

January 2012



Newsletter of the County of Orange Radio Amateur Civil Emergency Service

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## Captain's Corner

*by RACES Capt. Ken Bourne, W6HK, Chief Radio Officer*

### Drive Safely (Without a Radio?)

Text messaging while driving is insane, but it's becoming all too common, resulting in many fatal accidents. Because of the increasing number of fatalities due to "distracted driving," government agencies are looking at banning not only texting but also the use of cellular telephones (even hands-free types) and "portable electronic devices" in general, while driving. There is concern that these devices might include amateur radio equipment. Can you imagine what such a ban would do to RACES units and the activities in which we are involved (such as Severe Fire Weather Patrols)? The following information was provided by the ARRL. We need to watch for new legislation that could affect mobile operation.

On December 13, 2011, the National Transportation Safety Board (NTSB) recommended that States ban the non-emergency use of *all* cellular telephones and other "portable electronic devices" (PEDs) by drivers of motor vehicles. This would include hands-free cell-phone operation and all text messaging while mobile. While this NTSB recommendation has been the lead story in national media, the "distracting driving" issue has been receiving serious attention for several years. A number of states and municipalities have prohibited texting and handheld cellular telephone use by all or some drivers, though none has gone so far as to outlaw all hands-free cell-phone use. To avoid unintended consequences to amateur radio operation, the ARRL has been closely involved with this

issue for several years. The full text of the NTSB report is not yet available, and it is not yet known whether the broad term "portable electronic devices" might be construed as including all or some amateur radio equipment.

The wording of state legislation—and specifically the definition of the devices that are being regulated—determines what response is appropriate from the amateur radio community. The fact that a proposed state bill does not include a specific exemption for amateur radio doesn't necessarily mean the bill would prohibit amateur radio mobile operation. A well-crafted bill that narrowly defines "wireless mobile devices" or wireless communications devices, for example, limiting those definitions to cellular telephones and text messaging devices, might not need a specific exemption in order to protect amateur radio operation. In cases where a bill must be amended in order to add an amateur radio exemption, the proposed exemption language is critical. Some mobile cellular legislation, for example, would allow use of amateur radio while mobile only in an emergency, and thus routine amateur communications would still be precluded, and amateurs would be unlikely to install equipment that would be needed in an emergency.

The NTSB recommends that all states prohibit the use of cell phones and PEDs by all drivers of motor vehicles. The NTSB does not have the authority to impose such regulations itself, but the recommendation is likely to inspire additional legislative proposals.

**The Next  
OCRACES  
Meeting is**

**January 9, 2012  
1930 Hours**

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

**Training by  
Tom Tracey, KC6FIC**

**Improving Incident  
Observation Skills**



Orange County Sheriff's Department  
Communications & Technology Division

# OCRACES Has Holiday Dinner at Katella Grill

OCRACES celebrated its 2011 Holiday Dinner on Monday evening, December 6, 2011, at the Katella Grill in Orange. The food and service were excellent, and we had the restaurant's Solarium Room all to ourselves. OCSD Emergency Communications Manager Marten Miller, KF6ZLQ, made the arrangements with the Katella Grill. He reviewed the many OCRACES activities throughout the year. He also presented awards to the members, including Officer of the Year to Chief Radio Officer Ken Bourne, W6HK, and Member of the Year to Tom Tracey, KC6FIC.

Also attending from OCSD's Communications & Technology Division were Division Director Robert Stoffel, KD6DAQ, Assistant Director Joe Saddler, WA6PAZ (and wife Rachelle, KB6JIE), and Secretary II Angela Strehle. Gary Gray, W6DUE, retired OCSD Chief Telecommunications Engineer, also attended.

In addition to Ken (and his wife Carol, N6YL) and Tom, other OCRACES members attending included Sgt. Jack Barth, AB6VC (and wife), John Bedford, KF6PRN, Randy Benicky, N6PRL (and wife Lee Anne, KI6VUH), Bill Borg, KG6PEX (and wife), Lt. Scott Byington (and wife Pat, KC6ZHR), Sgt. Jim Carter, WB6HAG, Sgt. Chuck Dolan, KG6UJC, Jim Dorris KC6RFC and Nancee Graff, N6ZRB, Ray Grimes, N8RG (and wife Carol, WB6VMH), Martin La Rocque, N6NTH (and son), and Lt. Harvey Packard, KM6BV (and wife). OCRACES applicants enjoying the Holiday Dinner included Hannah Kilbourne, KJ6LDW, and Marty Oh, KJ6RWE. Also at the Holiday Dinner was Regional Logistics Manager Tom Woodard, KI6GOA, from Red Cross Emergency Services Department.



## Next OCRACES Meeting: January 9th

The next OCRACES meeting will not be on the usual first Monday of the month, because January 2nd is a County holiday. Rather, the meeting will be on Monday, January 9, 2012, at 7:30 PM, at 840 N. Eckhoff Street, Suite 104, in Orange. Our featured speaker is Tom Tracey, KC6FIC, who will give us valuable training on sharpening our observation skills at an incident, as we report conditions via radio to the EOC or command post. Please bring your HTs to this meeting. We will practice on a simplex frequency, as we observe typical conditions shown in slides by Tom during the training session. This is required training, and all OCRACES members are requested to attend. City RACES and MOU members are also invited to participate.

## Yaesu to Introduce non-D-STAR Digital Radios

Yaesu announced on December 27, 2011, that it is splitting from Motorola. The Vertex Standard land-mobile radio (LMR) business is being transferred to Motorola. Yaesu Musen Co., Ltd. (headquartered in Tokyo, with its Yaesu USA U.S. subsidiary remaining in Cypress) is wholly owned by the founder's family. The new operation is effective January 1, 2012. Yaesu will focus on amateur, marine, and air-band business. Part of its amateur radio focus is on digital communications, which would compete against Icom's D-STAR equipment.

Yaesu recently published *A Digital Communications Guide for Amateur Radio Operators*. The *Guide* mentions that the GMSK (GFSK) modulation technique, first used in digital radios in the 1980s, has lost popularity in the LMR market, and C4FM (4-level FSK, frequency-shift keying) has emerged as the dominant mode. The *Guide* refers to the 2004 introduction of D-STAR, also using GMSK modulation, to the ham bands. It then points out that Motorola recently introduced a C4FM Digital Mobile Radio (DMR) that can be used on amateur radio frequencies. An amateur radio club, DMR-MARC, is pursuing this digital technology. At the 2011 Dayton Hamvention, many hams used DMR on the ham bands for the first time.

Compared to GMSK, the *Guide* says C4FM (4-level FSK) can be simplified and the bit error rate (BER) made much better. For this reason, C4FM has replaced GMSK as the main modulation method utilized in the latest LMR radios. APCO P25 radios, primarily used in the public-safety market, use this modulation method. Phase I P25 uses frequency-division multiple access (FDMA) occupying 12.5 kHz bandwidth. Phase II P25 will use time-division multiple access (TDMA) occupying 6.25 kHz bandwidth. P25 channel bit rate is 9.6 kb/s, versus 4.8 kb/s for GMSK (including D-STAR). DMR, using C4FM TDMA, is used primarily in the European and Asian markets.

The Yaesu *Guide* says TDMA divides the available frequency band into narrow-bandwidth channels. Compared to TDMA, the circuitry is simpler. TDMA uses time slots, so many signals can share the same frequency, permitting multiple communications. When used in amateur radio communications, it would allow multiple groups to use one repeater on the same frequency. Sharing the spectrum by time division reduces actual transmission time by one-half or more, thus extending battery life. DMR uses 2-slot TDMA. The *Guide* says that TDMA has a lot of merit, but the circuit design is difficult and requires a high level of development ability, compared to FDMA systems.

Digital communication methods can convey large amounts of data. However, as the *Guide* points out, if the bandwidth is narrowed, the data transfer speed is rapidly diminished. The UHF analog radios currently used by OCRACES and city RACES units for Winlink can exchange data at 9600 b/s. Compare this to D-STAR, which is limited to sending data at only 4800 b/s. Yaesu says that the statement, "D-STAR is the standard digital communication for amateur radio," is not true. The *Guide* says, "We are not sure why D-STAR, which uses GMSK, is recommended. However, it is neither good nor appropriate to limit the digital radio selection to only one method for all hams worldwide. If only one manufacturer is developing only one type of digital radio for all hams, the digital technology would not advance and hams would be forced to use inferior equipment at higher cost. A good example is the use of the older GMSK technology. We see no advantage in pursuing outdated technology when better technology exists."

Yaesu believes the C4FM (4-level FSK) FDMA or TDMA are the most suitable selections for amateur radio applications. In early 2012, Yaesu says it will release a C4FM (4-level FSK) FDMA HT and a mobile transceiver into the amateur radio market. This is the technology used by existing Phase I P25 systems. After its initial introduction, Yaesu plans to introduce a C4FM TDMA amateur HT and mobile transceiver (DMR and Phase II P25 technology).

*A Digital Communications Guide for Amateur Radio Operators* may be downloaded from the Yaesu Web site. It gives technical details of various digital communications methods, including advantages and disadvantages of each.

## Sheriff Endorses Crime Stoppers Program

Sheriff Sandra Hutchens has endorsed the “Crime Stoppers” Program for use by the Orange County Sheriff’s Department. The program consists of two parts. The first part is receiving tips from citizens about crimes and acting on those tips through local law-enforcement agencies. This part is under the leadership of Supervising Dispatcher Aaron Berenschot. He will be looking for assistance from Reserve Deputies and PSRs.

The second part is the organization and upkeep of the program, led by Founder/CEO Patricia Wenskunas, who also heads an organization called “Crime Survivors.” She is looking for board members, donations, and support.

The OC Crime Stoppers program helps resolve, reduce, and prevent crime by enabling citizens to safely report criminal activity to law enforcement through anonymous crime tips. This 501(c)(3) non-profit organization works in partnership with the community, the media, and law enforcement to facilitate the sharing of valuable information.

There are more than 300 Crime Stoppers organizations in the United States and over 1,400 worldwide. This program has proven to be an asset to any community, with over 850 arrests made, over 1.2 million crimes cleared, and \$8 billion in property and drugs recovered in the last 33 years.

The establishment of a new Orange County based program seeks to provide the area with the tools to empower ordinary citizens to fight crime. Besides Sheriff Hutchens, all of the City Chiefs of Police have supported the launch of the program. Daily operations are governed by a volunteer Board of Directors and law-enforcement liaisons committed to supporting OC Crime Stoppers. Although the Orange County Sheriff’s Department is the lead coordinating agency for this program, this is a shared countywide effort.

OC Crime Stoppers provides citizens with the ability to report tip information via Web, text, or toll-free number. Every Web and text tip is assigned its own encrypted code. This code provides the ability for a 2-way SMS dialog with OC Crime Stoppers. It’s a tipster’s choice on whether they choose to respond to any further questions, and they can “delete thread” at any time. There is no way to obtain identifying information through this code. For further information regarding the program, to submit a Web tip, and to find out how to get involved, go to <http://www.occrimestoppers.org>. If you have any additional questions regarding operations and getting involved, contact Aaron Berenschot, the OCCS Coordinator, at [occrimestoppers@ocsd.org](mailto:occrimestoppers@ocsd.org).

To text a tip, dial C-R-I-M-E-S (274637). Start with key word OCCS, a space, and then the tip information. A reply text is immediately sent, providing the encrypted code. To submit a tip via toll-free number, call 855-TIP-OCCS (847-6227). This number is answered 24/7 by an independent call center on an unrecorded line.



## ARRL Wants Feedback for 60-Meter Band Plan

On November 18, 2011, the FCC released a *Report and Order (R&O)* detailing new rules for the 5-MHz (60 meters) amateur radio band. The rules will take place 30 days after they are published in the *Federal Register*.

The R&O brings with it a number of changes for 60-meter operators:

- ◆ The frequency 5368 kHz (carrier frequency 5366.5 kHz) is withdrawn and a new frequency of 5358.5 kHz (carrier frequency 5357.0 kHz) is authorized.
- ◆ The effective radiated power limit in the 60-meter band is raised by 3 dB, from 50 W PEP to 100 W PEP, relative to a half-wave dipole. If another type of antenna is used, the station licensee must maintain a record of either the antenna manufacturer’s data on the antenna gain or calculations of the antenna gain.
- ◆ Three additional emission types are authorized: **Data** (emission designator 2K8J2D, for example, PACTOR-III), **RTTY** (emission designator 60H0J2B, for example PSK31), and **CW** (150HA1A, i.e., Morse telegraphy by means of on-off keying). For data and RTTY, the requirement to transmit “only on the five center frequencies specified” may be met by using the same practice as on USB, i.e., by setting the suppressed carrier frequency of the USB transmitter used to generate J2D or J2B emission to the carrier frequency that is 1.5 kHz below the center frequency.

Considering the expected increase in 60-meter activity when the R&O finally takes effect, the ARRL is asking for feedback to assist in crafting a proposed band plan. For example, what modes and activities should be recommended for the various channels? If you are a 60-meter operator, e-mail your suggestions to [hf-band-plan@arrl.org](mailto:hf-band-plan@arrl.org). You can also participate in an online survey at <http://www.zoomerang.com/Survey/WEB22E8M4Y8D39/>.

## Watching the Web

### Web Sites of Interest to RACES Personnel

RF Network Designer Software  
<http://www.km5kg.com/networks.htm>

### KM5KG RF NETWORK DESIGNER

This page on the Dr Bingo's Amateur Radio Web Site covers a program for RF design. Amateur Radio and Pro versions are available. This program provides a large number of practical network design solutions integrated into a common package. Included are transmission-line transformers, stubs, solenoidal coils, toroidal coils, capacitors, RF transformers, L-networks, diplexer, bridged-tee combiner, hybrid-tee combiner, hybrid-pi combiner, L-network combiner, audio/RF attenuator, tee networks, pi networks, shunts, reactance adjuster, transmission-line model, open-wire line, closed-wire line, coaxial line, microstrip, Smith chart, data plot utility, shunt power divider, series power divider, Ohm's power divider, resonant tanks, array phase shifts, array geometry, radiation pattern plot, scattering parameters, matrix analysis, impedance broadbanding, series/parallel, tee/pi transform, mutual impedance, Cartesian/polar, and skin depth. User-definable curve plotting, screen capture and screen printing, file import and export, and extensive online help text are available. The Pro version of the program includes an S-parameter function, automatic impedance broadbanding, and generic complex admittance matrix analysis.

Impedance matching of nonresonant loads is allowed for L, tee, and pi networks. The tee network design screen, for example, shows extra details not normally available in typical RF design programs. A custom help message text is in the lower left of the screen. All controls and displays on the screen are explained by simply passing the mouse cursor over them. More detailed design theory is covered by clicking on the Help menu. These design tools in the tee network example include the effects of coil, capacitor, and transmission-line loss. The program automatically remembers all of the previous design parameters, so when you start the program you will start wherever you left off last time. Frequency sweep information can be displayed in tabular form or as a curve. Frequency limits are user selectable, and graph scales are user definable.

Components such as coils, capacitors, transformers, and stubs can be designed with a few clicks of the mouse. Unusual component characteristics are provided, such as mutual inductance between coil sections of a tapped solenoid, in addition to the usual Q, self capacitance, and inductance. Solenoidal coils of various cross-sectional shapes besides the customary circular form can be designed, including triangular, square, hexagonal, etc.

Many types of transmission line can be designed with this program. One of the types covered is open-wire line in a box, which may be called closed-wire line. Many of the screens have drop-down menus or "combo-boxes" that allow easy selection of wire gauge, dielectric material, standard copper pipe sizes, etc.

The Smith chart routine permits resonating of a set of impedance data, which can be imported from a file or entered directly from the screen. Labels may be toggled on and off in order to reduce clutter. Tabular data besides the usual resistance and reactance include SWR, reflection coefficient, and return loss for each data point.

Besides the Smith chart model of a transmission line, the program also provides a lumped-parameter model, which can be used to determine the impedance transformation through the line, the current phase shift, etc. This is a complete model, which also includes the effects of losses.

The diplexer design screen allows you to operate two transmitters at different frequencies into the same antenna. The various combiner screens allow you to operate two transmitters on the same frequency into the same load.

## Implantable Medical Devices Allowed at 70 cm

On November 30, 2011, the FCC commissioners voted to give a secondary allocation to the use of implantable wireless medical devices that operate between 413 and 457 MHz, which includes the 70-cm ham band. While the ARRL is concerned about interference from the very low power devices, it is also concerned about RF from radio amateurs affecting the devices. The League said that unless interference rejection capability is demonstrated by proponents of the devices, they "should not be allowed to operate anywhere in the 420-450 MHz band."

# 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 Member Russ Gowin, N6QZV, is the new chairman of the Orange County Council of Amateur Radio Organizations. OCCARO meets on the second Wednesday of every even month at 7:30 PM at the American Red Cross, George M. Chitty Building, 600 Parkcenter Drive, Santa Ana. The next meeting is on February 9, 2012.

Fountain Valley RACES participated in the Christmas tree lighting for the city.

## Orange RACES (COAR)

City of Orange RACES Member Ken Konecky, W6HHC, reported on the Digital ATV Yahoo Group that, since the presentation on the DATVexpress project to create a lower-cost DVB-S transmitter board at the TAPR Digital Communications Conference this past September, progress has been made. The first set of blank printed-circuit boards (first article) have been fabricated. The first-article prototype board has been assembled and electrically checked out. The PC is now recognizing the USB2 controller on the board and the first small-step of loading some test code into the FPGA to blink some LEDs has succeeded.

Ken recognizes the team who has contributed so far to Prototype #1:

- ◆ Electrical design—Art Towslee, WA8RMC
- ◆ PCB layout—Tom Gould, WB6P
- ◆ Hand soldering of SMT and power supply checkout—Art Towslee, WA8RMC
- ◆ Software and FPGA coding—Charles Brain, G4GUO

Ken added a new photo album for the DATVexpress Project to the Digital ATV Yahoo Group’s PHOTO area. (Contact Ken if you wish access to that Yahoo Group.) This album includes a photo of the very first DATVexpress prototype board. As Ken and his team announced at TAPR, the complete hardware and software design source will

become freely available without restrictions to encourage others to contribute new functions and performance.

## Hospital Disaster Support Communications System (HDSCS)

HDSCS members were in place in eight key areas of Children’s Hospital of Orange County at 4 AM on December 3, 2011, as the hospital shut down its telephone system for upgrades. Hospital staff members had prepared well, so message traffic was light. HDSCS operators handled an urgent pharmacy request involving a scheduled dosage of medications for a patient. They also reported intermittent phone problems as the system was brought on line and kept the house supervisor updated on the status of the system. In addition to being a valuable service to the hospital, this was excellent training for some new HDSCS members. Team Leader and Net Control within the hospital was Tom Gaccione, WB2LRH. Other operators within the facility were Bruce Chappell, KE6TSM, Bob Evans, W9TQC, Reid Green, KF6LOK, Rebecca Katzen, KI6OEM, Bill Preston, KZ3G, Dave Reinhard, KJ6REP, Clay Stearns, KE6TZR, and Dave West, KI6EPI. Outside base-station operator was April Moell, WA6OPS. Ten additional members were standing by in case the operation had continued and relief operators were needed.

## Orange County Amateur Radio Club

ARRL Section Manager Carl Gardenias, WU6D, will talk on “What’s new and happening in the Orange Section” at the next meeting of the Orange County Amateur Radio Club on Friday, January 20, 2012, at 7:00 PM, at the American Red Cross, George M. Chitty Building, 600 Park Center Drive, Santa Ana.

Besides meeting every third Friday, the Orange County Amateur Radio Club also has a breakfast/board meeting on the second Saturday of each month at 8:00 AM at the Jägerhaus, 2525 E. Ball Road, Anaheim. The meeting is open to all radio amateurs.

# January 2012

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 <i>Happy New Year!</i>	2 <i>Holiday, no meeting, no net</i>	3	4	5	6	7
8	9 <i>OCRACES Meeting &amp; Weekly ACS Net</i>	10	11	12	13	14 <i>Southwest ACS Meeting</i>
15	16 <i>Weekly ACS Net</i>	17	18	19	20 <i>Orange County Amateur Radio Club Meeting</i>	21
22	23 <i>Weekly ACS Net &amp; City/County/MOU Meeting</i>	24	25	26	27	28
29	30 <i>Weekly ACS Net</i>	31				

## Upcoming Events:

- **Jan 2:** County Holiday, no meeting, no net
- **Jan 9:** OCRACES Meeting, 1930 hours, 840 N. Eckhoff Street, Orange; incident observance training by Tom Tracey, KC6FIC
- **Jan 14:** Southwest ACS Meeting, 0900 hours, Cal EMA Southern Region, Los Alamitos
- **Jan 20:** Orange County Amateur Radio Club Meeting, 1900 hours, American Red Cross, George M. Chitty Building, 600 Parkcenter Drive, Santa Ana; guest speaker: ARRL Orange Section Manager Carl Gardenias, WU6D
- **Jan 23:** City/County RACES & MOU Meeting, 1900 hours, 840 N. Eckhoff Street, Suite 104, Orange



[www.ocraces.org](http://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

- 10 m: 29.640 MHz output, 29.540 MHz input, 107.2 Hz PL (off the air)
- 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 simplex
- 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: 1282.025 MHz output, 1270.025 MHz input, 88.5 Hz PL

\*Primary Net—Mondays, 1900 hours

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## County of Orange RACES

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Questions or Comments?  
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**“W6ACS ...  
Serving  
Orange County”**

## Meet your County of Orange RACES Members!



Ken Bourne W6HK    Scott Byington KC6MMF    Harvey Packard KM6BV    Ralph Sbragia W6CSP    Marten Miller KF6ZLQ    Robert Stoffel KD6DAQ



Jack Barth AB6VC    Jim Carter WB6HAG    Chuck Dolan KG6UJC    Ernest Fierheller KG6LXT    John Bedford KF6PRN    Randy Benicky N6PRL    Bill Borg KG6PEX    Jim Dorris KC6RFC    Nancee Graff N6ZRB



Ray Grimes N8RG    Walter Kroy KC6HAM    Martin La Rocque N6NTH    Brian Lettieri KI6VPF    Kenan Reilly KR6J    John Roberts W6JOR    Joe Selikov KB6EID    Tom Tracey KC6FIC    Brian Turner KI6WZS