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Net Control Type III

Part B



Santa Clara County ARES®/RACES

Last Updated: 31-Mar-2024

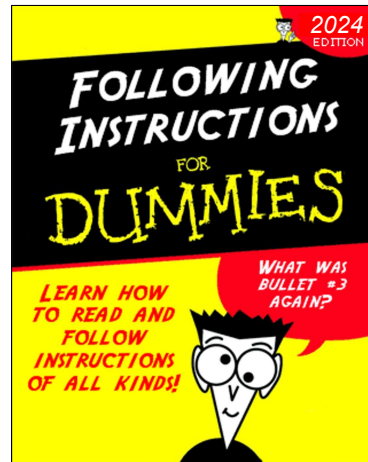
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Housekeeping

- 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.



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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

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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

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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

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STATUS TRACKING & T-CARD SYSTEMS

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Keeping Track of Status

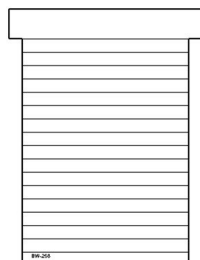
- Need to be able to quickly answer status-related questions
 - Who is en route? Who has arrived? Who needs a H&W check?
 - This is hard to do by scanning the 309, especially multiple pages
 - Who is on the net? Where are they?
- It is usually helpful to track status separately
 - Especially with a larger 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!

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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



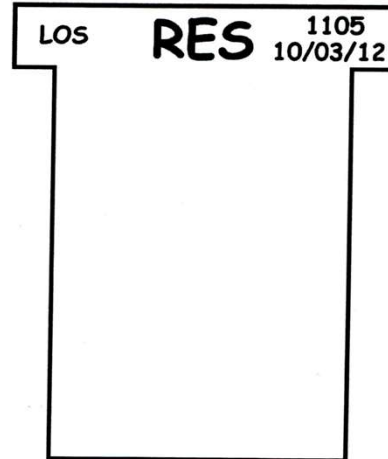
AGENCY	ST	END	TYPE	LD. NO.
ORDER/REQUEST NO.		DATETIME CHECK IN		
HOME BASE				
DEPARTURE POINT				
LEADER NAME				
CREW ID NO./NAME (FOR STRIKE TEAMS)				
NO. PERSONNEL		MANIFEST	WEIGHT	
<input type="checkbox"/> YES		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
METHOD OF TRAVEL				
<input type="checkbox"/> OWN		<input type="checkbox"/> BUS	<input type="checkbox"/> AIR	
OTHER				
DESTINATION POINT				ETA
TRANSPORTATION NEEDS				
<input type="checkbox"/> OWN		<input type="checkbox"/> BUS	<input type="checkbox"/> AIR	
OTHER				
ORDERED DATETIME		CONFIRMED DATETIME		
REMARKS				
ICS 219-2 (Rev. 4-10) CREW MPES 1344				

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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

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



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, ...

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

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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

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Simplified Level 3 Resource Net

RESOURCE NET FOR AN EVENT

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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

Rev: 08-Jul-2010

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))*
 - Thomas Guide: *(page and grid number)*
 - Local Contact: *(name, phone number, local frequency, (time, offset))*
- [Optional] Your start time will be: *(time)*
- [Optional] Operational period is expected to be [about] *(#)* 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:
 - AARS (Primary): 148.115 MHz (+) 100.0 Hz
 - WRSR (North): 145.270 MHz (-) 100.0 Hz
 - NRNAC (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)*

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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.

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Resource Net Tracking with Plain Paper

CALL SIGN	✓-IN	DEP	H&W	H&W	H&W	ARRIVE	V-OUT
KEGASJ	0645	✓	07:00	07:15	07:30	07:35	✓
KGGLR	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!

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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:

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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

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**EXERCISE TIME
RESOURCE NET**

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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.

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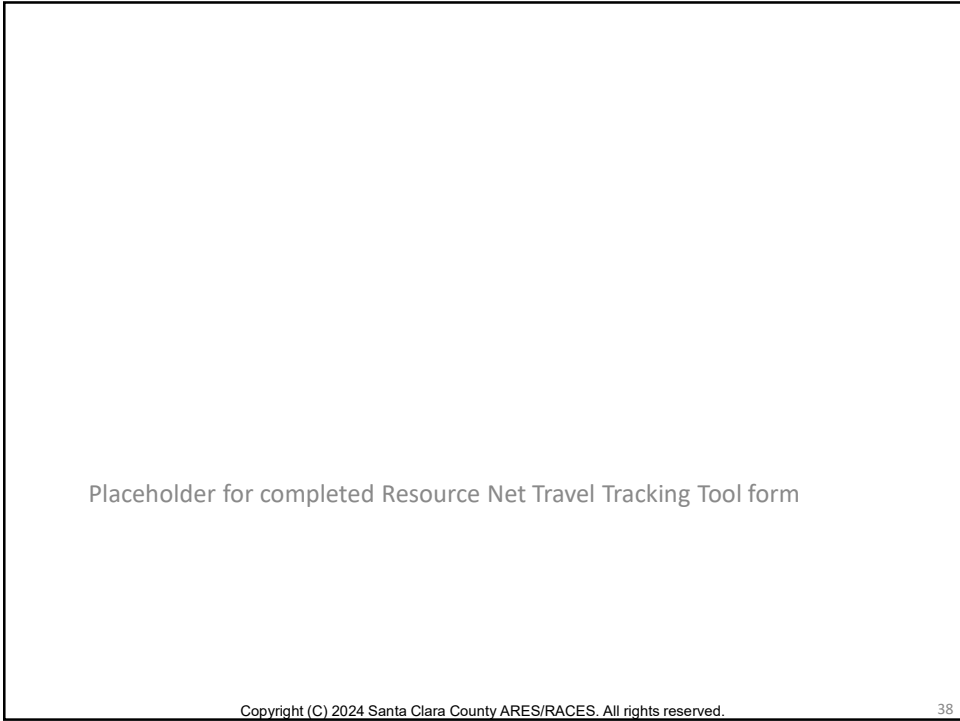
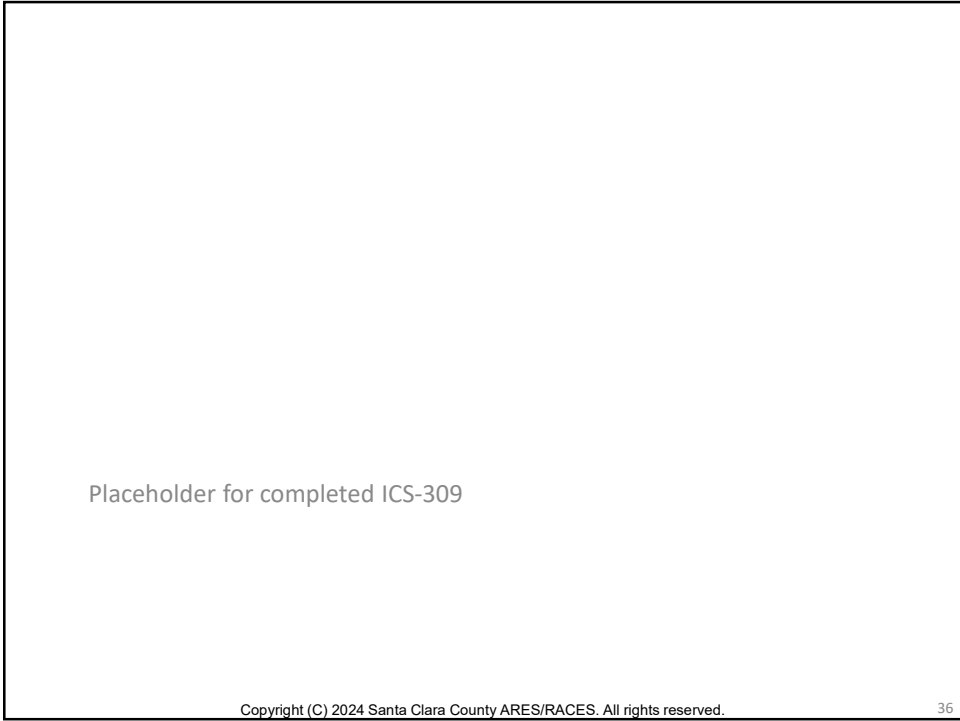
Interactive Exercise

Starting hint:

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





BRIEFINGS

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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.

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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.

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HANDING-OFF A NET: LOCAL VS REMOTE

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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.

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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

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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; <u>say call signs phonetically</u>
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

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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.

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EXERCISE TIME!

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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

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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>

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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

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SENDING A MESSAGE TO ALL STATIONS

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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 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

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CLOSING A NET



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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

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Pre-flight, takeoff, and flying: checklists!

PILOTING THE NET CONTROL STATION

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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

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Items to consider

Things to consider doing before arriving at your assignment

Checked	Item
<input type="checkbox"/>	Update County Voice frequency list, if needed
<input type="checkbox"/>	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.
<input type="checkbox"/>	Make sure your go-kit forms are up to date and bring extras with you
<input type="checkbox"/>	Verify your own prepared scripts are up to date. Note that your served agency might have their own, but good to check yours.
<input type="checkbox"/>	Bring your own headphones?
<input type="checkbox"/>	Anything else?
<input type="checkbox"/>	

Sizing up the equipment

Things to consider doing before your operational period starts.

Checked	Item
<input type="checkbox"/>	Verify your assignment, obtain the ICS-205
<input type="checkbox"/>	Verify proper equipment power up. Also, methods of supplying power. Only on battery: verify you have enough Ah available for the operational period.
<input type="checkbox"/>	Verify memory/VFO programming for your intended net: frequency, shift, offset, and PL tone set.
<input type="checkbox"/>	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
<input type="checkbox"/>	Verify PTT method: microphone, handswitch, or footswitch. Verify VoX is turned off if the radio has that capability (never enable Vox!!!)
<input type="checkbox"/>	Verify transmit power is set correctly
<input type="checkbox"/>	Verify squelch is set correctly
<input type="checkbox"/>	Listen on frequency of intended use. If free, verify PTT operation with successful voice transmission (and repeater squelch tail has been heard).
<input type="checkbox"/>	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.
<input type="checkbox"/>	Anything else? What about other station preparation steps?

Before starting your operational period

<input type="checkbox"/>	Make sure you are wearing any assigned vest or your own personal vest
<input type="checkbox"/>	Obtain the Relief Briefing from the current staff (if you are not the first shift)
<input type="checkbox"/>	Locate and have available on the “counter-top” multiple copies of the following set of forms appropriate to the station/position. For example: <ol style="list-style-type: none"> 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
<input type="checkbox"/>	Have blue or black ink pens, stapler and staple refills
<input type="checkbox"/>	Start your ICS 309 form.
<input type="checkbox"/>	Verify the starting number or continuing number for the message numbering for your position.
<input type="checkbox"/>	If not open: <u>upon permission from the Supervisor</u> , open the net. If open: announce the update script

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Operating your station

Things to consider for doing repeatedly during your operational period.

Checked	Item
<input type="checkbox"/>	For voice nets using ham radio: ID with the FCC callsign for the station as per Part 97 regulations at least every 10 minutes
<input type="checkbox"/>	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
<input type="checkbox"/>	Receive messages: 3 rd party, other formal, operator-to-operator. <ul style="list-style-type: none"> • Hand over received message and routing form to the Runner / Net Manager. • For an Immediate message also inform verbally of the Handling Order status
<input type="checkbox"/>	Transmit messages
<input type="checkbox"/>	Announce the update script approximately every 30 minutes or as appropriate
<input type="checkbox"/>	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.
<input type="checkbox"/>	Anything else?

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Ending your shift

Checked	Item
<input type="checkbox"/>	As directed by the Supervisor, close the net
<input type="checkbox"/>	Complete and sign your ICS-309 form(s).
<input type="checkbox"/>	If needed, perform a Relief Briefing for your position replacement.
<input type="checkbox"/>	If assigned a vest, turn over to your replacement or give to Supervisor
<input type="checkbox"/>	Complete your SCC ICS-214 form
<input type="checkbox"/>	Complete any other forms.
<input type="checkbox"/>	As needed, Review your forms with your Supervisor
<input type="checkbox"/>	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.
<input type="checkbox"/>	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



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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



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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

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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

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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

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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."

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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?

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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

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High Temperature



- Situation
 - You are net control in the middle of the summer in an area with 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)



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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



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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>

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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]

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REVIEW: EQUIPMENT FOR NET CONTROL

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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.

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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

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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



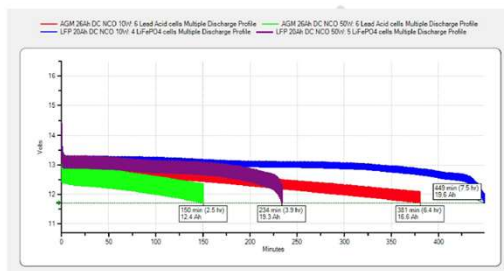
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Review: Net Control Duty Cycle Test Configuration

- 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

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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



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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.

The screenshot shows the Santa Clara County ARES®/RACES website. At the top, there is a header with the county seal and the text 'Santa Clara County ARES®/RACES'. Below the header, a navigation sidebar on the left contains several menu items: Home, Log Out, Activities Home, SCC ARES/RACES Home, Comments/Bugs, Events, List Events By Date, List Events I Joined, Modify an Event, List/Print an Event Roster, Log Event Participation, and Submit Class Evaluation. A red arrow points to the 'Submit Class Evaluation' link. The main content area displays a 'Calendar of Events' section with a filter for 'Current events' and a list of events, including 'Net Control - Type III, Part B (Zoom)' and 'EC/AEC Council Meeting (Zoom)'.

Submit Class Evaluation - for which class?

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

01/30/21 Net Control - Type III, Part A  Select class from the drop down

[Continue](#)

- 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.

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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

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