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Net Control Type III

Part B

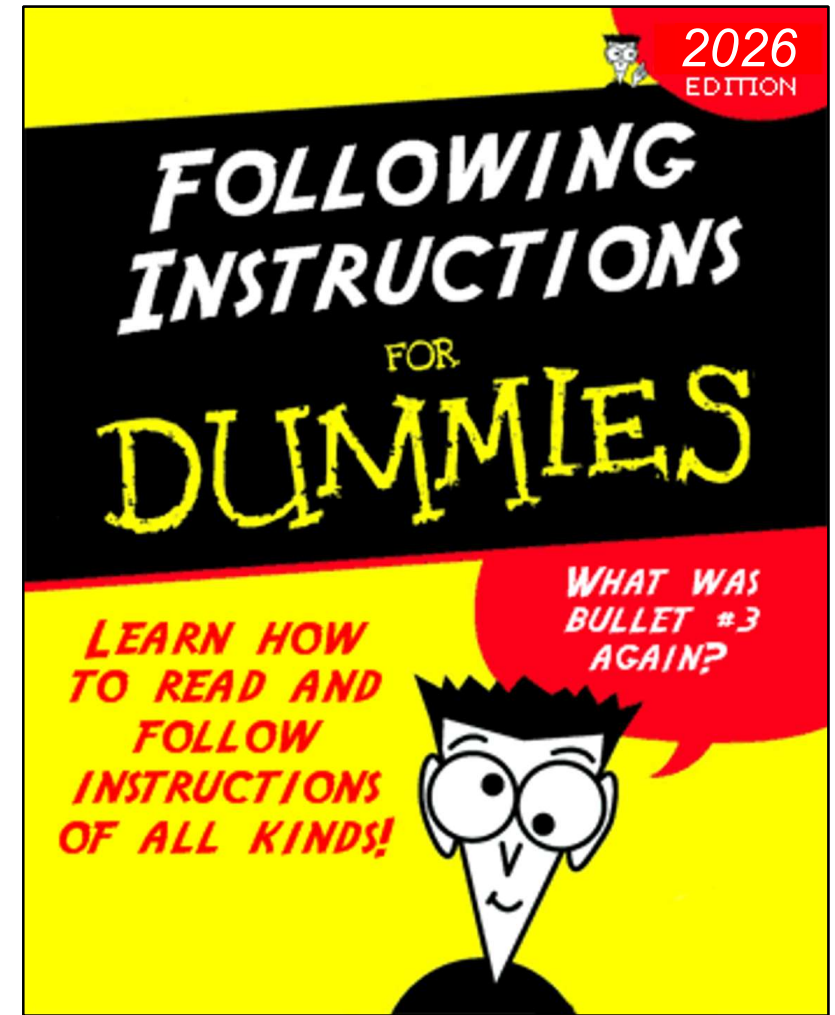


Santa Clara County ARES®/RACES

Last Updated: 10-March-2026

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.



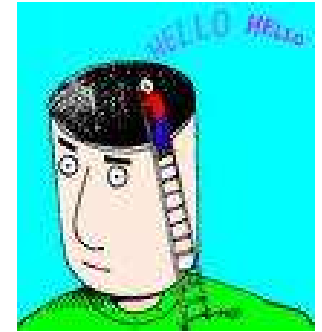
What if you were faced with:

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

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!!

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

Agenda: Net Control Type III, Parts A & B

Net Control Type III, Part A

- Net Control III Credential Qual.
- 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

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, ...





The co-pilot of the net

WORKING WITH A SCRIBE

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
Can Fill out bottom (Radio Operator Use) section of Message Forms
- Packet Net
 - Packet Operator: enters and sends messages at county EOC
 - 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

[illegible]

AGENCY	ST	KIND	TYPE	I.D. NO.
ORDER/REQUEST NO.		DATE/TIME CHECK IN		
HOME BASE				
DEPARTURE POINT				
LEADER NAME				
CREW ID NO./NAME (FOR STRIKE TEAMS)				
NO. PERSONNEL		MANIFEST		WEIGHT
		☐ YES ☐ NO		
METHOD OF TRAVEL				
☐ OWN ☐ BUS ☐ AIR				
OTHER				
DESTINATION POINT				ETA
TRANSPORTATION NEEDS				
☐ OWN ☐ BUS ☐ AIR				
OTHER				
ORDERED DATE/TIME		CONFIRMED DATE/TIME		
REMARKS				

County EOC Radio Room T-card

- Use to track Cities/Agencies that have checked into a Net
- Top left: City 3-letter identifier
- Middle: Net name: RES, MSG, CMD, PKT, EOC, etc.
- Right: Check-in time & date
- Body:
 - Record Check-out
- After checking out, turn card around in rack, or move to Inactive per instructions

LOS	RES	1105 10/03/12
Checked out – 16:10		

T-Card Example

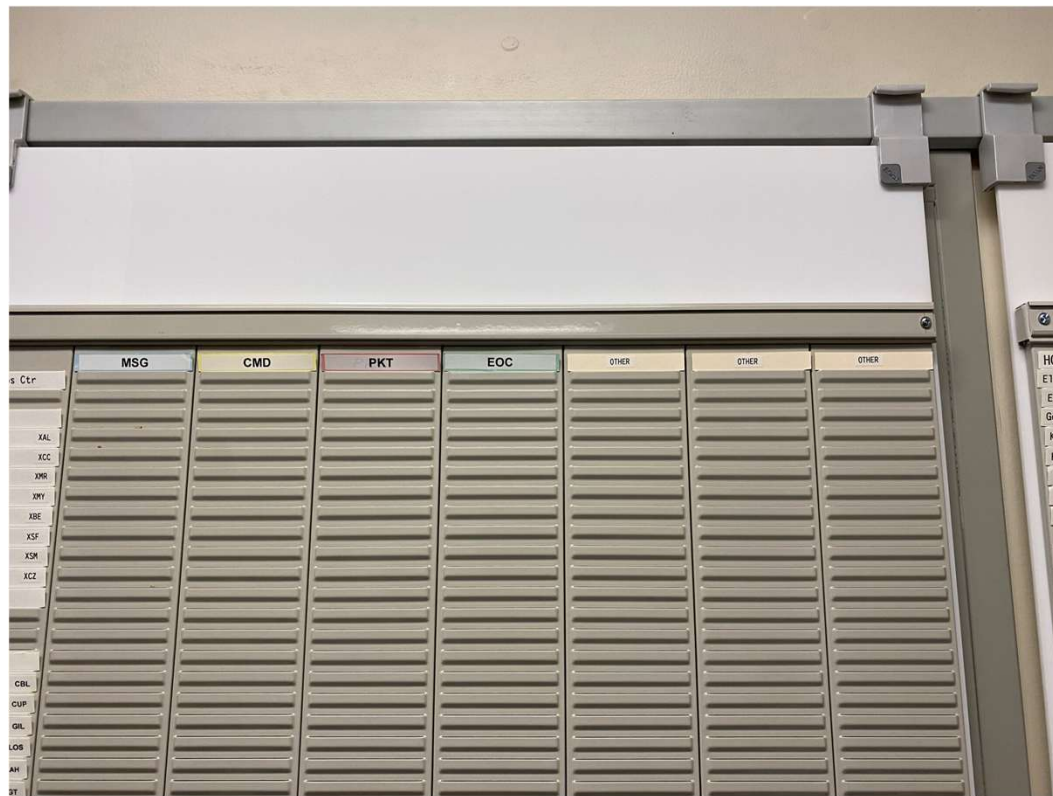
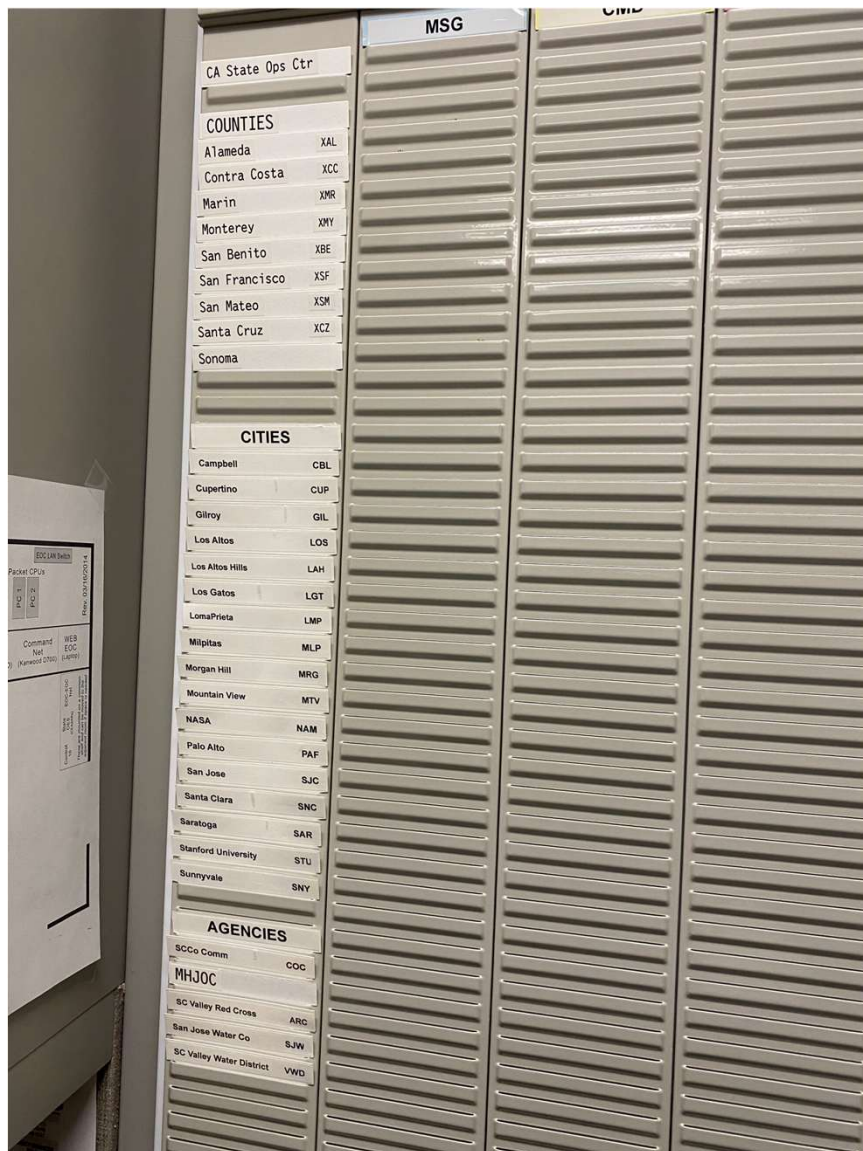
SCC EOC Radio Room T-Card Racks

- Counties, Cities, 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



Radio Room T-Card Rack – Close up



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						
Cupertino						
...						

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

CUP	RES	DATE TIME
Check-in	14:07	
Check-out	23:59	
Check-in	08:00	

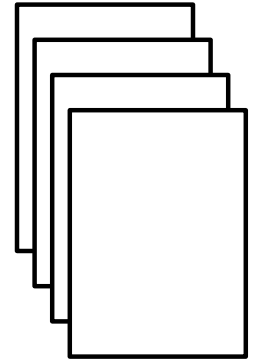
T-cards for Individuals – Typical Information

- Name (Last, First)
- Call Sign
- Agency Code, phone, etc.
 - Additional info based on event needs
 - Supervisor will define the specific information and required format
- Credentials (only list highest)
- As a NC you or scribe will note assignment times, check in/out, etc.

EXAMPLE

[illegible]

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 and Printer
 - Pro: May be good for high traffic volumes
 - Pro: Easy to transfer to a remote operator by Internet / Packet (if working)
 - Con: Requires power for computer and printer, 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

Survey questions: if you were dispatched tomorrow for a Net Control assignment for an event with unknown equipment and power status, what tested equipment are you able to bring with you?

POLL QUESTION

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

(Use portions and order as appropriate for situation)

Assignment (if appropriate):

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

Activation:

- Your activation number is: {activation number}

Pre-departure Instructions and Frequencies:

- Monitor this net as you travel
- Call net control about every 15-20 min. to report your location and last 3 digits of your odometer.
- When you arrive, stay in your vehicle and contact me
- [Optional] Frequency Information:
 - The following repeaters are linked:
 - ☐ AA6BT (Primary): 146.115 MHz (+) 100.0 Hz
 - ☐ W6ASH (North): 145.270 MHz (-) 100.0 Hz
 - ☐ K6SNY (South): 443.275 MHz (+) 107.2 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]}
- Other _____

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

www.scc-ares-races.org/operations/voice/SCCo_Res_Net_Dispatch_Template_v20240821.pdf

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 list, 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
KEGASJ	0645	✓	07:00	07:15	07:30	07:35	✓
KGGRLR	0650	0700	0715	0730			
KV6U	0730						

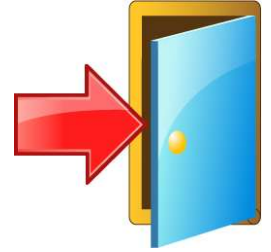
- Don't get too hung up on the perfect form, t-card or whatever
 - You should be able to do this from anywhere, with anything
- The task is to track status; method is up to you
 - Who are you tracking? What is their status? When do you need to contact them next?
- Make sure you track status correctly!

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	07:33								

- Quickly ascertain status of all participants
- Example: if the current time is 07:40, then who is:
 - Arrived/checked-out:
 - Still on net:
 - Next for H&W (15 min):
 - 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 odometer 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
- You are the scribe who is completing the Travel Tracking Form
- Listen to the recorded Resource Net
- We will assume the NC operator is 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: <i>Classroom Exercise</i> <i>XSC-10-01A</i>							2. Operational Period (Date / Time): <i>MM/DD/YY</i> <i>MM/DD/YY</i> From: <i>0800</i> To: <i>1200</i>	
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	
<i>N6JRC</i>	<i>06:01</i>								

Placeholder for Audio File

CLASS LAB EXERCISE

Class LAB Exercise Audio

- [*Resource Net Travel Tracking Classroom Exercise*](#)



Placeholder for completed ICS-309

Completed ICS-309

COMM Log ICS 309-SCCo ARES/RACES	1. Incident Name and Activation Number <i>Classroom Exercise</i> <i>XND-10-01A</i>		2. Operational Period (Date/Time) <i>MM/DD/YY MM/DD/YY</i> From: <i>0800</i> To: <i>1200</i>		
3. Radio Net Name (for NCOs) or Position/Tactical Call <i>Classroom Exercise Net</i>			4. Radio Operator (Name, Call Sign) <i>Jerry Haag; K6GAC</i>		
5. COMMUNICATIONS LOG					
Time (24:00)	FROM		TO		Message
	Call Sign/ID	Msg #	Call Sign/ID	Msg #	
<i>0600</i>					<i>Opened Net - Scribe W6XRL4 H. Munster</i>
<i>0601</i>	<i>N6JRC</i>				<i>Chk-In; Not Ready</i>
<i>0602</i>	<i>K6FSH</i>				<i>Chk-In; odo 201; Alfred St.; Depart</i>
<i>0605</i>	<i>N6JRC</i>				<i>odo 100; First St.; Depart</i>
<i>0607</i>	<i>KF6ZSQ</i>				<i>Chk-In; odo 001; Mercury St; Depart</i>
<i>0608</i>	<i>K6FJC</i>				<i>Chk-In; Not ready</i>
<i>0614</i>	<i>K6FSH</i>				<i>Arrived; Check-out</i>
<i>0615</i>	<i>KD6SOJ</i>				<i>Chk-In; odo 501; Elephant St; Depart</i>
<i>0620</i>			<i>N6JRC</i>		<i>H&W; odo 115; Second St.</i>
<i>0621</i>			<i>KF6ZSQ</i>		<i>H&W; odo 315; Venus St.</i>
<i>0630</i>			<i>KD6SOJ</i>		<i>H&W; odo 515; Zebra St.</i>
<i>0632</i>	<i>K6FJC</i>				<i>odo 401; Red St.; Departing</i>
<i>0635</i>			<i>N6JRC</i>		<i>H&W; odo 130; Third St.</i>
<i>0636</i>	<i>KF6ZSQ</i>				<i>Early chk-out; tracking terminated.</i>
<i>0645</i>			<i>KD6SOJ</i>		<i>H&W; odo 530; Lion St.</i>
<i>0647</i>			<i>K6FJC</i>		<i>H&W; odo 415; Blue St.</i>
<i>0649</i>	<i>KD6SOJ</i>				<i>Arrived; chk-out</i>
<i>0650</i>			<i>N6JRC</i>		<i>H&W; odo 145; Fourth St.</i>

Placeholder for completed Resource Net Travel Tracking Tool form

Completed Travel Tracking Tool Form

Resource Net Travel Tracking Tool		1. Incident Name and Activation Number: <i>Classroom Exercise XSC-10-01A</i>						2. Operational Period (Date / Time): <i>MM/DD/YY</i> From: <i>0600</i> To: <i>1200</i>	
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	
<i>N6JRC</i>	<i>06:01</i>	<i>06:05</i>	<i>06:20</i>	<i>06:35</i>	<i>06:50</i>				
<i>K6FSH</i>	<i>06:02</i>	✓					<i>06:14</i>	✓	
<i>KF6ZSQ</i>	<i>06:07</i>	✓	<i>06:21</i>	-----	-----	-----	-----	<i>06:36</i>	<i>Requested to leave early</i>
<i>K6FJC</i>	<i>06:08</i>	<i>06:32</i>	<i>06:47</i>						
<i>KD6SOJ</i>	<i>06:15</i>	✓	<i>06:30</i>	<i>06:45</i>			<i>06:49</i>	✓	

- The time is now 06:57
- Who has arrived at the destination?
- Who is still on the net?
- Who is next up for a health & welfare check? And when? 15 m



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, CPR, 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 of 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.



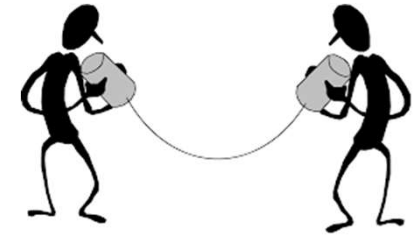
HANDING-OFF A NET: LOCAL VS REMOTE

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: proper pro-words; pause before speaking; eliminate need for repeats

IMPORTANT: FOR REMOTE HAND-OFF OF RESOURCE NET

- For a Resource Net (travel net) using H&W checks is an ideal time to do a net transfer.
- Impact of California AB 1785 / Section 23123.5(f) CVC hits us here too
- When NC2 announces presence; “I am 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!



Scenario :

A new NC is taking over the Resource Net and will be operating from a location remote from the current NC.

Exercise: Transfer of Level 3 Resource Net

- Need 6 volunteers
 - Net control 1 (ICS-309) Current Net Control Operator
 - Net control 2 (ICS-309) New Net Control Operator
 - Scribe for Net Control 2 (Travel Tracking Form)
 - Traveler 1 (NC knows that you will want to pull over before contacting NC for H&W)
 - Traveler 2
 - Traveler 3
- Before you start:
 - Net Control 1: write down traveler call signs for <traveler 1>, <traveler 2>, <traveler 3> these people are on your net at the current time
 - Travelers: think of a major street location and odometer reading (last 3 digits)
- Follow the script ...
 - “<...>” indicates where you substitute 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 NC2: fill in Travel Tracking Form as you go
 - Use the current time for entries
 - Everyone else: try filling in an ICS-309 as NC2 for practice as you listen

Exercise: Transfer of Level 3 Resource Net

Who	What
NC2	Net control, this is <your call sign phonetically>, I am 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's call sign spelled phonetically>, health and welfare. [pause] Break; <NC2 call sign>, <traveler 1> will make contact when off the roadway safely.
NC2	Roger, net2
NC1	<traveler 2's call sign spelled phonetically>
Traveler 2	<street location>, <odometer>, <call sign>
NC2	Roger, net2
NC1	<traveler 3's call sign spelled phonetically>
Traveler 3	<street location>, <odometer>, <call sign>
NC2	Roger, net 2

Continued on next page ...

Exercise: Transfer of Level 3 Resource Net

Continued from previous page ...

Who	What
NC1	Standing by for <traveler 1 call sign> Health & Welfare
	Assume some time may have passed (for this class exercise – 5 seconds)
Traveler 1	Net Control <your call sign> <street location>, <odometer>, <call sign>
NC2	Roger, net 2
NC1	Health and welfare check complete
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 your 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 coordinated by Net Control ...

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>
##:##	----	----	<T3-call>	----	H&W: <T3 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 for Net Tansfer
##:##	<N2-Call>		<T1-call>		H&W: <T1 location and odometer>
##:##	"		<T2-call>		H&W: <T2 location and odometer>
##:##	"		<T3-call>		H&W: <T3 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
<T3-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
 - Optional: Confirm with each 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 pacing station, 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 pacing 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

Placeholder for Homework ICS-309 Logging Exercise

All Stations Message

- Homework: ICS-309 Logging Exercise:
- Shift Change & All Stations Message

COMM Log ICS 309-SCCo ARES/RACES		1. Incident Name and Activation Number <i>Training Class Exercise</i> <i>XND-26-1TC</i>		2. Operational Period (Date/Time) <i>04/04/2026</i> <i>04/04/2026</i> From: <i>12:00</i> To: <i>15:00</i>	
3. Radio Net Name (for NCOs) or Position/Tactical Call <i>Xanadu Tactical Net</i>				4. Radio Operator (Name, Call Sign) <i>Your name, your FCC call sign</i>	
5. COMMUNICATIONS LOG					
Time (24:00)	FROM		TO		Message
	Call Sign/ID	Msg #	Call Sign/ID	Msg #	
<i>12:45</i>	<i>---</i>	<i>---</i>	<i>---</i>	<i>---</i>	<i>Shift Change</i>
	<i>---</i>	<i>---</i>	<i>---</i>	<i>---</i>	<i>Net Control = Your Name & Call Sign</i>
	<i>---</i>	<i>---</i>	<i>---</i>	<i>---</i>	<i>Scribe = Herman Munster, W6XRL4</i>
<i>12:55</i>	<i>Shelter 1</i>	<i>S1-313</i>	<i>XND-206</i>		<i>Shelter Status</i>
<i>13:10</i>	<i>KJ6HAM</i>				<i>check-in - assigned tactical = Shelter 2</i>
<i>13:20</i>	<i>KB6HAM</i>				<i>check-in - assigned tactical = Shelter 3</i>
<i>13:50</i>		<i>XND-207</i>	<i>Shelter 3</i>	<i>S3-2004</i>	<i>ICS-213 - Inventory update</i>
<i>14:05</i>	<i>Shelter 2</i>	<i>S2-121</i>	<i>XND-208</i>		<i>Resource Request</i>
<i>14:30</i>		<i>XND-209</i>	<i>All Shelters</i>		<i>ICS-213 - Exercise complete</i>
<i>"</i>		<i>"</i>	<i>Shelter 1</i>	<i>S1-314</i>	
<i>"</i>		<i>"</i>	<i>Shelter 2</i>	<i>S2-122</i>	
<i>"</i>		<i>"</i>	<i>Shelter 3</i>	<i>S3-2005</i>	
<i>14:33</i>	<i>---</i>	<i>---</i>	<i>---</i>	<i>---</i>	<i>Net Closed</i>

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

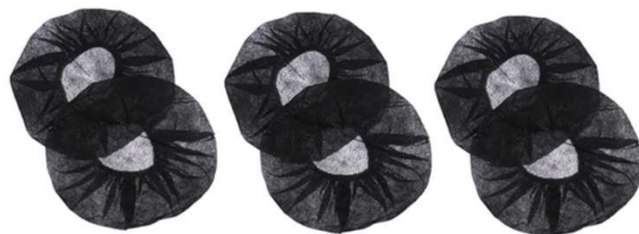
Prepare your checklist

- 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. If possible find a cheat sheet for that model of radio.
☐	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 or disposable ear covers?
☐	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: <u>upon permission from the Supervisor</u> , 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: <u>For Check-in:</u> fill out a new T-Card and hand it to the Supervisor, Runner, or designee <u>For Check-out:</u> inform the Supervisor
☐	Receive messages: 3 rd 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
 - Ask for relays !!! (this is important)
- 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 the 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 distracted by monitoring another frequency; if so, they should stop
 - Switch to “requester” role instead of “receiver” role
 - Your message number? Your date and time? Your Severity? ...
 - Move them 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 your location.
 - See if someone else can deliver the message for you
 - Did you take the Cross-Band Repeater Class?

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 interference
 - 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:
 - Multiple repeaters normally used for the Resource Net: W6ASH, K6SNY
 - Why? No single resource net repeater covers the entire county
 - During Resource Net Level 1 ops, repeaters won't be linked initially
- Action
 - Start the net where you can communicate the best
 - Be aware parts of the county can not reach you
 - Have multiple radios or send a liaison to the other frequencies
 - Ask a control operator or DEC/ADEC to link the repeaters (if appropriate)
 - W6ASH (2m) links to K6SNY (70 cm)
 - W6ASH (70cm) is a backup to W6ASH (2m)



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:
 - scc-ares-races.org/operations/go-kit/SCCo_Go_Kit_v20251009.pdf
 - 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

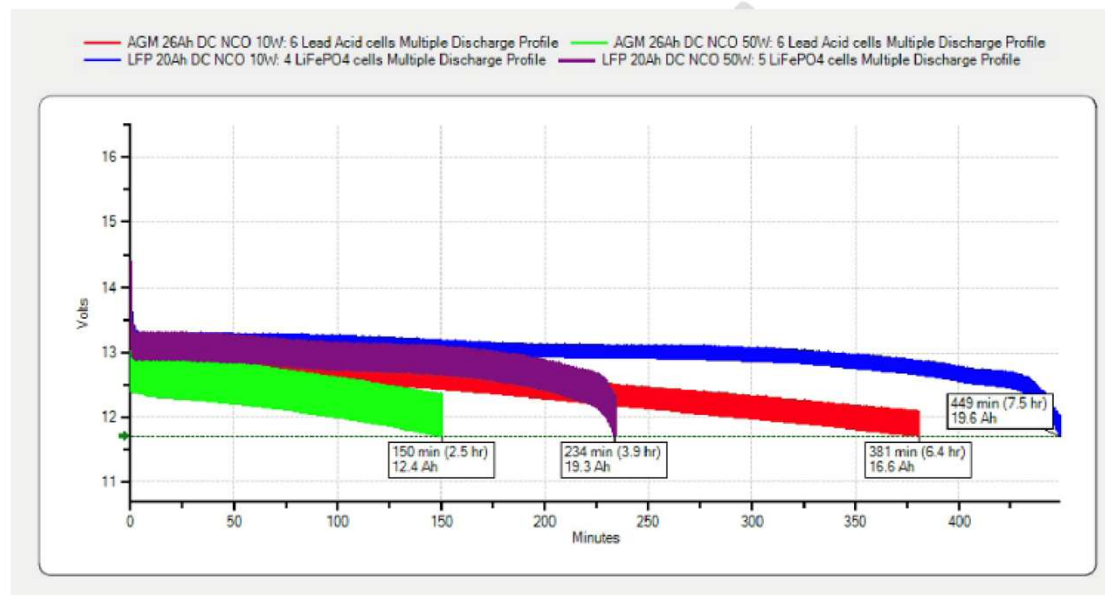


Review:

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 10th

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!

Upcoming Experience Opportunities

- **Saturday May 16th – Quarterly City/County Drill**
 - Practice as Field Communicator or Packet Operator
 - No prerequisites, just have the equipment and desire to play.
 - Set up your equipment and send simulated message traffic.
 - Perform all functions of a normal deployment: Resource Net, 3rd party message passing, logging, forms completions, etc.
 - Credential Evaluations available for those who are ready and have completed the prerequisites.

Final Assignment

Please complete the On-Line Class Evaluation within one week.

To get course credit you need to:

- a) Attend at least 90% of the class
- b) Participate in class
- b) Complete the class evaluation

If you do these, you will get credit for the course.

Online Class Evaluation

MUST BE SUBMITTED WITHIN 7 DAYS TO GET CLASS CREDIT

Activities Database

Home
Log Out
Activities Home
SCC ARES/RACES Home
Comments/Bugs
Events
List Events By Date
List Events I Joined
Submit Class Evaluation
My Profile
My Contact Info

Website Home Page

 Training & Practice	>
Classes <i>Emergency communications training curriculum</i>	>
Submit Class Evaluation <i>How can we improve?</i>	>
Voice Nets <i>City nets, SPECS/SVECS, hospital, training, HF</i>	>

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

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

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

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

This is a moderated group.

Reminder:

Net Control Type II, Saturday 5/2/2026

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

Class presentation with homework should be posted about a week prior to the class. Those signed up will be notified via email.