May 2015



Inside this issue:

Captain's Corner	1
Bob McFadden	2
OCRACES Meeting	3
NWS & Airport Day	3
City/County Meeting	3
Surf Quake 2015	3
Field Day	3
Cooperative T-Hunt	4
City/County Drill	5
RACES/MOU News	6



May 4, 2015 1930 Hours

840 N. Eckhoff Street, Suite 104, Orange

Tom Lawless, CISSP DHS Office of Emergency Communications



Orange County Sheriff's Department Communications & Technology Division



Newsletter of the County of Orange Radio Amateur Civil Emergency Service

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

Switching Power Supplies

Switching power supplies are being blamed for generating noise across the radio spectrum, but are all of them really the culprits that some hams think they are?

First, what is a switching power supply, as compared to an old-fashioned ("RFquiet") transformer-based power supply? As clearly explained by Wikipedia, a switching power supply, technically called a switched-mode power supply (SMPS), is an electronic power supply that incorporates a switching regulator to convert electrical power efficiently. Like a linear (transformer) power supply, an SMPS transfers power from a source to a load, while converting voltage and current to load requirements. Unlike a linear power supply, the SMPS has a pass transistor that continually switches between lowdissipation, full-on and full-off states, with minimal time in the high-dissipation transitions, thus minimizing wasted energy. Voltage regulation is achieved by varying the ratio of on-to-off time. On the other hand, a linear power supply regulates the output voltage by continually dissipating power in the pass transistor. The great advantage of an SMPS is the higher power conversion



Samlex Model SEC-1223 switching power supply provides a regulated output of 13.8 Vdc at 23 A, with an AC input of 120 V, 60 Hz. efficiency. SMPSes are also substantially smaller and lighter than linear supplies, due to the smaller transformer



The MFJ-4275MV switching power supply delivers 75 A maximum and 70 A continuous. Input voltage is 110 Vac or 220 Vac. Load regulation is better than 1%, and ripple voltage is less than 12 mV peak-to-peak. MFJ claims that RF hash is eliminated. Front -panel output voltage is adjustable from 4.0 to 16 Vdc. Front-panel connectors include two pairs of Anderson Powerpoles, one pair of high-current five-way binding posts, a cigarette socket, and two pairs of quick connects. Weight is 10.5 pounds.

size and weight.

Switching regulators replace linear regulators to achieve higher efficiency, smaller size, and lighter weight. However, they are more complicated and their switching currents can cause RF noise if not carefully suppressed. Simple designs (such as wall warts) may have a poor power factor.

As recognized by ARRL Laboratory Manager and EMI Expert Ed Hare, SMPSes are a more common noise source for radio amateurs than electrical power lines. "The old days of those iron transformers are gone," Hare said, when interviewed by Gary Pearce, KN4AQ, at the Raleigh, North Carolina, RARSfest over the *HamRadioNow* webcast. "Every single one of these is a switcher. We're also seeing noise from

Captain's Corner Continued from page 1

pulse-width control motors." Hare said the big culprits are "little wall warts," not switching supplies designed to power amateur radio gear. "Every TV you own has a built -in switcher, almost every device has a wall wart, and a lot of these are imported, not necessarily meeting the FCC rules, so we're seeing more reports involving those," he said.

Several years ago, I purchased a 50-pound Astron Model VS-50M 50-ampere linear power supply to supply 13.8 Vdc throughout my ham shack. I did not buy a lighter SMPS, because I didn't want to deal with RF noise. However, tests are revealing that SMPSes designed for amateur radio use are not so bad after all, thanks to improved filtering and shielding techniques. For example, ARRL ran tests on some MFJ SMPSes a few years ago, and found them to be very clean, as reported in *QST*. Several Astron SMPSes also claim to be clean, with desktop modes ranging from 7 amperes to 30 amperes continuous, with or without volt and amp meters. Samlex America is another popular manufacturer of clean SMPSes, offering many different models with various current ratings and configurations.

I finally broke down and purchased a Powerwerx Model SPS-30DM 25-ampere desktop switching power supply for use with one of my transceivers. I searched across the HF, VHF, and UHF ham bands for RF hash, and found none. It was useful at Field Day last year, for powering my Icom IC-7100 all-band transceiver. In addition to its fixed 14.1 Vdc output, it also provides a variable output of 5 to 16 Vdc, which is handy for electronic experiments, but I



Powerwerx Model SPS-30DM 25 A variable-output SMPS features digital voltage and current meters.

have to be careful not to crank it up higher than my transceiver's voltage rating.

Another Powerwerx 25-ampere switching power supply, the Model SS-30DV, is offered by Elecraft as an option with their transceivers. Its 14.1 Vdc output is not variable (and no metering is provided), which avoids exceeding the transceiver's voltage rating. It provides two frontpanel Powerpole outputs for quick connection to the Elecraft K3, as well as ¹/₄-inch binding posts in the rear.

Disturbingly, I have seen reports of SMPS failure, causing output voltage to be almost three times normal which would surely fry your transceiver! A well-designed power supply should include a crowbar circuit to prevent an overvoltage condition. Such a circuit puts a short circuit or low resistance path across the voltage output, and depends on the supply's current-limiting circuitry or line fuse or circuit breaker. If you buy an SMPS, buy quality!

KK6CUS Named "Employee of the Quarter"

Congratulations to OCRACES Assistant Radio Officer Bob McFadden, KK6CUS, who was named OCSD Communications & Technology Division "Employee of the Quarter" at the monthly Division "Birthday Recognition Meeting" on Wednesday, April 15, 2015. Bob is the first non-paid employee to receive the award, and has exclusive use of the prestigious "Employee of the Quarter" parking space at Eckhoff for three months. The award was given in recognition of the many hours that Bob has devoted to installing HF Winlink at Eckhoff and upgrading and maintaining the HF and UHF Winlink systems at the Orange County EOC, plus other accomplishments.

Division Director Robert Stoffel, KD6DAQ, presented the award to Bob. He also thanked OCRACES Chief Radio Officer Ken Bourne, W6HK, for his work. Also present at the breakfast was OCRACES Radio Officer Harvey Packard, KM6BV, who devotes many hours to the Division as a member and as an OCSD PSR. Robert's presentation coincided with National Volunteer Week (April 12-18, 2015). On April 16th, Robert sent the following e-mail to all OCRACES members: "As many of you know, this is National Volunteer Week. It is both an honor and privilege for me to extend a sincere 'thank you' to each and every member of our RACES program on behalf of the Orange County Sheriff's Department. Each RACES volunteer, in his or her own way, provides communications support to our public safety partnership and I truly appreciate everything you do, both individually



OCSD/Communications Director Robert Stoffel, KD6DAQ (right), presents the Division's "Employee of the Quarter" award to OC-RACES Sgt. Bob McFadden, KK6CUS.

and collectively. I know most everyone who volunteers does so because they want to! Still, in conjunction with National Volunteer Week, I would like to extend my appreciation for your efforts and say thanks for a job well done."

Next OCRACES Meeting: May 4th

The next OCRACES Meeting is on Monday, May 4 2015, at 7:30 PM, at 840 N. Eckhoff Street, Suite 104, in Orange. Our featured speaker will be Tom Lawless, CISSP (Certified Information Systems Security Professional), Office of Emergency Communications, Region IX Coordinator, U.S. Department of Homeland Security. He will discuss what he does at DHS, followed by how he has utilized volunteers as part of a response team. Also at this meeting we will discuss our Field Day plans.

NWS Open House: May 9th in San Diego

The National Weather Service in San Diego will present "2015 WeatherFest and All-Hazards Preparedness Expo on Saturday, May 9, 2015, from 10:00 AM to 2:00 PM, at 11440 W. Bernardino Court. We are invited to join NWS for a day of weather and all-hazards preparedness events and information sharing in remembrance of the May 2014 wildfires. To take the NWS office tour, you must RSVP to Jimmy.Taeger@noaa.gov. Special guests include NASA, CAL FIRE, US Border Patrol, San Diego Fire and Rescue, American Red Cross, Bureau of Land Management, National Park Service, US Navy, San Diego County OES, Cal OES, CERT, Coastal Data Information Program, California Geological Survey, etc.

Airport Day: May 9th at Fullerton Airport

The Fullerton Municipal Airport will host "Airport Day" on Saturday, May 9, 2015, from 10:00 AM to 4:00 PM. OCSD Aero Squadron Reserve Unit, OCFA, Fullerton Police and Fire Departments, Anaheim Police Department, CHP, Fullerton RACES, CAP, and other agencies are just some of the participants. Admission is free.

City/County RACES & MOU Meeting: May 18th

The next City/County RACES & MOU Meeting is on Monday, May 18, 2015, at 7:15 PM, at 840 N. Eckhoff Street, Suite 104, in Orange. At this meeting we will review the May 2nd City/County RACES & MOU Drill, and discuss Field Day plans by all participating agencies.

Surf Quake 2015: May 21st

On Thursday, May 21, 2015, from 8:00 AM to 1:00 PM, the Orange County Operational Area will be conducting "Surf Quake 2015," a countywide earthquake exercise. The Orange County EOC will be activated and the OCSD Communications & Technology Division will fill the Communications Alert and Warning Unit Leader and RACES Support Supervisor positions in the EOC. OCRACES members will participate.

Field Day Preparations Continue

OCRACES will participate in Field Day again this year, on June 27-28, 2015, at Craig Regional Park in Fullerton. We will be located at approximately the same spot in the park as last year, and we have also been given the use of a picnic shelter. Our Field Day Coordinating Team consists of Kenan Reilly, KR6J, Sgt. Bob McFadden, KK6CUS, and Sgt. Jack Barth, AB6VC. We plan to run as a 2A entry, for ease of setup and teardown. This category allows a "free VHF station," which operates on any band or combination of bands above 50 MHz (VHF/UHF) without changing its basic entry classification. It does not qualify for a 100-point bonus as an additional transmitter. All contacts count for QSO credit. It is operated using the primary call sign and exchange of the main Field Day group and is separate and distinct from the GOTA station. Work has been done on the RACES van to make it ready for Field Day. A Gen Turi exhaust pipe extension will be installed to route generator exhaust fumes away from the van. A 40-meter add-on kit has been procured for installing on the Cushcraft A3 tri-band beam, which will go onto the Will-Burt mast.

KC6NVX Hides (with Dinner) in Garden Grove

OCRACES Applicant Dennis Brunning, KC6NVX, was the fox on the cooperative T-hunt held on Monday, April 13, 2015. Collaborating with OCSD Emergency Communications Manager Delia Kraft, KR6AFT, he hid on the patio of Oggi's Pizza & Brewing Company in Garden Grove. Hiding with Dennis was Matt Curtis, KC6NVN. A few days before the hunt, Delia invited all OCRACES members to gather at the restaurant that evening, in celebration of National Volunteer Week. Those who RSVP'd and indicated that they were not hunting were given the name and location of the restaurant. They included Randy Benicky, N6PRL, and his wife Lee Anne, KI6VUH, Ray Grimes, N8RG, and Ken Tucker, WF6F. Although he knew the location, Ken Tucker tested his Thunting equipment during the hunt.

The first to find the fox was OCRACES Sgt. Bob McFadden, KK6CUS. Next was Ron Allerdice,

WA6CYY, from Costa Mesa. The MESAC team came in next, consisting of Assistant Radio Officer Patrick Williams, KJ6PFW, accompanied by Terri Fuqua, KJ6QOC, and Eric Bowen, W6RTR. The fourth hunter to arrive was OCRACES Capt. Ken Bourne, W6HK, with Roger Kepner, W6SQQ.

Then the party began, with delicious pizza followed by an incredible cake that Delia brought from Rockwell's Bakery





Ken Bourne, W6HK, fakes a smile after he was given what appeared to be a Cobra CB radio.

ed by an incredible cake that Delia brought from Rockwell's Bakery in Villa Park. Everyone participated in a drawing and received a nice gift as a "thank you" for volunteering their emergency communications skills. Bob McFadden was recognized for contributing

much of his time in setting up an HF Winlink station at Eckhoff. The drawing was "rigged" for Ken Bourne, who received an HRO gift certificate with a bag of candy that were stuffed in a Cobra CB box. Delia convinced Ken that OCSD was presenting him with a CB radio (knowing that Ken is angry with the FCC for creating CB in the first place). Ken was greatly relieved it wasn't really a CB radio, and appreciated the gift that Delia presented in recognition of his service as OCRACES Chief Radio Officer.



This delicious Rockwell's cake was provided by Delia Kraft, KR6AFT, to celebrate National Volunteer Week.

The next cooperative T-hunt will be held on Monday, May 11, 2015, immediately fol-

lowing the OCRACES net on the 146.895 MHz repeater. The fox will begin transmitting at approximately 7:20 PM on the input of the repeater (146.295 MHz). Hunters will compare bearings via the 449.100 MHz repeater, and are encouraged to beacon their positions via APRS throughout the hunt. The fox will hide on paved, publicly accessible property in a city or sector of Orange County to be announced before the hunt. No fees will be required to drive directly to the fox.

David Corsiglia, WA6TWF, has offered to be the fox on the June 8th Thunt, and will transmit on the input of the 449.100 MHz repeater while we compare bearings via the 2-meter repeater. We urge all hunters to get prepared for UHF hunting.

The cooperative T-hunts provide excellent practice in working together to find the source of interference. The hunts are not official RACES events, so DSW (Disaster Service Worker) coverage does not apply. Please drive carefully!



Some of those gathered at Oggi's after the hunt are (left to right, far side) Dennis Brunning, KC6NVX (the fox), Ken Bourne, W6HK, Ray Grimes, N8RG, Lee Anne Benicky, KI6VUH, Randy Benicky, N6PRL, and (left to right, near side) Matt Curtis, KC6NVN, Ken Tucker, WF6F, Delia Kraft, KR6AFT, Bob McFadden, KK6CUS, and Ron Allerdice, WA6CYY.

City/County RACES & MOU Drill: May 2, 2015

The next City/County RACES & MOU Drill will be held on Saturday, May 2, 2015, from 9:00 AM until 11:00 AM. OCRACES members are asked to arrive in uniform at the Orange County EOC RACES Room by 8:30 AM for orientation. As with the last drill, simplex will be used as a mode of communications, rather than as part of its own exercise. Another area of focus should be the routing of messages. During a real disaster, the County EOC may become the primary point of contact for city requests and information. This should be kept in mind as you determine who to send your message to.

OCSD Emergency Communications Manager Delia Kraft, KR6AFT, has issued the plan for this drill. Generally, the purpose of countywide exercises is to stress the emergency amateur radio communications network, discovering the best and worst of amateur emergency radio traffic protocols, communications equipment linkage, message corruption, and exchange rates, while providing each city RACES unit a platform to work with other organizations such as the Hospital Disaster Support Communications System (HDSCS). The purpose of the exercise is to expose strengths and weaknesses that enable informed decision making in the future among the various volunteer emergency communications organizations, strengthening the handling of an actual emergency. The exercise is a scenario-driven protocol providing context for message exchanges among cities while setting minimum standards for the quantity of messages received and transmitted.

The disaster scenario for the May 2nd exercise will be a 7.2 magnitude earthquake that occurred along the Newport Inglewood Fault, centered in San Diego and rupturing north towards Orange and Los Angeles Counties. The Orange County coastal and near-coastal cities will have felt strong to severe shaking while the rest of the county experienced moderately strong shaking for a period of two minutes. Immediately after the shaking stopped, existing emergency response measures would be implemented. The National Tsunami Warning Center in Palmer, Alaska, would quickly issue a tsunami warning to Orange County. However, the water levels would quickly subside without causing damage to the coastal areas. There would currently be no tsunami threat to the California coastline. The earthquake would have rendered many landline phone systems unusable, and the cell-phone towers that remained standing would continue to be overloaded with a substantially large call volume. Due to the ground motion and resulting liquefaction, there would be widespread damage to buildings and infrastructure. It would be estimated that 20,000 persons would have been displaced due to damaged homes and fires. There would be reports of hundreds of fires actively burning in several Operational Area jurisdictions. There would be numerous hazardous material issues. Gas pipelines would have been ruptured throughout Orange County, and services suspended. Numerous bridges and highways would have been significantly damaged. Debris caused from the earthquake would be blocking major highways and roadways throughout Orange County.

Each city shall construct messages (a minimum of eight), then transmit to a predetermined set of other cities while exchanging message traffic with OCRACES and HDSCS.

The test event shall exercise the Orange County amateur emergency communications system and determine the quality of its performance set against a disaster event. The focus of the exercise is to determine:

- Quality and quantity of radio message exchanges
- The digital capability of the system through radio-aided e-mail or Winlink message exchange

City RACES teams shall generate outgoing messages (maybe an e-mail message and one Winlink message) using repeaters and simplex radio between OCRACES and participating cities.

The city RACES and OCRACES radio frequencies listed in the 2015 "Yellow Book" shall be used for this test event, unless changed by OCRACES or a city RACES coordinator.

Outgoing messages from each city shall follow the ICS 213 protocol. The message may have a specific recipient or may be a broadcast message. The expectation for messages sent to a specific entity is that a reply is required. The broadcast message does not expect a reply.

Incoming messages shall be recorded in order of reception and shall be verified with positive message protocol, such as a message read back with positive acknowledgement.

The drill will consist of general message handling on primary frequencies as published in the *January 2015 Official RACES Guidebook* and in the "Communications Plan" as shown in the ACS Exercise Plan. Frequencies for the "Simplex Communications Plan" are also in the *January 2015 Official RACES Guidebook* and in the ACS Exercise Plan. Those who are participating in the use of HF communications will meet on 7250 kHz to test 40-meter NVIS propagation throughout the county, in the event of repeater failure during an extended power outage. Agencies participating in Winlink should use their tactical Winlink addresses only (such as CAORCO for OCRACES). Each participating organization should request a Winlink e-mail to be sent to them. Do not send messages to "all" or "reply all."

RACES/MOU News from Around the County

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

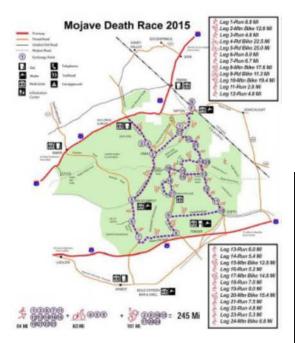
Please send your news to NetControl Editor Ken Bourne, W6HK, at:

w6hk@ ocraces.org

Fountain Valley RACES

Fountain Valley RACES Chief Radio Officer Dick Bruno, N6ISY, is looking for additional volunteers to support the Mojave Death Race on May 30-31, 2015. This race was originally started by the Orange County Marshall's Department, as their answer to the Baker to Las Vegas Challenge Cup Relay. It ran from 1997 to 2005. California Amateur Radio Emergency Services (CARES) provides ham communications support, which it has done since its inception.

The Mojave Death Race is much more challenging than B2V because it involves road cycling and mountain biking as well. The race faded after the first Gulf War broke out, due to a great number of First Responder Teams being called up for duty. The race was resurrected in 2013 by a couple who were on one of the teams that participated in past years.



Teams of 12, 8, or 6 compete in 24 legs, each leg being designated as a running, roadcycling, or mountain-biking leg. The course starts and ends in Nipton, California, and runs in a counter-clockwise direction within the Mojave National Preserve. The race is run consecutively until all the legs are finished, usually 18-25 hours. In addition to the ham radio network, they utilize a SPOT GPS device on the team "baton" that is passed from athlete to athlete. The SPOT activity is monitored by an outside company called Trackleaders. Key race personnel, net control, and medical crews have satellite phones as well. This year, 20 teams are competing in the race, six more than in the 2014 race. Race communications will be on 70 centimeters, utilizing several linked repeaters in California and Arizona, thanks to the Cactus Intertie System. A portable 70-cm repeater will be tied to the linked repeaters and will be set up at a higher elevation location at Mid-Hills. Cross-banding 2-m/440 MHz will no longer be used. Amateur radio support will be provided in all medical support vehicles between leg 10 and the finish. Additional ham volunteers are needed for course safety, roving the course between exchange points. The first seven legs are on paved roads, and the remaining are primarily grade dirt, requiring high-clearance vehicles. More hams are needed to fill 5-hour net control shifts, and for medical support vehicle ride-along duty. Cell phone coverage in that part of the desert is very spotty; therefore, ham radio operators are the chief form of communications to ensure athlete safety. Dick is the Director of Communications for CARES. To volunteer, contact Dick at 714-315-1637 or e-mail n6isy@arrl.net.

<u>Hospital Disaster Support</u> <u>Communications System (HDSCS)</u>

Fred Wagner, KQ6Q, Silent Key

HDSCS Coordinator April Moell, WA6OPS, shared with profound sadness the death of HDSCS Certified Hospital Communicator Fred Wagner, KQ6Q. Fred joined HDSCS in March 2001 and was one of their first Certified Hospital Communicators. He rarely missed a drill, participated in numerous standby operations, was involved in numerous phone outages, and was a responder in the Placentia Train Crash. April said that Fred was a dedicated volunteer and always eager to help. Besides being an amateur radio operator, he was a musician playing in at least two bands, and volunteered to recognize businesses that hired veterans. Fred himself was a veteran, having served in the U.S. Air Force as a B-52D bomber pilot. Further information about Fred may be found at the Forest Lawn tributes site at http:// forestlawn.tributes.com/show/102348803.

May 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2 City/County RACES & MOU Drill
3	4 OCRACES Meeting & Weekly 2 m ACS Net	5	6	7	8	9 Airport Day & NWS Open House
10	11 Weekly 2 m ACS Net & Cooperative T- Hunt	12	13	14 Messenger and Hotline Training	15	16 Weekly 40 m ACS Net
17	18 City/County RACES Meet- ing & Weekly 2 m ACS Net	19 Situation Analysis Sup- port Staff and Documentation	20	21 "Surf Quake 2015" Earth- quake Exercise	22	23 Weekly 40 m ACS Net
24	25 All-Band ACS Nets & SWACS Radio Test	26	27 EOC Opera- tions Section Training	28	29	30 Weekly 40 m ACS Net
31						

Upcoming Events:

- May 2: City/County RACES & MOU Drill, 0900-1100
- May 4: OCRACES Meeting, 840 N. Eckhoff Street, Suite 104, Orange, 1930

• May 9: Airport Day, Fullerton Airport, 1000-1600; NWS Open House, San Diego, 1000-1400

- May 11: Cooperative T-Hunt, 1920
- May 14: Messenger and Hotline Training, OC EOC, 1000-1200
- May 18: City/County RACES & MOU Meeting, 840 N. Eckhoff Street, Suite 104, Orange, 1915
- May 19: Situation Analysis Support Staff (SASS) and Documentation, OC EOC, 1330-1530
- May 21: "Surf Quake 2015" Earthquake Exercise, OC EOC, 0800-1300
- May 25: Southwest ACS Frequency/ Radio Test, OC EOC, 2015
- May 27: EOC Operations Section Training, OC EOC, 1000-1200

County of Orange RACES Frequencies

40 m: 7250 kHz SSB (City/County/MOU Net—Saturdays, 1000 hours) 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: 147.480 MHz simplex 1.25 m: 223.760 MHz output, 222.160 MHz input, 110.9 Hz PL 70 cm: 446.000 MHz output, 222.160 MHz input, 110.9 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) 23 cm: 1287.650 MHz, 1287.675 MHz, 1287.700 MHz, 1287.725 MHz, 1287.750 MHz, and 1287.775 MHz outputs, -12 MHz inputs, 88.5 Hz PL

*Primary Net—Mondays, 1900 hours

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Radio Officers (Lieutenants) Scott Byington, KC6MMF Harvey Packard, KM6BV <u>Chief Radio Officer (Captain)</u> Ken Bourne, W6HK 714-997-0073

Assistant Radio Officers (Sergeants) Jack Barth, AB6VC Ernest Fierheller, KG6LXT Bob McFadden, KK6CUS Tom Tracey, KC6FIC

County of Orange RACES

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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

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Questions or Comments? Contact NetControl Editor Ken Bourne, W6HK w6hk@ocraces.org



"W6ACS ... Serving **Orange County**"

Meet your County of Orange RACES Members!





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Ken Bourne Delia Kraft W6HK



Scott Byington



Jack Barth AB6VC



Ernest Fierheller KG6LXT



Tom Tracey KC6FIC



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Bill Borg KG6PEX

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