



Ventura County ARES

Net Control Operating Skills

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1 Why We Have Nets

During an emergency communication situation, a high volume of disorganized messages can quickly turn an overloaded communication system into a disaster of its own. To prevent this from happening, we use networks, or nets, to organize the flow of messages. The mission of a net is to move as much traffic as possible in the least amount of time, accurately and effectively. Nets can be either formal or informal as needed.

1.1 Informal Nets

During an informal net, there is minimal central control by the Net Control Station (NCS), if there is a Net Control Station at all. Stations call one another directly to pass messages. Unnecessary chatter is kept to a minimum. Informal nets are often used during the period leading up to a potential emergency situation and as an operation winds down. Smaller nets with only a few stations participating are often run as informal nets.

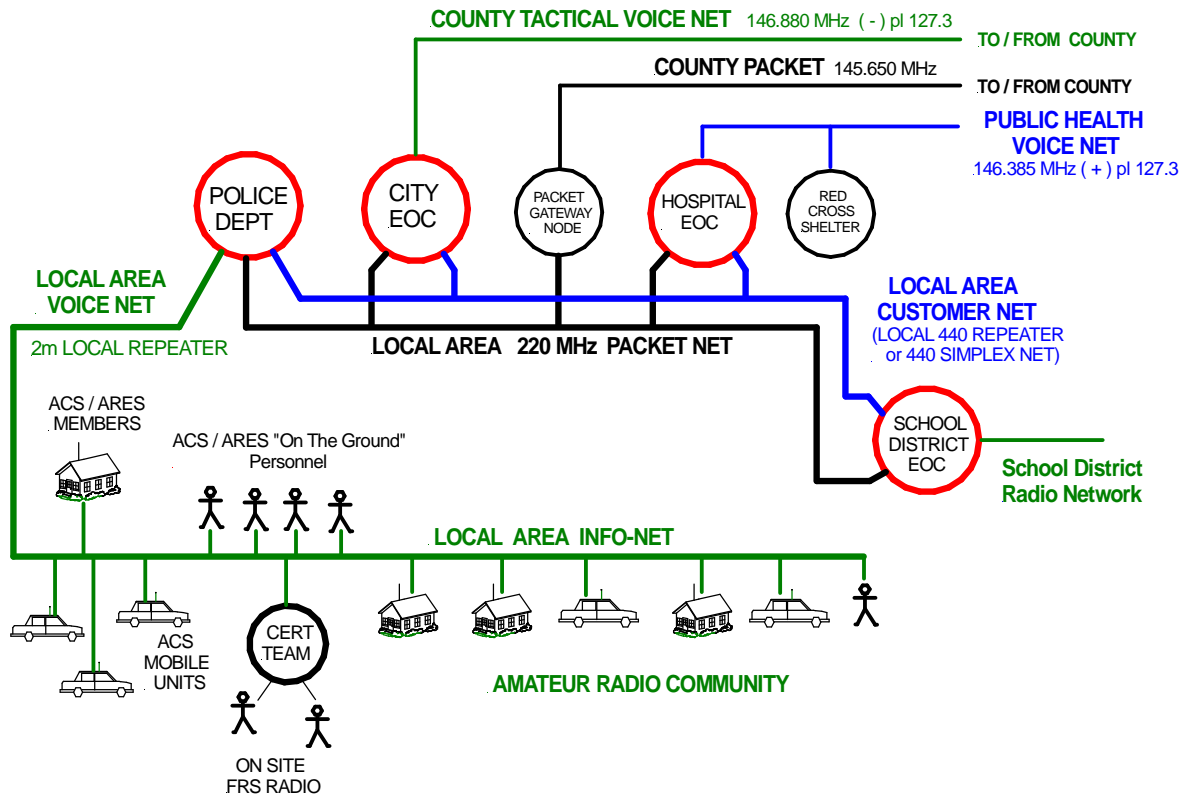
1.2 Directed (Formal) Nets

A directed net is created whenever large numbers of stations are participating, or when the volume of traffic cannot be dealt with on a first-come first-served basis. In a communication emergency of any size, it is usually best to conduct net operations on a directed basis whenever possible.

In a directed net, the Net Control Station runs the net. Radio operators are not allowed to break into the net or transmit unless specifically instructed to do so by the Net Control Operator. The Net Control Operator determines who uses the frequency and which traffic will be passed first based on priorities. For example, if Simi Hospital wishes to speak with Simi PD, the hospital must ask the Net Control Operator for permission to do so. "Net, Simi Hospital, request direct with Simi PD." The Net Control Operator may tell Simi Hospital to stand-by. When higher priority traffic has cleared, Net Control will call Simi PD and direct them to contact Simi Hospital for traffic. On a directed net, conversation is discouraged and tactical call signs will normally be used.

2 Net Missions

Each net has a specific mission, or set of missions. In a small emergency all the communication needs may be met by one net. In a larger emergency, multiple nets may be created to handle different needs. For example, in a large scale disaster three local Area nets could be in operation in addition to a number of nets external to the local Area. An example is shown in the following diagram.



- A local Area 440 MHz Customer Net provides voice communications between all of the local Area EOCs (Police Dept, City EOC, Hospital EOC, etc.) served by the ARES team.
- A local Area 220 MHz packet net allows the local EOCs to exchange packet messages, and to send packet messages to/from the County via a gateway node.
- A local Area 2 meter voice net provides communications with the local ARES members for incident staffing, communications with ARES mobile units, and local CERT teams. The net may also implement a local Area Info-Net for providing information to and obtaining information from local area amateur radio operators concerning the extent and magnitude of the crisis.
- In addition, it will be necessary for the local Area to communicate on several emergency communication nets external to the local Area. These include the County Tactical Voice Net, Public Health Voice Net, plus external nets to other organizations involved in the incident.

3 Anatomy of a Net Operation

A net is run by the Net Control Station. The Net Control Operator controls the flow of messages according to priority, and keeps track of where messages come from and where they go. The Net Control Operator also keeps a current list of which stations are participating in the net, where they are

located, their assignments, and what capabilities they have. In a busy situation, the Net Control Operator may have one or more assistants to help with record keeping.

The local Area Incident Communications Officer (initially the Area EC or one of the AECs) will activate and deactivate local Area nets and change net assignments as needed to meet the emergency situation. For example, during the early stages of an emergency all available local members will tune to the Area's Voice Net to learn what is happening and to indicate their availability should ACS be activated. If ACS is activated, the local Incident Communications Officer (ICO) will activate other local Area nets as needed in accordance with the Area's Emergency Communications plan.

Messages often need to be passed from one net to another. To do this, specific stations will be assigned to serve as the gateways between designated nets. These stations will monitor both nets and act as a go-between.

4 Net Control Operator

The role of the Net Control Operator is similar to that of a traffic cop. A traffic cop stands in the middle of an intersection directing vehicle traffic. The Net Control Operator resides conceptually in the middle of a radio net directing message traffic. A traffic cop sees cars approaching and directs them according to current traffic conditions, always away from accidents and points of congestion. The Net Control Operator directs the waiting message traffic so that it flows quickly and in a smooth manner to its destination in accordance with message priorities. Both traffic directors have to sometimes make decisions that sends some of the traffic on routes other than that desired so that the overall traffic flows as smoothly and quickly as possible.

The traffic cop must be nearly unbending in the execution of his job. Cars must move exactly as directed. The same is true for the Net Control Operator. The operator must **take control** and **be in control** of the radio net at all times or there is no control. That means that the operator must be assertive, ensuring that proper net procedures for the situation at hand are being followed! However, assertiveness must never be aggressive in nature or tone and must be done in a manner that does not strain relations with the personnel on the net. Authority must be exercised tactfully but firmly, with fairness, and without delay.

The Net Control Station may be located almost anywhere that is relatively calm and quiet. Locating the Net Control Station at a busy EOC is not a good idea. The noise and confusion at such a location will be extremely distracting, making it very difficult for the Net Control Operator to concentrate on his or her job. If a Net Control Station must be located at an EOC, try to select an EOC where conditions will be conducive to net control operations. An excellent location for a Net Control Station is at the home of the Net Control Operator, provided the operator and his or her spouse is willing to invite assistants into their home to help handle the net. The Net Control Operator should not be working alone. Using a private home as a Net Control Station is an excellent option that should always be kept in mind. There is also no need to designate a permanent location for a Net Control Station. The Net Control Station can be moved from one location to another, for example during shift changes, as the emergency evolves and conditions change.

4.1 Basic Techniques Employed by Successful Net Control Operators

Listen carefully. When asking for reports or soliciting traffic, listen carefully! This might seem obvious, but it is easy to miss critical information when operating under the stress of an emergency situation.

Do not think on-the-air. If you need a moment to consider what is needed next, tell the net to stand-by and un-key your microphone.

Keep transmissions as short as possible. This is extremely important.

Stick to the facts. Ensure that the members of your net do not discuss event details (victim names or circumstances) over the air unless directed to do so by an Incident Command Section Manager. There are no exceptions! Emphasize the need for members to always be as accurate as possible and to stick to the official facts as they know them. Information taken out of context or overheard may be inaccurate and misleading.

Be as concise as possible. Use the fewest words that will completely say what you mean. This will minimize the need for repeating instructions and messages.

Be friendly, yet in control. Speak slowly and clearly with an even tone, but not a monotone. Speak with confidence, even if you are inwardly nervous.

Do not use angry comments over the air. Courtesy is contagious. “Please” and “Thank You” are the most powerful tools at your disposal.

Use a script when possible. This promotes efficient operation. If you have time, annotate your script with updates before you start the net. Have the applicable preamble handy, and a roster to keep the net moving smoothly. A roster also assists in keeping names, calls, and locations together.

Ask specific questions – give specific instructions. This reduces the need for “repeats” and prevents confusion.

When there is a double. When there is a double (when two stations transmit on the same frequency at the same time), listen to see if you can identify either station by call sign or by context. Ask all stations to stand-by. If you can identify one of the stations, respond to that station first. If you can not identify either stations but you got a piece of one of their calls, for example RZ, then ask the station with the call ending in RZ to come back. Finally, ask the second station to come again with his or her call sign.

On the job training. One of your jobs as a Net Control Operator, is to remind members of proper net procedures. For example, if someone is not leaving enough time between exchanges for others with higher priority to break in, then remind them to leave more time. Their reaction will typically be, “oh yes, I forgot.” If the first parts of their transmissions are being cut off, remind them to wait longer after keying their mic before speaking. When traffic on the net is intense, people will become so focused on doing their jobs that they forget to identify with their legal FCC calls. As Net Control

Operator, you should remind them to do so at the end of their message exchanges. However, one thing you must never do is criticize someone on the air. It is better to lead by example, it produces better results.

Have pencil and paper ready and write down all calls. Practice writing down calls when you are not the Net Control Operator.

During check-ins, recognize participants by name whenever possible. It helps boost morale.

Handling call-ins. For efficiency when a number of stations are calling in, note on your worksheet as many calls as you can before you acknowledge anyone. Acknowledge all stations heard, and then yield the frequency to any station reporting in with emergency traffic. Clear all emergency traffic first, then turn to stations with high priority messages, and finally to those with routine messages.

Handling long exchanges. Move stations to a secondary net, if possible, when a protracted exchange of information is required. If moving to another frequency is not practical, instruct the two stations to leave plenty of time between their exchanges to allow others with higher priority traffic to break in. In addition, instruct the two stations to periodically turn control back to you (back to the Net Control Operator). If you determine that there is not higher priority traffic pending, then you can give the two stations permission to continue with their exchange.

Look for emergency and high priority traffic. Break from the routine of message handling frequently to solicit and clear any emergency or high priority traffic. This is especially true when longer formal messages are being passed.

If the net has been quiet for more than ten minutes, do a roll call of net stations. This keeps the net running more smoothly, verifies that everyone is ok, and ensures that you know about equipment failures and missing operators as soon as possible.

If the net is active, but you have not heard from certain stations for awhile. Call these stations to ensure that they are “ok”.

Take frequent breaks. While you may not recognize the stress that being a Net Control Operator produces, it is constant, and will become evident in your voice. If you are asking yourself when your last break was, you know it is time to take one. Turn over the net to your backup at least every two hours and rest. Do not listen to the net rest! Once rested, listen to the net for a few minutes before resuming as the Net Control Operator to become familiar with what is currently happening.

Control the tone of your voice. Be as calm as possible. Tension tends to cause voices to increase in pitch, and the net members will detect this change. Use a calm tone and members of the net will tend to remain calm as well. Remember to speak with confidence and authority. A weak or indecisive demeanor undermines your effectiveness as a Net Control Operator, and consequently the productivity of the net. Panic breeds panic. The worse the situation gets, the more you must slow down and remain calm.

Making net decision in a dynamic situation. The best way to enlist the cooperation of net members in a rapidly changing situation is to explaining to the net what changes you are making in a calm and straightforward manner. A net is not a democracy. You are in charge, you make the final decisions. Having said that, it does not diminish your authority to ask the opinion of someone on the net that is an authority on the particular problem facing the net, or has special knowledge because of their current location or assignment, or is someone whose judgment you simply trust. But, as the Net Control Operator, you make the final decision. You are the one responsible for that decision, not the person giving you a recommendation. Your decision must be decisive and clear. You will gain the respect and confidence of the net members by doing this. They know as well as you do that you are not an expert in everything.

You will make mistakes. Acknowledging them will earn the respect and support of net members.

Keeping a log. Finally, keep a “running” log of the important events that took place while you were the Net Control Operator. Each entry in the log must be accompanied with the time and date of the entry. You may need an assistant to do this. The log will be very important for the person relieving you during a shift change, and quite possibly for after action reports.

4.2 What Makes a Good Net Control Operator?

We all have talents. Some of us are natural Net Control Operators, some of us are not. A new amateur radio operator who has just passed his Technician Class exam may be a far better Net Control Operator than someone that has been an ARES member for years. There is a lot of natural talent that goes into being a good Net Control Operator. The Incident Communications Officer (ICO) must assign the job to the best Net Control Operator that is available at the time.

Here are some of the characteristics that an ICO looks for in a good Net Control Operator.

- A clear speaking voice: someone who talks as though they have a mouth full of marbles won't do.
- Fluency in the language: if you have a thick accent or cannot use the language precisely, it may make it difficult for others to understand you.
- The ability to think quickly, focus your thoughts, and say what you mean in as few words as possible.
- The ability to handle mental and physical stress for long periods. Information and demands will be coming at you from all directions all at once, sometimes for hours on end. Can you handle it without losing your composure, or your voice?
- The ability to listen and comprehend in a noisy and chaotic environment. Can you tune out all the distractions and focus only on the job at hand?

- Good hearing. If you have hearing loss that makes it tough to understand human voices, it is probably not a good idea to have you be the Net Control Operator of a voice net.
- The ability to write legibly what you hear as you receive it.

You may look at this list and think, well that lets me off the hook. I never have to worry about being a Net Control Operator. Your EC will probably disagree with your personal assessment and you will find yourself, at some point, running a net.

We all need to practice the Net Control Operator skills, including complying with the above list the best that we can. For that reason, your EC will ask you from time to time to serve as the Net Control Operator in non-critical situations such as the weekly Tuesday night check-in net or during public service events. This practice is important because there will be situations when you are the best Net Control Operator available. We all need to train so that we can step in and do the job if necessary.

Acknowledgement

This material is based in part on the ARRL CCEP Amateur Radio Emergency Communications Course, Levels 1, 2, and 3. Refer to the ARRL web site at <http://www.arrl.org/> for information on these courses.