Great California Shakeout
& Disaster Communications

Presentation to the South Bay Amateur Radio Club
Deane Bouvier, N5DQ
16 May 2019

What's the Shakeout About?

- The Great California ShakeOut is an annual organized event to
  - Increase earthquake awareness
  - Practice how to be safer during big earthquakes
  - Review and update emergency preparedness plans and supplies
  - Evaluate and secure your space to minimize damage and injuries.
- The ShakeOut is also a reminder to be prepared financially, such as by exploring earthquake insurance
- Millions of people worldwide will practice how to *Drop, Cover, and Hold On* at 10:17 on October 17 during Great ShakeOut Earthquake Drills
- 2019 is the 12th ShakeOut
  - Began in Southern California in 2008
- The Shakeout is also a great opportunity to practice *Disaster Communications* plans

Drop, Cover and Hold On

In MOST situations, you will reduce your chance of injury if you:

- **DROP** where you are, onto your hands and knees.
  - This position protects you from being knocked down and also allows you to stay low and crawl to shelter if nearby.

- **COVER** your head and neck with one arm and hand.
  - If a sturdy table or desk is nearby, crawl underneath it for shelter.
  - If no shelter is nearby, crawl next to an interior wall (away from windows).
  - Stay on your knees; bend over to protect vital organs

- **HOLD ON** until shaking stops.
  - Under shelter: hold on to it with one hand; be ready to move with your shelter if it shifts
  - No shelter: hold on to your head and neck with both arms and hands.
- **Why *Drop, Cover, and Hold On?***
  - Protects your head and vital organs from flying debris
  - Increases the potential to be in a survivable void space
  - https://youtu.be/j8mUZFeMwhE

3

ShakeOut Disaster Communications

- Disaster Communications
  - When normal communications are unavailable
  - *i.e.,* "When all else fails"
- In order to understand what this really means we need to understand
  - The County and State Disaster Response Plans
  - How hospitals handle disasters and
  - How amateur radio fits in as an auxiliary communications resource
- We are not the first line of defense but we may very well be the last

Emergency Management
Handled at the Lowest Level Possible

Standardized Emergency Management System (SEMS)

- **Field** –Carry out t*actical decisions and activities in direct response to an incident* or threat. The Incident Commander (IC) operates from a Command Post (CP)

- **Local Government** – Cities and special districts *manage and coordinate the overall emergency response and recovery activities* within their jurisdiction. Local governments are required to use SEMS when their EOC is activated or a local emergency is declared in order to be eligible for state reimbursement.

- **Operational Area (OA)** – An OA encompasses all political subdivisions located within a county's boundaries, including special districts. The OA facilitates and *coordinates* information, resources and decisions regarding *priorities among local governments within the OA.* The OA serves as the coordination and communication link between the Local Government Level and Regional Level.

- **Region** – The Regional Level manages and *coordinates* information and *resources among OAs within the mutual aid region* and also *between the OA and the state* level. California is divided *into three Cal OES Administrative Regions – Inland, Coastal and Southern. The Regional Level operates from the Regional Emergency Operations Center (REOC).*

- **State** – The state level of SEMS prioritizes tasks and *coordinates state resources* in response to the requests from the Regional level. The state level also serves as the *link between the state and the federal emergency response system.* The state level requests assistance from other state governments and coordinates with the Federal Emergency Management Agency (FEMA) when federal assistance is requested. The state level operates from the State Operations Center (SOC).

| State - SOC |
| --- |
| Region - REOC |
| Operational Area - EOC |
| Local Govt. EOC |
| Field IC - CP |

Source State of California Emergency Plan

Mutual Aid Flow of Requests and Resources

- At each level when resources are overwhelmed, the mutual aid process continues
- Counties are the state's Operational Areas
- Once a county emergency is declared, the Sheriff is the Director of Emergency Operations
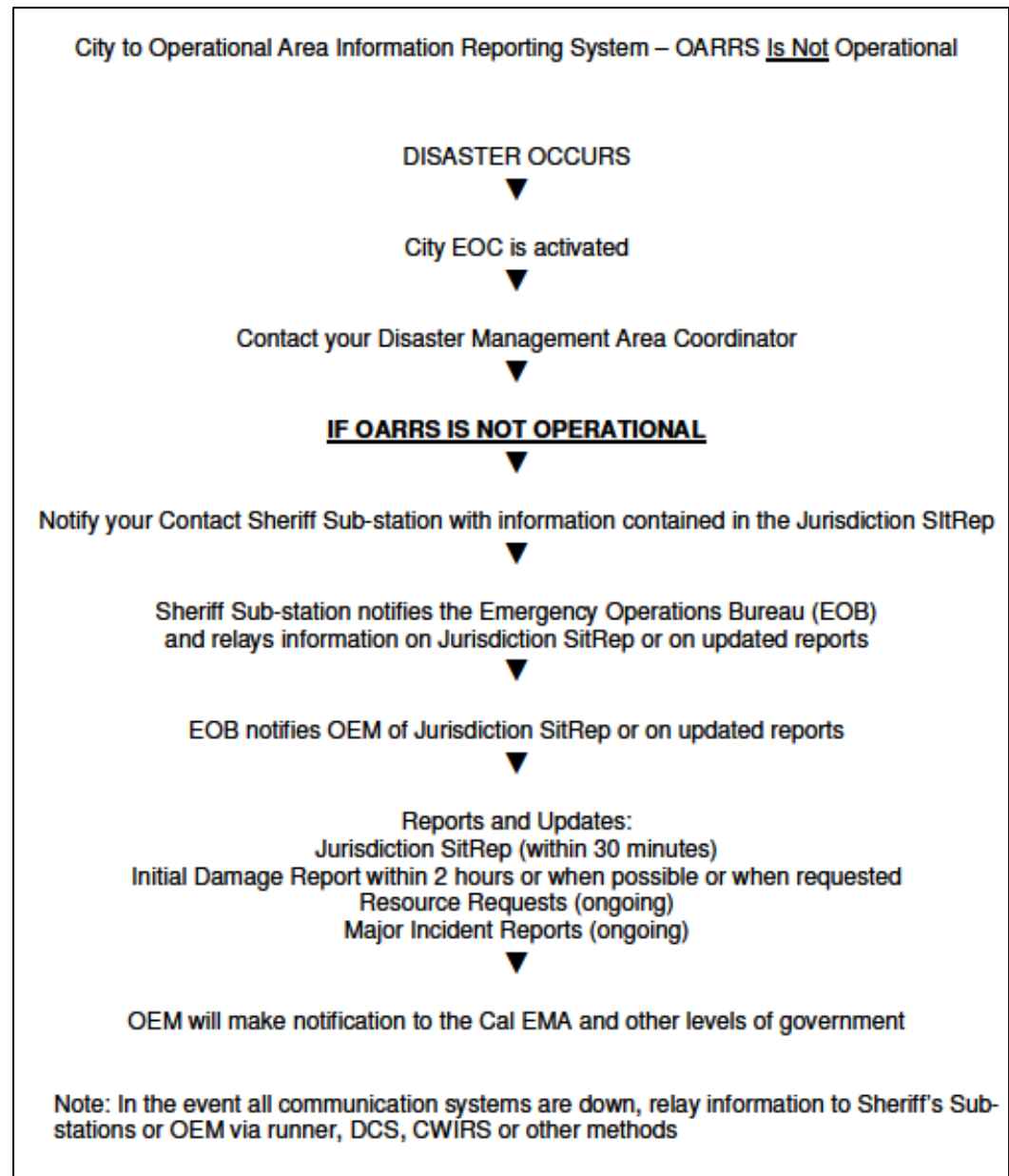- When normal means of communication are unavailable, amateur radio is pressed into service both up and down the chain
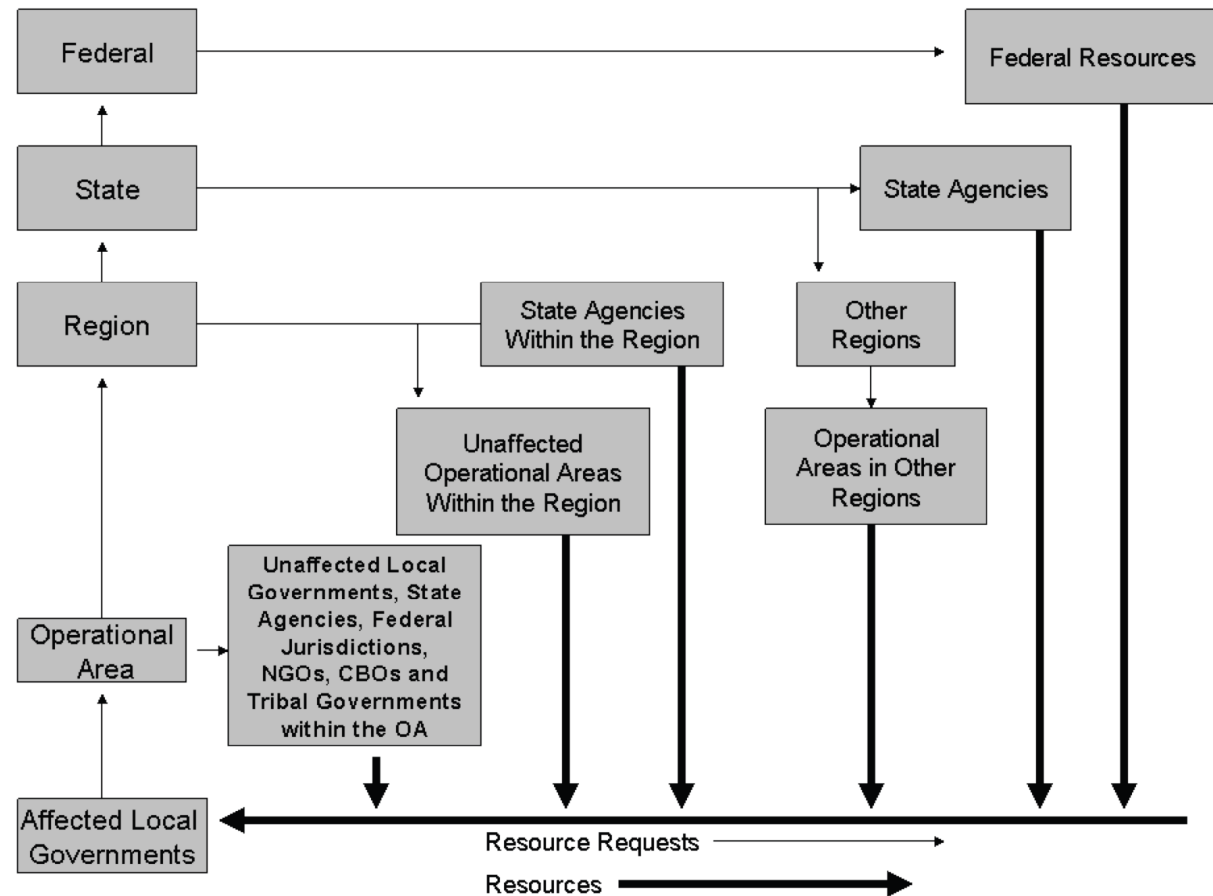
Source State of California Emergency Plan

City to OA Info Flow

- Operational Area Response and Recovery System (OARRS) is the normal way cities interact with the County EOC
  - Web based automated system for collecting disaster info
  - Relies on the Internet
- The next option is the Countywide Integrated Radio System (CWIRS) 800 MHz P25 trunked radio system
  - 88 cities
  - ~16 talkgroups
- What happens when they are not available?

City to Operational Area Information Reporting System – OARRS Is Not Operational

DISASTER OCCURS
▼
City EOC is activated
▼
Contact your Disaster Management Area Coordinator
▼
IF OARRS IS NOT OPERATIONAL
▼
Notify your Contact Sheriff Sub-station with information contained in the Jurisdiction SItRep
▼
Sheriff Sub-station notifies the Emergency Operations Bureau (EOB) and relays information on Jurisdiction SitRep or on updated reports
▼
EOB notifies OEM of Jurisdiction SitRep or on updated reports
▼
Reports and Updates:
Jurisdiction SitRep (within 30 minutes)
Initial Damage Report within 2 hours or when possible or when requested
Resource Requests (ongoing)
Major Incident Reports (ongoing)
▼
OEM will make notification to the Cal EMA and other levels of government

Note: In the event all communication systems are down, relay information to Sheriff's Sub-stations or OEM via runner, DCS, CWIRS or other methods

Source LA County Office of Emergency Management

7

City Assistance Requests

- When resources are over-whelmed cities seek mutual aid
  - From adjacent cities or
  - From the Operational Area
- If mutual aid is not available due to
  - Lack of normal communications
  - Lack of an existing system
  - City has been so devastated that managers are not sure of what steps to take
- Request for Operational Area support will be made via the city's "contact" Sheriff Station
- If normal means of communication are down, amateur radio steps in.
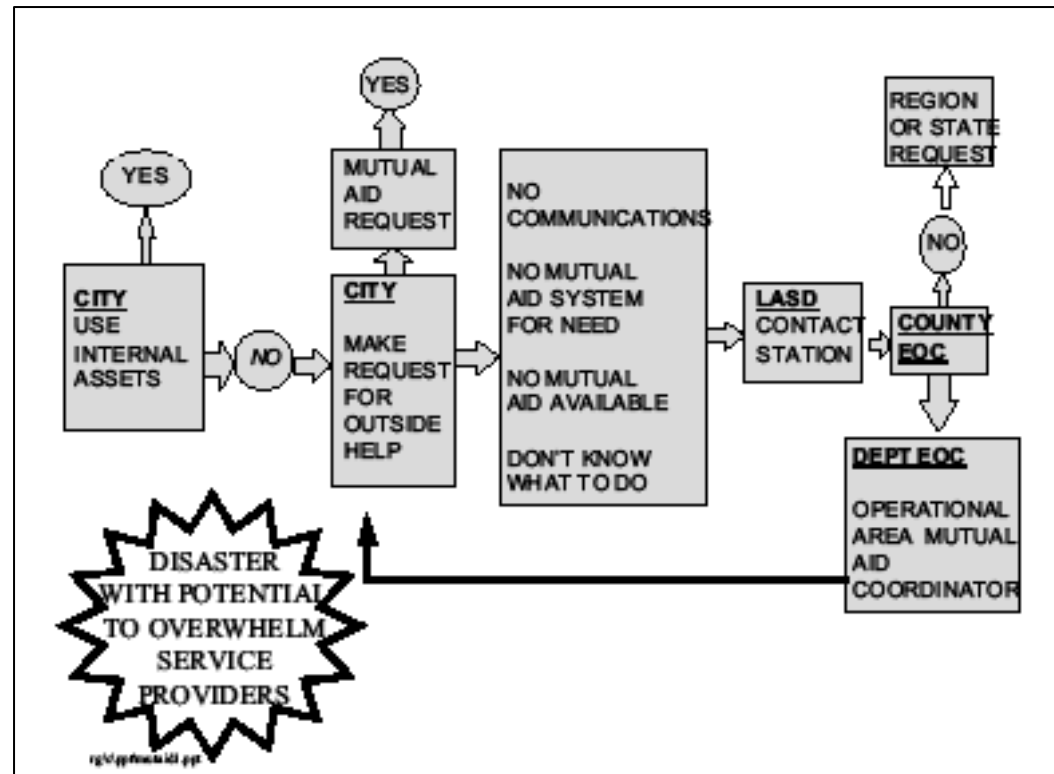
Source LA County Operational Area Emergency Response Plan

8

© Copyright 2019 LA County Disaster Communications Service

Los Angeles County
Disaster Management Areas

- The local level is the individual city and the other cities in their Disaster Management Area

- Ours is Area G
  - 14 Cities
  - 2 Sheriff Stations

- Fire Departments routinely get mutual aid from other area cities and the County
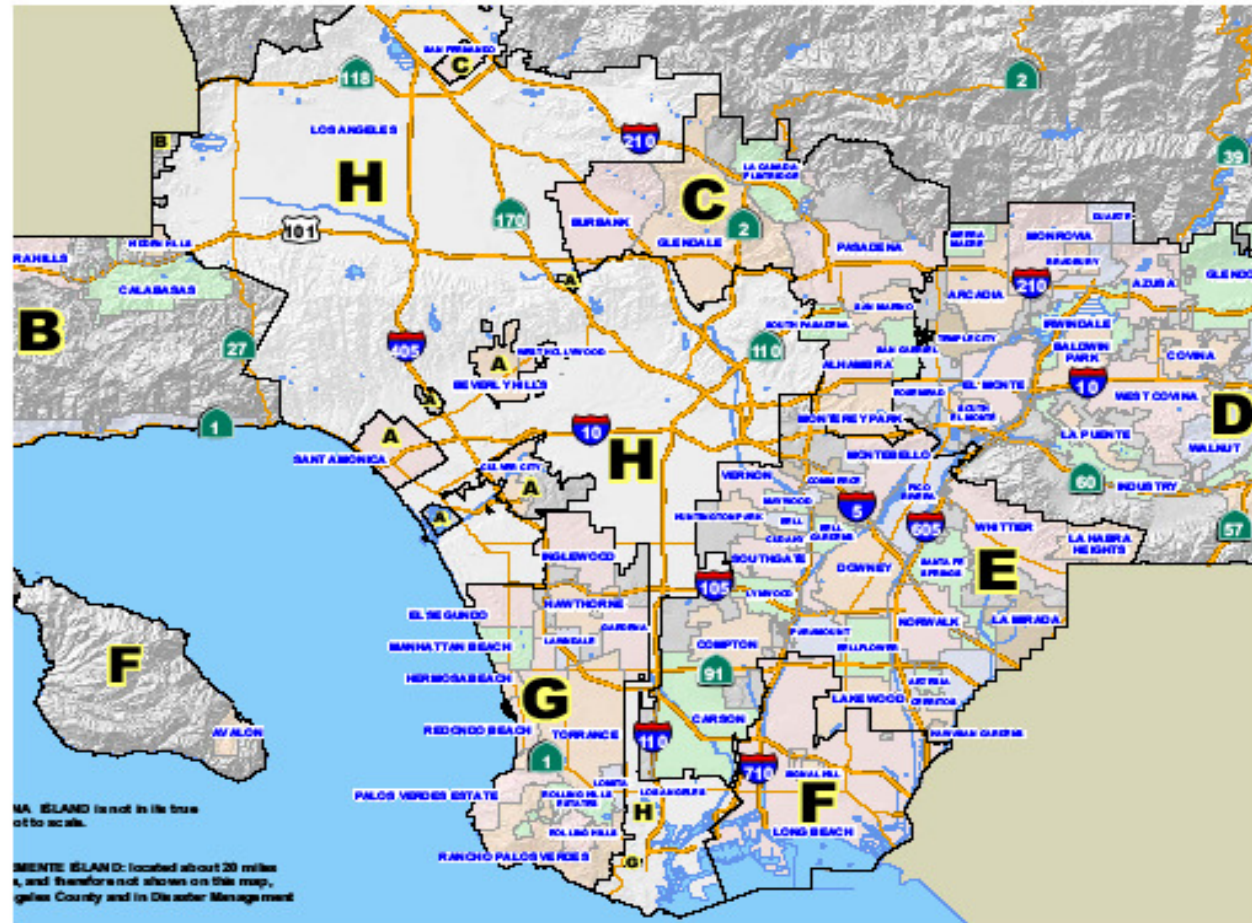
Source LA County Office of Emergency Management

DCS Coverage for Area G

- South LA DCS has been vacant for at least a decade
- Lomita has the critical mass to support both
- Combining the Districts is a practical solution
- Common frequency plan and staffing
- Provides cohesion to Area G

Area G City Contact Sheriff Stations

City	Primary Sheriff Station	Alternate Sheriff Station
EL SEGUNDO	South Los Angeles Station 3	Carson Station 16
GARDENA	South Los Angeles Station 3	Carson Station 16
HAWTHORNE	South Los Angeles Station 3	Carson Station 16
HERMOSA BEACH	South Los Angeles Station 3	Lomita Station 17
INGLEWOOD	South Los Angeles Station 3	Carson Station 16
LAWNDALE	South Los Angeles Station 3	Lomita Station 17
LOMITA	Lomita Station 17	Carson Station 16
MANHATTAN BEACH	South Los Angeles Station 3	Carson Station 16
PALOS VERDES ESTATES	Lomita Station 17	Carson Station 16
RANCHO PALOS VERDES	Lomita Station 17	South Los Angeles Station 3
REDONDO BEACH	Lomita Station 17	Carson Station 16
ROLLING HILLS	Lomita Station 17	Carson Station 16
ROLLING HILLS ESTATES	Lomita Station 17	Carson Station 16
TORRANCE	Lomita Station 17	Carson Station 16

10

Disaster Communications Mission

LA County DCS

- Primary mission – Support emergency management at the county level when normal means of communication fail
  - Providing communications assets county wide and staffing to the County/Operational Area EOC, Sheriff's Stations and other county agencies
  - Provide interoperability with the city radio organizations and the Governor's Office of Emergency Services (OES) Auxiliary Communications Service for status and resource requests up and down the disaster response structure
- Secondary mission - Support mutual aid and augment the emergency communications needs of the cities
  - Support City EOCs
  - Field operations
- Conduct events and training to improve emergency communications skills

City Group Mission is analogous at the city level

Cal OES Southern Region
Covers 11 Counties

Cal OES Southern Region
Mutual Aid Regions I and VI

Region 1 Mutual Aid
Law Enforcement
Sub-Regions
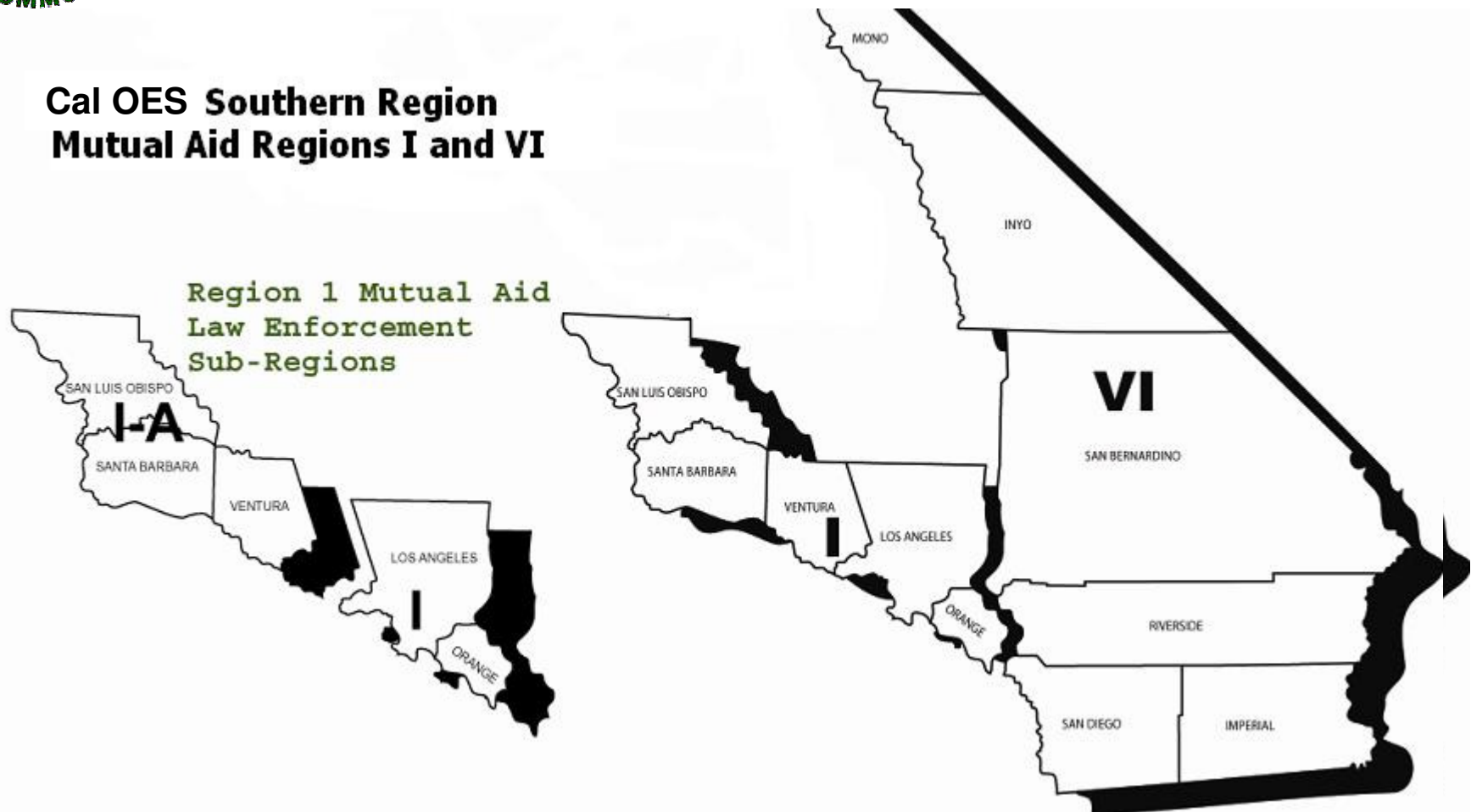
- Area managed by Southern Regional EOC

Source State of California Emergency Plan

Levels of Emergency Management Applied to Us

Federal

Dept of Homeland Security

FEMA

FEMA Region IX
Arizona, California, Hawaii, Nevada, Guam

State

Cal OES

Southern Region
Mutual Aid Regions I and IV

Mutual Aid Region I
San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange

Operational Area

L.A. County

South LA District 3	Lomita District 17

3A El Segundo	17A Lomita
3B Hawthorne	17B Palos Verdes Estates
3C Hermosa Beach	17C Rancho Palos Verdes
3D Inglewood	17D Redondo Bch
3E Lawndale	17E Rolling Hills
3F Manhattan Beach	17F Rolling Hills Estates
3G Gardena	17G Torrance
Special Districts	Special Districts

Area G

Local Government

Individual Cities and Districts

Lomita DCS has taken responsibility for Area G

Auxiliary Communication Links & Nets

- *DHS/FEMA NOC* WGY900 *Washington*
  - *Region IX Oakland* WGY909 FNARS*, SHARES** Federal Frequencies
- *Cal OES SOC* Sacramento (Mather) STACOM*** State HF KNHH558 CESN**** W6EMA 40m, 75m, 160m
- *Cal OES REOC* Los Alamitos K1OES SW ACS UHF net
- *L. A. County CEOC* K6CPT
  - County DCS VHF nets
- Station 3 & 17 EOCs W6LMT
  - District DCS VHF/UHF nets
- *City Groups* Various
  - City VHF/UHF nets

*FEMA National Radio System
**SHAred RESources HF Radio Program
***STAte COMmunications Net
****California Emergency Services Net

13

Lomita DCS Radio Room

- Every Monday we operate
  - County nets
    - 2m, 220, 6m & 10m
  - District nets with the city organizations
    - Check into city nets
    - Cross link W6TRW 2m + K6RH 440
    - 2m simplex, 220 simplex
    - PV West 440, voice and digital

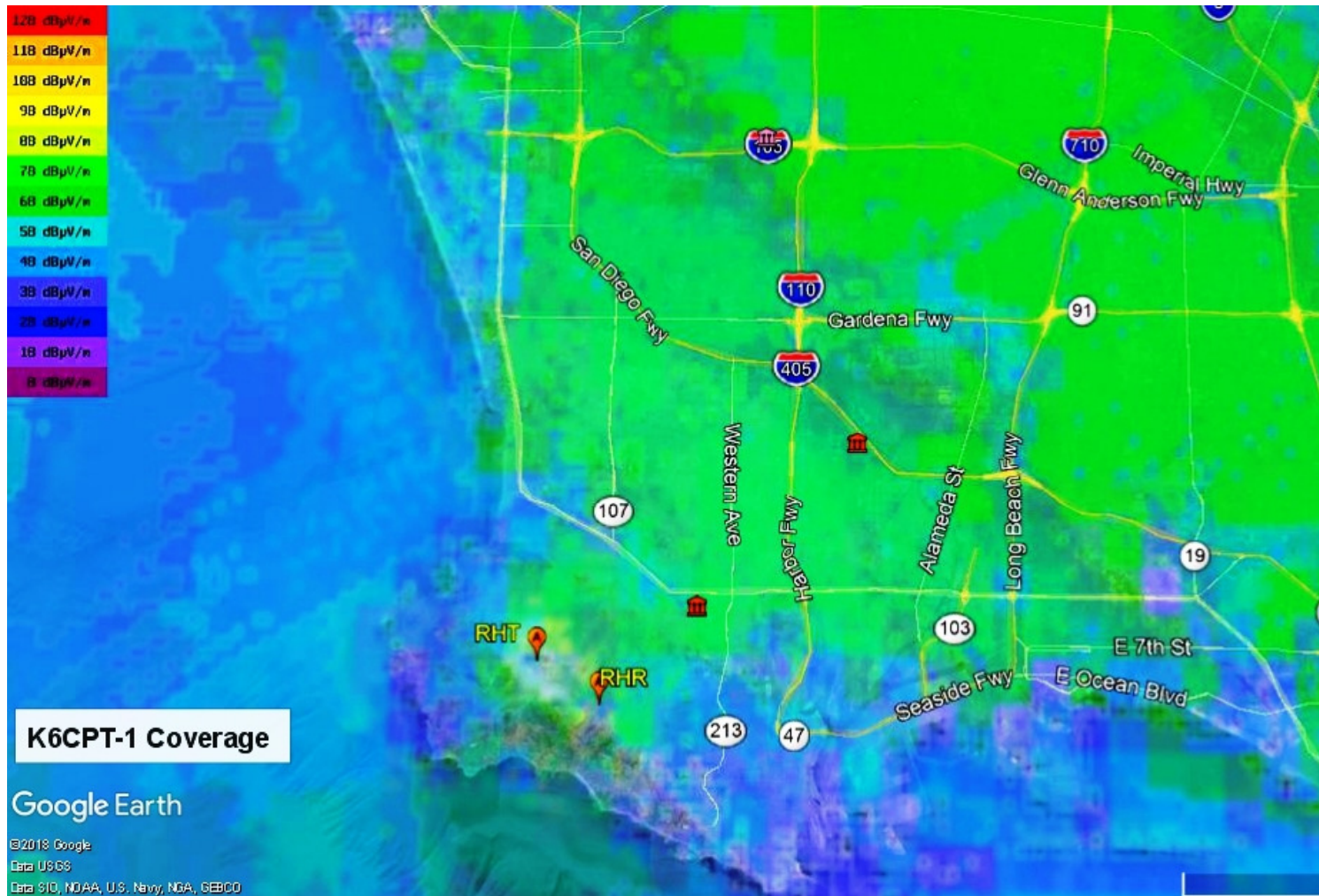- We support various other exercises and drills like the monthly PVPUSD Schools Net

14

County Repeaters We Use
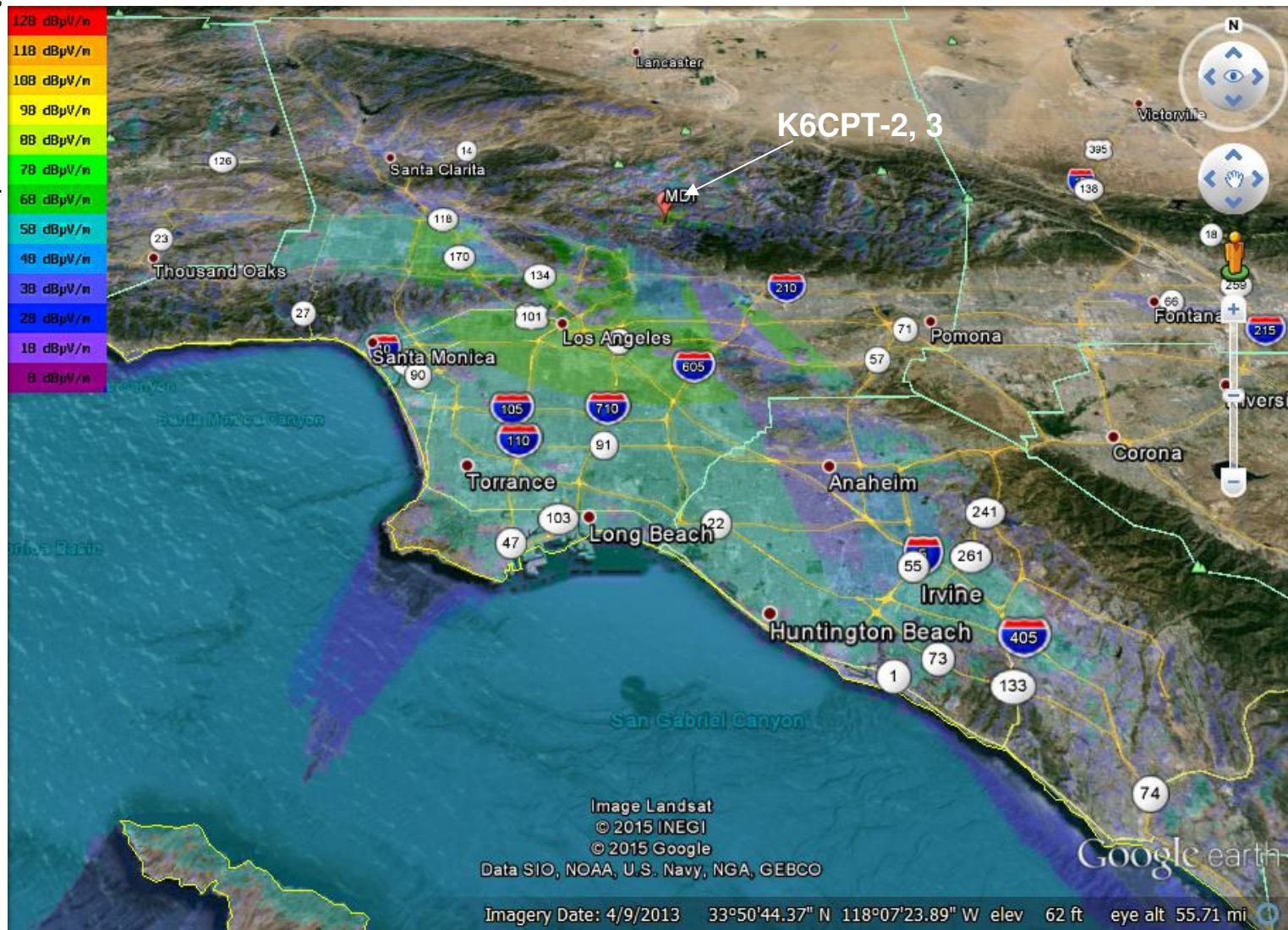## 7-Site Simulcast System South Bay Coverage

Simulcast System

Goal is to have hand-held coverage anywhere in the County

K6CPT-1 Coverage

15

County Repeaters We Use
County 2m + 220 Coverage

Mt. Disappointment hosts the County 220 repeater

District Repeaters We Use
Linked District Coverage

Linking two repeaters provides good coverage over Area G
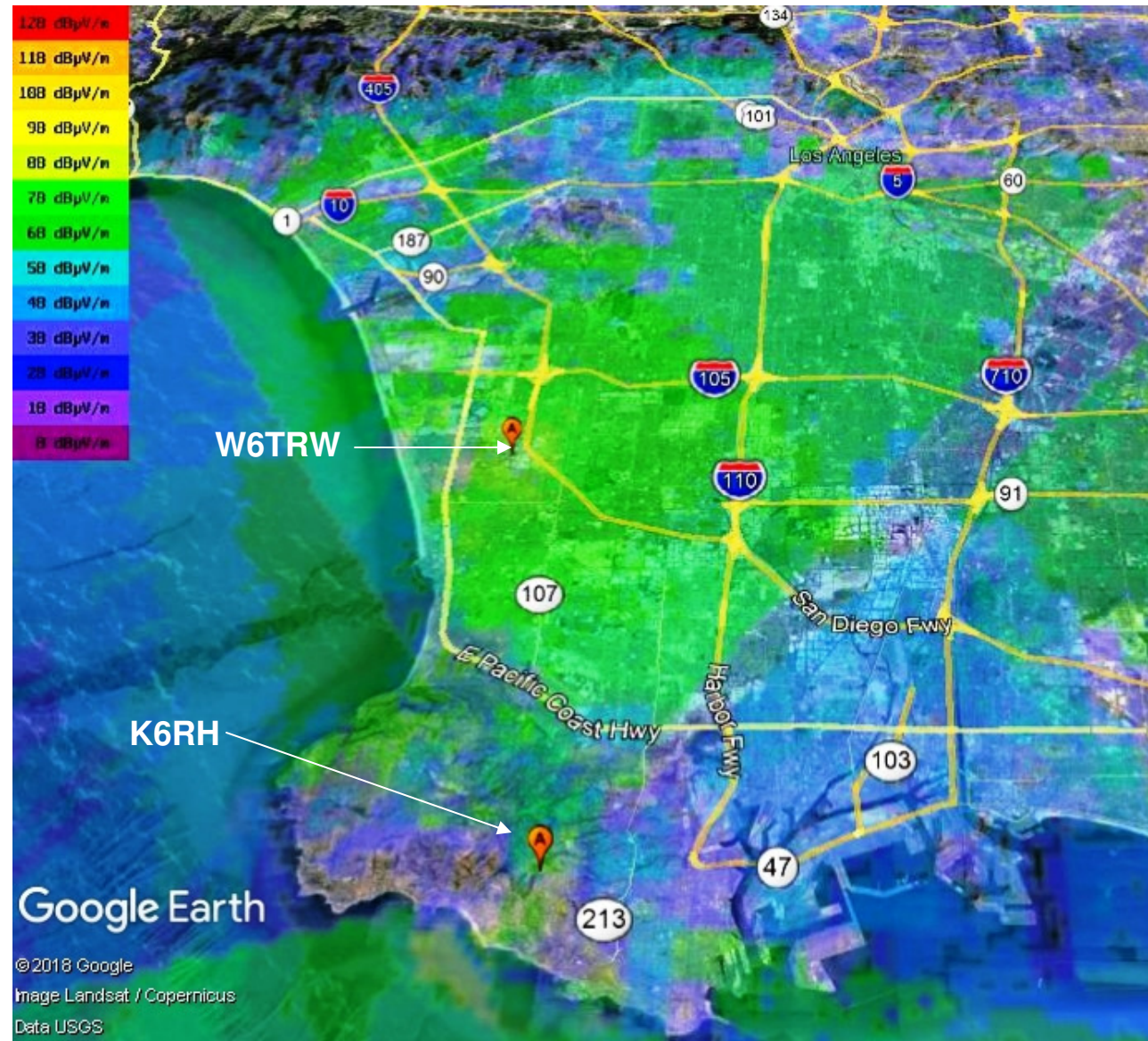
Digital Communications
Narrowband Emergency Messaging System

- Some disaster response traffic is better suited for digital mode than voice.
  - Voice is too slow and error prone for long or involved messages
- NBEMS – a simple and easy way to send error-free digital messages
  - You don't have to buy an expensive modem or software
  - You don't even need a dedicated connection to your radio
- NBEMS produces messages on standard forms used in disaster management
  - Incident Command System (ICS)
  - Red Cross
  - ARRL Radiogram
  - Military Auxiliary Radio System
  - CSV spreadsheets
- NBEMS works with Windows, Linux and Mac computers and can be used on HF too

Digital is Not New

Dr. Henry Richter, Civilian Head of Los Angeles County RACES (W6VZA), Gary Lopes, member of RACES (WA6MEM) and Sheriff Peter J. Pitchess.
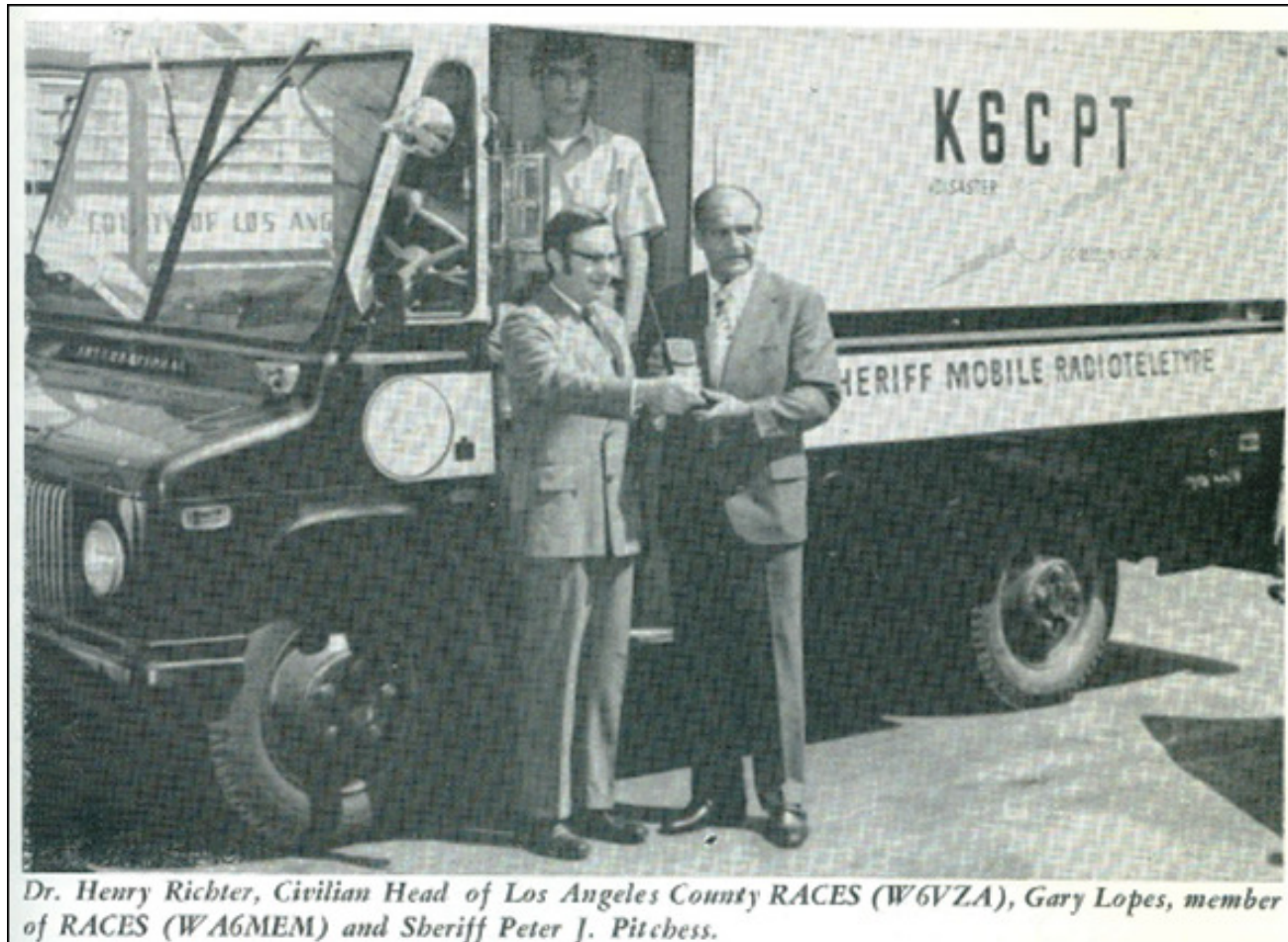
WA6MEM is the K6RH trustee

Exercise the Plan with Drills

- Routine nets to demonstrate interoperability
- Great Shakeout – an opportunity every October to test the amateur disaster radio plan by passing relevant traffic
- Simulate all primary methods of communication unavailable:
  - Landline telephones, cell phones and the internet OARRS (Operational Area Response and Recovery System) not available. CWIRS talkgroups are overloaded.
  - Amateur radio is the only reliable mechanism
  - Cities and county departments assess the impact
  - Cities send their initial Situation Report (SitRep) to their Contact District Sheriff Station DCS by voice or NBEMS ICS 213; update as necessary
  - Cities send their Resource Requests (if any) to their Contact District Sheriff Station DCS by voice or NBEMS ICS 213
  - Contact Sheriff Station DCS forwards reports to DCS Station EOB for the County EOC

SitRep Minimum Essential Elements of Information

- City/Agency Name
- Immediate status:
  - Black – Major Assistance Required
  - Red – Assistance Needed
  - Yellow – Problems but Under Control
  - Green – Normal Operations
  - Grey – Unknown
- Is your EOC activated?
- Does your city have a Resource Request?
  - If so make the request using one of the following categories:
    - Food/Water,
    - Equipment,
    - Shelter/Sheltering Needs,
    - Staffing/Personnel,
    - Transportation
- Did your city declare a local state of emergency?
- Required within 30 minutes of the disaster; updated as conditions change

> Reports and Updates:
> Jurisdiction SitRep (within 30 minutes)
> Initial Damage Report within 2 hours or when possible or when requested
> Resource Requests (ongoing)
> Major Incident Reports (ongoing)

21

Basic Frequency Plan

- Cities communicate with the District Stations on the District tactical (simplex) frequency per the DCS Frequency Plan
  - Direct contact of 88 Cities with the County EOC is unwieldy
- Non-medical traffic from hospitals within the District on District tactical frequencies
- Districts communicate with the EOB on county-wide frequencies
  - K6CPT-1 Simulcast system
  - K6CPT-2 2m Mt Disappointment
  - K6CPT-3 220 Mt Disappointment
  - Simplex Backup
- Districts should be able to operate on their tactical frequency and the county frequency simultaneously

Cal OES Southern Region May Radio Rodeo

- Demonstrate connectivity from the city to the Southern Region EOC using multiple frequencies
- Emphasis on mobile assets

OES Southern Region Exercise Structure

Other OAs ← … → LAC OA (SCC) ← … → Other OAs

Districts … Districts … Districts

Cities | Cities | Cities
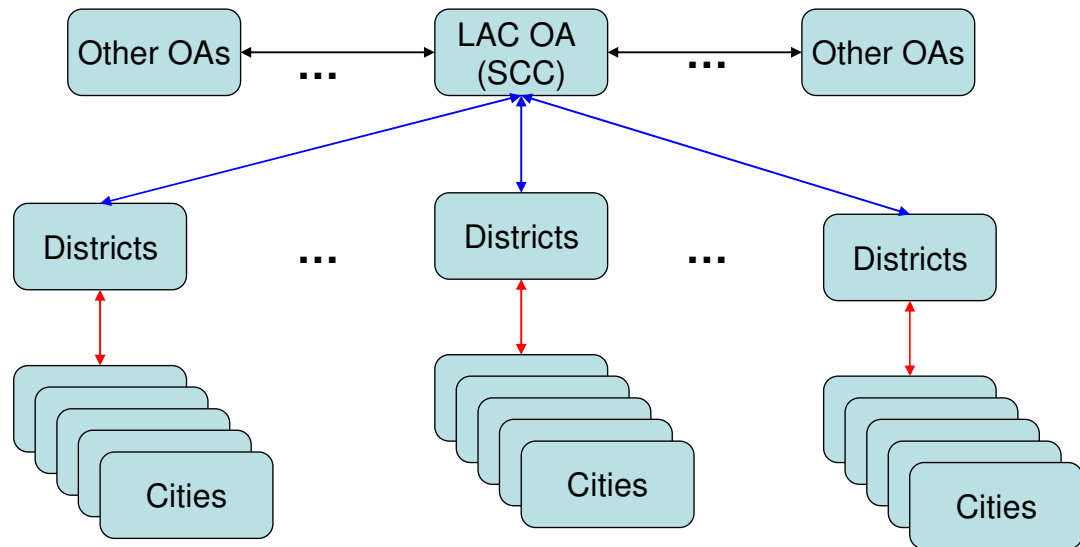
← → **Cal OES Southern Region Frequencies**

← → **LAC DCS County Wide Frequencies**

← → **Each District's Tactical Frequencies**

Communications & Fleet Mgmt Bureau
Mobile Communications Units

- Several deployable communications assets
- Most capable of desolate, off road operations
- Support
  - Interagency communications
  - Remote dispatch
  - Mobile repeaters
  - Satellite communications
  - HF communications
- Amateur radio equipment being installed
- DCS participates with the CFMB Technical Reserve Company in weekly maintenance and quarterly exercises
- MCU A made it to HAMCON at the Torrance Marriott in 2015 & 2017

24

HF Initiatives

- When infrastructure fails, we have HF
- CFMB has acquired
  - Harris military manpacks
    - EMP protected
  - Barrett HF base/mobile
  - Experimenting with Rockwell-Collins/AIRINC Urgentlink HF cellular
  - Obtained SHARES license
  - All with Automatic Link Establishment
  - Plan for Sheriff Stations to have HF NVIS antennas
- Operating on STACOM, Urgentlink, SHARES and amateur HF frequencies
- CFMB relies on DCS to operate the HF radios

25

Hospital Communications

- Twenty Base Hospitals in LA County
  - Three in the South Bay (HGH, LCM TMMC)
  - Mobile Intensive Care Nurse (MICN) provides pre-hospital advanced life support (ALS) to paramedics
  - Use Paramedic Radio system Medic UHF channels
  - Directs paramedics to closest receiving hospital with resources
- LA County Medical Alert Center (MAC)
  - Manages ReddiNet and VMED-28
  - Coordinates patients and resources for Mass Casualty Incidents
  - Directs helicopter rescue to available trauma center
  - County disaster resources are handled by geographically distributed Disaster Resource Centers (DRCs)
  - South Bay Area DRC is HGH
- Rapid Emergency Digital Data Interface Network (ReddiNet) tracks hospital status and bed capacity
  - Satellite based computer system
  - Used by the MICNs and the MAC
  - Backup is VMED-28 (formerly HEAR)
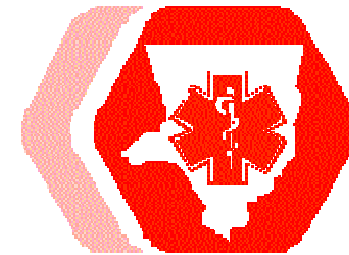
Hospital Disaster Response

- Use the Hospital Incident Command System (HICS)
  - FEMA ICS structure applied to hospitals
  - HICS Forms specialized version of ICS forms
- Hospital Command Center manages the response
- Emergency Department triage setup outside the building
- Internal communications via phone and LMR radios
- External communications to MAC and DRC (when engaged)
- Priority:
  - 1. ReddiNet
  - 2. VMED28: 155.340mHz, 156.7Hz
  - 3. Email: laemsadutyofficer@dhs.lacounty.gov
  - 4. Fax: (562) 944-5248 (DOC); (562) 906-4300 (MAC)
  - 5. Telephone: MAC (866) 940-4401
  - 6. CWIRS Radio: for County-operated hospitals
  - 7. Amateur/HAM radio (Frequency List available by request)
  - 8. Satellite Radio: (866) 290-4975
- Exercises
  - Local Triage Procedures – Periodic
  - Reddi-Net Hospital Polling – Monthly
  - SatRad DRCs and Trauma Centers - Quarterly

27

Amateur Radio Hospital
Disaster Communications Role

- EMS Directive 1132 – Amateur Radio Communications
  - Amateur Radio Operators (AROs) provide back-up communications for the EMS Agency and healthcare facilities when other communication equipment becomes inoperable
- ARRL LAX Section ARES serves most, but not all hospitals in LA County
  - Some hospitals use their own volunteer resources
    - Kaiser Permanente has a dedicated amateur radio group and repeaters (KPARN)
    - LCM Torrance and San Pedro use internal volunteers
    - TMMC uses TARA and internal volunteers
- Annual Statewide Healthcare and Medical Exercise
  - AROs deploy to hospitals, some with their own equipment
  - DARN system used to communicate with net control at the MAC
    - Hospital Status Assessment: Service Level and Bed Availability in 12 categories hourly
    - Medical resource requests as required
  - Local city/DCS tactical frequencies used for non-medical traffic to serving EOC

28

Interoperable Network of the South Bay

- South Bay Public Safety Agencies will transition to a P25 trunked system
  - Includes SBRCC cities plus Torrance and Redondo
- Part of the ICI System
- Testing underway
- 7 frequencies at 6 sites
  - 470.0125a
  - 470.0375a
  - 470.3125
  - 470.8125
  - 482.500c
  - 482.600a
  - 506.500
- PD encryption planned
- Missed several cut-over dates

Attachment B
Los Angeles County, CA
6 Site ASTRO 25 Simulcast System
Shaded Area Represents 97% Covered Area Reliability at DAQ-3.4
For Information Only

MOTOROLA

Composite Portable in Building (20 dB) Inbound

Portable Config: APX8000, 5W, Tx/Rx at Hip in Swivel Case
Portable Antenna: Wideband

1 in = 3 miles

May 22, 2017
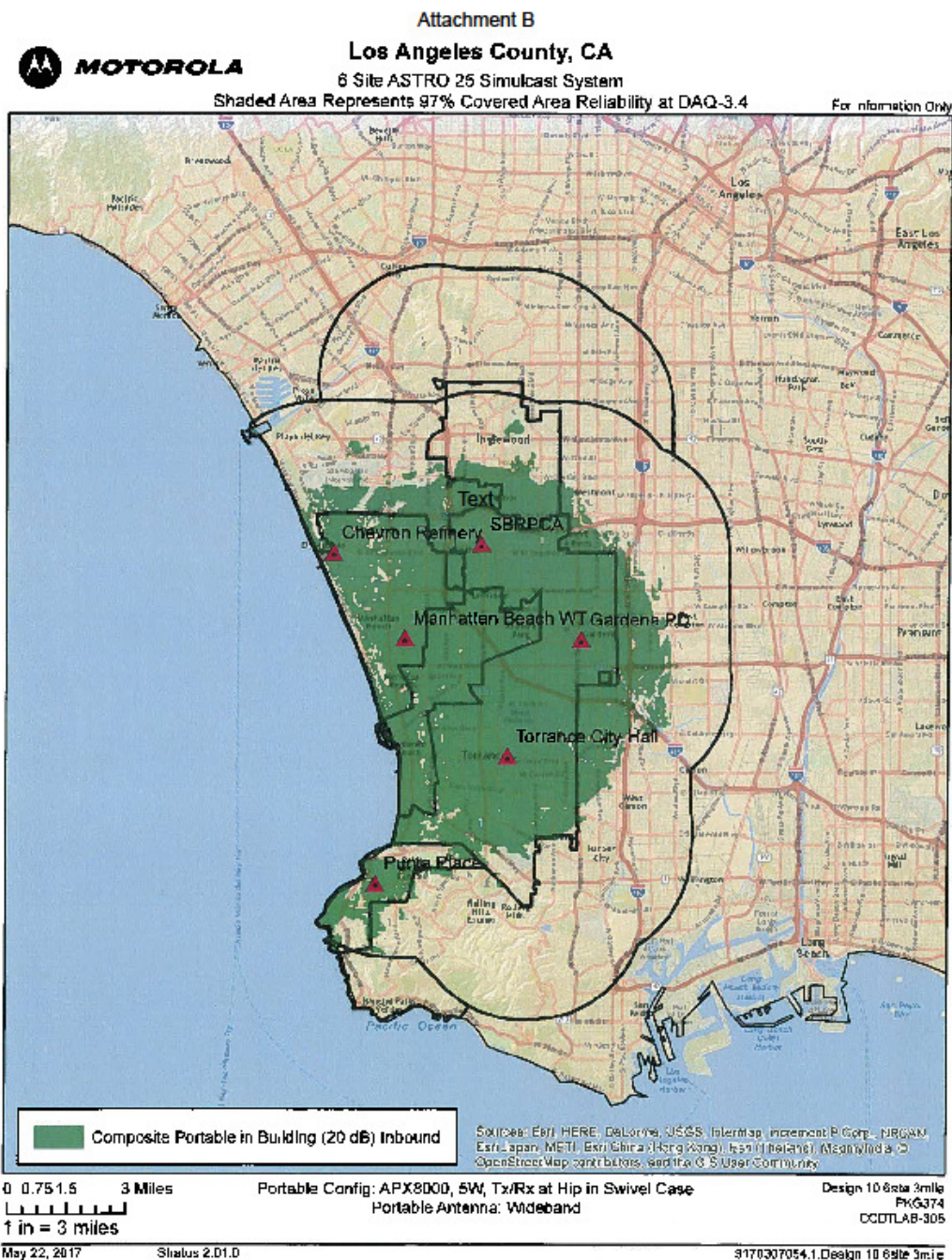
It's All About Interoperability