


2011 End of Year Summary

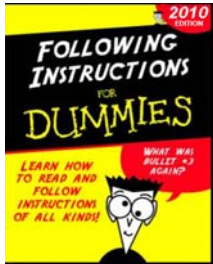


Santa Clara County ARES®/RACES
Last Updated 2011-Dec-8

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Housekeeping


- Pen/pencil & paper
- Cell phones & pagers
- Side conversations
- Questions
- Refreshments
- Breaks
- Restrooms
- In case of emergency



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Agenda

- Message passing
- MAC Program
- Packet operations
 - W6XSC Network Structure
 - Accessing the Network
 - Tactical Call Signs
 - Packet message addressing
- Radio Direction Finding
- Antenna Fundamentals and Safety
- AlertSCC
- Cross-Band Repeating
- SCC OES ARES/RACES Frequency List



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Message Passing

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Message Passing Do's & Don'ts

Based on observed behavior at a recent drill:

- Do not repeat the message
- Do not use Q-codes
- Do say numbers correctly: 11 is "one one"
- Do say time, date correctly: 10:51 is "one zero five one"
- Do minimize words; use proper prowords:
 - "the date is ..." → "date ..."
 - "Sorry, I didn't get that. Can you ..." → "say again word after"
- Do record message #s correctly
- Do send your message # when done receiving
- Do get acks from all stations in multi-station msg
- Do practice copying call signs (quickly)
- Do practice phonetics (standard ITU)

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2011 Message Passing Observations

- Message passing is what we do. It's why we exist.
- But message passing skills seem to have degraded
 - Incomplete / incorrect message forms
 - Degraded message passing protocol skills
 - Pace seems to be slowing down
- New message passing class in 2012
 - Will focus solely on message passing
 - Plenty of table top exercises to demonstrate proper skills

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Message Passing Example

- Each participant should have a blank ICS 213 message forms.
- This exercise will consist of passing a message to “all stations”
- The acting NCO will ask for a pacing station, if none volunteer, one will be selected by the staff.
- After transmission, the acting NCO will ask for any station requiring fills. Participants should minimize verbiage by using message handling pro-words.

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Exercise time – are you ready????



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How'd You Do?

- Did you copy the message EXACTLY?
- Don't be afraid to ask for spelling of a word – get it right!
- Beware of heterographs
 - “to” vs. “too” vs. “two”
 - “for” vs. “four”
 - “ate” vs. “eight”
- Did you add?
 - Your message number
 - How received
 - Amateur Radio
 - Call sign
 - Name
 - Date
 - Time
- Did the sending station as for the receiver's message number?

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MAC Program

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MAC Program 2011

- No major changes in 2011
- We have now reached the 2 year mark
- Going forward, that means:
 - All active status MACs must continue to meet the minimum participation requirements – 2 events in 2 years
 - Everyone can check their own records online
- Upcoming changes:
 - “Level” 1, 2, 3 will become “Type” 3, 2, 1
 - Reverse order, with Type 1 being the highest
 - Aligns with ICS typing standards
 - HF
 - Looking for volunteers to help scope out HF requirements
 - Add Message Passing Class to F1 requirements

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Questions / Concerns About an Eval

- Consult the MAC Handbook
 - Most concerns tend to be caused by a candidate not understanding the program requirements
 - The MAC Handbook is the official guide for all things MAC
- Speak with your evaluator
 - Evaluators are also trained on program details
 - Confirm eval status before you leave the eval
- Document your progress
 - Forms are available on the website for tracking progress
 - Print it out, bring it with you, have evaluator sign it
- Disagreement, discrepancy or problem?
 - Don’t delay - speak directly with your evaluator
 - If that doesn’t work, escalate to Eval Coordinator for the event
 - If that doesn’t work, escalate to MAC Program Manager



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County-wide Communications Drills


- The drills formerly called “MAC Drills”
 - MACs and non-MACs now welcome
- Latest drill was a huge success
 - 70+ attended, very high feedback marks
 - Activities: direction finding (2 types), cross-band repeating, HF, message passing, net control, packet “intro” station, full packet scenario station
 - Opportunities to participate or lead planning/operations
- Future drills will be patterned after this one
- Probably one per year
- We would like even more people to show up
 - Our plan could have easily accommodated another 20-30

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Packet Operations End of Year Update - 2011



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Why Packet Radio?

- It's fast
 - Yes, that's right. Fast.
 - 80+ messages sent/received, logged, acknowledged, printed in triplicate, perfectly legible, in < 2 hrs, with 0 errors, by 1 person!
- It's easy
 - Hardware: pre-built cables; straight-forward connections
 - Software: if you can use e-mail, you can use Outpost
 - Procedures: extensive documentation on website
- It's deployable
 - Virtually anywhere in the county and most of surrounding counties; no specialized radios or antennas required
- It fits our served agencies' needs
 - Preferable for long, complex, and/or high volume messages; explicit acknowledgements and tracking

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Learning Objectives

Our goal today is not to teach packet, but to highlight recent changes and reinforce certain key points.

By the end of the class, you will be able to:

- Describe the SCCo packet network structure
- Understand the use of primary & secondary BBSs
- Understand the use of tactical calls
- Properly address messages to users in the SCCo packet network
- Properly address messages to users outside the SCCo packet network

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Agenda

- Network Structure
- Primary and Secondary BBSs
- Tactical Call Signs
- Packet Message Addressing
- New Gateway Features

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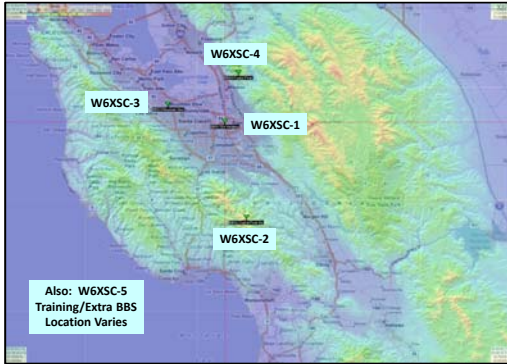


W6XSC NETWORK STRUCTURE

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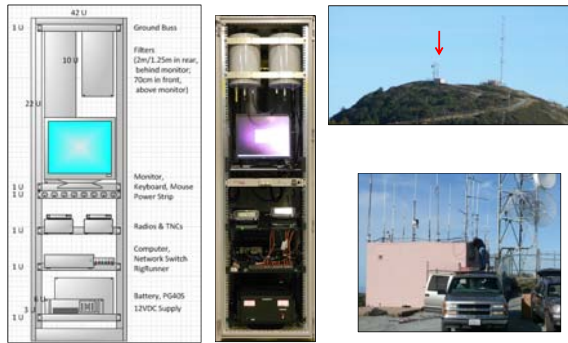
W6XSC BBS Locations



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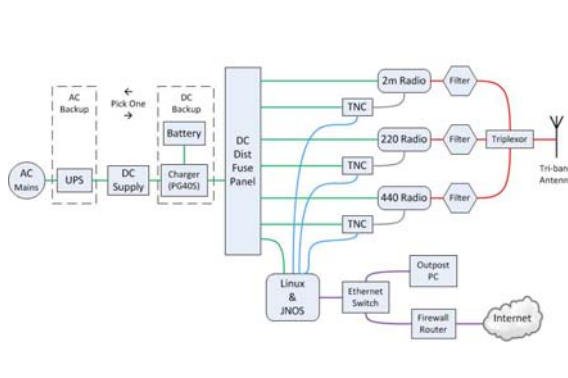
BBS Physical Installation



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Block Diagram: Typical W6XSC BBS



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W6XSC Connectivity/Frequencies

- 144 MHz - access
 - User access; typically individuals, some EOCs
- 220 MHz - access
 - User access; typically EOCs, some individuals
 - Future: add forwarding to traditional BBS network
- 440 MHz - forwarding
 - Forwarding between BBSs, no user access
 - Each BBS can reach all other BBSs directly
- 5.8 GHz (unlicensed)
 - Remote access for management/maintenance
 - Future: use for forwarding between BBSs
- Internet
 - Internet gateway functions currently located at Crystal Peak

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W6XSC BBS Operational Concepts

- The network is run like a commercial network
 - ARES/RACES – missing the point unless it works in an emergency
 - UPS, backup generators, physical and network security
 - Testing, automated monitoring, user communications
- All BBSs have equivalent functionality, user interface
 - Simplifies user training
 - Provides backup in case of failure
- All cities/agencies can reach at least 2 BBSs
 - Designated primary & secondary
 - Everyone in other cities knows where to find you
- All users in a city/agency use the same BBS
 - Simplifies addressing
 - Everyone in other cities knows where to find you

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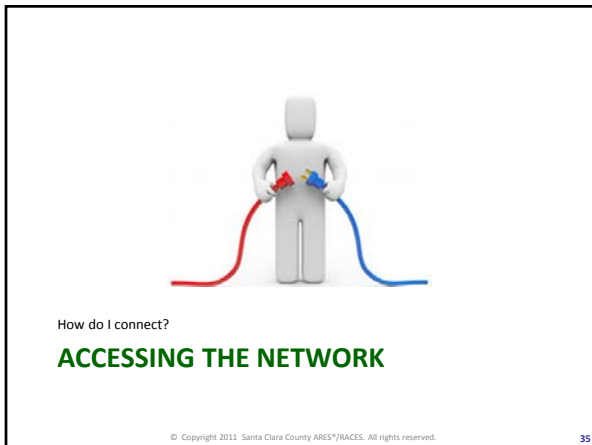
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Connectivity Beyond County Borders

- Bay Area / ARRL Silicon Valley Section
 - All surrounding counties and Coastal Region EOC can reach at least one Santa Clara County BBS – no Internet required!
 - CalEMA Coastal Region, Alameda County, Contra Costa County, Marin County, Monterey County, San Benito County, San Francisco County, San Mateo County, Santa Cruz County
 - Tactical calls already installed in all SCCo BBSs
 - Anticipated use: mutual aid; connectivity to CalEMA Coastal Region for escalation
 - Next Step: establish regular “check-in” process with surrounding counties.

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Antenna / Power Considerations 

- Packet networks are simplex
- You must be able to hear **EVERYONE** else on the channel and they must **ALL** be able to hear you
 - If not, you **WILL** cause doubles
 - Even if the BBS can hear your HT set on 1 watt with a rubber duck antenna in the basement, the person two cities away from you can not!
 - Even if it works when the channel is quiet, you **WILL** cause doubles during a real incident (or a drill or public service event) when everyone is trying to connect
- Raise your antenna as high as possible
- Use plenty of power

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Primary & Secondary BBSs

- In an emergency, web site may not be available
- The same information is also posted in a bulletin on all BBSs
 - Currently located in the “perm” area.
 - Bulletin area name will probably change in the next few months
- Keep a copy in your Outpost “Archive” folder at all times
 - You may also want to save it as a text file on your PC
- Post it at your EOC or operating position

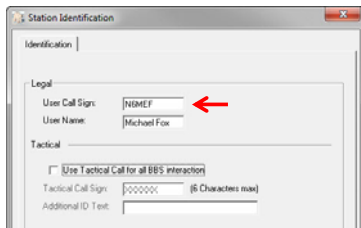
Agency Name	Pfx	Pr-1	Sec
Cal-Fire VIPs Santa Clara Unit	SCU	W6XSC-2	W6XSC-1
Campbell, City of	CBL	W6XSC-1	W6XSC-3
County Comm Center	CCC	W6XSC-1	W6XSC-3
Cupertino, City of	CUP	W6XSC-1	W6XSC-3
Gilroy, City of	GIL	W6XSC-2	W6XSC-1
Santa Clara Co Hospitals	HOS	W6XSC-2	W6XSC-1
Loma Prieta Region	LMP	W6XSC-1	W6XSC-3
Los Altos, City of	LOS	W6XSC-3	W6XSC-1

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Outpost: Setup > Identification

- Individuals use their FCC call sign
 - Outpost sets TNC automatically when you set your call sign in the Station Identification screen
 - Alternatively: Set your TNC “mycall” with your FCC call sign; then “connect w6xsc-#” (where # = 1-5); TNC sends your call sign

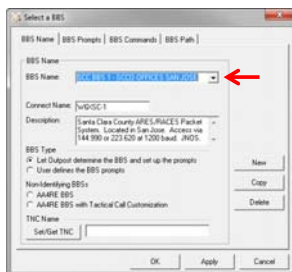


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Outpost: Setup > BBS

- Select your primary BBS
 - Outpost SCC is preconfigured with all five W6XSC BBSs



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TACTICAL CALL SIGNS

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Review: FCC vs. Tactical Call Signs

- FCC Call Sign
 - Assigned by FCC
 - Used to identify an amateur operator or its station
 - Part 97: "each amateur station ... must transmit its assigned call sign ... at the end of each communication, and at least every ten minutes during a communication."
- Tactical Call Sign
 - Assigned by net control or other local authority
 - Used to identify a function or a location
 - "Staging", "EOC", "Fire Station 1"
 - Use to call another function/location or answer a call
- Using both for packet – just like for voice
 - Connect using tactical calls, send messages to tactical calls
 - Final ID with FCC call sign

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What Are Tactical Call Signs?

- Call sign used to identify a function or location, instead of the individual assigned there
- Examples:
 - Santa Clara County EOC
 - Good Samaritan Hospital
 - Mountain View Varsity Park CERT
 - Packet Check-in Net Control for Monday or Tuesday
- Each is assigned a 6 letter abbreviation
- Does not replace FCC call sign
 - You must still configure your FCC call sign
 - Outpost automatically IDs with FCC call sign at the end of a connection if a tactical call sign is used

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Tactical Call Usage

- When should I connect using a tactical call?
 - Real incidents; drills, public service events, too
 - Only when you are operating as that function/location
 - Examples:
 - When you are the packet operator for your city EOC
 - When you are the packet operator for your CERT group
 - When you are the packet operator for a shelter
 - When you are the packet check-in net control operator
 - Otherwise, just connect using your FCC call sign
- Which tactical call should I use?
 - It depends on your organization and assignment
 - Usually assigned by your city/agency EC, or county DEC

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Tactical Call Usage

- How do I know which tactical calls to send TO?
 - City/agency main tactical calls are posted as a bulletin to all BBSs
 - They're easy enough to get for legitimate users, but we don't post them publicly
 - Your city/agency has a list of their own additional tactical calls
 - All tactical calls for a given agency start with the same prefix
 - All tactical calls with the same prefix have the same primary BBS

#Tactical	Agency Name	Pfx	Pri	Sec
XXXXXXXX	Cal-Fire VIPs Santa Clara Unit	SCU	W6XSC-2	W6XSC-1
XXXXXXXX	Campbell, City of	CBL	W6XSC-1	W6XSC-3
XXXXXXXX	County Comm Center	CCC	W6XSC-1	W6XSC-3
XXXXXXXX	Cupertino, City of	CUP	W6XSC-1	W6XSC-3
XXXXXXXX	Gilroy, City of	GIL	W6XSC-2	W6XSC-1
XXXXXXXX	Santa Clara Co Hospitals	HDS	W6XSC-2	W6XSC-1
XXXXXXXX	Loma Prieta Region	LMP	W6XSC-1	W6XSC-3
XXXXXXXX	Los Altos, City of	LOS	W6XSC-3	W6XSC-1

Please do NOT send "test" messages to tactical calls. They do not need to be tested.

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Tactical Call Example

- In the examples that follow, we will use the mythical city of "Xanadu"
- Xanadu's main tactical call entry would look like:

#Tactical	Agency Name	Pfx	Pri	Sec
XND EOC	Xanadu, City of	XND	W6XSC-4	W6XSC-2

- Xanadu has other tactical calls which all start with the "XND" prefix:
 - Example: XNDFS1 = Xanadu Fire Station 1

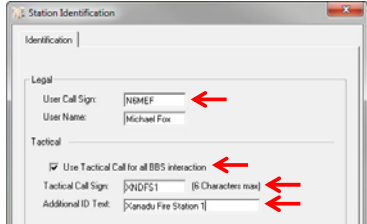
Your EC can request a list of tactical calls for your city/agency. Follow the procedure on www.scc-ares-races.org/packet.html.

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Outpost: Setup > ID (Tactical Call)

- Cities/Agencies/Locations/Functions use tactical call sign
 - Configure your FCC call sign as usual
 - Also check "Use Tactical Call ..." and enter your tactical call
 - Outpost logs in with your tactical call, then automatically IDs with your FCC call sign at the end of your session.



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"You want it to go where?"

PACKET MESSAGE ADDRESSING

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Review: E-mail

- You want to contact Joe Ham who lives in Mountain View.
 - Without knowing his e-mail address, can you guess what it is? (nope)
 - How about just the left hand side of the address (...@)? (nope)
 - How about just the right hand side of the address (@...)? (nope)
- So you ask Joe for his e-mail address. He tells you:
 - jham3270@gmail.com
 - dxbandit2000@yahoo.com
 - joseph@joehamtheman.org
 - ab6cde@arrl.net
 - Joe.Ham@eng1.compuco.com
- Which one should you use?
 - It usually depends. Often, it's not clear. Not great for EmComm.
- How can you keep track of all of this?
 - Manually, with address book in your e-mail application

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SCCo Packet Network Addresses

- Similar to e-mail addresses, except:
 - The left-hand-side of the address (...@) is known
 - For an individual, it's the person's call sign
 - For agencies & locations it's the tactical call sign
 - The right-hand-side of the address (@...) is known
 - It's w6xsc-#.ampr.org (where # is 1-5)
 - And you can figure out the “#” based on the primary and secondary BBS assigned to the city/agency's prefix

#Tactical	Agency Name	Pfx	Pr1	Sec
XNDEOC	Xanadu, City of	XND	W6XSC-4	W6XSC-2

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Review: E-mail

- Standard e-mail address format
 - Generically
 - <left-hand-side>@<right-hand-side>
 - Typically seen on the Internet
 - “user@host.domain”
 - Example: joe.ham@eng1.compuco.com
 - “user@domain”
 - Example: joe3270@yahoo.com
 - Requires company-wide (domain-wide) address database which routes e-mails to the right server for each user.

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SCCo Packet Network Addressing

- Standard packet message address format:
 - “user@host.domain”
 - “host” is the BBS name (W6XSC-#)
 - “domain” is ampr.org
 - n6mef@w6xsc-1.ampr.org (Michael Fox in Santa Clara)
 - k6fsh@w6xsc-3.ampr.org (Bob “Fish” Fishman in Mountain View)
 - kz6o@w6xsc-2.ampr.org (Logan Zintsmaster in Morgan Hill)
 - xndeoc@w6xsc-4.ampr.org (Xanadu Emergency Operations Ctr)
 - xndfs1@w6xsc-4.ampr.org (Xanadu Fire Station 1)
- This format works no matter where you are
 - Same BBS
 - Different W6XSC BBS
 - Different BBS on AMPRnet somewhere else in the world

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Review: E-mail Address Shortcuts

- You can usually leave off the **domain** when you are sending e-mail within an organization
 - “user@host”
 - Example: joe.ham@eng1
- Sometimes, you can just send to “user”
 - Usually on the same host, sometimes in the same domain
 - “user”
 - Example: joe.ham

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SCCo Packet Network Addressing

- You can leave off the domain (“.ampr.org”):
 - “user@host”
 - “host” is the BBS name (W6XSC-#)
 - n6mef@w6xsc-1 (Michael Fox in Santa Clara)
 - k6fsh@w6xsc-3 (Bob “Fish” Fishman in Mountain View)
 - kz6o@w6xsc-2 (Logan Zintmaster in Morgan Hill)
 - xndeoc@w6xsc-4 (Xanadu EOC)
 - xndfs1@w6xsc-4 (Xanadu Fire Station 1)
- This works within the W6XSC network
- This should work in worldwide AMPRnet network
 - It *should*, but it depends on if the BBS is set up properly

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SCCo Packet Network Addressing

- Special case:
 - “user” (with no @...)
- If “user” is an **FCC call sign**, message stays on local BBS (we don’t know where else it should go):
 - n6mef → stays on whatever BBS you are connected to
 - k6fsh → stays on whatever BBS you are connected to
 - kz6o → stays on whatever BBS you are connected to

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SCCo Packet Network Addressing

- Special case:
 - “user” (with no @...)
- If “user” is a tactical call, message is forwarded to the primary BBS for that agency’s prefix:

#Tactical	Agency Name	Pfx	Pri	Sec
XNDEOC	Xanadu, City of	XND	W6XSC-4	W6XSC-2

- xndeoc → forwarded to: xndeoc@w6xsc-4.ampr.org
- xndfs1 → forwarded to: xndfs1@w6xsc-4.ampr.org

- You can manually override (e.g. if w6xsc-4 is down):
 - xndeoc@w6xsc-2.ampr.org
 - xndfs1@w6xsc-2

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Example Scenario 1

- You are connected to W6XSC-1
- List all the ways you can send to:
 - Michael Fox (N6MEF) in Santa Clara
 - Pat Moore (K6PMM) in Gilroy
 - Xanadu EOC

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Example Scenario 1 – How’d you do?

- You are connected to W6XSC-1
- List all the ways you can send to:
 - Michael Fox (N6MEF) in Santa Clara
 - n6mef@w6xsc-1.ampr.org
 - n6mef@w6xsc-1
 - n6mef
 - Pat Moore (K6PMM) in Gilroy
 - k6pmm@w6xsc-2.ampr.org
 - k6pmm@w6xsc-2
 - Xanadu EOC
 - xndeoc@w6xsc-4.ampr.org
 - xndeoc@w6xsc-4
 - xndeoc

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Example Scenario 2 – W6XSC-1 is Down

- W6XSC-1 is Down; you are connected to W6XSC-2
- List all the ways you can send to:
 - Michael Fox (N6MEF) in Santa Clara
 - Pat Moore (K6PMM) in Gilroy
 - Xanadu EOC

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Example Scenario 2 – How'd you do?

- W6XSC-1 is Down; you are connected to W6XSC-2
- List all the ways you can send to:
 - Michael Fox (N6MEF) in Santa Clara
 - n6mef@w6xsc-3.ampr.org
 - n6mef@w6xsc-3
 - Pat Moore (K6PMM) in Gilroy
 - k6pmm@w6xsc-2.ampr.org
 - k6pmm@w6xsc-2
 - k6pmm
 - Xanadu EOC
 - xndeoc@w6xsc-4.ampr.org
 - xndeoc@w6xsc-4
 - xndeoc

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Example Scenario 3 – W6XSC-4 is Down

- W6XSC-4 is Down; you are connected to W6XSC-3
- List all the ways you can send to:
 - Michael Fox (N6MEF) in Santa Clara
 - Pat Moore (K6PMM) in Gilroy
 - Xanadu EOC

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Example Scenario 3 – How'd you do?

- W6XSC-4 is Down; you are connected to W6XSC-3
- List all the ways you can send to:
 - Michael Fox (N6MEF) in Santa Clara
 - n6mef@w6xsc-1.ampr.org
 - n6mef@w6xsc-1
 - Pat Moore (K6PMM) in Gilroy
 - k6pmm@w6xsc-2.ampr.org
 - k6pmm@w6xsc-2
 - Xanadu EOC
 - xndeoc@w6xsc-2.ampr.org
 - xndeoc@w6xsc-2

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AMPRnet Gateway (new)

- What is the AMPRnet?
 - The “Amateur Packet Radio network” is a worldwide IP network of packet radio systems.
 - AMPRnet address space = 44/8 (44.xxx.yyy.zzz)
- What is an AMPRnet gateway?
 - Interconnection between our network and AMPRnet
- Why is it useful?
 - All W6XSC BBSs can be reached from any BBS in the network
 - All W6XSC BBSs can reach any other BBS in the network
- How will we use it?
 - For connecting to other counties (and elsewhere) which are not reachable by radio
 - Example: Michigan connects all their counties this way
- How do I send messages to other AMPRnet users?
 - user@host.domain, where domain is ampr.net

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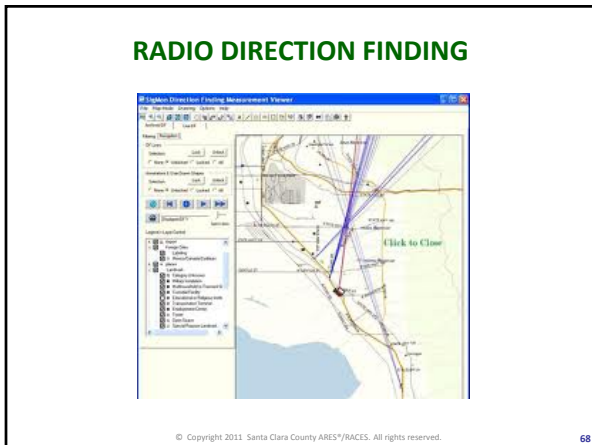
E-mail Gateway (new)

- What is an E-mail gateway?
 - Interconnection between packet messages and e-mail
- Why is it useful?
 - Connect to others who don't have packet capability
- How will we use it?
 - Messages to non-ham organizations
 - Message to ham organizations with no packet connection
 - Health & welfare traffic to family members
- How do I send messages to e-mail addresses?
 - user@host.domain – i.e. send to the regular email addr.
- Note: gateway is currently outbound only
 - Inbound is in the works; subject to Part 97 restrictions

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RADIO DIRECTION FINDING BASICS

- Why we train to locate:
 - Faster "stuck microphone" resolution at events
 - Search and Locate assistance
 - Interference sources
 - Intentional jammers
 - For fun! - e.g. Fox hunts (T-hunts)
- Options for "pedestrian" RDF: and HT or Receiver and
 - "Body shielding", with and without radio "shield" or tube
 - Time Of Arrival "box", e.g. "HANDI-Finder"¹ hand held
 - Loop antenna with and without an attenuator
 - Hand-held Yagi antenna with and without an attenuator
 - Yagi + VK3YNG VHF Foxhunt Sniffer Mk 4¹ is the *best* combo. Pricey, but performance is excellent. See: <http://www.foxhunt.com.au/>

¹ See <http://www.handi-finder.com/>

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What do you prepare for RDF?

- Practice, practice, practice
 - Get to know your RDF equipment
 - T-hunts (use your favorite search engine “sf bay area t-hunt”)
 - Organize your own
 - SCC Drill and training opportunities
- Optional things to bring with you
 - Map
 - Compass
 - Straight-edge
- Download the RDF training class presentation read the “LINKS” page at the end for more information

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Remember

- Above all else, your safety is number one!
- Obey all laws
- Often we are searching through public areas
 - RDF work will attract attention and questions
 - Be friendly, build public understanding and appreciation
 - Refer drill/event details to the PIO / IC
 - Ask them to visit the command post, etc. for more information
- RDF work is secondary to the public’s right to be there
 - Proactively give way, maintain safe distances, etc.
 - Respect their privacy!



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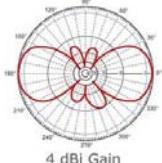
How To Help the Santa Clara Valley (SCV) Official Observer Coordinator (OOC)

- SCV OOC: Andy Korsak KR6DD
 - Sometimes he needs help in locating jammers / interference
 - He mostly can be reached on N6NFI 145.23 MHz (-) PL100
- Types of help
 - Reporting bearings from home
 - Steerable antenna or walking outside and taking a bearing
 - Reception and power reports are useful
 - Participating in a Hunt
 - Some experience in DF’ing required
- Interested?
 - Contact Mark Laubach k6fic@arri.net via email. A questionnaire will be sent back then passed on to Andy for his “processing”

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Antenna Fundamentals



Antenna Safety (Summary)

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Learning Objectives

- Effectively choose and deploy Antennas at your operations site
- Mitigate communications impairments by making changes to antennas or their setup
- Mitigate communications impairments by changing your operating procedure
- Know the limitations of your equipment
- Playing by the rules

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Antenna Fund. & Safety - continued

- ⌘ Effectively deploy and operate a multi-antenna, multi-radio, multi-band setup
- ⌘ Keeping it safe
- ⌘ Making it work

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Antenna Fund. & Safety - continued

Requires in-depth knowledge of

- ⌘ Antenna characteristics and placement
- ⌘ Radio characteristics
- ⌘ Feedline and antenna matching
- ⌘ RF isolation requirements for your radios

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Antenna Fund. & Safety - continued

Antenna Safety

- ⌘ Know your effective radiated power and distance requirements
(FCC mandated RF safety evaluation)
- ⌘ Keep wires and feedlines out of the way

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Antenna Fund. & Safety - continued

Mitigation of problems

- ⋄ Smart frequency planning (ICS-205)
- ⋄ Placement and adjustments of antennas
- ⋄ Lower power
- ⋄ Ferrite beads, choke baluns, filters
- ⋄ Only use one radio at a time

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Santa Clara County RACES Alerting Process

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AlertSCC notification - RACES

- This is different information from any you may have provided on the Santa Clara County AlertSCC website. That is for notification that you will receive from Santa Clara County Office of Emergency Services to residents of Cities within Santa Clara County.
- If you want to be notified by Santa Clara County RACES Staff in the event of an activation or pending activation then you need to ensure your AlertSCC information is current and complete. See the next slide for what you need to provide.

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REMINDER – under “My Contact Information”

Verify email and contact numbers

Be sure to update your Alert SCC information

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Cross-Band Repeating



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WHAT DOES THE FCC SAY?

- Sec. 97.201 Auxiliary station (a) Any amateur station licensed to a holder of a Technician, General, Advanced or Amateur Extra Class operator license may be an auxiliary station. A holder of a Technician, General, Advanced or Amateur Extra Class operator license may be the control operator of an auxiliary station, subject to the privileges of the class of operator license held. (b) An auxiliary station may transmit only on the 2 m and shorter wavelength bands, except the 144.0–144.5 MHz, 145.8–146.0 MHz, 219–220 MHz, 222.00–222.15 MHz, 431–433 MHz, and 435–438 MHz segments.
- (c) Where an auxiliary station causes harmful interference to another auxiliary station, the licensees are equally and fully responsible for resolving the interference unless one station's operation is recommended by a frequency coordinator and the other station's is not. In that case, the licensee of the non-coordinated auxiliary station has primary responsibility to resolve the interference.
- (d) An auxiliary station may be automatically controlled.
- (e) An auxiliary station may transmit one-way communications.
- [54 FR 25857, June 20, 1989, as amended at 56 FR 56171, Nov. 1, 1991; 60 FR 15687, Mar. 27, 1995; 63 FR 68980, Dec. 14, 1998; 71 FR 66462, Nov. 15, 2006; 75 FR 78171, Dec. 15, 2010]

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Santa Clara County OES ARES/RACES Frequency Lists



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SCC OES ARES/RACES Frequency List - updated

Santa Clara County OES, California
ARES®/RACES

Home | Operations | Packet | Training and Events | Reference Info | FAQ | December 8, 2011

OPERATIONS

Activation Info
AlertSCC System Information for Hams
ARES®/RACES Activation Level Definitions
RACES Activation Numbers

Contact Info
Direct-Dial Emergency Numbers, Santa Clara Co.
County Staff (DECA/DEC)
City Emergency Coordinators/Radio Officers

Forms and Signs
ICS Forms Used in Communications
Modified Mercalli Earthquake Reporting Scale
Modified Mercalli Earthquake Reporting Summary Form
Mutual Aid Request Forms
RACES Assignment Form (also MS-Word)
Radio Communications
Resource Net Training Photo (also MS-Word)
Resource Net Training Photo (also MS-Word)

Frequency Lists
County Voice Frequency List - (Updated 28-Feb-2011)
County Packet Frequency List and BBS Info

For the most current information on ALL of the frequencies used by SCC RACES , ALWAYS check the frequency lists on the Operations page.

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

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