

Operations

Net Operations

1. Introduction

To provide a basis for carrying out the mission of the Gwinnett County, Georgia Amateur Radio Emergency Service® (ARES®), procedures must be in place to provide the communications requirements for Served Agencies. This document defines procedures for operating communications nets used by Gwinnett County ARES® following guidelines of the American Radio Relay League's (ARRL) National Traffic System (NTS).

2. Responsibilities

The Assistant Emergency Coordinator for SKYWARN and Net Management is responsible for maintaining this document.

Each participant in Gwinnett County ARES® nets is responsible for being familiar with and following the procedures defined in this document.

3. Related Publications

NET 1-1 Net Control Station Procedures

4. Definition of Terms

ANCS Alternate Net Control Station

ARES® Amateur Radio Emergency Service® (ARES® and Amateur Radio Emergency Service® are registered service marks of the American Radio Relay League.)

ARRL American Radio Relay League

FCC Federal Communications Commission

GARS Gwinnett Amateur Radio Society

NCS Net Control Station

NTS National Traffic System

Served Agency A public service agency with which Gwinnett ARES® has established a support agreement through the implementation of a formal Memorandum of Understanding.

5. Guideline

5.1. Net Control

During emergency operations, all nets in support of emergency communications will function as controlled nets. Instructions by the Net Control Station (NCS) are to be followed.

The decisions of the NCS must not be debated on the air unless a clear and present danger exists which if the direction of the NCS were followed the result would be the loss of life, loss of property, or injury. In these cases, inform the NCS politely that you cannot carry out the request(s) and why.

5.2. Net Condition Level

The Increased Readiness Conditions described below are used in the operations of Gwinnett County ARES® Emergency Nets. The nets will follow these designations as a way of establishing net discipline and a way of providing more effective communications. The descriptions below are for guidance purposes. It is possible that certain situations may require the handling of various net conditions in a manner that does not exactly fit these descriptions. Such decisions are the responsibility of the NCS.

5.2.1. Net Condition 4:

Condition 4 is the lowest level of Increased Readiness. It marks a higher degree of disaster possibilities within the county. It exists to provide a presence on the frequencies and serve as a structure for potential elevation of the net into higher levels or readiness and increased net discipline. The net is conducted in a directed fashion but is open to all reports concerning weather in the area, reports of other emergency situations that may exist in a multi hazard condition, or the status of responding stations.

5.2.2. Net Condition 3:

Condition 3 identifies the condition where situations exist that present a greater potential threat than Condition 4 to life and/or property. In weather related situations, Condition 3 is the equivalent to a National Weather Service “watch” condition. Open reporting, except in the case of emergencies or the existence of extremely dangerous conditions, is ceased. The net is conducted in a limited reporting and more highly directed fashion. The NCS will manage the net in a more highly restricted fashion with reports being taken under NCS direction only unless a true emergency exists. Instead of acting to control report taking as in Condition 4, the NCS is truly in control of the deployment and management of all communications resources that are to be used.

5.2.3. Net Condition 2:

Condition 2 exists when a very hazardous situation exists that poses an immediate threat to life and/or property. In weather related situations, Condition 2 is related to a National Weather Service “warning” condition. No reports will be taken or given unless the NCS specifically requests them. The only exception to this would be the report of a situation where human life or major injury is eminent. At that time the pro-word “Break – Break” is to be used and all other net operations will cease. The net will resume under Condition 2 after the situation is under control. The actions the NCS will take in this condition can, in a very real way, impact the safety of those involved in the situation and impact the responsiveness of emergency services to those in need. This is why net communication is limited to only responses and requests from the NCS except in the situation described above. The NCS cannot allow random and un-requested communications to take place during this condition.

5.2.4. Net Condition 1:

Condition 1 exists at a time when a major disaster **has** occurred. The most extreme form of net discipline is required at this time. Only the highest priority traffic or transmissions will occur. Information being handled will fit either emergency or priority

classifications. The net in this condition will not handle welfare or routine traffic. Such traffic will be delayed in its handling or handled by another net set up for that express purpose.

5.3. General Principles of Net Operation

5.3.1. Entering a Net

When establishing a new location, check into the appropriate net to advise the NCS of your site's activation. If your location has been assigned a tactical call sign, use the tactical call, remembering to close all transmission sequences with your own operator call sign to comply with FCC Rules and Regulations. When using your call sign, use the ITU phonetic alphabet the first time to ensure that the NCS clearly understands your call the first time.

5.3.2. Logs

All location should maintain a log of events and traffic handled. Logs should contain copies of all formal traffic handled to comply with FCC Rules and Regulations. Logs should also contain notes about tactical traffic passed to and received from locations. NCS should maintain information regarding tactical traffic passed during the event.

Record all incidents that impact operations at your location. Record the time the event occurs and the nature of the event. This information will assist in post-event discussions to implement changes to improve operations in future operations.

5.3.3. Tactical Nets

Tactical nets normally involve short transmissions required to coordinate activities. Such nets are employed to assign personnel to locations, notify appropriate personnel of dangerous conditions that require immediate attention and similar activities. The NCS will normally advise what type net you are entering.

5.3.4. Traffic Nets

Formal traffic nets are normally used to relay information between Served Agency locations as well as interagency communications. Typical applications would be in shelter management, supplies requests and similar types of traffic.

5.4. Breaking Into a Net

To streamline net operations, eight (8) levels of "break" will be employed by Gwinnett ARES®. The keywords are called "break tags" and are to be used as indicated. They are: Answer, Question, Info, Priority, Medical, Emergency, Contact, and your call sign.

Instead of saying "break" in between transmissions during a directed net to gain recognition you use the a word break tag without your call sign. They are to be used only when your traffic will be appreciated by net control and results in more efficient communications. They are to be used wisely, as it causes net control to stop and turn over the net to the breaker. The message that follows a break should be as short as possible.

Here are their intended uses:

5.4.1. Answer

To be used when you have the answer to a question currently being discussed on the air.

5.4.2. Question

Used when the answer of a question can't wait, for instance when the Mayor is standing next to you and requested you to get some info using your radio.

5.4.3. Info

Used when information needs to be transmitted rapidly but is not related to what is being said on the air. For instance if something that net control needs to know about is going to happen in the next few seconds or if waiting for the end of an exchange will negate the value of the information.

5.4.4. Priority

Used to report an important but non-life threatening situation such as a fender-bender that just happened.

5.4.5. Medical

Used to report a minor medical incident that affects the operator in some way, like having to leave their post for a few minutes to walk someone with a minor cut over to a med tent.

5.4.6. Emergency

Only to be used to report an ongoing life or property threatening or damaging incident.

5.4.7. Contact

Used when a station wishes to conduct a brief informal communications with another station.

5.4.8. Your Call Sign

An indication that you have traffic that can wait and does not require the stoppage of the ongoing exchange. This tag is an expectation to be put on hold and in queue for your transmission.

5.5. Traffic Handling

A question that has plagued emergency operations within ARES® has been the decision on what type of message traffic to use: tactical for formal.

Tactical traffic is normally rapid exchanges of critical information required to support an operation. Such traffic normally involves matters of safety to life and property. SKYWARN nets operate in a tactical traffic mode due to the short importance-life of the information to the National Weather Service and the potential impact to forecasting severe weather. By the time a formal message was prepared, passed and read, the information may be useless to weather forecasters.

For all messages **not** involving matters of safety to life and property, formal traffic should be used. This is crucial for information originated by Served Agencies to provide an authority for releasing messages submitted for transmission. Formal messages encourage accuracy in information transferred and relieves ARES® members involved in passing traffic from

interpreting information. Traffic handlers, still, must exercise care in making sure that the information received for transmission is accurately transferred to the recipient.

5.5.1. Tactical Traffic

A log of tactical traffic details should be maintained by the NCS and all stations involved in the transfer of information unless that station is not in a posture that allows the recording of information. Such logs may be necessary to recreate critical situations in a manner similar to using formal message records to recreate events.

5.5.2. Formal Traffic

Use NTS traffic handling procedures as defined in the Appendices at the end of this SOG for all formal traffic. Insure that you have an adequate supply of message forms available. Verify that the message precedence is appropriate and that the net is supporting the precedence of the traffic you wish to pass. Special nets may be established to handle welfare traffic. No routine traffic will normally be processed during an emergency condition.

For formal traffic, use local time for the time filed so preclude confusion by served agencies.

5.6. Hints and Kinks

The following is taken from the ARRL and Colorado ARES® training materials:

5.6.1. Net protocols.

5.6.1.1. Legal

Legal requirements within nets are those of identification and operation on frequencies within the Amateur Radio Bands. The FCC tells us that you MUST identify at ten minute intervals during a conversation and in your last transmission. During periods of heavy activity in event nets it is easy to forget when you last identified.

The easiest way to insure you comply with FCC identification requirements during an event net is to identify with your FCC issued call as you complete an exchange. This serves two functions: 1) Tells NCS you consider the exchange to be complete without having to use extra words (saves time) 2) Fulfills all FCC identification requirements.

5.6.1.2. Customary

Customary protocols will normally be used in longstanding, non-emergency nets. They may include such practices as identifying with the FCC call of both stations on each transmission, giving the FCC call of the next person to talk or many other variations.

Please listen to the net before joining. Customary protocols will easily stand out.

5.6.1.3. Tactical Calls - when and how to use them

Tactical calls are used to identify a location during an event regardless of who is operating. This is an important concept. The tactical call allows you to contact a location without knowing the FCC call of the operator there. It also virtually eliminates confusion at shift changes and when a person takes a break from operating. Think about that. Do you answer a call from the sound of a persons voice or from the identified location? Obviously from the identified location.

Tactical calls should be used for all Emergency nets once there are more than three participants and most public service nets if there is more than minimal traffic.

Net control will assign the tactical call as each location is opened. It will normally be some unique identifier that indicates which location or function this is. Some examples are:

- NET - for net control
- FIRE-BASE-1 - for the first fire base established or the fire base in a particular region
- CHECK-POINT-1 - for the first check point in a public service event
- CP - for the event command post
- AID-3 - for the third aid station on a route
- etc.

Proper use of tactical calls can best be explained by example.

- Initiating a call

If you were at aid station three during a directed net and wanted to contact Net Control you would say "NET, AID3" or, in crisper nets, simply "AID3". If you had emergency traffic you would say "AID3, emergency traffic" or for priority traffic "AID3, priority traffic".

Notice how you have conveyed all information necessary without using any unnecessary words or taking any unnecessary time.

If you had traffic for another location, such as checkpoint five, you would say "AID3, traffic for CHECK POINT 5". This tells NCS everything needed to handle the traffic. NCS will then call checkpoint 5 with "CHECK POINT 5, call AID3 for traffic", if there is no other traffic holding.

Notice that there have been no FCC issued calls used. At this point none are necessary.

- Traffic during a call

Tactical calls will normally not be used in the contact unless a separate location is mentioned in the message.

- Completing a call

To complete the call from AID3, after the message/traffic is complete you would say "(your call), AID3". This fulfills your identification requirements and tells NCS that you believe the call to be complete.

The above is the same for all participants under virtually all traffic examples.

5.6.1.4. Participating in a net

- Enjoy yourself - Amateur Radio public service is fun!

- Prepare your self. Are your batteries charged? Are you on your best antenna for the frequency/repeater you will be on? Do you have pencil paper and other items you think you will need?
- Listen. If you are there at the start of a net or join one in progress, LISTEN for several minutes before you check in. NCS will announce/ask-for what they want.
- Follow NCS Instructions. NCS will ask for specific people/categories-of-people as they are needed. **Follow instructions.**
- Speak clearly. Do not slur your words, but speak in a clear crisp voice. Do not try to sound like a radio or TV commentator, but speak to be understood by anyone listening.
- Do not editorialize. "This is Phred in the North East portion of the county at 9300 feet where it is snowing, but it was sunny five minutes ago when I came in from feeding the birds, geese and hamsters, but its cold right now and it looks like it could rain in the next day or so - just checking in" is unnecessary AND unwanted. This ties up the net and does nothing to add usable information. Check in with your CALL. Add name and other information as requested by NCS.
- Plan your transmission. If you have more information than just your Name/Call then jot it down. You can, if necessary, just read your note. **** This promotes clear concise communication.
- Check in ONLY if you are going to be part of the net. Do NOT check in as "in & out" or "for the count". **You are joining the net or you should only listen.**
- Checking in with "This is" then a pause or unkey followed by the call may work on a few nets, but causes delays and potential problems on most. (Local net option)
- Unless your transmission is longer than ten minutes, you need only identify at the end of the transmission/exchange of information.
- Let NCS know when you leave or if you need to leave early. **Do not go into details of why you need to leave.**
- During an event, if the authorities ask you to move; do so immediately and without comment, then notify the NCS of your change in status as soon as you can.
- If an on-scene authority requests that you shut your radio off, or that you not transmit, **do what they ask immediately and without question.** This is **one** circumstance where you do not notify the NCS of a change in your status. *This deserves a little explanation.* This would normally occur only if there is a presence of explosives or explosive chemicals or vapors, and there is the possibility that a spark producing electronic device is present which might be triggered by an RF Signal.
- Be patient with the NCS. An NCS operator is under high stress. His questions and requests should be clear and crisp; but as he/she begins to tire, there may be a tendency to become rather terse. Typically, there is a whole lot going on at an NCS that the field operators never know about.

- Hams are patriotic, independent people and they are volunteers. The attitude among a few hams is that 'Volunteers don't have to take orders.' That's absolutely correct. We don't **have** to take orders. But if you are not ready to follow instructions, *you may want to do something outside of ARES.*®

5.6.1.5. Leaving a net

You will leave a net for one of three reasons:

1. The location is closing

If NCS has given you directions to close the location, simply identify with your FCC issued call, the location tactical call and the word "CLOSED". The NCS will tell you if anything else is needed.

If you are closing the location on orders of the served agency, you will identify with your FCC issued call, location tactical call and the phrase "location CLOSED per (name of person - served agency identification)".

2. You need a break and there is no relief operator, tell NCS that "I will be away from the radio for (number of minutes)" and end with "Tactical id, (your call)".
3. You have turned the location over to another operator. You will normally not need to tell NCS that you are leaving. However if there are specific instructions from NCS then follow those instructions.

5.6.2. Don't over identify

There is normally nothing that will expend more time, needlessly, than over identification. Someone that uses their FCC issued call in every transmission is usually a person that is unsure of themselves or, worse yet, someone that is more interested in having their call known to everyone at the event. In the latter situation, help them find work elsewhere.

The FCC tells us that you need only identify at ten-minute intervals during a conversation (NOT during a net unless you talk for more than ten minutes) and during your last transmission.

If you end each exchange with your call, that tells everyone that you are of the opinion the exchange is complete and you fulfill all FCC requirements.

5.6.3. Write it down

The easiest way to minimize what you say during a net is to write down everything before you key the microphone. Since very few of us like to write lengthy notes, this will promote brevity.

An excellent place to keep this information is in your location log. This serves two purposes: 1) You have a complete log of everything that came from your location 2) It will become very brief.

6. Release Information

Stan Edwards, WA4DYD, Emergency Coordinator, is the author of this document.

The date of publication for this document is July 23, 2004, and includes use and definition of “break tags”.

APPENDICES

ARRL FSD-3	Relief Emergency-Routine Messages Recommended Precedences
ARRL FSD-218	Relief Emergency-Routine Messages Recommended Precedences
ARRL FSD-220	Communications Procedures · ITU Phonetic Alphabet R-S-T System · Time Conversion Chart

FSD-3

Relief Emergency · Routine Messages Recommended Precedences

The letters ARL are inserted in the preamble in the check and in the text before spelled out numbers, which represent texts from this list. Note that some ARL texts include insertion of numerals .Example: NR 1 R W1AW ARL 5 NEWINGTON CONN. DEC 25 DONALD R. SMITH AA 164 EAST SIXTH AVE AA NORTH RIVER CITY MO AA PHONE 73-3968 BT ARL FIFTY ARL SIXTY ONE BT DIANA AR. For additional information about traffic handling, consult The ARRL Operating Manual, published by ARRL.

1. Group One—For Possible “Relief Emergency” Use

ONE	Everyone safe here. Please don't worry.
TWO	Coming home as soon as possible.
THREE	Am in _____ hospital. Receiving excellent care and recovering fine.
FOUR	Only slight property damage here. Do not be concerned about disaster reports.
FIVE	Am moving to new location. Send no further mail or communication. Will inform you of new address when relocated .
SIX	Will contact you as soon as possible.
SEVEN	Please reply by Amateur Radio through the amateur delivering this message. This is a free public service.
EIGHT	Need additional _____ mobile or portable equipment for immediate emergency use.
NINE	Additional _____ radio operators needed to assist with emergency at this location.
TEN	Please contact _____. Advise to standby and provide further emergency information, instructions or assistance.
ELEVEN	Establish Amateur Radio emergency communications with _____ on _____ MHz.
TWELVE	Anxious to hear from you. No word in some time. Please contact me as soon as possible.
THIRTEEN	Medical emergency situation exits here.
FOURTEEN	Situation here becoming critical. Losses and damage from _____ increasing.
FIFTEEN	Please advise your condition and what help is needed.
SIXTEEN	Property damage very severe in this area.
SEVENTEEN	REACT communications services also available. Establish REACT communication with _____ on channel _____.
EIGHTEEN	Please contact me as soon as possible at _____.
NINETEEN	Request health and welfare report on _____ . (State name, address and telephone number.)
TWENTY	Temporarily stranded. Will need some assistance. Please contact me at _____.
TWENTY ONE	Search and Rescue assistance is needed by local authorities here. Advise availability.
TWENTY TWO	Need accurate information on the extent and type of conditions now existing at your location. Please furnish this information and reply without delay.

- TWENTY THREE Report at once the accessibility and best way to reach your location.
- TWENTY FOUR Evacuation of residents from this area urgently needed. Advise plans for help.
- TWENTY FIVE Furnish as soon as possible the weather conditions at your location.
- TWENTY SIX Help and care for evacuation of sick and injured from this location needed at once.

Emergency/priority messages originating from official sources must carry the signature of the originating official.

2. Group Two—Routine Messages

- FORTY SIX Greetings on your birthday and best wishes for many more to come.
- FIFTY Greetings by Amateur Radio.
- FIFTY ONE Greetings by Amateur Radio. This message is sent as a free public service by ham radio operators at _____. Am having a wonderful time.
- FIFTY TWO Really enjoyed being with you. Looking forward to getting together again.
- FIFTY THREE Received your _____. It's appreciated; many thanks.
- FIFTY FOUR Many thanks for your good wishes.
- FIFTY FIVE Good news is always welcome. Very delighted to hear about yours.
- FIFTY SIX Congratulations on your _____, a most worthy and deserved achievement.
- FIFTY SEVEN Wish we could be together.
- FIFTY EIGHT Have a wonderful time. Let us know when you return.
- FIFTY NINE Congratulations on the new arrival. Hope mother and child are well.
- *SIXTY Wishing you the best of everything on _____.
- SIXTY ONE Wishing you a very Merry Christmas and a Happy New Year.
- *SIXTY TWO Greetings and best wishes to you for a pleasant _____ holiday season.
- SIXTY THREE Victory or defeat, our best wishes are with you. Hope you win.
- SIXTY FOUR Arrived safely at _____.
- SIXTY FIVE Arriving _____ on _____. Please arrange to meet me there.
- SIXTY SIX DX QSLs are on hand for you at the _____ QSL Bureau. Send _____ self addressed envelopes.
- SIXTY SEVEN Your message number _____ undeliverable because of _____. Please advise.
- SIXTY EIGHT Sorry to hear you are ill. Best wishes for a speedy recovery.
- SIXTY NINE Welcome to the _____. We are glad to have you with us and hope you will enjoy the fun and fellowship of the organization.

* Can be used for all holidays.

3. ARRL Recommended Precedences

Please observe the following ARRL provisions for PRECEDENCES in connection with written message traffic. These provisions are designed to increase the efficiency of our service both in normal times and in emergency.

EMERGENCY – Any message having life and death urgency to any person or group of persons, which is transmitted by Amateur Radio in the absence of regular commercial facilities. This includes official messages of welfare agencies during emergencies requesting supplies, materials or instructions vital to relief of stricken populace in emergency areas. During normal times, it will be *very rare*. On CW/RTTY, this designation will *always* be spelled out. When in doubt, do not use it.

PRIORITY – Use abbreviation P on CW/RTTY. This classification is for a) important messages having a specific time limit b) official messages not covered in the emergency category c) press dispatches and emergency-related traffic not of the *utmost* urgency d) notice of death or injury in a disaster area, personal or official.

WELFARE – This classification, abbreviated as W on CW/RTTY, refers to either an inquiry as to the health and welfare of an individual in the disaster area or an advisory from the disaster area that indicates all is well. Welfare traffic is handled only after all emergency and priority traffic is cleared. The Red Cross equivalent to an incoming Welfare message is DWI (Disaster Welfare Inquiry).

ROUTINE – Most traffic in normal times will bear this designation. In disaster situations, traffic labeled Routine (R on CW/RTTY) should be handled last, or not at all when circuits are busy with higher precedence traffic.

Note – the precedence always follows the message number. For example, a message number may be 207R on CW and “Two Zero Seven Routine” on phone.

Every formal radiogram message originated and handled should contain the following component parts in the order given

I. Preamble

- a. Number (begin with 1 each month or year)
- b. Precedence (R, W, P or EMERGENCY)
- c. Handling Instructions (optional, see text)
- d. Station of Origin (first amateur handler)
- e. Check (number of words/groups in text only)
- f. Place of Origin (not necessarily location of station of origin.)
- g. Time Filed (optional with originating station)
- h. Date (must agree with date of time filed)

II. Address

(as complete as possible, include zip code and telephone number)

III. Text

(limit to 25 words or less, if possible)

IV. Signature

CW: The prosign \overline{AA} separates the parts of the address. \overline{BT} separates the address from the text and the text from the signature. \overline{AR} marks end of message; this is followed by B if there is another message to follow, by N if this is the only or last message. It is customary to copy the preamble, parts of the address, text and signature on separate lines.

RTTY: Same as CW procedure above, except (1) use extra space between parts of address, instead of \overline{AA} ; (2) omit cw procedure sign \overline{BT} to separate text from address and signature, using line spaces instead; (3) add a CFM line under the signature, consisting of all names, numerals and unusual words in the message in the order transmitted.

PACKET/AMTOR BBS: Same format as shown in the cw message example above, except that the \overline{AA} and \overline{AR} prosigns may be omitted. Most amtor and packet BBS software in use today allows formal message traffic to be sent with the "ST" command. Always avoid the use of spectrum-wasting multiple line feeds and indentations.

PHONE: Use *prowords* instead of prosigns, but it is not necessary to name each part of the message as you send it. For example, the above message would be sent on phone as follows: "Number one routine HX Golf W1AW eight Newington Connecticut one eight three zero zulu july one Donald Smith Figures one six four East Sixth Avenue North River City Missouri zero zero seven eight nine Telephone seven three three four nine six eight Break Happy birthday X-ray see you soon X-ray love Break Diana End of Message Over. "End of Message" is followed by "More" if there is another message to follow, "No More" if it is the only or last message. Speak clearly using VOX (or pause frequently on push-to-talk) so that the receiving station can get fills. Spell phonetically all difficult or unusual words--do not spell out common words. Do not use cw abbreviations or Q-signals in phone traffic handling.

Precedences

The precedence will follow the message number. For example, on cw 207R or 207 EMERGENCY. On phone, "Two Zero Seven, Routine (or Emergency)."

EMERGENCY--Any message having life and death urgency to any person or group of persons, which is transmitted by Amateur Radio in the absence of regular commercial facilities. This includes official messages of welfare agencies during emergencies requesting supplies, materials or instructions vital to relief of stricken populace in emergency areas. During normal times, it will be *very rare*. On cw, RTTY and other digital modes this designation will always be spelled out. When in doubt, *do not* use it.

PRIORITY--Important messages having a specific time limit. Official messages not covered in the Emergency category. Press dispatches and other emergency-related traffic not of the utmost urgency. Notifications of death or injury in a disaster area, personal or official. Use the abbreviation P on cw.

WELFARE--A message that is either a) an inquiry as to the health and welfare of an individual in the disaster area b) an advisory or reply from the disaster area that indicates all is well should carry this precedence, which is abbreviated W on cw. These messages are handled *after* Emergency and Priority traffic but before Routine.

ROUTINE--Most traffic normal times will bear this designation. In disaster situations, traffic labeled Routine (R on cw) should be handled *last*, or not at all when circuits are busy with Emergency, Priority or Welfare traffic.

Handling Instructions (Optional)

HXA--(Followed by number) Collect landline delivery authorized by addressee within....miles. (If no number, authorization is unlimited.)

HXB--(Followed by number) Cancel message if not delivered within....hours of filing time; service originating station.

HXC--Report date and time of delivery (TOD) to originating station.

HXD--Report to originating station the identity of station from which received, plus date and time. Report identity of station to which relayed, plus date and time, or if delivered report date, time and method of delivery.

HXE--Delivering station get reply from addresses, originate message back.

HXF--(Followed by number) Hold delivery until...(date).

HXG--Delivery by mail or landline toll call not required. If toll or other expense involved, cancel message and service originating station.

For further information on traffic handling, consult the Public Service Communications Manual or the ARRL Operating Manual, both published by ARRL.

ARRL QN Signals For CW Net Use

QNA* Answer in prearranged order.

QNB* Act as relay Between _____ and _____

QNC All net stations Copy. I have a message for all net stations.

QND* Net is Directed (controlled by net control station).

QNE* Entire net stand by.

- QNF** Net is Free (not controlled).
- QNG** Take over as net control station.
- QNH** Your net frequency is High.
- QNI** Net stations report In.*
I am reporting into the net. (Follow with a list or traffic or QRU).
- QNJ** Can you copy me?
Can you copy _____?
- QNK*** Transmit message for _____ to _____
- QNL** Your net frequency is Low.
- QNM*** You are QRMing the net. Stand by.
- QNN** Net control station is _____
What station has net control?
- QNO** Station is leaving the net.
- QNP** Unable to copy you. Unable to copy _____
- QNQ*** Move frequency to _____ and wait for _____ to finish handling traffic. Then send him traffic for _____
- QNR** Answer _____ and Receive traffic.
- QNS*** Following Stations are in the net. *(Follow with list.)
Request list of stations in the net.
- QNT** I request permission to leave the net for _____ minutes.
- QNU*** The net has traffic for you. Stand by.
- QNV*** Establish contact with _____ on this frequency. If successful, move to _____ and send him traffic for _____
- QNW** How do I route messages for _____?
- QNX** You are excused from the net.* Request to be excused from the net.
- QNY*** Shift to another frequency (or to _____ kHz) to clear traffic with _____
- QNZ** Zero beat your signal with mine.

* For use only by the Net Control Station.

Notes on Use of QN Signals

The QN signals listed above are special ARRL signals for use in amateur cw nets only. They are not for use in casual amateur conversation. Other meanings that may be used in other services do not apply. Do not use QN signals on phone nets. Say it with words. QN signals need not be followed by a question mark, even though the meaning may be interrogatory.

International Q Signals

A Q signal followed by a ? asks a question. A Q signal without the ? answers the question affirmatively, unless otherwise indicated.

- QRA** What is the name of your station?
- QRG** What's my exact frequency?
- QRH** Does my frequency vary?
- QRI** How is my tone? (1-3)
- QRK** What is my signal intelligibility? (1-5)
- QRL** Are you busy?
- QRM** Is my transmission being interfered with?
- QRN** Are you troubled by static?
- QRO** Shall I increase transmitter power?
- QRP** Shall I decrease transmitter power?
- QRQ** Shall I send faster?
- QRS** Shall I send slower?
- QRT** Shall I stop sending?
- QRU** Have you anything for me? (Answer in negative)
- QRV** Are you ready?
- QRW** Shall I tell _____ you're calling him?
- QRX** When will you call again?
- QRZ** Who is calling me?
- QSA** What is my signal strength? (1-5)
- QSB** Are my signals fading?
- QSD** Is my keying defective?
- QSG** Shall I send _____ messages at a time?
- QSK** Can you work breakin?
- QSL** Can you acknowledge receipt?
- QSM** Shall I repeat the last message sent?
- QSO** Can you communicate with _____ direct?
- QSP** Will you relay to _____?
- QSV** Shall I send a series of V's?
- QSW** Will you transmit on _____?
- QSX** Will you listen for _____ on _____?
- QSY** Shall I change frequency?
- QSZ** Shall I send each word/group more than once? (Answer, send twice or _____)
- QTA** Shall I cancel number _____?
- QTB** Do you agree with my word count? (Answer negative)

- QTC** How many messages have you to send?
QTH What is your location?
QTR What is your time?
QTV Shall I stand guard for you _____?
QTX Will you keep your station open for further communication with me?
QUA Have you news of _____?

Abbreviations, Prosigns, Prowords

- CW** **PHONE (meaning or purpose)**
AA (Separation between parts of address or signature.).
AA All after (use to get fills).
AB An before (used to get fills).
ADEE Addressee (name of person to whom message addressed).
ADR Address (second part of message).
AR End of message (end of record copy).
ARL (Used with "check," indicates use of ARRL numbered message in text).
AS Stand by; wait.
B More (another message to follow).
BK Break; break me; break-in (interrupt transmission on cw. Quick check on phone).
BT Separation (break) between address and text; between text and signature.
C Correct; yes.
CFM Confirm. (Check me on this).
CK Check.
DE From; this is (preceding identification).
HH (Error in sending. Transmission continues with last word correctly sent.)
HX (Handling instructions. Optional part of preamble.) Initial(s). Single letter(s) to follow.
IMI Repeat; I say again. (Difficult or unusual words or groups.)
K Go ahead; over; reply expected. (Invitation to transmit .)
N Negative, incorrect; no more. (No more messages to follow.)
NR Number. (Message follows.)
PBL Preamble (first part of message)
N/A Read back. (Repeat as received.)
R Roger; point. (Received; decimal point.)
SIG Signed; signature (last part of message.)
SK Out; clear (end of communications, no reply expected.)
TU Thank you.

- WA** Word after (used to get fills.)
- WB** Word before (used to get fills.)
- N/A** Speak slower.
- N/A** Speak faster.

ARRL Communications Procedures

Voice	Code	Situation
Go ahead	K	Used after calling CQ, or at the end of a transmission, to indicate any station is invited to transmit.
Over	AR	Used after a call to a specific station, before the contact has been established
	KN	Used at the end of any transmission when only the specific station contacted is invited to answer.
Stand by or wait	AS	A temporary interruption of the contact.
Roger	R	Indicates a transmission has been received correctly and in full.
Clear	SK	End of contact. SK is sent before the final identification.
Leaving the air or closing the station	CL	Indicates that a station is going off the air, and will not listen or answer any further calls. CL is sent after the final identification.

ITU Phonetic Alphabet

Word list adopted by the International Telecommunications Union

A	Alfa
B	Bravo
C	Charlie
D	Delta
E	Echo
F	Foxtrot
G	Golf
H	Hotel
I	India
J	Juliett
K	Kilo
L	Lima
M	Mike
N	November
O	Oscar
P	Papa
Q	Quebec
R	Romeo
S	Sierra
T	Tango
U	Uniform
V	Victor
W	Wiskey
X	X-ray
Y	Yankee
Z	Zulu

The R-S-T System

Readability

- 1 Unreadable
- 2 Barely readable, occasional words distinguishable.
- 3 Readable with considerable difficulty.
- 4 Readable with practically no difficulty.
- 5 Perfectly readable.

Signal Strength

- 1 Faint signals, barely perceptible.
- 2 Very weak signals.
- 3 Weak signals.
- 4 Fair signals.
- 5 Fairly good signals.
- 6 Good signals.
- 7 Moderately strong signals.
- 8 Strong signals.
- 9 Extremely strong signals.

Tone

- 1 Sixty cycle a.c or less, very rough and broad.
- 2 Very rough a.c., very harsh and broad.
- 3 Rough a.c. tone, rectified but not filtered.
- 4 Rough note, some trace of filtering.
- 5 Filtered rectified a.c. but strongly ripple-modulated.
- 6 Filtered tone, definite trace of ripple modulation.
- 7 Near pure tone, trace of ripple modulation.
- 8 Near perfect tone, slight trace of modulation.
- 9 Perfect tone, no trace of ripple or modulation of any kind.

If the signal has the characteristic steadiness of crystal control, add the letter X to the RST report. If there is a chirp, the letter C may be added to so indicate. Similarly for a click, add K. The above reporting system is used on both cw and voice, leaving out the "tone" report on voice. Turn card over for examples.

Time Conversion Chart

UTC	EDT/AST	CDT/EST	MDT/CST	PDT/MST	PST
0000*	2000	1900	1800	1700	1600
0100	2100	2000	1900	1800	1700
0200	2200	2100	2000	1900	1800
0300	2300	2200	2100	2000	1900
0400	0000*	2300	2200	2100	2000
0500	0100	0000*	2300	2200	2100
0600	0200	0100	0000*	2300	2200
0700	0300	0200	0100	0000*	2300
0800	0400	0300	0200	0100	0000*
0900	0500	0400	0300	0200	0100
1000	0600	0500	0400	0300	0200
1100	0700	0600	0500	0400	0300
1200	0800	0700	0600	0500	0400
1300	0900	0800	0700	0600	0500
1400	1000	0900	0800	0700	0600
1500	1100	1000	0900	0800	0700
1600	1200	1100	1000	0900	0800
1700	1300	1200	1100	1000	0900
1800	1400	1300	1200	1100	1000
1900	1500	1400	1300	1200	1100
2000	1600	1500	1400	1300	1200
2100	1700	1600	1500	1400	1300
2200	1800	1700	1600	1500	1400
2300	1900	1800	1700	1600	1500
2400*	2000	1900	1800	1700	1600

Universal Coordinated Time (UTC) is the time at the zero or reference meridian. Time changes one hour with each change of 15 degrees in longitude. The five time zones in the US proper and Canada roughly follow these lines.

* 0000 and 2400 are interchangeable. (2400 is associated with the date of the day ending, 0000 with the day just starting.)