January 2024

Newsletter of the County of Orange Radio Amateur Civil Emergency Service

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OCRACES Meeting

Monday, January 8, 2024 at 7:30 p.m.

Duplexers, Combiners, and Circulators

OC EOC Loma Ridge

Orange County Sheriff's Department
Emergency Management Division

CRO's Nest

by Ken Bourne, W6HK, OCRACES Chief Radio Officer

Technical Nets and Antennas

OCRACES and City RACES nets are primarily conducted for keeping our units active, announcing events, and checking members' equipment, mostly on a weekly basis. Technical discussions normally do not occur on these nets, although technical radio-electronics discussions are an important aspect of amateur radio. Every amateur should be interested in and fascinated by radio technology, even if their primary focus is emergency communications.

Examples of local technical nets, in which radio technology is discussed, include the Southern California Six & Ten Meter Club Sunday nets on 50.4 MHz AM at 10:00 a.m., on 28.385 MHz USB at 8:00 p.m., and on 50.150 MHz USB at 8:30 p.m.

The BOZO 2-meter net on 144.240 MHz USB occurs on Sundays and Wednesdays at 7:00 p.m. Discussions about weak-signal propagation and other technical subjects are common.

The Orange County Amateur Radio Club (OCARC) conducts a 10-meter net on 28.375 MHz USB every Wednesday at 7:30 p.m. They also have a 2-meter net on 146.550 MHz FM simplex every Wednesday at 8:30 p.m. and a 75-meter net on 3.883 MHz LSB every Tuesday at 8:00 p.m.

OCRACES conducts a 60-meter net every Saturday at 10:00 a.m. on 5371.5 kHz USB (displayed as 5373 kHz center frequency on Yaesu transceivers). When responding to the roll call, participants give signal reports, propagation observations, and descriptions of their antennas. At the conclusion of the net, several members remain for deeper discussions of radio technology.

Some repeater clubs also conduct technical nets and discussions, such as the Catalina Amateur Repeater Association and the PAPA System. Participating in local repeater or digital-system (such as D-STAR, C4FM, and DMR) technical nets does not generally require a high-gain antenna. In this article, I will focus on effective antennas for HF nets on single sideband and for VHF nets on AM, single sideband, or FM simplex.

An effective antenna is necessary not only for technical SSB and FM simplex nets but also for a general call on frequencies commonly monitored by technically-oriented hams, such as between 3.6 and 3.7 MHz on 75 meters LSB, 28.375 and 28.385 MHz on 10 meters USB, 29.0 MHz on 10 meters AM, 29.6 MHz on 10 meters FM, 50.125 MHz on 6 meters SSB, 50.3 and 52.525 MHz on 6 meters FM, and 144.240 MHz on 2 meters USB.

On 75 and 60 meters, horizontal wire antennas are needed for effective local communications covering Orange County and up to about 340 miles, using Near Vertical Incidence Skywave (NVIS) propagation during the day. Vertical antennas on these bands are effective for longer distance propagation, especially in the evening, but are a poor choice for local technical nets. Vertical antennas are highly in-

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CRO's Nest *Continued from page 1*

effective for NVIS propagation. Good NVIS antennas for 75 and 40 meters include half-wave dipoles, off-center-fed dipoles (or a variation called a Windom antenna), end-fed long wires, double zepps, inverted V's, bazookas, doublets, etc. Half-wave dipoles, doublets, and inverted V's are about 123 feet long on 75 meters and almost 88 feet long on 60 meters. I don't quite have enough distance between trees for a 75-meter antenna, unless I let the ends droop down, so I put up a G5RV, originally designed by a British amateur, which is 102 feet long. Its ladder-line transmission line acts as part of the antenna, and, with an LDG tuner, it covers 75 through 6 meters. It is very effective on the OCRACES 60-meter nets on Saturday mornings, and produces a good signal for checking OCRACES into the Cal OES California Emergency Services Nets on 75 meters on Monday evenings and on 40 meters on Wednesday mornings. A minimum eighth-wave above ground is an ideal NVIS height for a horizontal wire antenna, which would be about 30 feet on 75 meters and 22 feet on 60 meters. If you don't have the room for a half-wave antenna on either band, even in an inverted-V configuration, you could try a horizontally mounted Hustler mobile antenna, clamped to a second-story iron balcony railing, a shortened end-fed long wire with a resonating coil, or a pair of Hamsticks in a dipole configuration on a 20-foot mast.

On 10, 6, and 2 meters and 70 centimeters, horizontal, multi-element, Yagi beam antennas have high gain and are used to produce strong signals, especially for weak-signal work. Will Anderson, AA6DD, near Perris, who runs the 6-meter technical nets, is a proponent of vertical Yagi and omnidirectional antennas on 6 meters. In general, ground-wave propagation is better with a vertically mounted antenna, while sky-wave performance can be better with horizontal polarization, unless a low angle of radiation is desired for longer distances, which is better with vertical polarization. On these bands, an omnidirectional antenna pattern is desired, which is provided by a vertical ground-plane antenna. If you use a directional horizontal or vertical Yagi, you would have to keep rotating it to hear each station on the net.

When I check into the OCARC 10-meter net on Wednesday evenings, I often need to switch between my half-wave vertical antenna and G5RV horizontal wire antenna, depending on which station I am listening to and which polarity they are using. Typically, there is a 20-dB cross-polarization difference.

Diamond CP-610 6/10-meter antenna.

Net-control stations have an advantage when using high-gain omnidirectional antennas.

An interesting high-gain omnidirectional vertical antenna that covers both 10 and 6 meters is the Diamond CP-610, which consists of 5/8 wavelength over 5/8 wavelength radiators on 6 meters and one 5/8 wavelength on 10 meters. Gain on 6 meters is 5.5 dBi and on 10 meters is 3.4 dBi. (dBi refers to an isotropic source. Subtract 2.15 dB for the dBd gain over a unity-gain antenna, such as a quarter-wave ground plane.) Diamond also offers similar single-band antennas.

On 2 meters, both vertical and horizontal omnidirectional gain antennas are available. I use a chimney-mounted Hustler G7-144 with stacked 5/8-wave radiators, producing 7 dBd gain. It is 15'4" from top to bottom, which is ideal for a 2-meter simplex net-control station. Hustler also makes heavy-duty 70-centimeter vertical gain antennas.

Many stations on the 2-meter BOZO net, which has technical chatter about weak-signal propagation, use horizontal yagi antennas. Net control commonly rotates a multi-element yagi antenna, and listens for northern California stations while beamed north. However, M2, for example, offers the omnidirectional 2-meter HO LOOP with a 4 dBd typical gain. They can be stacked for an 8 dBd gain. ✸

OCRACES In-Person Meeting: January 8th

The next OCRACES meeting will be in-person on Monday, January 8, 2024, at 7:30 p.m. It will be at the Orange County EOC at Loma Ridge. Our featured speaker will be Erik Schull, KE6BVI. He is a senior telecom engineer with the Sheriff's Technology Division, Technical Services Unit. He will give us an informative presentation on repeater duplexers, circulators, and combiners. All county and city RACES and EmComm members are welcome to attend.

✸

OCRACES Celebrates at Holiday Dinner

OCRACES members and guests enjoyed warm fellowship and great food at their 2023 Holiday Dinner on Monday, December 4th, at Marie Callender's Restaurant & Bakery in Orange. Thanks to OCSD Emergency Management Division Deputy Director Lee Kaser, KK6VIV, for arranging the party with the restaurant's staff. We welcomed our newest members and recalled fond memories of two members who became silent keys in 2023. ✸



Left to right: OCRACES members and guests at Marie Callender's; Waylon and Lee Kaser, KK6VIV; Ken Bourne, W6HK.




Left to right: Scott and Pat Byington, KC6MMF and KC6ZHR, and granddaughter Sayah; Robert Stoffel, KD6DAQ; Randy and Lee Anne Benicky, N6PRL and KI6VUH (not shown); Rod La Rocque, KK6DBP (son of Martin La Rocque, N6PRL, silent key).



Left to right: Ray and Carol Grimes, N8RG and WB6VMH; Debbie and Chuck Streitz, KK6HFS; Pilar and Bill Griffin, PSR.




Left to right: Heidi Aguirre, K3TOG; Chu and Chi Nguyen, KE6SFF and KE6MVS; Ryan and Robert Moore, KN6WSJ and KW6B; Joel Bishop, AJ6ZP, and his wife Debbie.

Winlink in Orange County

by Scott MacGillivray, KM6RTE, KM6RTE@gmail.com

Test Results of Winlink Gateways Local to Loma Ridge

Over the last 12 months, I've been testing access to local Winlink Radio Message Servers [RMS] (aka "gateways") that are within a 35-mile radius of Loma Ridge once a month. This is a continuation of the testing that I started back in March 2022. The access tests were done by downloading the latest current Winlink Channel listing prior to the test (typically Wednesday mornings), and then attempting to connect to each gateway three times. The results of these test are shown in Figure 1.

I have focused these tests just on VHF gateways since they account for the greatest portion (by far) of gateways accessible in Orange County when compared to UHF gateways. In addition, all of the gateways tested utilize packet encoding. While the popular VARA FM encoding offers significant throughput advantages, it is not widely used in Orange County. Though, packet is more robust by being able to support multiple connections simultaneously on the same frequency, which will be a big advantage during a countywide emergency.

The results show that there are ten Winlink gateways (i.e., KM6RTE-12, KM6RTE-10, KF6BRC-10, KE6SWE-10, WA6RUZ-10, W6HBR-10, KK6CKK-10, AG6MO-10, WD6CDN-11, and AG6RS-10) that are generally available and accessible from Loma Ridge. This is a 100% increase from only five gateways that were consistently available in the tests compiled at the end of last year (December 2022). This is awesome! The majority of these gateways (7 of 10) use the recommended frequency of 145.090 MHz for Winlink communications with OCRACES at Loma Ridge.

As you can also observe from the test results, it is not uncommon for a gateway that is normally up and running to go offline occasionally. For example, KM6RTE-12, KF6BRC-10, and W6HBR-10 have been unavailable a couple times during the year. As a Winlink gateway System Administrator, I've found that this can happen due to an internet connection temporarily going down (which is extremely common for KM6RTE-12 at Loma Ridge), or that the Winlink software becomes nonfunctional when the computer is waiting on a "Pending Install" of an operating system up-

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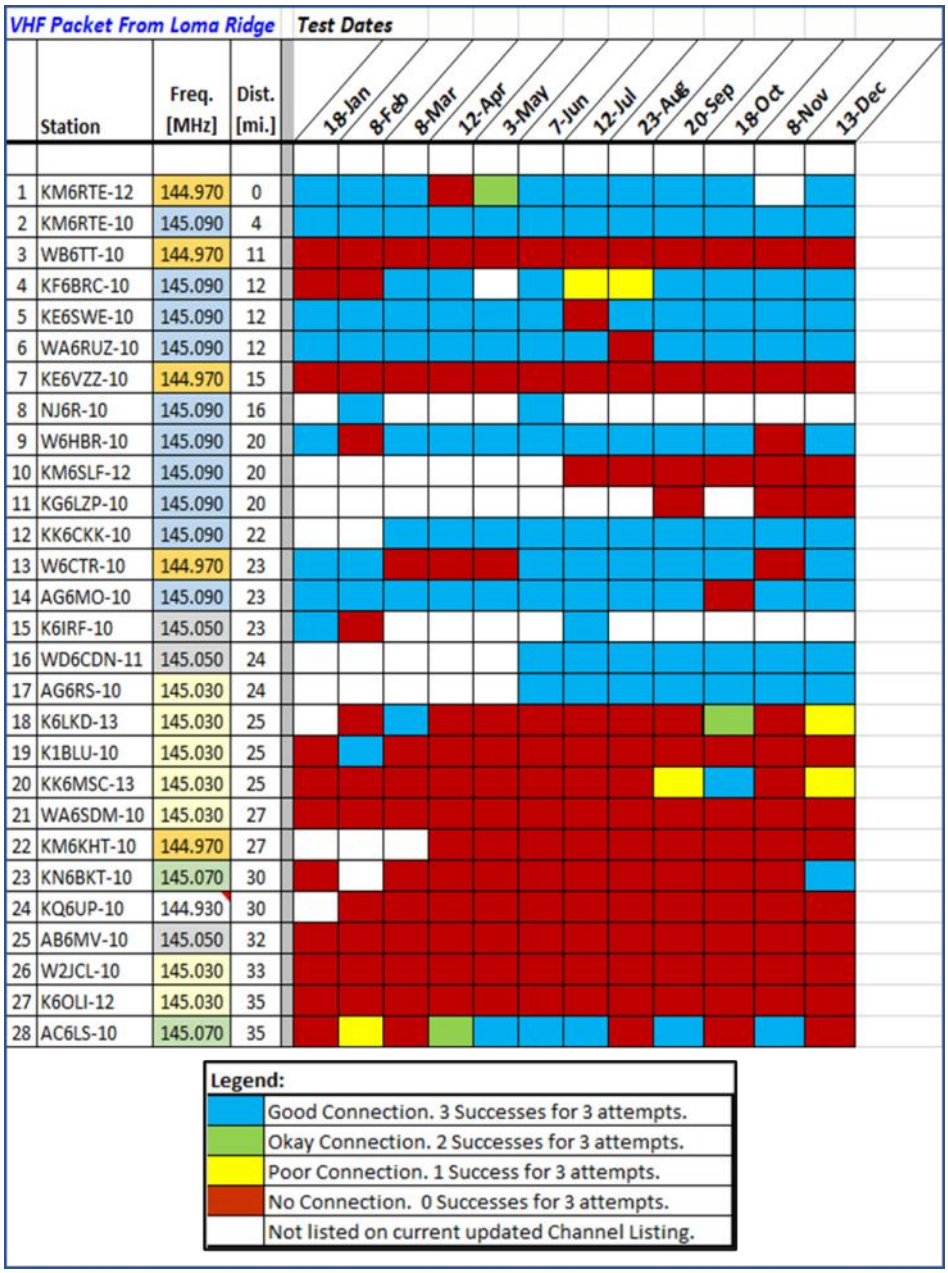

Figure 1. Access test results to local Winlink gateways from Loma Ridge for 2023.

Winlink in Orange County *Continued from page 4*

date.

There are a couple of gateways (i.e., WB6TT-10 and KE6VZZ-10) that are consistently listed as operational but are not available or accessible from Loma Ridge. This may be due to line-of-sight limitations, but I'm currently not sure. No testing was done from other locations in the county to verify that they are otherwise operational. The Loma Ridge location provides very good coverage across Orange County. It would be ideal that these gateways were operational and accessible since they operate on 144.970 MHz, which is the recommended frequency to support intra-communication within Orange County. If they are not operational and you know who the gateway system administrator is, please notify them so they can look into getting them back online.

In addition, there are a couple of newer gateways (i.e., KM6SLF-12, and KG6LZP-10) that are listed but not accessible from Loma Ridge. Again, if they're operational, this is likely due to line-of-sight limitations.

There are several other gateways (i.e., NJ6R-10, K6IRF-10, KK6MSC-10, and AC6LS-10) that are available sometimes, but not consistently. If these gateways were consistently available, Winlink operators would have great Winlink accessibly throughout Orange County, as well as good accessibility into Los Angeles and San Bernardino counties.

As a reminder, it is strongly recommended that RMS stations use the "PUBLIC" Service Code. As noted on the Winlink website; the "PUBLIC" service code is for maritime and open amateur radio use, including emergency gateways that allow public access. Whereas, the "EMCOMM" Service Code is for emergency gateways that do not allow public access. I strongly believe it is best practice for Winlink gateways to be available 24/7 to all operators in order to support checking equipment and/or performing regular testing (both client and server), as well as then be available to support an emergency.

Also note to Winlink gateway System Administrators, it is highly recommended to turn off the beacon of your gateway. It doesn't provide any real value to Winlink operators, but the beacon routinely adds congestion to the frequency. ✸

WRC-23 Concludes 23-Centimeter Issue

The International Telecommunication Union (ITU) World Radiocommunication Conference 2023 (WRC-23) continued through December 15, 2023, in Dubai, United Arab Emirates (UAE).

The primary effort of the International Amateur Radio Unit (IARU), of which the ARRL is a member, focused on Agenda Item 9.1 topic b to address amateur use of the 23-centimeter band and co-frequency use by several radionavigation satellite service (RNSS) systems in the 1240-1300 MHz band.

IARU's work that began 4 years ago with a preparatory study in the ITU Radiocommunication Sector (ITU-R) to address this agenda item has finally come to a close. Their concerted engagement in the ITU-R working parties, study groups, and WRC preparatory meetings ensured that the amateur services were properly represented during the development of two published ITU-R reports: M.2513 and M.2532. An ITU-R Recommendation, M.2164, followed these, which formed the basis for the discussions at WRC-23.

During the WRC-23 deliberations, strong positions were expressed by all parties involved. The result is a well-supported compromise for a footnote in the Radio Regulations regarding amateur and amateur satellite service operation in the 1240-300 MHz range. The footnote reminds administrations and amateurs of the need to protect the primary RNSS from interference, and it provides guidance for administrations to allow both services to continue to operate in this portion of the spectrum.

Administrations are the bodies that govern amateur radio in their respective countries, such as the Federal Communications Commission (FCC) in the United States.

The Conference Plenary compromise was formally adopted on December 8th and was not subject to further consideration during the final week of WRC-23. The IARU team continues its work on other WRC issues, including developing agendas for future conferences.

IARU President Tim Ellam, VE6SH, noted, "This is a very good result for the amateur services. The decision reached at WRC-23 on this agenda item makes no change to the table of allocations nor incorporates by reference M.2164 into the Radio Regulations. The addition of a footnote that provides guidance to administrations in the event of interference to the RNSS is a good regulatory outcome for amateurs and the primary users of this band."

The WRC also agreed to suppress Resolution 774, which closes the issue and satisfies the agenda item.

WRC-23 began on November 20th. ✸

Countywide RACES/EmComm News

"RACES/ EmComm News" provides an opportunity to share information from all City & County RACES/ACS units and EmComm organizations and supportive amateur radio clubs in and near Orange County, as well as from Cal OES and federal agencies.

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

kbourne.ocsd@earthlink.net

Ken Mirabella, KM6YH, Silent Key

With deep sadness, we report that former OCRACES Assistant Chief Radio Officer Ken Mirabella, KM6YH, became a silent key on Saturday, December 23, 2023, after a long and valiant battle with cancer.

Ken served for many years in OCRACES, and enjoyed our many activities, including activations, configuring the EOC RACES Room, drills, training exercises, Field Day, Baker to Vegas, and T-hunts.

Ken founded Powerwerx, a distributor of DC power products, wire and cable, and two-way radios, including DMR radios for amateur use.

Ken is survived by his wife Mary, ex-N6MPM, and his son Tom, N6TJM, who now runs Powerwerx.

Orange County Amateur Radio Club (OCARC)

The next meeting of the Orange County Amateur Radio Club will be on Friday, January 19, 2024, at 7:00 p.m., at the American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, in Santa Ana. Charlie Spetnagel, W6KK, will speak on the 2012 NH8S Swains Island DXpedition. He is a member of the Southern California DX Club, Southern California Contest Club, Northern California DX Foundation, INDEXA, and CDXC, and life member of the ARRL.

Southwest California SKYWARN

Warning Coordination Meteorologist Alex Tardy of the National Weather Service in San Diego encouraged submitting of weather reports using their online form.

There are two ways to report:

1. Spotter phone number: 1-800-240-3022. They are available 24/7/365
2. https://inws.ncep.noaa.gov/report/ (use this form) or report on MPING app

Flooding

- Rainfall: How much rain in a given time (e.g., 1 inch in 20 minutes). *Rainfall rates (e.g., 4 inches per hour) should not be reported*
- *Flooding: urban streets, ponding of water in low-lying areas, or poor drainage*
- ***Flash Flooding (swift moving and greater than 6 inches).*** Report flooding that is threatening life or property or disrupting traffic.

Winter Weather

- **Snowfall amount (new, duration, total). Snow depth and total to the nearest INCH**
- Elevation of snow level, heavy snow, and blizzard conditions
- Icy roads, road closures, chain control, unusually low temperatures, and wind chills

Wind

- Gust of >35 mph, and all wind-related damage (e.g., trees, branches, or power poles down

Extreme Heat

- >95° F near the coast, >105° F in the inland valleys, >115° F in the deserts

Fog

- Dense fog with visibility at or near zero (report in feet or miles or impacts)

Thunderstorms

- Hail size (for larger hail compare to coins or measure) and accumulation, wind gusts, lightning strikes causing fire, any damage

Tornadoes

- Funnel clouds, waterspouts, or any rotating cloud, in contact with ground (tornado) and confirmed injuries or damage

Surf and Coastal Impacts

- Surf 6 feet or higher, any flooding by combination of high tides and/or high surf
- Strong rip currents
- Tidal overflow and flooding or tsunami impacts such as strong currents

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https://www.facebook.com/swskywarn

Photos: Send to alexander.tardy@noaa.gov or nwssgxspotters@gmail.com.

Facebook: https://www.facebook.com/NWSSanDiego

Twitter: @NWSSanDiego #cawx #wxreport #socal

YouTube: https://www.youtube.com/NWSSanDiego

January 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 New Year's Day (no meeting, no net)	2	3	4 InTime Training for PSRs	5	6 Weekly 60 m Net & InTime Training
7	8 Weekly 2 m ACS Net & OCRACES Meeting	9	10	11	12	13 Weekly 60 m ACS Net
14	15 Weekly 2 m ACS Net	16	17	18	19 Orange County Amateur Radio Club Meeting	20 Weekly 60 m ACS Net
21	22 ACS Nets on 4 Bands	23	24	25	26	27 Weekly 60 m ACS Net
28	29 Weekly 2 m ACS Net	30	31			

Upcoming Events:

- **January 1:** New Year's Day (no net, no meeting)
- **January 4, 1800-2000 hours:** InTime training for OCSD PSRs, Orange County Sheriff's Regional Training Academy, Tustin
- **January 6, 0900-1200 hours:** InTime training for OCSD PSRs, Orange County Sheriff's Regional Training Academy, Tustin
- **January 8, 1930-2130 hours:** OCRACES meeting, in-person at OC EOC, Loma Ridge
- **January 19: 1900 hours:** Orange County Amateur Radio Club meeting, American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, Santa Ana

https://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 (down for repair)
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)
*Primary Net—Mondays, 1900 hours

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Questions or Comments?
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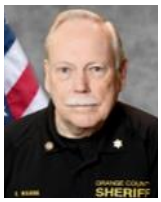
"W6ACS ... Serving Orange County"

Meet Your County of Orange RACES Members!

Officers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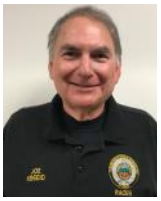
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