

USE AND DISTRIBUTION NOTICE

- Santa Clara County RACES authorization is granted to use and duplicate this material as-is, as long as this page and the copyright notices on each page are included, acknowledging Santa Clara County ARES/RACES as the holder of the copyright.
- Permission is granted to adapt this presentation to your needs as long as you acknowledge our copyright and include a note similar to "adapted with permission from Santa Clara County ARES/RACES."
- For additional information on training or any of our programs, send an email to: info@scc-ares-races.org

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

1

1



Net Control Type II

Class Material



Santa Clara County ARES®/RACES

Revised: 21-April-2023

ARES and Amateur Radio Emergency Service are registered servicemarks of the American Radio Relay League, Incorporated and are used by permission.

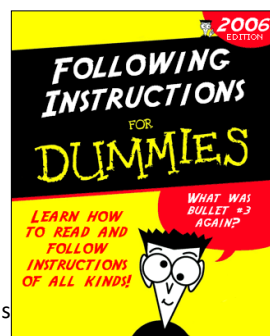
Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

2

2

Housekeeping

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



Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

3

3

N2 Prerequisite: Attention to Detail



Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

4

4

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

Copyright (C) 2023 Santa Clara County ARES/RACES. All rights reserved.

5

5

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 and city opportunities
 - City nets, SPECS, SVECS, etc.
 - City events
 - County drills and mini-drills
 - Real events
 - Public service events
 - Actual activations

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

6

6

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
- Principal/supervisor will be assigned (real or simulated)
 - All transmitted 3rd party message content will be provided by the principal
 - 3rd party message (formal or informal), content comes from principal
 - No radio "operator-created" 3rd party content
 - All received 3rd party content is to be delivered to the principal
- Participation requirements
 - Mobilization Resource Net for all non-staff (if provided for the drill)
 - 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 briefing.
 - A completed Drill Evaluation may be required
 - Will be made clear in SCCo event listing and during the briefing. If not clear: ask

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

7

7

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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

8

8

N2 Required Equipment, where to find:

References to:

- SCCo_RACES_Credentialing_Prgm_Handbook_v3.1.2 (12-Feb-2023)

For N2 Equipment (page 50)

- *All required equipment for Field Communicator Type II (F2)*

For F2 Equipment (page 38)

- *All required equipment for Field Communicator Type III (F3)*
- and 2m/70cm 25+W mobile, batteries for it, Power adapters, dual-band antenna, mast, tripod, coax cable, coax adapters.

For F3 Equipment (page 35)

- *All required equipment for Communicator Type IV (C4)*

For Communicator Type-IV (page 28)

- The go kit must contain the following equipment:
 - All items in the SCCo ARES/RACES standard 2-hour Carry Kit
 - All items in the SCCo ARES/RACES standard 12-hour Go Kit

Go kits: <https://www.scc-ares-races.org/operations.html#equip>

- Both kits are documented the SCCo_Go_Kit_rev210601 (MS-Word or PDF)

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

9

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
- Herman's mobile phone: 555-867-5309
- We may use other characters and calls based on the TV show:
 - Wolfman Jack: W6WOOF
 - Dracula: W6DRAC
 - Etc.
- We may also use others as simulated for real people:
 - Eddie Munster
 - Grandpa Munster
 - Etc.



Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

10



Five Keys to Success

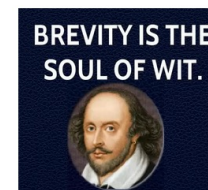
ADVANCED TECHNIQUES FOR NET CONTROL

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

11

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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

12

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 USB/LSB, usually gain & compression
- Speak clearly, correctly
 - Proper enunciation; proper use of phonetics, numbers, prowords
- 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

13

13

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
 - Examples: lost traveler, missing frequency info, missing contact info
- Anticipate check-in verification requirements
 - Have city list or County DSW list ready to verify check-ins
- Anticipate questions, have answers ready
 - ... 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

14

14

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 ARES/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."
 - ... 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. 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 whole numbers on your odometer, your city, 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.

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

15

15

Multiple Actions with One Command

If the circumstances allow you to leverage efficiency in your favor

5x

- 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"

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

16

16

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?

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

17

17

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



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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

18

18

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 be good at avoiding more doubles (use partial call sign)
 - Can be much faster (up to 2-3 times)
 - Especially for activations where lengthy information must be conveyed
 - Speed limit: ability of field operators to follow instructions

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

19

19

About that “Speed Limit”





- Takeaway: “listen and obey” – Follow the NCO’s instructions

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

20

20



Activating a remote county for the California QSO Party

A contesting "super station"

Contesting can dramatically improve your efficiency & effectiveness

IMPROVING YOUR SKILL LEVEL

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

21

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, ...

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

22

Example: ARRL Sweepstakes

- "Exchange" is patterned after ARRL Radiogram Preamble




- 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

23

Example: ARRL Sweepstakes

- And it sounds like this ...



- N6BV sends: <number> B N6BV 59 East Bay
- Without looking below, can you copy what the others send 100%?

- 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

24

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 program, 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>

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

25

25



WORKING TWO NETS SIMULTANEOUSLY AND CROSSBAND

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

26

26

Review

- Any questions on Working two Nets simultaneously AND Crossband Repeat?

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

27

27



RESOURCE NET OPERATIONS LEVEL 1 (REVIEW)

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

28

28

LEVEL 1

Review

- Any questions on Resource Net Level 1?

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

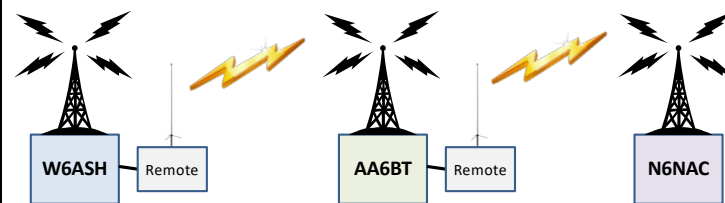
29

29



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
 - Control operator uses DTMF tones to send commands
 - Remote tuned to next repeater: transmits on input/listens on output
- Max delay when sending from W6ASH to N6NAC (or reverse)
 - Net control should use AA6BT whenever possible
 - Or, use N6NAC (on 440) when lots of other 2m field stations nearby



Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

30

30



RESOURCE NET OPERATIONS LEVEL 2

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

31

31

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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

32

32

Example – Resource Net Level 2

- Recent county drill included Resource Net Level 2
- Situation:
 - Simulated earthquake
 - Resource Net Level 1 established
 - Mike-Mike reports underway for about 10 minutes
 - Then ...
- Critique
 - What techniques were used which made this effective?
 - What improvements could be made?



Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

33

33

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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

34

34



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-5+)
 - 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? (hint: if you are in a supervised radio room)
 - What do you say 10 minutes from now? (hint: net status)



Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

35

35



RESOURCE NET OPERATIONS LEVEL 3

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

36

36

Resource Net Level 3 – Location awareness

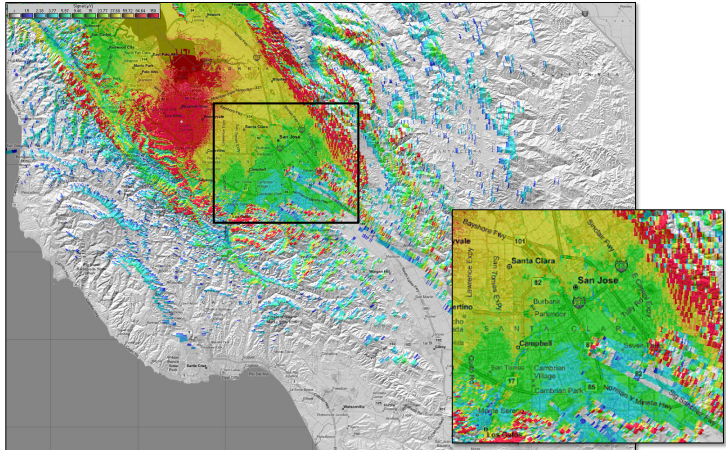
- Managing operators while traveling to their assignment requires understanding of:
 - Where they are and where they will be going.
 - Their approximate location.
 - Recommending a switch to a different repeater
 - Based on coverage patterns along the operator’s route,
 - If it looks like it might be necessary, and
 - 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
- Yes, operators should be aware of coverage and reachability
 - However, the NCO should be “on top” of the changing situation

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

37

37

W6ASH Coverage 2m (Resource Net North)

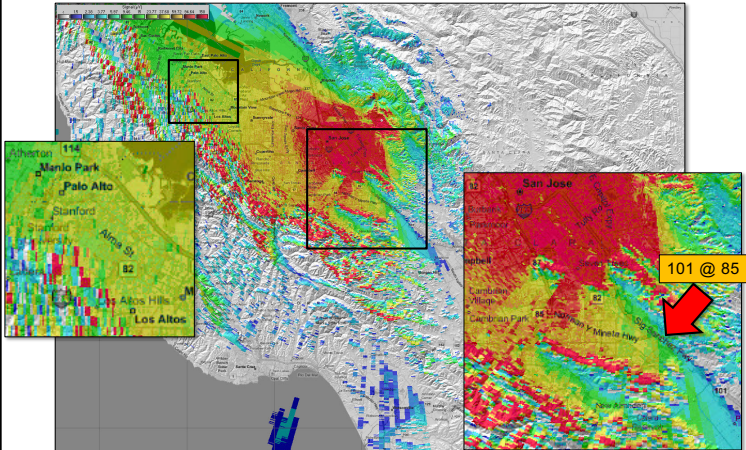


Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

38

38

AA6BT Coverage (Resource Net Primary)

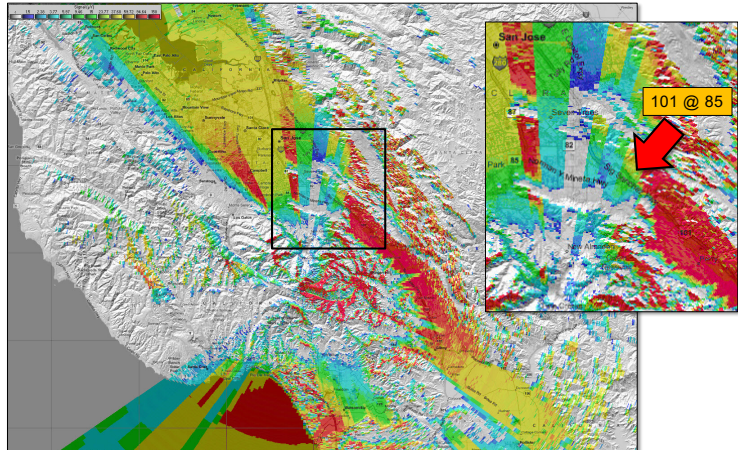


Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

39

39

N6NAC Coverage (Resource Net South)



Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

40

40

Resource Net Repeater Linking

- Repeater linking capabilities (as of this class date)
 - W6ASH 70cm MHz (North) can link to AA6BT (Primary)
 - W6ASH 2m MHz (North) can link to AA6BT (Primary) or N6NAC or K6SNNY (South)
 - AA6BT can link to N6NAC (South) and N6SNNY (alternate)
 - No linking can be originated from N6NAC
- Requesting a link – two methods
 - 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 N6NAC or K6SNNY)
 - On AA6BT, ask for a control operator to link to N6NAC (or K6SNNY)
 - Contact the DEC or any of the ADECs
 - <http://www.scc-ares-races.org/staff.html> (keep a copy in your go kit!)
- Don't forget to ask for link to be removed when done
 - Let the control operator know how long you need the link
 - Contact the control operator or DEC/ADEC when finished with event
- Also: for drill and exercises, repeater linking is planned in advance. We always get permission from each repeater owner or representative prior to any drill and exercise.

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

41

41

Resource Net Level 3 Operations

LEVEL 3

- Resource Net Level 2 operations may be underway
- At some point:
 - Cities may begin requesting resources
 - City sends a SCC RACES Mutual Aid Request form (typically Packet Net, or possibly on Message Net.) however, they may need to send via the Resource Net. Hint: know the form.
 - County DSW volunteers may begin checking in after being released by their city
 - Resource net NCO may be asked by supervisor to request resources from cities
- Resource net shifts to (or opens with) level 3 operation
 - Mobilize (assignment, activation), track, demobilize mutual aid resources
- Regular announcement
 - Taking check-ins from County DSW volunteers already released by their city/agency
 - Remind cities/agencies to send resource requests via packet (preferably)/message net
- Seek help from RACES Unit Leader to obtain assignments
 - DEC and ADECs are authorized to make resource assignments/activations
 - Assignments done per DSW rules – according to training

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

42

42

Volunteer Check-Ins

LEVEL 3

- “This is ..., net control for the Santa Clara County resource net, standing by for check-ins from County DSW volunteers who have been released by their cities”
- Record minimum info
 - Call sign, Credentials, Endorsement(s), 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

W6XRL4	F2 N3 MAC
LAH 555-555-5555	
0800 check-in	
Avail after 17:00	
check-out	

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

43

43

Exercise – Resource Net Level 3 Check-ins

Animation LEVEL 3



- 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 MACs.
 - 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?

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

44

44

LEVEL 3

RACES Resource Request Challenges

If you have to take a Mutual Aid Resource Request on the Resource Net.....

- 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
- May need to help the requester to ask for the correct resource
 - Agency must first use SCC RACES Mutual Aid Request form, receive approval
 - 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" → F2
 - Translate common assignments to qualification levels
 - Example: Typical Red Cross shelter needs F3+P3
- Preferred transmission method: send an XSC RACES Mutual Aid Request form via Packet to the RACES Unit Leader at the SCC EOC.

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

45

45

LEVEL 3

SCCo ARES/RACES Credentials at a Glance

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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

46

46

LEVEL 3

Endorsements at a Glance

- They are in the homework section of this presentation and detailed in the Credential Program Handbook.
- Status summary:
 - Mutual Aid Communicator (MAC). Available now.
 - County Fire Station Radio Operator.
 - Still working out the details, future.
 - County EOC Radio Room Operator. Available now!
 - County EOC RACES Unit Leader. In development.
- Any questions on these Endorsements?

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

47

47

LEVEL 3

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)
 - Typical county numbers are XSC-YY-NN, where:
 - "XSC" = Santa Clara County Operational Area
 - "YY" = Year (i.e. "23" for 2023)
 - "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-21-01T)
- Provide address, map grid, travel advisories, etc.
- Record starting odometer, street, city
- Begin tracking resource en route to assignment

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

48

48

Dispatch Template for mobilization

LEVEL 3

Yes, it is out of date, is on the list of things to update.

Santa Clara County Resource Net – Dispatch Template Rev: 08-Jul-2010

(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: (details of assignment)
- (Optional) You should report to:
 - Location: (name of staging area, park, shelter, school, etc.)
 - Address: (street address, city, special directions (if needed))
 - Traction Guide: (page and grid number)
 - Local Contact: (name, phone number, local frequency, time, offset)
- (Optional) Your start time will be: (time)
- (Optional) Operational period is expected to be (about): (H) hours. Please be prepared (with any food, water, clothing or supplies you may need.)
- (Optional) 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 colorator.
- When you arrive, stop in your vehicle and listen in.
- (Optional) Frequency information:
 - The following frequencies are listed:
 - AARBT (Primary): 146.115 MHz (+) 100.0 Hz
 - VADIA (Victim): 146.270 MHz (+) 100.0 Hz
 - NINAC (South): 444.825 MHz (+) 110.9 Hz
 - Other:
- (Optional) Remember: 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 considerations are required

Departure:

- Get departing location and colorator reading
- Verify that they repeat all instructions
- Wish them safe travel

Arrival instructions:

- Remain in your vehicle and contact (name or net control) on: (freq, offset, tone)

<http://www.scc-arcs-races.org/operations.html>

Page 1 of 1

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

49

49

Challenges for Resource Net Level 3

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?
 - Mutual Aid Resource Requests
 - County ARES/RACES staff will assign, but Net Control needs to track details
 - 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 ICS-213 Message Forms.
 - 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

50

50

Challenges for Resource Net Level 3

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
 - Coordinating with other counties
 - Demobilization – people are exhausted, need more guidance than usual

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

51

51

Challenges for Resource Net in General

LEVEL 3

- 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!
- 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 or volunteer centers
 - Volunteer centers typically won't be set up in the first 24 hours
 - City/county running the center can deploy someone to the center to provide communications and review Quick Trainer procedures

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

52

52

MESSAGE FORM <small>For use on Radioteletype, Radiotelex, Radiofax and Radiofax/Telex</small>		Origin Message # <input style="width: 50px;" type="text"/>	Destination Message # <input style="width: 50px;" type="text"/>
Date: <input style="width: 40px;" type="text"/>	Time: <input style="width: 40px;" type="text"/>	Handing: <input type="checkbox"/> Immediate (IMM) <input type="checkbox"/> Priority (P) <input type="checkbox"/> Routine (R) <input type="checkbox"/>	
Ref: <input style="width: 100px;" type="text"/>		This Message Requires User Tx: <input type="checkbox"/>	
FILE ACTION: <input type="checkbox"/>		FILE ACTION: <input type="checkbox"/>	
<input type="checkbox"/> ICN Translation (preferred) <input type="checkbox"/>		<input type="checkbox"/> ICN Translation <input type="checkbox"/>	
<input type="checkbox"/> Location (preferred) <input type="checkbox"/>		<input type="checkbox"/> ICN Translation <input type="checkbox"/>	
<input type="checkbox"/> Name (preferred) <input type="checkbox"/>		<input type="checkbox"/> Location (preferred) <input type="checkbox"/>	
<input type="checkbox"/> Telephone (preferred) <input type="checkbox"/>		<input type="checkbox"/> Name (preferred) <input type="checkbox"/>	
<input type="checkbox"/> Telephone (preferred) <input type="checkbox"/>		<input type="checkbox"/> Telephone (preferred) <input type="checkbox"/>	
SUBJECT: <input style="width: 100%;" type="text"/>			
REFERENCE #s: (Number of earlier msg.) <input style="width: 50px;" type="text"/>			
MESSAGE: <input style="width: 100%;" type="text"/>			

Review

MESSAGE NET OPERATIONS

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved

52

53

Radio Routing Slip

- SCCo ARES/RACES is clarifying “informal” messages into 3rd party, and Operational messages.
 - Operational messages are between radio operators: used to manage the net, such as check-ins, health & welfare, status/info gathering, etc.
 - 3rd party is what we do for our served agencies. ICS forms, SCCo forms, Mutual Aid Request, handwritten, etc.
 - Informal, handwritten, will encourage the sender to re-write on an ICS 213
- To help manage effective to/from, handling, message ID tracking: a new Radio Routing Form was developed.
 - Think of it as a standardized envelope
- Fill out and staple to forms that don’t already have the information.

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved

54

54

Radio Routing Slip

Santa Clara County RACES -- Radio Routing Slip		Rev: 190527
Radio Operator Only: ¹ Origin Msg #:		Destination Msg #:
This Section to be Completed by Message Author/Creator: (Underlined=Required)		
² Date:		³ Time (24hr):
⁴ Handling:		⁵ Immediate (ASAP) ⁶ Priority (<1 hr) ⁷ Routine (<2 hr)
T O M	⁸ 1CS Position:	⁹ 1CS Position:
	¹⁰ Location:	¹¹ Location:
	¹² Name:	¹³ Name:
	¹⁴ Contact Info:	¹⁵ Contact Info:
Form:	¹⁶ Type:	¹⁷ Topic:

Instructions for Message Author/Creator:

1. Complete section above, surrounded by BOLD line (see instructions on back)
2. Fill in all Required fields
3. Attach to the front of a form to be sent via radio
4. Deliver to radio operator for transmission

Radio Operator Only:			
Relay:	Rcvd:	Sent:	
Name:	Call Sign:	Date:	Time (24hr):

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved

54

55

Message Prioritization - Updated

- Prioritize according to handling order and time
 - SCC handling order: Immediate, Priority, Routine
 - Situation Severity is being deprecated – not all forms are replaced
 - Sender: continue to vocalize it if still there, not crossed out, and marked
 - Receiver:
 - If it is on your form and you don't hear it, don't mark it and move on.
 - If it is not on your form and you hear it, just make a note and move on.
 - Use Time to prioritize between same handling order
 - Ultimately, the served agency decides the order

MESSAGE FORM ▶ For paper: use ballpoint pen - blue or black ink only (See back for instructions)		Origin Msg #: ²	Destination Msg #: ³
Date: <u>2</u> / <u>1</u> / <u>2004</u> (mm/dd/yy)	Time (24hr): <u>0001</u> to <u>2400</u> (Crawford)	Handling: <input checked="" type="checkbox"/> <u>1</u> (v:ano): <input type="checkbox"/> Immediate (ASAP) <input type="checkbox"/> Priority (<1 hr) <input type="checkbox"/> Routine (<2 hrs) This message Requests You To: ⁴ TAKE ACTION (v:ano): <input type="checkbox"/> Yes <input type="checkbox"/> No REPLY (v:ano): <input type="checkbox"/> Yes, by _____ <input type="checkbox"/> Yes, by _____ <input type="checkbox"/> No	

Copyright 2023 Santa Clara County

56

56

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
XSC327	0915	Sunnyvale EOC	Routine
XSC349	0921	Gilroy EOC	Priority
XSC207	0925	Morgan Hill EOC	Priority
XSC401	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

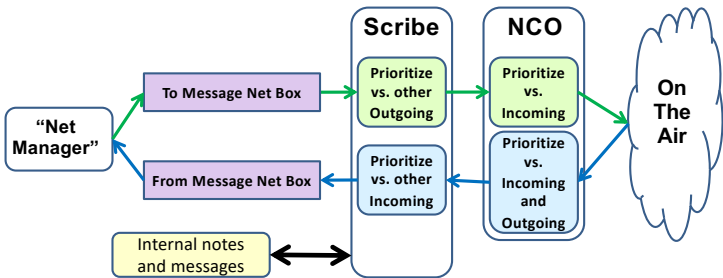
- List these six messages in the proper send/receive order
- NOTE: assume no other messages come in during this time

57

Placeholder for homework slide on message transmission order.

59

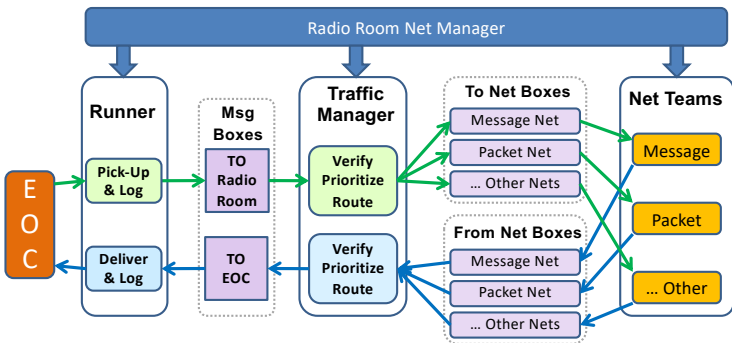
Review:
Prioritizing Traffic Within a Net



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

60

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

61

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?

Reminder: Message Handling Challenges

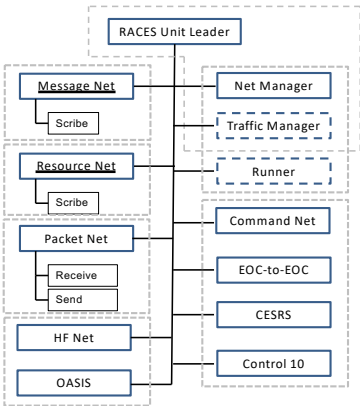
- Speed / message throughput
 - Two skilled operators can pass an ICS-213 in about 3 minutes or less, unskilled 2x to +3x longer
- Numerical sequences (lists of numbers): “15, 45, 26 ...”
 - “Figures one five, figures four five, figures two six, ...”
- Heterographs: to/too/two, for/four/fore, ate/eight, plain/plane, site/sight/cite
 - “I spell ...”
- Traffic volume – can be non-stop
 - Although it is less so with more messages passed by packet
- Prioritizing traffic
 - Individual message prioritization (handling order, 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
 - You better get it right!
- Keep your message passing skills up to date and practice!
 - Monthly message passing Training Net. Sign up under county web site events.
 - Message Passing table-top events – when available



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.
 - All 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
 - Santa Clara 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

66

66



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

INTRODUCTION TO PLANNING FOR NET CONTROL

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

67

67

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
- An N2 can plan for smaller to medium events
- 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

68

68

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 include:
 - Net types / quantity
 - Frequency selection and Intermod
 - 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

69

69

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, maybe scribe
 - Arrange event so everyone doesn’t need to be on the net at the same time
 - E.g., try to spread out arrivals

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

70

70

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 6 teams per net
 - Traffic: All informal: parades, bike races, checkpoints, rovers
 - How long to gather principal 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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

71

71

Review: Net Type and Quantity Considerations

- Shadow Nets
 - Usually works best as an open net
 - Most shadows need to talk to another shadow, 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.

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

72

72

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
- Packet Nets
 - May use existing county BBS frequencies
 - May use separate training BBS and non-SCCo frequencies
 - Can greatly reduce the traffic level on message nets
 - Encourage use, especially when formal message traffic is needed
- Staging nets and other tactical nets
 - Where and when needed
 - Can be quite large, but relatively simple – check-in/out; H&W

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

73

73

Review: ICS 205 – Communications Plan

COMMUNICATIONS PLAN SCLCS 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		
4. Communications Resources								
Ch #	Function	Call Sign and/or Sys / Net / Ch / TG Name	Assignment	Rx Freq, N / W or NAC	Tx Freq, N / W or + / - / S	Tx Tone or NAC	Mode A, D, M	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 requires at 900. Link after finished checking departing resources (1-1600). Frequency open to non-participant use during the approved utilization. Link to AA6BT
	Resource	WBASH (UHF) Resource Net North	RACES resources traveling to or from the drill site	440.800 W	+	100.0	A	
	Resource	N6NAC Resource Net South	RACES resources traveling to or from the drill site	444.625 W	+	110.9	A	Linked from AA6BT

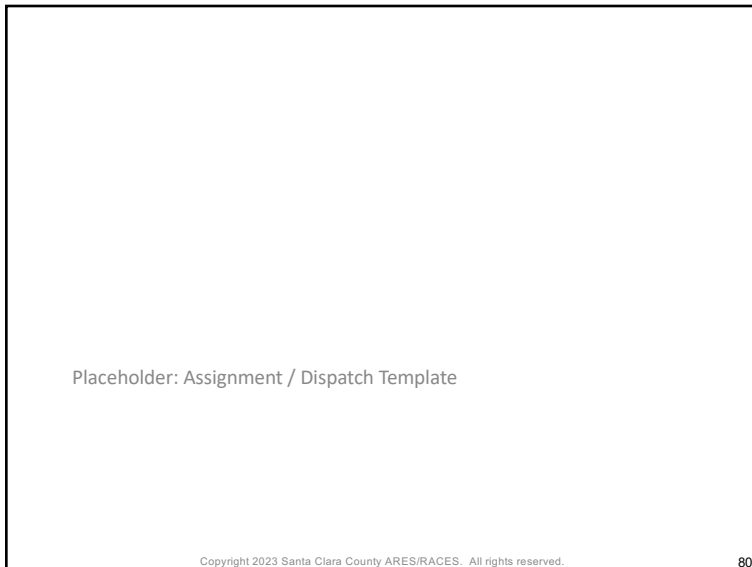
- Function – primary function
- Call Sign and/or Net – e.g. repeaters call sign, name of the net
- Assignment – brief description of how used
- Rx Freq (narrow / wide), Rx Tone, Tx Freq (N/W), Tx Tone
- Mode – Analog, Digital, Mixed
- Remarks – important comments for implementation

Review

STRETCH HOMEWORK

Placeholder: Review ICS-205 homework assignment

Placeholder: Review of Net Control Staffing Plan



80

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
- 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


Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

82



83

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 1-3
 - County Message Net
 - Other critical and/or high-traffic nets
- Describe the basics of net type and quantity planning for 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!

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

84

Summary + In addition

- An N2 operator (credential of any type) is expected to be more familiar with SCC-provided 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.

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

85

85

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
 - Field mini-drills
- Public service events (parades, bike races, festivals, ...)

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

86

86

Thank You – Receiving Course Credit

- “90% or better class time attendance required for credit”
- Completed ICS 214 SCCo ARES/RACES Unit Activity Log
 - This an item in the homework preparation checklist
 - Have your 214 checked for correctness and that it is complete
 - Make any updates/changes as required
 - Sign and date it.
 - Turn it in before leaving
- Sign out on the class ICS 211A SCCo RACES Check In List
- Complete the on-line course evaluation form

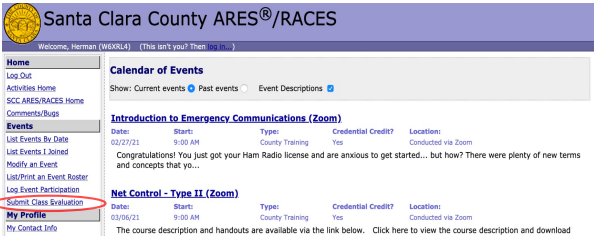
Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

88

88

On-Line Evaluation Form

Your evaluation form is available on-line for this course.
Please fill out and return promptly.
Reminder: must be completed within 7 days to receive credit for this course.



Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

89

89

Submit Class Evaluation - for which class?

Evaluations must be filed within 7 days of the class date. Once you file an evaluation, that class will be removed from the list below.

01/30/21 Net Control - Type III, Part A

Continue

Select class from the drop down

- Any class within the last 7 days, for which you have registered, will be shown in the drop-down list. Evals must be completed within 7 days from the class date.
- Select the desired class, then click Continue.
- The class evaluation form is displayed. You can fill it out and submit it on-line.
- The database will record that you have submitted the eval (part of the requirement to get class credit).
- The evaluation form that is saved will be anonymous unless you choose to add your name.

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

90

90

Training Evaluation Feedback Form

Course Name: Net Control - Type III, Part B

Course Date: 03/05/2022

Instructor: Leubach

Optional

Your Name (optional):

Call sign (optional):

	Poor			Best
Presentation Materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Class Demos (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instructor(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Training overall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lab Exercises (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other comments:

Clear the form

Submit this evaluation

1. Check off your desired ranking for each item. Leave blank if not applicable.

2. Add comments for the other items as desired.

3. When done, push "Submit this evaluation" at the bottom of the form.

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

91

91

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:

Stay tuned for future training and exercise opportunities:

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

Copyright 2023 Santa Clara County ARES/RACES. All rights reserved.

92

92