

February 2024



Inside this issue:

CRO's Nest	1
ARRL FCC Response	3
Repeater Directory	3
Quake Heroes Expo	4
Ernest Fierheller	4
Registrar of Voters	4
Gordon West's Books	5
USGS Thanks Hams	5
OCRACES Meeting	5
RACES News	6
Events Calendar	7
OCRACES Members	8

OCRACES Meeting
Monday,
February 5, 2024
at 7:30 p.m.

Duplexers,
 Combiners, Circulators

OC EOC
Loma Ridge

Orange County Sheriff's Department
Emergency Management Division



Newsletter of the County of Orange Radio Amateur Civil Emergency Service

County of Orange RACES

NetControl

Newsletter of the County of Orange Radio Amateur Civil Emergency Service

CRO's Nest

by Ken Bourne, W6HK, OCRACES Chief Radio Officer

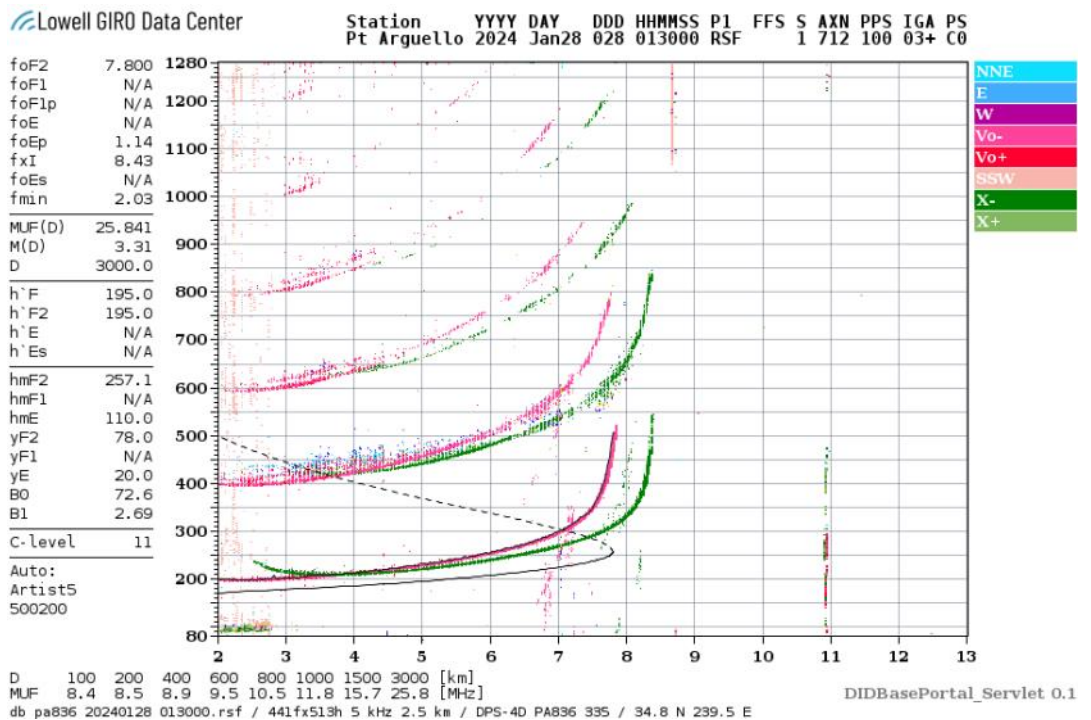
Propagation Data from Ionosondes

Propagation is a popular topic during the Saturday morning OCRACES nets on 60 meters. Near Vertical Incidence Skywave (NVIS) propagation enhances coverage of Orange County on 60 meters better than any other HF band, and usually extends coverage up to about a 300-mile radius in the mornings, and much beyond in the evenings. Several net members refer to ionograms from Pt. Arquello (near Vandenberg Space Force Base in Santa Barbara County), such as shown below, to predict and understand NVIS propagation characteristics. Ionograms from various worldwide locations can be

accessed at <https://giro.uml.edu/ionoweb>. If data from Pt. Arquello is missing, we refer to an ionospheric map from The Bureau of Meteorology, Australian Space Weather Forecasting Centre, at https://sws.bom.gov.au/HF_Systems/6/5 (see next page).

An ionogram is a display of data produced by an ionosonde. An ionosonde is a special kind of radar for examining the ionosphere and finding optimum operating frequencies. It consists of:

- An HF transmitter that tunes over a wide spectrum, typically from 1 to 22 MHz, although capable from 0.5 to 40 MHz
- A HF receiver that automatically tracks



(Continued on page 2)

CRO's Nest *Continued from page 1*

the transmitter's frequency

- A broadband antenna with a vertical radiation pattern
- Digital control and data analysis circuits

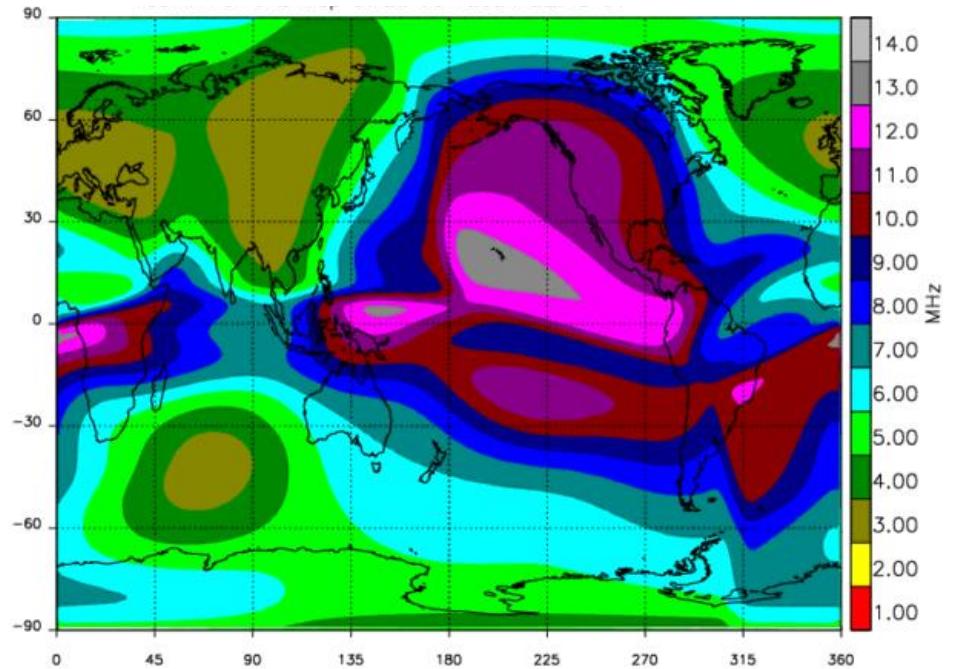
The transmitter sweeps with short pulses over the tested frequency range. These pulses are reflected by various layers of the ionosphere from 60 to 250 miles. Their echoes are received and analyzed by the control system, resulting in an ionogram, a graph of time between transmission and reception of pulses (reflection height) versus carrier frequency.

The Lowell Digisonde ionogram shown on the previous page presents signals reflected from the ionosphere in the frequency vs travel time frame, with signal strength indicated by the pixel density. Wave polarization, angle of arrival, and Doppler frequency are indicated by colors. Individual reflected signals (echoes) observed on each sounding frequency form traces in the ionogram range. Red (green) colors indicate vertical echoes with O-polarization (X-polarization). ARTIST software scales the ionogram and calculates the vertical Electron Density Profile (EDP) in real time. Thin black lines show the ARTIST-identified O-traces. The black line with uncertainty bars shows the calculated bottomside EDP.

The highest frequency that the ionosphere will reflect vertically is called foF2, which is the critical NVIS frequency. FoF2 measurements from various sites are used to create a map of foF2, as shown on this page.

The parameters shown in the list at the left on the ionogram (previous page) may be downloaded from the DEDBase GIRO web portal (click on "Ionogram Data" at the top of the <https://giro.uml.edu/> site). These parameters include:

- foF2—F2 layer critical frequency
- foF1—F1 layer critical frequency
- foE—E layer critical frequency
- foEs—Es layer critical frequency



Real-time foF2 map at 22:45 UT on January 28, 2024, from the Australian Space Weather Forecasting Centre. This map is updated every 15 minutes, using Space Weather Network data. Copyright Commonwealth of Australia 2024, Bureau of Meteorology.

- fbEs—Blanketing frequency of Es layer
- foEa—Critical frequency of auroral E layer
- foP—Critical frequency of F region patch trace
- Fx1—Maximum frequency F trace
- MUF3000—Maximum usable frequency, 3000 km
- MD—MUF(3000)/foF2
- hF2—Minimum virtual height of F2 trace
- hF—Minimum virtual height of F trace
- hE—Minimum virtual height of E trace
- hEs—Minimum virtual height of Es trace
- hEa—Minimum virtual height of auroral E trace
- hP—Minimum virtual height of F patch trace
- TypeEs—Type of Es layer(s)
- hmF2—Peak height of F2 layer
- hmF1—Peak height of F1 layer
- hmE—Peak height of E layer
- zhalfNm—True height at ½ NmF2
- yF2—Half thickness of F2 layer
- yF1—Half thickness of E layer
- yE—Half thickness of E layer
- scaleF2—Scale height at F2 peak
- B0—IRI thickness parameter
- B1—IRI profile shape parameter
- D1—IRI profile shape parameter
- TEC—Ionogram-derived total electron content
- FF—Frequency spread between fxF2 and fx1
- FE—Frequency spread beyond FoE
- QF—Range spread of F layer
- QE—Range spread of E layer
- fmin—Minimum frequency of echoes
- fminF—Minimum frequency of F-layer echoes
- fminE—Minimum frequency of E-layer echoes
- fminEs—Minimum frequency of Es layer
- foF2p—foF2 prediction by IRI no-storm option ★

ARRL Responds to FCC Proposals

ARRL The National Association for Amateur Radio® responded to the Federal Communications Commission’s (FCC) request for comments on removing the symbol (baud) rate restrictions that apply to data communications on the LF bands and the VHF and UHF bands below 450 MHz. The FCC also requested comments on the bandwidth limits applicable to those bands.

The FCC’s action follows their 2023 decision to remove the symbol (baud) rate limits on the 160- to 10-meter amateur bands. Those limits were replaced with a 2.8 kHz bandwidth limit, a move ARRL had long advocated for.

The FCC’s Further Notice of Proposed Rulemaking sought comments on updating the other amateur bands on which its symbol (baud) rate limits continue to throttle faster data rates. The subject bands are the LF bands (2200 and 630 meters) and the VHF and UHF bands below 450 MHz. In its comments, ARRL strongly agreed with the FCC’s proposal to remove the symbol (baud) rate limits on the remaining bands.

ARRL’s comments also noted that CW operation is protected in the lower 100 kHz of the 6- and 2-meter bands and will continue to be so protected, but otherwise, all modes are permitted in the remainder of the subject VHF and UHF bands with only the data modes subject to bandwidth restrictions below 450 MHz that vary by band. The bandwidth restrictions uniquely applicable to data modes have resulted in the other modes being permitted to use many times the bandwidth of data modes in an intermixed fashion determined by those using the bands. For the data modes, however, the limits have limited experimentation with techniques already in use in other countries on amateur VHF and UHF bands.

ARRL concluded that the FCC should also remove the bandwidth limits that apply uniquely to the data modes on the subject bands, and instead, amateurs rely on voluntary band plans and local agreements, as they already do with regard to the mix of the other modes ranging from Morse code (CW) signals of 50 Hz or so (depending upon speed) to amateur television that employs signals of 6 or more MHz. ARRL also noted that the limited propagation range on the subject bands enables local cooperation that is not possible on the HF bands where propagation is such that signals can cover the globe.

The bands addressed in this rulemaking are:

- 135.7-137.8 kHz (2200-meter) and 472-479 kHz (630-meter) bands.
- 50.1-54 MHz (6-meter) and 144.1-148 MHz (2-meter) bands.
- 219-220 MHz (1.25-meter digital) bands.
- 222-225 MHz (1.25-meter) and 420-450 MHz (70-centimeter) bands

The public period for reply comments ended on January 22, 2024. ★

ARRL Releases 2024 Repeater Directory

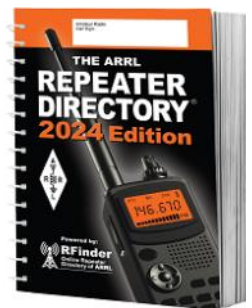
The ARRL Repeater Directory 2024 edition covers repeater systems throughout the U.S. and Canada. There are more than 20,000 repeaters in the United States alone. This directory helps you to find repeaters in your area, when you’re traveling, or when you’re on the move. Look up repeaters and see their input and output frequencies, plus find out whether they are analog FM repeaters or one of the varieties of digital machines. List price: \$19.95.

The Repeater Directory includes “crowdsourced” listings contributed by users, repeater owners, and volunteer frequency coordinators. This means more listings updated more often. New hams often use it to find local activity after purchasing a new handheld radio. Portable operators and public-service volunteers often keep a copy nearby or in their go-kit.

The 2024 edition includes 26,500 listings for US and Canada, organized by state/province, city, and operating mode. Listed digital repeaters include FUSION (C4FM),

D-STAR, DMR, NXDN, and P25 systems. HF, VHF/UHF, and microwave band plans are included

The repeater listings that appear are provided by RFinder, Inc. If a repeater has been omitted, or if a listing is inaccurate, it should be reported directly to RFinder via the RFinder smartphone app, or on the web at <https://www.rfinder.net/blog/add-repeaters>.



Product Details:

- Softcover: 528 pages
- Publisher: The American Radio Relay League, Inc.
- Copyright: 2023
- Language: English
- ISBN: 978-1-62595-185-4
- Dimensions: 6 × 9¼ inches (spiral-bound format)
- Shipping weight: 1.10 pounds ★

Quake Heroes Expo at Cal State Northridge

A special Quake Heroes Expo will be held on Saturday, February 3, 2024, at California State University Northridge (CSUN)—part of the year-long commemoration of the [30th Anniversary](#) of the 1994 Northridge earthquake. Attendees will learn about the lessons and losses of 1994 and how to improve safety and resilience today.

The free event features several screenings of [Quake Heroes](#), an inspirational documentary that blends interviews of people who helped others after the Northridge earthquake with Hollywood storytelling. The film was created by the Statewide [California Earthquake Center](#) and [RomaScope](#) with support from FEMA and many sponsors.

The Expo also includes:

- Comments from elected officials, community leaders, and invited guests—including several of the "heroes" featured in the film.
- Booths for each of the [Seven Steps to Earthquake Safety](#), where attendees can learn useful preparedness information, sign up for safety trainings and emergency alerts, and purchase discounted preparedness and earthquake fastening items.
- The Safe-T-Proof [Quake Cottage](#) earthquake simulator, which will provide an earth-shaking experience!
- Displays about what happened in 1994 and how we can reduce the chance of similar losses again.



- Free parking for all registered attendees.
- A raffle for free preparedness items, for attendees who take actions at each booth to complete their Expo Passports.

More details are on the [event website](#), including the schedule of the film screenings and event location on the CSUN campus.



[Learn More and Register to Attend](#)

Ernest Fierheller, KG6LXT, Retires

We bid farewell to Ernest Fierheller, KG6LXT, who has retired from OCRACES to devote more time to his workloads and additional activities.

Ernest became an OCRACES member about 20 years ago and an Assistant Radio Officer in October 2005.

We appreciate his dedication to RACES. He was one of the most active participants in our weekly nets. When it was his turn to run a net, he set a great example of how to keep our operations sharp.

During OCRACES drills at Loma Ridge, as Assistant Radio Officer, Ernest provided excellent training in net procedures and handling message traffic under stressful conditions. He was also dependable for RACES emergency activations. ★



Ernest Fierheller, KG6LXT.



ORANGE COUNTY REGISTRAR OF VOTERS



A Message from the Orange County Registrar of Voters:

The March 5th Primary Election is quickly approaching, and we look forward to providing excellent service to voters at Vote Center locations throughout Orange County. To make this possible, we are currently hiring more than 400 Customer Service Representatives to staff Vote Centers.

Please consider helping your neighbors exercise their right to vote by applying to be a customer service representative at a Vote Center in your community. Apply today at the link below, or contact us for additional information by email at recruitment@ocvote.gov.

Positions start at over \$20/hour!

Bilingual skills are a plus but not required.

[APPLY NOW](#)



ARRL Is Gordon West's New Publisher

ARRL The National Association for Amateur Radio® has become the new publisher of the Amateur Radio License Preparation books and related resources authored by Gordon West, WB6NOA. Gordon West's popular books, classes, and audio courses have been a mainstay of amateur radio licensing for over 40 years. Generations of hams have learned from "Gordo," and now the impact of his knowledge and experience will continue with the reach and resources of ARRL.

Current editions of Gordon West's popular license prep books will be available from ARRL and ARRL publication dealers soon, including:

- *Technician Class FCC Element 2 Amateur Radio License Preparation*, 10th Edition 2022-2026
- *General Class FCC Element 3 Amateur Radio License Preparation*, 11th Edition 2023-2027
- *Extra Class FCC Element 4 Amateur Radio License Preparation*, 8th Edition 2020-2024

The books, including future editions, will continue to be authored by Gordon West with Technical Editor Eric P. Nichols, KL7AJ. Nichols is a regular contributor to ARRL publications and has written several ARRL books. He has collaborated on the Gordon West books since 2013.

Gordon West Named ARRL National Instructor

ARRL Education and Learning Manager Steve Goodgame, K5ATA, has also announced that Gordon West has

been named ARRL National Instructor. Goodgame leads ARRL programs that benefit amateur radio volunteer instructors and professional educators. "Gordon West will serve as the ambassador for the new ARRL National Instructor Program," said Goodgame. "The program will place greater emphasis on connecting prospective hams with opportunities to find ARRL Affiliated Radio Clubs and classes. The National Instructor Program will also support ARRL volunteer instructors with new resources for teaching amateur radio courses and for developing licensees."

About Gordon West, WB6NOA

Gordon West has been an amateur radio operator for more than 60 years, holding the Amateur Extra call sign WB6NOA. He also holds an FCC Commercial Operator License, the First Class General Radiotelephone Certificate with Radar Endorsement. A frequent guest and presenter at ham radio conventions, West is well-known by the amateur radio community for his unique educational style and commitment to developing instructors. His work has benefited thousands of new amateur radio licensees. He is an ARRL Life Member, and has earned many recognitions including ARRL Instructor of the Year and Dayton Amateur Radio Association 2006 Amateur of the Year. The Gordon West Ambassador of the Year Award is presented annually by Orlando HamCation® to an amateur who has made outstanding contributions to the amateur radio community. ★

USGS Thanks Winlink Hams for ShakeOut

David Wald, Ph.D., Supervisory Research Geophysicist, U.S. Geological Survey, wrote the following letter: "We at the USGS really appreciate the work of the Winlink amateur volunteers who contributed to the recent ShakeOut earthquake scenario exercise as well as contributing to the USGS Did You Feel It? (DYFI) system since 2020. Winlink volunteers have sent in more than 6,000 responses for exercises and actual events. We

anticipate that your contributions will help us provide critical situational awareness in the minutes and hours after a significant earthquake. You have a rather unique capacity to communicate after a damaging earthquake. Hence, the connection between amateur radio operators and the USGS' post-earthquake information tools is a natural yet impressive handoff.

"I've been really impressed with the enthusiasm and professionalism of

all the amateur radio operators we've worked with over the past few years who have been ready and willing to develop the interface to connect directly to USGS via the DYFI system and to the many operators who have sent in felt reports. Fantastic!

"Lastly, I also want to thank Vince Quitarano (USGS contractor) for making all the connections between Winlink and USGS work so smoothly." ★

OCRACES In-Person Meeting: February 5th

The in-person OCRACES meeting that had been scheduled for January 8th has been moved to Monday, February 5, 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 in-

formative presentation on repeater duplexers, circulators, and combiners. All county and city RACES and EmComm members are welcome to attend. ★

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



Irvine RACES (IDEC)

IDEC will hold its next meeting on Thursday, February 22, 2024, at 1900 hours, at the Orange County EOC at Loma Ridge. They will receive a tour of the EOC and Control One. A couple of OCRACES members will also give IDEC a tour and introduction of the RACES Room at Loma Ridge.

Orange RACES (COAR)

The City of Orange Amateur Radio (COAR) RACES unit is looking for a couple more volunteers to assist with the upcoming Baker to Vegas race held on March 23-24, 2024. The race starts in the town of Baker, California around early afternoon, runs along highways 127, 178, 372, and 160 through the towns of Shoshone and Pahrump, and finishes in Las Vegas around 7:00 a.m. The race covers 120 miles and is broken down into 20 stages. Those interested in supporting the race are urged to contact COAR’s Chief Radio Officer Scott MacGillivray, KM6RTE, at csmacg67@outlook.com. Scott plans to use Zoom meetings to make it easier to participate in the preparation meetings. There will be an in-person “equipment check-out and dry run” the morning of March 9th at the Orange Police Department headquarters.

Westminster RACES

Westminster RACES is seeking volunteers, both RACES and CERT, to assist with the TET Parade & Festival on Saturday, February 10, 2024. The approximate time for this event will be from 0530 to 1500 hours. Contact Chief Radio Officer Adam Valek, N6HVC, at adam.n6hvc@gmail.com.

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. Mike Scofield, N6OKG, will present “Life Without Full Duplex,” talking about how to manage communication problems that can arise during the stress of emergencies.

Orange County Sheriff’s Department Mutual Aid Bureau (MAB)

After more than two years of coordinating the Chaplain, Explorer, and Professional Services Responder (PSR) programs, Sergeant Kyle Sheek is bidding farewell. We thank him for the great support he has given to OCRACES PSRs. As of January 29, 2024, the new MAB PSR program coordinator is Sergeant Nate Beyer. We look forward to meeting Nate and working with him.

The Mutual Aid Bureau will conduct an orientation for PSR applicants on Wednesday, March 13, 2024, at 1830 hours, at the Sheriff’s Regional Training Academy, 15991 Armstrong Avenue, in Tustin. A prescreen for PSRs will be conducted on Saturday, March 23rd, at 0900 hours, at the Academy. To become an OCRACES applicant, you must first become a PSR.

Orange County Sheriff’s Museum

The Orange County Sheriff’s Museum & Education Center is celebrating its 20th anniversary. It was chartered on December 24, 2004. After 20 years as the Museum Co-Founder/Director and Executive Director, Ray Grimes, N8RG, is relinquishing this position, to assume a position of Director/Advisor/Special Projects. Darren Braham, retiring as an OCSA Lieutenant, will become the Museum’s Executive Director. (See <https://www.ocsheriffmuseum.com/>.) Ray is also the Reserve Captain of the OCSA Aero Squadron Reserve Unit. As he is preparing to relocate to Arizona, he will hand over command of ASRU to Reserve Lieutenant Steve Brown.

San Diego County ACS

Steve Ruesch, KE6CWP, resigned on December 31, 2023, as San Diego County ACS Chief Radio Officer. Mike Downs, AI6XQ, has been promoted from Deputy CRO to the Chief Radio Officer position. Jeff Hebert, KK6ZRV, Communications Coordinator, Sheriff’s Communication Center, continues as the ACS program manager. Bob Melucci, AG6UL, is the new ACS Deputy CRO. (Bob is a member of the TASMA technical committee.)

February 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3 Weekly 60 m ACS Net & Members-only Social
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	20	21	22	23	24 Weekly 60 m ACS Net
25	26 ACS Nets on 4 Bands	27	28	29		

Upcoming Events:

- **February 3, 1500 hours:** OCRA-CES members-only social meeting (details in email to members)
- **February 5, 1930-2130 hours:** OCRACES meeting, in-person at OC EOC, Loma Ridge
- **February 16, 1900 hours:** Orange County Amateur Radio Club meeting, American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, Santa Ana
- **March 13, 1830 hours:** Orientation for PSR Applicants, Sheriff's Regional Training Academy, Tustin
- **March 23, 0900 hours:** Prescreen for PSR Applicants, Sheriff's Regional Training Academy, Tustin



<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

OCSD RACES Coordinator

Lee Kaser, KK6VIV, (714) 628-7081

Radio Officer

Scott Byington, KC6MMF

Chief Radio Officer

Ken Bourne, W6HK, (714) 997-0073

Assistant Radio Officer

Randy Benicky, N6PRL

County of Orange RACES

Orange County Sheriff's Department, Emergency Management Division
 2644 Santiago Canyon Road, Silverado, CA 92676
 Telephone: (714) 628-7081 • Fax: (714) 628-7154
 Email: LKaser@OCSherriff.gov

County of Orange RACES

OCSD Emergency Management Division
 2644 Santiago Canyon Road
 Silverado, CA 92676

Telephone – (714) 628-7081
 Fax – (714) 628-7154
 E-mail: LKaser@OCSherriff.gov

Visit Our Web Site
<https://ocraces.org>
 It's Where It's @!

Questions or Comments?
 Contact *NetControl* Editor Ken Bourne, W6HK
kbourne.ocsd@earthlink.net



**“W6ACS ...
 Serving
 Orange County”**

Meet Your County of Orange RACES Members!

Officers →



Ken Bourne W6HK Scott Byington KC6MMF Randy Benicky N6PRL

**OCSD
 RACES
 Coordinator** →



Lee Kaser
 KK6VIV



Heide Aguire K3TOG Jack Barth AB6VC Joel Bishop AJ6ZP Eric Bowen W6RTR Ray Grimes N8RG Ted Lavino KG6LZP Steve Livingston NJ6R Scott MacGillivray KM6RTE



Robert Moore KW6B Ryan Moore KN6WSJ Ron Mosher K0PGE Fran Needham KJ6UJS Chi Nguyen KE6MVS Joe Selikov KB6EID Robert Stoffel KD6DAQ Chuck Streitz KK6HFS Ken Tucker WF6F