

February 2023



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**Next
OCRACES
Meeting**

**Online
on Zoom**

**Monday,
February 6, 2023
at 7:30 p.m.**

Orange County Sheriff's Department
Emergency Management Division



Newsletter of the County of Orange Radio Amateur Civil Emergency Service

County of Orange RACES *NetControl*

CRO's Nest

by Ken Bourne, W6HK, OCRACES Chief Radio Officer

ChatGPT and Ham Radio

It seems like everyone is talking about ChatGPT. It's even being explored for amateur radio applications, such as designing equipment, antennas, and systems. We should explore whether it can be used for enhancing RACES emergency communications and training.

ChatGPT is an artificial intelligence (AI) chatbot developed by OpenAI, an AI research and deployment company. OpenAI launched ChatGPT on November 30, 2022. It interacts in a conversational way, The dialog format makes it possible for ChatGPT to answer follow-up questions, admit its mistakes, challenge incorrect premises, and reject inappropriate requests. Its answers are derived from huge volumes of information that it gleans from the internet.

I just started experimenting with ChatGPT, and you can also. Go to the OpenAI website at <https://chat.openai.com> and sign up for a free account.

David Kulcinski, WD6AJR, who participates in the OCRACES 60-meter ACS nets on Saturday mornings, posed a question to ChatGPT a few days ago: "What is the overall length of a full-wave loop antenna for the 60 meter band?" ChatGPT responded: "The overall length of a full wave loop antenna for the 60 meter band (5.3 MHz) is approximately 131 feet (40 meters). However, the precise length will depend on the specific design of the antenna, as well as the type of material used and the method of construction. In general, a full wave loop antenna for the 60 meter band will be a large, circu-

lar structure that is made of wire or other conductive material, and is designed to be resonant at the desired frequency. It is important to note that, for Amateur radio service, the FCC rules only allow a maximum of a half-wave loop of wire, which is approximately 66 feet (20 meters) long."

ChatGPT seemed to confuse itself in its response to David. It suddenly shifted from 60 meters to specifying a length of 131 feet, which is a full wavelength on 40 meters. It then said the loop is a circular structure, but it can actually vary to being square, rectangular, or odd shape. Then it said that the FCC rules only allow a maximum of a half-wave loop of wire (incorrectly specifying 66 feet for 40 meters, whereas a half wave on 60 meters is almost 88 feet). The FCC does not prohibit a full-wave loop antenna or any other gain antenna. Instead, the Commission specifies a maximum 100 watts effective radiated power (ERP) referenced to a half-wave dipole antenna. If the full-wave loop has a 3-dBd gain, the transmit power output then must be reduced to a maximum of 50 watts. Despite the several technical errors in this response from ChatGPT, the capabilities of this chatbot are impressive, and it will continue to improve.

I posed the following question to ChatGPT: "How well does a 102-foot G5RV antenna work on 60 meters?" ChatGPT responded: "The effectiveness of a 102-foot G5RV antenna on the 60 meter band will depend on a variety of factors, including the specific characteristics of the antenna, the location where it is installed, and the operating conditions at the time. In

Continued on page 2

CRO's Nest *Continued from page 1*

general, a G5RV antenna is not specifically designed for the 60 meter band, and its performance on that band may be limited compared to other antennas specifically optimized for that frequency range. However, it may still be able to pick up and transmit signals on the 60 meter band to some extent."

Generally, that response is correct, but could be more technical in explaining why a G5RV is inferior to a half-wave dipole in some ways (such as non-resonance) and perhaps slightly superior because of its greater length and subsequent capture area for receiving signals.

I posed another question: "What is the difference between RACES and ARES"? I was somewhat impressed with the response:

"RACES (Radio Amateur Civil Emergency Service) and ARES (Amateur Radio Emergency Service) are two different organizations that use amateur radio to provide emergency communications.

"RACES is a civilian emergency service that is activated by government officials during times of emergency or disaster. It is typically activated by state or local government officials, such as the mayor or governor, and is organized and controlled by government agencies. RACES is only activated during actual emergency or disaster.

"ARES, on the other hand, is a volunteer organization that provides emergency communications to served agencies and organizations, such as the American Red Cross, during times of emergency or disaster. ARES is organized and controlled by the American Radio Relay League (ARRL) and is activated by the local ARES Emergency Coordinator (EC). ARES is activated more frequently than RACES, such as during drills, simulated emergency tests and actual emergency or disaster.

"In summary, RACES is a government-run organization that is activated during actual emergencies, while ARES is a volunteer organization that provides emergency communications to served agencies and organizations during emergencies, drills, simulated emergency tests and actual emergency or disaster."

OpenAI admits that ChatGPT may occasionally generate incorrect or misleading information. You can get into a dialog with it and it will follow a conversation. You can ask it countless questions. You can ask it to write a poem, and then ask it to reword it in order to make it more exciting. You can ask it to write a computer program or code to accomplish various tasks.

Many radio amateurs are writing code for their Raspberry Pi, Arduino, and ESP32 devices, to control their station accessories. ChatGPT can write C++, Python, and Bash code. At a push it can write G-Code for 3D printers. Typical interaction with ChatGPT is with a browser, but a special Python library will connect a Raspberry Pi to ChatGPT

and provide a tool to answer questions.

Generating code for an Arduino is easy. With your browser, go to <https://chat.openai.com> and start a new conversation. Type a command, such as "Write code to flash the onboard LED on an Arduino Uno once per second." Press "Enter" and you will immediately receive the code, which you can copy to your clipboard ("Copy Code") and paste it into the Arduino IDE.

ChatGPT is based on OpenAI's Generative Pre-trained Transformer 3 (GPT-3) and GPT-3.5 update, an autoregressive language model that uses deep learning to produce human-like text. Given an initial text as prompt, it will produce text that continues the prompt. Large language AI models, such as GPT-3.5, are trained to create text based on what they have seen, and they can be trained automatically, typically with huge quantities of computer power over a period of weeks, according to CNET. For example, the training process can find a random paragraph of text, delete a few words, ask the AI to fill in the blanks, compare the result to the original, and then reward the AI system for coming as close as possible. Repeating over and over can lead to a sophisticated ability to generate text.

Microsoft is investing in OpenAI and its ChatGPT, and reportedly is planning to launch a version of Bing that uses ChatGPT to answer search queries. It hopes to make Bing more competitive with Google. By using the technology behind ChatGPT, Bing could provide more humanlike answers to questions instead of just links to information. Using ChatGPT-like functionality could help Bing rival Google's Knowledge Graph, a knowledge base that Google uses to serve up instant answers that are regularly updated from crawling the web and user feedback.

RACES units and the emergency management agencies they serve could find ChatGPT to be useful in creating or modifying training materials, such as PowerPoint copy, safety briefings, radio operating procedures, and other time-consuming tasks that require content creation. Because ChatGPT regurgitates information scoured from the internet, any generated content should be checked for accuracy. However, the format and conversational tone can help provide a basis and reduce the time needed to create training materials.

ChatGPT will be the topic of discussion during the next OCRACES meeting, which will be online on Zoom, on Monday, February 6, 2023, at 7:30 p.m. All OCRACES and other OCS D PSRs, as well as members of city RACES and EmComm units, are invited to participate in this meeting. You are encouraged to try ChatGPT before the meeting (go to <https://chat.openai.com>) so you can share your experiences and opinions. What major changes do you predict for amateur radio, RACES, and your own radio operating capabilities, as a result of ChatGPT and other AI systems? ★

Next OCRACES Meeting: February 6 on Zoom

The next OCRACES meeting will be online on Zoom on Monday, February 6, 2023, at 7:30 p.m. During this meeting will be a discussion about ChatGPT and how this artificial intelligence (AI) chatbot might be useful in amateur radio and RACES and in emergency response applications

and training.

All county and city RACES and EmComm members may participate in this meeting. A Zoom ID and password will be sent to members of the ocsd-races.groups.io mailing list. PSRs must register on the Reserve Tracker Calendar. ★

Paradan and INRAD Antenna Disconnectors

On January 21, 2023, Ham Radio Outlet tweeted a “coming soon” announcement about the Paradan Radio DAD-1 dual antenna disconnecter, which automatically disconnects two antennas from your radio and grounds both antennas. Paradan says the disconnecter prevents static-discharge, surges, and lightning-strike effects from damaging your radio and associated equipment. When the transceiver is turned off, the antenna’s signal and ground wires are shorted together and grounded, and both the coax centers and coax shields are disconnected from the radio. When the transceiver is powered on, the disconnecter reconnects both antennas for normal operating. Power for the disconnecter comes from the transceiver’s auxiliary power socket. Or connect it to your power supply that you turn

off when not operating. For those radios without an auxiliary power socket and you leave your power supply on, a separate radio on sensor unit is used to sense if the radio is turned on. Relay operating voltage is 10-18 Vdc. It has four relays with 15-A contacts each, protected for reverse spikes. Power handling is greater than 1.5 kW on each circuit. Active lightning protection is provided by a gas discharge tube on both antenna inputs. For correct operation, the disconnecter requires a good earth-type ground. The unit comes with a ring terminal, four barrel connectors, and a Powerpole pair. Paradan claims the DAD-1 dual antenna disconnecter is excellent for protecting remote stations from lightning surge. HRO has already posted a price of \$199.95 for the DAD-1 on its website.

Also on the HRO website is the INRAD DCA2 dual antenna disconnecter from Vibroplex, at a price of \$189.95. From the photographs and specifications, it appears to be identical to the Paradan DAD-1.

A single-antenna disconnect actuator is also available from HRO, the Paradan ADA-1 (\$119.95) and the INRAD DCA (\$109.95), also called the DCA1 on the Vibroplex website. It functions the same way as the dual antenna disconnecter, except it automatically disconnects only one antenna from your radio and grounds it when your transceiver is turned off.

Another “coming soon” HRO tweet is the Paradan Radio Power Strip-6 40-ampere metered power strip (\$124.95). The horizontal design permits easy fan-out from the six Powerpole outputs. The bright LED accurately displays both the DC voltage and the total cur-



Paradan DAD-1 dual antenna disconnecter.



INRAD DCA2 dual antenna disconnecter.

rent in amperes. The input is fused (40A ATC included) and the strip is RF filtered. The DC current is measured on the negative lead. The chassis is isolated from the negative lead. It includes 7 Powerpole pairs. ★



Paradan Power Strip-6.



Paradan ADA-1 single-antenna disconnect actuator.



INRAD DCA1 single-antenna disconnect actuator.

Winlink in Orange County

by Scott MacGillivray, KM6RTE, KM6RTE@gmail.com

Upcoming Winlink Peer-to-Peer Practice Drill: March 11th

This quarter's countywide Winlink Peer-to-Peer (P2P) drill is scheduled for the morning of Saturday, March 11th. This drill will be similar to the P2P drills that utilized attaching an Express Check-In form to your message.

For more information on the drill, refer to the instructions

to be distributed soon through the OCRACES Groups.io mailing list or contact me at KM6RTE@gmail.com. These countywide Winlink P2P drills are generally held once a quarter (though last quarter's was skipped due to schedule conflict), and next quarter's (Q2) drill is tentatively scheduled for Saturday, June 10th, 2023. Mark your calendar.

★

Weak-Signal DXing on VHF and UHF

RACES members are encouraged to set up home stations and improve signal reliability for emergency communications. Home stations are much more reliable than handheld radios for running RACES nets. Most RACES activity in Orange County is on the 2-meter amateur radio band and some on the 70-centimeter band. A good way to test transmit and receive reliability is to attempt working weak signals and setting personal records for distance. This is commonly done on 146.52 MHz and other simplex frequencies on 2 meters, and 446.0 MHz on 70 centimeters. These are FM frequencies, but more weak-signal activities are found near the bottom of those bands, using SSB and CW modes of operation. If your transceiver can operate on those modes, join the fun! While you're at it, put up a gain antenna, such as a yagi with a rotator, for even more excitement. A 2-meter yagi is not

large and can be mounted on a chimney without attracting the attention of a homeowner's association (hopefully!). A 70-centimeter yagi is three times smaller (for the same number of elements.)! Use low-loss coax, such as LMR-400 or better.

A good time to chase weak signals is during band openings, such as sporadic-E (rare on 70 centimeters) or tropospheric scatter, or during VHF/UHF contests, or on weekly nets devoted to that purpose. One such net is the BOZO net, which is on 144.240 MHz in Southern California. Some years back, 144.200 MHz was designated as the national calling frequency, especially for making short calls to distant stations during band openings. Rag chewing is discouraged on calling frequencies. Several years ago, several local hams got into an extended chat on 144.200 MHz, and an avid weak-signal ham, who was expecting a sporadic-E opening, got

frustrated and burst on the frequency and said, "Why don't you bozos get off the calling frequency?" His rant was not in the typical ham spirit, but the "bozo" reprimand stuck and the "perpetrator," being an avid VHF DXer himself, started the BOZO Net on SSB and CW, with great support from other weak-signal old timers. The goal of the BOZO net is to pass experience and fervor for weak-signal DXing to newcomers to the VHF and higher bands. The old timers know it takes patience and modified ham skills to get the most out of the varying propagation phenomenon. Net members also offer equipment and antenna guidance, as their ranks are full of very experienced and skilled amateurs. Their nets are on Sundays and Wednesdays at 7:00 p.m. on 144.240 MHz. Their activities have expanded to Northern California on 6 meters, 2 meters, 222 MHz, 432 MHz, and 1296 MHz. ★

OC EOC Functional Exercise: May 17th

The Orange County Sheriff's Department Emergency Management Division (EMD) is planning to conduct a functional exercise on Wednesday, May 17, 2023, at the Orange County Emergency Operations Center (EOC) at Loma Ridge. The exercise will simulate a response to a near-shore earthquake in Orange County, generating a major tsunami, followed by a large earthquake off the coast of Alaska, generating another major tsunami. This all-day event is intended to train OC EOC responders and evaluate EOC response plans.

OCRACES members available during this weekday in

May are urged to participate in this exercise. This will be an opportunity to train as OC EOC responders. Before the exercise, members are encouraged to take the courses listed on page 5 of this newsletter, to increase knowledge of EOC response procedures.

OCRACES members at the EOC may be asked to exchange over-the-air simulated earthquake and tsunami messages with city RACES members, especially in coastal cities that could be affected by a tsunami and in inland cities that might need to receive evacuees from the coastal cities. ★

OC Offers EOC Training Opportunities

The OCSD Emergency Management Division (EMD) has developed training courses to prepare Orange County's Disaster Service Workers, who may be called upon to participate in exercises for preparedness or activation of the County's Emergency Operations Center (EOC) in the event of a disaster. PSRs, including OCRACES members, may take some of these courses. OCRACES members are also required to pass the following FEMA courses:

- IS-100: Introduction to the Incident Command System, ICS-100
- IS-200: Basic Incident Command System for Initial Response, ICS-200
- IS-700: An Introduction to the National Incident Management System (NIMS)
- IS-800: National Response Framework, An Introduction

These courses may be found at <https://training.fema.gov/is/crslist.aspx?lang=en>. The IS-100 and IS-700 courses are prerequisites for the **OC EOC Overview/Basics** EOC Training category. Three other prerequisites for this category include:

- IS-2200: Basic Emergency Operations Center Functions, which introduces the role, design, and function of the EOC and the supportive relationship as a NIMS Command and Coordination component of the Multiagency Coordination System. This course is not required for OCRACES membership, but is highly recommended for all members to take.
- G606: Standardized Emergency Management Systems (SEMS). This course is currently not available but is occasionally offered on the <https://csti-ca.csod.com> website. Several OCRACES members have already received SEMS training.
- WebEOC (see description below, as an EMD-offered training course).

The category of **OC EOC Overview/Basics** provides an orientation and overview of OC EOC operations. It describes and explains how operations are conducted, explains the OC EOC responder role, work process, and how they support response efforts during an activation, explains the workflow in the OC EOC, and introduces the tools and resources used as well as products produced. Under this category, EMD is offering two courses:

- **EOC Exercise Orientation** (virtual via Zoom). Date: Wednesday, April 5, 2023 (10:00 a.m. to 12:00 p.m.).
- **OC EOC Orientation & Operations** (at the OC EOC). Date: Tuesday, April 25, 2023 (10:00 a.m. to 12:00 p.m.).

The **OC EOC Hotline** course (at the OC EOC) describes and explains the functions and responsibilities of Hotline and Rumor Control, explains the position within the OC EOC and how it's used during an activation, and introduces the tools and resources used as well as products produced by Hotline and Rumor Control. Prerequisites include IS-100, IS-700, and G606. Dates: Thursday, March 16, 2023 (10:00 a.m. to 12:00 p.m.); Wednesday, June 14, 2023 (10:00 a.m. to 12:00 p.m.).

The **WebEOC Training** course (at the OC EOC) is an introduction to the WebEOC Incident Management System used in EOCs. The class is a hands-on tutorial including login procedures, Activity Logs, and the Jurisdictional Information Management System. There are no prerequisites. Dates: Thursday, February 23, 2023 (1:30 p.m. to 3:30 p.m.); Tuesday, March 7, 2023 (9:30 a.m. to 11:30 a.m.); Wednesday, April 12, 2023 (2:00 p.m. to 4:00 p.m.); Tuesday, May 9, 2023 (1:30 p.m. to 3:30 p.m.); Thursday, June 29, 2023 (10:00 a.m. to 12:00 p.m.).

To register for these courses, please send an email to the Orange County Sheriff's Department, Emergency Management Division (OAdmin@ocsheriff.gov), with the subject line: Attn: EOC Training - Class Registration, and with the following information in the body:

- Last Name, First Name
- Affiliated Agency, Department, City, Organization, Special District (such as "Orange County Sheriff's Department, Emergency Management Division, OCRACES")
- Email address
- Phone number
- Course Name
- Yes, I have completed all course prerequisites (if applicable)
- Course Date and Time

A confirmation of registration and directions to the EOC will be sent to the email address provided. If you have not received a confirmation within one week of the course, please contact the Emergency Management Division at (714) 628-7054. ★

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

[Anaheim RACES](#)

The Anaheim RACES City Coordinator is Alexandra Solano, Anaheim Fire & Rescue. Meetings are now the third Wednesday of each month at 6:00 p.m. at the Anaheim Downtown Community Center.

[City of Orange Amateur Radio \(COAR\) RACES](#)

Scott MacGillivray, KM6RTE, is now the COAR Chief Radio Officer. He also remains an active member of OCRACES.

[Fountain Valley RACES](#)

The new Fountain Valley RACES website is <https://www.fountainvalley.org/713/RACES>.

[Orange County Amateur Radio Club \(OCARC\)](#)

The next meeting of the Orange County Amateur Radio Club is Friday, February 17, 2023, at 7:00 p.m. This will be a hybrid meeting on Zoom and at the American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, in Santa Ana. This is OCARC's 90th Anniversary. The meeting will feature Mike Stwertnik, KB6JVT, of NCG Company.

[Yuma Hamfest](#)

The 2023 Yuma Hamfest has been canceled due to silent keys, a diminished volunteer pool, increased costs, and other factors. The Yuma Hamfest may return in the future in a simpler format.

[Baker to Las Vegas Challenge Cup Relay](#)

Many years ago, OCRACES members heavily supported not only the Orange County Sheriff's Department in the Baker to Las Vegas Challenge Cup Relay, but also established the entire APRS backbone system for all teams to use for tracking their runners throughout the race, from Baker to Shoshone to Pahrump to Las Vegas. The communications systems along the route have changed and the technology provided by OCRACES is no longer needed. However, some teams still use amateur radio, and an invitation has been extended by the Los Angeles County Disaster Communications Service (LACDCS) through Eric Christensen, K6EJC, to all ham radio operators to volun-

teer to staff some of the 20 checkpoints along the 120-mile course for Baker to Vegas Race day, Saturday/Sunday, April 1-2, 2023. Anyone who is able to work is asked to fill out the application at <https://b2v2023.wufoo.com/forms/volunteer-form/>. Robert Dalley, KF6YGY, and Kelly Howard, W6KLY, are handling ham volunteers.

[General Class Question Pool](#)

The National Conference of Volunteer Examiner Coordinators' (NCVEC) Question Pool Committee (QPC) has released the [2023 - 2027 General Class FCC Element 3 Syllabus and Question Pool](#) to the public. The new General Question Pool is effective July 1, 2023, through June 30, 2027.

The new pool incorporates some significant changes compared to the 2019 - 2023 version. Its 432 questions were modified slightly to improve wording and to replace distractors; 51 new questions were generated, and 73 questions were eliminated. This resulted in a reduction of 22 questions, bringing the total number of questions in the pool down from 454. The level of difficulty of questions is more balanced, and the techniques and practices addressed have been updated.

The pool is available as a Microsoft Word document and PDF. The single graphic required for the new General Question Pool is available within the documents, or separately as PDF and JPG file formats.

"The newly revised pool must be used for General-class license exams starting July 1, 2023," said ARRL VEC Manager Maria Somma, AB1FM, who is a member of the NCVEC Question Pool Committee. "New test designs will be available to [ARRL Volunteer Examiners](#) on that date. The ARRL VEC will supply its officially appointed, field-stocked VE teams with new General exam booklet designs around mid-June."

General class examination candidates preparing for their exams using the 9th edition of [The General Class License Manual](#), and/or the 6th edition of [ARRL's General Q & A](#) are encouraged to test by, or before, June 30, 2023. New editions of ARRL licensing publications will be available in May, for exams taken on, or after, July 1, 2023.

February 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4 Weekly 60 m ACS Net
5	6 Weekly 2 m ACS Net & OCRACES Meeting	7	8	9	10	11 Weekly 60 m ACS Net
12	13 Weekly 2 m ACS Net	14	15	16	17 Orange County Amateur Radio Club Meeting	18 Weekly 60 m ACS Net
19	20 Weekly 2 m ACS Net	21	22 Orientation for PSR Applicants	23 WebEOC Training	24	25 Weekly 60 m ACS Net
26	27 ACS Nets on 4 Bands	28				

Upcoming Events:

- **February 6, 1930 hours:** OC-RACES monthly meeting on Zoom
- **February 17, 1900 hours:** Orange County Amateur Radio Club meeting, on Zoom and at the American Red Cross in Santa Ana
- **February 22, 1830 hours:** Orientation for PSR applicants, Sheriff's Regional Training Academy, Tustin
- **February 23, 1330-1530 hours:** WebEOC Training, OC EOC, Loma Ridge
- **March 4: 0900 hours:** Pre-screen for PSR applicants, Sheriff's Regional Training Academy, Tustin
- **March 6, 1930 hours:** OCRA-CES monthly meeting on Zoom



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



<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.

OCSD RACES Coordinator

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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 Jack Barth AB6VC Ernest Fierheller KG6LXT

**OCSD
 RACES
 Coordinator** →



Lee Kaser
 KK6VIV



Heide Aguire K3TOG Randy Benicky N6PRL Eric Bowen W6RTR Ray Grimes N8RG Martin La Rocque N6NTH Steve Livingston NJ6R Scott MacGillivray KM6RTE



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