January 2020

Newsletter of the County of Orange Radio Amateur Civil Emergency Service

Inside this issue:

Next OCRACES Meeting:

Monday, January 6, 2019, at 1930 Hours

840 N. Eckhoff Street, Suite 104, Orange

Charlie Bayhi PSR Executive Director on OCSD Professional Services Responder Program

Orange County Sheriff's Department
Communications & Technology Division

Captain's Corner

by RACES Captain Ken Bourne, W6HK, Chief Radio Officer

Diversity Transmissions

I have professional experience in configuring diversity receiving systems, to reduce signal dropouts from path loss or multipath phase cancellations. However, I never considered putting together a diversity *transmitting* system, since I believed it would not be effective or practical. I was surprised a few days ago while listening to Wil Warren, AB9U, in Cottonwood, Arizona, on 80 meters, describing his diversity transmitting system. His signal was significantly stronger than the stations he was communicating with.

Diversity reception requires two or more antennas. *True diversity* uses two receivers with a separate antenna on each receiver. Less-effective *switching diversity* uses one receiver with two antennas. Only one antenna is used at a time with switching diversity. When a signal dropout is detected, the receiver switches to the other antenna, and will switch back and forth whenever dropouts are detected. High-end amateur radio transceivers typically have two identical receiver modules (typically optional) for true diversity reception.

An effective HF diversity receive system uses one horizontal antenna and one vertical antenna. As ionospheric conditions change, the received signal sometimes shifts in polarity, causing a fade on one antenna while the signal approaches a peak on the other antenna. Sometimes these conditions will "average out" to a consistent copiable signal in a diversity system.

AB9U's polarization diversity system uses a vertical and horizontal antenna for both reception and transmission. He uses one exciter, splits the power, and drives two amplifiers, each connected to a separate antenna. Wil advises that the two antennas be separated as far as geographically possible, hopefully at least two wavelengths at the lowest frequency (which is a challenge on a typical Southern California lot!).

You will need a power splitter similar to a Wilkinson Divider. Wil describes his trifilar unun power splitter network on his website at ab9u.com/diversity/main.shtml. (As I write this article, I ran across the Ameritron ASP-200, which splits a radio's output into two paths to drive two amplifiers.) If you don't have any amplifiers, you can simply feed the two antennas from the splitter's output. Wil also describes a prototype hex-filar power splitter fed by one amplifier, splitting into vertical and horizontal antennas. He tested it at 1.5 kW.

In a forum that Wil ran previously, he was challenged by Rege Briney, AI3V, who said, "When you have two or more transmitting antennas, fed with two coherent signals, you do not have a 'diversity' transmission, as there is no redundancy to the signal. What you do have is a simple phased array. Assuming equal power and equal antenna gain, you can realize a maximum of 6 dB compared to a single transmitter and antenna. On an HF skywave path, polarization diversity provides little or no benefit, as linear wave is reflected back to earth as a pair of more or less equal and more or less circular waves. And they vary continuously."

Rege made several other comments that disagreed with Wil's assumptions. Based on my observations of Wil's signal strength and understanding of his theories, I think it's worth experimenting with transmit diversity, perhaps at next June's Field Day, since some real estate is needed for antenna separation.

OCRACES Celebrates Holidays at Rodrigo's

We had a happy gathering of 30 OCRACES members and applicants and OCSD/Communications staff at the annual OCRACES Holiday Dinner on Monday, December 2, 2019, at Rodrigo's Mexican Grill in Orange. Members got better acquainted with the new OCSD RACES Program Coordinators—Emergency Communications Coordinator Peter Jimenez, KI6UTE, and Senior Telecommunications Engineer Erik Schull, KE6BVI. OCSD Communications & Technology Division Director Dave Fontneau thanked members for supporting the Division and the Sheriff's Department. The Division will continue to administer OCRACES and maintain its repeaters, but Dave mentioned that OCRACES may be deployed (such as for Severe Fire Weather Patrols and EOC activations) by OCSD's Emergency Management Division.

Chief Radio Officer Ken Bourne, W6HK, thanked Dave for his recognition of the members' activities and his inspiring words. Ken also recognized former Emergency Communications Manager Lee Kaser, KK6VIV, who has transitioned to the Emergency Management Division and is now the Assistant Emergency Manager and continues to be a part of OCRACES. Ken thanked Peter and Erik for their enthusiasm in their new role of coordinating OCRACES.

Ken reviewed OCRACES 2019 activities and sadly recalled the passing of Roger Berchtold, WB6HMW, and Matt

Left to right: Carol and Ken Bourne, N6YL and W6HK; Dave Fontneau; Peter Jimenez, KI6UTE, and Erik Schull, KE6BVI.

Left to right: Robert Stoffel, KD6DAQ; Carol and Ray Grimes, WB6VMH and N8RG; and Randy and Lee Anne Benicky, N6PRL and KI6VUH.

Left to right: Ken Tucker, WF6F, and his wife Vicki; Scott and Pat Byington, KC6MMF and KC6ZHR; and Terey and Walter Kroy, KC6HAM.

OCRACES Holiday Dinner *Continued from page 2*

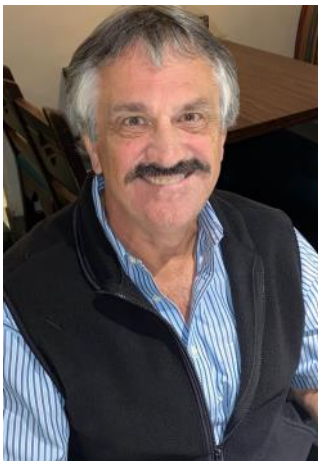
Luczko, KM6CAO. He recalled our monthly training meetings that covered such topics as maker technologies, AlertOC, loop antennas, cybersecurity, Mojave Death Race, microcomputers, APRS software, reporting earthquake intensity, Severe Fire Weather Patrol, NBEMS (Narrow Band Emergency Messaging Software), and CERT and RACES working together. Activities included Monday and Saturday nets, cooperative T-hunts, ACS Radio Rodeo, Fire Watch Symposium, Orange Street Fair (assisting City of Orange RACES), deployment drill, fire patrols, and Cal OES ACS meetings. Jack Barth, AB6VC, logged the most time on those activities. Randy Benicky, N6PRL, had the most net check-ins.



Left to right: Rod and Martin La Rocque, KD6DDP and N6NTH, Tom Tracey, KC6FIC, and his fiancée Karina, and Tony Scalpi, N2VAJ.



Left to right: Debi and Tom Wright, KJ6SPE; Bob McFadden, KK6CUS; and Don Mikami, N6ELD.


Applicants left to right: Mark and Julie Warrick, KM6ZPO and KN6AOC; Steve Clark, KC6FEW; and Kathy Gary, KK6RZC, and Duke Walls, W6EIF.

Next OCRACES Meeting: Monday, January 6th

The next OCRACES meeting will be on Monday, January 6, 2020, at 7:30 PM, at OCSD Communications & Technology Division, 840 N. Eckhoff Street, Suite 104, in Orange. This meeting will feature a presentation on the Professional Services Responder (PSR) program in the Orange County Sheriff's Department. PSRs are non-sworn reserves in the OCSD Mutual Aid Bureau. They provide administrative and leadership support in the areas of emerging technologies, communications, web design, graphic arts, legal and accounting services, and emergency response resources. OCSD is ramping up its PSR recruiting efforts and PSR Executive Director Charlie Bayhi is enthused about telling us about the PSR program at the January 6th OCRACES meeting.

OCSD/EMD Offers Training Classes at EOC

OCSD Emergency Management Division (EMD) says as Disaster Service Workers we may be called upon to participate in exercises for preparedness or activation by the County Emergency Operations Center (EOC) in the event of a disaster. Training opportunities are available to acquaint you with the EOC, the California State mandated Standardized Emergency Management System (SEMS), as well as your role during emergencies and exercises.

EMD has released a training schedule of offered courses. Space permitting, we will list and describe the courses for the next two months in each issue of *NetControl*. Download the complete January-June course list and registration form from https://ocraces.org/forms.html. E-mail the registration form to Michelle Baldwin at mbaldwin@ocsd.org. Confirmation for training and a map to the EOC will be sent to you by e-mail upon receipt of your approved registration. If you have not received confirmation within one week of the training date, please e-mail Michelle.

The courses offered for January 2020 at the Orange County EOC include:

- **WebEOC 8.0/JIMS 8.0**—Support Center; Thursday, January 16, 2020; 1:30 PM to 3:30 PM. WebEOC Orientation is a 2-hour class on the WebEOC Incident Management System used in EOCs. The WebEOC system has been completely redesigned and this course will demonstrate how to use the new WebEOC and JIMS 8.0 version. The class is a hands-on tutorial including login procedures, Activity logs, and the Jurisdictional Information Management System. Enrollment is open to all County employees and Operational Area Partners.
- **AlertOC Training**—Support Center; Thursday, January 23, 2020; 1:30 PM to 3:30 PM. AlertOC training is a 2-hour session designed to go over the processes and procedures to send a notification using the Everbridge system. This course addresses the main features of Mass Notification, which can also apply to other types of notifications using the Everbridge suite. Enrollment is open to all County employees and Operational Area Partners.

The courses offered for February 2020 at the Orange County EOC include:

- **WebEOC 8.0/JIMS 8.0**—Support Center; Tuesday, February 11, 2020; 10:00 AM to 12:00 PM.
- **Care and Shelter Branch Training**—Operations Center; Thursday, February 13, 2020; 9:00 AM to 11:00 AM. This course is designed for individuals who may staff a position within the Care and Shelter Branch during an exercise or activation of the EOC or those interested in the EOC Care and Shelter Branch. Training will include an overview of the positions within the Care and Shelter Branch and their responsibilities. The training will include hands-on practice on position-specific roles and responsibilities.
- **Situation Analysis Support Staff Training**—Operations Center, Wednesday, February 19, 2020; 9:00 AM to 11:00 AM. Prerequisite: Attendees must complete the WebEOC Orientation training. This course will focus on the Situation Analysis within the EOC. Staff members assigned to this role are responsible for gathering, analyzing, and vetting important information impacting County agencies, special districts, school districts, cities, and all other affected organizations. The course will include hands-on training on WebEOC Incident Management System. Enrollment is open to all County employees and Operational Area Partners.
- **Recovery**—Operations Center, Thursday, February 20, 2020; 1:30 PM to 3:30 PM.
- **Intro to SEMS, NIMS, ICS, and EOC Orientation**—Operations Center, Tuesday, February 24, 2020; 1:30 PM to 3:30 PM. *This course is mandatory for all County EOC response personnel.* This introductory course is intended to give participants a basic overview of the Incident Command System, Standardized Emergency Management System, National Incident Management System, and an orientation to the basic functions of the County Emergency Operations Center.
- **AlertOC Training**—Support Center; Wednesday, February 26, 2020; 9:00 AM to 11:00 AM.

Next Cooperative T-Hunt: January 20th

Due to holiday activities, the monthly cooperative T-hunt was not held in December. The next hunt will be on Monday, January 20, 2020, 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!

VARA Compares with Pactor 3 Winlink Speed

Several months ago, Mark Carpenter, K6ORJ, reported from Fresno on the OCRACES Saturday morning 60-meter net that he had been using VARA Modem software on HF Winlink, and found that performance was nearly equal to that of the SCS PTC-IIpro Pactor 3 modem, which OCRACES uses at the EOC, and which cost more the $1200. VARA performs at higher speeds than Winmor software. Jim Price, KO6GM, Communications Center Operations Officer, Communications Reserve Unit, Cal OES, is promoting the use of VARA. In his Winlink message of December 4, 2019, he says, "Although Pactor is the gold standard at Winlink protocols, VARA is a close second at a much more reasonable price. I've had good experience with it. My results are similar to the information on the following URL: https://digitalradio.groups.io/g/main/topic/vara_vs_pactor_iii_speed/20347199?p=,,,20,0,0,0::recentpostdate%2Fsticky,,,20,2,0,20347199. VARA was developed by Jose Alberto Nieto Ros, EA5HVK. You can download a free copy of VARA in order to try it out, at https://rosmodem.wordpress.com/. A full-featured copy is $70.00. Give it a try."

VARA is a high-performance HF modem based on OFDM (orthogonal frequency-division multiplexing) modulation. VARA Modem brings state-of-the art military-grade technology to new and existing HF data. It introduces a new standard of technology available for amateur and commercial use. It is designed for operation within an SSB bandwidth of 2400 Hz. It provides uncompressed user data rate to 5629 b/s at a low signal-to-noise ratio of 14.5 dB at 4 kHz. Symbol rate is 37.5 b/s with 52 carriers, thus satisfying the FCC symbol rate requirement of 300 baud or less for any carrier.

Currently, VARA works with BPQ32, Winlink Express (formerly RMS Express), RMS Trimode, RMS Packet, and VARA Chat. Communications between VARA and these external applications is accomplished using two TCP ports (8300 and 8301 by default).

"Disaster Alert" Accesses Active Hazard Info

"Disaster Alert" is an early warning app for iOS and Android devices, developed by Pacific Data Center, that provides access to information in both a list and on an interactive map about active hazards occurring around the globe. Built on PDC's "DisasterAWARE" platform, Disaster Alert offers near real-time updates about several types of active hazards as they are unfolding around the globe.

With Disaster Alert, you can customize early-warning alerts, view situational analysis reports, and access modeled hazard impacts for select hazards in a single map interface. Disaster Alert's continuous stream of new information is automatically derived from only scientifically verified sources. When no official source is available, alerts are updated manually, presenting a small lag in time.

Hazard updates include only active hazards—part of a collection of recent incidents that have been designated as potentially hazardous to people, property, or assets by PDC.

Automated global events include hurricanes (tropical cyclones/typhoons), earthquakes, tsunamis, volcanos, floods, wildfires, tornados, and winter storms. Manual major events include marine hazards, storms, droughts, and manmade incidents. The latest version (4.0) includes layers for tropical storm tracks and 20 other various incidents (including smaller earthquakes, etc.).

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)

The next City of Costa Mesa Emergency Service Amateur Communications (MESAC) is on Wednesday, January 22, 2020, at 6:30 PM, in the City's EOC.

Huntington Beach RACES

The next Huntington Beach RACES meeting is on Monday, January 6, 2020, at 1800 hours, at City Hall.

Laguna Beach

The City of Laguna Beach Police Department has opened up recruitment for the soon-to-be-vacant Emergency Operations Coordinator position, currently held by Jordan Villwock. Jordan was the Laguna Beach RACES Program Coordinator while John Kountz, WO1S, was the Chief Radio Officer. John served as CRO from 2002 to 2017.

OCSD Emergency Management Division

The career of Assistant Emergency Manager Vicki Osborn will be celebrated in a farewell potluck on Wednesday, January 8, 2020, at 11:30 AM, at the Orange County EOC.

Orange County SKYWARN

Orange County SKYWARN Coordinator Scott O'Donnell, WX6STO, activated SKYWARN for Orange County at 5:09 AM on Wednesday, December 4, 2019, at the request of the National Weather Service in San Diego for critical weather reports due to a Flash Flood Watch with possible thunderstorms. Rain was heavy throughout Orange County. Spotters were asked to report the following:

- **Flooding.** Rainfall: How much rain in a given time (e.g., 1 inch in 20 minutes). Rainfall rates (e.g., 4 inches per hour) should not be reported. Flooding: urban streets, ponding of water in low lying areas or poor drainage flash flooding (swift moving and greater than 6 inches). Report flooding that is threatening life or property or disrupting traffic.
- **Wind.** Gust of greater than 40 mph, and all wind-related damage (e.g., trees or power poles down).
- **Tornadoes.** Funnel clouds, waterspouts, or any "rotating" cloud, in contact with ground (tornado) and confirmed injuries or damage.
- **Surf and Coastal Impacts.** Surf 6 feet or higher, any flooding by combination of high tides and/or high surf, strong rip currents, tidal overflow, and flooding or tsunami impacts such as strong currents.
- **Photos.** Send to alexander.tardy@noaa.gov or nwssgxspotter@gmail.com, or post on Facebook at https://www.facebook.com/NWSSanDiego, or on Twitter (@NWSSanDiego #cawx #wxreport #socal). Include the day/time and specific location of photos.

Scott emphasizes, "SAFETY FIRST. Do not endanger yourself or others. Thank you for being a weather spotter! Your reports may be used in NWS Advisories or Warnings! The information you provide will be used for storm verification and improve future forecasts and warnings."

Orange County Amateur Radio Club (OCARC)

The OCARC Yearly Radio Auction will be held on Friday, January 17, 2020, at 7:00 PM, at the American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, in Santa Ana. Enter at the west door.

January 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 New Year's Day	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 Auction	18 Cal OES SWACS Meeting
19	20 Weekly 2 m ACS Net & Cooperative T-Hunt	21	22	23	24	25 Weekly 60 m ACS Net
26	27 ACS Net on Five Bands & Cal OES Nets	28	29	30	31	

Upcoming Events:

- **January 1:** Happy New Year!
- **January 6:** OCRACES Meeting, 1930 hours, 840 N. Eckhoff Street, Suite 104, Orange
- **January 17:** Orange County Amateur Radio Club (OCARC) Yearly Radio Auction, 1900 hours, American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, Santa Ana.
- **January 18:** Cal OES Southwest ACS Leadership Meeting, 1000 hours
- **January 20:** Cooperative T-hunt, 1920 hours
- **February 10:** City/County RACES & MOU Meeting, 1930 hours, 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

OCSD Emerg. Comm's Coordinator
Pete Jimenez, KI6UTE, 714-704-8080

OCSD Sr. Telecommunications Engr.
Erik Schull, KE6BVI, 714-704-7937

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

Radio Officer (Lieutenant)
Scott Byington, KC6MMF

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

County of Orange RACES

OCSD Communications & Technology Division
840 N. Eckhoff Street, Suite 104, Orange, CA 92868-1021
Telephone: 714-704-8080 or 714-704-7937 ● Fax: 714-704-7902
E-mail: pjimenez@ocsd.org or eschull@ocsd.org

County of Orange RACES

OCSD/Communications & Technology
840 N. Eckhoff Street, Suite 104
Orange, CA 92868-1021

Telephone – 714-704-8080 or 714-704-7937
Fax – 714-704-7902
E-mail – pjimenez@ocsd.org or eschull@ocsd.org

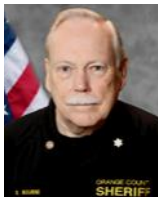
Visit Our Web Site
https://ocraces.org
It's Where It's @!

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

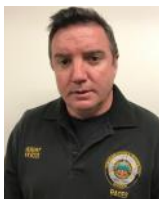


Ken Bourne
W6HK

Scott Byington
KC6MMF

Jack Barth
AB6VC

Ernest Fierheller
KG6LXT



Bob McFadden
KK6CUS

Tom Tracey
KC6FIC

Randy Benicky
N6PRL

Ray Grimes
N8RG

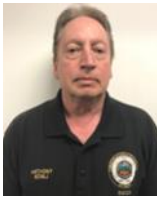
Lee Kaser
KK6VIV

Walter Kroy
KC6HAM

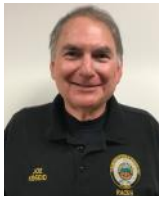
Martin La Rocque
N6NTH

Don Mikami
N6ELD

Harvey Packard
KM6BV



Tony Scalpi
N2VAJ



Joe Selikov
KB6EID

Robert Stoffel
KD6DAQ

Ken Tucker
WF6F

Tom Wright
KJ6SPE

OCSD RACES Coordinators

Peter Jimenez
KI6UTE

Erik Schull
KE6BVI