



# County of Orange RACES NET CONTROL



## August 2000

*Newsletter of the County of Orange Radio Amateur Civil Emergency Service*

### **Operation Boysenberry Preview**

by: Lt. Mike Krueger  
OCRACES Training Officer

Since 1998, Knott's Berry Farm management has generously allowed us to conduct specialized training in the park after hours.

"Operation Boysenberry" has become one of our favorite annual events, and one that draws a large number of RACES members seeking to hone their communications skills in the variety of unique and challenging environments available within the park.

This year, Operation Boysenberry will team OCRACES with the sheriff's Search and Rescue Reserve Unit. Five carefully planned scenarios will provide to each participant with valuable field training in communications, land navigation and related skills as presented at the August and September General meetings.

Operation Boysenberry is scheduled for Monday, September 18th, beginning at 1830 hours. Pizza will be provided. More information will be printed in the September Net Control.

### **August meeting**

The August OCRACES General Meeting will feature guest speaker Steve Riches (N6SOG) from the Sheriff's Department Search and Rescue Reserve Unit. Steve has an exciting presentation for us including instruction in map and compass use, the UTM coordinate system, and using Global Positioning System (GPS) receivers for land navigation. If you have an orienteering compass and/or GPS receiver, you are encouraged to bring them to this meeting! This meeting is open to all that are interested.

The meeting will be August 7th at 840 N. Eckhoff, Orange, at 1930 hours.

### **ORANGE COUNTY SHERIFF, FIRE SIGN CRISIS RESPONSE PACT**

In an effort to avoid turf disputes during emergency situations, Orange County Sheriff Mike Carona and Fire Authority Chief Charles Prather have forged a written agreement designed to consolidate command posts and coordinate resources during multi-agency responses. The pact is intended to identify the lead agency, and a similar plan is in the works for Los Angeles County. (Los Angeles Times)

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### **Upcoming Events**

August 7	OCRACES monthly meeting - Map/Compass/GPS Training- 840 N. Eckhoff St. Orange - 1930 Hours
September 11	OCRACES monthly meeting - 800 MHz Training 840 N. Eckhoff St. Orange - 1930 Hours
September 18	Operation Boysenberry Part III 1900-2200 Hours
September 28	Mass Casualty Incident - 0800-1300 OCRACES providing ATV/SSTV support
October 2	OCRACES monthly meeting-Cellular Emergency Response- 840 N. Eckhoff St. Orange - 1930 Hours

### ***Captain's Corner***

by: Ray Grimes, W6RYS  
Chief Radio Officer, OCRACES

The excellent and informative PSK-31 mode presentation by Ralph Sbragia, KD6FYT at last month's meeting got me to thinking about OCRACES changing position as an emergency communications primary service provider. As technologies evolve, and global accessibility to communications systems become more available and affordable, alternative voice communications options are being called upon for disaster communications more and more. These include landline (when available), Cellular Telephone (Analog, Digital, iDEN, PCS, etc.), Satellite Telephone, Citizens Band, Family Radio Service (FRS), Local Government and Public Safety radio systems, and so on. Amateur Radio is of course, the well organized and technically expert traditional local and long-distance 'free' provider of disaster communications services.

PSK-31 opens new doors and revisits a few closed ones. With computers and fast commercial transmission systems, RTTY popularity and practicality has greatly diminished over the years. There are the obvious problems in basic text messaging systems such as speed, accuracy, and immunity from noise and RF interference, to name a few. PSK-31 has given a new definition to text messaging over radio. It is a new direction and solution to sending high quality messages over radio circuits. The need is still present for emergency voice communications, but end users have come to expect so much more as technology jumps forward almost weekly. PSK-31 gives Amateur Radio a new tool, allowing transmission of very fast text messages, reliably, with amazing noise immunity.

Slow Scan Television using the handheld video communicators for example, also gives Amateur Radio a new tool in providing on-scene graphic images of emergency events. The great advantage of these compact, low cost devices is that they are very portable and can be carried along at all times, reducing emergency response and scene transmission setup time almost the commute time alone. On-scene Slow-Scan Television can be transmitted via almost any analog radio communications medium, providing first responders with digital photos. This visual information has proven to be invaluable in evaluating and provisioning for fast-evolving emergency scenarios.

The point is that while voice radio communications is our mainstay, our customers are using Amateur Radio as the last resort for voice emergency communications after their alternative radio systems and cellular telephones fail or become ineffective. Our emergency responder customers are now demanding higher reliability, professional quality, and high speed transmission of both text and graphics. OCRACES already has several new tools which will meet these applications and requirements. We should still maintain our voice communications skills and capabilities, but we also need to establish proficiency in high quality data and video services. These can be semi-automated so that OCRACES communicators can provide both voice communications and enhanced services simultaneously.

### ***FULLERTON RACES PREPARES FOR NEW EOC***

The long awaited City of Fullerton Maintenance Facility has now been occupied, and will also be the site of the new city EOC. The facility is located at the corner of Commonwealth and Basque. Fullerton RACES and the City of Fullerton will be installing new roof antennas for the radio equipment. A room for the equipment was designated, and work is proceeding on the installation of the packet station, several coax runs to the roof and other equipment. When completed, the new facility will have voice capabilities on 2-meters, 6-meters and 440 as well as a 2-meter packet station.

Fullerton RACES is planning on hosting their August 31st meeting at the new EOC. Interested RACES members from other cities may contact Fullerton RACES Chief Radio Officer Gary Holoubek, WB6GCT, at (714) 529-8191 or [wb6gct@juno.com](mailto:wb6gct@juno.com) for directions or additional information.

**Meetings:**

General: First Monday of Month  
(open to public) @ 1930 hr

**Meeting Location:**

OCSD/Communications  
840 N. Eckhoff St. Suite 104  
Orange, CA 92868-1021

**County RACES Frequencies:**

6 m: 52.62 MHz output, 52.12  
MHz input, 103.5 Hz PL

2 m: 146.895 MHz output,  
146.295 MHz input, 136.5 PL;  
(primary net Mondays, 1900 hrs)

2 m: Packet: 145.07 MHz  
(1830 - 1900 hours)

1.25 m: 223.76 MHz output,  
222.16 MHz input, 110.9 Hz PL

70 cm: 449.180 MHz output,  
444.180 MHz input, 107.2 Hz  
PL (private)

**OCRACES Web Page:**

<http://www.ocraces.org>

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## Did You Know?

### *A Coming Attraction*

By: Ray Grimes, W6RYS  
Chief Radio Officer, OCRACES

A magnetic storm is forecast for the week of July 15 which could disrupt radio transmissions and satellites, and power grids. Major recent sunspot activity has produced northern light displays as far south as Seattle, New York, Denver, and Washington D.C.

NOAA's Space Environment Center in Boulder, Colorado reported that Friday's complex sunspot group produced one of the largest solar flares seen in recent years. This event has ejected tons of plasma and charged particles, for which some is heading toward earth, at a velocity of 3 million mph. Upon reaching the Earth's magnetic field, massive geomagnetic storms are expected to result. As incoming particles are deflected toward the earth's poles, the northern and southern lights phenomenon results. NASA has placed a satellite 1 million miles upstream from the Earth which will detect geomagnetic storms approaching the Earth. This should afford NOAA forecasters a one hour warning prior to their arrival.

That may give us enough time to— oh, no, (crackle, crackle).....

Thanks to the Orange County Register web site at  
<http://www.ocregister.com/science/15solarcci.shtml>

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## Visual Communications

*Coordinator:* Jim Carter WB6HAG

*Web Page:* <http://www.qsl.net/wb6hag/>

Tri-Agency — The Tri-Agency program remains on hold as LA County received their FCC experimental license to operate air TV operations in our ATV frequency spectrum. This now jeopardizes our 2.4 GHz TV operations for local simplex usage.

ATV Manual — Glendale Emergency Amateur Radio Service (GEARS) has requested ATV implementation assistance. A copy of our OCRACES ATV Manual was sent to them in order to assist with their implementation process.

SSTV NETS — To promote SSTV, starting August 14, 2000, at 1920 hours on the 449.180 repeater, we will conduct an SSTV net. It's purpose to allow us to experiment with our SSTV capabilities such as; sending pictures of text documents, weather status (cloud formations), field pictures, beach shoots and anything you think is beneficial in an event.

*Visual Communications cont'd on pg. 4*

### ***How Smart is Your Antenna System?***

By: Ray Grimes, W6RYS  
Chief Radio Officer, OCRACES

When RF interference occurs when listening on a crowded band, what do hams do to overcome it? The possibilities, though somewhat limited, are obvious; change frequencies, change bands, change modes, increase receiver selectivity, increase transmitter power, or redirect the directional antenna. Very little of these solutions would be practical or possible for commercial radio communications systems, so how do they overcome RF interference?

Cellular radio systems employ intense frequency reuse which allows the same RF frequencies to be used over and over throughout the market area. This is accomplished through use of downtilt pattern antennas which pull the main antenna lobe close-in to the site. Using low antenna height also helps to minimize the coverage footprint to something around a two mile radius. Color Code, which is much like subaudible tone (CTCSS) is used in Cellular systems to distinguish one co-channel user from another, though this really doesn't prevent or eliminate true RF interference.

A clever RF interference solution which has been around for several years employs a "Smart Antenna System". The Smart Antenna System is typically used on base station receivers. The Smart Antenna System employs an antenna array with digital signal processing capability to receive in an adaptive, spatially sensitive manner. Restated, the Smart Antenna System can electrically change the directionality of its antenna patterns in response to its signal environment. Such systems are most effective at UHF and above. There are a number of Smart Antenna System technologies. The most commonplace ones are the Switched Beam which employs a finite number of predetermined antenna pattern combinations, and the Adaptive Array which can produce an infinite number of antenna patterns that are adjusted in real-time.

The benefits of a Smart Antenna System are to produce base station received signal gain, RF interference rejection, and provide spatial diversity (received signals at the antenna which are combined in phase to reduce fading and multipath effects). This system also facilitates RF power reduction for distant mobile or portable transmitters, further reducing co-channel RF interference potential. Smart Antenna Systems are useable with all transmission modes. Smart Antenna Systems can be developed which have the adaptive antenna system benefits on both the transmit and receive paths. While these complex signal processing systems can significantly improve base station receive performance while electrically suppressing RF interference, they aren't perfect. Smart Antenna Systems require significantly more antenna arrays than a simple base station, which may not be practical on shared, congested sites, or may be prohibitively expensive where site tenants pay premium prices for each additional antenna. I know of no commercial Amateur Radio systems employing this technology, though it would certainly be within the reach of some to develop a Smart Antenna System for ham repeater use.

### ***Visual Communications cont'd from pg. 3***

Discussions will take place on innovative ways to use SSTV. This is open to all Cities who would like to join in on the fun.

DART(Documentation and Response Team) — OCSD Communications requested OCRACES ATV participation in their formation of a documentation team. This program is still in the planning stage. More about this later.

Anaheim Drill - Anaheim has requested ATV participation in their September mass causality drill. We plan to use both fast and slow scan modes of operation.

**SONGS TOUR**

*The quarterly meeting of the EMERGENCY ALERT SYSTEM, Local Emergency Communications Committee was held July 18 at the San Onofre Nuclear Generating Station. The meeting included presentations about Weapons of Mass Destruction and the San Onofre facility. Meeting attendees also participated in an extensive tour of the power plant. Several OCRACES members attended the meeting and tour.*

