a US-licensed station that routinely connects to a foreign gateway, or a non-US-licensed station that connects with a US gateway, you may be affected by new CMS behavior. The Winlink CMS now will enforce US Third-Party Message rules.

Because Winlink is being severely criticized for allowing US client and gateway operators to violate US amateur radio third-party traffic rules, The Winlink Development Team has started to test automatic enforcement of these rules. §97.3(47), §97.115, and §97.117 apply.

If you attempt to send or receive a third-party message between a US-licensed station and another station the US does not have a third-party communication agreement with, you may receive a service message saying the message will violate the applicable rules and that the message is refused (if you're sending) or being held at the CMS (if you are receiving). Alternative means to successfully send or receive the message will be explained. The US has treaties with most countries in North and South America, but not most European, Asian, and Pacific countries.

If you are a US licensee, you should have no trouble sending and receiving to/from Internet addresses if you connect with another US-licensed gateway, or one licensed in Central or South America, as long as the US has a third-party agreement with the licensing country.

Although the Winlink Development Team has relied on US client and gateway operators to know the rules and obey them, unfortunately most have ignored them. In order to clean up the violations, the Team is taking these measures to keep US Winlink operators legal. All licensees have an obligation to study, know, and obey the Amateur Radio Service rules.

Next OCRACES Meeting: Monday, August 5th

The next County of Orange RACES meeting will be on Monday, August 5, 2019, at 7:30 PM, at OCSD Communications & Technology Division, 840 N. Eckhoff Street, Suite 104, in Orange. At this meeting we will discuss possible changes and increased activities in the RACES program. We will also discuss member responsibilities and new procedures for observing and reporting earthquake intensity on our 2-meter repeater, immediately following an earthquake.

Lee Kaser, KK6VIV, Moves to EMD

Lee Kaser, KK6VIV, who has been the OCSD Emergency Communications Manager and RACES Program Coordinator, has now moved to the OCSD Emergency Management Division at the Orange County EOC on Loma Ridge, and is the Assistant Emergency Manager. Details of Lee's continued close involvement with OCRACES will be forthcoming.

New Emergency Communications Coordinator

Congratulations to Peter Jimenez, KI6UTE, who has been promoted to OCSD Emergency Communications Coordinator and is also now the Training Officer in the Communications & Technology Division. His prior position was Telecommunications Engineer I in the Division. In his new position, Peter will be closely associated with the RACES Program.

60-Meter Net Moves to Channel 4

Due to high local noise at some locations on 60 meters channel 2, the Saturday morning Cal OES Southern Region ACS nets, currently run by OCRACES, have moved to channel 4 (5371.5 kHz upper sideband, dial frequency). Roll call begins at 10:00 AM and all radio amateurs are welcome to check in.

The net is intended to cover all 11 counties in the Southern Region of Cal OES, although most of the participants are county and city RACES members in Orange County, with some in San Diego County and Ventura County, and even some in Clark County and Nye County, Nevada. A mobile station in Fresno County is also an active participant.

One purpose of the net is to observe the fascinating and unpredictable 60-meter propagation throughout the Southern Region. The net encourages adding, modifying, and testing 60-meter antennas to improve communications. At that time of day, 60 meters has proven to be much more effective than 40 meters for covering Orange County and the Southern Region. One of the most effective antennas is a simple half-wave dipole (about 88 feet long) up about 30 feet for NVIS (near vertical incidence skywave) coverage. A station in Pahrump, Nevada, recently put up a full-wave horizontal loop antenna, at about 30 feet high, resulting in a very strong signal into Orange County when propagation is favorable.

Some stations in the Southern Region or even in Orange County might not be copiable in parts of Orange County, yet might be heard on a remote SDR receiver in Northern Utah. That receiver may be accessed at http://www.sdrutah.org/websdr1.html.

Deployment Drill: October 5, 2019

The next City/County RACES & MOU Drill will be on Saturday, October 5, 2019, from 0900 to 1100 hours. This will be a deployment drill, similar to last year's drill, which proved to be very popular. Unit members will set up portable stations on 60 meters as well as on OCRACES repeaters on 2 meters and 70 centimeters, especially in areas that are questionable for accessing the repeaters, such as deep in canyons or below seaside cliffs. When those poor-coverage areas are located, alternate coverage via 60 meters NVIS (near vertical incidence skywave) on 5371.5 kHz upper sideband (dial frequency) will be tested. Simplex relay will also be tested on 2 meters (146.595 MHz) and 70 centimeters (446.000 MHz), with relay stations at high points, such as Loma Ridge, Belmont Park in the Orange hills, Canyon Rim Park in Anaheim Hills, Coastal Peak Park (near Signal Peak) in Newport Beach, etc.

City and County RACES members are encouraged to set up portable 60-meter stations, experimenting with various horizontal antennas such as MFJ Hamstick dipoles mounted on tripod masts.

RACES Members Jolted by Ridgecrest Quake

On Thursday morning, July 4, 2019, at approximately 1034 hours, a magnitude 6.4 earthquake occurred at about 8 miles west-southwest of Searles Valley in Kern County and was felt throughout Orange County. Several County and City RACES members immediately got on the OCRACES 2-meter repeater to share information on observed intensity and to stand by in case of an activation. The following Friday night, July 5th, at 2019 hours, an even stronger earthquake, magnitude 7.1, occurred approximately 11 miles northeast of Ridgecrest on the China Lake Naval Weapons Center in Kern, San Bernardino, and Inyo Counties, and was strongly felt in Orange County. The July 4th earthquake then was declared a foreshock of the July 5th event. Again, several members of County and City RACES units accessed the OCRACES 2-meter repeater to check status of any possible activation.

For those living within 25-50 miles of the epicenter, the Searles Valley earthquake sequence produced a range of strong to violent shaking, up to intensity IX on the Mercalli Intensity Scale.

The Orange County EOC was not activated, but an incident was created in WebEOC. County agencies conducted windshield surveys. Only minor damage was reported, per OCSD and OCFA dispatch centers.

The California State Operations Center (SOC) activated at Level 1. The Inland Region EOC transitioned to GeoOps posture on July 6th. The Southern Region EOC in Los Alamitos activated at Level 2, and transitioned to GeoOps on July 11th. The Kern County EOC activated at Level 1 (lowest). The San Bernardino County EOC activated at Level 2. The City of Ridgecrest activated at Level 3 (highest). The California Geological Survey (CGS) activated the Earthquake Clearinghouse to deploy a team of resources to the China Lake Naval Weapons Center area. CHP activated their Central and Inland EOCs. The California Department of Public Health (CDPH) and the California Emergency Medical Services Authority (EMSA) activated the Medical and Health Coordination Center (MHCC) at Level 3 (lowest). Deployments from Cal OES included their Fire & Rescue Branch, Law Branch, Inland Region, Coastal Region, and Southern Region. Other deployments included MAR 3 Tactical Communications, CGS, and USGS. Cal OES engine strike teams and US&R companies and regional task force were dispatched. Shelters and evacuation centers were activated, including American Red Cross mobile units.

The Los Angeles County Fire Department's Urban Search and Rescue Team 136 and Hazardous Materials Team 811 were deployed to help assess damages. The Orange County Fire Authority (OCFA) also sent a heavy rescue apparatus and urban search and rescue support vehicle with six firefighters to areas that felt the brunt of the earthquake.

Raspberry Pi 4 Requires Special USB-C Cable

Fountain Valley RACES Chief Radio Officer Alan Hill, W6ARH, made an informative presentation at the June 3rd OCRACES meeting on using the Raspberry Pi microcomputer for amateur radio applications. Included was a hotspot for DMR and other digital modes, based on the Raspberry Pi. Now a new version, the Raspberry Pi 4, has been introduced. It has an updated 64-bit quad core processor running at 1.5 GHz with built-in metal heatsink, support for dual 4K displays, two USB 3.0 ports and two USB 2.0 ports, dual-band 2.4 GHz and 5 GHz wireless LAN, faster Gigabit Ethernet, and PoE capability via a separate PoE HAT. Versions are available with 1, 2, and 4 GB RAM.

Raspberry Pi 4 Model B.

TechRepublic reports that the Raspberry Pi Foundation has confirmed that the recently released Raspberry Pi 4 will not work when powered using certain USB-C cables. The economical, single-board computer is the first Pi board to use a USB-C power connection. Pi co-creator Eben Upton has confirmed that not every USB-C cable will work. "The Pi 4 doesn't receive power when used with electronically marked or e-marked USB-C cables—the type used by Apple MacBooks and other laptops," the article quotes Upton as saying. "A smart charger with an e-marked cable will incorrectly identify the Raspberry Pi 4 as an audio adapter accessory, and refuse to provide power."

Upton said he anticipates the issue will be fixed in future board revisions, but until then, Raspberry Pi 4 owners will need to use non e-marked USB-C cables—the type many smartphone chargers use—with a power supply that can deliver the 5.1 V at 3A the board needs. Another option is to purchase the official Raspberry Pi 4 power supply, which costs around $8. Older chargers with A-C cables or micro B-to-C adaptors will also work if they provide enough power.

KK6VIV Hides in Huntington Beach

At the fox's den are (left to right) Mark Warrick, KM6ZPO, Peter Gonzalez, KC6TWS, Pete Bergstrom, K6PB, Ron Allerdice, WA6CYY, Lee Kaser, KK6VIV (the fox), and Don Mikami, N6ELD. The yellow fox box is seen at right.

Lee Kaser, KK6VIV, was the fox on the monthly cooperative T-hunt on Monday, July 15, 2019. He hid the fox box in the Target parking lot at the southwest corner of Adams Avenue and Brookhurst Street in Huntington Beach.

First to find the fox was Ron Allerdice, WA6CYY, who was fortunate to start a short distance from the fox. Next was the team of Ken Bourne, W6HK, Don Mikami, N6ELD, and Mark Warrick, KM6ZPO. They started on high ground in Costa Mesa near Wilson Street and Pacific Avenue. The fox's signal was strong but the bearing was incorrect to the southwest. They drove down to the coast as the signal became weaker, and then back up Brookhurst Street, as the signal became very strong. Coming in third was the team of Peter Gonzalez, KC6TWS, and Pete Bergstrom, K6PB. Everyone then gathered around the fox box and had a very enjoyable conversation,

The next hunt will be on Monday, August 19, 2019, immediately following the OCRACES 2-meter net (approximately 7:20 PM). The fox will hide on paved, publicly accessible property in a city or sector of Orange County to be announced a few days before the hunt. He will transmit tones on the input (146.295 MHz) of the 146.895 MHz repeater. Hunters will compare bearings via the 448.320 MHz repeater and are encouraged to beacon their positions via APRS while hunting. We are looking for a volunteer to be the fox.

The cooperative T-hunts are usually held on the third Monday of each month (except in October). The hunts are not official RACES events, so DSW (Disaster Service Worker) coverage does not apply. Please drive carefully!

To keep our cooperative T-hunts active, we need to have more participants. RACES members are urged to equip themselves with direction-finding equipment and be ready to find sources of interference to RACES repeaters and to VHF public-safety communications. These hunts provide excellent practice in working together to find such interference—plus they are great fun! We hope to gain more participants soon, not only by RACES members getting equipped, but also because of a tape-measure beam building project to occur at the August 16th meeting of the Orange County Amateur Radio Club. We will promote our cooperative T-hunts at that meeting.

Fox-hunt loops and beams are available from Arrow Antenna and HRO, including the Arrow Model FHL-VHF foxhunt loop (covers 1 MHz to 600 MHz) and the Arrow Model 146-3 three-element portable hand-held yagi. The Arrow OFHA 4-MHz offset attenuator can be useful when close to the fox, to prevent receiver overload. For on-foot hunting, the BC-146.565 three-element, hand-held, foldup, yagi antenna is available from Bob Miller Enterprises (http://www.rdfantennas.com), along with the VK3YNG MK4 sniffer. An all-mode transceiver is quite useful, allowing hunters to switch to the SSB or CW mode for detecting extremely weak signals, or to switch in a built-in attenuator, reduce RF gain, or tune slightly off frequency when dealing with extremely strong signals. Some hunters use the DF2020T radio direction finder kit, which is a Doppler system available from Global TSCM Group, Inc. (http://www.kn2c.us). A very similar system is the MFJ-5005 Doppler direction finder. Useful apps are available for iPhones and Android phones. One such app is FoxHunt Pro, available for $1.99 for iPhones. For some excellent information on T-hunting, see http://www.homingin.com.

RACES/MOU News from Around the County

"RACES/MOU News" provides an opportunity to share information from all City & County RACES/ACS units and MOU organizations and supportive amateur radio clubs in Orange County.

Please send your news to *NetControl* Editor Ken Bourne, W6HK, at:

kbourne.ocsd@ earthlink.net

Newport Beach RACES

Gary Standard, K6GSX, Newport Beach RACES, has been participating in the Cal OES Southern Region 60-meter nets run by OCRACES on Saturday mornings at 10:00 AM on 5371.5 kHz upper sideband (dial frequency). He produces an unusually strong mobile signal, often stronger than other net participants into the Northern Utah remote SDR receiver.

Gary's mobile antenna has separate vertical and NVIS whips. He mostly uses the NVIS whip, configured horizontally (see photo), during the net. It is a military antenna with 1.8-30 MHz coverage and 0.05-second automatic tuning integrated into the antenna base and built to MIL-SPEC. The hitch mount is a "swing-out" customized for this antenna that permits the opening of Gary's rear cargo hatch.

Other Newport Beach RACES members participating in the Saturday morning 60-meter nets include Peter Putnam, NI6E, Roy Shlemon, K6GVG, and Larry Somers, KB6FW.

Orange County Amateur Radio Club

The next meeting of the Orange County Amateur Radio Club (OCARC) will be on Friday, August 16, 2019, at 7:00 PM, at the American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, in Santa Ana. This meeting will be your opportunity to hear about 2-meter tape-measure antennas, see examples up close, and build one (if you purchased a kit that had been previously offered or by procuring the parts described in an article by Joe Leggio, WB2HOL, at http://theleggios.net/wb2hol/projects/rdf/ tape_bm.htm).

This antenna would be ideal for use on 2-meter hidden-transmitter hunts, such as the cooperative T-hunts held on third Mondays (except in October) immediately following the OCRACES 2-meter net, which begins at 7:00 PM on the 146.895 MHz repeater. The fox transmits on the input (146.295 MHz) of the repeater, usually beginning at about 7:20 PM). Hunters compare bearings on an OCRACES 70-centimeter repeater and beacon their locations via APRS.

The three-element tape-measure beam designed by Leggio has a high front-to-back ratio with a very deep notch (approximately 50 dB) in the pattern toward the rear. The tape-measure elements fold easily for fitting into a car. Tape measures are often available free at Harbor Freight. Other materials include Schedule-40 PVC pipe and fittings. Element supports consist of PVC crosses and tees.

The matching network is a "hairpin match," consisting of a 5-inch length of wire connected across the feed points of the driven element, to cancel the antenna's capacitive reactance.

A pair of shears makes it easy to cut the tape-measure elements to length. (Wear safety glasses while cutting!) The edges will be sharp and should be covered with vinyl electrical tape. Cut one length to 41⅜ inches for the reflector element. Cut two lengths to 17¾ inches for the driven element. Cut one length to 35⅛ inches for the director.

The feedline should be RG-58/U coaxial cable, connected directly to the driven element. Be sure to scrape or sand off the element's durable paint before connecting. It's not easy to solder to steel, so be sure to tin the elements before mounting them to the PVC cross. Instead of soldering, you could slide the ends of the feedline under the driven-element stainless-steel hose clamps and tighten the clamps to hold the ends of the coax.

Two lengths of PVC pipe form the boom. One is cut to 11½ inches and goes between the director and the driven element. The other is cut to 7 inches and goes between the reflector and the driven element.

August 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3 Weekly 60 m ACS Net
4	5 Weekly 2 m ACS Net & OCRACES Meeting	6	7	8	9	10 Weekly 60 m ACS Net
11	12 Weekly 2 m ACS Net	13	14	15	16 Orange County Amateur Radio Club Meeting	17 Weekly 60 m ACS Net
18	19 Weekly 2 m ACS Net & Cooperative T-Hunt	20	21	22	23	24 Weekly 60 m ACS Net
25	26 ACS Net on Five Bands & Cal OES Nets	27	28	29	30	31 Weekly 60 m ACS Net

Upcoming Events:

- **August 5:** OCRACES Meeting, 1930-2130 hours, OCSD Communications & Technology Division, 840 N. Eckhoff Street, Suite 104, Orange

- **August 16:** Orange County Amateur Radio Club Meeting, 1900 hours, American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, Santa Ana (program: tape-measure antennas)

- **August 19:** Cooperative T-Hunt, 1920 hours

www.ocraces.org

Mission Statement

County of Orange RACES has made a commitment to provide all Public Safety departments in Orange County with the most efficient response possible to supplement emergency/disaster and routine Public Safety communications events and activities. We will provide the highest level of service using Amateur and Public Safety radio resources coupled with technology, teamwork, safety, and excellence. We will do so in an efficient, professional, and courteous manner, accepting accountability for all actions. We dedicate ourselves to working in partnership with the Public Safety community to professionally excel in the ability to provide emergency communications resources and services.

County of Orange RACES Frequencies

60 m: 5371.5 kHz USB (dial) (Channel 4) (OC ACS Net—Saturdays, 1000 hours)
40 m: 7250 kHz LSB
10 m: 29.640 MHz output, 29.540 MHz input, 107.2 Hz PL
6 m: 52.620 MHz output, 52.120 MHz input, 103.5 Hz PL
2 m: 146.895 MHz output, 146.295 MHz input, 136.5 Hz PL*
2 m: 146.595 MHz simplex
1.25 m: 223.760 MHz output, 222.160 MHz input, 110.9 Hz PL
70 cm: 446.000 MHz simplex
70 cm: 448.320 MHz output, 443.320 MHz input, 141.3 Hz PL (private)
70 cm: 449.100 MHz output, 444.100 MHz input, 110.9 Hz PL (private)
70 cm: 449.180 MHz output, 444.180 MHz input, 107.2 Hz PL (private)
70 cm: 449.680 MHz output, 444.680 MHz input, 131.8 Hz PL (private)
23 cm: 1287.650 MHz, 1287.675 MHz, 1287.700 MHz, 1287.725 MHz, 1287.750 MHz, and 1287.775 MHz outputs, –12 MHz inputs, 88.5 Hz PL

*Primary Net—Mondays, 1900 hours

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*"W6ACS …
Serving
Orange County"*

Meet Your County of Orange RACES Members!

Officers →

Ken Bourne **W6HK**	**Scott Byington** **KC6MMF**	**Jack Barth** **AB6VC**	**Ernest Fierheller** **KG6LXT**	**Bob McFadden** **KK6CUS**	**Tom Tracey** **KC6FIC**

Randy Benicky **N6PRL**	**Ray Grimes** **N8RG**	**Walter Kroy** **KC6HAM**	**Martin La Rocque** **N6NTH**	**Matt Luczko** **KM6CAO**
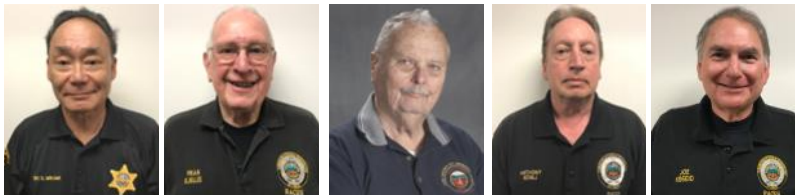
Don Mikami **N6ELD**	**Fran Needham** **KJ6UJS**	**Harvey Packard** **KM6BV**	**Tony Scalpi** **N2VAJ**	**Joe Selikov** **KB6EID**
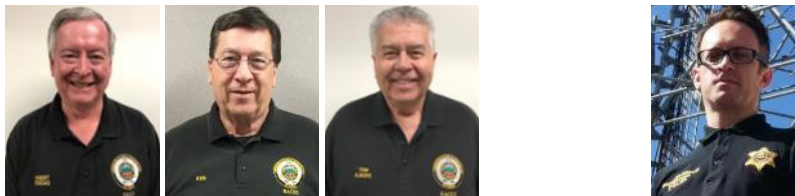
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