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Net Control Type III

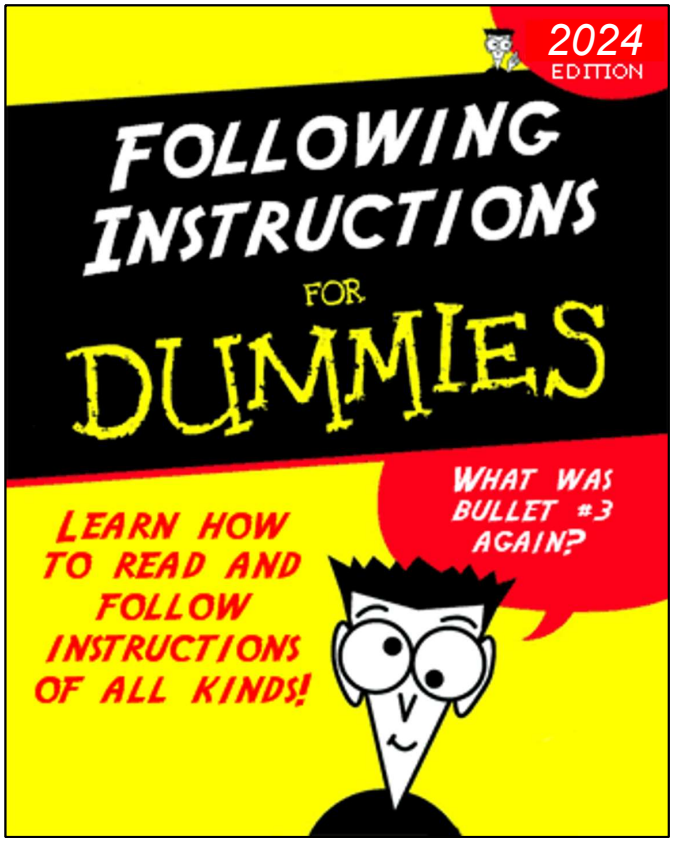
Part B

Santa Clara County ARES®/RACES

Last Updated: 31-Mar-2024

2

Housekeeping



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

What if your were faced with:

- Virtually non-stop radio communication for your entire shift
- Each transmission contains multiple critical pieces of info
- Personal safety of many at stake

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Review from Type III Part A

- What does it take to be a great Net Control Operator ?
  - Be a great communicator
  - Able to communicate *precisely*
  - Follow a shared, standard procedure, that EVERYONE is trained to use!
- Minimize: number of words said, time spent on the air, repetition
- Maximize: accuracy, information throughput, efficiency
- What else?
  - Practice!!

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Learning Objectives

- At the end of this class, you will know how to perform all duties expected of a Net Control Type III
- Specifically, you will know how to properly:
  - Work with a scribe
  - Perform resource tracking
  - Manage a resource net for an event
  - Hand off a net to another net control
  - Close a net
  - Deal with net control challenges
  - Select equipment for net control

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Agenda: Net Control Type III, Parts A & B

Net Control Type III, Part A

- Net Control III MAC Qualification
- Santa Clara County Nets
- NCO Attributes and techniques
- Record keeping and logging
- Starting a Net
- Operating a Net
- Damage Report Summaries

Net Control Type III, Part B

- Working with a scribe
- Status Tracking
- Resource Net for an Event
- Handing off a Net
- Closing a Net
- Dealing with challenges
- Equipment for Net Control

Net Control Type II: Advanced techniques, such as faster, higher efficiency operations, equipment for net controls, county Message Net operations, county EOC operations, and working two nets at once

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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 …
- Call sign W6XRL4
  - Others, e.g.: W6WOOF, W6DRAC

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The co-pilot of the net

WORKING WITH A SCRIBE

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Recommended NCO/Scribe Division of Duties

- Assumptions
  - NCO has microphone and PTT; scribe does not
  - NCO and scribe both hear the same thing
    - headphone splitter on same radio is ideal; HT listening to repeater is o.k.
    - Scribe's ability to hear NCO speak is critical; may be difficult in noisy location
- Resource Net
  - NCO: manages net; maintains ICS 309 Communications Log
  - Scribe: manage T-cards or tracking forms; prompts when H&W checks due
- Message Net
  - NCO: manages net; sends and receives messages, possibly ICS 309
  - Scribe: Probably ICS 309, prioritizes outgoing messages; manage T-cards
- Packet Net
  - Packet Operator: sends messages
  - Scribe: prioritizes outgoing messages; manages printer (received messages); manage T-cards

Local Hand-off / Relief with a Scribe

- Trade jobs to reduce stress
  - Shift time depends on traffic and stress level
- Take a break
  - When one needs to take a break, net can continue (perhaps slower)
- Recommended rotation for shift changes
  - Supervisor owns the schedule and timing
  - New replacement should be available 5-15 minutes in advance; gets supervisor briefing reviews procedures, equipment, surroundings
  - Scribe briefs replacement while NCO continues to operate net
  - Use final few minutes before handoff to make sure scribe is up to speed
  - Scribe becomes net control; replacement becomes scribe
    - Replacement → Scribe → Net Control → Break → …
  - Done well, handoff can be completed in < 30 seconds or less

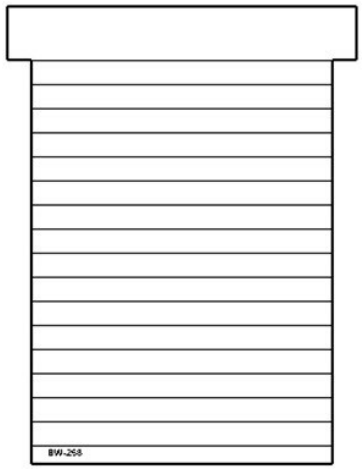
STATUS TRACKING & T-CARD SYSTEMS

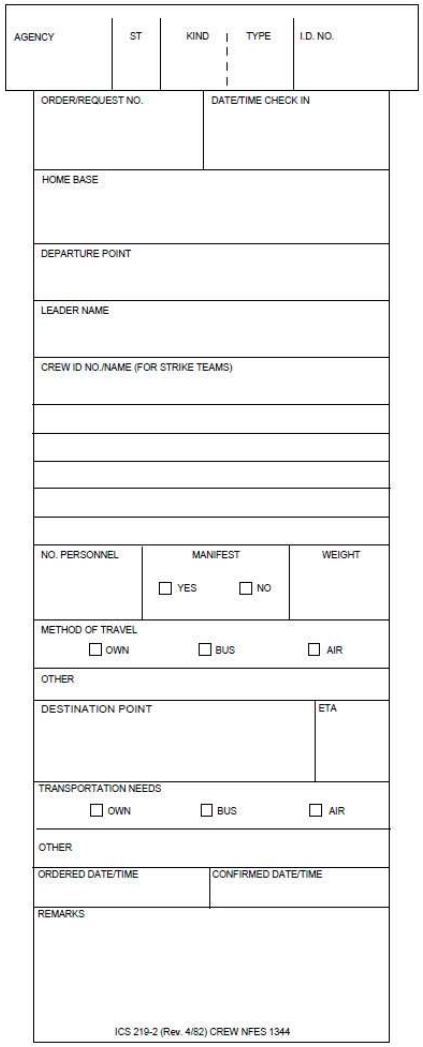
Keeping Track of Status

- Need to be able to quickly answer status-related questions
  - Who is en route? Who has arrived? Who needs a H&W check?
  - This is hard to do by scanning the 309, especially multiple pages
  - Who is on the net? Where are they?
- It is usually helpful to track status separately
  - Especially with a larger number of travelers
- Lots of options
  - Index cards, t-cards, white board, forms, plain paper, Travel Tracking form (more later)
  - Choose whatever method works for you
  - Must be accurate and efficient
- Remember, this is a DSW supervision responsibility
  - Get it right!

T-Card Formats

- ICS-219 used by Fire and Search & Rescue
  - Standard formats preprinted for crew, helicopter, aircraft, individual personnel, dozer, …
- Colors indicate type of resource
- Smaller cards typically used in ARES®/RACES
- Index cards are good substitute





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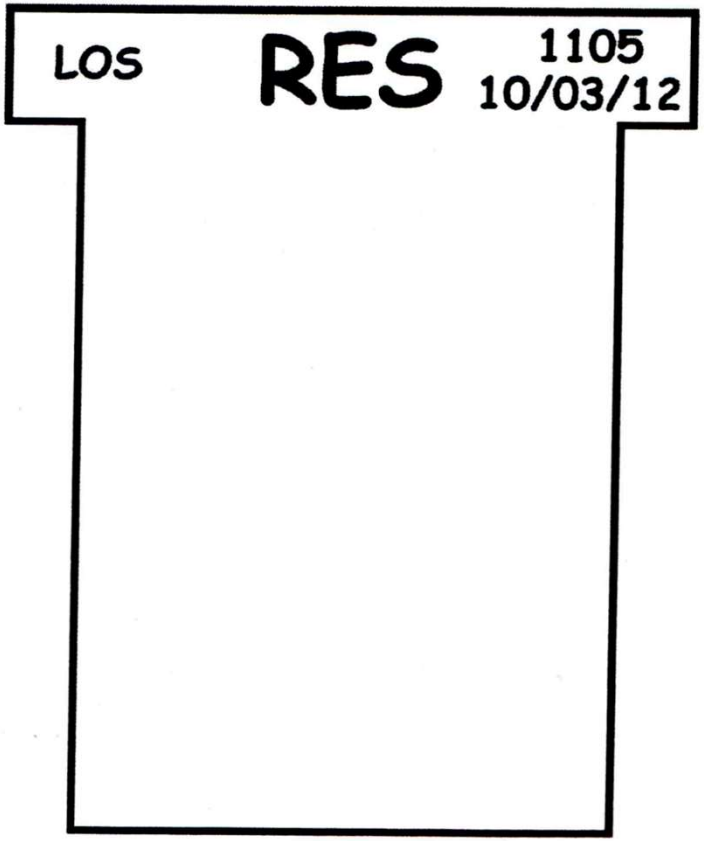
County EOC Radio Room T-card

- Use to track Cities/Agencies that have checked in to a Net
- Top left: city 3-letter identifier
- Middle: net name
- Right: initial time & date
- Body:
  - Record Check-In/Out
- After checking out, turn card around in rack, do not remove



T-Card Example

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SCC EOC Radio Room T-Card Racks

- Cities and Agencies on the left
- Hospitals on the right
- Located by the door for very easy situational status (SitStat)
- View by anyone walking by in the hall.
- T-cards are color-coded:

Message Net	light blue
Command Net	yellow
Packet	light red
EOC-to-EOC	light green
Other	manilla or white

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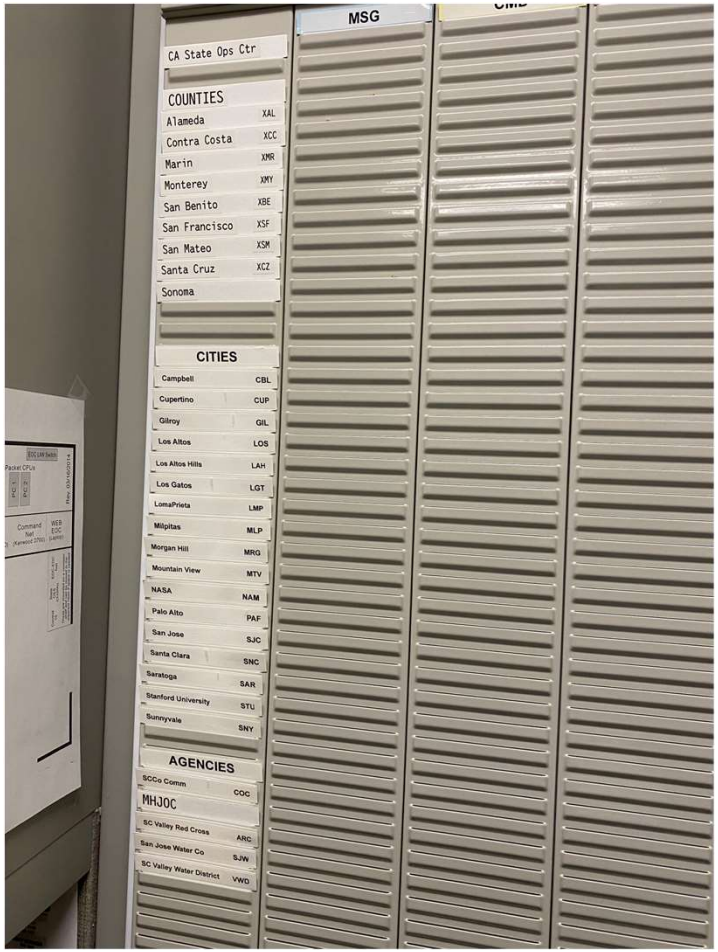
Radio Room T-Card Rack – Close up



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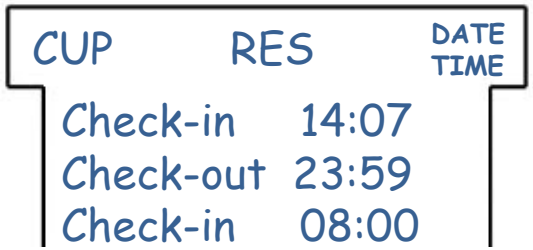
Tracking Cities/Agencies/Shelters/Locations

- Rack is organized in columns for nets; rows for cities/agencies
- Presence of card indicates that entity has checked-in on that net
  - Cards placed in “Inactive” slot when city is checked-out of that net

City	Resource	Message	Command	Packet	EOC	Inactive
Campbell						CBL RES DATE TIME
Cupertino	CUP RES DATE TIME	CUP MSG DATE TIME				CUP MSG DATE TIME
. . .						

- Details on card show Agency, Net type, check-in/out time, …



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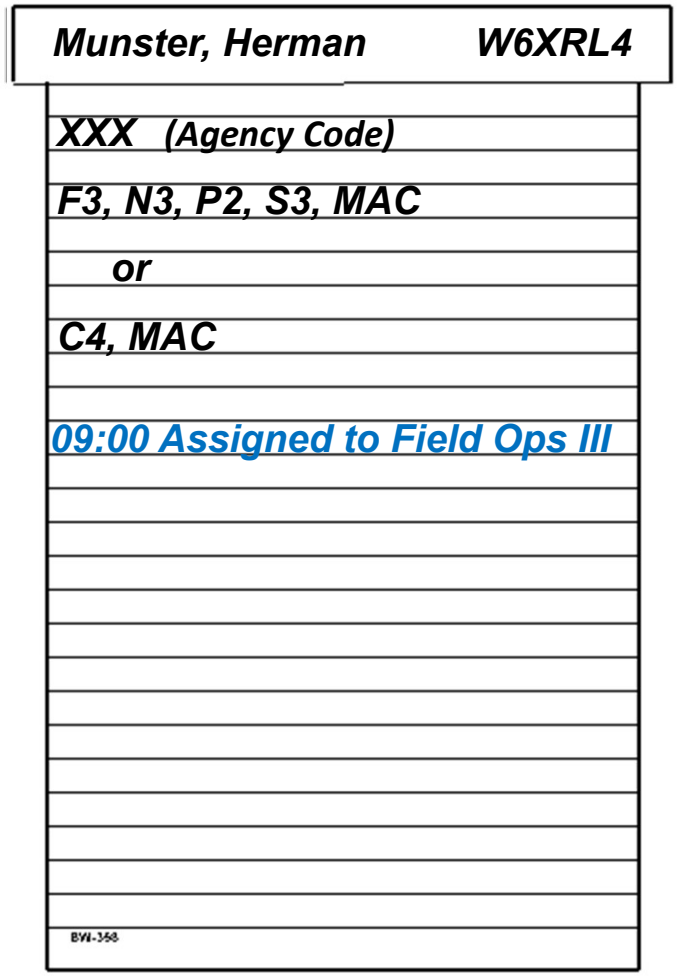
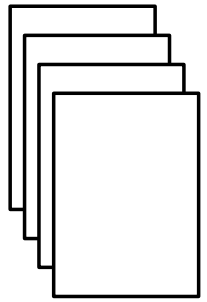
T-cards for Individuals – Typical Information

- Name (Last, First)
- Call Sign
- Agency Code
- Credentials (only list highest)
- Other information as requested
  - Home city *(Agency Code)*
  - Cell Phone
  - Additional info based on event needs
- Staging will define the specific information and required format
- Complete a T-Card with your information
- Staging will keep track of your assignment

EXAMPLE



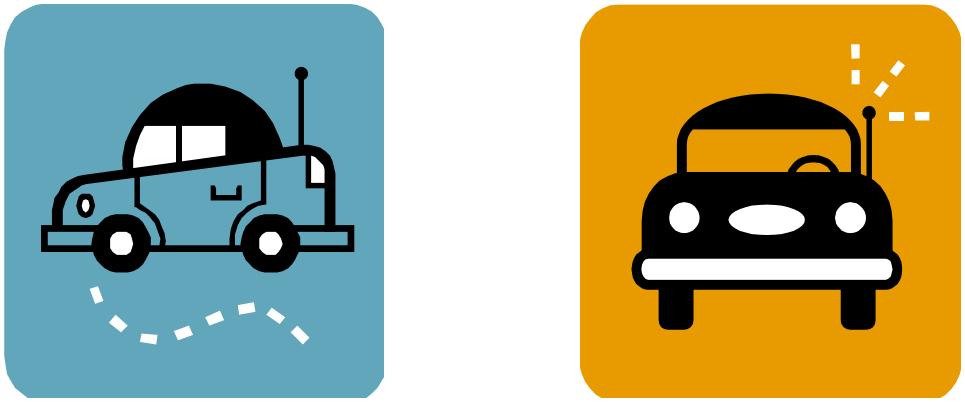
Index Cards as Substitute for T-cards



- No T-cards? Index cards can be just as effective
- One card per person or agency
  - Amount of info on card can be simple or detailed
  - Start with call sign, Credentials, and Endorsements for individuals
  - A scribe can help with more detail
- Instead of columns in a rack, make piles for each status
  - Available, en route to X, en route to Y, arrived @ X, arrived @ Y, …
  - Stagger cards so top line is visible
- New or updated card inserted at bottom of pile
  - Next H&W check is usually the person on top
- Similar process for transfers or return home

Other Tracking Methods

- Pre-printed Forms
  - Convenient to carry; use with a clipboard in a car or windy location
  - Can only organize info one way; may not work best for all situations
- Computer
  - Pro: May be good for high traffic volumes
  - Pro: Easy to transfer to a remote operator by Internet / Packet
  - Con: Requires power, hard to move in a hurry
  - Con: Remember to print out often, in case of power or device failure
  - Con: Other staff cannot easily see overall status as with T-Cards
  - Con: Loss of power, information is lost and leaves you without any tracking
  - Pick a simple, common format; need to hand off data at shift change
- Form 1 - a plain writing tablet is better than nothing
- Whatever approach you take, remember:
  - You must be able to hand-off to the next net control operator
  - Turn it in (hard copy) at end of shift (must be legible, understandable!)
  - Needs to be easily visible by anyone to see status



Simplified Level 3 Resource Net

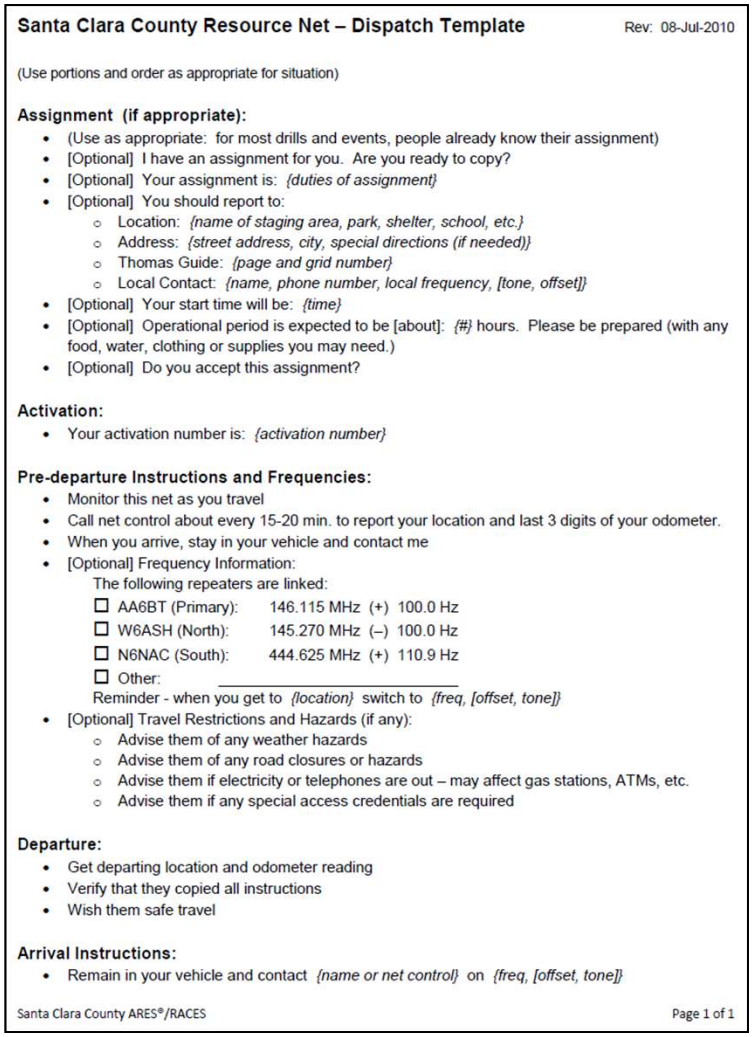
RESOURCE NET FOR AN EVENT

Resource Net for an Event

- Similar to Resource Net Level 3
  - Participants need to:
    - Check in, receive activation
      - Note: for planned events, assignments are already known.
    - Respond to H&W to track travel while en route
    - Arrive and check out
- Less complicated than full Resource Net Level 3 (mutual aid dispatch)
  - Simplified for use during drills and public service events
  - Typically, only needed at start and end of event
  - No need to track individual capabilities at check-in
  - No need to make assignments – already known or assigned at event
- This is important; required for DSW compliance
- Good practice for anyone interested in Resource Net Control
- Be prepared with detailed local maps, parking info, etc.

Resource Net Dispatch Template

- Standard template for Level 3 Resource Net
- Can also be used to build net control script for an event resource net



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: *{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)}*
  - Thomas Guide: *{page and grid number}*
  - 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.)
- [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 odometer.
- When you arrive, stay in your vehicle and contact me
- [Optional] Frequency Information:

  The following repeaters are linked:

  ☐ AA6BT (Primary): 146.115 MHz (+) 100.0 Hz
  ☐ W6ASH (North): 145.270 MHz (–) 100.0 Hz
  ☐ N6NAC (South): 444.625 MHz (+) 110.9 Hz
  ☐ 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]}*

Santa Clara County ARES®/RACES Page 1 of 1

www.scc-ares-races.org/operations.shtml

Resource Net Check-In and Activation

- Participant is in car and ready to go – then checks in
  - Resource: "Net Control, W6XRL4, ready for assignment"
- Net control verifies against participant, DSW lists (usually)
  - Verify DSW status, event participation status, as appropriate for event
  - Optional: find out if they need to pull over safely to respond to H&W
- Participant provides starting odometer and initial nearest major street intersection
  - NCO: W6XRL4, what is your odometer and location
  - Resource: "Odometer 123, near N. 1st St. and W. Younger, San Jose, W6XRL4"
    - Last three digits of odometer (no decimal places)
- Net Control provides assignment and activation number
  - NCO: "W6XRL4, your assignment is travel to drill city at Raynor Park. Your activation number is XXX-##-##. … Safe travel.

Resource Net Tracking with Plain Paper

CALL SIGN	√-IN	DEP	H&W	H&W	H&W	ARRIVE	√-OUT
KE6AGJ	0645	✓	07:00	07:15	07:30	07:35	✓
KG6RLR	0650	0700	0715	0730			
KJ6U	0730						

- Don’t get too hung up on the perfect form, t-card or whatever
  - You should be able to do this from anywhere, with anything
- The task is to track status; method is up to you
  - Who are you tracking? What is their status? When do you need to contact them next?
- Make sure you track status correctly!

Resource Net Status Travel Tracking Form

Resource Net Travel Tracking Tool	1. Incident Name and Activation Number:	2. Operational Period (Date / Time): From: To:

3. Call Sign	4. Traveler Status (00:00 24-hour –or– ✓)								5. Notes
	Check-In	Depart	H&W-1	H&W-2	H&W-3	H&W-4	Arrive	Check-Out	
W6XRL4	06:45	✓	07:00	07:15	07:30		07:35	✓	
W6DRAC	06:50	07:00	07:15	07:30					
W6WOOF	07:30								

- Quickly ascertain status of all participants
- Example: if the current time is 07:40, then:
  - Arrived/checked-out:
  - Still on net:
  - En route:
  - Checked-in, not departed:

Resource Net Check-Out

- Field resource arrives at destination, advises net control
  - "Net control, I have arrived at the staging area, final mileage is 437, and I'm checking out, W6XRL4."
- Net control advises stay in car, contact local tactical net
  - "W6XRL4, Roger. Stay in your vehicle and contact event net control on xxx.yyy simplex. If you can not reach them, come back to me here."
- Field resource switches frequency, contacts event net control
- If they can not reach the event net control
  - Wrong frequency, duplex/simplex issues, tone, etc.
  - Field resource will come back to Resource Net
  - NCO helps them contact local tactical net
  - Resource Net NCO should have back-up contact info for event net NCO
- Resource Net control could also inform tactical net control of who is being handed off via telephone or secondary frequency

EXERCISE TIME
RESOURCE NET

Exercise: Resource Net Travel Tracking

- Ideally you will have a NC and scribe working together as a team in a busy net
- You should keep an ICS-309 form and some method of tracking resources as they travel (Travel Tracking Form)
- They are both required in a real Resource Net
- Listen to the recorded Resource Net
- You are the scribe who is completing the Travel Tracking Form
- We will assume the NC operator in completing the ICS-309

- Suggestion: In the recording, a voice will inform you of the clock time before each communication: write it down when you hear it. Use the Operational Period on the example form.

Interactive Exercise

Starting hint:

Resource Net Travel Tracking Tool	1. Incident Name and Activation Number: *Classroom Exercise XND-24-02C*	2. Operational Period (Date / Time): From: *4/6/24 0600* To: *4/6/24 1200*

3. Call Sign	4. Traveler Status (00:00 24-hour –or– ✓)								5. Notes
	Check-In	Depart	H&W-1	H&W-2	H&W-3	H&W-4	Arrive	Check-Out	
N6JRC	*06:01*								

Placeholder for Audio File

CLASS LAB EXERCISE

Placeholder for completed ICS-309

Placeholder for completed Resource Net Travel Tracking Tool form

BRIEFINGS

Briefings: Initial

- Arriving at an event you should expect a briefing from your Supervisor. It should include:
  - Introductions,
  - Safety: priority one, medical issues, first-aid, 911, CRP, AED, Evacuation details, personal safety reminders
  - Site Orientation: parking, check-in/check-out reminders, restrooms, food & drink. If needed: building restrictions, no wandering, etc.
  - Summary of Incident / Exercise: scenario, expected number of participants, our role, operational period, ICS staff and/or SIM Cell and incident specific activities, activation number
  - Assignments: what positions are active and staffed, rotations
  - ICS 205 details for each net
  - Q&A for any clarifications, etc.

Briefings: Relief

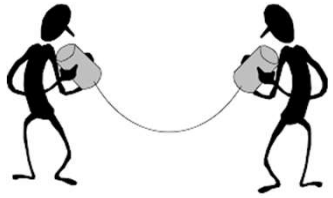
- If your position is currently staffed, e.g., NCO + Scribe you should expect a relief briefing – or you may be giving one to your replacement.
- At a minimum, it should include the following:
  - State if operation on primary or alternate resources, and any equipment settings.
  - Any equipment issues past or present?
  - Review who is currently checked-in and who has checked-out.
  - Review of any notices and contents. Example: XSCEVENT exercise notice(s) requesting specific messages on voice nets and packet net and status for each participant. Hand a copy of the notice to your position replacement.
  - Confirm next message number.
  - "Heads up" on any participant performance issues
  - Review any extra position forms or organizational aids, e.g. sticky notes, form 1, etc.
  - Agencies ICS position vest passes to the replacement
- Even if staffed by one person and the net is "busy", the briefing will take a little time – work out how to assist the current staff during the briefing.

HANDING-OFF A NET: LOCAL VS REMOTE

Local Net Transfer/Hand-off

- For local hand-off with single net control operator
  - Relief operator can work as scribe briefly, just prior to hand-off
- For local hand-off with net control & scribe team
  - Replacement arrives early, familiarizes self with location
  - Replacement receives briefing from supervisor
  - Net Control runs net solo while scribe briefs replacement with details
  - Scribe catches up on anything missed
  - Only if needed: Net Control announces shift change, e.g., “All stations stand by for 30 seconds for a shift change”
  - Scribe slides into net control seat; replacement slides into scribe seat
    - Replacement → Scribe → Net Control → Break
  - New NCO announces using the update script.

Remote Net Transfer/Hand-off



- You may need to transfer a net to a remote net control
  - Initial resource net control transfer to EOC or event location
  - Hand off to a more experienced net control operator
  - Evacuation of net control location
- Information to transfer
  - Current status of all who are checked into net
    - Resource Net transfer involves current en route status information (H&W)
  - Any other instructions as may be necessary; see relief briefing list
- Key points
  - Priority One: Maximize accuracy; losing someone is not an option!
  - Priority Two: Minimize transfer time
  - Always use good communications techniques: 5 words at a time; proper pro-words; pause before speaking; eliminate need for repeats

Procedure for Remote Transfer of Net

NC1 = Current Net Control

NC2 = Replacement Net Control

Who	What
NC2	Announces presence; ready for net control transfer
NC1	Acknowledge; announce start of H&W; requests NC2 to acknowledge each response with a tactical call such as “net2” (or similar)
NC1	Calls each net member, one at a time; say call signs phonetically
Members	Respond as usual (for resource net: street location, odometer, call sign)
NC2	“acknowledged, net2” or “roger, net2”; or “say again …”
NC1	Acknowledges; repeats process for rest of members on net
NC1	Fills in NC2 on any other pending issues; asks if ready to take net
NC2	Acknowledges all info; confirms ready
NC1	Announces transfer of net
NC2	Announces self as net control

IMPORTANT UPDATE FOR REMOTE HAND-OFF OF RESOURCE NET

- Impact of California AB 1785 / Section 23123.5(f) CVC hits us here too
- When NC2 “announces presence; ready for net control transfer”
- NC1 will then direct all “driving” participants to do a H&W. There will be a mixture of participants:
  - Those that will respond immediately, and
  - Those that will need to drive to a location where they can safely stop and then respond.
- NC1 and NC2, same acknowledgement procedure but will have to wait until each participant checks-in

NOTE: This is always an evolving process. Bottom line is the NCO establishes the procedures and participants need to follow the NCO’s instructions.

EXERCISE TIME!

Exercise: Transfer of Level 3 Resource Net

- Need 5 volunteers
  - Net control 1 (ICS-309)
  - Net control 2 (ICS-309)
  - Scribe for net control 2 (optional) (Travel Tracking Form)
  - Traveler 1
  - Traveler 2
- Before you start:
  - Net Control 1: write down traveler call signs
  - Traveler 1 & 2: think of a major street location and odometer reading
- Follow the script …
  - "<…>" indicates where you substitute your actual information
  - Example: <NC2 call sign> means you say Net Control 2's call sign
  - Net Control 2: fill in ICS-309 as you go
  - Scribe for NCO2: fill in Travel Tracking Form as you go
  - Use the current time for entries
  - Everyone else: try filling in an ICS-309 and Travel Tracking Form for practice as you listen

Exercise: Transfer of Level 3 Resource Net

Who	What
NC2	Net control, this is <your call sign>, ready for net control transfer
NC1	<NC2 call sign> roger; Break; I will now conduct a H&W check; when I call you, respond with street location, odometer and your call sign; Break; <NC2 call sign>, I want you to acknowledge each response as tactical call "net2"
NC2	Roger, net2
NC1	<traveler 1 call sign spelled phonetically>, health and welfare
Traveler 1	<street location>, <odometer>, <call sign>
NC2	Roger, net2
NC1	Acknowledged. <traveler 2 call sign spelled phonetically>
Traveler 2	<street location>, <odometer>, <call sign>
NC2	Say again odometer
Traveler 2	<odometer>, <call sign>
NC2	Roger, net2
NC1	Health and welfare check complete

Continued on next page …

Exercise: Transfer of Level 3 Resource Net

Continued from previous page …

Who	What
NC1	Net2, do you need any additional fills?
NC2	Negative
NC1	O.K. Additional information follows: Contact Jenny at 867-5309 to unlink the repeaters after you close the net.
NC2	Acknowledged.
NC1	Are you ready to take the net?
NC2	Affirmative.
NC1	This is <NC1 call sign> turning over net control to <NC2 call sign>; <NC1 call sign> clear.
NC2	This is <NC2 call sign>, net control for the Santa Clara County Resource Net. This is a directed net and all traffic will be …

Logging Example

Net Control 1 (Outgoing)

5.	COMMUNICATIONS LOG				
Time (24:00)	FROM		TO		Message
	Call Sign/ID	Msg #	Call Sign/ID	Msg #	
. . .					
##:##	<N2-Call>				Check-in
##:##			<T1-call>		H&W: <T1 location and odometer>
##:##			<T2-call>		H&W: <T2 location and odometer>
##:##	-----	-----	-----	-----	Hand off net to <N2-call>

Net Control 2 (Incoming)

5.	COMMUNICATIONS LOG				
Time (24:00)	FROM		TO		Message
	Call Sign/ID	Msg #	Call Sign/ID	Msg #	
##:##	<N2-Call>		NC		Check-in
##:##	NC		<T1-call>		H&W: <T1 location and odometer>
##:##	NC		<T2-call>		H&W: <T2 location and odometer>
##:##	-----	-----	-----	-----	Take over net; NCO = <name and call sign>
	-----	-----	-----	-----	Scribe = <name and call sign>

Travel Tracking Tool Example

~~Scribe~~ Net 2 (Incoming)

3. Call Sign	4. Traveler Status (00:00 24-hour –or– ✓)								5. Notes
	Check-In	Depart	H&W-1	H&W-2	H&W-3	H&W-4	Arrive	Check-Out	
<T1-Call>	*----*	*----*	*<time>*						*handoff*
<T2-Call>	*----*	*----*	*<time>*						*handoff*

SENDING A MESSAGE TO ALL STATIONS

All Stations Message

- There will be times when you are asked to send a message to all stations that are checked-in.
- A recommended method:
  - Announce you have an “all stations” message
  - Select a pacing station and get confirmation from that station
  - Confirm with each other checked-in station if they are ready to receive the all stations message
    - Skip any stations that don’t reply when you go back for message number
  - Send your message normally to the packing stations, satisfy any fills and get their message number.
  - Go to the next station, get their fills (if any) and their message number
    - They should have been copying the message sent to the paceing station
  - Repeat for the remainder of the stations
- Unfortunately, if you have any stragglers, you’ll have to repeat the entire message again but handle them after you get all other stations message numbers

CLOSING A NET

Closing a Net

- Verify purpose/function has been completed
  - All messages passed; all personnel accounted for
- Is there anyone remaining on the net? Any final requests?
- Verify with your supervisor before closing the net
- Closing script
  - Thank the owners, operators (and users).
  - Return frequency to normal use
- Arrange to unlink repeaters
  - For Resource Net repeaters, request a control operator over the air or ask for help from one of the county staff (DEC/ADEC). There are 3 repeaters involved so make sure they are all unlinked.
- Complete and turn in all paperwork

Pre-flight, takeoff, and flying: checklists!

PILOTING THE NET CONTROL STATION

N3: Expectations for Station Operation
Prepare your checklist

- As a Net Control Type III you are:
  - A fully independent operator
  - Capable of basic net control assignments without assistance or coaching.
- This means being able to use someone else's station equipment; e.g., a different city's equipment, equipment at a field exercise or actual deployment.
- "But, it is just ham radio equipment, anyone can figure it out"
  - You need to be efficient about walking up to a previously unknown station and have it ready-to-go for your operational period
- This suggests a methodical approach to being consistent
- Aircraft pilots do this all the time using a checklist
- Try developing a checklist for any Net Control radio station

Items to consider

Things to consider doing before arriving at your assignment

Checked	Item
☐	Update County Voice frequency list, if needed
☐	See if you can find out what radio make and model you will be using, if you can download the user's manual then study up on basics: VFO, memories, band selection, power setting, offset, PTT selection (if dual band), etc.
☐	Make sure your go-kit forms are up to date and bring extras with you
☐	Verify your own prepared scripts are up to date. Note that your served agency might have their own, but good to check yours.
☐	Bring your own headphones?
☐	Anything else?
☐	

Sizing up the equipment

Things to consider doing before your operational period starts.

Checked	Item
☐	Verify your assignment, obtain the ICS-205
☐	Verify proper equipment power up. Also, methods of supplying power. Only on battery: verify you have enough Ah available for the operational period.
☐	Verify memory/VFO programming for your intended net: frequency, shift, offset, and PL tone set.
☐	If a mobile radio with two “sides”: which side will you be using and verify PTT selected for the side of the radio you’ll be using
☐	Verify PTT method: microphone, handswitch, or footswitch. Verify VoX is turned off if the radio has that capability (never enable Vox!!!)
☐	Verify transmit power is set correctly
☐	Verify squelch is set correctly
☐	Listen on frequency of intended use. If free, verify PTT operation with successful voice transmission (and repeater squelch tail has been heard).
☐	Document any issues from expected behavior. Inform both Supervisor and next staff that arrives of each of the issues. Get approval to remedy any issues if are able.
☐	Anything else? What about other station preparation steps?

Before starting your operational period

☐	Make sure you are wearing any assigned vest or your own personal vest
☐	Obtain the Relief Briefing from the current staff (if you are not the first shift)
☐	Locate and have available on the "counter-top" multiple copies of the following set of forms appropriate to the station/position. For example: 1. ICS 309 Communication log 2. ICS 213 Message Form 3. Radio Routing Form 4. T-Cards 5. Form 1 – blank paper 6. Other forms based on the type of net you are on
☐	Have blue or black ink pens, stapler and staple refills
☐	Start your ICS 309 form.
☐	Verify the starting number or continuing number for the message numbering for your position.
☐	If not open: upon permission from the Supervisor, open the net. If open: announce the update script

Operating your station

Things to consider for doing repeatedly during your operational period.

Checked	Item
☐	For voice nets using ham radio: ID with the FCC callsign for the station as per Part 97 regulations at least every 10 minutes
☐	Track check-in and check-out messages and status: For Check-in: fill out a new T-Card and hand it to the Supervisor, Runner, or designee For Check-out: inform the Supervisor
☐	Receive messages: 3rd party, other formal, operator-to-operator. • Hand over received message and routing form to the Runner / Net Manager. • For an Immediate message also inform verbally of the Handling Order status
☐	Transmit messages
☐	Announce the update script approximately every 30 minutes or as appropriate
☐	Perform a roll call (H&W check) every 30 minutes for at least all Checked-In participants that have not been heard from in the past 30 minutes. If a participant fails to respond, inform the Net Manager.
☐	Anything else?

Ending your shift

Checked	Item
☐	As directed by the Supervisor, close the net
☐	Complete and sign your ICS-309 form(s).
☐	If needed, perform a Relief Briefing for your position replacement.
☐	If assigned a vest, turn over to your replacement or give to Supervisor
☐	Complete your SCC ICS-214 form
☐	Complete any other forms.
☐	As needed, Review your forms with your Supervisor
☐	Turn in all radio position paperwork, forms, T-cards, scribbles, etc. to your Supervisor. Turn in your 214 as part of the 211 sign out.
☐	Anything else?

DEALING WITH CHALLENGES

Loss of Repeater

- Situation
  - Loss of repeater
- How to recognize
  - No courtesy tone (and there used to be one)
  - No squelch tail
  - Not receiving responses
  - Pick one or more stations and call them specifically
  - You can hear people on the input but not the output

Loss of Repeater - Actions

- Switch to simplex on repeater output
  - Switch to high power; include tone, in case others are using tone squelch
  - Hint: pre-program into your radio memory for fast recovery
  - Announce and switch to alternate repeater (if available)
    - Some people may get lost
- If linked, you may be able to get by with the remaining repeaters
- Inform the net of the situation; have them switch to simplex or other linked repeater; advise them to NOT use tone squelch
- When you are on simplex: some people will not hear you
  - Accept the fact that you will lose people (especially if they are untrained)
    - Trained operators will be switching to repeater output, too
  - Listen on repeater INPUT for anyone having problems
  - <u>Ask for relays !!! (this is important)</u>
- Contact supervisor; request he/she contact repeater control operator

Loss of Station Power

- Situation
  - You are working net control when the lights go out and the radio goes dead
- Action
  - Use your HT to inform net of the situation
  - Hook HT up to station antenna if you need better range
    - Keep those coaxial adapters handy!
  - Seek help in restoring power while you work the net
    - It could just be a popped breaker or fuse!
  - You may also need your flashlight!
  - Pass net control duties to another operator
  - Prevent the problem with 12 hours of battery backup in station design
    - Minimum: 3000 mAh for HTs, 24-26 Ah for mobile stations
    - Net control stations will need MUCH more than the minimum

Field Operator with Poor Skills

- Situation
  - Field operator with poor skills disrupting or slowing down the net
- Action
  - Polite reminder to all stations of proper protocol
    - Better than singling out an individual
    - They may simply be unaware
  - Specific corrective action request to specific operator
    - See if he's distracted by monitoring another frequency; if so, he should stop
  - Switch to "requester" role instead of "receiver" role
    - Your message number? Your date and time? Your Severity? …
  - Move him to another frequency with less traffic, if possible
  - Ask supervisor to request replacement
    - Use phone (if possible) or command net to contact responsible EC

Open MIC Condition

- Situation
  - Someone unknowingly has an open mic on the net frequency
- Action
  - Everyone
    - Listen for and check their own radio if heard; watch radio xmit light; clicking in earphone/headphones (loose connection); no traffic heard for a while
    - Deploy field communicators in pairs; have teams check each other
  - Repeater
    - Increase your power to try to capture the repeater
    - Switch to simplex on repeater output and increase power to capture local receivers
  - Simplex
    - Increase power to capture local receivers
  - Roll call check to determine who can receive; dispatch to check others
  - Designate secondary freq. to monitor for open mic announcements

Well-meaning But Disruptive Operator

- Situation on a simplex net
  - Field operator trying to be helpful; e.g., taking and acknowledging check-ins as a relay, not going through net control
- Action
  - We don't want to discourage people who want to help
  - Remind all stations that this is a directed net and that all traffic must go through net control
  - Announce that you are not taking relays right now but will be soon
  - Ask for relays by call signs only
    - "Are there any relays? I'll take call signs only at this time."

High Volume Check-ins/Reports

- Situation
  - You are net control taking check-ins or Mike-Mike reports. Reports are coming in faster than you can record them.
- Reminder: you are the net control operator
- Action
  - Request 5 call signs only at a time, then go poll each for their report
  - Request by severity (and first 5 call signs of M-M x or higher))
  - Request by city (and first 5 call signs)
  - Ask for a scribe
  - Periodically: "Is there any emergency or priority traffic?"
  - Periodically: "Are there any stations that have not been able to reach net control?"
- Bonus question: how else could you handle high volume?

Immediate Message

- Situation
  - You are taking messages on a low-to-medium traffic net with no scribe and no runner. An Immediate (life threatening) message comes to you from the field and you need to leave the radio to deliver it.
- Action
  - Prioritize Immediate (emergency) traffic over all other
  - Ask if there is any other Immediate traffic
  - Put the net on hold: "All stations stand by for about 2 minutes while I deliver this Immediate message, this is <call sign>, net control"
  - Ask for an alternate net control to fill-in while you're gone.
    - This will work only if traffic is not directed to hyour location.
  - See if someone else can deliver the message for you

High Temperature

- Situation
  - You are net control in the middle of the summer in an area with very high temperatures which could affect equipment performance.
- Action
  - Use a pop-up or other means to create shade for yourself and radio
  - Use lower power
  - Switch radios
  - Switch off net control duty for a while – give the radio time to cool
  - Position radio for sufficient air flow
    - Sufficient space around cooling fins
    - "Radio in a box" is not the best approach in a hot environment unless it includes forced air (fan) ventilation
    - Consider sealed "blue" ice packs
  - Use a 12v DC fan (consider CFM > 50 and dB < 25)

Exhaustion

- Situation
  - You have been net control for 6 hours of your 12-hour shift and, because of exhaustion, you cannot continue your assignment
- Action
  - Drink fluids with electrolytes – may temporarily restore your energy
  - Notify supervisor and request replacement
    - Give sufficient notice to allow time for supervisor to locate a replacement
  - Request a replacement on-air
  - If you need to stop, then stop

Intentional Interference

- Situation
  - Your net is being disrupted by intentional harmful interfere
- Action
  - Ignore them
    - Often they will go away if they don't get a reaction from you
  - Explain purpose of net; ask politely if they will switch frequencies
    - Sometimes interference is caused by people who think you are monopolizing "their" frequency and interfering with *them*
    - Once they understand the legitimate nature of the net, they may go away
  - Switch to alternate frequency
    - Should be planned in advance
    - Know what it is from the ICS-205 or county frequency page, do not announce the new frequency.
  - Supervisor can report to Volunteer Monitor Program
    - If possible, record event for use later by the VM

      http://www.arrl.org/volunteer-monitor-program

Multiple Resource Net Repeaters

- Situation:
  - Three repeaters normally used for the Resource Net: AA6BT, W6ASH, N6NAC
  - Why? No single resource net repeater covers the entire county
  - During Resource Net Level 1 ops, repeaters won't be linked initially
- Action
  - If you can reach the primary repeater (AA6BT)
    - Start the net there
    - Be aware parts of the county can not reach you
    - Have multiple radios or send a liaison to the other frequencies
  - If you can NOT reach the primary repeater (AA6BT)
    - Start the net on the North or South repeater, as appropriate
    - Ask for a liaison who can reach AA6BT
  - Ask a control operator or DEC/ADEC to link the repeaters (if appropriate)
    - W6ASH (2m) <> N6NAC (70cm) <> AA6BT (2m), or
    - W6ASH (2m) <> K6SNY (70cm) [K6SNY is Backup to N6NAC]

REVIEW:
EQUIPMENT FOR NET CONTROL

Review: Required Equipment

- Typical situation
  - Most nets are managed from an EOC radio room (county, city, agency)
  - Most EOCs are fully equipped, but some are not or are not tested
    - You may prefer your own headphones/headset or sanitary covers
- Be prepared with your own equipment anyway
  - 2 hour carry kit & 12 hour go kit
  - Go Kit checklists: https://www.scc-ares-races.org/operations.shtml#equip
  - Itemized as: required, recommended, optional
  - Minimum required means you can't do the job without it
    - May not be the most efficient or comfortable way to operate
  - Recommendation: consider the "recommended" items, too; go with what works for you.

Review: Still Need Complete Go Kit

- Even if you're going to a fully equipped net control station, you still need your go kit. Some example uses:
  - HT and coax adapters
    - Monitor tactical frequency, monitor for doubles, backup radio
  - County frequency List
    - Direct Resource Net check-ins to proper city tactical frequency
  - Emergency contact numbers
    - Direct dial police and fire phone numbers
    - ADEC list for repeater linking; EC list to direct contact to local resources
  - Maps (printed or electronic offline – *device must work in airplane mode*)
    - Minimum - Santa Clara County for Resource Net
    - Surrounding counties, event specific, or incident maps
    - Smartphone map apps: use offline download of intended area
  - Clock or watch
    - Set to 24-hour time, this is most convenient for logging message traffic

Review: Protection, pop-up, power

- Personal protection
  - Layers and accessories for heat, sun, wind, rain, cold
  - Medicines, food, water, sun block, etc.
- Consider a pop-up shelter for outdoor sites
  - Side panels important for rain, shade, cold, night (bugs)
  - Tent stakes or ballast required for wind

- Equipment thermal protection
  - Fan, shade, laptop tent

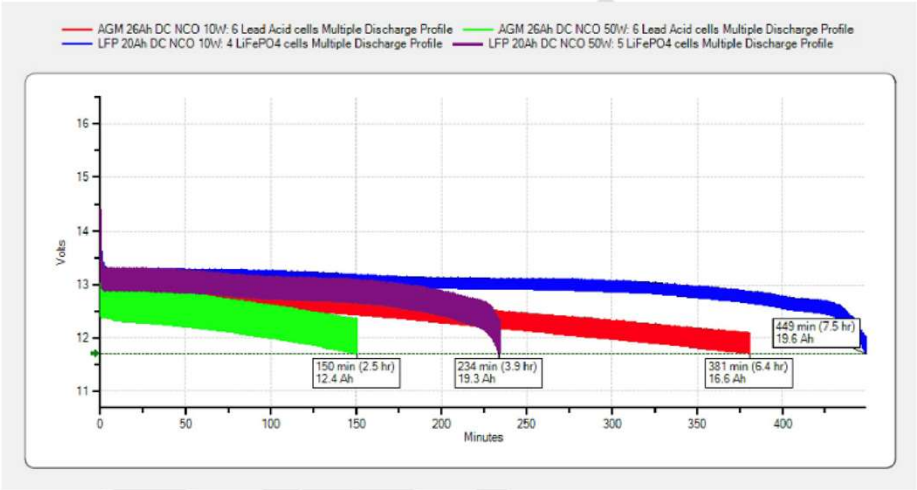
- Time of day
  - Task and area lighting

- Sufficient batteries for 12 hours of operation
  - For your radio(s) and all other e-accessories

Review:
Net Control Duty Cycle Test Configuration

- 10 W (M) and 50 (H) transmit power was simulated. The “Multiple Discharge” test was used to simulate a repeating cycle of idle, transmit and receive until the battery reached 11.7 V. (seconds are substituted for minutes).
- Test Device: West Mountain Radio Computerized Battery Analyzer IV Pro (CBA IV Pro) plus one CBA Amplifier, which is required in order to draw more than 100 Watts.

State	Duration/Cycle	Medium (10 W)	High (50 W)
Idle	3 sec	0.5 A	0.5 A
Transmit	32 sec	4.6 A	9.2 A
Receive	25 sec	0.6 A	0.6 A



	10 W Transmit	50 W Transmit
26 Ah AGM Battery	381 min (6.4 hr); 16.6 Ah	150 min (2.5hr); 12.4 Ah
20 Ah LFP Battery	449 min (7.5 hr); 19.6 Ah	234 min (3.9 hr); 19.3 Ah

Know/Learn the Radio and Other Equipment

- Before you start the net …
  - Familiarize yourself with all of the equipment
  - Know how to set frequency, offset, tone, power level
  - Know how to listen on repeater input
  - Know how to lock / unlock the keypad
  - Know how to use headsets and remote PTT
  - Program all expected frequencies into memory
  - Program in “simplex mode on repeater output” for all repeaters
  - Know where backup lights, fan, etc. are and how to use them
- Get there early enough to take care of these tasks and to ask questions if you need help

Summary

You should also now know how to:

- Work with a scribe
- Perform resource tracking
- Manage a resource net for an event
- Hand off a net to another net control
- Close a net
- Deal with net control challenges
- Select equipment for net control

Bottom line:

- You have the knowledge; now you need the practice

Next Class: Net Control Type II May 4th

Net Control Type III, Part A

- Net Control III credential
- Santa Clara County Nets
- NCO Attributes and techniques
- Record keeping and logging
- Starting a Net
- Handling damage reports
- Operating a Net

Net Control Type III, Part B

- Dealing with challenges
- Working with a scribe
- Resource Tracking
- Resource Net for an Event
- Handing off a Net
- Closing a Net

Net Control Type II: Advanced techniques, such as faster, higher efficiency operations, county EOC operations, and working two nets at once

Reminder: How Did You Learn to Ride a Bicycle?

- Did you read a book? Did you attend a class?
- Or did you get on the bike and start peddling?
  - perhaps with training wheels or a parent's hand steadying the bike
- Weekly SPECS, SVECS and city nets are like training wheels
  - Pre-written, pre-published scripts; no surprises
- Drills and public service events are like bike paths
  - Planned in advance; relatively few complications
- Real events can be like a mountain bike trail
  - Lots of bumps; not always clear what to do, which way to go
  - If you haven't practiced, you will probably crash
- Practice, practice, practice … before you need it!

Thank You!

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.

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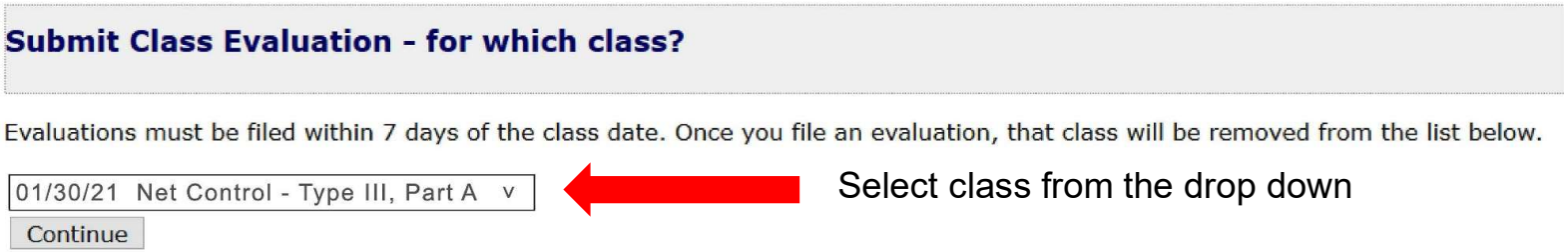

- Any class within the last 7 days, for which you have registered, will be shown in the drop-down list. Evals must be completed within 7 days from the class date.
- Select the desired class, then click Continue.
- The class evaluation form is displayed. You can fill it out and submit it on-line.
- The 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.

If you have questions or feedback about this or other training activities, you can join our Training discussion group.
https://scc-ares-races.groups.io/g/training
This is a moderated group.

Reminder 1:

Net Control Type II, Saturday 5/4/2024

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

Class presentation with homework should be posted by Monday evening 4/29/2024