

NATIONAL MILITIA STANDARDS

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8.0 COMMUNICATIONS S.O.I.

8.1 Training Standards

Mission success depends on the unit commanders ability to concentrate superior fire power at citical times and places. The key to this success is superiority in command and control via communications. Effective commo is essential to both the survival and the combat readiness of all units.

To be competant in the field under adverse operating conditions, all Signal Corps personnel must meet the following MilComm training standards.

Team Radio Operator (TRO) Profile

The TRO will carry, operate and maintain the teams radio equipment. He must have a thorough understanding of it's potential as well as it's limitations and how to overcome them. He will aid the Team Leader by maintaining contact with the other teams in the field and / or the Base Command Structure. The TRO will train and become profecient in:

1. Basic Operating Procedures
2. COMSEC
3. Basic Signal Intelligence gathering
4. Digital Encryption System
5. SitRep / SALUTE S.O.P
6. Alert S.O.P.
7. Unit CEOI
8. Construction of covert, field expediant antennas

Communications Officer Profile

Is responsible to his unit's Command Staff for the creation and implementation of communications systems and protocal within his respective Area of Operations. The CommO will create, implement, and oversee the Rapid Alert System. He will see to it that a secure system of communications is implemented and will be in charge of all communications protocols, codes etc. He will coordinate his efforts with his respective Intelligence Officer and his Commander. He will create and oversee the SigInt network. The CommO will be the Net Control Operator (NCO) for his A/O and will be an integral part of the Regional (Batn) and State Comm Network.

The Communcations Officer must be trained to the following Militia Signal Corps standards in addition to those of the TRO:

1. Must have a thorough knowledge of Signal Corps organization on both the Tactical and Strategic level.
2. Must be profeciant in Net Control Station (NCS) operating procedures; And, meet the minimum equipment requirments to fulfill his assigned mission.
3. Must be profeciant in PSK-31 ops
4. Must be able to send and receive morse code
5. Must have a thorough working knowledge of all MilComm coding systems and protocols.
6. Must be abe to developpe and implement a battalion level (regional) Rapid Alert

- System for integrating communications with local units and teams in the field.
7. Must be trained and equipped to maintain contact with Regional, State and national comm networks.
 8. Must be proficient in and equipped to gather Signal Intelligence (SigInt) and to coordinate those activities with the his units Intell Officer and C/O.

8.2 SIGNAL CORPS ORGANIZATION

Purpose And Overview

Presently, it appears to many people that there exists an immediate necessity to set up a system of national communications which encompasses support for local and regional communications sub-systems. The objective is to be able to readily disseminate communications deemed to be of emergency nature.

Obstacles

Although there are logistical and economic concerns, security is the main obstacle to overcome in establishing a national and regional communications system for use by the established local units.

Definitions

For purposes of defining terms used herein, the following words, terms, or phrases shall have the following meanings:

Division - as used herein the term Division is synonymous with region.

Region - as used herein the term region means the pre-determined extent of the area of operations of any local unit or Division. Regions/Divisions are established by state Militias.

AO - means Area of Operations.

Equipment - means radio communications devices.

Comm Section - means radio stations established for relay of sit-reps between Militias.

Proposed System: Integrated networks

1. Local Units - If organized by Militia Divisions within a state, all participating Local Units would have the capability to initiate sit-reps to their respective Division Comm section, by means of the equipment available in those Local Units, otherwise, Local Units would communicate directly with established state Comm sections for in their respective AO.

2. Division Comm - If organized by Militia Divisions within a state, Division Comm sections would subsequently make sit-reps based on sit-rep information received from Local Units to established state-wide Comm stations by the means of the equipment in their respective Division Comm sections, otherwise the state comm sections would receive local sit-reps.

a. As Division Comm sections receive and relay sit-reps from Local Units to state Comm sections, Division Comm sections would of necessity be required to have a broad range of equipment . A system of standardization would narrow the range of equipment required by both Local Units and Division Comm sections, thus enhancing economic concerns by reducing the broad range of different types of equipment necessary to meet the needs of receiving Local Unit sit-reps while shifting the emphasis upon use of codes and/or encryption means.

3. State Comm - Within each state there should be a minimum of 3, maximum of 24,

relay stations operating on a 24/7 basis, capable of receiving sit-reps from all Divisions within state geographical area and subsequently passing sit-rep to ERPN at regularly scheduled time of transmission, or, during emergency to a designated national Comm section.

- a. State Comm relay stations operating on a 24/7 basis are necessary for purposes of handling emergency traffic from Division and Local Units, passing that traffic along to a national communications section for processing and re-distribution. (NOTE: A working example of how such a system could be applied can be observed by monitoring what is called "MidCARS" on 7.258 MHz. "MidCARS" is an mid-America regional Amateur Radio Service which passes traffic along to any stations checking into that net. Numerous stations act as Net Control operators and pass along and periodically transfer Net Control operations along to another station to assume Net Control operations, usually hourly. If a full compliment of 24 state control operators were established in each state, each operator would serve as Net Control for 1 hour.)
- b. It should only be necessary for one state relay station to pass traffic to ERPN during regularly scheduled Net operations. The then current operating state Net Control station would pass sit-rep traffic to ERPN. Dependent upon the number state relay stations acting as Net Control a rotational schedule could be assigned to the participating state Net Control Comm. section.
- c. State Comm stations would be required to have available at that station a broad range of communications equipment for passing traffic between Local Units, Division Comm. sections, and ERPN.

The foregoing would require several means of communications hardware and software, (i.e. voice, analog, digital) be available for receiving and sending traffic within the various Division and state levels. This would provide to local units the means to monitor traffic between Division, state, and national communications stations dependent upon individual local units equipment availability.

Participating Local Units can issue sit-reps other Local Units, Division and/or state Comm sections, dependent upon state Militia structure, using designated "public" sit-rep frequencies and/or alternate sit-rep frequencies which are monitored 24/7. Normal sit-reps or emergency sit-reps will be relayed according to established SOP's which control use of net operations, and which shall, in case of emergency situation, allocate sit-rep frequencies, tac-frequencies and callsign designation, and any other pertinent tactical information.

8.3 TACTICAL COMMO 101

Communications is equally as important to your survival as planning and organization. During a disaster all forms of communications in current use may fail or be shut down by the government. Every group must set up a reliable means of commo in advance that is totally independent of outside control or power sources. Commanders who fail to implement tactical networks and comm plans will be unable to command, control or coordinate thier forces. They will be deaf, dumb and blind during a crisis.

Tactical Comm. Defined

Tactical communications are short range, ground-wave (line of sight) commo used in your Area of Operations between team members, teams, squads and thier firebase or command center. Tac Com also includes the Local and Regional networks. Local is for the Rapid Alert System within your county. Regional is the counties surrounding your A/O.

Range of Operations

Normal range may be considered .5-5 miles for team to team commo, 5-15 miles for team to base communications and up to 50+ miles for base to base commo.

Purpose

Area Commanders use Tactical Communication to direct fire and movement, call for resupply, reinforcement, medevac etc., operate the local Rapid Alert System and to maintain contact with other units in surrounding counties.

Tactical Networks

Consist of 3 base radio stations per county, equipped for SSB/Encrypted PSK-31 operation; plus mobile radios in EVERY vehicle. These base stations provide commo between the base of operations and the teams deployed in the field. They will also act as relay stations between the different A/Os within the region. They will remain operational on a 24 hour basis during a crisis or when the teams are deployed. They will monitor all unit freqs and gather SigInt from enemy communications. They must be able to receive and transmit over long distance using self contained power sources.

C.E.O.I.

Communications Equipment Operating Instructions- C.E.O.I-are contained in a small laminated notebook and are to be carried by all comm personnel. Every tactical network and team must have this to avoid confusion and to maintain OPSEC.

The CEOI contains: 7 split-frequency pairs to be used on a rotational basis, net/tac callsigns with an authenticator keyset, codes in use for the net and units during an activity, operation or period of time, and other instructions as needed. Codes are randomly chosen letter number groups of varying length (may resemble the 10-code) Different codes are used for the same thing. All codes and frequencies must be changed often, even daily.

NOTE For detailed information about Communication Security procedures study: CommSec hXXp://155.217.58.58/cgi-bin/atdl.dll/fm/24-12/Ch7.htm

Equipment

Tactical comm equipment must be lightweight, portable and have sufficient range to maintain contact with all team members and the base of operations. It must also be compatible with the base station equipment in use.

Band and Equipment Overview

Several bands and modes are available that will meet the above criteria. UHF-High Band / VHF-Low Band and the Freeband.

UHF-High Band

UHF is strictly limited range, line of sight communications better suited for the urban environment. UHF signals penetrate buildings and metal clutter well, but the signal is attenuated or absorbed by dense foliage and heavy terrain.

FRS: Most groups are familiar with or use Family Radio Service equipment. FRS has 14 UHF channels, a maximum output of .5 watt, a fixed (non-removeable antenna) and a very limited real world range of about 1.5 miles.

FRS radios only use is for clear, simple to use communications within a team. They

have very limited range, No privacy and being FM are very easily DF-ed. The so called "privacy codes" aren't. All they do is limit YOUR ability to hear others on the same freq. near you. Also, don't waste your money on encrypted units. Most use simple speech inversion circuitry which will confuse the basic moron; but won't slow down a smart 12 year old with access to common gear laying around the house. If "da man" is within range...encryption ain't gonna help you anyway.

GMRS: A better UHF solution for urban ops is the General Mobile Radio Service. GMRS has 23 FM channels (7 of which are compatible with FRS). The first 8 channels are for base/mobile/HT simplex use: 462.550, .575, .600, .625, .650, .675 (Emergency Channel), .700, and .725. There are 8 freqs. in the 467.000 mhz band that are for repeater input use only. Next, there are 7 interstitial channels located between the regular GMRS freqs. that are compatible with the first 7 FRS freqs. These are: 462.5625, .5875, 6125, .6375, .6625, .6875 and .7125.

Equipment is available with up to 50 watts output for up to 25 mile range. Most HT's have 15 channels with a 2 watt output. Range is approximately 5 miles. Midland currently offers a mil. spec. HT with all 23 channels and 2 watts erp. Other companies are offering HTs with up to 5 watts erp, 15 channels plus NOAA weather scan. Prices are around \$150.

For increased range, All of these HT's can be upgraded with 1/2 wave 2.5 db gain whip antennas. For mobile operation, mag mount antennas are available with up to 5 db gain.

To set up a GMRS network for your AO that has approx. 6-15 mile coverage; take a 5 watt HT with a speaker mike and connect it to an outdoor antenna mounted 20-30 feet high. Use the best low loss 50 ohm coax you can find such as LMR-400. Keep the cable run 50 feet or less. For general coverage in all directions use a omnidirectional vertical such as a J-pole or one of the readily available commercial antennas. To increase your range further, and for a little more comsec, take a 10db gain 440mhz 4-element beam, cut it down for 1.1 swr on the GMRS band and turn it with a tv rotor. You could also build this antenna out of rigid copper pipe for almost nothing.

NOTE

The FCC demands that you pay a \$75 tax (license) to operate on GMRS. They readily admit that the purpose of the tax is to "catch scofflaws" who owe child support or the IRS. Due to the short range nature of GMRS, enforcement of the rules has been rather lax. Anyone can buy a GMRS rig and most are tossing the paperwork in the trash. No one will check to see if you have a license unless you interfere with another licensed operator. So, NEVER interfere with a frequency when it is in use or another operator.

Also, the FCC issues a callsign with each new license. It is a 3 by 4 call that should be very familiar to the old Class D CB operators. A GMRS call will look like this: KFW-1234. So, if you don't have a call...make one up.

BE aware that the FRS/GMRS frequencies are in the same band used by local, State and Federal law enforcement agencies and that they can monitor your commo in split second.

VHF-Low Band

Here's where it starts to get interesting. VHF Low Band is preferred in rugged terrain because LB signals are much less affected by hills or dense foliage than VHF (2-meter) or UHF. This is probably the reason why the military uses tac comm radios that operate from 30.000-87.975mhz.

6-Meter Low Band (50.-54.000mhz) is well suited for tac com operations at the local and regional level. In most areas of the country this band sees little use and has been all but forgotten by the Tech class hams who think that 2 meters is the only band. There is little interference or overcrowding.

Typical mobile range is 40-50 miles. During years of high sun spot activity, occasional band openings allow base stations running beam antennas and power to reach out several hundred miles.

HT's for this band operate in the FM mode with an output of 5 watts. This is plenty of power for 5-15 mile range. Field expedient antennas for 6 meters are small, easily made and will increase the range even further. Mobile rigs such as the Ranger 5054 will operate CW, SSB or FM with 25 watts output. Most of the 6 meter HT's and mobile rigs can be broadbanded to cover the military frequencies which has many advantages. Quarter wave mobile whip antennas are approx. 4.5 feet tall and cost about \$25.

ARRL 6-Meter (50-54mhz) Bandplan:

50.000-50.100 CW, beacons

50.100-50.300 SSB, CW

...50.100-50.125 DX subband

...50.125 Old DX SSB Call

...50.200 New DX SSB Call

50.300-50.600 All Modes

...50.400 AM Call

50.600-50.800 Digital

...50.620 Packet Call

51.000-51.100 West Coast DX

NOTE

All freq.s above 51.10 are spaced 20 kHz apart on "even" channels.

51.500-51.600 Simplex (6 channels)

51.120-51.480 Repeater Input (19 channels)

51.620-51.980 Repeater Output (19 channels)

52.000-52.480 Repeater Input (23 channels except...)

..52.0-52.04 FM SIMPLEX

52.500-52.980 Repeater Output (23 channels except)

..52.525 PRIMARY FM SIMPLEX

..52.540 SECONDARY FM SIMPLEX

53.000-53.480 Repeater Input (19 channels)

..53.000 BASE FM SIMPLEX

..53.020 Simplex

53.520-53.980 FM Simplex

Upper HF 12-11-10 Meters

Being at the upper end of the High Freq. scale; these bands offer long range nationwide comms during daytime band openings and have excellent propagation in hilly, forested terrain. Groundwave signals will cover 60+ miles base to base, 24

hours a day. During band opening ranges of thousands of miles are possible. First Europe and the North will come in then as the day advances, Latin America, the Pacific West and Australia. These bands usually open about 1 hour after sunrise and stay up until around 9 pm local at night. A 25 watt, broadbanded mobile rig, such as the Ranger 2950DX or the old Uniden HR-2510 coupled to a 102 inch steel whip will have a range of approx. 35-40 miles. The mobile rig will work well for a 40-60 mile coverage base station with a power supply, set of meters/tuner and a vertical 5/8's wave antenna mounted 36' high. For a little more stealth and increased range, use a 3 element horizontal beam, a tv rotor and 40' mast. Most hams operate in USB mode on these bands while the freebanders tend to use LSB.

ARRL 10-Meter Bandplan:

28.000-28.070-CW
28.070-28.150-CW/Data
28.120-28.189-Packett/Data/CW
28.190-28.300-CW/Beacons
28.300-28.500-Most SSB activity
28.500-29.699-SSB and FM
28.590-ARRL Emergency Net
28.680-SSTV
29.300-29.510-Satellites
29.510-29.590-Repeater Inputs
29.600-National FM Simplex Freq.
29.610-29.690-Repeater Output (Base)

Freeband-27.405-27.995 (Upper Band)
27.500 National MilComm Monitor
27.555 National DX Call Freq.

11-Meter-26.965-27.405 (CB)
27.385LSB-Ch.38-National Contact Freq.

Freeband-25.000-26.960 (Low Band)

12 Meter-24.890-24.990
24.890-24.930-CW/Data
24.930-24.990-USB

Militia Signal Corps Tactical Bandplan

The following simplex frequencies are for Initial Contact only. Use them to contact friendly forces when you are out of your area of operations. Do not use these freq's for any mission critical information. When calling for a militia contact on these freqs: Call "CQ for the MSC DX group". All groups nationwide are urged to monitor these freq.s 24/7.

Tac1 27.325 AM/LSB-Alternate Call (Channel 32)
Tac2 27.385LSB-Primary Local Call (Channel 38)
Tac3 27.555LSB Primary DX Call
Tac4 29.600FM Simplex Call
Tac5 52.525FM Simplex Primary Call
Tac6 52.040FM Simplex Alternate Call
Tac7 146.485FM Simplex Call

Tac8 146.520FM Simplex Call
Tac9 462.6125FM (channel 3 FRS)

MINIMUM EQUIPMENT REQUIREMENTS:

1 FRS/GMRS radio and spare batteries per team member.

Team Radio Operators Field Gear:

- *1 Gear bag
- *1 GMRS Radio with hi-gain whip antenna per team, 2 per squad
- *1 200 channel scanner;
- *NOTE-Option* The Yaesu VX-5r HT can replace all squad radios as well as do double duty as a scanner. It will give you the ability to TRX on 6 & 2 meter, 70cm (440) FRS/GMRS, MURS and many other freq's. It can also monitor HF shortwave as well as military, aircraft and all local, State and Federal agency freq.s
- *1 Headset w/boom mike for radios
- *2 Red light sticks and/or mag-lite with red filter
- *1 C.E.O.I on laminated 3"X5" cards
- *1 Notepad w/pencil
- *1 Topo map of teams Area of Operation
- *1 Mini-binoculars 12X25
- *1 Manpack rechargeable battery system (7ah with various connectors to adopt to all squad equipment)

For further information study:

Tactical Single Channel Radio Comm Techniques study:
hXXp://155.217.58.58/cgi-bin/atdl.dll/fm/24-18.htm

Also, study the Milcomm Organization, and Rapid Alert System threads in the comm forum.

For those who know nothing about tactical communications read:

Basic Tac-Comm

hXXp://www.netside.com/~lcoble/dir9/commo.htm

8.4 RAPID ALERT SYSTEM

Purpose

All local, state and national units need to implement, maintain and regularly test a Rapid Alert System so that all members may be notified about any emergency situation.

The R.A.S. consists of five elements:

1. An Emergency Deployment Plan; which will consist of rendezvous/rally points, persons you are to report to and specific member assignments during the emergency.
2. Telephone Tree: Each member must have a contact list of other members to call or page. This contact list should include all members of your Local Unit, as well as your State Commander, XO and Communications Officer. The phone tree will be used to notify all members, of the activation of the Communications Network and their

units mobilization. (see SOP)

3. E-Mail: For issuing SITREPS, SALUTE reports, announcements etc. All sensitive or mission critical information should be encrypted by the most secure means available. At the present time use: the Communications forum at awrm.org for information that is for dissemination to the "public" and the Comm. Officers forum for more critical comm.

4. Radio Networks: Are radio stations grouped together for the purpose of message handling, relaying SitReps, and for the Command Staffs use in coordination and focus of effort. (see Organizational Overview by 1371)

Local Nets should consist of at least 3 radio stations per county that are capable of contact with each other as well as with the teams in the field. At least 1 of these stations must be capable of contact with all surrounding countys and the nearest Regional Net Control Station.

Regional Nets are comprised of several countys grouped together for mutual support. These Regional Nets will form the State Network. At least 3 regional stations must be capable of maintaing contact throughout their respective state as well as being able to contact the National (ERPN) Network. The most capable station in this state network will be designated the State Net Control Station. It must be capable of maintainng Local, Statewide and Nationwide contact at all times.

5. Neighborhood Alerts: Members will be designated to ride through the local neighborhood alerting the people in their Area of Operations. A siren, bell, and or p.a. system may also be used.

Activation of the R.A.S.

The Local RAS may be activated by any member of the particular unit involved. But, every effort must be made to follow the chain of command, especially at the Regional and State level.

Any time the State RAS is activated it should be called by the C/O, X/O, or Comm. O. and only after confirmation of the local sitreps with the Local C/O. If the crisis is of a Statewide nature it should then be passed on to the national level by the State Net Control Station.

Telephone Tree S.O.P.

Summary:

1. C/O notifies Team Leaders
2. Team Leaders notify team members
3. Team Leaders report status back to C/O

Detailed Procedure:

1. Notify Team Leaders: The decision to activate the telephone tree is made by the C/O, X/O or other Command Staff. They will contact the TEAM Leaders and advise them of:
 - a. THE NATURE OF THE EMERGENCY
 - b. Any special instructions
 - c. The telephone number and or frequency where TL's can report back the status of their teams to the C/O. If any TL's can't be reached backups will be called.

2. Notify Team Members:

- a. Each Team Leader will then notify all the individual members of his team; advising them of:
 - a. The nature of the emergency
 - b. Any special instructions
 - c. Requestes them to monitor the ERPEN, their State Net and the Local Emergency Frequency for further instructions and SitReps.

Alert Levels

Over the years we've saw every kind of alert imaginable. Most of them false or someone jumping the gun. These "alerts" usually come with no confirmation or follow up; meanwhile everyone runs around for 2 days trying to find out what is going on.

Only State Commanding Officers or State Communications Officers should issue an alert. Local groups should maintain contact with these officers and issue sitreps as necessary up the chain of command to them. Only upon double-confirmation and a decision by the State C/O, should local sitreps be passed on or an alert issued. A standardized SOP or Protocol for Sitreps and Alert Levels should be adopted.

ALERT LEVELS:

Level 1 "RED" Highest alert rating. Incident In Progress: Nationwide Comm. Network in operation and monitored 24/7. Local and State Nets activated. Emergency Deployment Plan activated and All units mobilized.

Level 2 "YELLOW" Credible Threat: Rapid Alert System activated and all Local, State and Nationwide nets in "open mode" operation 24/7. All units at preassigned locations and awaiting further orders.

Level 3 Potential Threat: All equipment packed and ready to go. All members stay in daily contact with Team Leaders via the Local Radio Network. Local Nets make weekly contact with the State Net. Monitor ERPEN on schedule.

Level 4 Minimal Threat: All equipment available. Members maintain standard contact with Team Leaders through the weekly Local Radio Net.

Level 5 Standby...All members monitor shortwave, ERPEN and local freqs. for developing situations.

Message Format

CALL...Give callsign of the station you are attempting to contact. Then, your callsign. After the Net Control Station acknowledges you may proceed with your message.

Transmit information in the following order:

PRECEDANCE---Routine, Priority or Emergency

TIME---Followed by date-time group IE: 012302-1830

FROM---Followed by callsign of person sending message if different from that of the sender.

TO...The person or unit the message is for

..."BREAK"

Text of message---Encode and limit to 25 words if possible. Use the D.E.S., Brevity Code, SitRep and Salute format per MilComm SOP.

8.4 SRATCOMM And TACOMM S.O.I.

National Communications S.O.I.

PURPOSE:

The National Network's mission is to provide emergency communications for the various states by acting as points of contact and relay stations. OPSEC and COMSEC apply at all times.

The Eastern Regional Patriots Net is a directed net for SITREPS, SALUTE's, message handing/relay and announcements. We need reports and updates on natural or man made disasters, civil distress / unrest, police militarization, Posse Comitatus Act violations, military activities in civilian areas, FEMA actions against citizens, FBI/ATF action in local jurisdictions, LE/Military roadblocks and checkpoints, martial law declarations, weapons confiscations etc.

TIME:

All times given are in UTC. Monitor the appropriate frequencies per SOI, on the hour, from five minutes before until five minutes after.

COMSEC:

These frequencys are "public" knowledge, therefore no Mission Critical traffic should be passed. Use all COMSEC measures including the Milita Brevity Code. Be prepared to hit and bounce at ALL times.

FREQUENCIES:

Don't give out frequencys over the air Use the "F" or "A" code.

National Emergency Net:

F-1__3.860-LSB-Nighttime Monitor / Eastern Regional Patriot Net Meets Every night @ 0100 hour

F-2__7.275-LSB-Net-Primary Daytime Monitor

F-3_10.145-LSB Digital Net 11:00/13:00/14:00/ and 17:00 hours..Call for KC2AXU-15NPS(National Patriot System) Use mailbox if NCS is not online...leave your id and a brief message...use the Brevity Code

F-4_14.345-USB-Alternate Daytime Monitor

F-5_18.140-USB-Alternate Daytime Monitor

F-6_27.555-Daytime Monitor/DX Initial Contact

F-7_28.333-USB-ConSigCor

"Tac Call" Initial Contact Bandplan:

The following simplex frequencies are for initial contact only. Do not use them to pass any mission critical information. Use them to contact friendly forces when you are out of your area of operations. When attempting to make contact with the militia; Call "CQ for MSC DX group". All units should monitor these freqs. 24/7.

Tac1 27.325 AM/SSB Alternate

Tac2 27.385 LSB Primary Local Contact Freq.

Tac3 27.555 LSB Primary Nationwide DX Daytime Call Freq.

Tac4 29.600 FM

Tac5 52.025 FM Primary
Tac6 52.040 FM Alternate
Tac7 146.485 FM Primary
Tac8 146.520 FM Alternate
Tac9 462.6125 FM (channel 3 FRS)

6.900 Emergency Broadcast System: Monitor on the hour during emergency for news and announcements.

***NOTE:**

Complete details on the above subjects can be found in the Signal Corps Operations Manual, which is a separate publication.

For more information, have your CO, XO, or Comms Officer check the Communications section of www.awrm.org.