March 2021

Newsletter of the County of Orange Radio Amateur Civil Emergency Service

Inside this issue:

Captain's Corner	1
Getting Vaccinated	2
OCRACES Meeting	3
Tony Scalpi, N2VAJ	3
Tom Wright, KJ6SPE	3
Art Goddard, W6XD	3
PSR Orientation	4
ITU News Magazine	4
Peter Jimenez, KI6UTE	5
MARS on 60 Meters	5
RACES/MOU News	6
Events Calendar	7
OCRACES Members	8

OCRACES Online Meeting on Zoom:

Monday, March 1, 2021, at 7:30 PM

Orange County Sheriff's Department
Technology Division

Captain's Corner

by RACES Captain Ken Bourne, W6HK, Chief Radio Officer

Preparing for the Unimaginable

Just when you think things can't get worse—they do! (Or at least they could!) 2020 was a nightmare for millions of people. The U.S. was besieged with devastating storms, California was clobbered with fire storms, and, to top it off, COVID-19 hit! Anti-law-enforcement protestors rioted throughout the country and eventually we saw the U.S. Capitol invaded by violent insurrectionists. All of this prompted the Orange County Sheriff's Department to stay well-trained and prepared, as they always are. Likewise, OCRACES remained on alert and ready to respond if activated. We continued to conduct our meetings (online), held our emergency communications training exercises (from home property), and exchanged information to keep our communications technology up-to-date.

We never expected these disasters to occur—especially the worldwide pandemic that has killed almost 2.5 million people—over 500,000 in the U.S. Staying sequestered has shut down our in-person RACES meetings and drills. As the daily case count seems to be dropping and as more citizens get vaccinated, we are seeing encouragement from the OCSD Reserve Bureau to begin resuming our activities, including in-person meetings. But suddenly record-breaking storms hit Texas and other states east of here, delaying delivery of the vaccines. It's difficult to comprehend the staggering numbers of COVID-19 victims, the economic impact, and the tragedies hitting families in Texas and elsewhere. We are no longer thinking such disasters only happen to other people—not to us. It's happening right here in Orange County as well, and more unimaginable disasters could occur. We in RACES must be prepared to serve and provide auxiliary emergency communications when needed.

We have often discussed and trained for disasters such as earthquakes, fire storms, tsunamis, civil unrest, and massive, long-lasting power outages. But what about the unimaginable, such as a nuclear EMP (electromagnetic pulse) attack that could wipe out all solid-state electronics and the power grid for months. Or what about a large asteroid colliding with the earth? Or what about a powerful solar storm? That might not be as far-fetched as it sounds, and I'll focus on that scenario for the remainder of this article, borrowing information from ARRL about a new study in the research journal *Space Weather* that considers what might happen if a worst-case coronal mass ejection (CME) were to hit Earth. This could be called a "perfect solar storm."

In 2014, Bruce Tsurutani of Jet Propulsion Laboratory (JPL) and Gurbax Lakhina of the Indian Institute of Geomagnetism introduced the "perfect CME." (Click **here** for more information.) It could create a magnetic storm with intensity up to the saturation limit, a value greater than the Carrington Event of 1859, the researchers said. (Click **here** for details about the Carrington Event.) Many other space-weather effects would not be limited by saturation effects, however. The interplanetary shock

Continued on page 2

Captain's Corner *Continued from page 1*

would arrive at Earth within about 12 hours, the shock impingement onto the magnetosphere would create a sudden impulse of around 234 nanoteslas (nT), and the magnetic pulse duration in the magnetosphere would be about 22 seconds. Orbiting satellites would be exposed to "extreme levels of flare and interplanetary CME (ICME) shock-accelerated particle radiation," they said. The event would follow an initial CME that would "clear the path in front of it, allowing the storm cloud to hit Earth with maximum force."

The Solar and Heliospheric Observatory (SOHO) has observed CMEs leaving the sun at speeds of up to 3,000 kilometers per second, and many instances of one CME clearing the way for another have been recorded.

The CME's 12-hour travel time would allow little margin for preparation. The CME would hit Earth's magnetosphere at 45 times the local speed of sound, and the resulting geomagnetic storm could be as much as twice as strong as the Carrington Event. Power grids, GPS, and other services could experience significant outages.

More recent research led by physicist Dan Welling of the University of Texas at Arlington took a fresh look at Tsurutani and Lakhina's "perfect CME," and, given improvements in space-weather modeling, he was able to reach new conclusions.

Welling's team found that geomagnetic disturbances in response to a perfect CME could be 10 times stronger than Tsurutani and Lakhina had calculated, especially at latitudes above 45° to 50°. "[Our results] exceed values observed during many past extreme events, including the March 1989 storm that brought down the Hydro-Québec power grid in eastern Canada, the May 1921 railroad storm, and the Carrington Event itself," Welling summarized.

A key result of the new study is how the CME would distort and compress Earth's magnetosphere. The strike would push the magnetopause down until it's only 2 Earth-radii above Earth's surface. Satellites in Earth orbit would suddenly find themselves exposed to a hail of energetic, and potentially damaging, charged particles.

Other research has indicated that phenomena such as the Carrington Event may not be as rare as once thought. A much weaker magnetic storm brought down the Canadian Hydro-Québec system in 1989.

Scientists believe a perfect CME will happen someday. As Welling et al conclude, "Further exploring and preparing for such extreme activity is important to mitigate space-weather-related catastrophes."

In July 2012, NASA and European spacecraft watched an extreme solar storm erupt from the sun and narrowly miss Earth. "If it had hit, we would still be picking up the pieces," said Daniel Baker of the University of Colorado at a NOAA Space Weather Workshop 2 years later. "It might have been stronger than the Carrington Event itself."

Thanks to ARRL for the above CME material.

How to Get Vaccinated

The COVID-19 pandemic has affected RACES operations. We conduct our drills from home property and our meetings on Zoom. The OCSD Reserve Bureau is beginning to encourage some outside activities for its sworn and non-sworn (PSR) Reserves, as the COVID case count in Orange County is decreasing, but social distancing and other cautions remain. As OCRACES members transition fully to PSR and sworn Reserve status, we must take steps to protect ourselves so we can attend training meetings and be ready to serve when activated. That includes getting vaccinated against the COVID-19 virus.

The OC Health Care Agency has partnered with Composite Apps, developer of the Othena application, for the sole purpose of facilitating safe and timely distribution of COVID-19 vaccines to Orange County residents. The agency says the success of the County's implementation of the phased, tiered vaccination plan depends on everyone being patient and allowing priority groups to be vaccinated first. Eligible RACES members can register online through https://www.othena.com to view available appointments and to keep informed with upcoming availability. Currently, appointments will be provided only to the following prioritized groups:

- Phase 1A populations (all tiers)
- Phase 1B, Tier 1 populations, which includes:
  - Education
  - Food Service, Grocery and Agriculture Workers
  - Child Care Providers
  - Emergency Services

See https://occovid19.ochealthinfo.com/covid-19-vaccination-distribution for Phases 1A and 1B, Tier 1 details.

IDEC Mesh at March 1st Zoom Meeting

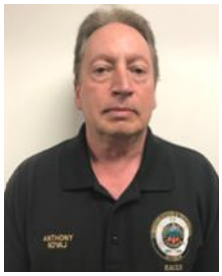
IDEC Operations Lieutenant Bob Pestolesi, KE6GYD, will be our featured speaker at the next OCRACES meeting on Monday, March 1, 2021, at 7:30 PM, which will once again be on Zoom. He will talk about IDEC's mesh network system. (See his article on page 6 of this issue.) This will be an excellent follow-up to the presentation on mesh networks that was at the February 1st OCRACES Zoom meeting by Don Hill, KE6BXT.

Joe Selikov, KB6EID, will once again be the Zoom meeting host. For security reasons, please use the latest version of Zoom, which currently is 5.5.2. The meeting link, ID, and password will be emailed to RACES members.

Farewell to Tony Scalpi, N2VAJ

Tony Scalpi, N2VAJ, has resigned from OCRACES, to focus on other pursuits. He is a highly knowledgeable RF engineer and was always eager to share his knowledge with RACES members. Originally from New York, he graduated from Manhattan College with a BSEE. He spent many years in RACES in Putnam County, New York, and ARES in Sunnyvale, California, and eventually became an OCRACES member in March 2016. We thank Tony for his five years of dedicated service in OCRACES and wish him the very best.

You can still catch Tony on our 60-meter nets every Saturday morning at 10:00 AM, on 5371.5 kHz upper sideband (dial frequency). Like the rest of us, he enjoys observing the unusual signal propagation on that band and experimenting with various antenna configurations.

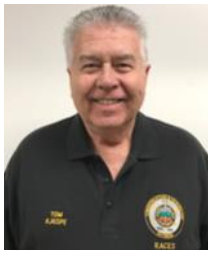


Tony Scalpi, N2VAJ.

Farewell to Tom Wright, KJ6SPE

Tom Wright, KJ6SPE, is stepping aside from OCRACES due to expanded work duties, which, he feels, do not allow him to make a commitment to be available when needed. He recognizes "a committed member should be anxious to return any call asking for volunteers to help with an OCRACES task assignment. He said he is grateful to have been an OCRACES member and cherishes the time spent participating in meetings, events, and drills.

Tom became an OCRACES member in August 2014. He was an excellent net control operator and participated in most City/County RACES & MOU exercises at the Orange County EOC RACES Room. We will miss his cheerful and helpful attitude in working with his fellow members.



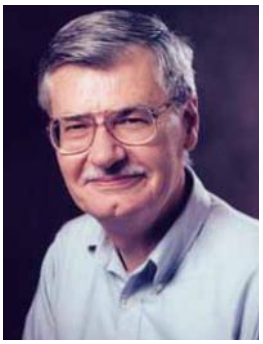
Tom Wright, KJ6SPE.

Art Goddard, W6XD, Silent Key

We are sad to report that former ARRL Southwestern Division Director Art Goddard, W6XD, of Costa Mesa, died on February 13, 2021. Art was a proponent of radio amateurs providing communications during emergencies and disasters. He was a guest speaker at an OCRACES meeting on August 4, 2008, emphasizing the importance of promoting the public benefit of the Amateur Radio Service.

An ARRL Life Member, he was 78. First licensed in 1956, Goddard was an electrical engineering graduate of Worcester Polytechnic Institute and Montana State University. He worked for Collins Radio and later for Boeing, from which he retired as an executive.

After several years working with local governments in southern California on proposed antenna ordinances, he was elected ARRL Southwestern Division Vice Director in 1995, serving two terms before being elected Director in 2001. After retiring from the ARRL Board, he continued to follow ARRL affairs and advocate for stronger public relations on behalf of amateur radio.



Art Goddard, W6XD, SK.

Goddard was active on the air from HF through microwaves. A member of the Southern California Contest Club, he took part in contest DXpeditions to locations ranging from subarctic to tropical, operating the CQ World Wide DX Contest in 26 of the 40 CQ zones. He also headed teams of VHF/UHF/microwave contest rovers. Goddard was heavily involved with the Costa Mesa Historical Society and was co-author of two books on Costa Mesa history.

PSR Orientation & Pre-Screen: March 11 & 20

OCRACES continues to progress toward all members being OCSD Reserves—either non-sworn PSRs (Professional Services Responders) or sworn Reserve Deputies. The first step for those members or applicants who are not already PSRs is to attend the PSR orientation at the Sheriff's Academy in Tustin on Thursday, March 11, 2021, at 1830 hours. After that, they need to attend the PSR pre-screen on Saturday, March 20th, at 0900 hours. Before attending the March 11th orientation, they should fill out the Interest Card at https://ocsd.typeform.com/to/feMqPo. After the pre-screen, they will submit a PSR application and applicants will follow that with submitting a RACES application. Applicants also need to attend three RACES meetings (online or in person). After passing background, they will obtain a PSR uniform and sign a DSW form and get sworn in.

Each member of RACES needs to obtain the following certifications within the first three months of becoming a RACES PSR.

- **IS-100.C: Introduction to the Incident Command System**
  https://training.fema.gov/is/courseoverview.aspx?code=IS-100.c
- **IS-200.C: Basic Incident Command System for Initial Response**
  https://training.fema.gov/is/courseoverview.aspx?code=IS-200.c
- **IS-700.B: An Introduction to the National Incident Management System**
  https://training.fema.gov/is/courseoverview.aspx?code=IS-700.b
- **IS-800.D: National Response Framework, An Introduction**
  https://training.fema.gov/is/courseoverview.aspx?code=IS-800.d

Although optional, it is highly suggested to have an understanding of and have read **Auxiliary Emergency Communications Overview : Units 1, 2, and 10.** This is an overview of the Auxiliary Communications (AUXCOMM) position including the responsibilities, roles, and functions within the COMU, as well as roles and functions of Auxiliary Emergency Communications (AEC). Click on https://www.cisa.gov/publication/comu-training-documents.

The AUXCOMM course used to be offered some time ago. It is an excellent course to take when it is offered and it dives deep into the roles and responsibilities of Auxiliary Communications Groups such as RACES and how they tie into the EOC.

OCRACES members who have not already completed the IS-100, -200, -700, and -800 certifications are asked to do that soon. Send copies of your completion certs to Peter Jimenez for his files. If you can't find your certs, you can obtain a transcript of your certs from FEMA Emergency Management Institute. Pete would also like to have a copy of your FCC amateur radio license. Please follow the above procedures as we enjoy working together to expand our RACES unit and to enhance our service to the Sheriff's Department and to the community.

ITU News Magazine Covers Emergency Comm

The latest issue of the free publication *ITU News Magazine* highlights World Radio Day (observed each year on February 13), featuring two articles on amateur radio. Articles in the magazine include the evolution of radio throughout the ages, ham radio and emergency communications, and remarks by International Amateur Radio Union (IARU) President Tim Ellam VE6SH, regarding why World Amateur Radio Day (celebrated each year on April 18) is important to highlight crucial services.

Read the latest issue for:

- A deep dive into the evolution of radio throughout the ages
- An overview of how radio connects and serves societies across the world in normal times and its crucial role in emergencies and global crises
- An inside look at how the world of radiocommunications is becoming more diverse through inclusion
- A glimpse of the resilient future brought by innovation in radiocommunications

Go to https://www.itu.int/en/myitu/Publications/2021/02/02/15/24/ITU-News-Magazine-No-1-2021 to download your free copy.

Peter Jimenez, KI6UTE, Receives Promotion

Congratulations to Peter Jimenez, KI6UTE, who has been promoted to Supervising Communications Technician within the OCSD Technology Division. Pete was previously the Emergency Communications Coordinator and continues to coordinate the Sheriff's RACES program.

MARS Schedules Interoperability on 60 Meters

The Military Auxiliary Radio System (MARS) has announced dates in 2021 during which MARS members will operate on 60 meters for interoperability with the amateur radio community. Some dates coincide with quarterly Department of Defense Communications Exercises (COMEX).

All exercises will begin on channel 1 as the initial calling channel and move to other 60-meter working channels as may be appropriate. (OCRACES runs a weekly net covering the Cal OES Southern Region and beyond on 60 meters channel 4 every Saturday at 1000 hours.)

"In addition to voice calls, I want to introduce passing ICS 213 messages in both voice and digital modes to enhance the overall interop experience," said US Army MARS Chief Paul English, WD8DBY. "Our exercises will yield the frequencies to other scheduled exercises or mission activations, which may be called by other agencies for interop support (e.g., hurricane, wildfire, etc.). We regularly instruct MARS members to work cooperatively with the amateur radio community during the use of the 60-meter interop channels. We will continue to track our 60-meter usage and activities.

English said he plans to provide a quarterly usage report of 60-meter interoperability activities.

- February 23 – 27
  Exercise: DOD COMEX 21-1
  Location: CONUS
- March 1 – 7
  Exercise: Interop Outreach
  Location CONUS
- April 3 – 10
  Exercise: Interop Outreach
  Location CONUS
- April 30 – May 6
  Exercise: DOD COMEX 21-2
- May 7 – 8
  Exercise: Armed Forces Day Cross-Band Test
  Location: CONUS
- June 1 – 6
  Exercise: Interop Outreach
  Location CONUS
- July 5 – 10
  Exercise: Interop Outreach
  Location CONUS
- July 20 – 22
  Exercise: DOD COMEX 21-3
  Location: CONUS
- August 2 – 8
  Exercise: Interop Outreach
  Location CONUS
- September 1 – 6
  Exercise: Interop Outreach
  Location CONUS
- October 1 – 31
  Exercise: DOD COMEX 21-4
  Location: CONUS

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

Irvine RACES (IDEC)

IDEC's Mesh Capabilities

By IDEC Operations Lieutenant
Bob Pestolesi, KE6GYD

Over four years ago, Joe Ayers, AE6XE, from OCMESH gave a presentation to IDEC's Technical Committee about the capabilities of a high-speed wireless data network that he and others were developing. With his help, a group of about six IDEC members, excited about this new mode of emergency communications, formed a mesh Special Interest Group. SIG members purchased equipment with their own money and with Joe's help and began experimenting with mesh. After determining that this would be a great asset to the City of Irvine, we demonstrated its capabilities to the City's Emergency Manager and IDEC's advisor at the time, Sgt. Tim Schilling. VoIP calls were made, messages were sent, and video was streamed back to our Radio Room. We even had a member with a drone send video. Our EM and Sergeant were impressed and indicated that they would look for funding to develop our own network within the City. Since then, the Chief and many city council members have seen the system in action during demonstrations at Field Day and National Night Out.

A proposal was made and funding was found to establish three relay nodes at high points in the surrounding hills that cover virtually the whole city, barring trees and buildings in the way. Portable or permanent stations will connect to the relay nodes and all relay nodes point to the IDEC Radio Room at the PD. The Radio Room has Ethernet running to the EOC to quickly set up and display any mesh traffic and provide VoIP and video capability from the network, should that be requested. Of the three relay nodes, one is powered via solar, another is AC powered with back-up generator, and another is AC powered with solar backup.

Portola High School ComBox.

Signal Peak node antennas.

IDEC has decided to create its own internal network with its own SSID using AREDN firmware, but also tie our system into the greater OCMESH network should there be a need to communicate with other cities and/or organizations. Currently, IDEC can communicate with all other cities and entities that have mesh capability.

At each of the six high schools in the city that could be used for evacuation centers, IDEC has permanently installed mesh radios/antennas on the roofs. Existing communication "ComBoxes" have been modified to work with mesh and can operate from AC or battery power. The schools, using upgraded laptops in the ComBoxes, have file transfer, internal email, and VoIP capability with PBX assigned extensions. We also have a node station at the City Yard that is used as an alternate EOC.

Our SIG has expanded to 12 members with six having home mesh stations and another six having go-kits that can be deployed anywhere needed (barring obstructions) with video, VoIP, and file/email capability.

Our next goal is to survey network connectivity from fire stations and community parks and find where gaps in coverage exist.

March 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 Weekly 2 m ACS Net & OCRACES Zoom Mtg	2	3	4	5	6 Weekly 60 m ACS Net
7	8 Weekly 2 m ACS Net	9	10	11	12	13 Weekly 60 m ACS Net
14	15 Weekly 2 m ACS Net	16	17	18	19 Orange County Amateur Radio Club Meeting	20 Weekly 60 m ACS Net
21	22 ACS Net on 4 Bands	23	24	25	26	27 Weekly 60 m ACS Net
28	29 Weekly 2 m ACS Net	30	31			

Upcoming Events:

- **March 1:** OCRACES Meeting on Zoom, 1930 hours
- **March 19:** Orange County Amateur Radio Club Meeting on Zoom, 1900 hours
- **March 11:** Orientation for PSRs, Sheriff's Academy, 1830 hours
- **March 20:** Pre-Screen for PSRs, Sheriff's Academy, 0900 hours

https://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 (out of service)
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 Supervising Comm Technician
Pete Jimenez, KI6UTE, 714-704-8080

OCSD Senior Telecomm Engineer
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

Orange County Sheriff's Department, 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 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

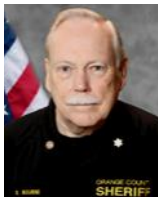
Visit Our Web Site
https://ocraces.org
It's Where It's @!

Questions or Comments?
Contact *NetControl* Editor Ken Bourne, W6HK
kbourne.ocsd@earthlink.net

"W6ACS ... Serving Orange County"

Meet Your County of Orange RACES Members!

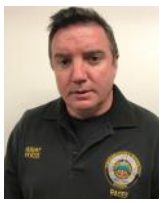
Officers


Ken Bourne
W6HK


Scott Byington
KC6MMF


Jack Barth
AB6VC


Ernest Fierheller
KG6LXT


Bob McFadden
KK6CUS

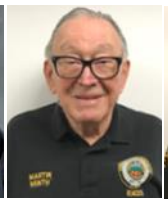

Tom Tracey
KC6FIC


Randy Benicky
N6PRL


Ray Grimes
N8RG


Lee Kaser
KK6VIV

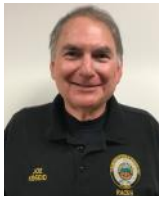

Walter Kroy
KC6HAM


Martin La Rocque
N6NTH


Don Mikami
N6ELD


Fran Needham
KJ6UJS


Harvey Packard
KM6BV


Joe Selikov
KB6EID


Robert Stoffel
KD6DAQ


Ken Tucker
WF6F

OCSD RACES Coordinators


Peter Jimenez
KI6UTE


Erik Schull
KE6BVI