

January 2023



Inside this issue:

CRO's Nest	1
OCRACES Meeting	3
Bluetooth Mic	3
Chi Nguyen	3
Winlink in OC	4
Holiday Dinner	5
RACES News	6
Events Calendar	7
OCRACES Members	8



Newsletter of the County of Orange Radio Amateur Civil Emergency Service

CRO's Nest

by Ken Bourne, W6HK, OCRACES Chief Radio Officer

Nationwide Power Grid is Vulnerable

Recent attacks on power substations in Moore County, North Carolina, and Pierce County, Washington, knocking out power to thousands of customers, are an example of what a coordinated attack could do to the nationwide power infrastructure, with outages lasting for weeks or even months. How can RACES prepare?

On December 5, 2022, Moore County, North Carolina, declared a state of emergency because of power outages continuing after a “deliberate” attack over the December 3-4 weekend in which gunfire damaged two substations. The attack left roughly 45,000 people without power.

Under the state of emergency, a curfew was in place from 9:00 p.m. to 5:00 a.m. each night, and residents of the county were encouraged to conserve fuel. Duke Energy declared the damage was beyond repair in some areas. Large pieces of equipment would have to be replaced. The outage also rendered wastewater pumps in the area out of order, and schools in the county were closed. Traffic lights were also out. Emergency shelters were opened to the public. Residents’ houses were unheated.

Power outages were first reported to police on Saturday, December 3rd, shortly after 7:00 p.m. When utility companies responded to the substations, evidence indicated that intentional vandalism had occurred at multiple sites. Moore County Sheriff Ronnie Fields said that the damage had been caused by gunfire. He said that the scene was the same at both sites, calling the attacks “targeted” and carried out by a person

or persons who “knew exactly what they were doing.” Department of Homeland Security Secretary Alejandro Mayorkas said the attack “appears to have been deliberate.”

The Charlotte, North Carolina, office of the Federal Bureau of Investigation said it was “investigating the willful damage to power facilities” in the area.

North Carolina Governor Roy Cooper called the attack a criminal act and “This was an intentional attack that caused significant harm to people.”

On Sunday, December 25th, Christmas Day, four power stations in the Tacoma, Washington, area were vandalized, knocking out power to more than 14,000 customers. The first substation, in Spanaway, belonging to Tacoma Public Utilities (TPU), was attacked at 5:30 a.m., leading to outages in the area. A second nearby TPU substation was also vandalized. At a substation belonging to Puget Sound Energy (PSE), the fenced area was broken into in the early morning and the equipment vandalized, similar to the other two substations. Later, on Sunday evening, suspects gained access to the fenced area at a fourth substation operated by PSE and vandalized equipment that caused a fire.

In January 2022, a bulletin from the Department of Homeland Security warned that domestic violent extremists “have developed credible, specific plans to attack electricity infrastructure since at least 2020, identifying the electric grid as a particularly attractive target.”

On the night of April 16, 2013, a mysterious incident south of San Jose, California,

Continued on page 2

**Next
OCRACES
Meeting**

**Online
on Zoom**

**Monday,
January 2, 2023
at 7:30 p.m.**

Orange County Sheriff's Department
Emergency Management Division

CRO's Nest *Continued from page 1*

marked the most serious attack on our power grid in history. For 20 minutes, gunmen methodically fired at high-voltage transformers at the Metcalf Power substation. Security cameras captured bullets hitting the chain-link fence. Jon Wellinghoff, at that time chairman of the Federal Energy Regulatory Commission (FERC), a small government agency with jurisdiction over the U.S. high-voltage transmission system, said they knew what they were doing. They had a specific objective. They wanted to knock out the substation. Wellinghoff flew out to the substation, along with two other individuals who train U.S. special forces to actually attack infrastructure. The commandos discovered the attackers had reconnoitered the site and marked firing positions with piles of rocks. That night they broke into two underground vaults and cut off communications coming from the substation. Wellinghoff said they then went from these vaults, across a road, and over into a pasture area. "There were at least four or five different firing positions. There was no security at all."

They aimed at the narrow cooling fans, causing 17 of 21 large transformers to overheat and stop working. Wellinghoff said, "They hit them 90 times, so they were very accurate. And they were doing this at night, with muzzle flash in their face." Someone outside the plant heard gunfire and called 911. The gunmen disappeared without a trace about a minute before a patrol car arrived. The substation was down for weeks, but PG&E had enough time to reroute power and avoid disaster. If they had succeeded, they "Could've brought down all of Silicon Valley," said Wellinghoff.

CBS News and "60 Minutes" mentioned that there are actually three grids in the U.S.: the eastern, western, and Texas (which has its own). There are 55,000 substations across the country, each housing massive transformers. Should a transformer explode, the system is designed to trigger a localized, grid-preserving blackout. But if several sections of the grid go down at the same time, the shutdowns can cascade like dominoes. That's what set off the great Northeast Blackout in 2003, leaving 45 million Americans without power.

Wellinghoff said, "There's very few number of substations you need to take out, in the eastern United States, to knock out the entire grid." The *Wall Street Journal* found the U.S. could suffer a coast-to-coast blackout if saboteurs knocked out just nine substations.

After the Metcalf attack, FERC pressed the utilities to harden defenses at their most critical substations—erect walls and sensors to prevent similar attacks—there is now a wall around Metcalf. But many substations remain vulnerable targets, like one "60 Minutes" found in southern California that serves 300,000 customers—huge transformers "protected" by a chain-link fence.

Dr. Granger Morgan, a Carnegie Mellon University engineering professor who chaired three National Academy of Sciences reports on the power grid for the U.S. government (including one on terrorism that was classified for five years), said that there are a lot of places that are physically very vulnerable. He said their report on terrorism was because of concerns about the possibility that a terrorist organization could attack the grid. Around the world, terrorists have attacked with bombs, planes, and drones. Russia's cyberattack on Ukraine's grid in 2015 knocked about 60 substations offline, leaving 230,000 people in the dark. The U.S. Secretary of Energy has said Russia could do the same thing here.

Mike Mabee, who runs the "Grid Security Now" website at <https://michaelmabee.info>, points out that the U.S. electric grid is actually 3,000 different companies, both public and private sector. He said, "What we've never had is a national-scale blackout, which is completely possible under some known threats such as the cyber threat, the physical security threat, or even extreme weather. And the U.S. public is completely unprepared to survive without the electric grid for any period of time whatsoever."

One of many alarming articles on Mabee's website mentions that a large Chinese transformer purchased by the Western Area Power Authority (WAPA) from JiangSu HuaPeng Transformer Co. Ltd. (JSHP) was seized by the U.S. government at the Port of Houston in the summer of 2019. The transformer was taken to Sandia National Laboratories. In an interview on July 16, 2021, Latham Saddler, the former director of Intelligence Programs at the National Security Council, confirmed that after the Chinese transformer was taken to the National Lab, "They found hardware that was put into that, that had the ability for somebody in China to switch it off."

Are government agencies prepared to be without power for weeks or months after a terrorist or foreign-nation attack on our power grid is successful? Responsible RACES members keep their vehicles supplied with at least a half tank of gas at all times, and keep their portable radios charged and their duty bags at the ready, and their families supplied with two weeks of water and nonperishable food. But are we prepared to serve or even survive during a power outage that lasts for weeks or months? If attackers shut down the grid, we and millions of others could be left without light, heat, refrigeration, water, phones, and the internet. Cash registers wouldn't work at grocery stores. Gas pumps would not operate at filling stations. What will we do? This will be the subject of discussion at the next OCRACES meeting, which will be online on Zoom on Monday, January 2, 2023, at 7:30 p.m. The meeting ID and password will be sent with this newsletter via the ocsd-races.groups.io email list. ★

Next OCRACES Meeting: January 2 on Zoom

The next OCRACES meeting will be online on Zoom on Monday, January 2, 2023, at 7:30 p.m. At this meeting we will discuss how RACES would respond to a severe regional or nationwide power outage as a result of an attack on the power grid, such as by strategically placed

explosives along the power infrastructure, by cyberattack, or even by an electromagnetic pulse (EMP) attack, resulting in weeks or months without power.

A Zoom ID and password for this meeting will be sent to members of the ocsd-races.groups.io mailing list. ★

AnyTone Bluetooth Mic Used with DMR Mobile

AnyTone is offering the BT-01 Bluetooth microphone (BT Mic) for use with their AT-D578UV series of FM/DMR mobile radios. It includes a 2.2-inch display, keyboard, speaker, and microphone. The 4.25-in × 2.5-in × 1-in compact design offers full control of the radio, without looking at the radio's front panel (which is removable). The BT Mic also comes with a coiled 2-in cable, which can be connected to the radio for direct control. The built-in battery is charged via a type "C" USB connector from a 5-volt supply. A headset connector is on the right side. A memory card may be inserted next to the headset connector. The AnyTone BT-1 is available from Powerwerx (<https://powerwerx.com>), as well as the AT-D578UV III Plus DMR triband radio with GPS, covering 144-148 MHz, 222-225 MHz, and 420-450 MHz. ★



AnyTone AT-D578UV FM/DMR mobile radio.



BT-01 Bluetooth mic for D578UV mobile radio.

Welcome to Chi Nguyen, KE6MVS

Welcome to Chi Nguyen, KE6MVS, who became an OCRACES member on Wednesday, December 14, 2022.

Chi grew up in South Vietnam during the U.S. involvement in the war in Southeast Asia. His family became the Boat People after the war, and arrived in Orange County in 1989.

Chi received his education from Golden West College and Cal State Long Beach, with an Engineering major. After graduating from CSULB, Chi and his friends started a computer service/repair company called AQA Inc., and then joined another computer service company called Cervices. In 1999, Chi began working for Garden Grove Unified School District (GGUSD) as a Computer Network Analyst. His network group maintained a fiber backbone for switches and routers for 70 schools and facilities, spanning from Garden Grove to Westminster, Stanton, Fountain Valley, and Santa Ana. He retired from GGUSD in December 2022.

Chi earned his Technician Class amateur radio license in 1988 and his General Class license in 2015. He likes to use his ham radio skills to serve the community. For example, he and his friends organized a communications team to help maintain the safety and logistics at many fundraising walkathons for Vietnamese refugees, for Katrina hurricane victims at Mile Square Park, and other

community events.

Chi joined Westminster RACES in the summer of 2004, and became Chief Radio Officer from 2011 to 2020, after CRO Al Toll, W6JNU, became a silent key.

Chi's equipment consists of handheld, base, and portable stations on 6 meters, 2 meters, 1.25 meters, 70 centimeters, and Winlink.

Chi likes to encourage others to become ham operators. If family members and coworkers pass the ham test, he will pay their test fee or take them to lunch, whichever works! As a result, eight of his coworkers and ten of his relatives got their ham license, including his wife and children.

Chi helps to maintain emergency communications repeaters and radios at GGUSD. He is also a member of OCHEART and West County CERT.

Chi and Thu, KE6SFF, will celebrate 33 years of marriage next June. His son Andrew, KI6SYJ, lives and works in Garden Grove.

Chi is a Professional Services Responder (PSR) in the Orange County Sheriff's Department. ★



Chi Nguyen, KE6MVS.

Winlink in Orange County

by Scott MacGillivray, KM6RTE, KM6RTE@gmail.com

Survey Results of Winlink Gateways Local to Loma Ridge

Over the last six 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. This is a continuation of the testing that I started back in March 2022. The access tests are 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.

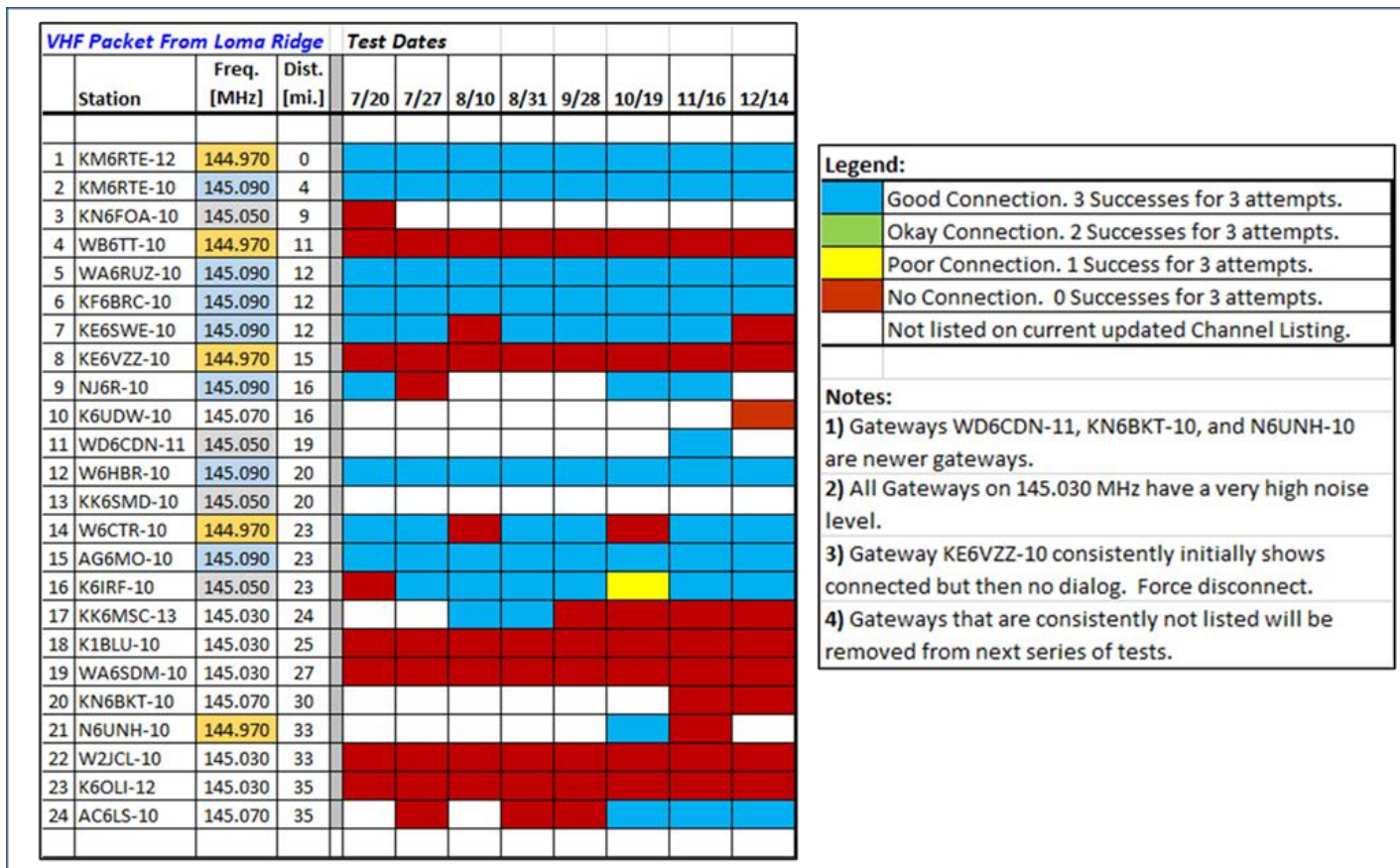


Figure 1. Access test results to local Winlink gateways from Loma Ridge.

The results show that there are five Winlink gateways (KM6RTE-12, KM6RTE-10, WA6RUZ-10, KF6RC-10, and W6HBR-10) consistently available in Orange County and accessible from Loma Ridge. These are the same gateways that were consistently available in the tests done in the first half of 2022.

There are a couple of gateways (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.

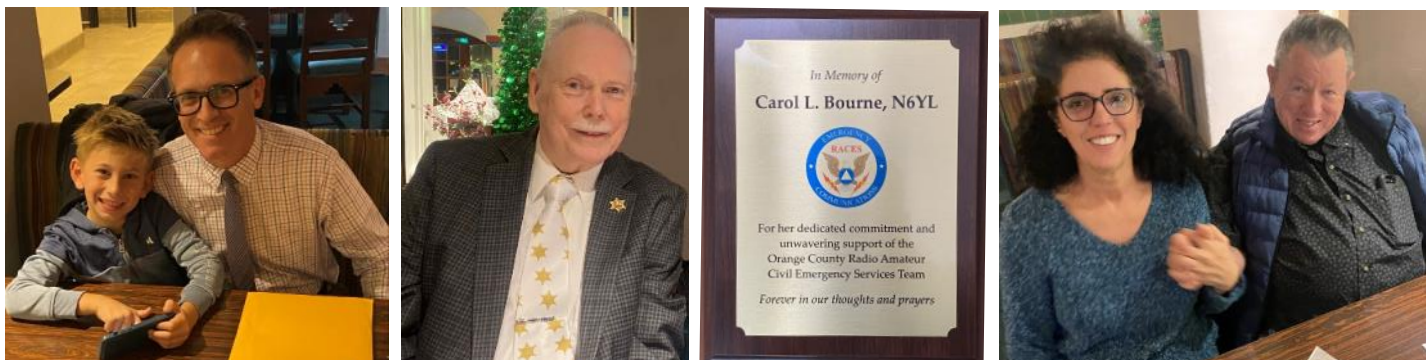
There are several other gateways (i.e., NJ6R-10, K6IRF-10, W6CTR-10, and KK6MSC-10) that are available sometimes, but not consistently. If these gateways were consistently available, Orange County would have a really good start at having reasonable Winlink RMS coverage throughout the county.

In addition, it is strongly recommended that all of the RMS stations in Orange County 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 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 be available during an emergency.

Also, of 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. ★

OCRACES Has Holiday Dinner

OCRACES had its first Holiday Dinner since 2019 (due to COVID), on Monday, December 5, 2022, at Rodrigo's Mexican Grill in Orange. The food was good and enjoyed by 25 guests. OCSD Emergency Management Division Director Lee Kaser, KK6VIV, presented a plaque in memory of Carol Bourne, N6YL, now a silent key, for her decades of supporting OCRACES. ★



Left to right: Waylon and Lee Kaser, KK6VIV; Ken Bourne, W6HK; memorial plaque for Carol Bourne, N6YL; and Lee Anne and Randy Benicky, KI6VUH and N6PRL.



Left to right: Ken Tucker, WF6F, and his wife Vicki; Carol and Ray Grimes, WB6VMH and N8RG; and Fran Needham, KJ6UJS, and his wife Sharon and daughter Mona.



Left to right: Robert Stoffel, KD6DAQ; Scott MacGillivray, KM6RTE; Ernest Fierheller, KG6LXT; Steve Livingston, NJ6R; Heide Aguirre, K3TOG; and Chuck Streitz, KK6HFS.



Left to right: Ron Mosher, K0PGE; Martin and Rod La Rocque, N6NTH and KD6DBP; Walter Kroy, KC6HAM, and his wife Terry; and Pilar and Bill Griffin (who is a PSR studying for his ham radio exam so he can join OCRACES).

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

Seal Beach RACES

Kasandra Bowden, Police Communications Director, West Cities Police Communications Center, is now the City Coordinator of Seal Beach RACES.

Orange County Amateur Radio Club (OCARC)

The next meeting of the Orange County Amateur Radio Club is Friday, January 20, 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. Bob Turner, W6RHK, ARRL Southwestern Division, Orange Section Manager, will speak at the meeting.

Orange County Sheriff's Department Mutual Aid Bureau

The Orange County Sheriff's Department Human Trafficking Detail will provide a classroom lecture to OCSO Professional Services Responders (PSRs) and Explorers on Tuesday, January 24, 2023, at 6:00 to 9:00 p.m., at the Sheriff's Regional Training Academy, 15991 Armstrong Avenue, in Tustin. The lecture will explain what human trafficking is, the ins and outs, and how OCSO combats this crime. RACES PSRs are urged to register for this lecture on the Reserve Tracker Calendar.

The next orientation for PSR applicants will be on Wednesday, January 4, 2023, at 6:30 p.m., at the Sheriff's Regional Training Academy in Tustin. The next prescreen for PSR applicants will be on Saturday, January 7, 2023, at 9:00 a.m., at the Sheriff's Academy. Anyone wishing to become a PSR (which is required to be an OCRACES member) should first fill out the Reserve Interest Form at <https://form.typeform.com/to/feMqPo>.

Henry Radio Amplifiers

Ted Henry, W6YEY, owner of Henry Radio Inc., recently sold his amateur and commercial amplifier line to Bob Burchett, WB6SLC, the owner of NovexComm in Torrance, a manufacturer of radio rack mounts for amateur and government users. (See <https://www.novexcomm.com>.) The website of Burchett's new venture is <https://henryradioamplifiers.com>. Henry Radio stopped making its tube-type amplifiers in 2005, but many of them are still in service. The company's solid-state amplifier line cur-

rently focuses on VHF and UHF products, plus two low-powered HF amplifiers. Burchett told *CQ* magazine that he plans to introduce a solid-state high-power HF amplifier in 2023.

NightFire Electronic Kits

NightFire Electronics LLC (<https://yakits.com>) offers a large variety of electronic kits for amateur radio, audio, Bluetooth, games, LED projects, power supplies, and much more. They also offer Arduino modules, transistors, ICs, resistors, capacitors, LEDs, inductors, and electronic hardware. Bob McFadden, KK6CUS, reports that he built a NightFire QRP (low-power) Pixie CW transceiver kit for 40 meters (7.050 MHz). The price is only \$14.99. The oscillator is crystal-controlled with a little room for tweaking with a silicon diode used as a pseudo varactor diode. The transmitter output is 360 mW into a 50-ohm load, with a 12-Vdc input. The receiver uses the output transistor as a mixer/detector, feeding the received signal into an LM386 audio amplifier, to feed an 8-ohm, 1-W speaker. The keyer is a switch to ground.

Huntington Beach RACES

Rob Thompson, KE6RKG, Silent Key

We are sad to report that Huntington Beach RACES Member Rob Thompson, KE6RKG, passed away on Thursday, December 8, 2022. Rob was a long-time member of HB RACES and served in officer roles for many years. He also participated with Tri-Cities RACES, and checked Dana Point, San Clemente, and San Juan Capistrano into the 2-meter OCRACES nets almost every Monday. Rob also loved the sport of desert racing. He was an integral part of the off-road racing community, serving as their "radio relay" lifeline from mountain tops during their events.



Rob Thompson, KE6RKG.

A memorial service for Rob will be held on Saturday, January 14th, at 2:00 p.m., at Faith Capo, 34381 Calle Portola, in Capistrano Beach. A reception will follow immediately with food and refreshments.

January 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 New Year's Day	2 Weekly 2 m ACS Net & OCRACES Meeting	3	4 Orientation for PSR Applicants	5	6	7 PSR Pre-screen & Weekly 60 m ACS Net
8	9 Week 2 m ACS Net	10	11	12	13	14 Weekly 60 m ACS Net
15	16 Weekly 2 m ACS Net	17	18	19	20 Orange County Amateur Radio Club Meeting	21 Weekly 60 m ACS Net
22	23 ACS Nets on 4 Bands	24 Human Trafficking Lecture for PSRs	25	26	27	28 Weekly 60 m ACS Net
29	30 Weekly 2 m ACS Net	31				

Upcoming Events:

- **January 1: Happy New Year!**
- **January 2, 1930 hours:** OC-RACES monthly meeting on Zoom
- **January 4, 1830 hours:** Orientation for PSR applicants, Sheriff's Regional Training Academy, Tustin
- **January 7: 0900 hours:** Pre-screen for PSR applicants, Sheriff's Regional Training Academy, Tustin
- **January 20, 1900 hours:** Orange County Amateur Radio Club meeting, on Zoom and at the American Red Cross in Santa Ana
- **January 24, 1800-2100 hours:** Lecture for PSRs on Human Trafficking, 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

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

Questions or Comments?
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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



Ron Mosher
K0PGE

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KJ6UJS

Chi Nguyen
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Robert Stoffel
KD6DAQ

Chuck Streitz
KK6HFS

Ken Tucker
WF6F