



Newsletter of the County of Orange Radio Amateur Civil Emergency Service

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Captain's Corner

by RACES Captain Ken Bourne, W6HK, Chief Radio Officer

CONELRAD

In this article I'm going to share some interesting 1950s history with you, with a discussion about CONELRAD (*Control of Electromagnetic Radiation*), a method of emergency broadcasting to the U.S. public in the event of enemy attack during the Cold War. CONELRAD was established by U.S. President Harry S. Truman in 1951. Rules for compliance by radio amateurs were instituted on January 2, 1957, just over a month after I became a ham, and required compliance by radio amateurs. Naturally, because I was a young member of DuPage County (Illinois) RACES in the Civil Defense section of the DuPage County Sheriff's Office, I was eager to comply.

Preparing for a possible nuclear attack from the Soviet Union was a major issue in those days. Our new Civil Defense Center was being constructed in a large underground nuclear-proof facility with a motor-driven horizontal sliding thick-steel door over the stairs leading to the EOC below. A motorized antenna tower in an adjacent field could descend below as well. RACES members were offered radiological measurement training and the use of Geiger counters.

As part of that period's "paranoia" about nuclear attacks, CONELRAD came into being. I recalled the CONELRAD days during a recent discussion with Tony Scalpi, N2VAJ, about his restoration of a 1950s AM broadcast radio with CONELRAD triangles on the frequency dial.

AM radios built between 1951 and 1963 had markers on the frequency dial to indicate the two frequencies that were designated for CONELRAD stations—at 640 kHz and 1240 kHz. That was back in the days before

"kHz," so the AM dials had highly abbreviated kilocycle-per-second numbers such as 5, 6, 7, 9, 11, 14, and 16, with little triangles between the 6 and 7 and between the 11 and 14 where the CONELRAD stations were supposed to be.



At the initiation of an alert, a broadcast station had to follow this procedure:

- Cut the carrier for approximately 5 seconds.
- Return carrier to the air for approximately 5 seconds.
- Cut the carrier for approximately 5 seconds.
- Return carrier to the air.
- Broadcast an approximately 1,000 Hz tone for 15 seconds.
- Make announcement of CONELRAD radio alert.
- Repeat announcement of alert.
- Remove carrier from the air or change frequency to 640 kHz or 1240 kHz (called kc/s in those days).

Effective January 2, 1957, the U.S. government required that any operator of a radio transmitter must have some means of determining when a CONELRAD alert is in progress and to cease transmitting immediately.

Operators of radio transmitters, such as radio amateurs, needed and wanted to comply, to preclude the possibility of a guided missile homing in on their station's signal. To comply, a radio amateur simply needed to monitor a broadcast station while transmit-

Continued on page 2

Next OCRACES Meeting

**Monday,
September 9, 2019,
at 1930 Hours**

**840 N. Eckhoff
Street, Suite 104,
Orange**

**Severe Fire Weather
Patrol Training by
Kevin McArthur,
KK6JSG, OCSD/EMD**



Captain's Corner *Continued from page 1*

ting. In my ham shack, I wired a small Army surplus dual-lamp display to the speaker output of an AM broadcast radio. If the lights were blinking, I could transmit. Unfortunately, many hams forgot to monitor the broadcast audio or to watch the blinking lights.

I really should have bought a Heathkit Model CA-1 CONELRAD Alarm, which would have prevented transmitter operation unless the CA-1 was turned on and monitoring a broadcast station for an alert. Its built-in relay would also shut down the transmitter in the event of an alert. The CA-1 connected to the automatic volume control lead in an AC/DC AM radio. AVC voltage was found at the dual diode detector circuit. When the CA-1 detected a change in AVC voltage (caused by the AM station going off the air), it would automatically disable the ham transmitter.



Heathkit CA-1 CONELRAD monitor.

Other CONELRAD monitors were marketed in the 1950s, such as the AMECO Model CD-1. It was not a kit, but was wired and tested. It converted any AM broadcast receiver having AVC into an alarm system with a loud tone. It was not designed to disable a transmitter during an alarm. It also functioned as a code-practice oscillator!

The Miratel Air Alert tuned from 550 to 1600 kHz. Its built-in speaker operated upon alarm. It had a relay circuit to control an external bell or light, or to disable a transmitter. Miratel's Air Alert II CONELRAD receiver was a complete AM broadcast receiver with self-contained alarm for silent and audible monitoring, but without a relay for disabling a transmitter.



Miratel Air Alert CONELRAD receiver.

The RCA Type CR-17B CONELRAD Receiver had two tuning sections—tunable to the entire broadcast band and preset to a CONELRAD frequency. It provided silent or audible monitoring, with automatic visual indicator on loss of carrier or presence of CONELRAD carrier. It had provisions for an external alarm, which could probably be used to disable a transmitter as well.



RCA CR-17B CONELRAD Receiver.

The Kaar Engineering Conalert II was a CONELRAD monitor with five switch-selected broadcast band "channels" (tunable AM frequencies). Two of those frequencies were fixed at 640 and 1240 kHz. It provided silent or audible monitoring. It energized a 6.3 VAC external alarm circuit and closed switch contacts for disabling a transmitter.



Kaar Conalert II.

The Motorola Model DS 9661 CONELRAD monitor depended upon both the carrier break and the 1000 Hz tone to prevent a false indication by a normal station shutdown. It included up to five crystal-controlled channels, including the two CONELRAD frequencies, plus a sixth tunable channel. Contacts were provided for an external alerting device, which could be used for disabling an amateur or land-mobile transmitter.



Motorola DS 9661 CONELRAD monitor.

Update Your iPhone to Avoid Hacking

Many OCRACES and city RACES members use Apple iPhones, which recently became vulnerable to cyberattacks through operating system (iOS) version 12.4. OCSD Support Services Division issued a notice that on August 27, 2019, Apple announced that multiple vulnerabilities were discovered in iOS 12.4 (and some older versions) that could be exploited by hackers. Apple has provided updates to mitigate this risk. To update your device:

- Verify which iOS version your device is running by going to Settings > General > About.
- If you are not running the most current version of iOS (12.4.1), go to Settings > General > Software Update.
- Download and install the latest version of iOS (12.4.1); you will need to be connected to Wi-Fi in order to download and install the update.

OCSD reminds us not to download, accept, or execute files from untrusted or unknown sources. Do not visit untrusted websites or follow links provided by unknown or untrusted sources. Be careful with links even from trusted friends. They might be from a spoofed address that you *think* is from your friend, or your friend might be forwarding a bad link that he thought was ok but it had already infected his computer without him realizing it.

Next OCRACES Meeting: Monday, Sept. 9th

The next County of Orange RACES meeting will be on Monday, September 9, 2019, at 7:30 PM, at OCSD Communications & Technology Division, 840 N. Eckhoff Street, Suite 104, in Orange. At this meeting Senior Emergency Management Program Coordinator Kevin McArthur, KK6JSG, OCSD Emergency Management Division, will provide our annual Severe Fire Weather Patrol training.

September is National Preparedness Month!

If an earthquake started rumbling or you noticed smoke in the hills on your commute, what would you do first? Do you know which types of disasters affect Orange County and how to prepare for them? September is National Preparedness Month, and a great time to get prepared for a disaster, and spruce up your emergency kit.

ReadyOC is Orange County's preparedness resource, and AlertOC is Orange County's emergency notification system. AlertOC allows you to register multiple locations to receive alerts for your home, child's school, workplace, and more. If an emergency situation occurs in any of these locations, you will receive a notification, even if you aren't currently there. Signing up for AlertOC takes just a few minutes online at www.AlertOC.org. Your information is completely private. You will be asked to create a username and password so you can log in and manage your information and preferences.

ReadyOC empowers OC residents to better prepare for emergencies. Orange County is prone to many disasters, including earthquakes, wildfires, landslides, pandemic, flooding, terrorism, gas or chemical leaks, and more. Make a Promise to Prepare and download the free ReadyOC app (<http://readyoc.org/resources/phone-apps.html>) to get an emergency checklist you can take to the store with you, and download free resources at ReadyOC.org. Being prepared can reduce the fear, anxiety, and losses that come with disasters. Stay one step ahead of emergencies by signing up for AlertOC today. We know that the next emergency is coming. We just don't know when or what kind it will be. But we can—and must—prepare now for the next emergency with ReadyOC. Our family, friends, and community depend on it.

KJ6UJS Transfers from OCRACES to COAR

Fran Needham, KJ6UJS, who has been a devoted and valuable County of Orange RACES member since February 2013, has resigned from OCRACES in order to assume important responsibilities with City of Orange Amateur Radio (COAR), the city's RACES unit. One of those responsibilities has been COAR's involvement with the Orange International Street Fair and providing event information to OCRACES members assisting COAR with the Street Fair.

We deeply appreciate the dedication that Fran has given to OCSD and OCRACES. He has participated in most of our exercises and activations and has introduced several good ideas for improving our operations. He continues to serve as a Professional Services Responder (PSR) in the Orange County Sheriff's Department, High-Tech Services Reserve Squad, Investigative Reserve Unit, and continues to work as a PSR on equipment maintenance at OCSD's Communications & Technology Division.



Fran Needham, KJ6UJS.

We give our good wishes to Fran as he serves in COAR and we thank him for his excellent service in OCRACES.

Deployment Drill: October 5, 2019

The next City/County RACES & MOU Drill will be on Saturday, October 5, 2019, from 0900 to 1100 hours. This will be a deployment drill, similar to last year's drill, which proved to be very enjoyable. Unit members will set up portable stations on 60 meters as well as on OCRACES repeaters on 2 meters and 70 centimeters, especially in areas that are questionable for accessing the repeaters, such as deep in canyons or below seaside cliffs. When those poor-coverage areas are located, alternate coverage via 60 meters channel 4 NVIS (near vertical incidence skywave) on 5371.5 kHz upper sideband (dial frequency) will be tested. Simplex relay will also be tested on 2 meters (146.595 MHz) and 70 centimeters (446.000 MHz), with relay stations at high points, such as Loma Ridge, Belmont Park in the Orange hills, Canyon Rim Park in Anaheim Hills, Coastal Peak Park (near Signal Peak) in Newport Beach, etc.

City and County RACES members are encouraged to set up portable 60-meter stations and experiment with various horizontal antennas such as MFJ Hamstick dipoles mounted on tripod masts.

RACES Procedures Following an Earthquake

San Diego County RACES members are now prepared to use the Modified Mercalli intensity scale (MM or Mike-Mike) when reporting earthquake intensity. OCRACES will now do the same, using procedures similar to those originally set by Santa Clara County ARES/RACES, and following intensity descriptions used by USGS and other agencies.

The Modified Mercalli intensity scale is a seismic intensity scale used for measuring the intensity of shaking produced by an earthquake. It measures earthquake intensity at a given location, distinguished from the earthquake’s inherent force or strength as measured by seismic magnitude scales, which require accurate instrumentation.

When an earthquake is felt (no activation, no damage, and no injuries):

- All City and County RACES members should switch to the OCRACES 2-meter repeater
- The first OCRA-CES member on frequency is net control and states and asks other stations to state observed intensity as “Mike-Mike” and their general location

Following an activation and/or after a moderate to major earthquake:

- The first OCRA-CES member on frequency is net control until a Radio Officer or operator at the EOC takes over
- Net control will ask for injury and major -damage reports from MM7 or higher areas, then from MM1 to MM6 areas
- Intensity reports do not take priority; only injury and major-damage reports are acceptable following a moderate to major earthquake
- Inform net control of your status (deployment availability)

Modified Mercalli Earthquake Intensity Scale			
Intensity Mike- Mike	Shaking	Description/Damage	Equivalent Richter Magnitude
I MM1	Not felt	Not felt except by a very few under especially favorable conditions.	1.0 to 2.0
II MM2	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.	2.0 to 3.0
III MM3	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.	3.0 to 4.0
IV MM4	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	4.0
V MM5	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.	4.0 to 5.0
VI MM6	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.	5.0 to 6.0
VII MM7	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.	6.0
VIII MM8	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	6.0 to 7.0
IX MM8	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. Liquefaction.	7.0
X MM8	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.	7.0 to 8.0
XI MM8	Extreme	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	8.0
XII MM8	Extreme	Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.	8.0 or greater

KM6ZPO and KN6AOC Hide in Orange

Mark and Julie Warrick, KM6ZPO and KN6AOC, were the fox on the monthly cooperative T-hunt on Monday, August 19, 2019. They hid the fox box in Plaza Square Park in the middle of the traffic circle in downtown Orange, while sitting on a bench in the park.

Ron Allerdice, WA6CYY, was the first hunter to find the fox. He took his initial bearings from the Orange County Mining Company parking lot at Chapman Avenue and Crawford Canyon Road. Next to arrive was Richard Saunders, K6RBS. Coming in third was the team of Ken Bourne, W6HK, and Don Mikami, N6ELD. Don was equipped with a new Bob Miller BC-



At the fox's den are (left to right) Mark and Julie Warrick, KM6ZPO and KN6AOC (the foxes), Ron Allerdice, WA6CYY, Pete Bergstrom, K6PB, Jim Schultz, AF6N, Tim Goepfinger, N6GP, Ken Bourne, W6HK, Don Mikami, N6ELD, and Peter Gonzalez, KC6TWF. Not pictured is Richard Saunders, K6RBS.

146.565 foldup yagi antenna with a VK3YNG MK4 sniffer. He experimented with the sniffer at the fox's den with some coaching from Ron, WA6CYY, who also uses that sniffer. Fourth place was taken by the team of Peter Gonzalez, KC6TWS, and Pete Bergstrom, K6PB. Arriving in fifth place was the team of Tim Goepfinger, N6GP, and Jim Schultz, AF6N, using a new tape-measure yagi that they built at the August 16th meeting of the Orange County Amateur Radio Club.

The next hunt will be on Monday, September 16, 2019, immediately following the OCRACES 2-meter net (approximately 7:20 PM). The fox will hide on paved, publicly accessible property in a city or sector of Orange County to be announced a few days before the hunt. He will transmit tones on the input (146.295 MHz) of the 146.895 MHz repeater. Hunters will compare bearings via the 448.320 MHz repeater and are encouraged to beacon their positions via APRS while hunting. We are looking for a volunteer to be the fox.

The cooperative T-hunts are usually held on the third Monday of each month (except in October). The hunts are not official RACES events, so DSW (Disaster Service Worker) coverage does not apply. Please drive carefully!

To keep our cooperative T-hunts active, we need to have more participants. RACES members are urged to equip themselves with direction-finding equipment and be ready to find sources of interference to RACES repeaters and to VHF public-safety communications. These hunts provide excellent practice in working together to find such interference—plus they are great fun!

An easy-to-build tape-measure yagi for T-hunting is described at http://theleggios.net/wb2hol/projects/rdf/tape_bm.htm. Several of these were built at the August 16, 2019, meeting of the Orange County Amateur Radio Club. Fox-hunt loops and beams are available from Arrow Antenna and HRO, including the Arrow Model FHL-VHF fox-hunt loop (covers 1 MHz to 600 MHz) and the Arrow Model 146-3 three-element portable hand-held yagi. The Arrow OFHA 4-MHz offset attenuator can be useful when close to the fox, to prevent receiver overload. For on-foot hunting, the BC-146.565 three-element, hand-held, foldup, yagi antenna is available from Bob Miller Enterprises (<http://www.rdfantennas.com>), along with the VK3YNG MK4 sniffer. An all-mode transceiver is quite useful, allowing hunters to switch to the SSB or CW mode for detecting extremely weak signals, or to switch in a built-in attenuator, reduce RF gain, or tune slightly off frequency when dealing with extremely strong signals. Some hunters use the DF2020T radio direction finder kit, which is a Doppler system available from Global TSCM Group, Inc. (<http://www.kn2c.us>). A very similar system is the MFJ-5005 Doppler direction finder. Useful apps are available for iPhones and Android phones. One such app is FoxHunt Pro, available for \$1.99 for iPhones. For some excellent information on T-hunting, see <http://www.homingin.com>.

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 and supportive amateur radio clubs in Orange County.

Please send your news to NetControl Editor Ken Bourne, W6HK, at: kbourne.ocsd@earthlink.net

Costa Mesa RACES (MESAC)

Jason Dempsey is now the Costa Mesa Emergency Services Administrative and is the MESAC advisor.

Huntington Beach RACES

Huntington Beach RACES participated in National Night Out on Tuesday, August 6, 2019. Other city RACES units in Orange County did the same. HBRACES set up an HF/VHF/UHF station to show how ham radio is used in disasters. They used their repeater to demonstrate local communications to the public. They were hoping that OCRACES or other city RACES units would have been on 60 meters channel 4 at a coordinated time to demonstrate the use of HF in a disaster. Perhaps this could be planned for next year's National Night Out.

Laguna Woods RACES

John Pilger, K6PIO, has been appointed Deputy Radio Officer of Laguna Woods RACES. Bruce Bonbright, NH7WG, is the Chief Radio Officer. Jim Riedel, K6EEE, and Don Schwab, K6IAA, remain as the Assistant Radio Officers.

Laguna Woods RACES is preparing for the October 5th City/County RACES & MOU deployment exercise and for the October 17th Great Shake Out.

Orange RACES (COAR)

City of Orange Amateur Radio (COAR), the city's RACES unit, was activated during the Labor Day weekend to assist the Orange Police

Department (OPD) by roaming the Orange International Street Fair. Leading the effort was COAR Chief Radio Officer Will Stoddard, KJ6IA. OCRACES was activated to assist COAR during this event.

Roaming teams, consisting of two COAR members or one COAR member and one OCRACES member, were formed to help with directions, report lost children and items, get first aid if needed, and to be vigilant for activities that required the attention of Law Enforcement. The 5-hour shifts included Friday, August 30th, 5-10 PM; Saturday, 12-5 PM and 5-10 PM, and Sunday, 12-5 PM.

COAR members operated net control on their 2-meter simplex frequency and their 70-centimeter repeater at OPD's mobile command post in the parking lot south of City Hall. They included Bobbie Guice, KG6MIF, Cliff Guice, KG6MIG, Mike Friese, KF6WRM, Fran Needham, KJ6UJS, Arland Miller, W6ACM, and Joe Quick, KE6ZMG. COAR members on Roaming Teams included Quent Cassen, W6RI, Eric Krause, KM6PFG, Arland Miller, W6ACM, Kent Sandie, KF6CIB, Bryan Hyland, K6BRY, Kent Sandie, KF6ICB, Sam James, W6RDS, Scott Macgillivray, KM6RTE, Jeff Mikoleit, KK6YUP, Don Poysa, KØVNI, Mike Friese, KF6WRM, and Hy Finkelstein, KM6KQG. Teaming up with COAR members on roaming teams from OCRACES were Ken Bourne, W6HK, Jack Barth, AB6VC, Randy Benicky, N6PRL, Tom Tracey, KC6FIC, Don Mikami, N6ELD, and Tony Scalpi, N2VAJ.

Buena Park RACES

Buena Park RACES Chief Radio Officer Bill Lovelace, K6MET, who has volunteered with the City's Police Department CAPs (Citizens Assisting Police) and RACES programs for over five years, commends the group of officers and civilians working together for the betterment of the community. Bill said the BPRACES members were recognized on Tuesday, July 9, 2019, by the BP City Council for over 250,000 volunteer hours.



September 2019

Upcoming Events:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2 Labor Day	3	4	5	6	7 Weekly 60 m ACS Net
8	9 Weekly 2 m ACS Net & OCRACES Meeting	10	11	12	13	14 Weekly 60 m ACS Net
15	16 Weekly 2 m ACS Net & Cooperative T-Hunt	17	18	19	20 Orange County Amateur Radio Club Meeting	21 Weekly 60 m ACS Net
22	23 ACS Net on Five Bands & Cal OES Nets	24	25	26	27	28 Weekly 60 m ACS Net
29	30 Weekly 2 m ACS Net					

- **September 2:** Labor Day, no meeting, no net
- **September 9:** OCRACES Meeting, 1930-2130 hours, OCSD Communications & Technology Division, 840 N. Eckhoff Street, Suite 104, Orange
- **September 16:** Cooperative T-Hunt, 1920 hours
- **September 20:** Orange County Amateur Radio Club Meeting, 1900 hours, American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, Santa Ana
- **October 5:** City/County RACES & MOU Drill, 0900-1100 hours
- **October 7:** OCRACES Meeting, 1930-2130 hours, OCSD Communications & Technology Division, 840 N. Eckhoff Street, Suite 104, Orange
- **October 12:** Cal OES Southern Region ACS Leadership Meeting, 1000-1200 hours, Los Angeles County Sheriff's Communications Center
- **October 21:** City/County RACES & MOU Meeting, 1930-2130 hours, OCSD Communications & Technology Division, 840 N. Eckhoff Street, Suite 104, Orange



www.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
 - 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)
 - 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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Lee Kaser, KK6VIV
714-628-7081

Radio Officer (Lieutenant)
Scott Byington, KC6MMF

Chief Radio Officer (Captain)
Ken Bourne, W6HK
714-997-0073

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

County of Orange RACES

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It's Where It's @!

Questions or Comments?
Contact NetControl Editor Ken Bourne, W6HK
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**“W6ACS ...
Serving
Orange County”**

Meet Your County of Orange RACES Members!

Officers →



Ken Bourne
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Scott Byington
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Jack Barth
AB6VC

Ernest Fierheller
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Bob McFadden
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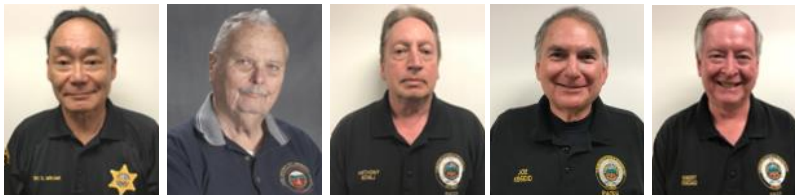
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Harvey Packard
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Tony Scalpi
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KD6DAQ



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Lee Kaser
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