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# Net Control Type II Classroom Presentation



Santa Clara County ARES®/RACES

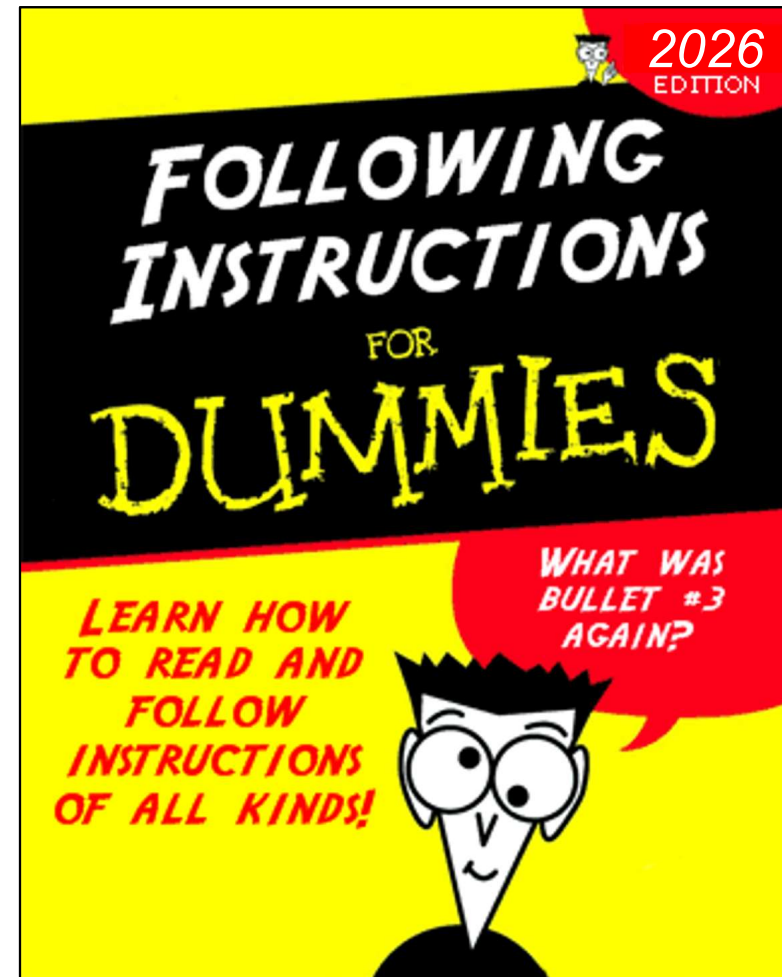
Revised: 24-April-2026

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# Housekeeping

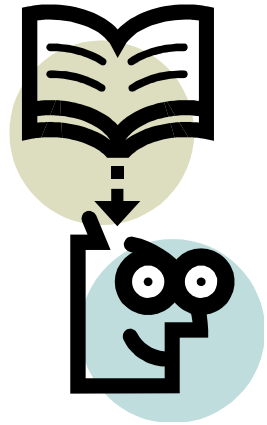
- Introductions
- Pen/pencil & paper
- Cell phone
- Side conversations
- Questions
- Breaks
- In case of emergency
- No wandering or exploring other areas of the building.



# N2 Prerequisite: Attention to Detail



# Learning Objectives



By the end of this class, you should be able to:

- Describe the role of an advanced net control operator (N2)
- Checklists, Scripts, and Preparation
- Describe the advanced concepts, techniques, equipment and procedures required to operate:
  - Two nets simultaneously
  - County Resource Net Levels 1-3
  - County Message Net
  - Other critical and/or high-traffic nets
- Organizational models for net control
- Describe the basics of net control planning

## Review:

# What does it take to be a great Net Control Operator?

- You need to be a great communicator,
  - com·mu·ni·cate: to transmit information, thought, or feeling so that it is satisfactorily received or understood
- Who is able to communicate *precisely*,
  - pre·cise·ly: 1. in a precise manner 2. exactly
- Following a shared, standard procedure, that EVERYONE is trained to use!
- What else?
  - Training (you are here now doing that),
  - Preparation, and
  - Practice

# Net Control – After your training

## Preparation and Practice

- Preparation, such as:
  - Go-kit periodically checked and updated
  - Scripts prepared / updated
  - SCCo website and documentation updates, if any
  - Personal checklists prepared / updated
  - Radio familiarity
  - Periodically set up your station at an alternate location
    - E.g., field station, table, chair, power/batteries, etc.
    - Is all your field station equipment still good to go for an activation?
- Practice
  - Weekly nets
    - City nets, SPECS, SVECS, etc.
    - Hospital net
  - City and County drills and exercises
  - Real events
    - Public service events
    - Actual activations

# SCCo: Drills and Mini-drills

- Dress rehearsal for a real event
- Event information provided by Staging after Check-In
  - Assignment specifics, ICS-205, etc.
- Briefing will be held before the operational period starts
  - **Ask** If anything is unclear during the briefing
- A Principal/supervisor will be assigned (real or simulated)
  - All transmitted 3rd party message content will be provided by the simulated served agency principal/supervisor
  - Radio operators DO NOT create 3<sup>rd</sup> party message content
  - All received 3<sup>rd</sup> party content is to be delivered to the principal

# SCCo: Drills and Mini-drills (Cont.)

- Participation requirements
  - Mobilization Resource Net (for all participants)
  - Staging Check-in and Check-out
  - For each drill tactical net: check-in/out appropriately, respond to H&W, log messages appropriately, etc.
  - Required forms turned in completed and signed
    - Typically, at Staging during Check-out or as directed by principal or supervisor
  - A Drill Evaluation (Hot Wash) may be conducted
    - In person or submitted form/report
    - Will be made clear in SCCo event listing and during the briefing. If not clear: **ask**

# N2 Required Equipment, where to find:

## Reference:

- SCCo RACES Credentialing Program Handbook v3.2 (11-Aug-2025)  
[https://www.scc-ares-races.org/credentials/SCCo\\_RACES\\_Credentialing\\_Program\\_Handbook\\_v3.2.pdf](https://www.scc-ares-races.org/credentials/SCCo_RACES_Credentialing_Program_Handbook_v3.2.pdf)
- The go kit must contain the following equipment:
  - All required items in the SCCo ARES/RACES standard 2-hour Carry Kit
  - All required items in the SCCo ARES/RACES standard 12-hour Go Kit
- Both kits are documented in the SCCo Go-Kit Checklist (09-Oct-2025)  
[https://www.scc-ares-races.org/operations/go-kit/SCCo\\_Go\\_Kit\\_v20251009.pdf](https://www.scc-ares-races.org/operations/go-kit/SCCo_Go_Kit_v20251009.pdf)

# Our Example Operator: Herman Munster

- “The Munsters” was a TV show in the mid-1960s
- Herman was the father, played by Fred Gwynne
- Herman was an amateur radio operator: W6XRL4
- We may use other fictitious characters and calls as needed:
  - Wolfman Jack: W6WOOOF
  - Dracula: W6DRAC
  - Etc.
- We may also use others as simulated for real people:
  - Eddie Munster
  - Grandpa Munster
  - Etc.



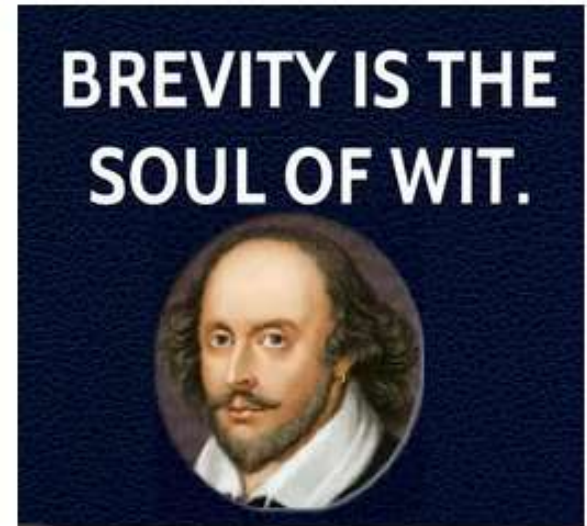


Five Keys to Success

# ADVANCED TECHNIQUES FOR NET CONTROL

# Be Brief

- Speak only when you have to speak
  - But don't forget to ID and announce net
- Say only what you have to say
- Use prowords whenever possible
- Avoid open mic pauses and non-words (“uh”)
- Avoid Push-To-Think



By Polonius, Act 2, Scene 2  
of Hamlet, circa 1603

# Reminders for Avoiding Repeats



- Wear a headset
  - So you can hear and don't need to ask for repeats
  - So you maintain consistent mic position – even if you turn your head
- Adjust mic gain for your voice
  - For FM, usually low/med/high; for HF (USB/LSB), usually gain & compression
- Speak clearly, correctly
  - Proper enunciation; proper use of phonetics, numbers, prowords
  - Speak across the mic, not into it.
- Speak crisply, but not too quickly
  - You can't speak quickly enough to make up for the time needed to repeat
  - Pace your speed on written messages by “air” writing as you speak
- Listen carefully and log quickly, accurately and legibly
- Know repeater delays !!
  - Pause after keying up; pause after courtesy tone; remind others to pause
- Monitor for doubles
  - Use HT or scanner – earbud under headphones

# Information: Know it, Have it Ready



- Be as informed as possible; be prepared with details
  - Know the specific procedures for the net you are running
  - Anticipate questions and have answers ready
  - Backlog is created the first time you can't answer a question right away
  - Clearing the backlog takes time away from all other activity
- Anticipate questions, have answers ready
  - Examples: lost traveler, missing frequency info, missing contact info ... or line up a way to get answers quickly via supervisor
  - Resource net: maps, travel advisories/hazards, DSW status
  - Staging or other sites: site status, facilities, parking, resource status
  - Command net: phone numbers, frequencies, reporting structure
- Anticipate check-in verification requirements
  - Have city list or County DSW list ready to verify check-ins

# Provide Direction



- Inform (remind) the field communicators of reply format
  - Some people may be new/inexperienced; others excited, tired
- Examples:
  - “I will now take check-ins from County DSW RACES volunteers \*\* who have been released from their cities. If you have not been released by your city, you should return to your city net or contact your EC for release. I’ll take the first five call signs only.”
  - ... then: “When I call you, respond with your credential status (if any) use phonetics, such as ‘foxtrot 2’ or ‘november 3’ , then followed by any completed endorsements (3 letter code). End with your FCC call sign.”
  - “I will now call for Health and Welfare checks. When you hear your call sign, and when safe to transmit, respond with the last three digits of your odometer, your nearest major street intersection, and your call sign ...”

Note: \*\* call for check-ins will be based on actual needs at the time, this is just an example to talk about the process.

# Multiple Actions with One Command

5x

If the circumstances allow you to leverage efficiency in your favor

- Do things five (or more) at a time
- Check-ins
  - Take 5 call signs at a time
  - Tell them what info you need; how to respond
  - Then call each one for the details
- Resource net activations
  - Collect 5 call signs, issue instructions; get 5 acknowledgements
- Health and welfare
  - Announce H&W roll-call, then run through them all at once
- Ask for multiple pieces of information with one check-in
  - “When I call you, respond with your city, your credentials, your cell phone number, and your FCC callsign”

# Multiple Actions with One Command

5x

- Example: Taking **one** Mike-Mike report at a time
  - We pick up the net after the opening script



- Your Observations?
  - What techniques were used?
  - What worked?
  - What could be improved?

# Multiple Actions with One Command

# 5x

- Example: Taking **five** Mike-Mike reports at a time
  - Again, we pick it up the after the opening script



K6EXE - No ending call sign

KF6ZSQ - No ending call sign

N6MSN - No ending call sign

KZ6DM - No ending call sign

We don't care about the call sign

QSL? We do not use Q codes

K6WWS - Didn't follow 5 at a time instructions

Left net so didn't answer when called

N6HDN - No ending call sign

KJ6ACE - Wrong format (city after MM)

- Your Observations?
  - What techniques were used?
  - What worked? Or didn't?
  - What could be improved?

# Multiple Actions with One Command

5x

- So, what are the trade-offs?
- One at a time:
  - Simple
  - Anyone should be able to handle net control duty
  - Slow
  - Speed limit: how much the net control has to say
- Five at a time:
  - There will be lots of “doubles”
  - Net control must be good at picking out partial call signs
  - Net Control must provide good instructions and enforce net procedures
  - Net control must be good at avoiding more doubles (use partial call sign)
  - Can be much faster (up to 2-3 times)
    - Especially for where lengthy information must be conveyed
  - Speed limit: Ability of field operators to follow instructions

Net Controls ability to control the net



*Activating a remote county for the California QSO Party*



*A contesting "super station"*

Contesting can dramatically improve your efficiency & effectiveness

## **IMPROVING YOUR SKILL LEVEL**

# Contesting is FANTASTIC Practice for EmComm

- Similar goals: Speed and accuracy
  - Contests award points for each correct entry; penalties for mistakes
  - For many contests, penalties for incorrect log entries are worse than a few extra contacts, so accuracy is paramount
- Similar success factors:
  - Station quality
    - Station can hear and be heard by as many other stations as possible
    - Everything in working order, even during power outages, other problems
  - Operator skill
    - Listening and speaking skills, attention to detail
    - Preparation, operating procedures, logging, practice, ...

# Example: ARRL Sweepstakes Contest

- “Exchange” is patterned after ARRL Radiogram Preamble



The image shows a green header for an ARRL Radiogram. The text reads "THE AMERICAN RADIO RELAY LEAGUE" and "RADIOGRAM" in large yellow letters. Below this, it says "VIA AMATEUR RADIO". The form is divided into several fields, with the first five fields highlighted by a red border. The fields contain the following information:

NUMBER	PRECEDENCE	HX	STATION OF ORIGIN	CHECK	PLACE OF ORIGIN	TIME FILED	DATE
1	R	G	K4IWW	12	CARY NC		DEC 20

- For Sweepstakes, the information you send:
  - Number: the contact # (1 for your first contact, 2 for your second, ...)
  - Precedence: contest station category
    - A = low power; B = high power; Q = QRP; M = multi; S = school; U = unlimited
  - Station of origin: your call sign
  - Check: the last two digits of the year you were licensed
  - Origin: your ARRL Section Abbreviation
    - Ours would be “SCV” for Santa Clara Valley

# Example: ARRL Sweepstakes



- And it sounds like this ...
  - N6BV sends: <number> B N6BV 59 East Bay
  - Without looking below, can you copy 100% of what the others send?
- As you listen, why is N6BV so much farther ahead?

N6BV's Number	Their Number	Precedence	Station	Check	Section
211	71	A	K5IID	56	WV
212	12	M	NN2T	59	NNJ
213	95	B	K2PLF	55	MD
214	80	B	K3MD	63	EPA
215	14	A	N5LYG	86	STX
216	38	A	N1WR	61	MD
217	35	A	NN2L	64	NNY
218	33	A	VE3FWA	85	ON

# Why Is It Good Practice for EmComm?

- The same operator skills apply:
  - Listen carefully, pick out call signs, copy quickly
  - Avoid “doubles” (... “station ending in delta” ...)
  - Speak clearly, as quickly as possible
  - Use proper prowords, say numbers correctly
  - Use a minimum of words
    - “number ...” vs. “you are my number, uh ...”; no “please copy ...”
  - Don’t repeat information, unless required to clarify
  - Message format is usually known in advance (Ex: ICS-213 field order)
  - Preparation is critical
    - Radio, antennas, controls, quality power (w/backup)
    - Logging method, typing skills, section abbreviations (like our agency prefixes)
    - Food, water, clock, ...
- For more info about contesting in Northern California:
  - Northern California Contest Club: <http://www.nccc.cc>



# **WORKING TWO NETS SIMULTANEOUSLY AND CROSSBAND**

# Review from Homework

- **Any questions on Working two Nets simultaneously**
  - Decide which net is your primary, let both nets know
  - Must be able to hear both nets, stereo headset or HT in one ear for second net
  - Keep radio controls (left and right) matching what you hear in your ears.
  - Must keep two ICS-309 logs – one for each net.
- **Any questions on Crossband Repeat?**
  - Know how to setup your radio



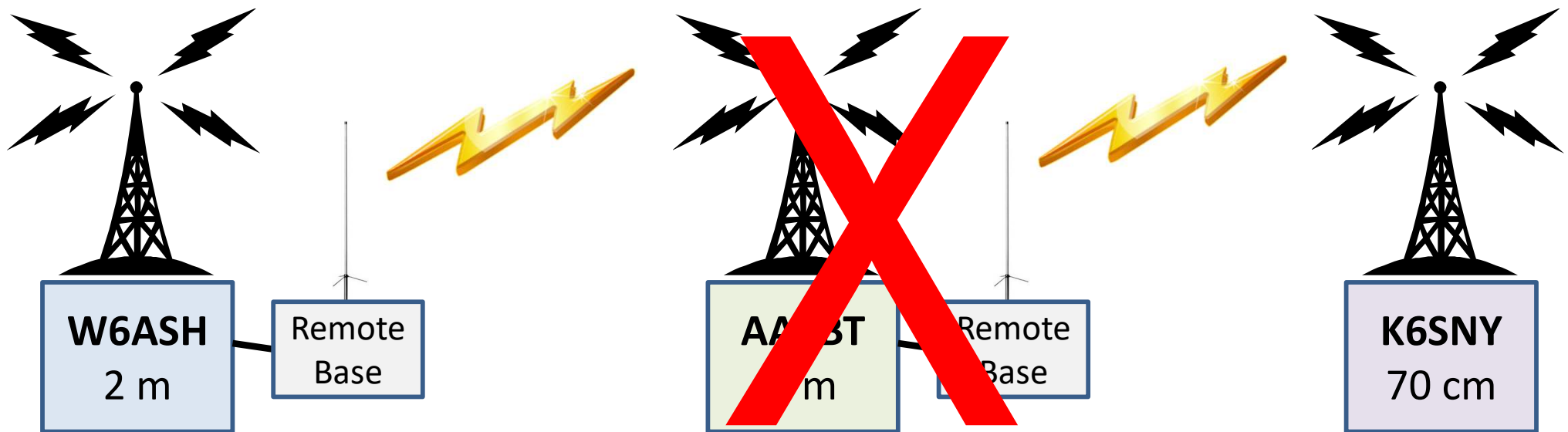
# RESOURCE NET OPERATIONS LEVEL 1 (REVIEW)

# Review

- Any questions on Resource Net Level 1?

# How Resource Net Repeater Linking Works

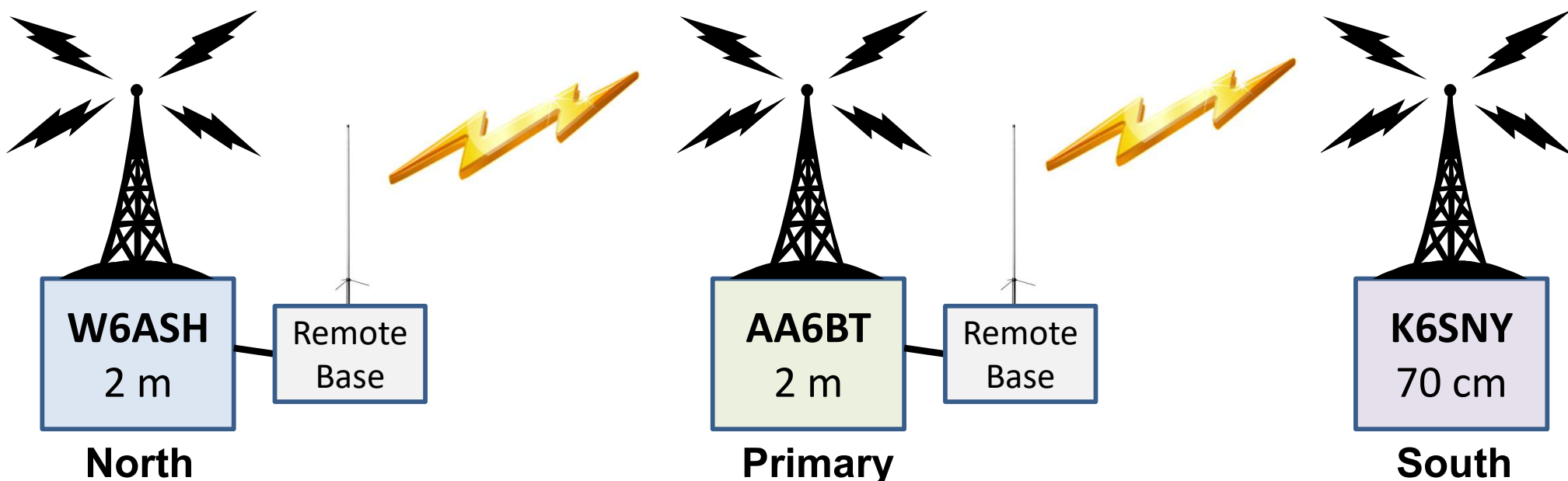
- Normally, the repeaters used for Resource Net are not linked
- Some repeaters include a “remote base” wired into repeater
  - Linking can be done remotely by Control Operators
  - Remote tuned to next repeater: transmits on input/listens on output
- Max delay when sending from W6ASH to K6SNY (or reverse)
  - ~~Net control should use AA6BT whenever possible~~
  - Or, use K6SNY (on 440) when lots of other 2m field stations are nearby



# Resource Net Repeater Linking

- Repeater linking capabilities
  - W6ASH 2m (North) can link to AA6BT (Primary), or K6SNY 70cm (South), AA6BT (Primary) 2m can link to K6SNY 70 cm (South)
  - W6ASH 70cm (Alternate North) can link to AA6BT 2m (Primary)
  - No linking can be originated from K6SNY

**Normal Linking - W6ASH ↔ AA6BT ↔ K6SNY**



# Resource Net Repeater Linking (Cont.)

- Requesting a link – two methods (non-planned events)
  - Come up on repeater to be linked and ask for a control operator
    - On W6ASH, ask for a control operator to link to AA6BT (or K6SNY 70cm)
    - On AA6BT, ask for a control operator to link to K6SNY
  - Or contact the DEC or any of the ADECs to link the repeaters
    - <https://www.scc-ares-races.org/operations/contact/staff>  
(keep a copy in your go kit!)
- Don't forget to ask for links to be removed when done
  - Let the control operator know how long you need the link
  - Contact a control operator or DEC/ADECs when finished with event
- For planned events, repeater use is planned in advance. We always get permission from each repeater owner or representative prior to any drill, exercise, or public service event.



# RESOURCE NET OPERATIONS LEVEL 2

# Resource Net Level 2 Operations

- Assume Resource Net Level 1 operations underway
- At some point, if local situation warrants, city/agency EOCs will activate
  - City EOC: “Los Altos EOC has been activated and is taking check-ins on our local tactical frequency of 146.595 simplex”
  - NCO: “Los Altos EOC, Roger. All stations, all stations, if you are from Los Altos, please switch to the Los Altos frequency of 146.595 simplex and check in with your city.”
- Resource Net is now at Level 2 operation
- If repeaters aren't already linked, request linking now
- Make regular announcements of which tactical nets are up
  - Be prepared with frequency info if asked
- Continue to take damage reports from other cities/agencies

# Example – Resource Net Level 2

- Drill included simulated Resource Net Level 2
- Situation:
  - Simulated earthquake
  - Resource Net Level 1 established
  - Mike-Mike reports underway for about 10 minutes
  - Then ...



# Challenges for Resource Net Level 2

- Mixed traffic during transition between level 1 and level 2
  - Start tracking city status (plain paper, t-cards, index cards, ...)
- Inexperienced operators – don't know about city nets
  - Maintain a copy of the county frequency list
- Least practiced aspect of the resource net
  - No one is particularly experienced at doing this
  - Understand the process, do your best, be professional
- Hand-off from previous operator or to next operator
  - Resource net is typically handled remotely during level 1
  - At some point it will likely transition to someone at the county EOC
  - Be prepared to hand off damage reports and city/agency EOC/net status – (we did this in a previous class)



# Exercise – Resource Net Level 2



- Situation
  - An earthquake recently occurred
  - You activated the resource net and you're taking Mike-Mike reports
  - Some reports from some cities indicate significant damage (MM-6+)
  - A city EOC checks-in on the resource net and reports they are taking check-ins on their local tactical frequency
  
- Response
  - What do you say next?
  - What do you do next?
  - What do you say 10 minutes from now? (hint: net status)



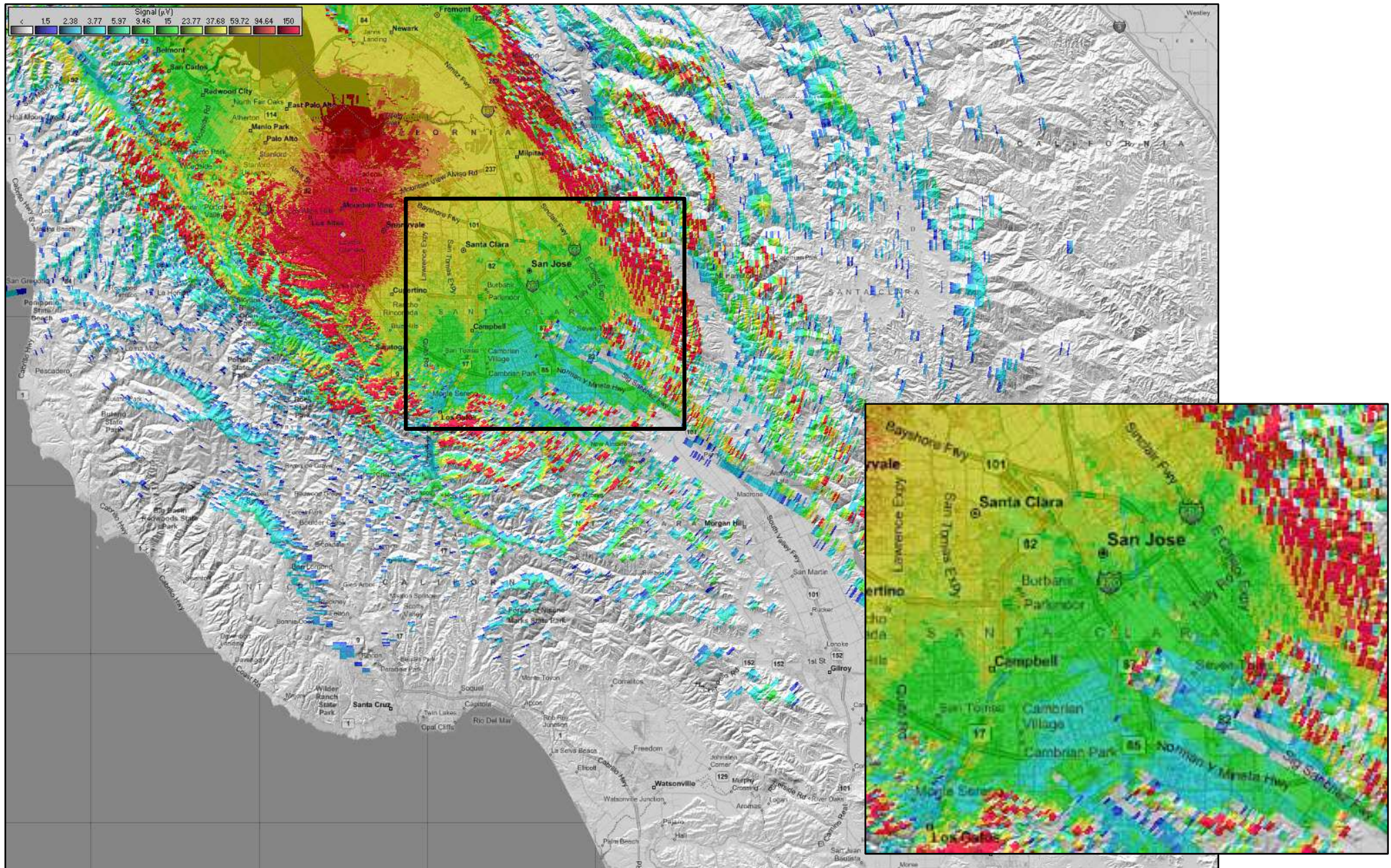
# RESOURCE NET OPERATIONS LEVEL 3

# Resource Net Level 3 – Location awareness

- Managing operators while traveling to their assignment requires understanding of:
  - Where they are and where they will be going.
  - Their approximate location.
  - Recommending a switch to a different repeater
    - Based on coverage patterns along the operator's route
    - If it looks like it might be necessary
    - Before having reachability / communications problems
  - Ask them to verify with net control after the frequency change
    - If no contact, remind them to switch back to current frequency
  - How will they handle H&W checks (park vehicle or use radio)
- Yes, operators should be aware of coverage and reachability
  - However, the NCO should be “on top” of the changing situation

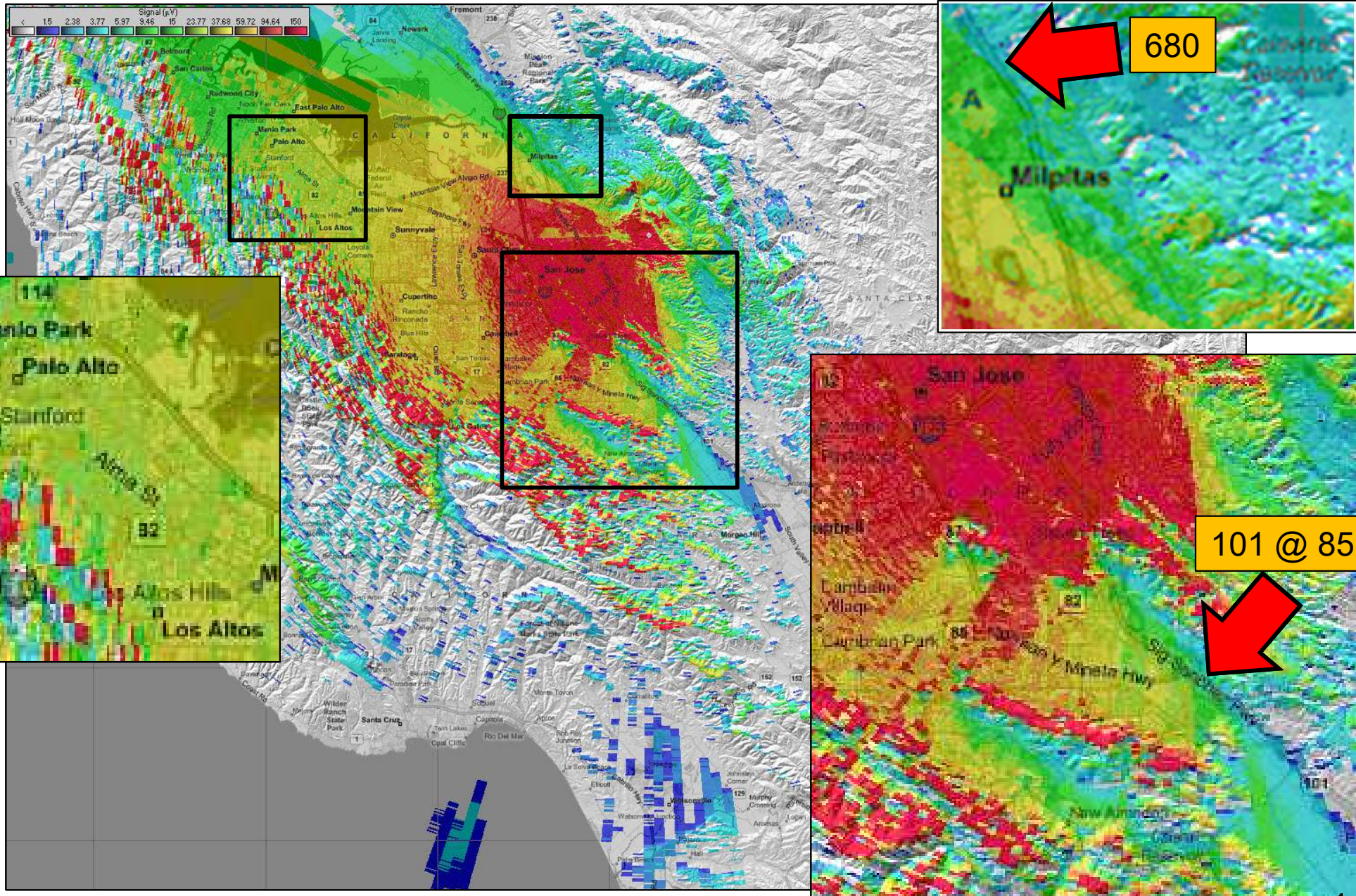


# W6ASH Coverage 2m (Resource Net North)



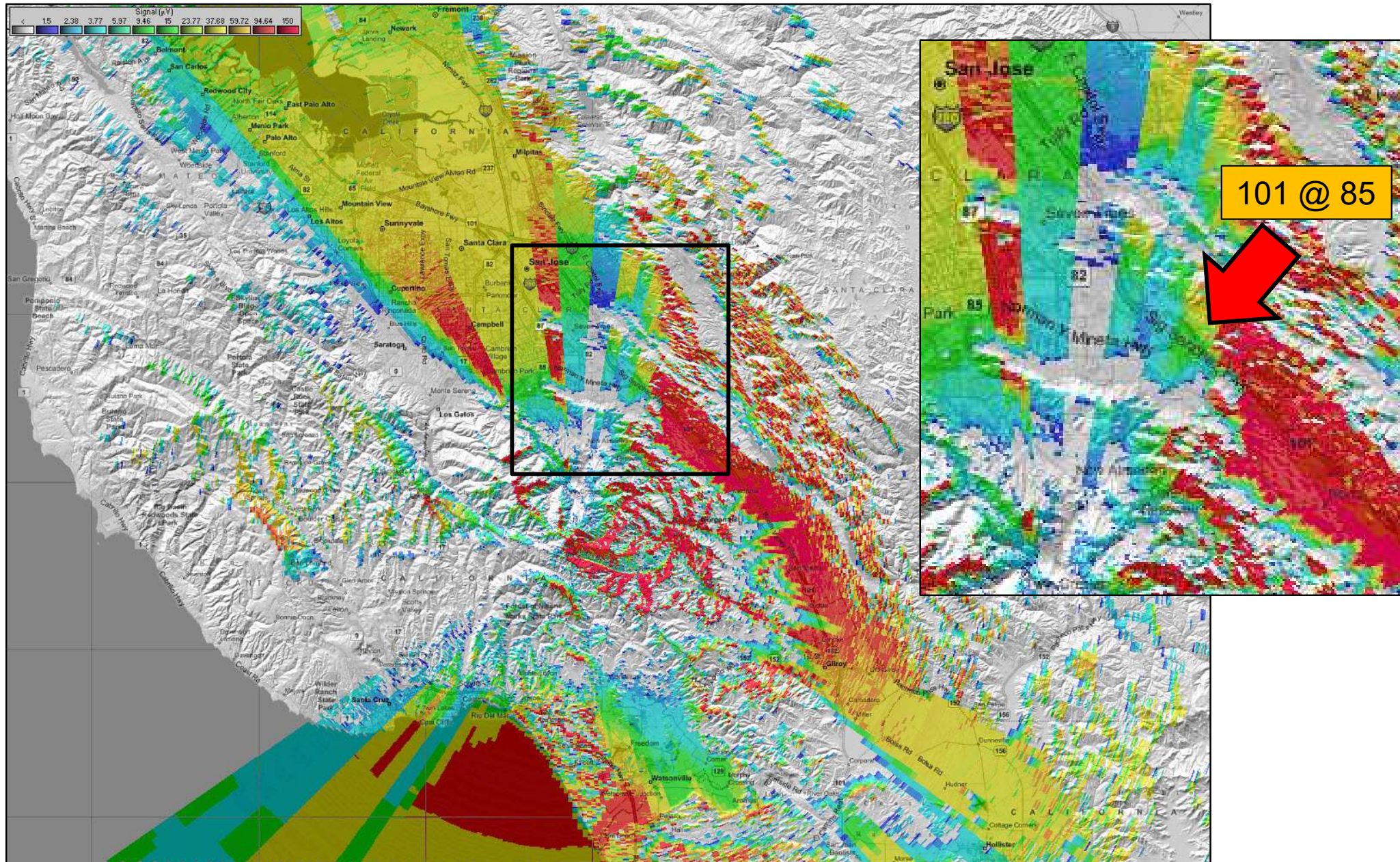


# AA6BT Coverage (Resource Net Primary)





# K6SNY Coverage (Resource Net South)

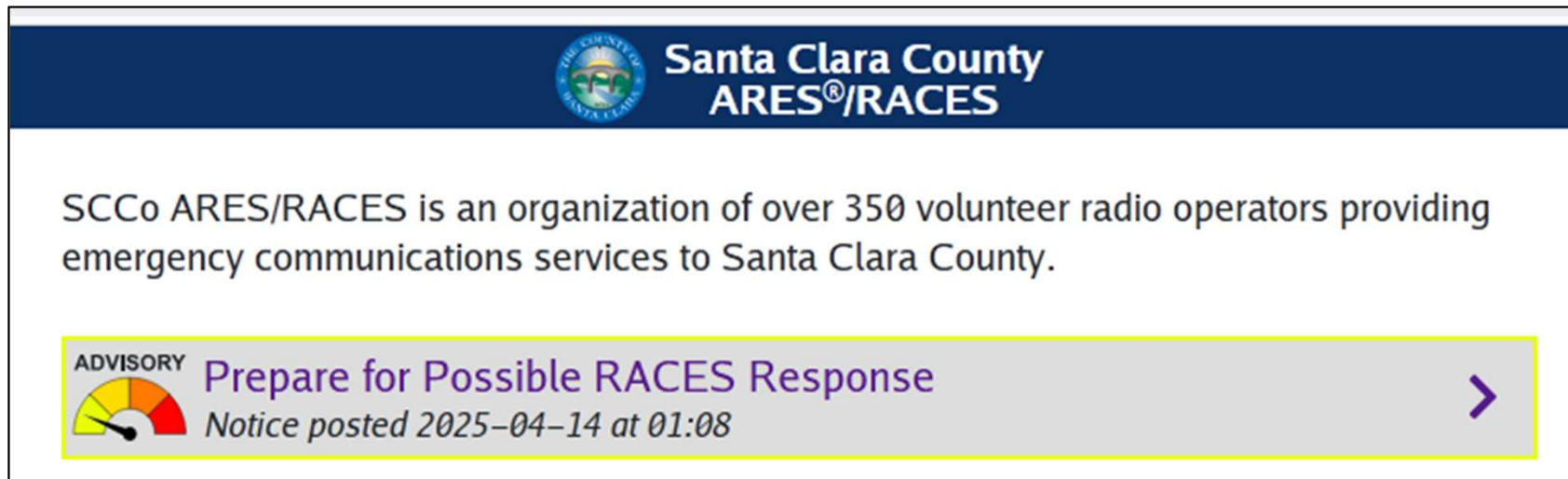


# Resource Net Level 3 Operations

- Resource Net Level 2 operations may be underway
- At some point:
  - Cities may begin requesting resources
    - City sends a SCCo RACES Mutual Aid Request form (typically Packet Net, or possibly on Message Net) however, they may need to send via the Command Net if other nets are busy
  - Resource Net NCO may be asked by supervisor to request resources from cities
  - County Mutual Aid Communicators (MACs) may begin checking in after being released by their city

# Requesting RACES Mutual Aid

- Announcements will be made on the Resource Net about a need for Mutual Aid Communicators (MACs)
- If telephones and the internet are available:
  - Groups.io message will be sent to EC and MAC lists
  - AlertSCC will be used to contact RACES members with County DSW registration.
- RACES Response Preparation message posted on web site about current status if Internet is accessible.




The screenshot shows the Santa Clara County ARES/RACES website. At the top is a dark blue header with the county seal and the text "Santa Clara County ARES®/RACES". Below the header is a white section with the text: "SCCo ARES/RACES is an organization of over 350 volunteer radio operators providing emergency communications services to Santa Clara County." At the bottom of the screenshot is a yellow-bordered advisory box with a gauge icon, the text "ADVISORY Prepare for Possible RACES Response", and a timestamp "Notice posted 2025-04-14 at 01:08". A purple arrow points to the right within the advisory box.

# RACES Response Preparation Levels

LEVEL 3

## Four Preparation Levels: Advisory, Alert, Staging, & Activation



**Santa Clara County  
ARES®/RACES**

SCCo ARES/RACES is an organization of over 350 volunteer radio operators providing emergency communications services to Santa Clara County.

**ADVISORY** Prepare for Possible RACES Response  
*Notice posted 2025-04-14 at 01:08*

**ALERT** Listen for Possible RACES Response  
*Notice posted 2025-04-19 at 19:32*

**STAGING** MAC Staging for Possible RACES Response  
*Notice posted 2025-04-19 at 19:32*

**ACTIVATED** RACES Activation in Progress  
*Notice posted 2025-04-19 at 19:32*

<https://www.scc-ares-races.org/services/emcomm/levels>

## Volunteer Check-Ins

- “This is ..., net control for the Santa Clara County resource net, standing by for check-ins from County Mutual Aid Communicators who have been released by their cities”
- Record minimum info on T-Card (Special T-Card used at XSC EOC)
  - Call sign, Credentials, Endorsements, home city
  - If phones are working, get cell phone number
- Place in “available” status
- If not available until later – have them check out
  - Record time when they will be available; place in “other” status area

Name (Last, First) <b>Munster, Herman</b>		Call Sign <b>W6XRL4</b>	
Credentials Endorsements	<b>F2 N3 MAC ERO</b>	Verified (Cred. & Endor.)	<input checked="" type="checkbox"/>
City/Agency	<b>XND</b>	Released By City/Agency	<input checked="" type="checkbox"/>
Cell Phone	<b>408-555-1212</b>	SCCo DSW enter X for yes	<input checked="" type="checkbox"/>
Other contact methods for individual / Time to check back into net <b>Available after 1700</b>			

## Resource Net Level 3 T-Card Example (XSC EOC)

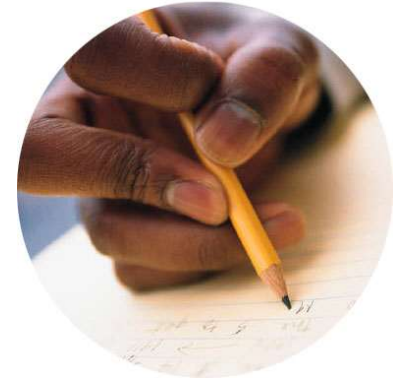
Name (Last, First)		Call Sign	
<u>Credentials</u> <u>Endorsements</u>		Verified (Cred. & Endor.) <input type="checkbox"/>	
<u>City/Agency</u>		Released By <input type="checkbox"/> <u>City/Agency</u>	
<u>Cell Phone</u>		SCCo DSW <input type="checkbox"/> enter X for yes	
<u>Other contact methods for individual / Time to check back into net</u>			
<u>Dispatch Limitations:</u>			
<u>Proposed Assignment</u>			
Assignment Accepted Y <input type="checkbox"/> N <input type="checkbox"/>	<u>Date/Time</u>	<u>Reason not accepted</u>	
<u>Proposed Assignment</u>			
Assignment Accepted Y <input type="checkbox"/> N <input type="checkbox"/>	<u>Date/Time</u>	<u>Reason not accepted</u>	
<u>MAR - Agency Msg #</u>	<u>Location:</u>		
<u>Mobilization Date:</u>		<u>Time:</u>	
<u>Arrived Date:</u>		<u>Time:</u>	
<u>Demobilize Date:</u>		<u>Time:</u>	
<u>Checked Out Date:</u>		<u>Time:</u>	
Rev: 20240711		<input type="checkbox"/> Check box if additional notes have been added to the back of T-card	

## Resource Net Level 3 Operations (Cont.)

- Resource Net shifts to (or opens with) level 3 operation
  - Mobilize (assignment, activation), track, demobilize mutual aid resources
- Regular announcement
  - Taking check-ins from MACs already released by their city/agency
  - Remind cities/agencies to send RACES Mutual Aid Requests via packet (preferably) or message net
- RACES Mutual Aid must be approved by OEM official
- Assignment of Resources and Activations
  - CRO and DCROs are authorized to make resource assignments and activations
  - Assignments done per DSW rules – according to training
  - RACES Unit Leader at County EOC will know/follow procedure
  - Resource Net Control will receive assignment information from RACES leadership and communicate assignments to MACs

# Exercise – Resource Net Level 3

## Check-ins



- Situation
  - Resource Net is operating at Level 2.
    - When and how do you transition to Level 3?
    - How do you ask for check-ins?  
Note: we can only take **County DSW** volunteers, with a preference for Credentialed Operators and a MAC Endorsement.
  - Then consider each of the following:
    - A (single) volunteer checks in after being released by his/her city, or
    - A city wants to make a resource request (usually on the Message or Packet Net)
- Things to consider:
  - What do you say next?
  - What do you do next?
  - What do you say 10 minutes from now?

# RACES Resource Request Challenges

If you have to send or take a Mutual Aid Resource Request

- Served agencies may or may not know about credentials and endorsements
  - Some know exactly what they need
  - Some will ask for the highest, even if they don't need it
  - Some don't know Credential levels; only know what skills they need
- Type II NCO is expected to know and understand Credential levels and Endorsements
  - Key services/capabilities; typical assignments; equipment
  - Hint: it's all in the Credential Program Handbook

# RACES Resource Request Challenges

If you have to send or take a Mutual Aid Resource Request

- May need to help the requester to ask for the correct resource
  - Agency must first use SCCo RACES Mutual Aid Request form, receive approval from local city/agency official
    - Supervisor can help
  - Translate verbal descriptions into qualification levels
    - Request: “busy net, outdoor shelter, cover a wide area on simplex,” “high traffic field assignment,” “25W rig and antenna with mast” needs an F2
  - Translate common assignments to credential levels
    - Example: Typical Red Cross shelter or Hospital needs F3+P3
- Preferred transmission method: send a RACES Mutual Aid Request form via Packet to the RACES Unit Leader at the SCCo EOC.

## SCCo ARES/RACES Credentials at a Glance

Expertise	Skill Areas			
	Field Comms	Net Control	Shadow	Packet
<b>Type 1 Specialist</b>	Field Comm 1	Net Control 1	Shadow 1	Packet 1
<b>Type 2 Advanced</b>	Field Comm 2	Net Control 2	Shadow 2	Packet 2
<b>Type 3 Independent</b>	Field Comm 3	Net Control 3	Shadow 3	Packet 3
<b>Type 4 Basic</b>	Type IV Communicator			
<b>Type 5 Unknown</b>	Licensed Amateur Radio Operator w/DSW			

Higher Proficiency ↑

# Endorsements at a Glance

- They are covered in the homework section of this presentation and detailed in the Credentialing Program Handbook
- Status summary:
  - Mutual Aid Communicator (MAC)
  - County EOC Radio Room Operator (ERO)
  - County SHARES Radio Operator (SRO)
  - County EOC RACES Unit Leader (RUL)
- Any questions on these Endorsements?

# Resource Mobilization Steps

- Provide assignment info to the resource(s) (volunteers)
- Resource may accept or reject the assignment
  - We're volunteers! They may refuse if they feel unqualified, unsafe
- Record accepted assignment on T-card (or other tracking tool)
- Provide the assigned activation number (do not make it up)
  - Must be approved by OEM official on appropriate form
  - Typical county numbers are XSC-YY-NN, where:
    - "XSC" = Santa Clara County Operational Area
    - "YY" = Year (i.e. "26" for 2026)
    - "NN" = event number (i.e. "01" for first event, "02" for second event, ...)
    - For training exercises, a "T" will be appended to the end (e.g. XSC-26-04T)
- Provide address, travel advisories, contact information, etc.
- Record starting odometer, intersection
- Begin tracking resource en route to assignment

## Dispatch Template for mobilization

- Lots of details to cover for a real activation; much less for drills
- No two situations are the same
- No one script can cover them all
- Use template to prepare script
  - Assignment
    - Location, address, coordinates, contact, start-time, etc.
  - Activation
  - In-transit
    - Frequencies, procedures
  - Restrictions, hazards, advisories
  - Arrival

**Santa Clara County Resource Net – Dispatch Template**

(Use portions and order as appropriate for situation)

**Assignment (if appropriate):**

- (Use as appropriate: for most drills and events, people already know their assignment)
- [Optional] I have an assignment for you. Are you ready to copy?
- [Optional] Your assignment is: *{duties of assignment}*
- [Optional] You should report to:
  - Location: *{name of staging area, park, shelter, school, etc.}*
  - Address: *{street address, city, special directions (if needed)}*
  - Local Contact: *{name, phone number, local frequency, [tone, offset]}*
- [Optional] Your start time will be: *{time}*
- [Optional] Operational period is expected to be [about]: *{#}* hours. Please be prepared (with any food, water, clothing or supplies you may need.)
- Do you accept this assignment?

**Activation:**

- Your activation number is: *{activation number}*

**Pre-departure Instructions and Frequencies:**

- Monitor this net as you travel
- Call net control about every 15-20 min. to report your location and last 3 digits of your odometer.
- When you arrive, stay in your vehicle and contact me
- [Optional] Frequency Information:
 

The following repeaters are linked:

<input type="checkbox"/> AA8BT (Primary):	146.115 MHz (+) 100.0 Hz
<input type="checkbox"/> WBASH (North):	145.270 MHz (-) 100.0 Hz
<input type="checkbox"/> K6SNY (South):	443.275 MHz (+) 107.2 Hz
<input type="checkbox"/> Other:	_____

Reminder - when you get to *{location}* switch to *{freq, [offset, tone]}*
- [Optional] Travel Restrictions and Hazards (if any):
  - Advise them of any weather hazards
  - Advise them of any road closures or hazards
  - Advise them if electricity or telephones are out – may affect gas stations, ATMs, etc.
  - Advise them if any special access credentials are required

**Departure:**

- Get departing location and odometer reading
- Verify that they copied all instructions
- Wish them safe travel

**Arrival Instructions:**

- Remain in your vehicle and contact *{name or net control}* on *{freq, [offset, tone]}*
- Other \_\_\_\_\_

SCCo ARES\*/RACES (Rev. 20240821) Page 1 of 1

# Challenges for Resource Net Level 3

- Resource allocation
  - Availability
    - Who is available? Where are they? (home, staging, some other county) What skills do they have? What constraints? Do they have a County DSW?
    - County RACES staff will make assignment, Net Control needs to track details
  - Mutual Aid Resource Requests
    - What type of resources have been requested? When are they needed? What flexibility do we have (level, time, quantity)? Are there any specific requirements, such as: climbing stairs, lifting heavy weight, etc.?
    - Documented on RACES Mutual Aid Resource Request Form.
  - Assignments
    - Who should be assigned? What alternatives do we have?
    - RACES CRO/DCRO staff will make assignments; net control needs to track.
- Credentials and endorsements define skills unambiguously.  
Learn them!
- T-cards (or substitute) are essential.
- A scribe is really helpful when tracking lots of resources.

# Challenges for Resource Net Level 3

- Status tracking
  - Questions from requesting city/agency?
    - How many people en route? What skill sets? When can I expect them to arrive? How long can they stay? What about replacements?
  - Questions from home city ECs
    - How many of my people are deployed? Where are they? When will they be back? Do you need more help? When?
  - Questions from county staff
    - How many people deployed? Where? Who? What resource gaps do we have? Where/when can we fill them?
- Other challenges
  - Possible coordination with other counties, region, and state
  - Demobilization – people are exhausted, need more guidance than usual
  - Safety is a priority!

# Challenges for Resource Net in General

- Inexperienced operators – weak or rusty on our procedures
  - Don't know/remember where to go, when, how, ...
  - Direct existing ARES/RACES members back to their city nets
    - Need release from city before available for assignment anyway!
    - Must have County DSW, otherwise we can not activate them
    - Prefer MACs but may take others for simple assignments
- Spontaneous volunteers – don't know our procedures
  - Typical radio questions
    - “Hey, are you guys running a net or something?”
    - “What's going on? ... Did something happen?”
    - “I'm in <city> and ... How can I help?”
  - Direct spontaneous volunteers to city nets
    - Unaffiliated volunteers are closest to their cities where they can be better utilized
    - Untrained volunteers need to be vetted, registered with DSW, and trained to be useful during an emergency

<b>MESSAGE FORM</b>		Origin Msg #: <sup>2</sup> _____	Destination Msg #: <sup>3</sup> _____
<p>► For paper: use ballpoint pen – blue or black ink only (See back for instructions)</p>			
<b>Date</b> <sup>1</sup> :	<b>Time</b> (24hr):	<b>Handling</b> <sup>5</sup> (✓one): <input type="checkbox"/> Immediate (ASAP) <input type="checkbox"/> Priority (<1 hr) <input type="checkbox"/> Routine (<2 hr)	
____/____/____ (mm/dd/yy)	____:____ (0001 to 2400)	<b>This Message Requests You To</b> <sup>6</sup> : <b>TAKE ACTION</b> (✓one): <input type="checkbox"/> Yes <input type="checkbox"/> No <b>REPLY</b> (✓one): <input type="checkbox"/> Yes, by _____ <input type="checkbox"/> No	
<b>T O</b>	<b>ICS Position: (required)</b> <sup>7</sup>	<b>F R O M</b>	<b>ICS Position: (required)</b> <sup>8</sup>
	<b>Location: (required)</b> <sup>9</sup>		<b>Location: (required)</b> <sup>9</sup>
	<b>Name: (optional)</b>		<b>Name: (optional)</b>
	<b>Telephone #: (optional)</b>		<b>Telephone #: (optional)</b>
<b>SUBJECT:</b> <sup>10</sup> _____			
<b>REFERENCE</b> (e.g., Number of earlier msg.): <sup>11</sup> _____			
<b>MESSAGE:</b> <sup>12</sup> (what, when, where needed; how long; contact name and phone number - KEEP MSG BRIEF)			
<b>ACTION TAKEN:</b> <sup>13</sup> (For use by Originator / Recipient) ► <b>USE SEPARATE MESSAGE FORM IF SENDING REPLY!</b>			
CC: <input type="checkbox"/> Management <input type="checkbox"/> Operations <input type="checkbox"/> Planning <input type="checkbox"/> Logistics <input type="checkbox"/> Finance			
<b>Operator Use Only:</b> <sup>14</sup>			
<b>Relay:</b>	<b>Rcvd:</b>	<b>Sent:</b>	
<b>How Received</b> <input type="checkbox"/> or <b>Sent</b> <input type="checkbox"/> (✓one): <input type="checkbox"/> Telephone <input type="checkbox"/> Dispatch Center <input type="checkbox"/> EOC Radio <input type="checkbox"/> FAX <input type="checkbox"/> Courier <input type="checkbox"/> Amateur Radio <input type="checkbox"/> Other _____		<b>Operator Call Sign:</b> _____ <b>Operator Name:</b> _____ <b>Date:</b> _____ <b>Time:</b> _____	
<b>Outgoing (Sent):</b> <sup>15</sup> <b>Message Originator:</b> Send the original to radio. Retain a copy for your reference. <b>Radio:</b> After sending, complete Operator Use Only and file in radio.			
<b>Incoming (Received):</b> <sup>15</sup> <b>Radio:</b> Complete Operator Use Only then route to the Addressee. Retain a copy in radio if directed by Supervisor. <b>Addresssee:</b> Take appropriate action.			
<b>SCCo RACES ICS Form 213 (01/19/2022)</b>			

Review

# MESSAGE NET OPERATIONS

# Message Prioritization

- Prioritize according to Handling, Date, and Time
  - SCC Handling order: Immediate, Priority, Routine
  - Use Date to prioritize between same Handling order
  - Use Time to prioritize between same date
  - Ultimately, the served agency decides the order

<b>MESSAGE FORM</b>		Origin Msg #: <sup>2</sup> _____	Destination Msg #: <sup>3</sup> _____
▶ For paper: use ballpoint pen – blue or black ink only (See back for instructions)			
<u>Date</u> <sup>1</sup> : <b>2</b> _____ (mm/dd/yy)	<u>Time</u> (24hr): <b>3</b> _____ (0001 to 2400)	<b>Handling</b> <sup>5</sup> (✓one): <input type="checkbox"/> Immediate (ASAP) <input type="checkbox"/> Priority (<1 hr) <input type="checkbox"/> Routine (<2 hr)	
		<b>This Message Requests You To</b> <sup>6</sup> :	
		TAKE ACTION (✓one): <input type="checkbox"/> Yes <input type="checkbox"/> No	
		REPLY (✓one): <input type="checkbox"/> Yes, by _____ <input type="checkbox"/> No	

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## Homework Exercise: Message Prioritization

- You are net control for the county message net
- The following messages are waiting to be sent:

Msg Nbr	Time	Sending To	Handling Order
XSC-327	0915	Sunnyvale EOC	Routine
XSC-349	0921	Gilroy EOC	Priority
XSC-207	0925	Morgan Hill EOC	Priority
XSC-401	0930	All EOCs	Immediate

- You also have the following incoming messages waiting:

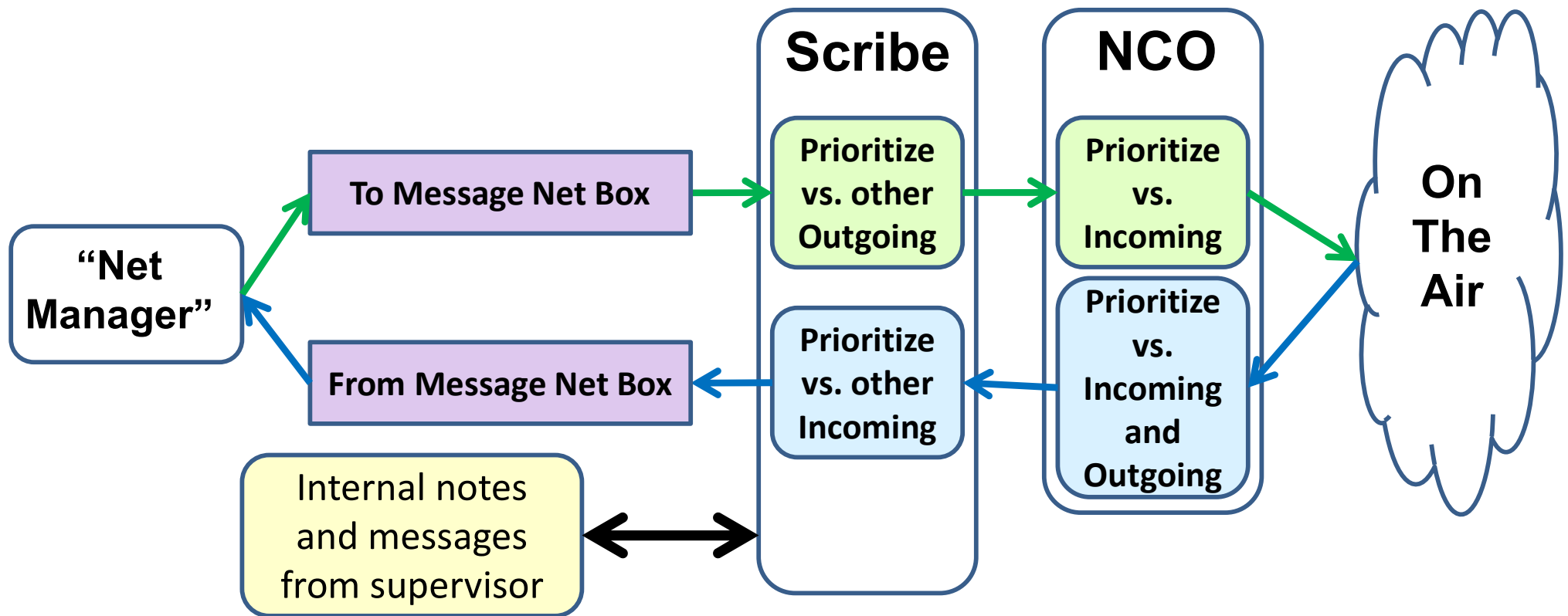
Time	Receiving From	Handling Order
0920	Los Altos	Priority
0930	San Jose	Immediate

- List these six messages in the proper send/receive order
- NOTE: assume no other messages come in during this time

# Homework Exercise: Message Prioritization

# Review:

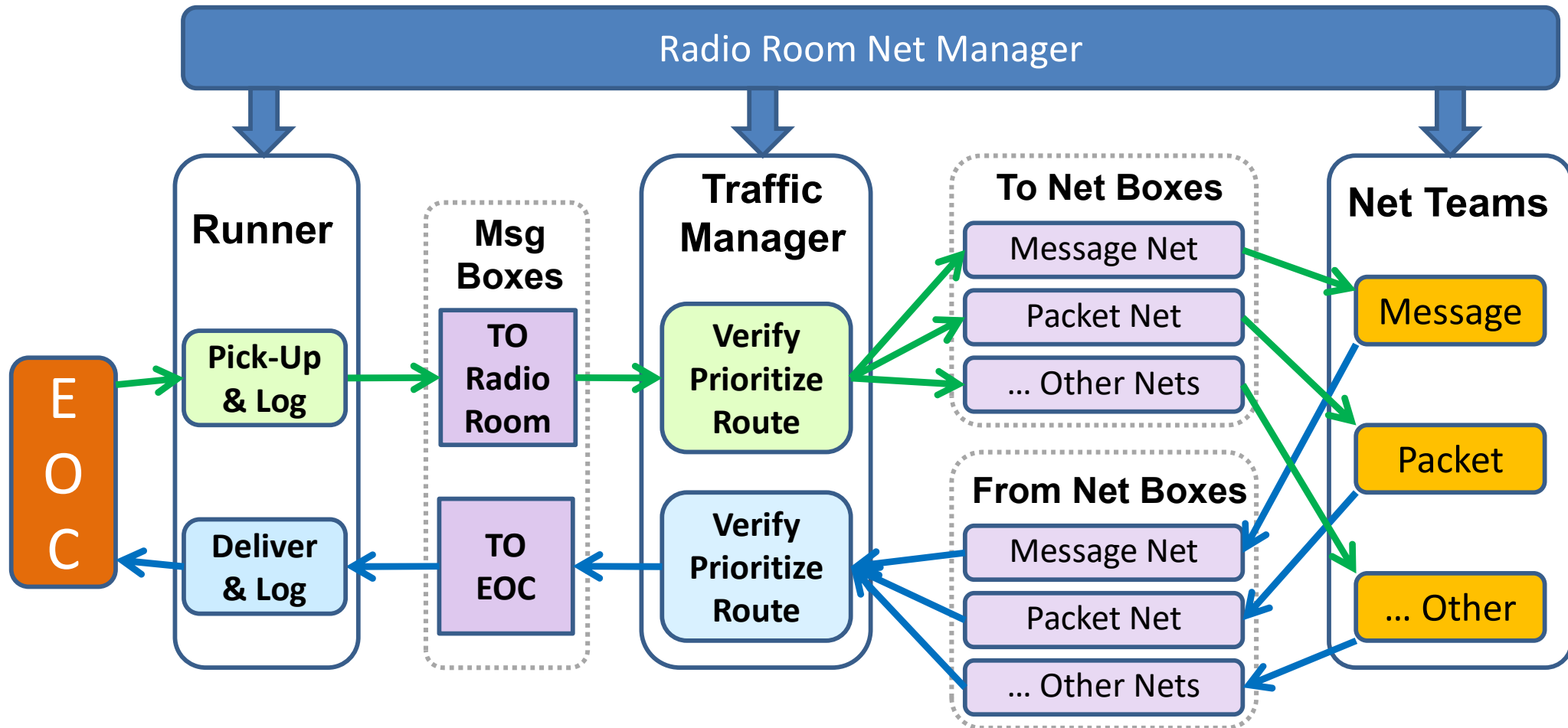
## Prioritizing Traffic Within a Net



- NCO prioritizes message on the air
  - Holds any incoming for outgoing high priority and vice versa
- Scribe prioritizes & logs message into & out from the team
  - Maintains prioritized incoming and outgoing message bins

# Review:

## Radio Room Traffic Routing/Prioritization



- For small, low traffic events, radio room Net Manager (formerly shift supervisor) may also perform the traffic manager role

# Exercise: Net Manager / Traffic Manager

The following messages have come in from the EOC to be sent out via Amateur Radio. Which county net would you use and why?

To	Handling Order	Which Net?	Why?
Sunnyvale EOC	Routine		
Fire Station 75	Immediate		
All EOCs	Priority		
All EOCs	Immediate		

How might the contents of the message influence your choice?

How might net conditions/operators influence your choice?

# Reminder: Message Handling Challenges

- Speed / message throughput on voice
  - Two skilled operators can pass an ICS-213 in about 2-3 minutes or less, unskilled 2x to +3x longer
- Heterographs: to/too/two, for/four/fore, ate/eight, plain/plane, site/sight/cite, one/won, ...
  - “I spell ...”
- Traffic volume – can be non-stop
  - Although it is less so with more messages passed by packet
  - But higher volume of operator-to-operator traffic may increase the workload

## Reminder: Message Handling Challenges (Cont.)

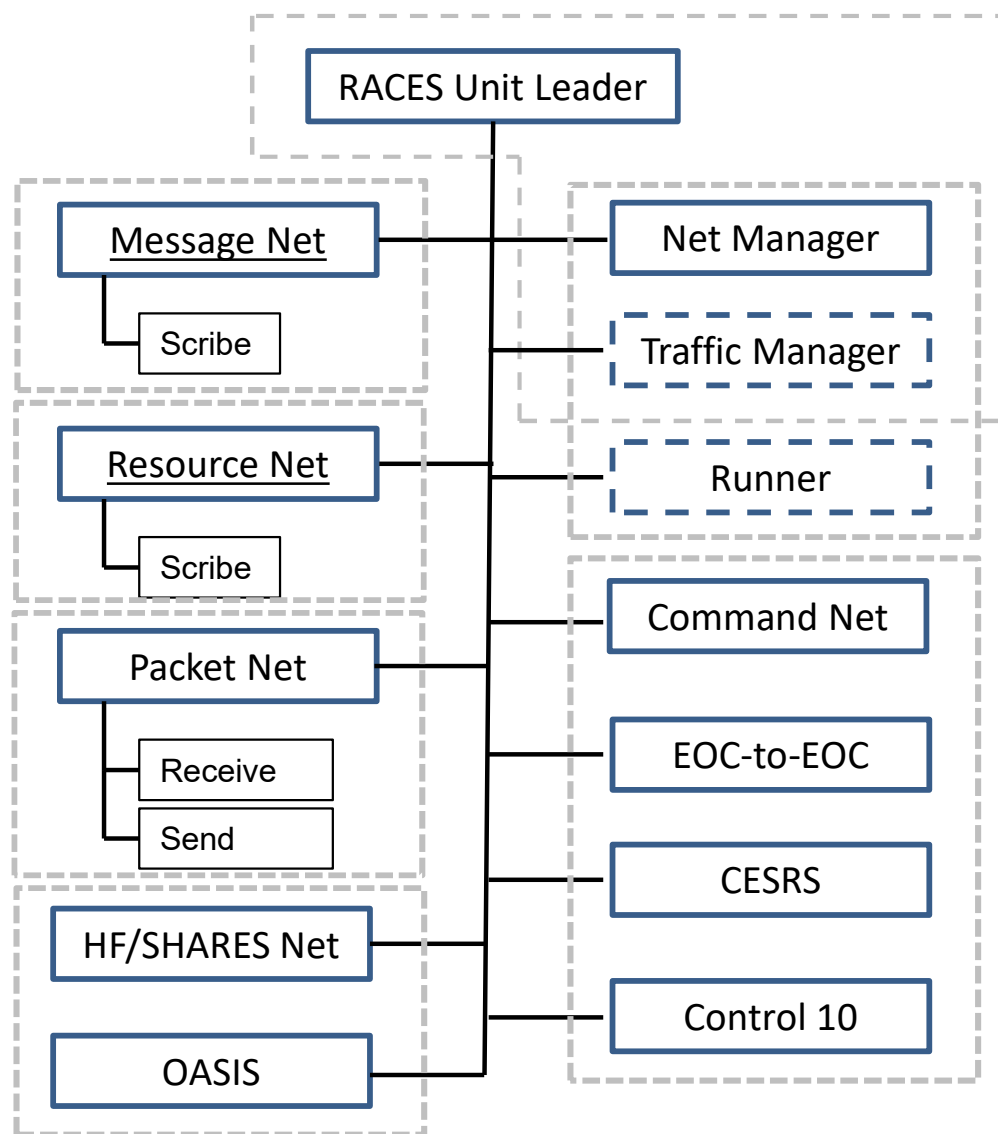
- Prioritizing traffic
  - Individual message prioritization (handling order, date, time)
  - Incoming vs. outgoing messages
- Inexperienced operators
  - Failing to identify quantity and priority of messages when they contact you, improper prioritization, poor message passing skills
- If packet is available, use message net primarily for Immediate messages and operator- to-operator traffic
  - You better get it right!
- Keep your message passing skills up to date and practice!
  - Quarterly Training Net. Sign up under county web site events.
  - Message Passing class
  - Drills and Public Service Events



# ORGANIZATIONAL MODELS FOR NET CONTROL

# County Radio Room Positions and Structure

- Specific staffing dependent upon situation (and # of volunteers)
- Some NCO positions may be combined, if traffic levels permit
- Dashed lines suggest positions that may be covered by one person until more volunteers arrive.
  - Up to RACES Unit Leader delegation



# Net Control Models

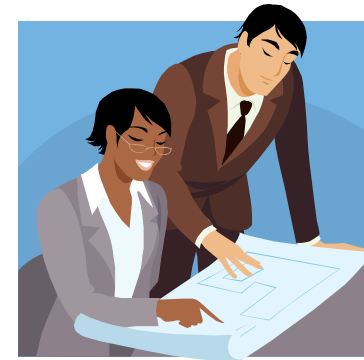
- More than one model exists for net control:
  1. Net control (with optional scribe) is also EOC Operator [county]
    - NCO/scribe team direct traffic AND handle EOC messages
    - NCO and scribe divide workload for maximum efficiency
    - Appropriate when most traffic is to/from EOC
    - County nets operate this way
  2. Net control separate from EOC Operator [some cities]
    - NCO responsible for directing traffic and potentially assigning msg #'s
    - EOC operator sends/receives messages from/to EOC
    - EOC operator goes through net control, just like other field stations
    - Used by some cities
  3. Others ...
- Be sure you understand which model is being used before you take over net control duties



It's not rocket science. But it does take effort & attention to detail

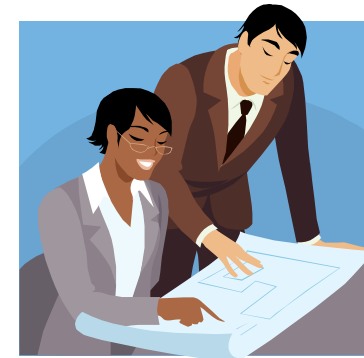
# INTRODUCTION TO PLANNING FOR NET CONTROL

# Review: Focus of this section



- The formulation and documentation of a formal net control plan is beyond the scope of this course
  - Medium to large events require detailed and formal documentation
  - Covered in the Event Planning Table-Top course (June 7<sup>th</sup>)
- Use the planning information in this section to help you think through different Net types and the planning process
  - Each drill and event will be different
  - But plans from previous instances of a drill or event can be helpful
  - After-Action-Reports from prior events are also useful

# Review: Planning for an Event



- Advanced net control operator (N2) should be able to
  - Plan a net for a smaller to medium event
  - Be able to (re)create an ICS 205 for a small to medium event
    - One to two tactical nets
  - Assist with net control planning for a larger event
- Components of a larger formal net control plan includes:
  - Net types / quantity
  - Frequency selection and Intermod considerations
  - Power level selection and Fundamental Overload
  - Antenna placement
  - Schedule
  - Equipment and logistics
  - Personnel requirements/assignments
  - Net control script
  - Net control briefing

Mentioned here,  
covered in  
Event Planning  
Table Top course

# Review: Net Type and Quantity Considerations

- Resource Net
  - Directed net
  - Common for county exercises and many city exercises
  - Required for activation under DSW and mutual aid
  - For smaller events, could consider as an informal “talk in” frequency
  - Larger events will probably need an experienced NCO, and maybe a scribe
  - If possible, arrange event so everyone doesn’t need to start travelling at the same time
    - E.g., try to spread out arrivals and departures

# Review: Net Type and Quantity Considerations

- Message Net / Field team / Tactical nets
  - Directed net
  - Traffic: All formal: e.g. shelters, schools, fire stations, hospitals...
    - How many teams? Messages per team? Time/message? Operator quality?
    - Expect 4 to 8 teams per net depending on traffic volumn
  - Traffic: All informal: parades, bike races, checkpoints, rovers
    - How long to gather key data (crowd size, etc.), health & welfare?
    - Usually no more than 15-20 teams per net
  - Traffic: Mixture
    - Think through traffic types, quantity of messages per team, quantity of teams, health & welfare checks, capability of likely net control operators, availability of net control operators
  - NCO staffing: larger nets will likely need a scribe

# Review: Net Type and Quantity Considerations

- Shadow Nets
  - Usually works best as an open net
  - Most shadows need to talk to another shadows, not to Net Control
  - Traffic is almost always informal (usually no forms-based traffic)
  - Try to stay with one shadow net whenever possible
    - Shadows are highly mobile/portable
    - Radio is in pouch, backpack, vest, etc.; difficult to switch frequencies
    - HT output is mono; difficult to tell which frequency is in use
    - Working two frequencies usually only possible with 2 HTs; 2 earbuds
  - Open net performance is dependent on everyone on net
    - Consider: who the operators will be; how “chatty” the principals are; number of shadows; number of expected messages per shadow; ...
  - If you need more than one net, divide according to traffic clusters
    - Geography, functional area, etc.
    - May need a NC liaison between the shadow nets

# Review: Net Types and Quantity Considerations

- Command Net
  - For event staff to communicate with each other
  - Large events can benefit greatly; some medium events, too
  - Typically operated as an open net
- Staging nets and other tactical nets
  - Where and when needed
  - Can be quite large, but relatively simple – check-in/out; H&W
- Packet Nets (not part of Net Control but ...)
  - May use existing county BBS frequencies
  - May use separate training BBS and non-SCCo frequencies
  - Can greatly reduce the traffic level on voice message nets
  - Encourage use, especially when formal message traffic is needed
  - Why would a Net Control planner be concerned about Packet operations?

# Review: ICS 205 – Communications Plan

<b>COMMUNICATIONS PLAN</b> SCC <sub>o</sub> ARES/RACES/ACS		1. Incident Name/Location Countywide RACES/CERT Exercise, Moffett Field			2. Activation Number XSC-18-08T		3. Operational Period Date/Time From Date: 10/27/2018 To Date: 10/27/2018 From Time: 0600 To Time: 1600		
<b>4. Communications Resources</b>									
Ch #	Function	Call Sign and/or Sys / Net / Ch / TG Name	Assignment	Rx <u>Freq</u> / W	Rx Tone or NAC	Tx <u>Freq</u> / W or + / - / S	Tx Tone or NAC	Mode <u>A</u> , <u>D</u> , <u>M</u>	Remarks
	Emergency	9-1-1	All event staff and participants	Telephone		Telephone		M	For actual emergencies, first call 9-1-1. Then report the situation to Net Control, prefacing your message with "THIS IS NOT A DRILL."
	Resource	AA6BT Resource Net Primary	RACES resources traveling to or from the drill site	146.115 W		+	100.0	A	Directed Net. Link to N6NAC. Link repeaters at 0600. Unlink after finished tracking departing resources (~1600). Frequency open to non-participant use during low resource net utilization.
	Resource	W6ASH (UHF) Resource Net North	RACES resources traveling to or from the drill site	440.800 W		+	100.0	A	Link to AA6BT
	Resource	N6NAC Resource Net South	RACES resources traveling to or from the drill site	444.625 W		+	110.9	A	Linked from AA6BT

- Function – primary function
- Call Sign and/or Net – e.g. repeaters call sign, name of the net
- Assignment – brief description of how used
- Rx Freq – (narrow / wide ), Rx Tone,
- Tx Freq – (N/W), Tx Tone
- Mode – Analog, Digital, Mixed
- Remarks – important comments for implementation

Review

# **STRETCH HOMEWORK**

Placeholder: Review ICS-205 homework assignment

Placeholder: Review of Net Control Staffing Plan

Placeholder: Assignment / Dispatch Template

# Feedback to Event Staff

- An N2 advanced net control operator can provide more detailed comments to the event staff
- Comments can include:
  - Problems and concerns
  - Observations and feedback
  - Lessons learned
  - Improvement ideas for future events
  - Remember we do not run their event we are communicators
- If appropriate at the time, verbalize comment to event staff
- Document it (again) on your ICS 214
  - We do review all 214's (as well as all the other drill paperwork)
- It helps with building the After Action Report
  - All paperwork from DSW events is organized, scanned and archived for 7 years

# An N2 is a guide and adviser to users

- A Served Agency is creating a RACES Mutual Aid Request. What would you recommend to the served agency for these needs:
  1. NC Operator for a slow to moderately busy message net at a city EOC.
  2. What would you recommend to staff a new Shelter that just opened.
  3. A hospital needs staffing for the next shift, what do they need?
- What is the capability difference between a MAC, and someone with only County DSW as it relates to a Level 3 Resource Net?
- You are running a Level 3 Resource Net. What advise would you provide to an operator travelling from Palo Alto to Gilroy?
- How would you handle users that wish to pull over for H&W?
- You have started a Level 1 Resource Net and are getting many reports of MM 4 and higher. How would you get the repeaters linked?

# SUMMARY

# Summary



You should now be able to:

- Describe the role of an advanced net control operator (N2)
- Describe the advanced concepts, techniques, equipment and procedures required to operate:
  - Two nets simultaneously
  - County Resource Net Levels 1, 2, and 3
  - County Message Net
  - Other critical and/or high-traffic nets
- Describe the basics of net type and quantity for planning small events

Performing any of these roles well requires practical experience that cannot be gained in the classroom. So, get on the air! We hope to see you at the next event!

# Summary + In addition

- Any Type 2 operator (including N2) is expected to be more familiar with SCC procedures, documentation, and reference information:
  - Credentialing program:
    - Capabilities & Services, Assignments, and Equipment of all Type 3 and Type 2 credentials
    - Endorsements
    - Evaluation process
  - Operations (everything on the SCC web pages), for example:
    - Optional and additional forms
    - Considerations and Recommendations for constructing stations
    - Station Components
    - Standards and Procedures
    - Etc.

# Go Practice! (and participate in Drills)

- Learning to be a good net control takes practice
  - Multiple hours, multiple events
  - Multiple event types, multiple net types
  - Real radio environment
  - Unfortunately, that's just not possible in a 3-hour classroom
- But we have lots of practice opportunities available:
  - Monday/Tuesday night nets
  - City events (amateur radio, CERT, etc.)
- Drills too
  - Quarterly communication drills
  - Yearly, county-wide drill (September)
  - Field mini-drills
- Public service events (parades, bike races, festivals, ...)

# Thank You – Receiving Course Credit

- “90% or better class time attendance required for credit”
- If you did the stretch homework share it with staff. But keep it for reference after it is reviewed.
- Sign out on the class ICS 211A SCCo RACES Check-In List
- Complete the on-line course evaluation form

# Online Class Evaluation

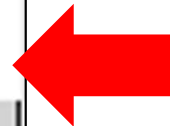
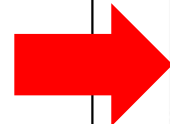
MUST BE SUBMITTED WITHIN 7 DAYS TO GET CLASS CREDIT

## Activities Database

- Home**
- [Log Out](#)
- [Activities Home](#)
- [SCC ARES/RACES Home](#)
- [Comments/Bugs](#)
- Events**
- [List Events By Date](#)
- [List Events I Joined](#)
- [Submit Class Evaluation](#)
- My Profile**
- [My Contact Info](#)

## Website Home Page

-  [Training & Practice](#) >
- [Classes](#) >  
*Emergency communications training curriculum*
- [Submit Class Evaluation](#) >  
*How can we improve?*
- [Voice Nets](#) >  
*City nets, SPECS/SVECS, hospital, training, HF*



<https://www.scc-ares-races.org/>

<https://www.scc-ares-races.org/activities/>

If you have questions or feedback about this or other training activities, please join our Training discussion group.

<https://scc-ares-races.groups.io/g/training>

This is a moderated group.

Reminder:

Watch the Activities Calendar for future training and exercise opportunities:

See: <https://www.scc-ares-races.org/activities/events.php>

### **Upcoming Events with Net Control Opportunities (\* Credential Credit)**

- \* Quarterly City/County Drill – May 16<sup>th</sup>
- El Camino Bike Ride – May 30<sup>th</sup>
- Sequoia Bike Ride – June 6<sup>th</sup>
- \* Sunnyvale July 4<sup>th</sup> Festival & Parade– July 4<sup>th</sup>
- \* Pop-Up Practice & Evaluations – July 18<sup>th</sup>
- \* Quarterly City/County Drill – August 22<sup>nd</sup>
- \* Annual County-wide Exercise – Sept. 19<sup>th</sup>

### **Upcoming Classes:**

Event Planning – June 6<sup>th</sup>

Shadowing – June 20<sup>th</sup>

Message Passing – July 11<sup>th</sup>