April 2023

County of Orange RACES

NetControl

Newsletter of the County of Orange Radio Amateur Civil Emergency Service

CRO's Nest
by Ken Bourne, W6HK, OCRACES Chief Radio Officer

Coax Switches

Coax switches are some of the most common devices in a ham shack for switching between antennas. They are also used for switching an antenna between two or more transceivers and/or scanners. Most in-shack coax switches are operated manually with a knob, but some are electronic, using relays that are activated with push buttons, computers, or control signals from a transceiver.

It's a good idea to avoid purchasing used coax switches at an electronics swap meet. They might have burned contacts from surges and arcing, contact corrosion, worn silver on the contacts, and flimsy mechanism. If a switch with faulty contacts produces an open, short, or high SWR, it could damage your transceiver.

The most basic coax switch is the A/B or 2-port switch, with one input and two outputs for switching between two antennas and one transceiver. It can also be used oppositely, for switching one antenna and two transceivers. In this case, to prevent overload or damage to those transceivers, high switch isolation is needed and the unused connection should be automatically grounded by the switch to bleed off any stray signal.

Relay Switches

Some desktop coax switches use relays instead of manual rotary switches. They can be triggered by various interfaces such as pushbuttons, rotary switches, toggle switches, computers, and some transceivers. Relays tend to be more reliable and can

The **MFJ-4726 desktop/remote 6-position antenna/transceiver switch** is designed to switch up to six 50-ohm antenna systems to six transceivers in any combination. It handles up to 1,500 watts from 1 to 60 MHz (low SWR from 1 to 30 MHz). It has sealed relays for extended life and connection reliability. An optional MFJ-4726RC remote control allows the switch to be placed in another room. In the off/remote position, all switch inputs are grounded or control is transferred to the MFJ-4726RC. All unused inputs are grounded. You can connect a sense line to your transceiver so that, when it's off, all inputs are automatically grounded. All RF connectors are SO-239 (UHF female). An ultra-fast gas-discharge-tube lightning surge protector protects your transceiver and shunts static electricity and lightning-induced surges to ground.

handle high power. Some relay switches have independent band memory and band interface capabilities for several radios and antennas, and are compatible with many modern transceivers.

Remote Antenna Switches

Remote coax relay switches are typically used to select two or more antennas on a tower. They reduce the number of runs

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Next OCRACES Meeting

In-Person at OC Sheriff's Academy, Tustin

Monday, April 3, 2023 at 7:30 p.m.

Orange County Sheriff's Department Emergency Management Division

CRO's Nest *Continued from page 1*

of expensive coaxial cable from a tower or other remote site with two or more antennas. This also reduces "cable clutter" in your ham shack. All unselected antennas would have their coax feeds shorted to ground at the remote switch box, which would increase lightning protection to your shack.

The remote switching enclosure should be mounted at the base of your tower where you can access it quickly in case of a problem. The cost of extra cable going up the tower is minor, compared to the inconvenience of climbing your tower. Add a drip loop to each cable.

At a remote tower site, with two or more antennas picking up strong signals or noise, grounding or shorting the unselected antenna automatically could reduce routing of signal or noise interference that might otherwise "override" inadequate port isolation.

The Daiwa CS-201A 2-port antenna coax switch is intended to switch between one antenna and two radios, or two antennas and one radio. Its unselected port is automatically grounded. Frequency range is up to 600 MHz. It can handle 2.5 kW PEP and 1 kW CW. VSWR is below 1.12:1 across the range. Insertion loss is less than 0.2 dB. Isolation is 60 dB at 600 MHz.

Specifications

Pay close attention to specifications when purchasing a new coax switch. Make sure it covers your operating frequency range and RF power requirements. Specifications of unrecognized foreign brands listed on eBay or Amazon might not be trustworthy. Besides maximum RF frequency and power, other important parameters include isolation, insertion loss, SWR, number of ports, connector type, lightning protection, and mechanical design.

Inspect the internal quality even of a new switch before use, for reliable contacts, soldering, shorts, and grounds, to insure reliability.

Isolation

Isolation is the level of attenuation between ports. A quality coax switch will have isolation typically more than 50 dB.

Be very careful about choosing a coax switch to connect two or more transceivers to a single antenna. Consider how much RF might be routed to the unselected transceiver, even if the switch has as much as 70 dB isolation between ports. Coax switches that do not ground their unused connectors should never be used for this one-antenna/multi-transceiver application. RF leakage from one port to another can overload or damage other radios or test equipment such as an antenna analyzer. Unselected ports should be automatically grounded by the switch to bleed off any stray signal.

Insertion Loss

Insertion loss reduces received signal strength and creates resistive loss (heat) on a transmitted signal. Insertion loss should not be more than a few tenths of a dB. Every coax switch has some parasitic capacitance, inductance, resistance, and conductance, similar to a lowpass

The Alpha Delta DELTA-4B 4-port coax switch has a precision-machined switch shaft and quadrant mechanism. It has a low-loss microstrip cavity, positive detent switching, master antenna ground function, and a front-panel removable arc-plug surge-protection gas-tube module. The unselected antenna ports are grounded for protection and maximum isolation. Impedance is 50 ohms. Power rating is 1,500 watts PEP/1,500 watts CW through 500 MHz. Insertion loss is 0.1 dB to 30 MHz, less than 0.5 dB through 450 MHz.

filter. These parasitic components combine to attenuate and degrade the signal routed through the switch. The power loss and voltage attenuation caused by these components varies (normally increases) with frequency of the input signal. Insertion loss of 0.2 dB at 3.5 MHz might climb to well over 1 dB on 2 meters.

SWR

A good coax switch will have an SWR of less than 1.2:1. This rating is related to insertion loss. The lower the SWR, the lower the insertion loss will be, and vice versa. SWR normally increases with frequency.

Lightning Protection

Some coax switches have surge-protection gas-tube modules that are replaceable in case of a nearby lightning strike. They probably will not withstand a direct lightning strike. Generally, external lightning arrestors outside your house are preferred, allowing lightning surges to be routed directly to a ground rod. ✴

Next OCRACES Meeting: April 3rd at Academy

The next OCRACES meeting will be in-person on Monday, April 3, 2023, at 7:30 p.m., at the Orange County Sheriff's Regional Training Academy, 15991 Armstrong Avenue, in Tustin. Sgt. Jason McLennan will give a presentation on the Sheriff's Dive Team.

All county and city RACES and EmComm members may attend this meeting. PSRs must register on the Reserve Tracker Calendar. ✦

TikTok Banned from OC Government Devices

The article, "Beware of Social-Media Risks," in the March 2023 issue of *NetControl*, warned about the dangers of using the Chinese-owned TikTok app, for fear of it gathering users' saved information. If TikTok data flows through Chinese servers, the Chinese government can access all data collected from the app users' smartphones without requiring a warrant or notification. The article urged RACES members not to use the app.

The March *NetControl* article mentioned that more than half of the states and Congress have banned TikTok for official government devices. On Tuesday, March 14th, the Orange County Board of Supervisors followed the Federal Government's advice and declared that county employees will no longer be allowed to download, view, or use TikTok on government-issued devices. The board approved a proposal from First District Supervisor Andrew Do and Sheriff Don Barnes to ban the popular social-media app to "ensure the safety and security of county data." Do stated, "We are taking proactive steps to ensure the County of Orange is following best security practices to protect our county and the residents we serve."

Sheriff Barnes said he encourages the public, particularly parents, to consider the potential for compromised data and negative influence on users, and take action to secure your personal devices." Barnes explained how the Chinese-based tech giant ByteDance, parent company of TikTok, collects users' personal data, building profiles based on an individual's viewing history, habits, and even geographic locations and may tailor or manipulate the content that that person sees. "We have recognized the inherent risk of the way the TikTok social-media platform operates and how its contents can be misused by the parent company or the Chinese Communist Party against the best intentions of the American People," Barnes said.

KC Roestenberg, the county's chief information officer, said applications like TikTok can pose a risk to county systems and data. "Social media plays an important role in the county's ability to communicate and perform community outreach. As such, it is critical that the social-media platforms we use are trusted and comply with a reasonable level of regulation."

The March 14th decision amends the county's current information technology and social-media use policies to apply the prohibition to company cellphones, laptops, and desktop computers used by more than 18,000 Orange County employees, except as necessary for law-enforcement purposes. ✦

# Coax Jumper Goes Through Window Gap

The Comet-NCG CTC-50M window-gap coax extension jumper allows you to route your outdoor antenna coaxial cable into your ham shack (radio room) without drilling holes in your wall or leaving a window or door open. The center core of the flat-wire coax is copper-clad steel chosen for its strength and resistance to metal fatigue. The film is made of ALPET (aluminum/PET plastic), also to resist damage due to material fatigue.

The frequency range of the CTC-50M is DC to 1300 MHz. Maximum power at HF is 100 watts PEP, at VHF is 60 watts FM, at UHF is 40 watts FM, and at 900 MHz to 1.3 GHz is 10 watts FM. VSWR below 500 MHz is 1.3:1, and above 500 MHz is 1.5:1. Insertion loss at DC to 500 MHz is 0.5 dB, at 500 to 900 MHz is 1.3 dB, and at 900 to 1300 MHz is 1.8 dB.

Impedance is 50 ohms. Connectors are SO-239.

HRO is offering the CTC-50M at $59.95. ✦
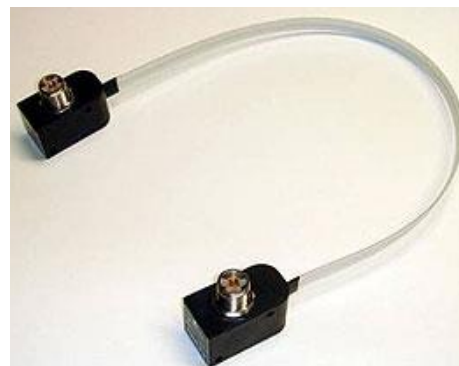
Comet-NCG CTC-50M window-gap coax extension jumper routes your outside coax inside without drilling holes.

Winlink in Orange County
by Scott MacGillivray, KM6RTE, KM6RTE@gmail.com

Results from March 11th Countywide Winlink Peer-to-Peer Drill

This quarter's countywide Winlink Peer-to-Peer (P2P) drill was held Saturday, March 11th, from approximately 8:45 a.m. until 12:30 p.m. The purpose of the practice drill was 1) to provide Winlink operators in Orange County the opportunity to gain experience using P2P operating mode, and 2) to verify their Winlink computer and radio equipment setup successfully operates in the P2P operating mode. This drill was similar to the ones held in previous quarters, and included the opportunity to use a form attached to their Winlink message.

As background, Winlink P2P is one of four operating modes that Winlink supports. Winlink conventional mode is the most commonly used and utilizes a connection to the internet by communicating via RF through a Radio Message Server (RMS), or more commonly referred to as a Winlink gateway. However, having experience utilizing P2P is a very important skill since, in a widespread disaster, it is reasonable to consider that internet access at a gateway may not be available. In that situation, Winlink is still a very viable method of sending and receiving digital messages by using P2P directly between stations (e.g., OC EOC at Loma Ridge and local city EOC). If the disaster has widespread electrical power outage, a gateway can still operate if it has some sort of backup electrical power. In that case, the gateway can be used as a P2P relay in order to extend the range of messages sent and received. My personally managed gateways (KM6RTE -10 and -12) are connected to a UPS (Uninterruptable Power Supply) and/or backed-up electrical power.

For the March 11th exercise, Drill Ops, operating from the OCRACES radio room at Loma Ridge, communicated with over 20 different Winlink operators around Orange County. Overall, there were an estimated 44 messages transferred to/from Drill Ops during the 3-1/2-hour long exercise. The majority of participants successfully included a Check-In form that was correctly filled-out.

The Winlink Express software is constantly improving and has been continually adding more capability to handle the GPS location information included in the Check-In form, as well as many other Winlink forms. Figure 1 is one of the map display options showing the locations ("pins") of the stations reporting their GPS locations included in the Check-In form. If an operator didn't enter their exact location, the Winlink Express software defaults to the center of their grid location for their location (e.g., the green pin for Drill Ops). This explains why there are fewer than the 20 stations shown, since several locations ("pins") shown represent more than one station reporting. ✸

Yaesu Develops Flagship FTM-500DR Mobile

Some preliminary and speculative information is available about Yaesu's new FTM-500DR 50-watt, 144/430 MHz, dual-band digital mobile transceiver, which is not yet available for sale. The FTM-500DR shares the Yaesu core features, with many new features and improvements. It reportedly offers simultaneous FM, APRS, and digital voice (C4FM) operation. It has 1000 memory channels. The built-in GPS receiver with 66 channels provides location-based navigation. The optional Bluetooth interface allows for hands-free operation while driving. Advanced features include Digi Group ID, Digital Group Monitor, and participation in the Wires-X system.

Yaesu says the FTM-500DR delivers clear and powerful high-fidelity audio with its AESS (Acoustic Enhanced Speaker System) dual front speaker system.

The E20 (Easy to Operate –IV) smart operating system includes TOUCH & GO and SEARCH & GO functions. TOUCH & GO enables initiating communications quickly by touching the target frequency. SEARCH & GO enables dual-receive of a desired frequency during main channel operation.

Yaesu FTM-500DR dual-band mobile transceiver reportedly offers simultaneous FM, APRS, and C4FM operation.

The package includes power cable, DTMF microphone, PC connection cable, and a control unit cable. An optional microSD memory card makes voice recording and playback possible.

The FTM-500DR might be available by April 2023. As of February 2023, this radio has not been approved by the FCC. ✸

FEMA Publishes NIMS ICT Guidance

The Federal Emergency Management Agency (FEMA) has released a final version (March 2023) of the *National Incident Management System (NIMS) Information and Communications Technology (ICT) Functional Guidance*. The Guidance provides instruction on integrating communications, information technology, and cybersecurity functions into the ICS structure while adhering to the concepts and principles of the NIMS doctrine. The Guidance officially includes support from amateur radio operators.

Under the NIMS Logistics structure is the new Information and Communications Technology (ICT) branch.

The expanded Communications Unit (COMU) structure now includes the Auxiliary Communicator (AUXC) role, which covers personnel from services that provide communications support to emergency management, public safety, and other government agencies. This role includes amateur radio.
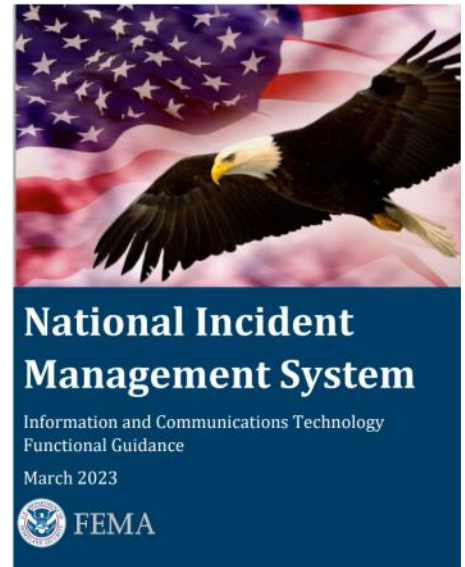
Under Communications Unit Leader (COML) is Auxiliary Communicator (AUXC):

- Installs appropriate/approved auxiliary communications equipment per discussion with the COML or INCM;
- Tests all components of auxiliary communications equipment to ensure systems are operational;
- Operates auxiliary communications equipment for voice and data communications;
- Establishes auxiliary communications area(s) of operation; and
- Interacts and coordinates with appropriate auxiliary communications operational personnel.

NIMS guides government, non-governmental organizations, and the private sector to work together to prepare for, respond to, and recover from disasters and other emergencies.

The NIMS ICT guide (PDF) is available at https://www.fema.gov/sites/default/files/documents/fema_ict-functional-guidance.pdf.

FEMA will host two 30-minute Zoom for Government webinars during the spring and summer of 2023 (exact dates TBD) to discuss the NIMS ICT Functional Guidance and answer related questions. The webinars will be open to the whole community. Advance registration is required and will be on a first-come, first-served basis.

NIMS provides stakeholders across the whole community with the shared vocabulary, systems, and processes to successfully deliver the capabilities described in the National Preparedness System. It defines operational systems that guide how personnel work together during incidents. ✦

City/County RACES & EmComm Drill: May 6

The next City/County RACES & EmComm ACS Exercise will be on Saturday, May 6, 2023, from 0900 to 1200 hours. The drill plan and scenario are being finalized but will probably be a simulated large earthquake off the Southern California Coast, generating damage and casualties throughout the county and threatening a major tsunami. Repeaters will "fail" and all operations will be at field locations, using simplex frequencies for FM voice and peer-to-peer Winlink. No operations will occur from home locations or EOCs, except for OC EOC net control.

The first part of the drill will be for city and county net controls to call their own members on their primary simplex frequencies and receive short simulated damage reports. The last part of the drill will be for OCRACES net control to call each city and EmComm unit on 146.595 MHz simplex and ask for a report on the number of members who checked in on their simplex frequency and for city requests for resources that are not locally available. OCRACES net control will also be active on 60 meters to take requests for resources and to communicate with Cal OES and surrounding counties to request resources that are not available in Orange County. The exact time schedule for these segments and other details will be announced in the drill plan, to be released in April.

The Winlink portion of the drill will utilize the peer-to-peer (P2P) operating mode, and may extend to about 1500 hours. Cities may report their check-in results using the Field Situation Report form, and may request resources from the county via Winlink rather than via voice simplex.

Mesh activities are not planned for OCRACES during this exercise, but city RACES units may optionally incorporate mesh into their operations on May 6th. ✦

Countywide RACES/EmComm News

"RACES/
EmComm
News" provides
an opportunity
to share
information
from all City &
County
RACES/ACS
units and
EmComm
organizations
and supportive
amateur radio
clubs in and
near Orange
County, as well
as from Cal
OES and
federal
agencies.

Please send
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Seal Beach/Los Alamitos RACES

Seal Beach RACES Chief Radio Officer Dick Crowe, KG6XJ, advised that they have planned an April Training Drill. The scenario is an earthquake at 2:00 a.m. The drill will require the RACES team members to report in as quickly as possible and provide a quick assessment of the damage or what is needed in their immediate neighborhood. This will develop a procedure of what the members should do at the beginning of an emergency, with or without being activated, to provide the Incident Commander with a first-hand assessment of the city issues. This will be good information for the new members, as to what they can be expected to do. Leisure World presents other challenges that will be considered during the drill. Dick invites comments from other RACES units in coastal cities as to what they would do in the event of a tsunami.

Baker to Vegas

Eric Christensen, K6EJC, advises that he has been assigned as the ham radio lead at the Baker to Vegas Challenge Cup Relay race Check Point 12 in Pahrump, Nevada. The event is on Saturday and Sunday, April 1-2, 2023. So far, he is the only ham presently assigned to that check point and would like to be contacted by anyone who is interested in working there. Contact Eric at k6ejc@att.net or at (818) 599-6883.

Beach Restoration

RACES members in Orange County coastal cities are advised that the Federal Government has agreed to a major beach restoration project in the county to restore almost 2 million cubic feet of sand lost to storm erosion over the past several years. The sand will be dredged from the sea and added to replenish the coastline from Seal Beach to Bolsa Chica to Huntington Beach and as far as the Newport Beach Pier. State Parks Superintendent Kevin Pearsall said that a large amount of sand is receding into the ocean. The project will help protect property and roads from flooding. Seal Beach saw flooding in January. The restoration work will be carried out by the U.S. Army Corps of Engineers, who

will work with local experts to ensure that the sand is distributed evenly along the coastline. The beach restoration project will be funded by federal and local government money and is expected to begin in the coming weeks. It is expected to take several months to complete.

Orange County Amateur Radio Club

The next meeting of the Orange County Amateur Radio Club (OCARC) is Friday, April 28, 2023, at 7:00 p.m. The meeting has been moved from the usual third Friday to the fourth Friday because of the Visalia DX Convention. Endaf Buckley, N6UTC, will talk on working all States (WAS) via Roving Satellite. This will be a hybrid meeting on Zoom and at the American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, in Santa Ana. Online visitors can receive Zoom sign-on information on the day of the meeting by an email link that will be provided at https://www.w6ze.org at 9:00 a.m. PDT.

SigAlert Map

If you are RACES member activated to respond to a particular location, in some cases it's advisable to check the map at SIGALERT.com for current traffic conditions and to choose an alternate route if necessary.

Safe OC

Safe OC (https://www.safeoc.com) is a localized version of the "If You See Something, Say Something" U.S. Department of Homeland Security (DHS) national anti-terrorism public awareness campaign. The campaign is focused on publicizing how an alert public plays a critical role in keeping Orange County safe. The community can work together to fight back against local threats to public safety. The campaign has two primary focuses:

- To raise public awareness of the indicators of terrorism and terrorism-related crimes

- To emphasize the importance of reporting suspicious items (e.g., an unattended bag in a public place) and behaviors (e.g., someone trying to break into a restricted area) to local law enforcement.

April 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 Weekly 60 m ACS Net
2	3 Weekly 2 m ACS Net & OCRACES Meeting	4	5 EOC Exercise Orientation	6	7	8 Weekly 60 m ACS Net
9	10 Weekly 2 m ACS Net	11	12 WebEOC Training	13	14	15 Weekly 60 m ACS Net
16	17 Weekly 2 m ACS Net	18	19	20	21	22 Weekly 50 m ACS Net
23	24 ACS Nets on 4 Bands	25 OC EOC Orientation & Operations Training	26 Orientation for PSR Applicants	27	28 Orange County Amateur Radio Club Meeting	29 Weekly 50 m ACS Net
30						

Upcoming Events:

- **April 3, 1930 hours:** OCRACES monthly meeting, Sheriff's Regional Training Academy, Tustin
- **April 5, 1000-1200 hours:** EOC Exercise Orientation, virtual via Zoom (PSRs only)
- **April 12, 1400-1600 hours:** WebEOC Training (PSRs only), OC EOC, Loma Ridge
- **April 25, 1000-1200 hours:** OC EOC Orientation & Operations Training (PSRs only), OC EOC, Loma Ridge
- **April 26, 1830 hours:** Orientation for PSR Applicants, Sheriff's Regional Training Academy, Tustin
- **April 28, 1900 hours**: Orange County Amateur Radio Club meeting, on Zoom and at the American Red Cross in Santa Ana
- **May 1, 1930 hours:** OCRACES monthly meeting, on Zoom
- **May 6, 0900-1200 hours:** City/County RACES & EmComm ACS Exercise
- **May 6: 0900 hours:** Prescreen for PSR Applicants, Sheriff's Regional Training Academy, Tustin

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 (down for repair)
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)
*Primary Net—Mondays, 1900 hours

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https://ocraces.org
It's Where It's @!

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Serving
Orange County"

Meet Your County of Orange RACES Members!

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RACES
Coordinator →

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KC6MMF

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AB6VC

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N8RG

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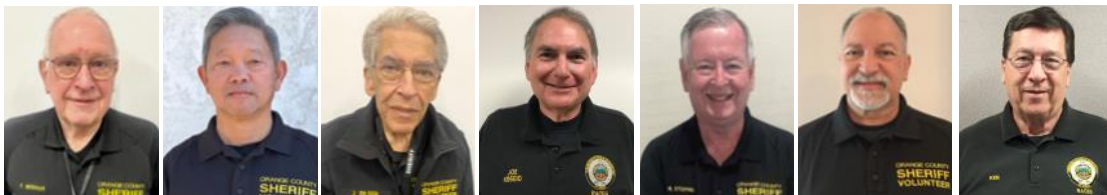
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