

July 2011



Newsletter of the County of Orange Radio Amateur Civil Emergency Service

Inside this issue:

- Captain's Corner 1
- Field Day 2
- OCRACES Meeting 3
- Fire Patrol Training 3
- October 1st Drill 3
- Orange County Fair 3
- Van at HAMCON 3
- Depiction Update 4
- COAR DATV 5
- RACES/ACS News 6

Captain's Corner

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

War Emergency Radio Service

RACES was created on August 15, 1952, but what preceded RACES? Could radio amateurs operate during World War II? Right after Japan attacked Pearl Harbor on December 7, 1941, hams were ordered to cease operations until the end of the war, except for civil defense communications. In June 1942, the War Emergency Radio Service (WERS) was established to provide communications for air-raid protection in addition to natural disasters (as previously provided by hams). WERS was not part of the Amateur Radio Service. Originally, only licensed radio amateurs could participate in WERS. Later, anyone holding any class of FCC Radiotelephone license could participate. Non-amateurs could serve in WERS, but only in low-level positions.

WERS was administered by local civil defense offices. Licenses were issued to communities, and not to individual operators. The FCC continued to issue amateur

radio licenses to provide standards for WERS applicants (and to allow hams to prove their ability before enlisting in the armed services).



Abbott TR-4 112 MHz WERS transmitter-receiver.

WERS was authorized by the Defense Communications Board for Civilian Defense, Civil Air Patrol (CAP), and State Guard systems to permit a limited number of amateur stations to be licensed for defense purposes. All of these stations were closed by the first of the year for security reasons. By the end of 1944, 250 licenses (covering 5,213 radio transmitters) were issued to civilian defense stations.

WERS operations were on 112-116 MHz (the former 2½-meter ham band, which became known as "The Civil Defense Band"), with backup on 224-230 MHz and 400-401 MHz. Maximum allowed power was 25 watts input to the final amplifier. CAP and civilian state guard operated on 115.2-116 MHz. WERS operated under strict military-type rules..

World War II ended on August 15, 1945, and six days later radio amateurs were allowed to share 112 to 115.5 MHz with WERS. WERS was terminated on November 15, 1945, and the FCC released 10, 6 (was 5), and 2 meters for amateur use.



Typical World War II WERS radio equipment.

**The Next
OCRACES
Meeting is**

**July 11, 2011
1930 Hours
Orange County EOC
Loma Ridge**

**Winlink Training
by RACES Lt. Scott
Byington, KC6MMF**



Orange County Sheriff's Department
Communications & Technology Division

OCRACES Participates in Field Day

The weather was perfect for Field Day on Saturday and Sunday, June 25-26, 2011, at Craig Regional Park in Fullerton. Thanks to Radio Officer Ralph Sbragia, W6CSP, for an outstanding job as Field Day Chairman. Thanks also to John Roberts, W6JOR, for building an HF windom antenna that performed extremely well on 80, 40, 20, and 10 meters. We appreciate the extra time put into our operations by Assistant Radio Officer Chuck Dolan, KG6UJC (and his world's greatest hamburgers), Brian Turner, KI6WZS, and Applicant Hannah Kilbourne, KJ6LDW. Other participants included Radio Officer Scott Byington, KC6MMF, Chief Radio Officer Ken Bourne, W6HK, Randy Benicky, N6PRL, Assistant Radio Officer Ernest Fierheller, KG6LXT, Walter Kroy, KC6HAM, Martin La Rocque, N6NTH, Nancee Graff, N6ZRB, Applicant Jim Dorris, KC6RFC, and Ray Grimes, N8RG. Others at our site included OCSD Communications & Technology Division Assistant Director—Engineering Services Joe Saddler, WA6PAZ, Rachelle Saddler, KB6JIE, OCSD Reserve Sgt. Rick Edgmon, NU6D, Carol Bourne, N6YL, Lee Anne Benicky, KI6VUH, and Carol Grimes, WB6VMH.



Left photo: RACES Lt. Ralph Sbragia, W6CSP (Field Day Chairman), chases points from his mobile communications trailer, using his screwdriver antenna. Middle photo: John Roberts, W6JOR (left) explains the HF windom antenna he constructed to OCSD Communications & Technology Division Assistant Director—Engineering Services Joe Saddler, WA6PAZ. Right photo: OCSD Reserve Sgt. Rick Edgmon, NU6D (left), observes John Roberts, W6JOR (center) testing the HF windom antenna, while conversing with RACES Lt. Scott Byington, KC6MMF.



John Roberts (behind ladder), RACES Sgt. Chuck Dolan, KG6UJC, Applicant Hannah Kilbourne, KJ6LDW, and Brian Turner, KI6WZS (left to right), erect HF windom antenna at Craig Regional Park. RACES Capt. Ken Bourne, W6HK, and Carol Bourne, N6YL, worked Croatia on this antenna about an hour before Field Day officially began.

Next OCRACES Meeting: July 11th

The next County of Orange RACES meeting is on Monday, July 11, 2011, at 7:30 PM, at the Orange County EOC on Loma Ridge. This is a required training meeting on Winlink for all OCRACES members and applicants, to be presented by Radio Officer Scott Byington, KC6MMF. Note that this meeting is on the second Monday of the month, rather than the usual first Monday, due to the July 4th holiday.

Severe Fire Weather Patrol Training: Aug. 1st

OCRACES members will receive their annual Severe Fire Weather Patrol training at the August 1, 2011, meeting at 7:30 PM, at 840 N. Eckhoff Street, Suite 104, in Orange. The training will be given by Orange County Fire Authority Battalion Chief Bryan Brice. All members who wish to participate in the Fire Patrols must receive this training. City RACES members who plan to participate in the patrols on a mutual-aid basis are encouraged to attend this training meeting.

October 1st Drill Scenario: Gas Line Explosion

It was decided at the last City/County RACES/ACS & MOU meeting on June 27, 2011, that the scenario for the next City/County RACES/ACS & MOU drill on Saturday, October 1, 2011, would be natural-gas explosions throughout Orange County. As was mentioned in the May 2011 issue of NetControl, aging natural-gas pipelines pass under heavily populated neighborhoods throughout Orange County. Major leaks are possible, which could cause blazes far worse than the explosion that occurred up in San Bruno on September 20, 2010, when 53 homes were destroyed and 120 more were damaged. Before this drill, we will try to determine where the most vulnerable pipe lines are located, and plan for deployment to those areas. RACES units in parts of Orange County that are not so vulnerable would be deployed on a mutual-aid basis to the affected areas. We are seeking suggestions from all RACES units and emergency managers throughout the County on what needs to be emphasized in this drill, so that we train realistically for what could actually happen.

OCRACES at Orange County Fair: July 27th

OCRACES members will occupy the Ham Radio Booth at the Orange County Fair on Wednesday, July 27, 2011, from 1700 to 2300 hours. This is a great opportunity to show our emergency communications capabilities to the public and to introduce young people to the mysteries of radio propagation and other adventures in amateur radio. We will be in a large 20-foot booth in a prime location. Parking and entrance tickets will be provided to members and applicants who agreed to participate.

OCRACES to Exhibit Van at HAMCON

OCRACES will exhibit its emergency communications response vehicle at HAMCON (2011 ARRL Southwestern Division Amateur Radio Convention) on Saturday, September 10, 2011. The convention will be held at the Marriott Torrance South Bay, 3635 Fashion Way, in Torrance. Our van will be parked outside the exhibit hall, which is open from 8:00 AM until 5:00 PM.

Go to <http://www.hamconinc.org> for ticket registration, a list of vendors/exhibitors, a run-down of technical presentations, and other information about the convention. Some of the presentations include N6MI's contest and emergency communications van, collecting and restoring amateur radios of the past, integrating civilian volunteers and sworn agency personnel, personal emergency preparedness, hydration for the emergency responder, NVIS for reliable regional communications, and much more.



Depiction Now at Version 1.3.1

County and City RACES units and MOU organizations using Depiction mapping software (which was installed on the Winlink system computers dispensed by OCS D Communications & Technology Division) need to update their computers to Depiction version 1.3.1. (The latest Microsoft Windows XP updates also need to be downloaded and installed on these computers.) The Depiction user manual has been updated for version 1.3.1, and may be downloaded from the Depiction Web site. The manual covers the newest Depiction features and has been clarified, refined, and generally improved. Also, a new whitepaper, “GIS 101: Understanding Concepts & Terms,” is a valuable resource for anyone using any type of mapping software, and is available for download separately or as an appendix in the user manual. Amateur radio users are invited to join Tim O’Shea, KY7Y, in a Webinar series on the second Tuesday of every month for a look at Depiction and EmComm. Tim is Assistant Emergency Coordinator/PIO for Washoe County (Nevada) ARES/RACES and a Depiction Preferred Consultant. The Webinars start on July 14, 2011, and will begin at 7:00 PM Pacific time.

COAR Tests New 1.292 GHz DATV Equipment

The new City of Orange RACES (COAR) digital ATV equipment was successfully tested in the field on Saturday, June 11, 2011. Ken Konechy, W6HHC, reported that great pictures were sent back to the Orange Police Department EOC Room from the home of Kathleen Nelson, K6IBH, on a ridge across from Loma Ridge. This ridge allows camera video to the east toward Sierra Peak, Irvine Park, Loma Ridge, and the Saddleback peaks. The DATV signals were fairly weak because a hill was sloping down in the transmission path, over which the signal probably propagated via “knife-edge” refraction to reach the OPD EOC. Several years ago, COAR had tried to use analog ATV from this same ridge, and the signals could not be received at the EOC. Even though the DATV signals were weak in the June 11th test, picture quality was great. In addition to Ken and Kathleen, those participating in the test included Bruce Creager, KC6DLA, Steve Carmichael, KI6DDE, Robbie Robinson, KB6CJZ, and Will Stoddard, KJ6IA.

Prior to the June 11th test, Ken and Robbie successfully bench tested the new 1.292 GHz DVB-S DATV equipment on Ken’s dining room table on Saturday, June 4, 2011, using Robbie’s microwave test equipment.

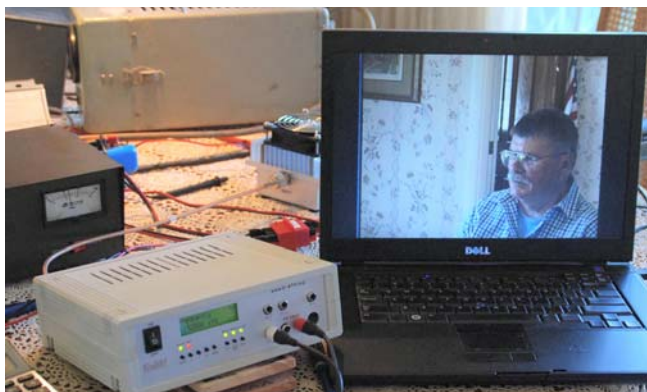
The San Diego Del Mar Amateur Television Group also has two of the same units, one for simplex and the other eventually for a new in-band DATV repeater. Eight DATV stations are operational now out of 18 members.

A new Yahoo! Group has been formed for sharing DATV knowledge and experience, at <http://groups.yahoo.com/group/DigitalATV>. The “Files” section

of this group has good introductory material on DATV and some fairly in-depth descriptions of DVB-S, DVB-T, and DVB-S2 protocols. A detailed technical article on COAR’s June 4th bench test and June 11th field test, “TechTalk94-DATV Testing Report-Part 5 (KomplettSender DVB-S),” is in the “Files” section under “Testing DATV.” This article will also appear in the July 2011 issue of the Orange County Amateur Radio Club’s *RF Newsletter*. This article provides an overview for hams new to DATV, including equipment that can be used (including costs), approaches to bench-testing DATV equipment for the first time, and what results can be achieved with DVB-S.



Ridge location at K6IBH for the DATV test on June 11th, using a KomplettSender unit from SR-Systems and a 1.2-GHz loop yagi up 25 feet.



COAR’s new DATV equipment under test on June 4th at W6HHC.

Watching the Web

Web Sites of Interest to RACES Personnel

The Online Source for Understanding Antennas

<http://www.antenna-theory.com>

Antenna-Theory.com

Antenna-Theory.com intends to be a source of knowledge for learning about and understanding antennas. The goal is to present a comprehensive tutorial on antennas. Pages include: Introduction to Antennas; Fundamentals and Antenna Basics; Types of Antennas; Antenna Arrays; Antenna Measurements; Smith Charts and Impedance Matching; Antenna Engineering Careers; Antenna Definitions; Antenna Forum; and Topics Related to Antenna Theory.

Introduction to Antennas begins by stating that, in the 1890s, there were only a few antennas in the world. By the early 21st century, thanks in large part to mobile phones, the average person now carries one or more antennas (considering that cell phones can have multiple antennas, especially if GPS-equipped). The strong growth in RFID devices suggests that the number of antennas in use may increase to one antenna per object in the world. This section links to pages on: History; Fun Stuff; Antenna Book Reviews; About the Authors; and Video Overview of Antenna-Theory.com and Intro to Antennas.

Fundamentals and Antenna Basics steps through the following parameters: Frequency; More Advanced Frequency Information; Frequency Bands; Radiation Pattern; Field Regions; Directivity; Efficiency and Gain; Beamwidths and Sidelobes; Impedance; Bandwidth; Polarization of Waves; Polarization of Antennas; Effective Aperture; Friis Transmission Formula; Antenna Temperature; and Why Do Antennas Radiate?.

Types of Antennas covers such fundamental antenna types as wire, microstrip, reflector, travelling wave, and aperture. The Wire Antennas page includes short dipole, dipole, half-wave dipole, broadband dipoles, monopole, folded dipole, and small loop. Microstrip Antennas covers rectangular microstrip (patch) and planar inverted-F antennas (PIFA). Reflector Antennas covers corner reflector and parabolic reflector (dish antenna). Travelling Wave Antennas covers helical and Yagi-Uda Antennas. Aperture Antennas covers slot Antenna, cavity-backed slot, inverted-F, slotted waveguide, and horn antennas.

Antenna Arrays (Phased Arrays) are sets of two or more antennas. Signals from the antennas are combined or processed to achieve gain, to provide diversity reception, to cancel interference from particular directions, to “steer” the array, to determine the direction of arrival of incoming signals, and to maximize the Signal to Interference Plus Noise Ratio (SINR). Pages include: Basic Concepts and Intro to Antenna Arrays; Weighting Methods Used in Antenna Arrays; and Geometry Optimization in Antenna Arrays.

Antenna Measurements includes the following sections: Required Equipment and Ranges; Radiation Pattern and Gain Measurements; Phase Measurements; Polarization Measurements; Impedance Measurements; Scale Model Measurements; and SAR (Specific Absorption Rate) Measurements.

Smith Charts and Impedance Matching includes these sections: Introduction to Smith Charts; Video Introduction to Smith Charts; Constant Resistance Circles; Constant Reactance Curves; Impedance Transformations; Intro to Impedance Matching: Series L and C; Impedance Matching: TX Lines with Series L and C; The Admittance Smith Chart; Impedance Matching: Parallel L and C; Impedance Matching: Parallel TX Lines; Immitance Charts; Impedance Matching on Immitance Charts; and Advanced: Dual-Band Impedance Matching.

Antenna Definitions includes technical discussions on antenna factor, axial ratio, baluns, bazooka balun, cross polarization, decibels (dB), E-plane, Effective Isotropic Radiated Power (EIRP), Effective Isotropic Sensitivity (EIS), electric field (E-field), electric flux density, folded balun, fractional bandwidth (FBW), front-to-back ratio, H-plane, intrinsic impedance, magnetic field (H-field), magnetic flux density, Maxwell’s equations, multipath, permeability, permittivity, Q, reciprocity, resonant, S-parameters, Specific Absorption Rate (SAR), spherical coordinates, steering vector, tapered baluns, Total Isotropic Sensitivity (TIS), Total Radiated Power (TRP), VSWR or SWR, wave number, wave vector, and 2.4 GHz antenna.

Topics Related to Antenna Theory includes the following tutorials: Cell Phones and Cancer: Does RF Energy Present a Health Risk; FEKO—Method of Moments Numerical Simulation Code for Antennas and Electromagnetics Problems; Smith Charts; Transmission Lines; and Waveguides.

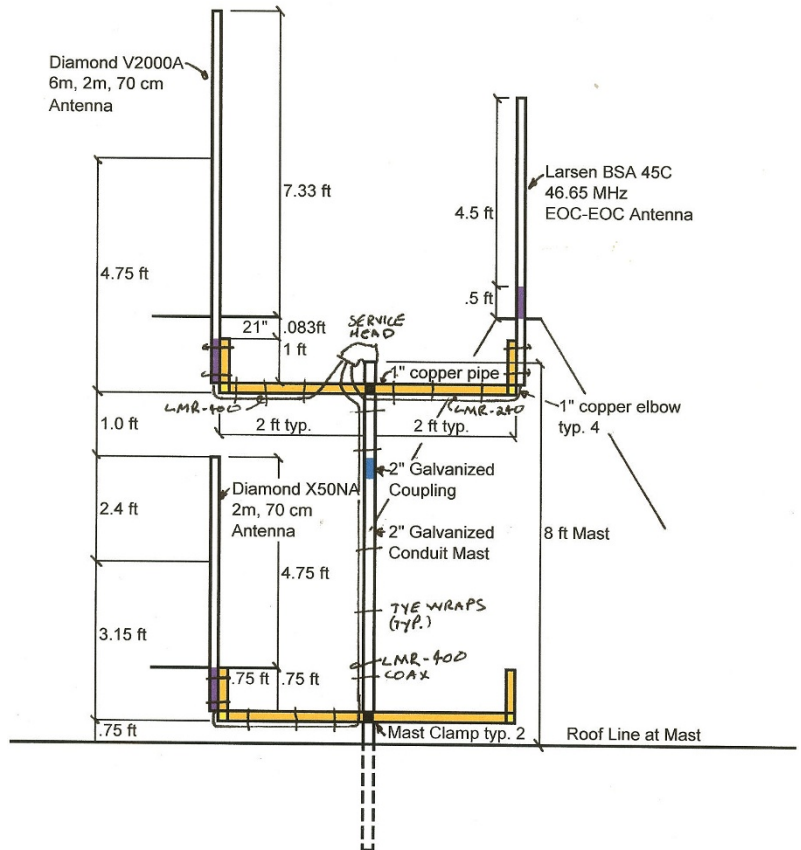
RACES/ACS News from Around the County

Seal Beach RACES

Seal Beach RACES Chief Radio Officer Mike Maronta, KC6YNQ, reports that the City's RACES unit operated their new equipment at Fire Station 48 for the City/County RACES & MOU Drill held on May 21, 2011. Fire Station 48 is now the backup EOC location for the City of Seal Beach. The new equipment consists of a Yaesu FT-8900R (10 m, 6 m, 2 m, 70 cm) radio, an FT-8800R (2 m, 70 cm) radio, dual Samlex SEC-1235M power supplies, two 51 Ah batteries, and a Super PWRgate PG-40S battery charger, all backed up by an Emergency Electric generator, and mounted in a modified Motorola Centracom Operator Console which was obtained surplus from the City of San Luis Obispo. In addition, the RACES unit mounted a new Vertex Standard VX-5500 land-mobile radio in the console for use on the EOC/EOC OA-1 system. They installed a new antenna tower with a Diamond V2000A tri-band antenna for the FT-8900R, a Diamond X50NA antenna for the FT-8800R, and a Larsen BSA45C ground-plane antenna for the VX-5500 radio. A picture of the Operator Console and a sketch of the antenna tower are shown on this page. More information and a wiring diagram can be found on the Seal Beach RACES Web site at <http://lsfyc.org/races41.lsfyc.org> under the "Equipment" tab.

Seal Beach RACES now has sev-

eral operating positions around the City: at the Seal Beach PD, at Fire Station 48, at the pier PD Substation, and from the Emergency Services Trailer. All equipment is coordinated and all radios share the same memory channel and frequencies. All frequencies from the 2011 "Yellow Book" are programmed into all permanently mounted radios and many of the member hand-helds.



"RACES/ACS 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

July 2011

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4 4th of July Holiday	5	6	7	8	9 EmComm Breakfast
10	11 OCRACES Meeting & Weekly ACS Net	12	13	14	15	16
17	18 Weekly ACS Net	19	20	21	22	23
24	25 Weekly ACS Net & SWACS Frequency/ Radio Test	26	27 OC Fair Ham Radio Booth	28	29	30
31						

Upcoming Events:

- Jul 4: 4th of July Holiday (no meeting, no net)
- Jul 9: EmComm Breakfast, Katella Grill, 0800, 1325 W. Katella Ave., Orange
- Jul 11: OCRACES Meeting, 1930, OC EOC, Loma Ridge
- Jul 25: Southwest ACS Frequency/Radio Test, 2015
- Jul 27: OCRACES at Orange County Fair Ham Radio Booth, 1700-2300
- Sep 9-11: HAMCON 2011, Marriott Torrance South Bay
- Oct 1: City/County RACES/ACS & MOU Drill, 0900-1100
- Oct 24: City/County RACES/ACS & MOU Meeting, 1900, 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

- 10 m: 29.640 MHz output, 29.540 MHz input, 107.2 Hz PL (disabled)
 - 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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It's Where It's @!

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

Meet your County of Orange RACES Members!



Ken Bourne
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Scott Byington
KC6MMF



Harvey Packard
KM6BV



Ralph Sbragia
W6CSP



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