

Attachment E

NETWORK OPERATIONS

Concept of Operations – Large Scale Events

ARES' primary goal is to move Priority and Emergency precedence formal and tactical messages past broken or overwhelmed normal communication circuits, using both voice networks and digital systems. If normal means are still functional, they should be used unless the ARES system is faster.

NH-ARES usually operates voice nets on two interconnected levels, with liaisons between them and to outside nets (MARS, NTS, etc) as required. These nets facilitate the movement of messages, notify recipients of incoming Winlink email or other digital messages, and provide a means of coordinating ARES efforts, including ARESMAT requests. Formal messages are handled by voice nets only when digital options do not exist.

The bottom level voice net is the Local Area Net, under the direction of each area's LAC, and is administered by a Local Net Manager. This net connects all served agencies and locations within the group's assigned operational area. Local Area Nets operate on frequencies listed in Attachment E.

The top level is the ARES Section Coordination and Traffic Net (ARES Section Net), which connects Local Area Nets with each other and with state-level agencies, such as the State EOC and the Red Cross, and with nets outside the NH Section. This net is under the overall direction of the ACO, and administered by the ARES Section Net Manager.

While not a net in the usual sense, the Winlink radio email system and its supporting packet infrastructure are used to move more detailed messages digitally. The voice nets and digital systems support each other but serve different purposes. (See Attachment M for Winlink plan details.)

Section Net Liaisons

Each active Local Area Net will have at least one Liaison Station moving messages between their Local Area Net and the Section Net. Each Local Area Net Manager or NCS is responsible for assigning a qualified operator as the net's liaison to the Section Net as long as both nets are in session.

For nets outside NH-ARES, the Section Net Manager or NCS will assign one or more stations to act as liaisons with those nets, unless one has already been assigned from the other net. This includes both the National Traffic System (NTS) and MARS networks, as well as the Section Nets of any neighboring Sections that might be active.

In a wide-spread emergency where all normal communication in and out of the state is impaired, the NCS may opt to assign a station to full time NTS liaison duty to accept any incoming traffic. The MARS network will provide its own net liaison once a request is made through the ASEC MARS, if MARS has not already done so on its own.

Agency stations, such as the State EOC, may check directly into the Section Net to move messages. If HF facilities are not available, a nearby home HF station can be assigned to relay messages via VHF or UHF.

Moving Messages Beyond the Section's Nets

For messages addressed to locations outside the New Hampshire Section, the primary method is to send them via Winlink into the Internet email system. In situations where the destination's Internet status is in question, or where the email address is unknown, the Section Net's NCS may opt to ask a station to pass the message through the MARS digital network (1st choice), or to contact an appropriate NTS net. All such outbound messages must contain a Radiogram header.

Section Traffic and Coordination Net (Section Net)

The Section voice net is intended primarily for coordination of message routing, and for directly passing short tactical messages, but not for actually moving formal written messages under most circumstances. Formal written messages can be passed either via Winlink, or between liaison stations by voice on another

Attachment E

NETWORK OPERATIONS

frequency, or by any mutually available digital mode. This helps keep the main Section Net frequency free for coordination of other traffic and emergencies, and increases overall message throughput.

Net frequencies are listed in Attachment E. The net usually operates as an HF voice net. The Section Net Manager may opt to use VHF/UHF FM in cases where all active local area net liaisons are within range of a single wide-area repeater or network.

In cases where HF propagation, interference, and widespread repeater failures prohibit usual operations, the Section Net may be operated on a suitable 6m or 2m simplex frequency. The choice of band will be made by the Net Manager or NCS, and will depend on equipment available in each local area for both primary and alternate liaison stations. ECs and net managers should identify hilltops with RF paths to both Concord and local nets.

Finding & Contacting the Section Net

If you are unsure where the Section Net is operating, consult Attachment E for the list of possible frequencies. The Net Manager will usually try to establish the net on HF first, using 40m during the day and 80m at night. If propagation or interference makes HF unusable, the net may be found on the K1JY UHF repeater network or on the listed statewide 2m FM simplex frequency. In rare cases, the net may be operating on one or more repeaters not on the list, especially where the event is regional and only affects a few ARES groups.

Digital Message Notification via the Section Net

When a message is sent between NH-ARES stations via Winlink or other digital means, that area's liaison station should be notified via a tactical message on the Section Net. The liaison station should in turn notify the local station of the incoming message so that they will know to check their Winlink or PBBS mailbox.

Simplex Section Net Operations

In the rare event that HF is unusable, and there is no common repeater or system on which to operate the Section Net, the Net Manager may opt to hold the net on 2m or 6m FM simplex, depending on available resources. Liaison stations will need to locate on a hill with both a path to Concord, and adequate coverage of their own area.

The network topology will be somewhat different than usual in this case, since it is unlikely that all liaison stations will be able to hear each other directly. Relays will almost certainly be required, and some creative means may be required to move digital messages.

Ad Hoc Point-to-Point Circuits

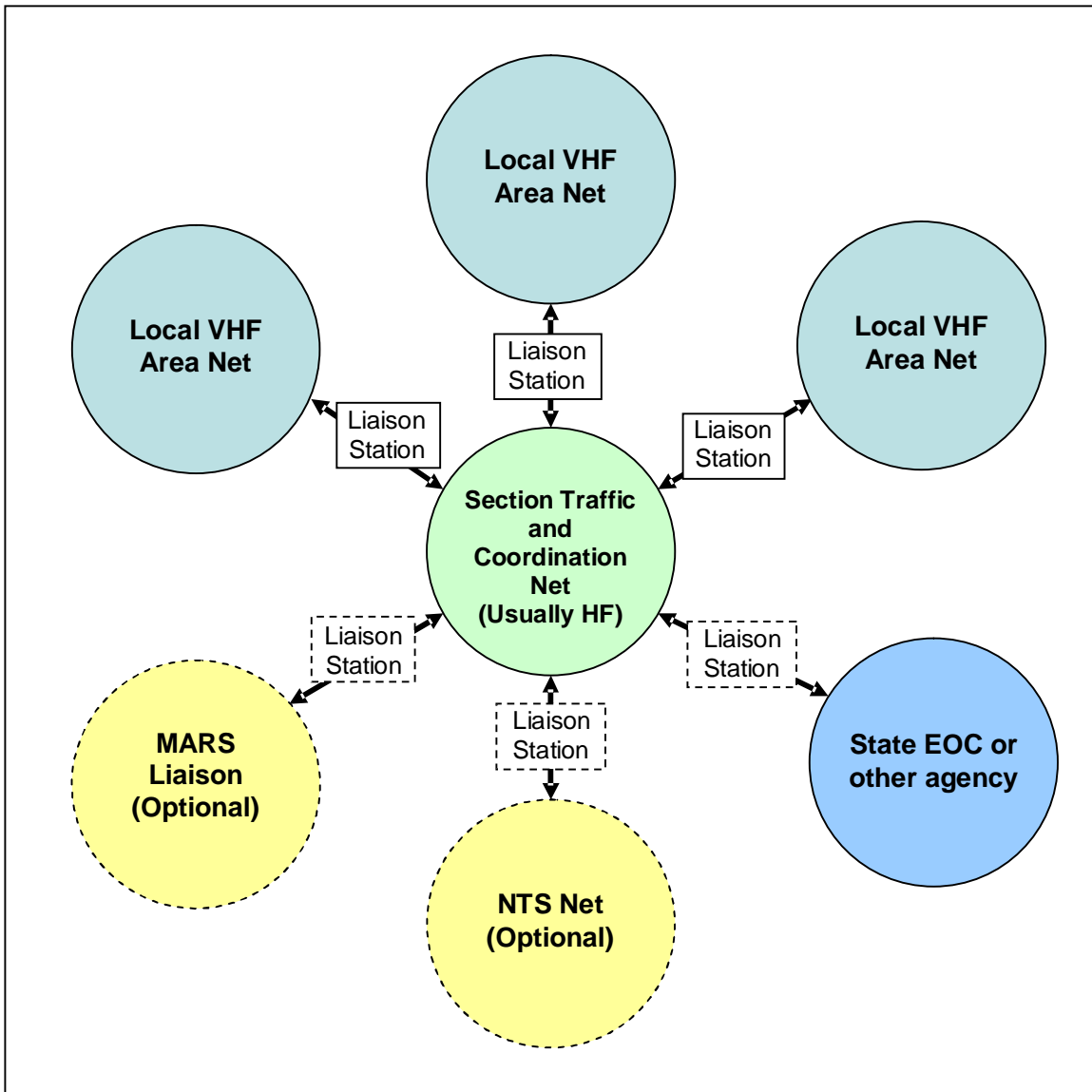
Ad hoc voice or digital circuits (not coordinated by the Section Net) are useful in several different circumstances: 1) Conditions do not permit contact with the Section Net; 2) Most traffic is going to one area or location; 3) The Section net is overloaded. Even when most traffic is being moved via such a route, the local group should provide a full time Liaison to the Section Net to accept any incoming traffic. The Section Net NCS should be notified of the existence of the ad hoc circuit.

Concept of Operations – Small Scale Events

Where a small number of local nets are in operation, and are communicating mostly with the State EOC, the State EOC station may directly monitor and join the local nets. If the repeater is out of range of the State's radios, a relay station should be established. See Attachment K for details.

Section and Local Network diagrams are on the following two pages...

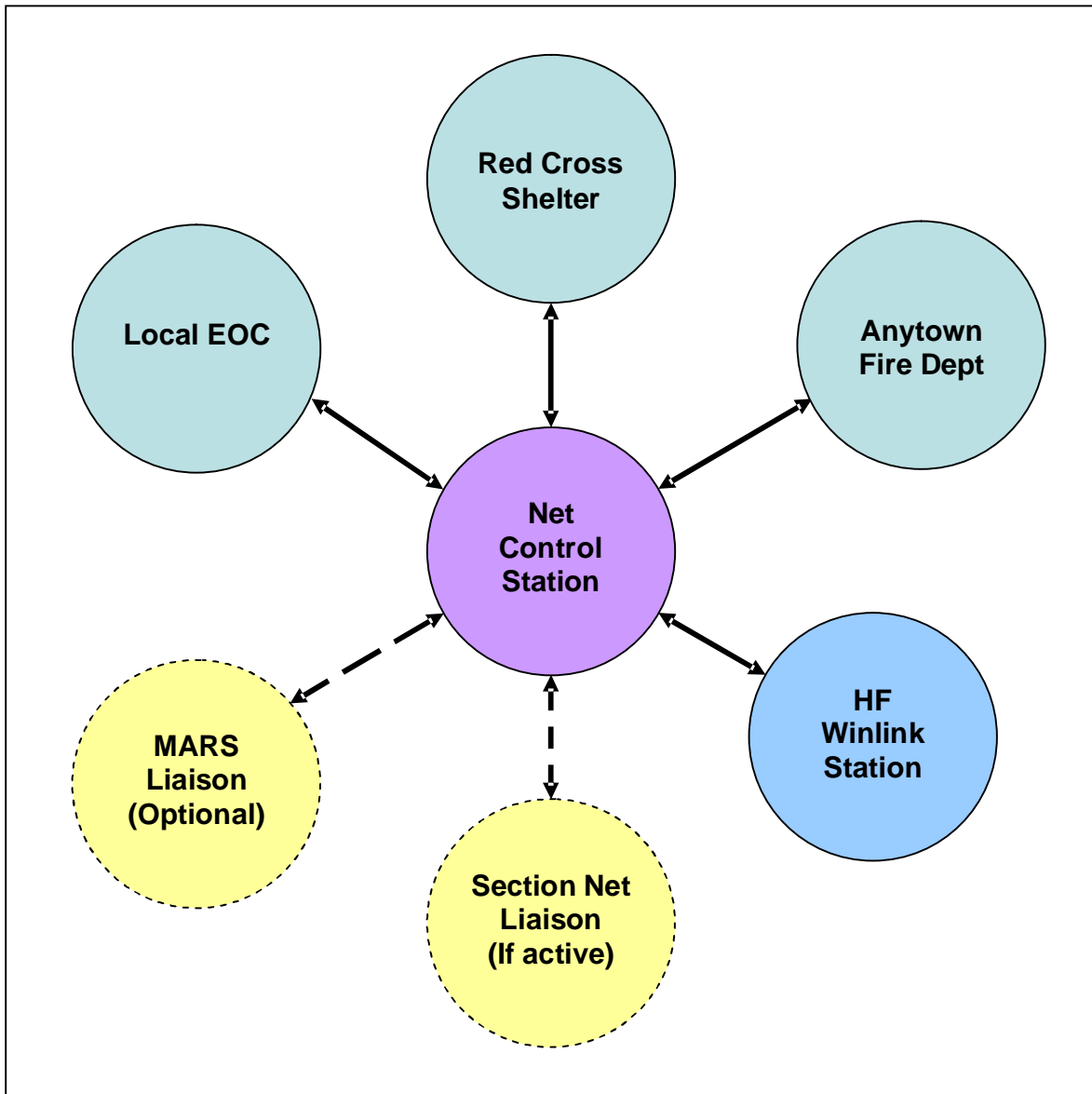
Attachment E
NETWORK OPERATIONS



Statewide Net Structure – Functional Diagram
(Actual net structure may include more local nets and agency stations)

The Local Net diagram is on the next page.

Attachment E
NETWORK OPERATIONS



Typical Local Net Structure
(Actual net structure may include many more stations)