

ARRL NTS Methods And Practices Guidelines

Traffic Net and Message Handling Procedures

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Introduction

[This version has been extensively reformatting by Harold Melton, KV5R. It is designed to print on about 186 pages – down from about 450 pages for the source documents. It also uses four-level subheader styles, which will automatically create and update the Table of Contents. Also, the various forms and tables have been improved, and will automatically scale to fit the page. The text is essentially unmodified, except that a great deal of ALL CAPS have been converted to more modern forms of text emphasis. – KV5R]

This document, *NTS Methods and Practices Guidelines (NTS MPG)*, is attached to the ARRL *Public Service Communications Manual (PSCM)* as *Appendix B*, and is the working reference manual on Traffic Net and Message Handling Procedures in the NTS. It shall be the uniform reference standard for STMs, Section/Local NMs and Area Staff members.

The NTS MPG document is maintained by the Standing Committee of the three NTS Area Chairs, and selected additional staff persons, under the *General Procedures* sections of the NTS *Terms of Reference (NTS TOR)*, attached to the PSCM as *Appendix A*.

This manual will be a working reference document—subject to change as Amateur Radio continuously improves how the tasks are performed. The methods presented are a reasonably accurate snapshot of current practices. They are indeed practices, and not strict rules, but the beginner, Section, Region, Area, and TCC net operators and management alike will find it beneficial to have a uniform protocol reference to be used by operators.

It is further hoped that the wisdom of the founders of the ARRL and its NTS with respect to fundamental operating practices, along with new practices, will be preserved in tact in one collection of documentation as the NTS goes forward. Other essential references such as message Precedences, “Q-Signals,” Handling Instructions, ARRL Numbered Radiograms, etc., are reproduced in this manual although available from ARRL in Newington, CT, in printed form or on the internet. You will need to update these from the ARRL primary source from time to time.

The ARRL NTS system operation is in accordance with the PSCM and NTS TOR. Such matters are left to those separate documents.

This manual deals with station and net operating practices and not with matters of net format or system management. Those issues are dealt with by Net Managers, Section Traffic Managers, and Area Staffs, etc., as appropriate. This manual is not intended to infringe on their discretion in such matters, nor with “job descriptions” imposed at any level.

Instructors may extract the information in the manual for use in their own training lesson plans provided full credit is given to the ARRL source. Some simplified overview tutorial documents may be made available through ARRL Field and Educational Services from time to time, particularly for the introduction of the NTS to newcomers to Amateur Radio.

Requests for further information, explanations, or suggested additions should be submitted to your Net Manager for consideration. After review, such input may be forwarded via either STM's or Area/TCC staff to the appropriate Area Chair for periodic consideration by the NTS standing committee on standards and practices.

Foreword

Handling communications for a third party has always been a technology and art form capturing the imagination of people throughout the history of civilization. Such communications have played an important role in the development of the world as we know it. It is no surprise that this fascination persisted and flourished with the introduction of the telegraph and radio.

From smoke signals to semaphore, telegraph to email, the art form has adapted to the prevailing technology of the time. Over the years the mechanism of getting the information from point A to point B may have changed, but the basic steps of creating the transmission-ready final form of the communication, the handling of it through the system, and the reception and delivery have remained essentially the same.

In Amateur Radio today we find many adaptations to the technology of the time and, in fact, are involved in developing new technologies as we go along. The basic underlying purpose and act of communicating for a third party, or for ourselves, is still fascinating and useful regardless whether we are using CW, Voice, RTTY, PSK-31, packet, or WinLink gateways. The use of today's modes has expanded our abilities far beyond the time when Hiram P. Maxim wanted to send his message on CW to order a new tube and seized upon the idea of having a system of scheduled and reliable nets to handle such message traffic.

We began this Amateur Radio journey in an organized way in 1914 when the American Radio Relay League was founded, and the NTS net system has developed and adapted over the years. Today the ARRL manages and operates the National Traffic System (NTS/NTSD) to assure a continuing and reliable structure to handle formal message traffic in the US. Many other countries participate in the system as permitted by treaty or convention. CW, Voice, and a variety of digital modes and structures are operating to assure the use of all Amateur Radio resources in the public service effort.

There is a large body of experience and literature available to guide amateur operators in using radio to establish contact. This experience is in many ways unique to Amateur Radio due to its flexibility and resourcefulness driven by personal interest and motivation. This manual will not deal with this art except where the specifics of radio operation are conducive to effective message transmission and reception.

The public and our served agencies appreciate our ability to send formal written message traffic efficiently and accurately. When we combine our traffic handling, radio and net operating skills to provide professional service we earn their trust.

The process is simple, yet there are details to learn about how to make it all happen efficiently and with precision. We must interface with those we serve and gather the information re-

quired to prepare the message in the proper format. We must be skilled at exchanging the message with another station to pass it along, and be able to participate in and run organized nets to efficiently handle large amounts of message traffic. We must know how to deliver the message to the addressee, and create a reply or a service message back to the originator when required.

The manual, therefore, will deal with the methods used by effective communicators in transmitting and copying message traffic while dealing with language perception, format and protocols, net operating and net control, and managing the completion of the task through to delivery and servicing of messages. Soliciting messages from the public and brief discussions of public service and disaster operations are also presented.

Objectives

The primary objective of these methods and protocols is to facilitate transmission of a properly formatted written formal message from point A to point B such that it arrives exactly as written on the original copy, group for group, character for character, space for space.

Messages filed in the NTS must be capable of being transmitted by any mode without message alteration being required.

Voice and CW nets must be run with methods and protocols to operate effectively and uniformly so that message traffic may be exchanged with efficiency.

Stations operating in the NTS have the responsibility to promptly relay messages along, deliver messages in a timely fashion, or service undeliverable messages back to the originator. Stations must honor this responsibility.

Stations operating in the NTS interface directly with the public and served agencies representing all of Amateur Radio. Stations must represent us all well.

The methods and protocols of the NTS MPG are intended to facilitate achieving these objectives.

Chapter 1, Format: Chapter 1 presents the standard ARRL formal radiogram format used throughout Amateur Radio today for written message traffic. This format is the expected form of written messages, and is used everywhere except in a few specialized served agency applications where simplified incident reports or customized RACES forms may be used. Other techniques used in some disaster efforts, such as taking lists of contact names for welfare inquiries, and other similar informal traffic handling methods, are beyond the scope of this manual.

Chapter 2, Voice: Transmission of formal written traffic by voice confronts the amateur with the difficulties of voice perception when attempting to convey form and content with precision. The path of the manual temporarily splits accordingly, presenting voice message exchanging protocols in Chapter 2 separate from the CW protocols. The two station voice exchange is presented in this chapter.

Chapter 3, CW: Transmission of formal written traffic by CW is presented in Chapter 3. The technique is notably differ-

ent than on voice. The two station CW exchange is presented in this chapter.

Chapter 4, Nets: Managing the voice and CW transmission of messages beyond the two station exchange is handled on nets. The manual paths again converge, presenting both CW and voice traffic net operating guidelines, for both the participating station and the net control, in Chapter 4.

Chapter 5, NCS: Additional topics unique to net control are expanded upon in Chapter 5.

Chapter 6, NTSD: Messages transmitted with the digital modes use the standard ARRL format for the entire message entered into the text field, thus enabling a message to move from one mode to another without modification. Chapter 6 presents the NTS Digital (NTSD) methods of handling the standard message including the routing information in the “To” and “Subject” blocks. The NTS Digital Guidelines for the system are included in this chapter.

Chapter 7, SAR/PSHR: Chapter 7 presents the methods used by stations participating in the National Traffic System for reporting their monthly activity—the SAR and PSHR reports.

Chapter 8, Public Interface: Chapter 8 presents guidelines for delivering messages to the addressees, sending service messages back to the station of origin to report on progress or problems, notes on originating messages from the public and mass mailings.

Chapter 9, Public Service: Chapter 9 ends the manual with a discussion and examples of some tactical public service type operations. Section Emergency Coordinators and local EC’s generally stipulate the methods used in this type operation, hence the examples given here are designed to show how the traffic net procedures can be useful in such nets.

General: Throughout this manual there are tasks presented which are, or may be, handled using various techniques. Different methods for doing the same task are either presented as alternate choices explained in full as separate cases, or included in notes within the chapter section. Often the order of preference is based upon the current “best Amateur Radio practice.”

In some cases there are matters for which there is no customary method yet devised or widely used. A few suggestions are made, but plain English is always a default tool for accomplishing the tasks or issuing the commands in these cases.

Some new ice is broken in a few protocols presented in the manual. For example, the continuing problem of how best to handle voicing of different kinds of groups encountered in messages when on the phone nets has been consolidated into one set of guidelines. Although these matters are handled in a variety of ways throughout the system, the presented form will be of assistance in bringing some uniformity. To do otherwise would leave a large number of variable “rules” to use which can be confusing to the newcomer. A variety of rules can lead to misunderstandings and surprises when transmitting message traffic even among experienced operators. The voicing protocols presented here are designed to be mutually exclusive, assuring that every form of message syntax or encountered group

will have a unique method applied. The experienced operator may then come to expect a unique meaning of the method in each situation.

Such license is taken only when the presented protocols have been subjected to extensive testing in typical amateur traffic handling situations. When choices were available, those presented first in order were chosen to attempt to optimize message transmission and reception accuracy, then efficiency.

In addition to the chapter texts, some additional attachments are included in both textual and graphics form to aid in the fundamental purpose of the work, i.e., to provide a document for those wishing to have a ready reference for the current “best Amateur Radio traffic handling practices” of the day.

The future of the NTS is in the hands of those who understand the value of formal third party communication and the technology required to make it effective in today’s environment. To assure opportunities for all amateurs to enjoy the rewards of public service traffic handling it is essential to pass along the knowledge developed over the years, and to introduce newcomers to this particular subset of Amateur Radio activity. Everyone can participate.

Formal traffic handling is an essential part of Amateur Radio emergency communications public service as well. Effective ARES/RACES operations need not invent a new wheel to accomplish this. Where formal traffic handling is required, cooperative effort and training between NTS operators and those of ARES/RACES will produce benefits for the overall effort. The distinction between the groups with respect to traffic handling can be made to vanish. ARES and RACES operators can become NTS operators within their domain.

It is worthwhile to reduce the number of amateurs encountered at hamfests who have been in the service for ten or twenty years or more who have never heard of the NTS! It is perhaps more important to be certain that newcomers, from the first day they enter the service, are aware of the NTS/ARES/RACES and the skill levels used in serving the public. Pass the torch!

Acknowledgments

Many outstanding Amateur Radio operators have contributed to this manual—some without even being aware of it at all. We are specifically referring to all the devoted NTS operators, net controls and managers encountered since way back in the United Trunk Line days. Those individuals were the mentors for all of us coming up through the ranks of the traffic handling community. They are the ones who pioneered the practices we use today, and to each and every one of them we owe our thanks for their devotion to the effectiveness of our traffic handling systems. Remember that H. P. Maxim was doing this at one time... with the same intent as those of us who pound brass, voice messages, or type on keyboards today.

Particular thanks must be given to Bill Thompson, W2MTA, most recent past Eastern Area Chair, who shared a keen interest in this particular work, encouraged its progress, and made it possible to bring it to this level. It is hoped that the manual will satisfactorily justify his trust.

Thanks to Marcia, KW1U, current Eastern Area Chair, who helped carry the work forward, and to Jim, KB5W, Central Area Chair, and Rob, K6YR, Pacific Area Chair, for their assistance, guidance and suggestions in bringing this work of the Standing Committee to final form and submission.

Thanks also must be extended to Gary Ferdinand, W2CS, who likewise shared a keen interest in this effort. His considerable time and effort in precise and detailed review and criticism of the articulation of techniques helped capture in the written word efficient methods and syntax at all levels of operating activity. To a large extent the capturing of best current practice in this manual is due to his sharp eye and experience.

Thanks to Nick, N4SS, Eastern Area NTSD, and Cal, N3QA, former 3DC, who both made extensive contributions to Chapter 6 on the NTS Digital system.

Appreciation must also be extended to all the currently active net controls and operators who answered questions or set the example along the way. This was always done with the friendly spirit of cooperation in Amateur Radio that makes our service unique.

And thanks, too, to all the NTS operators in the MDC Section who put up with the constant experimentation with traffic handling quality control tests, training and exercises, SET workloads, and constant preaching. The MDC SEC, WA1QAA, was first in line insisting on having this kind of document, and spent untold hours helping to review content. Thanks also to John, KO4A, who invested his time and effort in early formatting of material which helped move the project forward.

All of those operators, Section and national, contributed a great deal to this manual by proving what works, and reminding us all daily why we do this.

73, AI, W3YVQ, EAS Associate Member, ORS, OES,
MDC ASM RACES-ARES/NTS Coordinator.

Chapter 1 - The ARRL Message Format

1.0 The ARRL Message Format

The standard ARRL message format is used to send written amateur radio messages throughout the National Traffic System (ARRL NTS) and independent nets. The format is standardized in order to provide a uniform means of originating, handling, and tracking messages.

A message is considered a “formal” radiogram when it is completed with a correctly formatted preamble, address, text and signature. Stations in the system are not obligated to handle incomplete or improperly formatted messages.

This chapter presents the message format and how to fill out the message form. The ARRL standard message consists of four main parts:

Preamble: Information to track the message;

Address: Name and address of the intended recipient; (with optional delivery “Op Note”);

Text: The message information; and

Signature: The party for whom the message was originated; (with optional reply “Op Note”).

Records: These four parts are recorded on the message form along with information records about how the message was originated, received, sent or delivered. The handling operator’s duties include entering these records.

1.0.1 Example Blank Form

Below is an example form fabricated for this manual. The ORIG and DLVD blocks at the bottom were added here for demonstration of records. Official ARRL message packs are available from the ARRL, Newington, CT, 06111, and: [http://www.ARRL.org/FandES/field /forms/](http://www.ARRL.org/FandES/field/forms/).

ARRL Radiogram Format:

NR	PREC	HX	STATION OF ORIGIN	CK	PLACE OF ORIGIN	TIME FILED	DATE FILED
(2) TO					THIS RADIO MESSAGE WAS RECEIVED AT:(9) AMATEUR STATION _____ TEL _____ NAME _____ STREET ADDRESS _____ CITY, STATE, ZIP _____		
TEL							
OP NOTE (2.4)							
TXT							
_____					_____		
_____					_____		
_____					_____		
_____					_____		
_____					_____		
_____					_____		
_____					_____		
_____					_____		
SIG (4)					OP NOTE (4.2)		
RCVD FROM		NET	DATE/TIME		SENT TO	NET	DATE/TIME
(5)					(6)		
(7) ORIG - FROM - DATE/TIME					(8) DLVD - TO - DATE/TIME		
Name					Name		
Addr					Addr		
City					City		
TEL					TEL		

Experienced traffic handlers can write and handle messages on plain paper, five or ten to a page. Get to know the format well enough to be able to do likewise.

1.0.2 Example Message

In order to discuss and illustrate the various parts of the message, the following example message will be used. This abbrev-

viated presentation form will be used often throughout this manual, less the form lines, with the preamble, address, text, and signature each indented.

1 R HXE W1AW 12 NEWINGTON CT 1830Z JUL 1	(1. PREAMBLE)
DONALD R SMITH	(2. ADDRESSEE)
164 EAST SIXTH AVE	(ADDRESS)
RIVER CITY MD 00789	(CITY/ST/ZIP)
301 555 3470	(TEL)
THANKS FOR MESSAGE X HOPE	(3. TEXT)
TO SEE YOU AT HAMFEST	(TEXT)
X 73	(TEXT)
DIANA	(4. SIGNATURE)

This message is entered on the form below and the form blocks are numbered for reference. Preamble numbers in brackets [] refer to sections 1.1.#, and part (block) numbers in

paren. () refer to sections 1.#. in the text below. This form was created for this manual.

PREAMBLE (1)

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
NR 1	PREC R	HX E	STATION OF ORIGIN W1AW	CK 12	PLACE OF ORIGIN NEWINGTON CT	TIME FILED 1830Z	MON DY JUL 1
(2) TO DONALD R SMITH 164 EAST SIXTH AVE RIVER CITY MD 00789 TEL 301 555 3470 OP NOTE (2.4) TXT (3) THANKS FOR MESSAGE X HOPE TO SEE YOU AT HAMFEST X 73					THIS RADIO MESSAGE WAS RECEIVED AT:(9) AMATEUR STATION _____ TEL _____ NAME _____ STREET ADDRESS _____ CITY,STATE,ZIP _____		
SIG (4) DIANA		OP NOTE (4.2)					
RCVD FROM (5) WD3W		NET MEPN	DATE/TIME 012215Z JUL 91		SENT TO (6) KD3JK	NET MDD	DATE/TIME 012308Z JUL 91
(7) ORIG - FROM - DATE/TIME Name Addr City TEL					(8) DLVD - TO - DATE/TIME Name Addr City TEL		

Note: The ARRL radiogram consists of **groups** in the Preamble, Address and its Op Note, Text, and Signature and its Op Note. These groups consist **only** of three possible character types: **letters** (all upper case), **figures**, and/or **slashes (/)**. The slash is used to separate characters within a group, but may be the first or last character if needed. It is not usually used as a group by itself. (Message records may in any form.)

1.1 Preamble Part

All messages must have a preamble. The preamble of the message contains information about the message necessary to keep track of it as it passes through the amateur system.

The parts of the preamble, except for the check as noted later, are **not** changed by any station relaying or delivering the message. They are permanent parts of the message created by the station of origin and must remain with the message all the way to the delivery point. Preamble information is used to service undeliverable messages and to generate replies to specific handling instructions.

The **Handling Instructions**, [HX__], and **Time Filed**, [Time], are **optional**, chosen by the station of origin based on the need for their inclusion (see sections 1.1.3 and 1.1.7).

The parts of the **Preamble** are as follows:

NR 1	PREC 2	[HX] 3	STN ORIG 4	CK 5	PLACE OF ORIGIN 6	[TIME-FILED] 7	MON 8	DAY 9
---------	-----------	-----------	---------------	---------	----------------------	-------------------	----------	----------

Each of these parts of the preamble are discussed in the following paragraphs (numbered according to their position).

1.1.1 Message Number, #

NR 1	PREC	[HX]	STN-ORIG	CK	PLACE-OF-ORIG	[TIME-FILED]	MON	DAY
---------	------	------	----------	----	---------------	--------------	-----	-----

The message number is selected by the station originating the message and it must be on all messages. It stays with the message all the way to the point of delivery. The delivering station may need to reply to the station of origin and refer to this number.

Use number digits only, no letters, leading zeros, or dashes. Numbers are usually begun with 1 at the start of a year or month at the pleasure of the originating station.

Note: If the message is a Service message, place letters SVC in front of message number as a leading group (infrequently used currently). Precedence is kept the same as in the message being serviced. (See the section on *Creating Service Messages*.)

1.1.2 Message Precedence

NR 2	PREC	[HX]	STN-ORIG	CK	PLACE-OF-ORIG	[TIME-FILED]	MON	DAY
---------	------	------	----------	----	---------------	--------------	-----	-----

Letter(s) used to indicate the precedence of the message, and must be on all messages. See the latest Precedence full definitions from ARRL FSD-3. Messages are handled in the order of precedence as much as possible as follows;

Precedences (ARRL FSD-3, 2/94):

EMERGENCY (Always spelled out on form.): 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.

Emergency is always spelled out in the preamble. Means other than Amateur Radio should be included in the delivery options. **Emergency messages have immediate urgency.** They should take priority over any other activity and should be passed by the best means available with the cooperation of all stations.

Priority (P): 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 (W): 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 (R): 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.

Notes: These precedences are not meant to prohibit handling lower level traffic until all higher levels are passed. Common sense dictates handling higher precedence traffic before lower when possible and/or outlets are available.

Exercise Messages: Messages in the ARRL format passed for test and exercise purposes may be given a precedence preceded by the word “TEST,” as in “TEST R,” “TEST P,” “TEST W,” or “TEST EMERGENCY.” It is customary to indicate within the text of such messages the words “TEST MESSAGE,” or “EXERCISE.” Using “EXERCISE” as the first and last groups of the text helps alert listeners to the nature of the content to avoid undue alarm. In some exercises, the life of the message may be terminated when the exercise period is terminated, i.e., any such messages are not handled after the exercise. Consult with the ARES/RACES/NTS group conducting the test to determine if such messages should be filed, handled and delivered afterwards to permit a full evaluation of the exercise.

Service Messages: The precedence of a SVC message should be the same as that of the message being serviced. SVC ahead of a message number indicates a service message sent between stations relative to message handling, or delivery. Since they affect timely delivery, they are handled before routine messages. SVC is not a precedence (See section 1.11).

1.1.3 Handling Instructions, HX, Optional

NR 3	PREC	[HX]	STN-ORIG	CK	PLACE-OF-ORIG	[TIME-FILED]	MON	DAY
---------	------	------	----------	----	---------------	--------------	-----	-----

Optional. Do not use handling instructions unless a particular need is present. Handling instructions are used to instruct the relaying and/or delivering operator to handle the message ac-

ording to the following codes (ARRL FSD-218). If used, handling instructions must stay with the message to the point

of delivery. **Note:** Numbers following the letters are appended without a space.

Handling Instructions (ARRL FSD-218 2/91)

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 of the message back to the 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 and time and method of delivery (by service message).
HXE	Delivering station get reply from addressee, originate message back.
HXF __	(Followed by a number.) Hold delivery until [date].
HXG	Delivery by mail or landline toll call not required. If toll call or other expense involved, cancel message and send service message back to originating station.

Compliance with these instructions is **mandatory**. Reports may be considered service messages.

inserted, otherwise the HX should be repeated, thus: NR 27 R HXAC W1AW..., or, NR 27 R HXA50 HXC W1AW...(etc.).

More than one HX code may be used. If more than one code is used, they may be combined provided no numbers are to be

1.1.4 Station Of Origin

NR	PREC	[HX]	STN-ORIG 4	CK	PLACE-OF-ORIG	[TIME-FILED]	MON	DAY
----	------	------	---------------	----	---------------	--------------	-----	-----

The call sign of the amateur station originating (creating) the message for first introduction into the amateur system is the station of origin and must be on all messages. This call sign must stay with the message to the point of delivery. Service messages go to this station.

It is wise for stations not at their call book address to include an Op Note about how to send service messages or replies. See the sections on *Delivering And Servicing Messages*.

1.1.5 Check, Ck

NR	PREC	[HX]	STN-ORIG	CK 5	PLACE-OF-ORIG	[TIME-FILED]	MON	DAY
----	------	------	----------	---------	---------------	--------------	-----	-----

The check is the number of word “groups” in the text of the message and must be used on all messages. This number is used by operators to verify that the text has been copied with the correct number of groups. See the *Text* section 1.3.4 for information about how to count word groups for computing the check. There are two ways to enter the check in the preamble:

- 1 R HXE W1AW 12 NEWINGTON CT 1830Z JUL 1. (check is 12) The check is entered as the number of word groups in the text if there are **no ARRL Numbered Radiograms** in the text.
- 1 R HXE W1AW ARL 12 NEWINGTON CT 1830Z JUL 1. (check is ARL 12) The check is preceded by the letters “ARL” if the text includes **one or more ARRL Numbered Radiograms** (See attached list.). Note the space between “ARL” and “12.”

Check Errors: This subject is covered in the “Receiving Messages” sections of chapters 2 and 3. The original check is never changed. A correction may be appended with “/.”

As mentioned earlier, the preamble of a message is created by the originator and is not to be changed by other stations. If a discrepancy is found between the check and the word count of a message by relaying stations, every attempt should be made to verify that the correct text and check has been transmitted and received. This is your responsibility as an operator.

If an error can not be resolved, it is customary to modify the check in the preamble by preserving the original check, and noting the corrected value by appending it with a “/,” as in 13/12. This is read as “one three corrected to one two” when transmitting on VOICE, or “13/12” on CW.

The text or check is not altered to force agreement!

The use of “ARL” in the check alerts the receiving operator to expect ARRL numbered radiogram(s) in the text.

1.1.6 Place Of Origin

NR	PREC	[HX]	STN-ORIG	CK	PLACE-OF-ORIG 6	[TIME-FILED]	MON	DAY
----	------	------	----------	----	--------------------	--------------	-----	-----

The **Place Of Origin** is the location (city and state) of the party for whom the message is created, not necessarily the location of the station of origin. For example, if the station of origin is in Baltimore creating a message for a person in Elliccott City, the **Place Of Origin** would be Elliccott City in the preamble. The **Place Of Origin** relates to the signature and should make sense to the addressee as the place the signing party is located. It must stay with the message to the point of delivery.

The state is given by the US standard two letter code as in “Baltimore MD,” or “Chicago IL.” Note that no punctuation is used. (State abbreviations are shown in the MPG-R routing tables.)

Undeliverable messages are serviced back to the station of origin, not the place of origin. See the section on *Originating Service Messages*.

If the message addressee wishes to send a reply message, the message goes back to the place of origin, and the addressee should supply the full address for such replies. If it is not available, the station of origin is the next best choice, assuming origination records are kept.

The originating station should ask the person for whom the message is originated about replies. If it is unlikely that the addressee will know the reply address, include a full address for reply as part of the signature.

1.1.7 Time Filed, [Time], Optional

NR	PREC	[HX]	STN-ORIG	CK	PLACE-OF-ORIG	[TIME-FILED] 7	MON	DAY
----	------	------	----------	----	---------------	-------------------	-----	-----

The optional “**Time Filed**” is used only when filing time has some importance relative to the precedence, handling instructions, or meaning in the text. **Time Filed** is the time when the message is created by the station of origin. The time figures are in the 24-hour format followed by the letter “Z” to denote UTC time, or local time, as in “0215Z” or “2215EDT.” It is acceptable to specify local time as “L,” as in 2215L.

UTC (Z) date and time is customary on ARRL messages (an unmarked time is assumed to be UTC). To avoid ambiguity, mark the time with a Z, time zone designator, or L.

Time and date must agree, that is be related to the same time zone.

The **Time Filed** is normally omitted on routine traffic having no special time concerns. If used, the filing time must stay with the message to the point of delivery.

Example: 0215Z JUL 13, 2215EDT JUL 12, or 2215L JUL 12 (all three filing times/dates are equivalent).

1.1.8 Month Filed, Mon

NR	PREC	[HX]	STN-ORIG	CK	PLACE-OF-ORIG	[TIME-FILED]	MON 8	DAY
----	------	------	----------	----	---------------	--------------	----------	-----

Month must be used on all messages. (If **Time Filed** is used, this date must agree with that time); This entry is the month in which the message is created and is written in the preamble as the three letter abbreviation: The month/day is assumed to be UTC unless marked otherwise by a time. The abbreviations: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC.

The full name of the month is spoken when transmitting the preamble on voice. On CW, only the three letters are sent.

Example: 0215Z JUL 13, 2215EDT JUL 12, or 2215L JUL 12 (all three filing times/dates are equivalent). “7/13” and other variations are not used.

1.1.9 Day Filed, Dy

NR	PREC	[HX]	STN-ORIG	CK	PLACE-OF-ORIG	[TIME-FILED]	MON	DAY 9
----	------	------	----------	----	---------------	--------------	-----	----------

The DAY FILED is the day of the month on which the message was originated and must be used on all messages. (If TIME FILED is used, the date and time must agree). The day is written in figures only, no leading zeros. On voice, two digit days are spoken as two separate digits (“one seven” rather than

“seventeen,” etc.). The month/day is assumed to be UTC unless marked otherwise by a time. Example: 0215Z JUL 13, 2215EDT JUL 12, or 2215L JUL 12 (all three filing times/dates are equivalent). “7/13” and other variations are not used.

1.1.10 Review Of The Preamble

The preamble consists of the following parts, two of which are optional (OPT.):

NR	PREC	[HX] OPT.	STN-ORIG	CK	PLACE-OF-ORIG	[TIME-FILED] OPT.	MON	DAY
----	------	--------------	----------	----	---------------	----------------------	-----	-----

In the example message given, the preamble is:

NR 1	PREC R	[HX] HXE	STN-ORIG W1AW	CK 12	PLACE-OF-ORIG NEWINGTON CT	[TIME-FILED] 1830Z	MON JUL	DAY 1
---------	-----------	-------------	------------------	----------	-------------------------------	-----------------------	------------	----------

If the handling instruction, HXE, and the filing time, 1830Z, were not used by the originating station (both are optional), the preamble would be as follows: Most routine messages in the amateur system are of this form.

NR 1	PREC R	[HX]	STN-ORIG W1AW	CK 12	PLACE-OF-ORIG NEWINGTON CT	[TIME-FILED]	MON JUL	DAY 1
---------	-----------	------	------------------	----------	-------------------------------	--------------	------------	----------

A **SERVICE** message would have a preamble as follows:

NR SVC 1	PREC R	[HX]	STN-ORIG W1AW	CK 12	PLACE-OF-ORIG NEWINGTON CT	[TIME-FILED]	MON JUL	DAY 1
-------------	-----------	------	------------------	----------	-------------------------------	--------------	------------	----------

An **EXERCISE** message would have a preamble as follows:

NR 1	PREC TEST R	[HX]	STN-ORIG W1AW	CK 12	PLACE-OF-ORIG NEWINGTON CT	[TIME-FILED]	MON JUL	DAY 1
---------	----------------	------	------------------	----------	-------------------------------	--------------	------------	----------

Special rules apply for voicing a preamble. (See Chapter 2.)
On CW simply send all the characters and spaces.

There is no prosign or proword sent at the end of the preamble.

1.2 Address Part

The second section of the message is used to specify the name, address, city, state, zip, and telephone number of the addressee. From the example message:

- (2) DONALD R SMITH (ADDRESSEE)
164 EAST SIXTH AVE (ADDRESS)
RIVER CITY MD 00789 (CITY/ST/ZIP)
301 555 3470 (TEL)
(plus optional Op Note; see 1.5)

Getting as much addressee information as possible is the responsibility of the operator originating the message. Stations relaying or delivering the message can not be in a position to do this as well. An originating operator should try to anticipate the problems the delivering operator might have, and try to help assure success by getting a complete address including telephone number while still in contact with the originator.

If part of a message address is garbled in transmission, a complete address will help the receiving operator recover by giving him more leads to track down. See the chapter on *Message Delivery*.

No guarantee of delivery can be made by amateurs handling messages for the public. However, the reputation of Amateur Radio and the ARRL is enhanced if all operators try to pay attention to details, which help assure the message will get through.

1.2.1 Addressee

Line 1 should contain the full name of the addressee and, if possible, it should be the name as it is most likely to be found in the local telephone directory at the point of delivery.

Messages addressed to children should contain the parents listed name, for example:

JUDY AND BARBARA SMITH
C/O DONALD R SMITH
164 EAST SIXTH AVENUE (etc.);

or,

DONALD R SMITH AND JUDY AND BARBARA
164 EAST SIXTH AVENUE (etc.)

Amateur call signs and/or titles are included at the end of the name of the addressee:

JOHN R SMITH W3XYZ

or,

JOHN R SMITH PRES PODUNK ARC

1.2.2 Street Address

Line 2 is the street address (or institution name which might require an extra line in the address). Enter figures, street name (spell out east, west, north and south for clarity), and apartment or unit number. Sections of a city, as in SE or NW, are usually left abbreviated.

Apartment or unit numbers for residences are usually included at the end of the street address line. Note the EAST in the street address is spelled out. This is preferred to the abbreviation "E," etc.

JAMES R SMITH
23 EAST OAK DRIVE SW APT 34

Nursing home or other institution names are usually entered as additional lines:

ROBERT A JOHNSON
PLEASANT VISTA NURSING HOME RM 26 (Extra line.)
101 HOWARD ST
NEW YORK NY 00787
212 555 6700

1.2.3 City, State, Zip

The **City, State** (using standard two letter abbreviations), and Zip code are entered without punctuation. **Nine Digit Zips** are written with a spelled **dash**, i.e.

OWINGS MILLS MD 21117 DASH 2345

Foreign Zip Codes may be one or several "mixed" letter/figure groups. They are written as they would be for posting, without punctuation.

1.2.4 Telephone Number

Telephone numbers are written as three groups of digits with no punctuation; area code, exchange, and number (only two groups if the area code is not required):

212 555 3245, or 555 1200 (**note no hyphens used**)

International phone numbers may be grouped differently. They are written as grouped in a directory, without punctuation.

1.2.5 Address Op Note

An Op Note may be inserted after the telephone figures, before the text, relating to handling and/or delivery matters. The words “OP NOTE” are used to introduce this information when transmitting the message. Op Notes are optional, and are generally not considered part of the message to be delivered to the addressee. They are primarily for use by the handling operators. For example, the following address with Op Note relates to when to attempt delivery by telephone.

DONALD R SMITH
 164 EAST SIXTH AVENUE
 RIVER CITY MD 00789
 301 555 3470 OP NOTE WORKDAY ONLY

1.2.6 Punctuation

Punctuation Is Not Used In The Address Section. The only exception in general use is the symbol “/,” sometimes used to separate parts of a street address, group, or institution name. If a DASH or HYPHEN is required, it is spelled out to avoid conflict with prosigns used in the transmission process:

SFC JOHN L JONES
 357TH ORD/CMD 34 DASH 765 UNIT
 FORT SMITH CO 99770
 600 555 7899

1.2.7 Messages For Other Services

Messages which must be re-filed with other systems, such as MARS, may require additional information such as rank, unit information, APO, etc. Find out what is required by consulting an operator in that system before accepting the message so that you are prepared to ask for what is needed.

1.2.8 International Traffic

Messages addressed to persons in other countries are subject to regulation or prohibition according to treaties between those countries and the United States. Before accepting messages for international transmission, check the ARRL list of countries with whom third party traffic is permitted, or consult with the ARRL Section Traffic Manager in your Section.

1.2.9 Re-Contacting Originating Party

Originating stations should also get complete information from the originator to permit re-contact if a problem arises in delivery, or if a reply message is received (this information is entered in block 7 on the message form, see 1.7).

1.3 Text Part

The text contains the actual message information authorized by the person for whom the message was originated. Note that the amateur does not originate messages for a person without permission from that person!

The text is entered in section 3 of the message form. (When transmitting a message, the text is separated from the preceding address, and the signature to follow, by the use of the word “BREAK” on voice, the prosign <BT> on CW, to allow the receiving operator to know its beginning and end. BREAK and <BT> are not counted as groups.)

The text is divided into word “groups,” five or ten to a line for easy counting, and is usually limited to 25 words or less.

ARL	FORTY	SIX	X	DO
YOU	WANT	THE	304/BA	EQUIPMENT
QUERY	THE	SIX	DASH	B
TYPE	IS	NO	LONGER	AVAILABLE
X	CU	ON	7013R5	73

Note the use of “X,” “QUERY,” “/,” “DASH,” “R” and spelled-out numbers for the ARRL numbered radiogram “ARL FORTY SIX” (See the following section.). The check is ARL 25.

1.3.1 Punctuation

Punctuation characters are not used in the text except as follows:

- /: The slash, “/,” is used to separate characters within a group, as in 304/BA. Since the “/” is part of the group it does not qualify as a separate group for the check. Although usually not used as a group by itself (a space on the left and on the right), if so used it would be counted in the check.
- X: The letter “X” used to denote a period. The letter “X” is never used as the last group of the text. The “X” is a separate group and IS counted for the check.
- R: The letter “R” is used in place of a decimal in mixed figure groups, as in 7013R5 (7013.5), or 146R670 (146.670). Since the “R” is part of the group it does not qualify as a separate group for the check. (The inclusion of the “R” makes the group a “mixed group” for transmission on voice.)

Other punctuation is spelled out (in order to avoid confusion with prosigns used in the transmission of the message) as in “Query” for a question, “Dash” to separate special number or mixed groups, “Exclamation,” “Comma,” etc. (Hyphens are **not** used in telephone number groups or anywhere else in the text.) Such punctuation words are separate groups and **are** counted for the check.

Q-Signals and other letter groups are permitted in the text. Ciphers, codes, and encryption, and other groups intended to obscure the meaning, are not.

Salutations: Words like “love” and “regards,” often associated with signatures in formal letters, are put in the text in amateur messages (not in the signature).

1.3.2 Email, Packet Or Internet Addresses

Punctuation is not permitted. Appropriate spelled words are used as substitutes where required, i.e.:

W3XXX ATSIGN AOL DOT COM
 (“AT” may be used for “ATSIGN”)
 W3XXX ATSIGN WB3XXX DOT MD DOT USA DOT NA

HTTP COLON SLASH SLASH WWW DOT HOMEPAGE DOT COM

Notes: “\” is written as “BACKSLASH,” “/” is written as “SLASH.”

“TILDE,” “UNDERSCORE,” “POUNDSIGN,” etc., are often encountered.

Use “UPPERCASE” or “LOWERCASE” where required to specify case.

Use “SPACE” and “DASH” where they are an integral part of an address group.

1.3.3 ARRL Numbered Radiograms

ARRL Numbered Radiograms are messages encoded as one or two numbers, some with option blanks to be filled out in the text, to permit many words to be condensed to a few. These numbers are always spelled out in the written message and in transmission, and are always preceded by the letters “ARL,” as in “ARL FORTY SIX” in the example text.

For example, ARL SIXTY TWO reads “Greetings and best wishes to you for a pleasant [] holiday season.” In a message text this would be written as “ARL SIXTY TWO CHRISTMAS,” where the word CHRISTMAS fills in the blank. Some blanks may require multiple words. Some ARRL Numbered Radiograms have multiple blanks. The text groups completing such multiple blanks may usually flow after the numbers, but they may be separated with an “X” if required for clarity.

More than one ARL message may be placed in the text. Each one is preceded by “ARL.” The CHECK must contain “ARL” ahead of the group count if these radiograms are used in the text. An “X” may be used to prevent ambiguity at the end of the numbered radiogram, with or without a blank, otherwise it is not required to separate subsequent text.

1.3.4 Counting Word Groups For The Check

The number value to be entered in the “CHECK” in the preamble of the message is the total number of groups in the text between the start and end prosigns (but not counting the prosigns).

An easy rule to remember about counting word groups: Any group of one or more consecutive characters with no interrupting spaces, with a space before it and after it, is counted as one group.

Such a group may be all letters, all numbers, or any mix of numbers, letters, or slashes (/), so long as there are no spaces within the group. Each word, group of connected digits, connected mixed characters, spelled punctuation word, “X,” or ARL constitutes one group for the purpose of calculating the total count to enter in the check section of the preamble.

The prosigns “BREAK,” or <BT> on CW, at the start and end of the text are not counted.

Examples of word groups:

One Group:	Two Groups:	Three Groups:
X	X 73	THANKS X 73
145R67	555 5678	301 555 3456
34TH	34 TH	55 DASH 56XA

34TH/CMD	34TH CMD	34 TH CMD
SIXTY	ARL SIXTY	ARL SIXTY SIX
FIFTEEN	FIFTY SIXTH	TWO ZERO SIX
7035R7KHZ	7035R7 KHZ	7035 DECIMAL 7

Note: 7035R7 means 7035.7, but the period symbol is not permitted. **The letter “R” is used as a substitute for decimal point.** The number group is written as 7035R7, or 7035 DECIMAL 7. If “DECIMAL” is used it is a separate group, making three total in this example.

1.3.5 Exercise Message Texts

Exercise messages: It is customary to indicate within the text of such messages the words “TEST MESSAGE,” or “EXERCISE.” Together, the “TEST” precedence and “TEST MESSAGE” in the text alert those receiving the message to the exercise nature of the content. It is suggested that use of the word “EXERCISE” as the first and last groups of the text help make this clear to any listener even if the entire message is not copied, thus preventing undue alarm. See the above section 1.1.2 *Message Precedences, Prec., Exercise Messages.*

1.4 Signature Part

1.4.1 Signature

The signature of the message is the name of the person for whom the message is created (not necessarily the station of origin), and any other information that person wishes to include (such as address, telephone number, title, etc.). The Place-of-Origin given in the Preamble is the location of this individual.

Words like love and regards, often associated with signatures in formal letters, are put in the text in amateur messages.

Amateur call signs, titles, QCWA or OOTC numbers, etc., in the signature follow the name on the same line.

Addresses for the signing party are optionally included (upon request) on subsequent lines, exactly as done in the address section, but are included only if important to the originator, message purpose, or replying.

Since most addressees know the party from whom messages originate, most messages in daily NTS service have simple one-line signatures.

Messages for served agencies, particularly during disasters, generally require an authorizing signature in full. Messages without same may be refused.

It is **important** for originating stations to get full information about persons for whom messages are originated in order to be able to re-contact them should a problem arise in the delivery of their message, or if a reply is received (see 1.7).

Example:

THANKS	FOR	MESSAGE	X	HOPE
TO	SEE	YOU	AT	HAMFEST
X	73			
(SIG)	DIANA N1ABC AT WA1ABC BBS CT			

Note in this case the reply information is part of the signature itself, thus delivered to the addressee as part of the message. See the next section also.

1.4.2 Signature Op Note

An Op Note may be inserted after the Signature, before the end of the message, relating to reply and/or servicing matters. The words “OP NOTE” are used to introduce this information when transmitting the message. Op Notes are optional, and are generally not considered part of the message to be delivered to the addressee. They are primarily for use by the handling operators. For example, the following signature with Op Note relates to replies being directed to an amateur packet BBS.

Example with signature Op Note:

THANKS	FOR	MESSAGE	X	HOPE
TO	SEE	YOU	AT	HAMFEST
X	73			

(SIG) DIANA OP NOTE REPLY VIA N1ABC AT WA1ABC BBS CT

Note in this case the reply information is included in the Op Note, for the information of the handling station to use for any reply. The Op Note is not normally delivered to the addressee.

See the section on *Transmitting Methods For Voice and CW* for details of how to include the Op Note relative to the prosigns used in transmission. The words “OP NOTE” are always included to introduce such information to indicate that the information is separate and distinct from regular message parts.

1.5 Records, Block 5, Station RCVD Information

Enter the call sign of the station from whom the message was received, net name, and date/time of receipt in the RCVD block (REC'D block on regular ARRL form.)

RCVD FROM (5)	NET	DATE/TIME	SENT TO (6)	NET	DATE/TIME
------------------	-----	-----------	----------------	-----	-----------

These blocks were created for this manual.

1.6 Records, Block 6, Station Sent Information

Enter the call sign of the station to whom the message was sent, net name, and date/time of transmission in the SENT block. (SENT block on regular ARRL form.)

1.7 Records, Block 7, Station of Origin Information

Enter the name, address, and telephone number of the party for whom the message was originated, and date/time, in the ORIG block. (REC'D block on regular ARRL form.)..

(7) ORIG - FROM - DATE/TIME Name Addr City TEL	(8) DLVD - TO - DATE/TIME Name Addr City TEL
--	--

These blocks were created for this manual. The SENT and REC'D blocks may be used.

1.8 Records, Block 8, Station DLVD Information

Enter the name and date/time of delivery, and any corrections to address and telephone number, in the DLVD block. This may be needed later for replies or future deliveries. Such corrections, or other information about the addressee, should be considered private and not sent back to the originator without getting the addressee's permission. (This information must be entered into the SENT block on the regular ARRL message form.)

Note: Some operators make their own message forms, or copy on blank paper. Records are then noted ad-hoc in a form as desired. Others use computers with standard editors or word processors and file management, or use custom software for copying messages, verifying the check, and archiving, and/or for originating messages and check counting. Records are entered for each message depending upon the software used, and are always an important responsibility..

1.9 Block 9, Station Identification For Mailing

Enter your station information when mailing a message to the addressee so that person may contact you regarding a reply or becoming a radio amateur. This block appears on the standard ARRL message blank.

1.10 Originating A Message

When originating a message from a member of the public, remind that person that no guarantee of delivery is possible but that the amateur service has a nationwide network of stations meeting daily to perform this free public service and that every effort will be made to get the message through.

Get all of the originating party's information for the station origination block 7.

Get the complete name, address, city, zip, and telephone information for the addressee for block 2.

Explain the normal 25 word limit on texts and assist the party in constructing a clear text, using ARRL Numbered Radiograms if possible. Complete block 3.

Ascertain how the party wishes the signature to read in block 4.

Count the text word groups for the check block, fill out the preamble with your message number, call, etc., and the originating party's place of origin.

Observe the cautions in the following sections regarding legality, permission, and foreign third party traffic.

As originator you are the best filter for compliance. It is difficult to examine a message and conclude with certainty what purpose or meaning is in the content in all cases. If in doubt, it is not mandatory to accept the message; refuse it. If you know by some means other than content that a message is business related, or otherwise illegal, do not handle it.

Handling messages is a voluntary service.

You may explain regulations regarding message content and purpose to the originating party with tact and diplomacy. Help them to construct a proper message.

You are the licensee held responsible by the FCC.

1.10.1 Message Legality

Accept only messages in which content and purpose comply with the FCC regulations in force regarding third party traffic, the prohibition of "business" traffic, encryption, and other rules regarding prohibited communications.

If you receive such a message, and determine it does not comply with this requirement, you are not obligated to pass it on. Send a service message to the station of origin indicating same.

1.10.2 Messages Originated With Permission

Do not originate a message for a third party (someone other than yourself) without permission. This is a fraud and forgery.

Generating messages containing information about a third party without their permission is also considered very poor practice. Respect privacy.

1.10.3 Foreign Third Party Traffic

Do not transmit by amateur radio any third party messages into foreign countries that do not have treaty provisions with the United States permitting such traffic.

Traffic to foreign countries may have tighter rules, or be prohibited. Some countries may permit amateur-to-amateur messages transmitted directly—others may not. You are the first party. The amateur receiving the message is the second party. The amateur-to-amateur case, usually permitted, is different than the case of the second party receiving a message for a third party.

Check the **US Third-Party Traffic Agreements** list published by the ARRL in the **Net Directory**, periodically in *QST*, and elsewhere, or check with your Section Traffic Manager. This list is also available on the ARRL web site. (Regulations, International Operating.)

You are the licensee held responsible by the FCC.

1.10.4 Outlets For Your Messages

Check into a local or section net of the NTS and submit your message for handling, or put your message on a digital system which has the capability of passing it to the NTS or destination.

Local and Section NTS nets are listed in the "ARRL Net Directory." These nets meet daily at fixed times and operate on HF for wide area coverage or VHF/UHF for local users. You do not have to be a member of the NTS or hold the Official Relay Station (ORS) ARRL appointment to check into these nets. Generally, however, the Region and Area nets of the NTS are limited to assigned liaison stations.

There is no need to get on the air and call CQ to raise a station in the message destination area. Use the National Traffic System. The converse is also true. The NTS relies on stations in local calling areas checking into NTS nets to provide delivery outlets for messages.

1.11 Originating Service Messages

Messages encountered anywhere in the system that can not be relayed or delivered are not discarded. A service message back to the originating station must be generated. In other words, there are only three things an operator can do with a message: **(1) Relay it; (2) Deliver it; or (3) Service it** back to the originating station.

Undeliverable messages are serviced back to the station of origin, not the place of origin.

If a service message is sent back to the station of origin per its call book address, and it can not be contacted, stations often will send a service message back to the place of origin in an attempt to locate it. It is wise for stations not at their call book address to include an Op Note about how to send service messages or replies.

Service messages should contain a reference to the message number, addressee last name (or other identifier to cover errors in the message number), and reason(s) for the inability to relay or deliver the original message.

Generating service messages is the responsibility of the station holding the message.

Service messages are originated with the letters "SVC" ahead of the message number followed by a space, and the precedence of the service message is kept the same as that of the message being serviced. (This practice is used less frequently in recent years. Best practice of the day may be leaving off the SVC ahead of the number for service messages. The precedence is still handled the same way.)

1.11.1 ARL Sixty Seven, Undeliverable Message Service

The Numbered Radiogram, ARL SIXTY SEVEN, is generally used in service messages including the information mentioned above to complete the blanks.

A service message is originated with your number (preceded by "SVC"), precedence the same as the original message, call sign as station of origin and your city of origin, addressed to the original message's station of origin to report the undeliverable message. It is good practice to obtain the full address and

phone number of the station of origin for this service message, if possible. On the other hand, some originators of mass mailings in the NTS are well known and may often be addressed with their call signs and city/state. Consult with your STM or other NTS operators who might be familiar with such stations.

ARL SIXTY SEVEN reads:

“Your message number [.....] undeliverable because of [.....]. Please advise.”

Note the word “number” is included, thus only the figures of the original message number need be included. (It is acceptable practice to add the addressee’s last name or call sign after the number as additional qualification. This protects against loss of the number in transmission.) The cause for the message

being undeliverable follows. An “X” may be used to separate the explanation or parts thereof for clarity if needed. For example: “ARL SIXTY SEVEN 34 SMYTHE PHONE 410 555 1234 INCORRECT X NO LISTING X 73.” This gives the originator an indication of what you received and a specific reason for your difficulty.

Do **not** service back changes of addresses, phone numbers, or other personal information about the addressee without their permission. The original message might be intended to pry into the private affairs of the recipient.

See the chapter on *Delivering Messages For Servicing Criteria And More Details*.

1.12 ARL Codes, Precedences, and Handling Instructions

Group One -- For Possible "Relief Emergency" Use		Group Two -- Routine Messages	
ONE	Everyone safe here. Please don't worry.	FORTY SIX	Greetings on your birthday and best wishes for many more to come.
TWO	Coming home as soon as possible.	FIFTY	Greetings by Amateur Radio.
THREE	Am in ____ hospital. Receiving excellent care.	FIFTY ONE	Greetings by Amateur Radio. This message is sent as a free public service by ham radio operators here at _____. Am having a wonderful time.
FOUR	Only slight property damage here. Do not be concerned about disaster reports.	FIFTY TWO	Really enjoyed being with you. Looking forward to getting together again.
FIVE	Am moving to new location. Send no further mail or communication. Will inform you of new address when relocated.	FIFTY THREE	Received your _____. It's appreciated; many thanks.
SIX	Will contact you as soon as possible.	FIFTY FOUR	Many thanks for your good wishes.
SEVEN	Please reply by Amateur Radio. through the amateur delivering this message. This is a free public service.	FIFTY FIVE	Good news is always welcome. Very delighted to hear about yours.
EIGHT	Need additional ____ mobile or portable equipment for immediate emergency use.	FIFTY SIX	Congratulations on your _____, a most worthy and deserved achievement.
NINE	Additional ____ radio operators needed to assist with emergency at this location.	FIFTY SEVEN	Wish we could be together.
TEN	Please contact _____. Advise to standby and provide further emergency information, instructions, or assistance.	FIFTY EIGHT	Have a wonderful time. Let us know when you return.
ELEVEN	Establish Amateur Radio emergency communications with ____ on ____ MHz.	FIFTY NINE	Congratulations on the new arrival. Hope mother and child are well.
TWELVE	Anxious to hear from you. No word in some time. Please contact me as soon as possible.	* SIXTY	Wishing you the best of everything on _____.
THIRTEEN	Medical emergency situation exists here.	SIXTY ONE	Wishing you a very Merry Christmas and a Happy New Year.
FOURTEEN	Situation here becoming critical. Losses and damage from ____ increasing.	* SIXTY TWO	Greetings and best wishes to you for a pleasant _____ holiday season.
FIFTEEN	Please advise your condition and what help is needed.	SIXTY THREE	Victory or defeat, our best wishes are with you.
SIXTEEN	Property damage very severe in this area.	SIXTY FOUR	Arrived safely at _____.
SEVENTEEN	REACT communications services also available. Establish REACT communication with ____ on channel _____.	SIXTY FIVE	Arriving _____ on _____. Please arrange to meet me there.
EIGHTEEN	Please contact me as soon as possible. at _____.	SIXTY SIX	DX QSLs are on hand for you at the ____ QSL Bureau. Send _____ self addressed envelopes.
NINETEEN	Request health and welfare report on _____. (State name, address and telephone number.)	SIXTY SEVEN	Your message number ____ undeliver able because of _____. Please advise.
TWENTY	Temporarily stranded. Will need some assistance. Please contact me at _____.	SIXTY EIGHT	Sorry to hear you are ill. Best wishes for a speedy recovery.
TWENTY ONE	Search and Rescue assistance is needed by local authorities here. Advise availability.	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.
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.	* can be used for all holidays	
TWENTY THREE	Report at once the accessibility and best way to reach your location.	Notes: <ul style="list-style-type: none"> • Emergency/priority messages originating from official sources must carry the signature of the originating official. • ARL Numbers Should Be Spelled Out At All Times. • From ARRL FSD-3 (2/94) 	
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 locaton.		
TWENTY SIX	Help and care for evacuation of sick and injured from this location needed at once.		

EMERGENCY (Spelled out): 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 (P): 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 (W): 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 (R): 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.

Exercise Messages: Messages in the ARRL format passed for test and exercise purposes may be given a precedence preceded by the word “TEST,” as in “TEST R,” “TEST P,” “TEST W,” or “TEST EMERGENCY.” It is customary to indicate within the text of such messages the words “TEST MESSAGE,” or “EXERCISE.” Using “EXERCISE” as the first and last groups of the text helps alert listeners to the nature of the content to avoid undue alarm. In some exercises, the life of the message may be terminated when the exercise period is terminated, i.e., any such messages are not handled after the exercise. Consult with the leadership conducting the exercise.

Service Messages: The precedence of a SVC message should be the same as that of the message being serviced. SVC ahead of a message number indicates a service message sent between stations relative to message handling, or delivery. Since they affect timely delivery, they are handled before routine messages. SVC is not a precedence (See section 1.11).

Handling Instructions* (From ARRL, FSD-218 2/91)

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 of the message back to the 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 and time and method of delivery (by service message).
HXE	Delivering station get reply from addressee, originate message back.
HXF__	(Followed by a number.) Hold delivery until [date].
HXG	Delivery by mail or landline toll call not required. If toll call or other expense involved, cancel message and send service message back to originating station.

* Compliance with these instructions is mandatory. Reports may be considered service messages.

* more than one hx code may be used. If more than one code is used, they may be combined provided no numbers are to be inserted, otherwise the HX should be repeated, thus: NR 27 R HXAC W1AW..., or, NR 27 R HXA50 HXC W1AW... (etc.).

Chapter 2 - Sending Messages On Voice

2.0 Introduction

This chapter assumes you already know the rules for formatting radiograms presented in chapter 1. Chapter 2 will present the basics of transmitting the message on voice. This material should be augmented with classroom or on-the-air training. This block covers:

1. Tools used in transmitting the message;
2. Rules for voicing the different parts of the message;
3. Voicing the message exchange with examples, fills;
4. Booking and sending multiple messages;
5. Station Operations.

A radiogram is composed of a series of characters collected into groups. The groups, and the spaces separating them, make up the preamble, address and its op note, text and signature and its op note. On CW the characters and spaces are sent one at a time, making copy simple. Groups on CW are not introduced, and they are spelled as sent.

On voice we are faced with a quite different situation. We must say words to induce correct copy, and are forced to deal with language perceptions. The tools and rules presented here tend to minimize the variability caused by those perceptions and lead to accurate message transmission. With a little practice they will become second nature.

General Note: Literature on traffic handling shows variations on the definitions and uses of prowords, operational words, and introductory words. The same applies to the techniques used for voicing messages and for the handshaking between stations during traffic exchanges.

An attempt is made here to consolidate those variations into one uniform set which may provide consistency. In order to make it easier to sort these things out some of these variations currently in wide use are shown in this manual as alternatives. Where there are choices the simplest and most efficient methods are shown as primary. Notes are included in those sections pointing out the differences that might be expected. The best current practice has been the guide.

Amateur radio protocols are not so formal that you will be excused from a net if they are not followed to the letter. Use of methods as uniform as possible does however help assure both efficient and accurate traffic handling and net operations.

Do what the trained receiving operator expects and confusion and errors will be minimized.

If you use these techniques you will be understood anywhere in the NTS.

2.1 Tools

2.1.1 Phonetic Alphabet

All operators should memorize the phonetic alphabet and number pronunciation, and be fluent in spelling groups using phonetics. Practice off the air by sending text to yourself with phonetics.

A	ALFA	M	MIKE	Y	YANKEE
B	BRAVO	N	NOVEMBER	Z	ZULU
C	CHARLIE	O	OSCAR	1	ONE
D	DELTA	P	PAPA (PA-PA')	2	TWO
E	ECHO	Q	QUEBEC (KAY-BEK')	3	THREE (TREE)
F	FOXTROT	R	ROMEO	4	FOUR
G	GOLF	S	SIERRA	5	FIVE (FIFE)
H	HOTEL	T	TANGO	6	SIX
I	INDIA	U	UNIFORM	7	SEVEN
J	JULIETT	V	VICTOR	8	EIGHT
K	KILO	W	WHISKEY	9	NINE (NINER)
L	LIMA	X	X-RAY	0	ZERO

2.1.2 Pauses

Pauses are crucially important tools in voicing messages. Pauses exist between words/letters, groups (essential for clarity and separation), at the end of the Preamble, after each line of an address, the mandatory listening pause after the first Break, and even after every five lines of Text. Additionally, pauses may be used to listen for interruptions throughout the message transmission to improve efficiency. See the section on *The Message Exchange, Interruptions*.

A clear group pause will distinguish between “SPRINGDALE” and “SPRING” “DALE” easily. Pauses are essential to allow copying time for the receiving operator also—longer pauses after longer groups, especially after the city in the Preamble or Address.

The receiving operator hears such pauses. They are clues to what is coming next in addition to aiding in correct group copying. Use pauses, they're free.

Pauses as used throughout this manual and the voicing examples presented later:

TYPE	SYMBOL	USE (symbol used in this manual only)
WORD PAUSE	(.)	As in pause between words of a sentence.
GROUP PAUSE	(. .)	Similar to a pause between sentences.
PUSH-TO-TALK	(//)	At least a group pause switch release.
LISTENING PAUSE	(/.../)	For fill interruption after the Proword BREAK. Listening pauses are used differently on HF fast VOX, other half duplex modes, and on FM repeaters with and without audio delays.
COPY PAUSE	(...)	Length depending on group(s) sent; (spell the group(s) to yourself; when done continue).

2.1.3 Pausing For Interruptions

It is useful when sending messages to use fast VOX or release the PTT after every group or phrase transmitted to permit interruptions by the receiving station.

On FM repeaters, or where this is not practical, the release to listen after the first “break” at the start of the text, and after the “break” separating variable parts of a book, is considered mandatory to listen for interruptions.

See *Transmitting and Receiving* under *The Message Exchange* section.

2.1.4 Prowords, Operational Words

These words are spoken to begin or end the message, indicate information for the receiving operator, or to separate parts of the message or books. They are not written in the message or counted in the check. They are usually spoken in a different tone of voice to distinguish them from written parts of the message. The list follows.

2.1.4.1 Number (Before Message Number Or SVC)

The proword “number” begins message copy. It tells the operator to copy everything after hearing the word “number.”

To begin the message say “number ...” then transmit the preamble. This is the short formal way to initiate copy. (It has been a long standing custom to begin by saying “Please copy number...” or “Copy message number...” but these informalities are not required.)

The corresponding operational word to stop copy is “end.”

The message numbers in variable parts of a book are also introduced with “number” followed by the individual message number.

2.1.4.2 End (End Of Message)

The proword “end” signals the end of groups to be copied, in other words, the end of the written message. (“end” is a shortened form of “END OF MESSAGE” and is used to make the short and formal end of copy although the later is still used by operators from time to time.)

In other words, written copy is begun with “number” and terminated with “end.”

2.1.4.3 Book Of (#)

Used to begin transmission of a book of messages. To begin the book say “BOOK OF (#)” then begin the fixed parts of the message. The corresponding words to end the book are “END BOOK.” The (#) is the quantity of individual messages in the book spoken as words without using the “figures” introducer.

2.1.4.4 End Book

Used to end copy of a book of messages. In other words book copy is begun with “book of (#)” and terminated with “end book.”

2.1.4.5 Break

The proword “break” marks the start of the text, and “break” at the end of the text marks the start of the signature. The “break” is also used to separate parts of booked messages.

The first “break” at the start of the text, and at the beginning of each variable part of a book message, requires a standby after saying the word to listen for fill requests. The receiving station does not respond at “break” unless necessary. The “break” used to end the text does **not** require a standby before continuing with the signature. See *Voicing The Exchange* for more operational details on these standby pauses.

2.1.4.6 I Spell

Used to indicate you are going back to spell the group just voiced. It is used with **one group at a time**, and is said **immediately** after voicing the group, followed by either phonetic or letter spelling of the group. (Pausing too long before saying “I spell” will force the receiving operator to attempt to spell the group before you do.) When the group is spelled, go on to the next group without repeating the spelled group.

In ARL SIXTY ONE: “A R L.. SIXTY I spell SIERRA INDIA X-RAY TANGO YANKEE.. ONE I spell OSCAR NOVEMBER ECHO ...”

2.1.4.7 I Say Again, (Use #1) To Repeat For Clarity

Say the group(s), then “I say again,” repeat the group(s), and then continue. It is wise to limit repeats for clarity to one group at a time to avoid confusion with use #2 below. In bad radio conditions, however, repeating phrases or whole lines of a message can increase the chance for correct copy.

“WHISKER I say again WHISKER ... “

2.1.4.8 I Say Again, (Use #2) To Correct An Error

Stop, say “I say again,” go back to last group (or proword) sent correctly, and continue, starting with that correct group or proword.

Example: in “TO BRING BOOKS...,” the group BRING skipped in error;

“TO BOOKS I say again TO BRING BOOKS...”

2.1.4.9 No More, One More (1), More (2 Or More)

Indicates if you have additional traffic to follow or not. These terms follow the “end” or “end book” termination of copy.

2.1.4.10 Over

Indicates the end of your transmission and signals the receiving station to go ahead:

“W3TX 3RN TRAFFIC PODUNK TWO.. WORDS WITH W3RX OVER.”

Many transmissions by the net control or individual stations are “self completing,” i.e., the words themselves signal the end of the sequence. In such cases the “over” may be omitted.

Such signals are pointed out throughout the chapter. The “end no more” sequence, for example, is sufficient to signal the end of the transmission of the radiogram. On the other hand, a station’s traffic list, comment, or question is of uncertain length and is terminated with “over,” or sometimes with its call sign.

The “Over” may be used between messages or after other transmissions whenever the transmitting station wishes to signal or force the other station to go ahead.

The “Over” is useful in preventing two stations from transmitting at the same time. It is used effectively when the words of the transmission are not themselves a clear indication for the other station to “go ahead.” “Doubling” by two stations can result in much wasted time and copying errors. See also the note on “Go Ahead” under Misc., below.

2.1.4.11 Roger

Receiving station acknowledgment of message(s) copied. It is not necessary to repeat message number(s) or other parts. (“MESSAGE(s) RECEIVED,” “BOOK OF (#) RECEIVED,” are in wide use. For the sake of brevity and efficiency, Roger is the preferred method. Roger, meaning received-understood, implies all messages were received.)

Roger means “received and understood.” It does not mean “yes” or “affirmative.”

2.1.4.12 Misc. Affirmative, Negative, Roger, Q-Signals

A few key words:

AFFIRMATIVE	Yes.
CHARLIE	Yes.
CONFIRM	___ The request to confirm correct copy of group(s). The affirmative reply to the request.
NEGATIVE	No.
ROGER	Received and understood. (Does not mean yes, confirm, charlie, or affirmative!).
OVER	End of transmission, invitation to transmit.
GO AHEAD	Continue. Used after requesting fills after interruptions to signal the sending operator to continue. Also used as an equivalent to Over.
73	Best regards (plural!). 73’s is redundant.
/	Symbol used to separate characters in groups. SLASH. The “/” may be voiced as “slash,” “stroke,” “diagonal,” or “slant-bar.”

Q-Signals are not used operationally on voice! Say it with words as described in this manual. (Q-Signals are permitted within the message text and are treated as initials.)

2.1.5 Introductory Words For Groups

Introductory words are spoken to alert the receiving operator to a special type of group to follow such as initial(s), figure(s), mixed groups, or amateur call signs—not normal spoken words. The introducer implies that the group is going to be sent one character at a time, letters phonetically if present. The introducer avoids having to try to pronounce such groups and then use “I spell” to spell them. They are used ahead of single

groups (except for a shortcut explained in **Introducing Multiple Text Groups** in the text voicing rules section.). Only one introducer is used per group. They are not written. They are usually spoken in a different tone of voice.

Say the introductory word(s) ahead of the group, voice the group as individual characters as indicated, then go on to the next group.

Always voice the letters in eligible introduced groups with **phonetics** unless indicated otherwise in this manual. Do not use multiple introducers within a single group.

Examples of groups eligible to be introduced and voiced one character at a time using phonetics for letters:

J, AM, BARC, 7, 234, 2A, 2/3, 146R67, M/4, 3M/4A, W3XYZ, W4XYZ/3, 2300Z, 6PM, 7025KHZ, etc.

Email, packet, and internet addresses are also sometimes introduced as shown later to avoid having to introduce each of the individual groups contained therein.

The use of the introductory words completes the “tool kit” for voicing any type of group encountered in the message. All groups are either plain text words to transmit, and perhaps be spelled using “I spell,” and these eligible groups to be introduced.

Introductory words are used for all eligible groups in the message except where there are special relaxed rules for the Preamble and Telephone numbers in the Address and Signature where the experienced operator expects the types of groups to be sent. (See *Voicing Rules and Examples*.)

2.1.5.1 Figure(s)

Used to introduce a group of one or more numbers:

Say “figure(s),” then voice the numbers one digit at a time, group pause, and go on to the next group. Examples:

2, voiced as “figure TWO”;

62, voiced as “figures SIX TWO”;

Saying “figure TWO” means the number character “2.” Saying “TWO” implies the spelled-out word. Saying “figures SIX TWO” indicates the single group “62.” Saying “figure SIX... figure TWO” results in copy of the figures “6” and “2” as separate groups. Saying “SIXTY TWO” or “SIX TWO” implies two groups—words spelled out exactly as shown.

Avoid the use of “figures SEVENTEEN” in place of “figures ONE SEVEN”; or “figures FIFTY TWO” for “figures FIVE TWO,” etc. The teens and Y’s can cause errors under difficult receiving conditions, and operators expect single characters at a time in these groups. This applies to the non-introduced figures in the Preamble as well. “SEVENTEEN” is not the pronunciation for any of the single character figures.

2.1.5.2 Phone Figures

Used to introduce the telephone numbers in an address or signature when no zip code is present (thus forcing the receiving station to skip the zip to the telephone number line), as in: ...MARYLAND (no zip) 410 555 1234, voiced as “MARYLAND telephone figures FOUR ONE ZERO..(pause) FIVE FIVE FIVE.. (pause) ONE TWO TREE FOUR.” (See the *Spe-*

cial Voicing Rules For Telephone Figures In The Address And Signature.)

2.1.5.3 Initial

Used to introduce a single letter initial, phonetic pronunciation mandatory, as in the initial in a proper name, John R Smith: “JOHN.. initial ROMEO.. SMITH”;

A “A,” any other single letter, as a group in the text or name initial, “initial ALPHA”

I Pronoun I, voiced as “initial INDIA”

X Letter “X” used as a period, voiced as “initial X-RAY.”
(The “X” used as a period is often voiced without the “initial” introduction. The method shown is preferred.)

2.1.5.4 Initials (Letter Group)

Used to introduce a group of 2 or more letters, as in an abbreviation, unpronounceable group, etc. Phonetics are mandatory; as in:

AM voiced as “initials ALPHA MIKE”

NTS voiced as “initials NOVEMBER TANGO SIERRA”

THUR voiced as “initials TANGO HOTEL UNIFORM ROMEO”

Say “initials” then immediately voice the letters phonetically, group pause, then go on to the next group. (“letter group” is used in place of “initials” by many operators. “Initials” is recommended for clarity. See also the section on *Sending A Series Of Like Groups.*)

2.1.5.5 Mixed Group

Used to introduce a group consisting of a mix of 2 or more of the 3 types of characters permitted in a group; letters, figures, or slashes (/), not beginning with figure(s). See the next section for mixed groups beginning with figure(s). Examples:

R2, A3J, A/X, B/3, MS/4, W4XYZ/3, W3XYZ/EPA/EANTX, etc.

Say “mixed group,” voice one character at a time, letters phonetically, group pause, then go on to the next group, as in:

MS/4, voiced as “mixed group MIKE SIERRA SLASH FOUR”

Do **not** introduce characters separately within the mixed group. To do so would imply a separate group to copy.

The “/” may be voiced as “slash,” “stroke,” “diagonal,” or “slant-bar” (“Forward slash” is not necessary and should be avoided.)

2.1.5.6 Mixed Group Figure(s)

Used to introduce a mixed group as above when the first character is number(s), as in:

2A: voiced as “mixed group figure TWO ALPHA”

2/A: voiced as “mixed group figure TWO SLASH ALPHA
With two or more numbers beginning the group:

24/B: voiced as “mixed group figures TWO FOUR SLASH BRAVO”

146R67: voiced as “mixed group figures ONE FOUR SIX ROMEO SIX SEVEN” (The “R” is used as a decimal point within mixed figure groups.)

Do not introduce characters separately within the mixed group. To do so would imply a separate group to copy.

This introduction is an expansion of “mixed group” related to teletype when “figures” was required to be typed before typing numbers.

2.1.5.7 Amateur Call

Used to introduce an amateur call sign in the Address, Text, or Signature (but not in the Preamble). Phonetics are mandatory for the letters; as in:

K000: voiced as “amateur call KILO OSCAR ZERO OSCAR,” etc.

Note that call sign groups with slashes appending other information are introduced as mixed groups (W3ABC/NCS).

2.1.5.8 ARL, Check And Text, If Numbered Radiograms

ARL In Check: The letters ARL precede the Check in messages containing ARRL Numbered Radiograms within the text, and are voiced as 3 letters without introduction, as in:

ARL 20: “A R L.. TWO ZERO”; (note the space); or

20/ARL 20: “TWO ZERO.. CORRECTED TO.. A R L.. TWO ZERO”

The letters “A R L” are customarily voiced without phonetics, but may be so voiced in severe conditions if necessary. Note there is a space between the ARL and the CHECK figures.

ARL In Text: The letters ARL in the Text are used like an introductory group indicating that ARRL Numbered Radiogram spelled-out numbers are to follow immediately. The group is customarily voiced as the letters “A R L,” **not** introduced, and **not** spelled phonetically. Each separate numbered radiogram is preceded by the ARL group. The spelled-out numbers of the radiograms are each spelled phonetically using “I spell.”

ARL SIXTY: “A R L.. SIXTY I spell SIERRA INDIA X-RAY TANGO YANKEE,” (Two groups.);

ARL SIXTY ONE: “A R L.. SIXTY I spell SIERRA INDIA X-RAY TANGO YANKEE.. ONE I spell OSCAR NOVEMBER ECHO,” (Three groups.);

ARL FIFTY ARL SIXTY: “A R L.. FIFTY I spell FOXTROT INDIA FOXTROT TANGO YANKEE.. A R L.. SIXTY I spell SIERRA INDIA X-RAY TANGO YANKEE,” (Four groups.)

In severe conditions it is permissible to introduce ARL as “initials ALPHA ROMEO LIMA.”

2.1.5.9 Email, Packet, And Internet Addresses

The normal voicing of such addresses is to treat all the groups formatted in the address as individual groups using the previously described introducers and phonetics as required.

These addresses may be introduced as “email address,” “packet address” and “internet address” when it is desired to avoid having to introduce every group within the address. See the voicing rules for examples. In this case the words are used as introducers.

2.2 Rules For Voicing Messages

Following are the guidelines for voicing parts of the message during transmission.

Q-Signals are not used operationally on voice.

2.2.1 Spelling, Phonetic Or Letter

When voicing a group try to understand the perception of the group by the receiving operator. Although context sometimes helps in group perception, surprises in formatting often make it safer to treat each group individually when making the decision to spell. When there is any chance of misunderstanding or ambiguity you may spell the group. Voice the group, use the operational words “I spell” immediately, then spell the group with letters or phonetics. When done go on to the next group.

Spell only one group at a time using the operational words “I spell.”

Spell with letters or phonetics based on radio conditions, interference, or type of group. Spell and use phonetics where mandatory. Use only standard phonetics. Over-use of phonetics is controversial, but the objective in traffic handling is absolute accuracy in copy. Based on errors measured in the traffic system, the following guidelines target the most frequent and critical errors.

2.2.1.1 Mandatory Use Of Phonetics And Spelling

Preamble: Group introductions are not required in the Preamble, but all groups that would be eligible to be introduced are still voiced as such. Only the introducer is omitted.

These rules apply throughout the message.

Introduced Groups:

All characters in introduced groups are voiced one character at a time

All letters in introduced groups are voiced with phonetics:

- Initial, Initials (letter groups, 2 or more letters forming the group);
- Initial “X” used as a period, “Initial X-RAY”;
- Mixed group letters; “mixed group figure SIX PAPA MIKE” (6PM);
- Amateur call sign letters; “amateur call WHISKEY ONE ALPHA WHISKEY”;
- Handling instruction letters, “HOTEL X-RAY CHARLIE.”

Always spell these groups and use phonetics:

- Last names of addressee in address, and in Op Note;
- Proper names in text;
- Last names in signature and Op Note;
- ARL Radiogram numbers spelled out in texts; (ARL FIFTY and SIXTY sound very much alike even letter-spelled!);
- Fills, as requested;

2.2.1.2 Phonetic Or Letter-Spelling Choices

Letter-spelling is used in this manual as the shortened way of saying “spelling with letters” rather than with phonetics (“KEY I spell K E Y” vs. “KEY I spell KILO ECHO YANKEE”).

The choice to use phonetic spelling or letter spelling depends on radio conditions, interference, and type of group. The ambiguity in perception of sound-alike letters when letter-spelling is avoided by choosing to spell with phonetics.

Phonetics are always used when spelling the groups eligible to be introduced and for key groups of the message outlined in the section above.

Spell the following type groups (phonetics or letters)

In Preamble:

- City of origin, unless very common and understood;

In Address:

- First names, unless unique and understood without ambiguity;
- Street names, unless very common and understood;
- City name, unless very common and understood;

In Text, address Op Note and signature Op Note:

- Unusual words; and plurals (as needed to emphasize the “s”);
- Words with numerous spellings (to, too, two, for, four);
- Words that seem out of context;
- Spelled-out numbers (Note that the use of figures denotes numbers. Spelled-out numbers can be letter spelled for emphasis; 6, “figure 6”; or six, “SIX I spell S I X...” (“eighth” and “eight” are candidates for spelling!);

In Signature:

- First names and address names in signature, unless unique or very common and understood.

When there is any doubt about correct copy, spell it out!

2.2.2 No Extraneous Words

Prowords, Introductory Words, and Operational Words are set aside for special purposes and are recognized by traffic handlers. Any other words used are likely to cause confusion or be written down by the receiving operator. Words such as “today’s date,” “BACK STOP that’s two words,” “BLACK as in night,” etc., are considered more than bad practice. Do not say any extraneous words like “check,” “with a check of,” “city of origin,” “to,” “going to,” “street address,” “break for text,” “break it for the signature,” “signature,” etc.

Q-Signals used operationally on voice are extraneous words.

[“Common spelling” should be avoided—spellings many consider “common” may not be common to everyone.—*Ed.*]

Do not say “same as...” for parts of the message, implying a group is the same as in a previous message. It is usually disruptive to copy or organization. Book if required.

Saying “today’s date” for the preamble date is considered poor practice as well.

In other words, the proper use of pauses, prowords, operational words and rules for voicing each individual group of the properly formatted message is sufficient and expected practice for proper perception and copy by the receiving operator. The object is to have the receiving operator copy the message exactly as it is written on the sending copy. Avoid surprises. Treat the unusual with spelling or “I say again” for clarity.

See the Voicing Rules and examples, and special booking instructions to follow.

2.2.3 Sending Speed

Sending at the proper speed for accurate copy is the hardest skill to learn in traffic handling!

Clear sending, using introductory and operational words and expected transmission protocols properly, and using proper spacing between groups, are crucial for accuracy.

See the section on *The Message Exchange, Sending Speed*.

2.2.4 Rules For Voicing The Parts Of The Message

2.2.4.1 Preamble Voicing Rules

Basic preamble example:

NR 65	PREC R	[HX]	STN-ORIG N3XYZ	CK 20	PLACE-OF-ORIG CATONSVILLE MD	[TIME-FILED]	MON JUL	DAY 24
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And a Test message with HX codes and Time Filed.

NR SVC 66	PREC TEST R	[HX] HXA50	STN-ORIG N3XYZ	CK 22/ARL 23	PLACE-OF-ORIG CATONSVILLE MD	[TIME-FILED] 1800Z	MON JUL	DAY 24
-----------------	-------------------	---------------	-------------------	--------------------	---------------------------------	-----------------------	------------	-----------

Introductory words are not required since the receiving operator knows the order and type of the Preamble parts. Eligible groups are still voiced as in introduced groups.

Proword “Number”: The message transmission is begun by saying “number” then:

Message Number: Say the word “Service” if the number is preceded by SVC. Say the message number figures one digit at a time.

Precedence: Voice as the full word(s); “Emergency,” “Priority,” “Welfare” or “Routine” (Emergency, P, W, R are written.). Exercise messages may be given a precedence preceded by the word “TEST”; voice as “TEST ROUTINE,” etc.

HX_: Say HX codes phonetically, as in “HOTEL X-RAY CHARLIE,” treated as an initial group, or a mixed group if numbers present, but without being introduced as such. If figures are appended the group is a mixed group, as in “HXA50,” voiced as “HOTEL X-RAY ALPHA FIFE ZERO”

Station-Of-Origin: Say call sign with phonetics without the introducer.

Check: If there is an ARL preceding the check figures voice as individual letters “A R L” (indicating presence of a Numbered Radiogram in the text). Say the check digits one at a time without introduction. If the check is amended as in 22/ARL 23 say “TWO TWO CORRECTED TO A R L TWO TREE” (or “TWO TWO SLASH A R L TWO TREE,” less often used) without introducers.

Example:

NR SVC 66	PREC TEST R	[HX] HXA50	STN-ORIG N3XYZ	CK 22/ARL 23	PLACE-OF-ORIG CATONSVILLE MD	[TIME-FILED] 1800Z	MON JUL	DAY 24
-----------------	-------------------	---------------	-------------------	--------------------	---------------------------------	-----------------------	------------	-----------

The complex preamble example above is voiced (Also see more Voicing Examples later.):

Place-Of-Orig: Say the CITY, then say “I spell,” and follow with letter or phonetic spelling for the city unless it is well known and understood. Say STATE as full name, even though it is written as two letters. (If you feel you must say the state as a letter group, then introduce it as “initials” and voice the letters with phonetics.). If the City/State of origin is not a city/state, as in a message relayed from MARS, the groups such as “VIA MARS NNN0AAA FPO NY” may be voiced using appropriate introducers and phonetics as required.

Time-Filed: Voice as a mixed group, without introduction, as in “ONE EIGHT ZERO ZERO ZULU.” The operator knows the month typically follows the state. Hearing a figure will indicate that a filing time is being sent. Use phonetics for letters such as “Z,” “EST,” etc. (Some operators elect to introduce the filing time as “mixed group figures” as a “heads-up” for the optional filing time, but the first method shown is best practice of the day.)

Month: Say the month as full name, even though written as three letters (JUL = “JULY”).

Day: Say DATE digits one at a time; “TWO FOUR” rather than twenty four.

Add a short pause, then go on to the Address part.

“number SERVICE.. SIX SIX.. TEST ROUTINE.. HOTEL X-RAY ALPHA FIFE ZERO.. NOVEMBER TREE X-RAY YANKEE ZULU.. TWO TWO.. CORRECTED TO.. A R L..

TWO TREE.. CATONSVILLE I spell C A T O N S V I L L E..
MARYLAND.. ONE EIGHT ZERO ZERO ZULU.. JULY..
TWO FOUR”

2.2.4.2 Address And Op Note Voicing Rules

Groups in the address section are voiced with introducers, last names spelled with phonetics, unusual groups spelled with letters or phonetics, and special rules apply to the zip codes and telephone numbers.

Special example address:

(addressee) JOHN A HAM W3XYZ PRES PODUNK ARC

(address) 107 HOOK ROAD SW APT 21A

(city/st/zip) PHILADELPHIA PA 19034 DASH 1234

(tel) 215 555 2345

(op note) OP NOTE CALL AFTER 6PM

No special introducer is used to begin the address. The day in the preamble followed by a short pause is the beginning marker.

Introduce and use phonetics with all eligible introduceable groups as encountered, noting the special rules for zip codes and telephone figure groups.

See also Section 2.3.3.7, *Jumping Ahead* for shortcuts in sending the address for “known” recipients.

Names: Spell unusual First Names. Introduce an Initial and voice it phonetically. Say the Last Name, “I spell,” and then spell phonetically. Introduce and use phonetics with call signs and other eligible groups.

Address groups are introduced rigorously. Spell street names unless easily understood. Do not expand abbreviations or compress words to abbreviations. Transmit exactly as written. AVENUE is “AVENUE,” AVE is “initials ALPHA VICTOR ECHO.”

City/ST/Zip: Spell the destination City (unless well known) and use phonetics if it is an unusual name or contains sound-alike letters. Allow sufficient copy time for long city names unless spelled. Say State as the full name (even though only the two letter abbreviation is written), or as introduced initials if you must. Introduce Zip Code with figures and voice one digit at a time; “figures TWO ONE TWO ZERO ZERO.”

Nine Digit Zips, Special Rule, as in (21200 dash 1234) are voiced as: “figures TWO ONE TWO ZERO ZERO.. DASH I spell D A S H.. ONE TWO TREE FOUR.” Note the one-time “figures” introduction.

Canadian or other Mixed Zips may be introduced once: A4X 2L7, “mixed groups ALPHA FOUR X-RAY.. TWO LIMA SEVEN,” using a pause between groups.

Telephone Number, Special Rule: Introduce the figures **one time** for all the groups as in: “figures FOUR ONE ZERO.. FIFE FIFE FIFE.. ONE TWO TREE FOUR,” using a pause between each group of digits. It is customary here to introduce only once, unlike number groups elsewhere, since several phone groups are expected, and the next group(s) sent will be either “op note” or “break.”

If **No Zip Code** is given, introduce telephone number as “**telephone figures,**” again a one-time introduction. The “telephone figures” special introduction will tell the receiving operator to skip over the zip code area on the message form.

Foreign Telephones: Telephone figures for foreign countries may not be grouped as in this country. Introducing each figure group “figures” individually is suggested in this case.

If **No Telephone Figures** are given, simply go on to the Op Note or “break.”

Address Op Note: “OP NOTE” is the introducer. Contents of the address Op Note are voiced according to the rules for text groups—rigorous introduction of eligible groups and spelling. At the end of the Op Note, voice the “break.”

Experienced operators should be able to achieve transmission and copy of the example address with lines, abbreviations, mixed groups, figures and spelling exactly as written above.

Pauses at the end of each line aid in copy. See the Voicing Examples later.

Break At End Of Address:

The Address (or its Op Note if present) always ends by voicing the proword “break.”

This first “break” at the start of the text, and at the beginning of each “variable” part of a book message, requires a standby after saying the word to listen for fill requests.

If nothing is heard in a few seconds, continue sending the message text. If the receiving operator is forced to say “go ahead” you have probably waited too long, although it may do so at its discretion. Saying “go ahead” is discouraged except in FM repeater type operating where frequent listening by the sender for interruptions is not practical. Fast VOX or PTT operation on HF permits more frequent interruptions. See *The Message Exchange, Pausing For Interruptions*.

2.2.4.3 Text And Op Note Voicing Rules

After the standby pause, continue with the Text. There are no rule shortcuts used in the Text (except a shortcut for a series of like groups, 2.2.4.4 below). Voice every individual group clearly, using pauses to indicate group separation and for copy time.

Message example text:

ARL	SIXTY	FIVE	11PM	JULY/29
USAIR/354	TELL	N3ZZZ	THANKS	FOR
THE	GREAT	MEAL	X	NEW
PHONE	410	555	2008	REGARDS

Introduce all single initials, initial groups, figure groups (voiced one digit at a time), mixed groups and amateur calls as encountered, voicing letters with phonetics.

Spell proper names phonetically, spell sound-alike words and unusual groups for clarity with letter or phonetic spelling. Spell plurals as needed.

Say ARL as three letters, “A R L” (may be introduced as “initials” and voiced phonetically in severe conditions). Spell each ARRL numbered radiogram spelled-out number phonetically one at a time; i.e., for ARL SIXTY FIVE, say “A R L.. SIXTY

I spell SIERRA INDIA X-RAY TANGO YANKEE.. FIVE I spell FOXTROT INDIA VICTOR ECHO..”

Use I Say Again to correct errors by saying “I say again,” then going back to the last correctly sent group and resuming transmission with that group.

“I say again” may be used to repeat groups or phrases for clarity or emphasis.

Groups may be voiced one at a time; or several groups may be voiced together as a phrase, based on what you think the receiving station can remember, then pause for copy time. Picking phrases based on logically connected groups is often helpful in perception. **Do not** include introduced groups in such phrases—send those each individually.

Consider pausing before saying “initial X-RAY” (used as a period) after a long group or phrase. This will help the receiving operator avoid forgetting the initial while concentrating on copy.

Remember that punctuation, other than X for period, is always written out as a word group and may be spelled if necessary.

The Text always ends by voicing the proword “break,” followed immediately, without a standby for fills, by the signature.

2.2.4.4 Introduction Of Multiple Text Groups

When sending a series of the same type groups within the text, such as a number of call signs each appended with liaison information, the entire series is sometimes introduced once in the plural to save repeating the introductory words for every group. As soon as a different type of group is encountered the appropriate new introducer is used.

For W3AA/3RN W3AB/MDD W3AC/MSN W2XX in a net report text; voice as:

“Mixed groups WHISKEY TREE ALPHA ALPHA SLASH TREE ROMEO NOVEMBER.. WHISKEY TREE ALPHA BRAVO SLASH MIKE DELTA DELTA.. WHISKEY TREE ALPHA CHARLIE SLASH MIKE SIERRA NOVEMBER.. amateur call WHISKEY TWO X-RAY X-RAY,” using pauses to separate the groups and the new introducer for W2XX.

Or, less frequently, for suffix type groups such as AA AB BL 3CF; voice as:

“Initial groups ALPHA ALPHA.. ALPHA BRAVO.. BRAVO LIMA.. mixed group figure TREE CHARLIE FOXTROT,” using pauses to mark the group separation and using the new introducer for the mixed group. The introducer “letter groups” may be used as the alternative to “initial groups” in this case.

This shortcut is used mainly for net reports and similar traffic between stations who understand the content. It is used primarily with a series of mixed groups or amateur calls or suffixes to save time spent repeating introducers. It is seldom done with a series of single letters or figure groups of any kind.

It is a risky shortcut to use on unfamiliar traffic. Using introducers for each eligible group is the formal and expected treatment.

2.2.4.5 Signature And Op Note Voicing Rules

(SIG) **BILL** (Will, Al, Hal, Jean, Gene, etc.)

It is suggested that signature errors may be reduced by regularly spelling with letters or phonetics even for first names. There are many sound-alike names in common use.

Signatures may also be multi-lined. Rules for voicing the groups in the signature are the same as for the ADDRESS groups, including the special rules for zips and telephone figures when presented in the same order. Otherwise use the rigorous text rules for each group.

If there is no signature op note, the message may be ended. See the next sections.

Signature Op Note: Contents of the signature Op Note are voiced according to the rules for TEXT groups. “OP NOTE” is the introducer. See also the voicing examples later.

Example:

OP NOTE PKT AT WB3FFV 21228 MD, is voiced as “OP NOTE.. initials PAPA KILO TANGO.. AT I spell ALPHA TANGO.. amateur call WHISKEY BRAVO TREE FOXTROT FOXTROT VICTOR.. figures TWO ONE TWO TWO EIGHT.. initials MIKE DELTA”

2.2.4.6 Email, Packet, And Internet Address Voicing

Standard Voicing: The entire series of groups can be voiced as introduced groups, or groups spelled for clarity, as done normally for such groups. (See Chapter 1 for formatting these addresses.)

Example: **kj3e@k3hki.#smd.md** is written in the message as:

KJ3E ATSIGN K3HKI DOT POUNDSIGN SOMD DOT MD, and is voiced as:

“amateur call KILO JULIETT TREE ECHO.. ATSIGN I spell A T S I G N.. amateur call KILO TREE HOTEL KILO INDIA.. DOT I spell D O T.. POUNDSIGN I spell P O U N D S I G N.. initials SIERRA OSCAR MIKE DELTA.. DOT I spell D O T.. initials MIKE DELTA.”

(ATSIGN and POUNDSIGN could also have been introduced with “initials” as a letter group and sent using phonetics rather than using the spelling method.)

HTTP COLON SLASH SLASH WWW DOT HAM DOT INFO BACKSLASH EDU, and

HARRY ATSIGN AOL DOT COM are voiced in similar fashion.

Introduced Voicing, (not widely used):

These addresses may also be introduced as shown below to avoid having to introduce each of the individual groups contained therein. (Where the groups “PACKET ADDRESS,” “INTERNET ADDRESS” or “EMAIL ADDRESS” appear in a text they should be voiced, and then spelled, to avoid confusion with their use as introducers, if used, in the same message part.) Note that the introduction permits voicing each of the parts without using other introducers, and implies no spaces. “SPACE” should be included in a properly formatted message where a space is required as an integral part of the address (the same applies to “UNDERSCORE,” etc.).

Packet Address example: **kj3e@k3hki.#smd.md** is written in the message as:

KJ3E ATSIGN K3HKI DOT POUNDSIGN SOMD DOT MD, and is voiced as: “packet address.. KILO JULIETT TREE ECHO.. ATSIGN I spell A T S I G N.. KILO TREE HOTEL KILO INDIA.. DOT I spell D O T.. POUNDSIGN I spell P O U N D S I G N.. SIERRA OSCAR MIKE DELTA.. DOT I spell D O T.. MIKE DELTA.”

Internet Address example `http://www.ham.info\edu`, written in the message as: HTTP COLON SLASH SLASH WWW DOT HAM DOT INFO BACKSLASH EDU, and is voiced in similar fashion as above, introduced as **“internet address.”**

Email Address example: `harry@aol.com` becomes HARRY ATSIGN AOL DOT COM, as written, introduced as **“email address”**:

“email address.. HOTEL ALPHA ROMEO ROMEO YANKEE.. ATSIGN I spell A T S I G N.. ALPHA OSCAR LIMA.. DOT I spell D O T.. CHARLIE OSCAR MIKE.”

The introducer implies no spaces. “SPACE” is used in formatting such addresses where a space is required as an integral part of an address.

2.2.4.7 Ending The Message

When the signature (or its Op Note if present) is completed, the operational groups to end the message are voiced, as in:

“end.. no more,” “end.. more,” “end.. one more,” for the single message; and:

“end book.. no more,” “end book.. more,” “end book.. one more,” for book traffic.

“Over” is dispensed with at this point. The “end.. no more” sequence is sufficient to signal the end of the transmission. On FM repeaters or slow VOX operation it is useful at other times to use “Over” as the last group sent to avoid “doubling” and/or to force a response from the receiving station. “Over” may be used that way between messages in a long series, following “end more,” to request the receiving operator to confirm copy is still satisfactory, if needed. Otherwise the series is customarily sent through to the end.

The “END NO MORE” sequence after the last message signals the receiving station to acknowledge the message(s) or ask for fills as required.

2.2.4.8 Misc. Introduced Group Voicing Examples

FIGURE(S)	
4	“figure FOUR”
46	“figures FOUR SIX”
TEL, In address (or sig)	
410 555 1234	“figures FOUR ONE ZERO.. FIFE FIFE FIFE.. ONE TWO TREE FOUR,” introduced once.
TELEPHONE FIGURES (when no zip code figures in address)	
410 555 1234	“telephone figures FOUR ONE ZERO.. FIFE FIFE FIFE.. ONE TWO TREE FOUR”
TEL, in text or elsewhere, (each group treated as any other figure group).	
410 555 1234	“figures FOUR ONE ZERO.. figures FIFE FIFE FIFE.. figures ONE TWO TREE FOUR,” all 3 groups introduced.
INITIAL(S) (Letter Group)	
John A Smith	“JOHN.. initial ALPHA.. “
I AM	“initial INDIA.. AM...”
X	“initial X-RAY”
PM	“initials PAPA MIKE,”
MIXED GROUP	
B6	“mixed group BRAVO SIX”
R/9	“mixed group ROMEO SLASH NINER”
I/O	“mixed group INDIA SLASH OSCAR”
W4KFC/VA	“mixed group WHISKEY FOUR KILO FOXTROT CHARLIE SLASH VICTOR ALPHA”
MIXED GROUP FIGURE(S)	
2C	“mixed group figure TWO CHARLIE”
2/C	“mixed group figure TWO SLASH CHARLIE”
146R67	“mixed group figures ONE FOUR SIX ROMEO SIX SEVEN”
AMATEUR CALL	
W3BOB	“amateur call WHISKEY TREE BRAVO OSCAR BRAVO”
ARL, IN CHECK (ARL voiced as non-introduced letters, as in letter-spelling)	
ARL 20	“A R L.. TWO ZERO” (No introduction in PBL.)
ARL, IN TEXT (ARL voiced as non-introduced letters, as in letter-spelling)	
ARL FIFTY	“A R L.. FIFTY I spell FOXTROT INDIA FOXTROT TANGO YANKEE” (Numbered radiogram groups spelled phonetically.)

2.2.4.9 Summary

Transmitting radiograms on voice is more complex than many operators realize at first. It is a learned skill, and like any other, requires some practice. The tools and rules are based mainly on common sense, however, and are easily learned. In summary:

Groups in the preamble are not introduced (except optionally the time-filed, MARS origins, etc.);

Figures, initials, mixed groups, and call signs elsewhere are introduced by type, except for the special rule for zips and telephone numbers in the address or signature; figures one digit at a time;

Initials, mixed groups, and call signs are always voiced with phonetics for letters;

Groups may be voiced one at a time, or grouped in phrases chosen as logically connected words;

Groups that must be introduced are not included in voiced phrases;

Certain critical groups are always spelled phonetically, others always spelled with letters or phonetics, in order to minimize errors which can disable the message. Emergency BLOOD and FLOOD kit requests demand phonetic spelling of the key word. Both types of kits are available!

Pauses are critically important to copy. GLENDALE and GLEN DALE are two different places!

The sending operator's progress through the message may be anticipated due to uniform methods, and every action is either expected or flagged by prowords, introductions or operational words—the receiving station locked in sync;

The sending operator transmits the message at copy speed, rather than reading speed, using pauses for clarity;

Last names, telephone figures, street address figures and names, call signs, figures vs. spelled numbers, and abbreviations erroneously converted to words and vice versa, are some of the critical groups transmitted with errors that can disable messages or cause serious misinterpretation at the delivery point. Exact copy really is imperative.

Traffic handlers operate mostly in an “open loop” mode, i.e., there is seldom direct feedback as to the accuracy of relayed radiograms. The old party joke rule applies. It takes a concerted effort to assure that the accuracy of messages is preserved from origination to delivery. Where practical to do so, it may be worth the trouble to make arrangements to test the system from time to time by sending relayed messages back to the originator to check for errors that creep into the process. Scrupulous attention to clear and proper sending and careful honest receiving is the routine quality control.

Traffic handling done efficiently and accurately is a lot of fun, and a rewarding activity with a public interface.

2.3 The Message Exchange

The following sections present the methods for sending, receiving, asking for fills, multiple message sending and booking messages.

Amateur radio operators handling traffic have an ethical obligation to consider every message a “ball in play” until it is relayed, delivered, or serviced. Each station handling a message represents the entire amateur community.

The objective of traffic handlers is to be like a fax machine in the chain of message relaying. Whatever goes in should come out the other end with reliability, accuracy, and promptness.

The skills of both the transmitting and receiving stations in exchanging formal written messages involves speech perception and spelling problems unique to voice operating. The protocols in this manual reflect years of experience in Amateur Radio dealing with these problems. The skills do require some practice.

Unlike casual note taking, copy of the formal radiogram must produce the result of having every group transcribed exactly as it was written on the original message.

Sending messages for officials during disasters often puts the operator between the public and help. Getting the job done right is critical to public safety and welfare.

2.3.1 Transmitting Notes

2.3.1.1 Sending Speed

Important Note (Repeated a different way.):

The transmitting operator must send clearly and at a speed which will allow the receiving operator to copy perfectly without rushing. Transmit, do not “read,” the message. This is one of the hardest skills in traffic handling to master. Use pauses to frame groups clearly.

Assume the receiving operator is copying with pencil and paper unless advised otherwise.

A useful trick to overcome the natural tendency to speak too rapidly is to say a group or phrase, pause, spell it to yourself as though you were writing it, and continue when you visualize that the receiving operator is also finished. KC3Y, Maryland Slow Net NM, teaches actually writing it out while voicing it.

It always takes less time to send a message correctly the first time than it takes to negotiate repeats and fills of missing or uncertain parts. The importance of clearly spaced group sending can not be overemphasized. It is crucial to correct message copy.

Two stations passing traffic on voice seldom have the luxury of duplex operation like they have on the telephone. They must work together using the skills that come from proper training and experience to know what each other is doing without the direct feedback—a primary purpose of uniform protocols.

Send a message to someone while watching the copy process. You can see when you are sending too rapidly or too slowly. The motion of a hand, or a facial expression, can alert you to when to stop, or when something is confusing.

The art of “transmitting” a message is knowing when you are doing it right, and knowing the other person is following along in step, when you are transmitting in the blind.

Break-in CW comes close to full duplex relative to interruption, but even experienced CW operators develop the skill of knowing when they are doing it right. An approximation of that method for voice using interruptions is outlined below.

2.3.1.2 Pausing For Interruptions

The receiving station should only interrupt for fills at those specific “break” points where listening pauses are mandatory unless it is known that the sending station is able to hear between groups, otherwise parts of the message may be missed.

Listening Between Groups: It is useful to use fast VOX or release the PTT after every group or phrase transmitted to permit interruptions by the receiving station.

If the transmitting station is listening between groups or phrases simply interrupt and say the last group or segment copied, and the sending operator can resume with the next group, or repeat the group containing the segment, respec-

tively. If the receiving station says a group incorrectly, the transmitting station will repeat that group to correct it before continuing.

If you are capable of such frequent listening and the receiving station is not familiar with your capability, you may announce same at the start of the message exchange sequence, much like QSK is announced when operating on CW: Say “Listening Between Groups” before beginning.

On FM repeaters, or where this is not practical, the release to listen after the first “break,” and after the “break” separating variable parts of a book, is considered mandatory to listen for interruptions. At these points formal fill request words are used.

The receiving station is not obligated to say anything at these customary listening pauses on HF and fast VOX operation. If the receiving operator says “go ahead” during these breaks, you have probably paused too long. Conversely, if the receiving station needs to interrupt at these points it should be ready to transmit immediately upon hearing the “break” so as to catch the transmitting station before transmission resumes.

On FM repeaters and slow VOX operation “go ahead,” or “go” for short, is optionally used, however. This confirms that copy is still acceptable and avoids a loss-of-signal situation from forcing a repeat of long messages, a series of messages, or long books.

Caution should be used on FM repeaters with audio delay systems or multi-site key-up delays. On these systems you must key the transmitter and wait for up to a second or two before your audio will be available to the receiving station. Groups may be cut off at the beginning. This also makes listening between groups cumbersome and risks cutting off important information. Use the customary listening break points instead, allowing sufficient time to prevent repeater delays from causing missed message groups by “doubling.”

SSB: The transmitting station may set up for fast VOX by turning the VOX “delay” to minimum so that the transmitter un-keys as quickly as possible after each word or phrase spoken. Linear amplifiers using relays slaved to the exciter key-line may be so slow that the net delay is still too long to be useful for this purpose. Converting such linears to solid state switching and “TR” electronic antenna switching can dramatically improve the situation as well as reduce wear and tear on the equipment.

If the minimum delay is insufficient you may have to use PTT instead (Push-To-Talk mic or foot switch). PTT on a large variety of radios forces an immediate return to full receive when the switch is released.

2.3.2 Receiving Notes

The receiving operator must develop certain skills and disciplines to assure accurate copy and efficient operation. These skills are complimentary to those involved in transmitting messages on voice. In addition:

2.3.2.1 Transcribe The Message Exactly

The message copied should be an exact replica of the message held by the transmitting station... letter for letter, group for group.

2.3.2.2 Transcribe The Message Without Modification

No part of the message may be altered, even when it appears necessary, except for appending corrections to the check value. If part of a message appears to be in error, confirm the part with the sending station. If it is correctly received, leave it alone. Op Notes may be used to pass words to the next operator regarding problems or even suspected errors. This is risky business, however, and very easily a situation in which one can insert one’s foot in one’s mouth. You never really know what the message originator had in mind!

2.3.2.3 Be Sure Of Every Group Received

Do not assume that you have copied a group correctly. If you miss part of a group avoid guessing about the missing part. Check each group to see that it fits the context and makes sense. If the sending speed is too fast, ask for reduced speed. If interference is present, ask for a shift in frequency if possible. Ask for a repeat or confirmation if you have any doubt. Only you know for sure that you have copied every group with certainty.

Do not acknowledge the message until you are certain you have it copied it completely and accurately. Take the time!

2.3.2.4 Ask For Fills Or Confirmation

If interference or static is present, or you make a copying mistake, mark the groups or parts of words which might be in error (underline). If the sending station is “listening between groups” interrupt with the group or segment. The sender will repeat. Otherwise, mark (underline, circle, etc.) groups you are not sure about as you go along. You can ask for “fills” formally after the “break” at the start of the text or at the end of the message. Read the message to check for questionable context. Ask for “fills” or confirmation until you are certain that you have all of the message correctly copied. Do not be afraid to ask or worry about taking the extra time. Other operators will respect your care.

The benefit of being able to interrupt the moment you have a receiving doubt is obvious. You get to fix things as you go along, thus saving formal fill requests later... and valuable time.

Acknowledge the message only after this process is completed. Do not worry about taking the extra time. Other operators will respect your care.

2.3.2.5 Accept Only Messages You Can Relay Or Deliver

Try to accept only those messages you can forward or deliver in a timely fashion. Sometimes you may be asked to do otherwise as a liaison station or for “store and forward.”

If you accept a message, and are unable to pass it on promptly, try to find another station to accept it and keep it moving. There are many ways to move a message along. Phone a fellow amateur to take custody if you can not handle it properly. Mailing, personal delivery, telephoning neighbors of the addressee, etc., are alternative methods to direct telephone delivery. See

the chapter on *Delivering Messages*. Service messages promptly when necessary. Ask fellow amateurs for help if you have difficulties.

Messages should be delivered within 48 hours if possible.

2.3.2.6 Take Responsibility For Messages Accepted

Once you acknowledge a message, it is your message to handle. Do not go back to the station from whom you received it and bother him with delivery problems or change your mind about accepting it. It is reasonable, in some circumstances, to find the station from whom the message was received and confirm the message content, but it is your responsibility, not his, to service the message.

If you can not deliver a message, try relaying it to another station that can.

If you have an insoluble problem, send a service message back to the station of origin. Explain the problem and put enough information in the service message to allow the station of origin to find the original message and evaluate, at the same time, the accuracy of the information you received. Repeat any key items in question in your service message!

2.3.2.7 Emergency Messages

Emergency messages should be handled by the fastest path available, on or off radio. Notices regarding death or serious illness are often better delivered by relief agencies or public safety officials.

2.3.2.8 Honor All Handling Instructions

HX codes regarding delivery, progress and replies are part of the job. Failure to honor these requests is as serious as not delivering the message at all. If a reply is requested by HXE from the addressee, and no reply is forthcoming, send a service message back and say so. In these type messages, the “ball is in play” until the originating station receives his expected response. An “ARL SEVEN” reply request in the text is an option for the addressee to approve.

2.3.2.9 Do Not Originate Messages Without Permission

Originating a message for a third party (Someone other than yourself.) without permission is a fraud and forgery. (Strong words!) Generating messages about a third party or their property or status without their permission is also considered very poor practice. Respect privacy.

Do **not** service back changes of addresses, phone numbers, or other personal information about the addressee without their permission. The original message might be intended to pry into the private affairs of the recipient.

2.3.2.10 Make No Comments Regarding Message Content

It is not proper to comment on the content of a message on the air, (legality excepted), or allow such a judgment to affect how a legal message is handled. The originator and the addressee deal with the content of messages.

Any legal message placed in play in the traffic system should get the same good service. Even an apparently pointless message is at least giving the system some practice, and it is improper to assume that the message is pointless to the originator or addressee.

2.3.2.11 Accept Only Messages Which Meet Fcc Rules

Accept only messages in which content and purpose comply with the FCC regulations in force regarding third party traffic, the prohibition of “business” traffic, encryption, and other rules regarding prohibited communications.

It is difficult to examine a message and conclude with certainty what purpose or meaning is in the content in all cases. If in doubt, it is not mandatory to accept the message—refuse it.

If you know by some other means than content that a message is business related, or otherwise illegal, do not handle it.

If you wind up with such a message, and do not wish to send it along, send a service message to the originating station.

You are the licensee held responsible by the FCC.

Handling messages is a voluntary service.

2.3.3 Voicing The Exchange

Formal voicing methods are shown in the following sections.

The choice of greetings, use of operator names, and farewells is, of course, optionally added. Amateur traffic handling is a polished skill couched in the friendly traditions of the service—and it’s fun!

Groups may be sent as individual single groups, or sent as phrases in the text. Introduced groups are not included in phrases. The receiving operator may request that each group or phrase be sent twice (or more) times under difficult conditions. This may be requested at the start or during an interruption opportunity. A series of single messages, books, or a mix of both may be sent in a series. See the notes after the first voicing example below and section 2.4.

2.3.3.1 Ready To Copy-On/Off Net-Repeat/Spell-Listening

In the examples the TX station is the message sender, the RX station the receiving station.

New Frequency:

On a new frequency (off of a net) the RX station calls to check if the frequency is clear; “Is this frequency in use?.” If the frequency is busy the RX station moves to the next clear frequency in the same direction (away from the net) and repeats the sequence.

If clear the RX station will call the TX station and establish contact. The RX station may indicate it is ready to copy or wait to be asked by the TX station. In either case, the establishment of “ready to copy” status is a courtesy prerequisite to beginning the transmission of messages.

See the *Station Operations* section regarding moving off the net, searching, establishing contact, and net exchanges.

On A Net:

On a net frequency the NCS will dispatch the traffic to be passed “HERE,” the RX station will begin with “ready to copy.” The sending station then begins transmission of the first message according to the rules for a single message or a book. Listen to the NCS in case the calling order is reversed (order of call signs in the dispatch). If the TX station is asked to begin the exchange (addressed first), TX will ask “ready to copy?.” The reply is “ready to copy,” often shortened to

“ready,” key words for this purpose used instead of a simple “affirmative” reply.

Requests To Repeat And/Or Spell Groups, RX Station:

At the start or at interruption opportunities the RX station may request that the TX station send each word group 2 or more times and/or to spell each group (letters or phonetics) in difficult receiving conditions.

Advising Listening Capability And Quantity, TX Station:

At the start the TX station may advise the RX station if it is “listening between groups.” It may also advise the quantity of messages to be sent when sending multiple messages.

2.3.3.2 Voicing Example 1, Single Message

(PBL)	26 R N3XYZ 17 BANGOR ME JUL 24				
(ADR)	JOHN R SMITH				
	23 OAK DRIVE				
	PHILADELPHIA PA 19034				
	215 555 2345				
(TXT)	I	WILL	ARRIVE	TOMORROW	AT
	6PM	X	CAN	YOU	PICK
	ME	UP	AT	THE	AIRPORT
	QUERY	73			
(SIG)	BILL				

Prowords, operational words and introductory words are shown lower case. Try sending the prowords and operational words in a slightly higher pitched voice, the introductory words in a slightly lower pitched voice, or vice versa. TX is the sender, RX the receiver, on a net frequency. (See *Station Operations* for details on off frequency calls.)

KEY: .''' = word pause, .' = group pause, .' .. = copy pause, (/) = release of PTT, (/.../) = required listening pause.

RX: “W3RX ready to copy.” (In severe conditions the RX station may ask the sender to repeat each group 2 or 3 times and/or use letters or phonetics to spell all groups.);

TX: “W3TX” (Optionally informs RX of quantity and if listening between groups.)

“number.. TWO.SIX.. ROUTINE.. NOVEMBER TREE X-RAY YANKEE ZUZU.. ONE.SEVEN.. BANGOR.. MAINE.. JULY.. TWO.FOUR.” ..

“JOHN.. initial.ROMEO.. SMITH I spell SIERRA MIKE INDIA TANGO HOTEL.. .. figures TWO TREE.. OAK I spell O.A.K.. DRIVE.. .. PHILADELPHIA.. .. PENNSYLVANIA.. figures ONE NINER ZERO TREE FOUR.. .. figures TWO ONE FIFE.. FIFE FIFE FIFE.. TWO TREE FOUR FIFE.. break” (/.../) (interruption pause)

“initial.INDIA.. WILL.. ARRIVE.. .. TOMORROW.. AT.. .. mixed group figure SIX PAPA MIKE.. initial X-RAY.. CAN.. YOU.. .. PICK.. ME.. UP.. .. AT.. THE.. AIRPORT.. .. QUERY.. figures SEVEN TREE.. break.. BILL I spell BRAVO INDIA LIMA LIMA.. end.. no.more”

RX: “ROGER.. W3RX” (or “ROGER.. 73 W3RX,” etc.), or asks for fills, and acknowledges the message when done.

TX: “W3TX” (or “THANKS 73 W3TX,” etc.); (The exchange is complete.)

PTT releases (/) are not shown in this example. On fast VOX or PTT operation, release or listen after every group or phrase. The expected interruption pause (/.../) is shown.

Notes:

1. No transmissions are made by the receiving station until the end unless fills are required. If the receiving station says “go ahead” at the customary break the pause was probably too long, although it may optionally do so.
2. **On FM repeaters**, due to audio delays and receive site delays, it may be impractical to break after groups without loss of audio. In this case, the PTT switch is released only at the customary expected fill breaks. When sending long messages or batches the receiving operator may be forced to say “go ahead” by saying “over” at the break point between messages, thus confirming continuing good copy. Keep the repeater transmission time limiter in mind also.
3. **Grouping:** The Preamble, Address, prowords and signature groups are generally transmitted as individual single groups. The text may also be sent as single groups, or by using the phrasing technique below based on context or conditions.
4. **Phrasing:** Some operators prefer to say text groups in phrases rather than as single groups. Although controversial, transmitting phrases containing groups that are logically connected can actually aid in perception and accurate copy. It must be carefully done. Choose how many groups to voice based on context and group lengths, say the groups, then pause an appropriate time for copy before continuing. Groups eligible to be introduced are not included in transmitted phrases.
5. **Repeating For Emphasis:** Unusual or difficult groups may be repeated for clarity using the operational words “I say again,” as in: “mixed group figure SIX PAPA MIKE I say again mixed group figure SIX PAPA MIKE.” Phrases may be repeated for clarity in like fashion.
6. **Repeating To Correct Errors:** Errors may be corrected by using the operational words “I say again,” going back to the last group sent correctly, and resuming transmission, as in: “TOMORROW mixed group figure SIX PAPA MIKE I say again..TOMORROW.. AT.. mixed group figure SIX PAPA MIKE” (where the missed group “AT” is emphasized with tone of voice, or perhaps even spelled for clarity).
7. **Repeating Groups Multiple Times:** The receiving operator can request that the sending station repeat each group or phrase twice (or more) when conditions are difficult. Single groups in this case, requested in advance, are usually repeated without operational announcement. Phrases are repeated using “I say again” prior to the repeat to mark the phrase boundaries.
8. **Spelling Requests:** In extreme cases the receiving operator may request that groups be spelled phonetically (in addition to those customarily so spelled to reduce common

errors). This request may be made at the beginning of the exchange or at any later interruption opportunity.

9. **Multiple Messages:** See the later sections on *Booking Messages And Sending Multiple Messages*. Books and batches are generally sent continuously with acknowledgment at the end of the series.

2.3.3.3 Voicing Example 2, HXC, Filing Time, Op Notes

Sample message:

(PBL)	65 R HXC N3XYZ ARL 20 CATONSVILLE MD 1800Z JUL 24			
(ADR)	JOHN A HAM W3XYZ			
	107 HOOK ROAD APT 21A			
	PHILADELPHIA PA 19034			
	215 555 2345 OP NOTE CALL AFTER 6PM			
(TXT)	ARL	SIXTY FIVE	11PM	JULY/29
	USAIR/354	TELL N3ZZZ	THANKS FOR	
	THE	GREAT MEAL	X	NEW
	TELEPHONE	410 555	2008	REGARDS
(SIG)	BILL	OP NOTE PKT AT WB3FFV 21228 MD		

Again, on net frequency per NCS dispatching order:

RX: "W3RX ready to copy" (May request repeated groups or spelling.)

TX: "W3TX" (May inform RX of quantity and pause listening between groups.)

"number.. SIX FIFE.. ROUTINE.. HOTEL X-RAY CHARLIE.. NOVEMBER TREE X-RAY YANKEE ZULU.. A R L.. TWO ZERO.. CATONSVILLE I spell C A T O N S V I L L E.. MARYLAND.. figures ONE EIGHT ZERO ZERO ZULU.. JULY.. TWO FOUR." ..

"JOHN.. initial ALPHA.. HAM I spell HOTEL ALPHA MIKE.. amateur call WHISKEY TREE X-RAY YANKEE ZULU.. .. figures ONE ZERO SEVEN.. HOOK I spell H O O K.. ROAD.. initials ALPHA PAPA TANGO.. mixed group figures TWO ONE ALPHA.. .. PHILADELPHIA.. .. PENNSYLVANIA.. figures ONE NINER ZERO TREE FOUR.. .. figures TWO ONE FIFE.. FIFE FIFE FIFE.. TWO TREE FOUR FIFE.. OP NOTE.. CALL.. AFTER.. mixed group figure SIX PAPA MIKE.. break"/(..) (interruption pause)

"A R L.. SIXTY I spell SIERRA INDIA X-RAY TANGO.YANKEE.. FIVE I spell FOXTROT INDIA VICTOR ECHO.. mixed group figures ONE ONE PAPA.MIKE.. mixed group JULIETT UNIFORM LIMA YANKEE SLASH TWO NINER.. .. mixed group UNIFORM SIERRA ALPHA INDIA ROMEO SLASH TREE FIFE FOUR.. TELL.. amateur call NOVEMBER TREE ZULU ZULU ZULU.. THANKS.. FOR.. .. THE.. GREAT.. MEAL I spell M E A L.. initial X-RAY.. NEW I spell N E W.. TELEPHONE.. .. figures FOUR ONE ZERO.. figures FIFE FIFE FIFE figures TWO ZERO ZERO EIGHT.. REGARDS.. break.. .. BILL I spell BRAVO INDIA LIMA LIMA.. OP NOTE.. initials PAPA KILO TANGO.. AT I spell ALPHA TANGO.. amateur call WHISKEY BRAVO TREE FOXTROT FOXTROT VICTOR.. figures TWO ONE TWO TWO EIGHT.. initials MIKE DELTA.. end.. no more" (/)... (RX acknowledges or asks for fills.)

RX: "ROGER W3RX" (or "ROGER 73 W3RX," etc.)

TX: "W3TX" (or "THANKS 73 W3TX," etc.), (The exchange is complete.)

Notes:

1. (/) Not shown; use PTT releases to listen or mark parts of the message as desired; note extra pauses after the preamble, address lines and every 5 text groups used as line ending signals (on FM repeaters some operators will release the PTT to mark such lines).
2. Listen for fills at least after the first "break" (and after each "break" before "NUMBER" in book parts; see the section on booking) if not listening between groups or phrases sent.
3. Note the phrases used in transmitting the text; "THANKS FOR" and "THE GREAT." Those groups might have been voiced "THANKS FOR THE GREAT" except a line ending signal pause was optionally inserted. Optional sending of phrases is based on logically connected groups with no introduced groups imbedded within the phrase. Groups may also be sent singly.
4. The sound-alike group "FOR" was not spelled here since context was clear. Sound-alikes should always be spelled unless the context clarity is certain.
5. Plural "THANKS" was not spelled here. Plurals may be spelled with letters to emphasize the "S" in difficult conditions or where context would not clearly indicate the plural.
6. Note extra pauses for copy time after long groups like "PHILADELPHIA" and "TELEPHONE."
7. Groups are voiced with pauses for copy time, particularly after long groups unless you spell them.
8. Note the introducer "figures" for each and every text number group.
9. No expected standby for fills between "break" and the signature.
10. Introductory and operational words are usually said in a different tone of voice.
11. Transmission ending "over" is dispensed with in these examples... it is not required.

2.3.3.4 Acknowledging The Message

The receiving station asks for fills if required, then says "ROGER" and "call sign" to complete the exchange. (The full call sign at the end of an exchange meets ID requirements as well as being a signal that the exchange is complete.)

"ROGER MESSAGE(S)" and "MESSAGE(S) RECEIVED" are still in use by some operators, but ROGER implies all messages received and is sufficient, and efficient.

Saying such phrases as "YOUR MESSAGE NUMBER (#) RECEIVED," or "ROGER YOUR MESSAGE (#), or "QSL MESSAGE," etc., is considered poor practice.

Q-Signals are not used operationally in voice message handling. (They are permitted as message groups of course.)

Once acknowledged the message becomes the responsibility of the receiving operator to 1) relay it, 2) deliver it, or 3) to service the message back to the originating station.

2.3.3.5 Making Note Of Words In Doubt

When you are copying a message, any group(s) received about which you have doubt should be marked by underlining or some other convenient means. It is amazing how much you can forget after copying another five or ten groups.

Underline or otherwise mark the group, phrase, address, etc., so that you remember to go back at the end of the message and clear it up. (Or interrupt the transmission if the sending station is able to hear you between groups.)

See also: *Transmitting, Pauses For Interruptions.*

2.3.3.6 Interrupting For Fills Between Groups

If the sending station is listening between groups or phrases the receiving station may interrupt immediately for fills. In this case the technique is very simple.

Say the last group or segment of a group copied and the sending station will resume transmission with the next group, or repeat the group containing the segment, respectively, thus avoiding having to wait until a break point to ask for fills in the formal way. Examples are indented to represent timing of the transmissions:

TX:	ANTENNA IS RETRACTED..	(sent as single groups)
RX:	IS	
TX:	RETRACTED.. NOW...	
TX:	ANTENNA IS RETRACTED..	(sent as single groups)
RX:	WAS	(error in request)
TX:	IS..RETRACTED..NOW..." (IS!)	
TX:	ANTENNA IS RETRACTED NOW	(sent as a phrase)
RX:	IS	
TX:	RETRACTED NOW...	
TX:	INSERTED FORCIBLY..	
RX:	FORCE	
TX:	FORCIBLY... (spell if needed)	

Tips: It is customary to interrupt with this method immediately when there is missed copy. It is not considered good practice to interrupt and ask for earlier portions of the message. Better to wait until normal break points or the end of the message and use fill requests.

If the receiving station must interrupt for some other reason it may send "WAIT," and, when ready to copy again, ask for resumption of the transmission by sending the last group(s) copied, or part name, as the indicator of where to continue.

2.3.3.7 Jumping Ahead

When familiar mass mailing type messages are encountered, receiving operators will often wish the sending station to jump ahead to the next part of the message to save time if the sender listens between groups. This practice should be used with care to avoid errors of assumption.

A receiving operator asking for a repeat of a message part, such as the preamble, or addressee, might not need all of that part. When it copies what it needs the station will then send the specific group or part where the sending station should resume transmission.

A receiving operator, upon recognizing the addressee, may tell the sending station to go directly to the text by sending "Text." The sender then transmits "break" and then the text. If, however, there is an address op note, the sending operator should send that op note before continuing with the text.

A receiving operator, recognizing a "standard message" from an originator might interrupt the sending with "Signature" as soon as the address is received and the text is recognized. The sending operator skips the text, sends "break," and follows with the signature. If the receiving station interrupts with a "Roger" as soon as the text is recognized it is indicating it knows both the text and signature, however the sending operator should send the signature and/or the signature op note, if present, when the op note is not "standard" for that message. If in doubt the sending operator should confirm the receiving station has the op note.

2.3.3.8 Fill Requests And Responses

These words are used to ask for and provide repeats of specific groups or parts. Fill in the blanks with the flanking group(s), ask for the required part name, ask for confirmation of a group or phrase, or ask for a group to be spelled with letters or phonetically. Be specific. If there are similar groups in the message give 2 or more groups in the request and/or use limits. The interrogatory is implied without a query (?).

These requests are not usually needed with fast VOX. See the earlier section on *Interrupting For Fills Between Groups.*

Limits:

[IN (part)]: The optional position limiter refers to preamble or preamble part names, addressee, address, phone figures, text, signature, op note, book message number, etc., as required to avoid ambiguity in the request. They may precede or follow the request.

Multiple Fills: When several fills are needed the additional requests simply follow the reply to the preceding fill without a specific acknowledgment. When the fill(s) are settled the receiving station either acknowledges the message(s), or, if the sender was interrupted, says "GO AHEAD" to the sender as the signal to continue (at BREAK), or the specific group after which to resume when interrupting with fast VOX.

Method 1, Fill Requests And Responses:

[IN (part)] WORD AFTER _____;

Respond with group or part requested;

[IN (part)] WORD BEFORE _____;

Respond with group or part requested;

[IN (part)] ALL AFTER _____;

Respond with all groups after the one specified to the end of the message, unless limited;

[IN (part)] ALL BEFORE _____;

Respond with all groups in the message to the group specified, unless limited;

[IN (part)] BETWEEN _____ AND _____;

Respond with group(s) between blanks, observing limits;

[IN (part)] CONFIRM _____;

Respond “CONFIRM” or “AFFIRMATIVE” if group(s) correct.

Otherwise voice the correct group(s), (spelling helps);
(part name); Simply state the part name, thus asking for a repeat of that part.

Respond by re-sending the requested part;
 [IN (part)] SPELL [PHONETICALLY]... , may be used ahead of fill requests.

Respond by spelling word groups with “I spell.”
 Eligible groups are introduced and voiced normally.

Note: The optional [IN (part)] limiters may be placed before or after the request. Both methods are in use. This manual will show them ahead of the request as a suggestion that doing so makes it easier for the sending operator to find the requested fill.

Alternate Methods: There are several schools of thought on requesting and providing fills. The above methods are the best current practice today, being short and efficient. The alternatives below differ in the response method only and are shown for reference.

Method 2: Repeating the flanking groups confirms location and catches multiple missed groups unknown in the request.

[IN (part)] WORD AFTER ____;
 Respond with group given, word after, and next group;

[IN (part)] WORD BEFORE ____;
 Response: go back two groups, give that group, the requested group, and the group given;

[IN (part)] ALL AFTER ____;
 Respond with all groups, starting with group given;

[IN (part)] ALL BEFORE ____;
 Respond with all groups up through, and including, the group given;

[IN (part)] BETWEEN ____ AND ____;
 Respond with first group given through, and including, the second group given;

CONFIRM and SPELL requests are the same as in method 1.
 Method 3: Repeating the request.

[IN (part)] WORD AFTER ____;
 Respond with “word after,” group given, then word after;

[IN (part)] WORD BEFORE ____;
 Respond with “word before,” group given, then word before;

[IN (part)] ALL AFTER ____;
 Respond with “all after,” group given, then all groups requested;

[IN (part)] ALL BEFORE ____;
 Respond with “all before,” group given, then all groups requested;

[IN (part)] BETWEEN ____ AND ____;
 Respond with “between” group(1) and group(2), then the groups requested;

CONFIRM and SPELL requests are the same as in method 1.

2.3.3.9 Requesting Fills, Examples

Note that there are at least three ways of replying to fill requests in use (See the section above.). Only the primary method is shown here. Example message:

(PBL)	65 R HXC N3XYZ ARL 20 CATONSVILLE MD 1800Z JUL 24
(ADR)	JOHN A HAM W3XYZ
	107 HOOK ROAD APT 21A
	PHILADELPHIA PA 19034
	215 555 2345 OP NOTE CALL AFTER 6PM
(TXT)	ARL SIXTY FIVE 11PM JULY/29
	USAIR/354 TELL N3ZZZ THANKS FOR
	THE GREAT MEAL X NEW
	TELEPHONE 410 555 2008 REGARDS
(SIG)	BILL OP NOTE PKT AT WB3FFV 21228 MD

Requests And Responses

(“req. = request, ans. = answer):

- req. “WORD AFTER GREAT”; (or “IN TEXT WORD AFTER GREAT” if a limit was required.)
- ans. “MEAL” (the group may be spelled if needed)
- req. “WORD BEFORE THE”
- ans. “FOR I spell F O R” (usually spelled)
- req. “ALL AFTER BILL”
- ans. OP NOTE PKT AT WB3FFV 21228 MD (voiced per the rules)
- req. “ALL BEFORE CATONSVILLE”
- ans. number 65 R N3XYZ ARL 20 (voiced per the rules)
- req. “BETWEEN X-RAY and figures FOUR ONE ZERO”
- ans. “NEW PHONE I spell P H O N E” (spelled for clarity)
- req. “CONFIRM ONE ONE PAPA MIKE”
- ans. “CONFIRM” (AFFIRMATIVE may also be used by some ops.)
- req. “CONFIRM figures TWO ZERO ZERO TREE”
- ans. “figures TWO ZERO ZERO EIGHT” (the repeat indicates the error)
- req. “IN ADDRESS.. TELEPHONE FIGURES “
- ans. “figures TWO ONE FIFE.. FIFE FIFE FIFE.. TWO TREE FOUR FIFE”
- req. “PREAMBLE”
- ans. number 65 R N3XYZ ARL 20 CATONSVILLE MD JUL 24 (voiced per the rules)
- req. “LAST NAME ADDRESSEE”
- ans. “HAM I spell HOTEL ALPHA MIKE”
- req. “SPELL PHONETICALLY WORD AFTER GREAT”
- ans. “MEAL I spell MIKE ECHO ALPHA LIMA”

Receiving station acknowledges after all fills are done: “ROGER.. (call sign) .”

Note: The use of “Over” has been dispensed with in this example. As in the case of “end.. no more,” “Over” is implied by the nature of the fill requests and the responses in most cases. “Over” may be used to clarify the end of your transmission

when necessary, particularly on FM repeaters or slow VOX operation.

Replies restating the flanking groups, or restating the request syntax are not shown.

2.3.3.10 Verifying The Check

When receiving traffic, it is customary to copy text five or ten groups to a line to enable a quick count of the groups. Doing this will enable you to anticipate the end of the message (thus saving the time required for a group count). A surprise indicates a probable check error.

Since every operator verifies the group count, a check discrepancy flags both sending and copying errors.

Make a quick check of the text to find obvious possibilities such as words that could have been sent as either one or two groups. The importance of the use of clear separation between groups when sending can not be overemphasized (The “GLENDALE” vs. “GLEN DALE” case.). Clear sending will reduce such errors.

Ask for fills using the fill request guidelines. “CONFIRM..” may be used for likely items. Often a check discrepancy results from missing an “X-RAY” or some other simple error.

Do not spend a lot of time fishing for the problem. The discrepancy may be found sooner or later by fishing, but only after trial and error and the expenditure of much time.

Wise operators using fast VOX go directly to the first initials method to save time wasted searching group by group. The first initials method involves sending the first initials of each group in the text with the other station interrupting as soon as the discrepancy is detected. Either station may initiate the first initials sequence.

If the RX station is confident it copied the transmitted check correctly, but it has a different group count, RX may immediately begin the first initials series. The TX station will interrupt when the initial sequence error is detected.

If the RX station is not sure it copied the check correctly it may ask “CONFIRM CHECK ##.” The TX station will either confirm with “CONFIRM” (or “AFFIRMATIVE”) or send the correct check. If a corrected check matches the count the problem is fixed.

If the check still disagrees with the count the RX may ask “COUNT ##?” (its count), in which case the TX station will no doubt make a quick verification of its count, amend the check, or begin the first initials series to the RX station. The RX station will interrupt when the initial sequence error is detected.

The process is slightly different in each case.

See the first initials section following.

Note: Do not re-send entire messages or parts of messages in an attempt to find errors unless the receiving station makes specific requests for parts or fills, or repeats. Do not send entire messages or parts of messages back to the sending station unless specifically requested to do so.

2.3.3.11 Repeating The Text Group’s First Initials

A text is sent with a check of ARL 20:

ARL	SIXTY	FIVE	11PM	JULY/29
USAIR/354	TELL	N3ZZZ	THANKS	FOR
THE	GREAT	MEAL	X	NEW
TELEPHONE	410	555	2008	REGARDS

With the text copied incorrectly with a check of 20 but a group count of 19, assume “THE” was missed before “GREAT.”

The exchanges would go as follows, indents reflect timing. It is assumed that both stations are capable of listening between groups when transmitting. This may be simulated by quick PTT releases. If not possible, such as on FM repeaters with key up delay, stations send and copy the full sequence and make their requests and corrections at the end as noted below.

1. If the RX station is confident it copied the transmitted check correctly, but it has a different group count, the RX station may initiate the initials sequence (using phonetics):

RX: TEXT INITIALS.. A S F 1 J.. U T N T F.. G	incorrect sequence
TX:	FOR THE
RX: ROGER 73 W3RX	the count now agrees

Note that the TX station will back up a sufficient number of groups to be able to send a unique series of groups to correct the copy.

2. If the RX station is not sure it copied the check correctly it may ask “CONFIRM CHECK ##.” Note this is simply a verification of the copied check.

RX: CONFIRM CHECK TWO ZERO	
TX: CONFIRM (or AFFIRMATIVE)	since the original check IS 20

The receive station now knows there is either a sending or a receiving error (or a miscount check error on the original). It may begin a TEXT INITIAL series at this point as above, or;

3. The RX station may ask for a verification of the count:

RX: CHECK ONE NINER?; or COUNT ONE NINER?; (number of received groups);

Note that the query is not a normal fill request. The TX station will make a quick check of the count. If TX finds an error on its copy, it will amend the check and inform the RX station of the amended check, as in: CHECK TWO ZERO SLASH ONE NINER. The amended check now becomes part of the message. That is **not** the case in this example so step 4 below is used:

4. The TX station therefor may initiate the INITIALS sequence.

TX: TEXT INITIALS A S F 1 J.. U T N T F.. T	using phonetics
RX:	WORD AFTER FOR
TX:	THE
RX: ROGER 73 W3RX	the check now agrees

In any of the cases, if the stations were operating slow VOX/PTT, FM repeaters, etc., the station copying the Initials would listen to the full sequence and make the “WORD AFTER” request or send the correction at the end. On FM repeaters a popular practice is to send the Initials in groups of 5 then standby to listen before continuing.

When waiting until the end the correction sent should be carefully chosen to be unique, using as many groups as required. Fill requests should likewise be unique when there are duplicate groups in the text.

2.3.3.12 Verifying Alternatives

If the first initial technique does not readily resolve the check discrepancy the last resort under severe conditions or very confused copy would be to ask for the message or the part to be re-transmitted in its entirety.

“SAY AGAIN (or REPEAT) THE MESSAGE (or BOOK)” may be used.

Requesting “TEXT?,” or other parts, per the FILL rules may be used. Repeating groups may be requested as in “TEXT REPEAT EACH GROUP TWICE,” or “TEXT SPELL GROUPS PHONETICALLY,” etc.

All voicing rules would apply to such repeats as though the message or part had never been previously sent. Stick to expected protocols to avoid introducing new errors.

FM Repeaters: Asking for a repeat of the text first initials in batches of five with an “Over” to check the receiving station is sometimes done on FM repeaters to avoid doing the entire text. The entire text first initial method works in all cases, however, and is still efficient on repeaters.

Guidelines For Alternatives Usually Avoided:

Do **not** read back parts or entire messages to the sending station unless, for some reason, that is specifically requested. This is considered poor practice.

Do **not** re-send parts or entire messages to the receiving station unless, for some reason, that is specifically requested. Requesting the text at reading speed should be avoided in favor of the initials check on the first attempt (to find check discrepancies).

2.3.3.13 Amending The Check

If the sending station and receiving station eventually agree that they have the same text, and the original check on the sender’s copy is in error, the sender made a mistake in not verifying the check when the message was received, or an error was made in copy and not caught.

The Check may be amended by adding a slash followed by the corrected number as in 12/13, which is voiced as “ONE TWO corrected to ONE TREE,” or “ONE TWO SLASH ONE TREE.”

The text or check is never changed to force agreement!

The original Check value is preserved throughout the life of the message as it moves through the system. An Amended Check becomes part of the message to be carried on through to delivery.

The sending station should have caught the discrepancy before sending the message, and amended the check. If you fail to catch a check discrepancy and inadvertently acknowledge the message, and can not reach the sending station, you can only amend the check for future reference. If the error has fatally flawed the message a service message back to the originating station may be the only recourse.

If such errors are encountered with a message already having an amended check, only the amended value may be changed once the text is verified. An omitted “ARL” can be added to the amended part. Multiple amendments are seldom if ever done (20/21/22 would be 20/22).

An Op Note may be added if there is a particular suspicion about the nature of the error.

2.3.3.14 Acknowledging The Message At Last

Once the rapid and efficient resolution of the check problem is completed, the receiving station responds with, “ROGER,” or asks for fills or confirmation of groups, or parts of the message still missed or in doubt. The message is then acknowledged when fills are completed. (“MESSAGE(s) RECEIVED,” “BOOK OF (#) RECEIVED,” are sometimes used. For the sake of brevity and efficiency, Roger is the preferred method. Roger, meaning received-understood, implies all messages were received.) See the section on *Station Operations*.

Saying phrases such as “YOUR MESSAGE (#) RECEIVED,” “MESSAGE NUMBER # RECEIVED, or using “QSL MESSAGE(S),” etc., on voice, are all considered poor practice.

2.3.4 Booking, Time Saving Option, Special Events

Considerable time can be saved in sending two or more messages with fixed parts, such as fixed addressees, fixed texts, etc., by “booking” the messages as they are voiced.

2.3.4.1 Booking Is Optional

Booking is usually done in the head of the sending operator, and it is done at the option of the operators and is not mandatory. The economy of booking is based mainly upon the size of parts that would otherwise have to be repeated.

2.3.4.2 Sending The Basic Book

The basic book with a common text and variable address and signature would be formed as follows during transmission (shown written, use proper voicing rules):

“book of three R W3FT ARL 3 BALTIMORE MD JAN 15

break” (/.../) “ARL FORTY SIX break” (/.../)

“number 1 (addressee) break (signature) break” (/.../)

“number 2 (addressee) break (signature) break” (/.../)

“number 3 (addressee) break (signature)

End book no more”

2.3.4.3 Notes On Booking Structure

There are many permutations of booking depending on the fixed and variable parts. Booked messages can have fixed preambles (except for message number), fixed addressees, fixed texts, fixed signatures, or combinations of each.

Voicing The Book:

Book Of (quantity): The book is introduced by saying “BOOK OF (#)...,” (where “#” is the quantity of messages booked, voiced as a word group without introduction) followed by the fixed parts, then the variable parts.

Break: The parts of the book are separated by “break.”

End Book: The book is ended by saying “END BOOK,” followed by the customary “no more,” “more,” or “one more.” (“Over” may be added on FM repeaters or slow VOX operation, but it is not required.)

Generally the following guidelines apply:

The Preamble is kept intact except for the message number and sometimes check or date. The message # is a variable part.

The Addressee, Address and its Op Note are kept together.

The Text is kept intact as a fixed part or a variable part, except for blanks in a fixed text to be filled-in within a variable text part. The associated check stays in the same part except when a fixed text has blanks filled in variable parts with variable length additions. There the check moves to the variable parts.

The Signature, and its Op Note are kept together.

A message with a very long text may be originated as two or more separate messages and easily sent as a book. Each variable part would simply be:

“number (##) CHECK (#) break (text part) break.”

If the fixed parts include a text, “break” is still used to mark the start and end of the text. If the fixed parts include no text, a single “break” is inserted between the fixed address and signature. If the text is the last fixed part, only one “break” is used to separate it from the “NUMBER” of the first variable part. IF the fixed part contains only a signature it is preceded by a “break” to distinguish it from a stand-alone address, and is of course followed by the “break” to begin the variable parts.

Each variable part begins with the proword “NUMBER,” the message number associated with that part, followed by any variable parts of the preamble (identified by part name), and then the address, text and/or signature of the variable parts, each separated by a single “break.” In other words, the variable parts of the book are separated from each other, and from the fixed parts, by the SINGLE proword “break.” No double “break” is ever required.

In summary, the purpose of the booking format is to combine all fixed parts of several messages into one block to be sent first, followed by all the variable parts, sent next, all in such a way that exact replicas of the individual messages may be reconstructed by the receiving station at a later time. Booking is done “visually” on the fly by the sending operator. Booking is optional.

Rules for introductory and operational words are generally the same as for single messages except for the opening and closing references to the book and quantity, and the need to identify variable parts of the preamble when separated from the main preamble. (See examples below.)

2.3.4.4 Books To A Single Station

When sending a book to a single station it is customary to send the book continuously from start to end. Stopping for acknowledgment after each variable part takes extra time. Fast VOX operation is used on HF to provide listening between groups or phrases. Interruptions are possible any time.

On slow VOX or FM repeaters it is customary to listen after the mandatory “break” at the start of a text, and between “break” and “NUMBER” at the start of each variable part. These are the points where the receiving operator expects a listening opportunity. On repeaters the receiving station sometimes will say “go ahead” (or “go”) at the customary listening breaks to confirm that copy is still acceptable, thus preventing the need to repeat long books if there is a problem. For books of three or four this is not usually required or done. It may be agreed upon by the operators.

In the following examples the parts of the message are shown written, not as voiced in all cases. Use the proper voicing rules. The customary listening pauses are shown as (/.../) for reference. Other PTT releases may be used but the receiving station is not expected to say anything unless a fill interruption is required.

2.3.4.5 Example 1, Fixed PBL And TXT, To One Station

Given the 3 messages:

```

2 R W3VPR ARL 15 ANNAPOLIS MD JAN 1
JIM SMITH
13 OAK LANE
BOSTON MA 01033
ARL SIXTY ONE X HAVING
A WONDERFUL TIME HERE X
HOPE TO SEE YOU SOON
BETTY AND JOHN
3 R W3VPR ARL 15 ANNAPOLIS MD JAN 1
BILL JONES
4 CEDAR RD
BALTIMORE MD 21228
410 555 3434
ARL SIXTY ONE X HAVING
A WONDERFUL TIME HERE X
HOPE TO SEE YOU SOON
HARRY OP NOTE REPLY MDD
4 R W3VPR ARL 15 ANNAPOLIS MD JAN 1
CHUCK K3FT
C/O BTN 146R67
BALTIMORE MD
ARL SIXTY ONE X HAVING
A WONDERFUL TIME HERE X
HOPE TO SEE YOU SOON
GEORGE
    
```

They are booked as follows, shown written (not voiced). Use proper voicing rules:

```

"book of three R W3VPR ARL 15 ANNAPOLIS MD JAN 1
break (/.../) ARL SIXTY ONE X HAVING
A WONDERFUL TIME HERE X
HOPE TO SEE YOU SOON break (/.../)
number 2 JIM SMITH
13 OAK LANE
BOSTON MA 01033 break
BETTY AND JOHN break (/.../)
number 3 BILL JONES
4 CEDAR RD
BALTIMORE MD 21228
410 555 3434 break
HARRY OP NOTE REPLY MDD break (/.../)
number 4 CHUCK K3FT
C/O BTN 146R67
BALTIMORE MD break
GEORGE
end book no more"
    
```

Note the fixed parts of the book do not contain a message number, variable parts of the book all contain a unique message number, and where a text is included the text is begun and ended with a “break.” A “break” separates the address from the signature where no text is present. “BREAK” always separates each variable part before the proword “NUMBER,” and implies a listening pause.

2.3.4.6 Example 2, Fixed PBL and ADDEE, to One Station

Given the two messages:

```

3 R W3XYZ 10 CROWNSVILLE MD JAN 5
    
```

```

BOB W3BOB
TWO OPERATORS ARRIVED AT BWI
TO OPERATE PACKET X THANKS
JIM N3EI
5 R W3XYZ 11 CROWNSVILLE MD JAN 5
BOB W3BOB
NEED SIX MOBILES WITH TWO
METERS FOR SEARCH TEAMS X
ADVISE
BRIAN N3QXW
    
```

Booked as follows (shown written, use proper voicing rules):

```

"book of two R W3XYZ CROWNSVILLE MD JANUARY 5
BOB W3BOB break (/.../)
number 3 CHECK 10 break (/.../)
TWO OPERATORS ARRIVED AT BWI
TO OPERATE PACKET X THANKS break
JIM N3EI break (/.../)
number 5 CHECK 11 break (/.../)
NEED SIX MOBILES WITH TWO
METERS FOR SEARCH TEAMS X
ADVISE break
BRIAN N3QXW
end book no more"
    
```

Note the use of BREAKs to separate the parts, and the word "CHECK" to introduce the variable checks.

Note the lack of a "break" between the PBL and "BOB W3BOB," thus indicating that the line is an address, shortened here for the example, not a signature. A fixed-signature-only book would set the signature apart with a break between the PBL and SIG, then a break to end the fixed parts..

Note the economy of this booking is minimal unless the address is full length, but still saves some time, particularly with large books. PBL and address need only be sent once.

2.3.4.7 Example 3, Fixed PBL, TXT and SIG, to One Station

(Use proper voicing rules.)

```

"book of two R KJ3E 10 CALIFORNIA MD MAR 10
(/.../) WELCOME TO FISTS CW CLUB
break
X ENJOY YOUR MEMBERSHIP 73 break
KJ3E break (/.../)
number 2 JOHN A SMITH
(address, city, zip, tel) break (/.../)
number 3 HARRY J JONES
(address, city, zip, tel)
end book no more"
    
```

2.3.4.8 Example 4, Fixed PBL and TXT Except ARL Blank

(Which might be used in a holiday traffic solicitation. Use proper voicing rules.)

```

"book of two R W3XYZ ARL 3 ANNAPOLIS MD MAR 5
break (/.../) ARL SIXTY BLANK break (/.../)
number 1 JOHN A SMITH
(address, city, zip, tel) break
CHRISTMAS break BARBARA break (/.../)
number 2 HARRY B LEVIN
(address, city, zip, tel) break
HANUKKAH break BOB AND JUDY
end book no more"
    
```

"BLANK" (or "XXX") is used as place holder for additions in the variable parts, or, where there are two ARL blanks, two may be used, as in: "ARL SIXTY SEVEN BLANK BLANK."

Each blank is limited to single group addition in the variable parts if the check is common. If the blanks have additional groups (more than one), or a variable number of additions, the check becomes a variable part (i.e., a blank may stand for a phrase in the variable part). See the next section.

A fixed part check must agree with the final un-booked version of the message. Where blanks are filled with variable length insertions the check would move to the variable parts to agree with the final text for that version.

2.3.4.9 Example 5: Fixed PBL and TXT Except Misc. Blank

Where numerous messages are sent with a variable word or phrase implied by a blank in the fixed text. Note the checks are in the variable parts of the message! Use proper voicing rules.

```

"book of two R W3XYZ ANNAPOLIS MD MAR 5
break (/.../) HAPPY BLANK ANNIVERSARY break (/.../)
number 1 CHECK 3
JOHN A SMITH
(address, , city, zip, tel) break (/.../)
40TH break MOM AND DAD break (/.../)
number 2 CHECK 4
HARRY B LEVIN
(address, city, zip, tel) break (/.../)
THIRTY FIFTH break UNCLE BILL
end book no more"
    
```

Some operators use "XXX" instead of "BLANK" as place holder. The check indicates the variable additions plus fixed text groups—total text groups (not counting the "blank(s)."

2.3.4.10 Asking For Fills In Books

It is customary when asking for fills in books to specify the message number and/or use part limits to help the receiving station find what you are asking for when ambiguity would otherwise result. The optional limiter [in number ##] is used. From the example in the last section:

- req. "in number 2 WORD AFTER HARRY,"
- ans. "initial BRAVO"; or
- req. "in number 1 CHECK,"
- ans. "4"; or
- req. "WORD BEFORE BLANK,"
- ans. "HAPPY" (in the fixed text implied since no number was given.

"IN FIXED PARTS" may be used to introduce the request if ambiguity would otherwise result.)

2.3.4.11 Books To Multiple Stations

When sending a book of messages with different addressees to different receiving stations on the same frequency it is customary to check each station is ready to copy before starting, and to say the call sign of the station to copy each variable part just ahead of the proword NUMBER introducing that part. This assures each station knows what to copy. All stations obviously copy the book's fixed parts. The TX station arbitrates relays.

In a stack of numerous stations copying such a book off net, it is efficient to stop at the end of each station's variable part(s), get fills settled and acknowledgment with that station, and excuse the station from the stack so it may return to the net for other business.

Transmission of books to multiple receiving stations is usually encountered only on Section or Local nets, seldom on Region or higher nets where liaisons are dispatched singly. It requires skill in dispatching, and by the sending station to control the sending process, but it can save considerable net operating time when done properly. It is an optional strategy. It is often used for transmitting widely distributed books or “bulletins” to jurisdiction reps in emergency nets where considerable time can be saved. (See *Dispatching Messages To All Stations On Net, QNC*, Chap. 4.)

Note that the TX station performs like a net control when handling a group of stations receiving parts of a book. If the stations are dispatched from a net the Net Control Station will

assign the messages to each receiving station and the sending station copies along, or the sending station is advised by the NCS which stations will handle which messages at the time of the dispatch. The sending station controls the exchange on the assigned frequency or on the net until the assignment is complete. Example follows.

2.3.4.12 Example: Book Of 3, To 3 Stations

Note: *(/.../)* represents the customary listening points. At the listening points after the first and second messages the receiving stations are called specifically, thus dispensing with the need for interruptions at those points. Message parts are shown written, not voiced in all cases.

Use appropriate voicing rules.

TX:	“Is the frequency in use?..”	(off net, no response)
TX:	“W3XA W3TX READY TO COPY?”	(on or off net)
RX1:	“READY”; or [“READY TO COPY”]	
TX:	“XB?”; or W3XB?	(TX may use suffixes or tactical calls in this sequence.)
RX2:	“READY”	
TX:	“XC?”	
RX3:	“READY”	
TX:	“book of three	R W3VPR ARL 15 ANNAPOLIS MD JAN 1
	break <i>(/.../)</i>	ARL SIXTY ONE X HAVING
		A WONDERFUL TIME HERE X
		HOPE TO SEE YOU SOON break” <i>(/.../)</i> *
RX3:	“XB STATION OF ORIGIN” *	
	* (W3XB needs fill. Fixed part fill requests from any RX station are accepted here so all stations can benefit. The ID is optional.)	
TX:	“WHISKEY TREE VICTOR PAPA ROMEO”	
RX3:	“ROGER”	
TX:	“W3XA number 2	JIM SMITH (alerts XA to copy next part)
		13 OAK LANE
		BOSTON MA 01033 break
		BETTY AND JOHN break
	W3XA?”	(checking with receiving station for acknowledgment)
RX1:	“ROGER W3XA”	(station automatically excused from the stack)
TX:	“W3XB number 3	BILL JONES (alerts XB to copy next part)
		4 CEDAR ROAD
		BALTIMORE MD 21228
		410 555 3434 break
		HARRY OP NOTE REPLY MDD break
	W3XB?”	
RX2:	“WORD AFTER figure FOUR”	
TX:	“CEDAR I spell C E D A R”	
RX2:	“ROGER W3XB”	(station automatically excused from the stack)
TX:	“W3XC number 4	CHUCK K3FT (alerts XC to copy next part)
		C/O BTN 146R67
		BALTIMORE MD break
		GEORGE
	end book no more”	
RX3:	“ROGER W3XC”	
TX:	“W3TX”	(EXCHANGE COMPLETE)

Each station is automatically excused from the stack when done.

A receiving station can ask for fills for any part of the message before acknowledging its particular parts. Fills can be requested by interruption if the sending station is so equipped, otherwise requests are accepted at the customary break points or when the TX station calls directly. Some bulletin books have only one message number to be copied by all stations. In

this case an acknowledgment poll for all stations is done at the end of the book. See also chapter 4.

2.3.4.13 Special Event Book Solicitations

When sending continuing books, as in holiday solicitations where one huge book may be transmitted all day long, the book will usually have a fixed preamble except for the number and possibly the check. The text may be one of several choices, or contain a basic fixed text with a blank or blanks to be filled in based on choices of the originators. The sending

station may transmit new messages sporadically during the event time, calling the receiving station(s), announcing the continuing book, and sending the new message number, check, address, text choice or blank information for the variable text, and signature.

One or a team of receiving stations may complete the messages for transmission as books or singles on later nets. Generally, only messages with one text choice, even if there is a blank to be completed in the variable text parts, are booked for transmission throughout the NTS. Messages with variable texts are permitted, of course, but are usually an economy only for a large number of messages to one addressee.

Traffic may be presorted by NTS Region or local delivery areas to facilitate handling through the Section and higher nets.

The stations may agree in advance that the text will be sent from the originating station as “text 1,” or “text 2,” etc., each with its own check the receiving station would enter the appropriate text and check in the message(s) to be forwarded. Transmitting such books through the nets may be done in similar fashion although this is seldom if ever done. Normally the forwarding station would book together only those messages with one text version, sending those with different texts in separate books to keep the confusion to a minimum. For stations working together much time can be saved in transmission, as in this example (shown written, use proper voicing):

```

"BOOK OF TWENTY SIX
R W3FT BALTIMORE MD DEC 20
TEXT 1 check 15 break (/.../) (text of 15) break
TEXT 2 check 18 break (/.../) (text of 18) break
TEXT 3 check 22 break (/.../) (text of 22) break" (/.../)
* (The PBL and these texts could have been sent earlier in the event
and omitted here.)
"number 1 JOE SMITH
10 OAK DR
PODUNK MD 21228
410 555 1234 break" (/.../)
"TEXT 2 break
MARY SMITH break" (/.../)
* (Continuing with messages 2 through 25)
"number 26 JOHN DOE
24 EAST 16TH ST NW
TOWSON MD 21204
410 555 5678 break" (/.../)
"TEXT 1 break
UNCLE JOE
    
```

end book no more”

2.4 Sending Multiple Messages

When transmitting a series of two or more single messages, books, or a mix of singles and books, the following sequence is customary. Transmission of the entire batch is continuous and extraneous exchanges between the stations are eliminated or minimized.

The receiving station usually is aware of the quantity of messages to be passed. This information is part of the net listing and, perhaps, the dispatch. If the situation warrants the transmitting station may inform the receiver of the quantity at the start of the exchange along with information regarding fast VOX listening capability, etc.

If the transmitting station is listening between groups or phrases the receiving station can interrupt whenever a group is in doubt. Otherwise, the receiving station must wait for one of the customary listening pauses after an eligible “break” is uttered.

The transmission of the series of messages is then normally done in one continuous flow without interruption unless a fill is needed.

The sending station voices the “end more” or “end one more” statement at the end of each intermediate message, followed by a brief listening pause, and the next message is then begun with “number” without waiting for a “go ahead” from the receiving station.

On FM repeaters, or with slow VOX operation, the sending station may say “end more over” after each message to force acknowledgment by the receiving station, particularly when sending a long series of single messages or long books. Alternatively the receiving station may say “go ahead” at the eligible breaks. This will help avoid a loss of signal situation from requiring a repeat of an entire series of long transmissions. Normally neither of these are required except to reset repeater timers.

Multiple Message Example: Two singles and a book of two, total 4 messages:

The exchange is shown below written out, not voiced in all cases. Use the proper voicing rules for the type message groups sent.

```

RX: (checks if frequency is clear, then calls TX station)
RX: "W3TX W3RX READY TO COPY" (short method of calling ready)
TX: (optional "LISTENING BETWEEN GROUPS")
(optional "FOUR MESSAGES" if RX does not know quantity)
"number 22 R W1AW 11 NEWINGTON CT DEC 22
GEORGE SMITH
45 OAK DRIVE
PODUNK MD 21200
410 555 1234 break (/.../)
ADVISE IF YOU RECEIVED MY
EMAIL DATED MARCH 7 X
73 break
STEVE end more" (/.../)
"number 309 R W3FT ARL 3 BALTIMORE MD DEC 22
WILLIAM JONES
13 SLEEPY HOLLOW PKWY
PODUNK MD 21200
    
```

```

410 555 2456 break (/.../)
ARL SIXTY CHRISTMAS break (/.../)
BUCK end more" (/.../)
"book of two R W3VPR ARL 15 ANNAPOLIS MD DEC 23
break(/.../) ARL SIXTY ONE X HAVING
A WONDERFUL TIME HERE X
HOPE TO SEE YOU SOON break"(/.../)
"number 2 JIM SMITH
13 OAK LANE
BOSTON MA 01033 break
BETTY AND JOHN break"(/.../)
"number 3 BILL JONES
4 CEDAR RD
BALTIMORE MD 21228
410 555 3434 break
HARRY OP NOTE REPLY MDD
end book no more"
RX: "ROGER W3RX"
TX: "W3TX" (Exchange complete)
    
```

Optional greetings and farewells are not shown.

The entire series of messages is sent continuously, fill requests and acknowledgment at the end, unless the RX station desires to interrupt at the customary listening pauses, or the TX station is listening between groups for interruptions at any time.

2.5 Station Operations

Stations passing traffic individually and on nets should be familiar with message formatting outlined in chapter 1 and sending methods outlined in previous sections in chapter 2. Chapter 4 will present net operating methods. This section presents the common practices of two stations engaged in the traffic exchange, whether on a net, sent off frequency from a net, or meeting by themselves.

The customary practices help the stations know what to expect of each other. Once contact is made the same basic sequence of exchanges is used by all stations when passing traffic, regardless of how they got together.

2.5.1 Exchange On Net Frequency

The typical net dispatch and exchange is as follows:

NCS: "W3RX W3TX HERE (tfc dest. [qty.*])"

Quantity is usually only given if there is more than one message assigned to the receiving station and the NCS wishes to have the station send fewer than the total to permit other net business to be injected.

RX: "W3RX ready to copy"

TX: "W3TX... (transmits the message(s)/book(s) as shown in earlier sections);

RX: "ROGER W3RX"

TX: "W3TX" (End of transaction. The NCS resumes control of the net.)

Listen to the dispatch carefully in case the NCS specifies a different calling order. The first station call sign in the dispatch initiates the exchange. Other arrangements are made for relays, etc. If the TX is asked to initiate the exchange, it asks the RX station "ready to copy?," RX answers "ready to copy." See the *Net Operating* chapter 4 for more information.

2.5.2 Moving Off Net Frequency

The art of moving off net frequency and making contact requires a little care and practice. The RX station is usually addressed first in the dispatch when being sent off frequency from a net. The NCS will say the RX call sign, the TX call sign, the assigned frequency and the traffic destination (quantity) to be passed.

NCS: "W3RX W3TX (freq) (tfc dest. [qty.*])"

The two stations acknowledge with their suffix in that order by each saying:

"RX GOING"; or sometimes simply "RX."

"TX GOING"; or sometimes simply "TX."

In some cases the Net Control Station will give the call signs in a different order based on the type of dispatch. Listen to the instructions carefully. Transmitting in the right order will avoid "doubling." The NCS needs to hear that both the dispatched stations have acknowledged and are going, otherwise a call to verify the dispatch was copied may be made, wasting net time. Explanations of dispatching methods and the station responses are outlined in the *Net Operating* chapter 4.

2.5.2.1 Calling Order, Searching, Direction, Time

When two stations move off the net to exchange traffic certain customs of calling and answering are used. These customs help prevent the confusion of two stations calling each other at the same time, or on two different frequencies, or each station thinking the other is going to do the calling.

At or near the assigned frequency the receiving station calls first, regardless of the dispatch order, so the transmitting station tunes around to find it. (The receiving station picks the frequency to be free of interference, and checks before calling.)

If a relay station is dispatched to help with the exchange the relay station picks the frequency and makes the calls for the other stations.

The receiving, or relay, station selects the frequency as close as possible to the assigned frequency. It is also customary that any shifts or searches are also done in the same direction, i.e., if stations move down to the assigned frequency, and find the

frequency busy, they would move down another 2.5KHz or so, or to the next available clear frequency. This is not a hard and fast rule, but moving in the opposite direction should be done in limited fashion since most stations would not be expecting it. Moving too far in the expected direction will also usually result in the other station becoming lost.

2.5.2.2 Repeat Calls

The RX station makes the first call:

RX: "IS THIS FREQUENCY IN USE?"; if no response,

RX: "W3TX W3RX"; if no reply, repeats the call:

RX: "W3TX W3RX," until contact is established:

TX: "W3TX ready to copy?"

RX: "ready to copy," and the exchange is begun.

Note that "this is" and "go ahead" or "over" are omitted in the calls. They are not required. Full ID is made after the exchange.

If unsuccessful the call is again repeated by the receiving station, keeping the calling time short and the listening time short so the other station will not pass by and miss the call.

The process is repeated for usually no longer than thirty seconds to one minute or so. Beyond that time the chance of hooking up diminishes. It is prudent after a reasonable time to go back to the net, report "no joy," and let the NCS arbitrate a solution.

(See chapter 4 on *Net Operations*.)

2.5.2.3 Two Station Exchange

1. The Long Method, the receiving station calls first:

RX: "IS THE FREQUENCY IN USE?," if no response, then:

RX: "W3TX W3RX" (if no reply, see the section above)

TX: "W3TX ready to copy?"

RX: "ready to copy?"

TX: (advises quantity and if listening between groups), then begins the exchange with "number...," or "book of (#)," as outlined in voicing rules; ending with ". . . end no more";

RX: "ROGER W3RX" (or "ROGER 73 W3RX," etc.); (or settles fills and then acknowledges)

TX: "W3TX" (or "THANKS 73 W3TX," etc.)

2. The Short Method, the receiving station calls first:

Experienced stations often use a shortcut as follows:

RX: "IS THE FREQUENCY IN USE?," if no response, then:

RX: "W3TX W3RX ready to copy" (assumes contact is likely)

TX: "W3TX..." (adds quantity and listening between groups, and the traffic is transmitted.)

RX: "ROGER W3RX" (or "ROGER 73 W3RX," etc.); (or settles fills and then acknowledges)

TX: "W3TX" (or "THANKS 73 W3TX," etc.)

This shortcut is not used if the RX station needs to make repeated calls. The "ready to copy" is omitted forcing the TX station to ask in that case.

Note that "this is" and "go ahead" or "over" are omitted in the calls. They are not required. Full ID is made after the exchange.

"ROGER" is sufficient to acknowledge the message(s). "MESSAGE(S) RECEIVED" is also in use, but "ROGER" is the shorter and more efficient method, and is easier to hear.

Making comments such as "ROGER YOUR NUMBER (#)," etc., is considered poor practice.

2.5.2.4 Relay Station Assistance

If a relay station is dispatched to aid in the exchange the relay station will usually initiate the contact for obvious reasons. The relay station will initiate an exchange with the sending station then pass the message to the receiving station, keeping the original holder on frequency for any confirmations.

2.5.2.5 Special Requests, RX Station

If the receiving station wished to ask for multiple group transmission or spelling it makes the first call without the "ready to copy":

RX: "W3TX W3RX," The sending station will make contact:

TX: "W3TX ready to copy?," at which point the RX request may be made:

RX: "W3RX repeat each group twice ready to copy"; or ". . . spell each group phonetically ready to copy"; or both.

2.5.2.6 Expeditious Assigned Exchanges

The assigned traffic is exchanged promptly.

Stations handle only assigned traffic. If other traffic comes up, or some traffic may not be passed, or is refused, the stations return to net and inform the NCS. The NCS may have made other arrangements for other traffic held or need to make new assignments.

Stations pause briefly to listen for calls from others when their business is concluded, then return to net promptly. Chatting with stations is considered poor practice and may keep others waiting. The stations can list "WORDS for (call sign)" on the net and be assigned to have conversations, on or off the net frequency, at another time.

2.5.2.7 Returning To The Net

The order of transmitting when returning to a net is not important except that stations should not interrupt ongoing transactions. Receiving-station-first may be exercised when returning if both stations know they are returning together.

Job Completed: Stations report back into the net by saying:

STN: "(suffix) BACK"

NCS: "(suffix)," repeats the suffix to acknowledge.

It is not necessary for the returning station to indicate the assigned traffic was passed. The NCS assumes it cleared the dispatched traffic. A station would report "no joy" if that was not the case. It is not necessary for a returning station to remind the NCS of its remaining pending business.

If a returning station has additional business to list, or wishes to report a change in the original dispatched traffic count:

STN: “(full call sign) BACK PLEASE ADD TRAFFIC (list Over”); or

“(full call sign) BACK PLEASE CORRECT THE PODUNK 6 TO 5 OVER”); or

“(full call sign) BACK PLEASE CANCEL MY LITTLEBURG OVER”); or

“(full call sign) BACK REQUEST TO BE EXCUSED OVER”);

etc. or the station may reply to a specific request from the NCS for a volunteer to take a liaison job or accept listed traffic.

NCS: “(suffix),” repeats the suffix to acknowledge return, or for a request, might say, “(call sign) ROGER STANDBY,” or might excuse the station as requested.

If Unable To Complete The Assignment: Stations return to the net in less than a minute. All stations report to the NCS when returning that the assignment is incomplete:

STN: “(full call sign) NO JOY,” or

“(full call sign) NO (suffix),” the suffix is that of the station to be contacted when dispatched;

NCS: “(suffix),” repeats the suffix to acknowledge, and arbitrates a solution to the problem.

The station may add a brief explanation of the problem encountered, such as no clear frequency, unable to copy, interference, suggest a frequency, etc.

Both or All stations report “No Joy,” etc., if the assignment is not completed.

See chapter 4 on *Net Operating* for details on these moves and how to deal with problems with assignments and dispatches.

2.5.3 Moving To A Stack Of Two Or More Stations

A station may be dispatched off net to pass traffic to a particular station already participating in an exchange at a stack (frequency off net). In some cases there may also be another station waiting in line. The NCS will assign the order of business at the stack. Each subsequent station assigned to the stack will be instructed to exchange traffic with one station there following another particular station already there. The NCS will specify which station to follow using an “AFTER (call sign)” addition to the dispatch syntax:

NCS: “W3RX UP 5 W3TX AFTER W3XX PODUNK,” or

NCS: [“W3RX UP 5 W3TX PODUNK AFTER W3XX”], less used form.

In the example, W3RX moves up 5 KHz, waits for W3XX to finish with W3TX, then calls W3TX and exchanges the Podunk traffic..

The station moves to the stack frequency, waits for its turn, and then promptly calls its station immediately following the departure of the station it is to follow. Calls should be made promptly so the assigned station does not escape back to the net. The miss will require another dispatching round and wasted net time.

The NCS will usually limit a stack to a total of 3 stations (2 exchanging, 1 waiting), waiting for one to return before dispatching additional stations, one at a time.

Books For Multiple Receiving Stations (See 2.3.4.11 and 12):

On nets below Region and Area level the NCS may dispatch a number of stations to receive particular parts of a book held by one transmitting station. The NCS will either assign the traffic to the receiving stations before the dispatch, or will do so within the dispatch syntax. In either case the transmitting station acts as a temporary NCS to pass the traffic either on the net or off frequency. Off frequency as each station receives its part(s) of the book, the transmitting station will settle with that station and release that station to return to the net.

See chapter 4 on *Net Operating* for information on using these skills on the traffic nets and the art of controlling net business.

See the *Proword, Prosign And Abbreviation List* at the end of Chapter 3.

Chapter 3: Sending Messages On CW

3.0 Introduction

CW (continuous wave radiotelegraphy) message sending is a skill dating back to the very beginning of radio communication, and, in fact, carries forward disciplines developed during the land-line telegraph and semaphore eras. CW is the first three level digital code; dots, dashes, and spaces.

CW traffic handling has an advantage over voice in getting through interference and noise due to the narrower bandwidth requirement. CW provides automatic spelling of all word groups resulting in less overhead in transmitting. CW transmitting dispenses with the problems of speech perception, group introductions and phonetic spelling for clarity.

This chapter presents the basic methods of transmitting messages on CW. The chapter is organized so that each section prepares the operator for the next section. Basic tools, sending the single message and books, getting fills, and interacting with other stations are the main section subjects. It is assumed that the operator has become familiar with the ARRL standard message format presented in chapter 1. This chapter is limited to sending and receiving messages on CW. CW net operations are an integral part of chapter 4, *Net Operations*.

3.1 Tools

Message format for CW traffic is the same as for voice with respect to the rules about content, punctuation, etc. These matters are addressed at the time of original creation of the message discussed in chapter 1. A properly formatted message is suitable for transmission on all modes. In fact, it is correct to regard the message format rules presented in chapter 1 as having been developed to suit the telegraphic transmission methods. Prosigns and abbreviations on CW are selected to avoid conflict with message parts, and vice versa.

Prosigns and abbreviations are listed in section 3.6, “Q-Signals” in section 3.7.

3.1.1 Sending

Speed: Sending speed for pencil and paper copied traffic handling is usually limited to about 25 words per minute since writing a message on paper above that speed becomes difficult. Operators using typewriters (mills) or computers can copy traffic at speeds above 40 wpm if the sending is properly done. Believe it or not, even an experienced traffic handler enjoys copying messages sent with a good fist by a beginner at low speed. Assume paper and pencil copy unless advised otherwise.

Honor QRS (slow down) requests. It is crucial to understand the need for the sending station to slow down to the speed at which the receiving station can copy comfortably as a function of his skill and radio conditions. Sending any faster is counterproductive, resulting in inaccurate message transmission or wasted time in requesting “fills” and repeats. There is a customary practice of replying to, and sending traffic to, a station at its sending speed.

Fist: As important as sending speed is a good “fist.” Clear character formation, with proper dot to dash ratio and proper weighting, and extra care in proper spacing between elements, characters and groups is the key to good copy (pun intended). Farnsworth spacing sometimes used in training is not recommended for traffic handling.

The dot element consists of 1 unit of time followed by a space of 1; a dash 3 units followed by a space of 1; letters spaced 3 units, words 5 (as a minimum).

Group (word), spacing is crucial. This can not be overemphasized. Proper, and even enhanced, word spacing greatly lends to clear and accurate copy at any speed. Pauses are used to accentuate parts of the message and prosigns. Pauses and spaces are the “third elements” of CW sending in addition to the dot and dash.

When letters or groups are “run together” the copy degrades quickly, and accuracy suffers.

Conditions: Speed should always be adjusted for conditions. It is very effective to slow down when fading (QSB), interference (QRM), and static or noise (QRN) are severe, or signals are weak. As the receiving operator narrows his receiver bandwidth speed may be lowered to enhance copy. In some cases higher speed can be better than slow, or used to squeeze information between bursts of interference. Repeating message groups more than once (QSZ 2 or 3) can also enhance successful copy. In bad conditions adjust your speed and/or repeat groups.

Generally, the most effective technique is to send at the speed best matched to the receiving station’s capability and use QSK (full break-in) to permit interruptions between your elements, characters and groups. The receiving operator can then interrupt on a real-time basis and recover from lapses in copy caused by conditions. This gives both operators feedback on the copy conditions and permits adjusting with speed or repeating whenever needed.

3.1.2 Break-In, QSK

In addition to the large signal-to-noise advantage CW has over phone (voice), the use of full break-in (QSK) is a powerful

tool. When using QSK, listening between your own dots and dashes, you can hear interruptions by the receiving station or interference. Full QSK provides essentially full duplex operation and is virtually indispensable for efficient traffic work.

The receiving operator can interrupt the sender at any time to ask for repeats or fills. When the receiving station interrupts the sender it may send the last group, or fragment, received, and the sender will simply resume with the next group, or the group containing the fragment, respectively.

If the interruption group sent is incorrect, the sender corrects the group immediately.

If a radio does not have full break-in, the operator should consider using CW VOX keying with minimum drop-out delay, or use a manual PTT switch to engage the transmitter which will force immediate receiver recovery when released. (Most radio mike PTT circuits permit this. A foot switch can be used for hands-free operation.)

Another option to consider is the use of a second receiver, operating on a separate antenna, with fast or no AGC (AVC), which permits QSK. The operator also can tune the second receiver around without affecting the transmitter, and receiving on two separate antennas with two receivers (diversity reception) can aid in copy with QSB (fading).

Most traffic handlers on the CW nets use full break-in. “QSK” is sent before “NR” when beginning to send the message to alert the receiving operator of the capability.

3.1.3 Prosigns, Operational Symbols And Abbreviations

These special groups are used in CW sending as a form of shorthand in much the same way as prowords, operational words, and introductory words are used in voice sending. They inform the operator to begin and end copy, mark parts of the message, indicate actions such as repeating or requesting fills, and give other operational information.

Concatenated Letters

Unique code characters used as prosigns are shown in this manual as concatenated letters bracketed by a less-than sign (<) and a greater-than sign (>) (Also known as angle brackets and referred to here as prosign brackets.). For example: <AA> stands for the element group (.-.), the carriage return line feed prosign; and <BT> stands for (-...-, the “=“), the “break” starting and ending the text. Such groups are sent by sending the bracketed letters without a space between them. (Di-dah-di-dah, and dah-di-di-di-dah.)

Capitalized Letters: A group of capitalized letters, without the prosign brackets, is transmitted as a group of normal letters with normal spacing between them, as in NR, (-. .-.).

No Extraneous Words Or Characters: No extraneous words, characters or symbols should be sent during transmission of the record copy message. The receiving operator will recognize the prosigns, abbreviations, and operational symbols presented here. Any other characters sent will be assumed to be part of record copy of the message.

See the Sending Examples.

3.1.3.1 Punctuation

Punctuation such as the comma (---), question mark (---), period (---), etc., are not permitted in the record copy of ARRL formatted messages. The query (---, ?) has a special use operationally as “I say again.” (see the section below on prosigns). The following characters are permitted as explained in chapter 1:

- “/” Slash, (-.-., <DN>), used generally to separate characters within groups;
- “X” Initial X is used as a substitute for the period in the text, and is used as a separate group. (The “X” is never formatted as the last character in a text.)
- “R” Initial R used as a decimal point in figure groups. Other punctuation, such as DASH or QUERY, is spelled out.

3.1.3.2 Q-Signals

Operators should become familiar with the International “Q-Signals” used for both traffic handling, net operations, and conversation. They are used to ask questions and give instructions using a three letter shorthand. They should not be used on voice nets.

The ARRL “QN_” signals are special signals to be used on CW nets only. They should not be used on voice nets. Other meanings that may be used in other services do not apply. CW traffic nets make frequent use of the QN signals in normal operations.

The use of essential Q-Signals shall be explained as the examples of traffic sending are presented in this chapter. QN-signals used in net operating will be presented in the chapter on Net Operating.

See the lists of Q and QN signals, reproduced from the ARRL FSD-218, included at the end of this chapter.

A few often used Q-signals are given in the next section.

3.1.3.3 Essential Prosigns And Abbreviations

The following are used in sending the message, generally in the order encountered. (See the complete list of *Prosigns And Abbreviations And Q-Signal* lists at the end of the chapter.)

“Fill Request” abbreviations are shown in the next section.

<AA>	Used as a line-end symbol after the addressee, address, city/state/zip, and after the telephone figures if an Op Note follows, else the <BT> is used there.
<AR>	Ends record copy for a single message; and is followed by additional message quantity characters; N, B, B1, or 1.
<AR>	In BOOKS; ends record copy of the last message of a book before “END BOOK,” which is then followed by <AR> and characters; N, B, B1, or 1.
ARL	Before check if ARRL Numbered Radiograms in text, and before each Numbered Radiogram in the text.
<AS>	Wait, standby.
B	Indicates more messages to follow. (“<AR> B”). See N.
B1	Indicates one more message to follow. (“<AR> B 1”)
1	A shortened form of B1 used to indicate one more message to follow. (“<AR> 1”).
BOOK OF (#)	Signals the beginning of record copy of the fixed parts of a book, where the (#) is the quantity of messages in the book, spelled out as a word. (“BOOK OF TWO...”)
<BT>	Marks the start and end of the Text (not counted in the Check). If QSK is not being used, the <BT> at the start of the text is a mandatory breakpoint to listen for fill requests.
<BT>	<BT> separates fixed and variable parts of a book. The <BT> before each book variable part and variable text is a mandatory listening point as above.
C	Yes, Affirmative.
END BOOK	Signals the end of record copy for a book.
K	Go ahead. Over. Invitation to transmit.
N	No, Negative. Also indicates no more messages to follow, as in (“<AR> N”).
NR	Signals the beginning of record copy with the first group following NR for each single message or variable part of a book (equivalent to “number” on voice).
OP NOTE	Used to introduce address or signature operator notes.
QRV?	Are you ready (to copy)?
QRV	I am ready. (to copy)
QSK	Indicates full break-in operation, sent just before NR (or BOOK) in the exchange sequence only once for any number of messages in a series.
QSL	Acknowledge receipt. All messages received, acknowledged.
QSM	Repeat last message sent.
QSZ ___	Send each word group twice, or ___ times.
R	Received and understood. (Does not mean yes or affirmative!)
“?”	I say again, used to repeat group(s) for clarity.

“?”	I say again, used to repeat group(s) for correction, where the operator goes back to the last correctly sent group or prosign and resumes transmission with that group.
“?”	Used following a Q-signal outside the written message to ask the question.

3.1.3.4 Fill Requests

Used to request repeats of groups or parts specified. They may be preceded by the groups “IN (part)” to indicate the location of the requested groups within the message where ambiguity would otherwise result, otherwise they are omitted. The optional “[IN (part)]” limiter, sent before or after the request, refers to the PBL, ADR, TXT, SIG, or book message #, etc., as needed.

[IN (part)] WA ___: Word After.

[IN (part)] WB ___: Word Before.

[IN (part)] AA ___: All After.

[IN (part)] AB ___: All Before.

[IN (part)] BN __ ES __; (or BN __ ? __): range of groups.

(part): Request for a specific message part to be repeated, as in PBL, ADR, TXT, SIG, etc.

CFM ___: Confirm; request to confirm if group is correct.

Note that the “?” is implied and thus omitted when making fill requests.

See the section on *The Message Exchange, Fill Requests*, and in *Asking For Fills In Books* for details and replies.

3.1.3.5 Email, Packet, Internet Addresses

Properly formatted addresses, as indicated in chapter 1, are sent as written.

[**Note:** The ITU has added a new Morse code character for the ATSIGN @: <AC>, didahdahdidahdit.—*Ed.*]

3.2 Rules For Sending Messages

The proper use of style, speed, fist, adapting to conditions, prosigns, and break-in permits very effective and efficient CW traffic handling—and it is fun. In today’s world of packet, high speed automatic digital backbone file transfer and mail systems, CW still plays a vital role in traffic handling, and it is a very personal experience with interactive real-time operator contact.

When operators are properly trained and experienced, they are able to anticipate much of what the other station is going to do. Much information is exchanged with just a few abbreviations or prosigns, full QSK, signal to noise advantage, character for character transmission, and low overhead. Throughput on CW is often higher than on voice for this reason.

3.2.1 Transmitting Notes, Speed And Clarity

A few reminders:

The transmitting operator must send clearly and at a speed which will allow the receiving operator to copy perfectly without rushing. Use pauses to frame groups clearly. Properly formed and spaced characters and groups are key to accuracy.

Assume the receiving operator is copying with pencil and paper unless advised otherwise.

It always takes less time to send a message correctly the first time than it takes to negotiate repeats and fills of missing or uncertain parts. Send at the receiver’s speed.

Clear group spacing is essential to accurate copy, and may even be exaggerated a bit for emphasis. Extra spacing between characters in unusual groups may be used with good effect.

Use no extraneous words or prosigns during the transmission of the message written record. An experienced operator copies everything heard except for those prosigns and abbreviations which trigger a special response. Do not transmit anything else you do not want copied.

Sending properly formatted messages with a good fist and proper use of group spacing and prosigns leads to efficient operation with the receiving operator locked in sync.

Traffic handlers operate mostly in an “open loop” mode, i.e., there is seldom direct feedback as to the accuracy of relayed radiograms. The old party joke rule applies. It takes a concerted effort to assure that the accuracy of messages is preserved from origination to delivery. Where practical to do so, it may be worth the trouble to make arrangements to test the system from time to time by sending relayed messages back to the originator to check for errors that creep into the process. Scrupulous attention to clear and proper sending and careful honest receiving is the routine quality control.

3.2.2 Receiving Notes

The receiving operator must develop certain skills and disciplines to assure accurate copy and efficient operation. These skills are complimentary to those involved in transmitting the message. Passing the message from one station to the next is covered in the section on the *Message Exchange*.

Additionally the receiving station has several important and ethical responsibilities. It must:

3.2.2.1 Transcribe The Message Exactly

The message copied should be an exact replica of the message held by the transmitting station—letter for letter, group for group.

3.2.2.2 Transcribe The Message Without Modification

No part of the message may be altered, even when it appears necessary, except for appending corrections to the check value. If part of a message appears to be in error, confirm the part with the sending station. If it is correctly received, leave it alone. Op Notes may be used to pass words to the next operator regarding problems.

3.2.2.3 Be Sure Of Every Group Received

Do not assume that you have copied a group correctly. If you miss part of a group avoid guessing about the missing part. Check each group to see that it fits the context and makes sense. If the sending speed is too fast, ask for reduced speed (QRS). If QRM is present, ask for a shift in frequency if possible. Ask for a repeat or confirmation if you have any doubt.

Only you know for sure that you have copied every group with certainty.

Do not acknowledge the message until you are certain you have it copied it completely and accurately.

3.2.2.4 Ask For Fills Or Confirmation

If interference or static is present, or you make a copying mistake, mark the groups or parts of words which might be in error (underline). If the sending station is using QSK interrupt with the group or segment. The sender will repeat. Otherwise, mark (underline, circle, etc.) groups you are not sure about as you go along. You can ask for “fills” formally after the <BT> at the start of the text or at the end of the message. Read the message to check for questionable context. Ask for “fills” or confirmation until you are certain that you have all of the message correctly copied. Do not be afraid to ask or worry about taking the extra time. Other operators will respect your care.

Do not acknowledge the message until you are certain you have it copied it completely and accurately.

3.2.2.5 Accept Messages That You Can Relay Or Deliver

You should accept only messages that you can forward or deliver in a reasonable time. Sometimes you may be asked to do otherwise as a liaison station or for “store and forward.”

If you accept a message, and are unable to pass it on promptly, try to find another station to accept it and keep it moving. There are many ways to move a message along. Phone a fellow amateur to take custody if you can not handle it properly. Mailing, personal delivery, telephoning neighbors of the addressee, etc., are alternative methods to direct telephone delivery. See the chapter on *Delivering Messages*. Service messages promptly when necessary. Ask fellow amateurs for help if you have difficulties.

Messages should be delivered within 48 hours if possible.

3.2.2.6 Take Responsibility For Messages Accepted

Once you acknowledge a message, it is your message to handle. Do not go back to the station from whom you received it with delivery problems, or change your mind about accepting it. It is reasonable, in some circumstances, to find the station from whom the message was received and confirm the message content, but it is your responsibility, not his, to service the message.

If you can not move a message, relay it to another station that can.

If you have an insoluble problem, send a service message back to the station of origin. Explain the problem and put enough information in the service message to allow the station of origin to find the original message and evaluate, at the same time, the accuracy of the information you received. (Repeat key items in service messages!).

3.2.2.7 Emergency Messages

Emergency messages should be handled by the fastest path available, on or off radio. Notices regarding death or serious illness or injury are often better delivered by relief agencies or public safety officials experienced in such matters.

3.2.2.8 Honor All Handling Instructions

HX codes regarding delivery, progress and replies are part of the job. Failure to honor these requests is as bad as not delivering the message at all. If a reply is requested by HXE from the addressee, and no reply is forthcoming, send a service message back and say so. In these type messages, the “ball is in play” until the originating station receives his expected response. An “ARL SEVEN” reply request in the text is an option for the addressee to approve.

3.2.2.9 Do Not Generate Messages Without Permission

To originate a message for a third party without their permission is a fraud and forgery. (Strong words!) Generating messages about a third party without their permission is also considered very poor practice.

Do **not** service back changes of addresses, phone numbers, or other personal information about the addressee without their permission. The original message might be intended to pry into the private affairs of the recipient. Respect privacy.

3.2.2.10 Make No Comments Regarding Content

It is not proper to comment on the content of a message on the air, (legality excepted), or allow such a judgment to affect how a legal message is handled. The originator and the addressee deal with the content of messages.

Any legal message placed in play in the traffic system should get the same good service. Even an apparently pointless message is at least giving the system some practice, and it is improper to assume that the message is pointless to the originator or addressee.

3.2.2.11 Accept Only Messages Which Meet FCC Rules

Accept only messages in which the content and purpose comply with the FCC regulations in force regarding third party traffic, the prohibition of “business” traffic, encryption, and other rules regarding prohibited communications. It is difficult to examine a message and conclude with certainty what purpose or meaning is in the content in all cases. If in doubt, it is not mandatory to accept the message. Refuse it.

If you know by some other means than content that a message is business related, or otherwise illegal, do not handle it. If you wind up with such a message, and do not wish to send it along, send a service message to the originating station.

You are the licensee held responsible by the FCC. Handling messages is a voluntary service.

3.3 The Message Exchange

The following sections present the technique for exchanging the message, including examples and notes regarding syntax and operational handshaking.

3.3.1 Ready To Copy, QRV

In the examples the TX station is the message sender, the RX station the receiving station.

It is customary on CW and Phone alike to formally check that the receiving station is “ready to copy” before beginning the message. The inquiry “QRV?” and affirmative reply “QRV” are used on CW for this purpose. See also *Station Operations*.

3.3.1.1 QRV, New Frequency, Off Net

Long method:

RX: “QRL?,” the RX station checks the frequency, if no response, then:

RX: “W3TX W3RX” (makes the call)

TX: “W3TX QRV?”

RX: “QRV”

TX: “[W3TX]...” (sends the message(s))

Short method:

RX: “QRL?,” the RX station checks the frequency, if no response, then:

RX: “W3TX W3RX QRV” (makes the call)

TX: “[W3TX]...” (sends the message(s))

3.3.1.2 QRV, On A Net, RX Called To Receive Message(s)

RX: “W3RX QRV,” (announces presence and ready to copy)

TX: “[W3TX]...,” (sends the message(s))

3.3.1.3 QSZ (RX), Requesting

At the start or at interruption opportunities the RX station may request that the TX station send each word group 2 or more times:

RX: “W3TX W3RX QSZ QRV” (two times), “.. QSZ (#),” 3 or more times.

3.3.1.4 QSK, Quantity (TX), Announcing

At the start (after QRV) the TX station may advise the RX station if it is operating QSK. It may also advise the quantity of messages to be sent when sending multiple messages.

TX: “QSK,” or “QTC 4 QSK,” and then sends the message(s).

Most traffic handlers use QSK with today’s modern radios.

3.3.2 Sending Examples

The following message will be used for demonstrating the sending methods below:

3.3.2.1 Example 1, Basic Message

1 R W1AW 13 NEWINGTON CT JUL 1	(PBL)
DONALD R SMITH	(ADDEE)
164 EAST SIXTH AVENUE	(ADR)
RIVER CITY MD 00789	(CITY, ST, ZIP)
301 555 3470	(TEL)
THANKS FOR MESSAGE X HOPE	(TEXT)
TO SEE YOU AT HAMFEST	(TEXT)
8/10 X 73	(TEXT)
DIANA	(SIG)

The message exchange is as shown below. Refer to the prosign and abbreviation list as needed. TX is the sending station, RX the receiver—on net frequency per the dispatch. Items in brackets [] are optional.

NCS	W3RX W3TX HR RIVER CITY [1], (or RC 1, dest. abbreviated, qty. optional)
RX	W3RX QRV; [or W3RX QSZ [#] QRV]
TX	W3TX...; or simply QSK..., or [W3TX QSK...], or simply begin the message
	NR 1 R W1AW 12 NEWINGTON CT JUL 1 (short pause)
	DONALD R SMITH <AA>
	164 EAST SIXTH AVENUE <AA>
	RIVER CITY MD 00789 <AA>
	301 555 3470 <BT> (/.../)*
	THANKS FOR MESSAGE X HOPE
	TO SEE YOU AT HAMFEST
	8/10 X 73 <BT> DIANA <AR> N
RX	QSL W3RX; (or QSL 73 W3RX, etc.)
TX	W3TX; (or TNX 73 W3TX, etc.) (Transaction complete.)

(/.../) denotes release of the PTT for the mandatory listening pause if not using QSK.

The short pause after the preamble is one extra word space long, and is optional, primarily to allow a brief instant for a carriage return, return key stroke, or pencil movement to address line. No prosign is used for this purpose at this location

in the message. The date figures are the cue to the beginning of the address. Note the <AA> line ending prosigns used in the address section. Optional greetings, names and farewells are omitted in the examples in this manual but may be used before the statement ending ID or key words.

3.3.2.2 Example 2, Svc, Hx Code, Filing Time, Op Notes

Sample message:

(PBL)	SVC 65 R HXC N3XYZ ARL 20 CATONSVILLE MD 1800Z JUL 24
(ADR)	JOHN A HAM W3XYZ
	107 HOOK ROAD APT 21A
	PHILADELPHIA PA 19034
	215 555 2345 OP NOTE CALL AFTER 6PM

(TXT)	ARL SIXTY FIVE 11PM JULY/29
	USAIR/354 TELL N3ZZZ THANKS FOR
	THE GREAT MEAL X NEW
	TELEPHONE 410 555 2008 REGARDS
(SIG)	BILL OP NOTE PKT AT 145R09 WB3FFV 21228 MD

Sent as follows on the net frequency:

NCS	W3RX W3TX HR PHILADELPHIA [1], (or PHILA 1, qty. optional)
RX	W3RX QRV; [or W3RX QSZ [#] QRV], etc.
TX	W3TX...; or simply QSK... , or [W3TX QSK], or simply begin the message
	NR SVC 65 R HXC N3XYZ ARL 20 CATONSVILLE MD 1800Z JUL 24
	(short pause)
	JOHN A HAM W3XYZ <AA>
	107 HOOK ROAD APT 21A <AA>
	PHILADELPHIA PA 19034 <AA>
	215 555 2345 <AA> OP NOTE CALL AFTER 6PM <BT>(/.../)*
	ARL SIXTY FIVE 11PM JULY/29
	USAIR/354 TELL N3ZZZ THANKS FOR
	THE GREAT MEAL X NEW
	TELEPHONE 410 555 2008 REGARDS <BT>
	BILL <AA>
	OP NOTE PKT AT 145R09 WB3FFV 21228 MD <AR> N
RX	QSL W3RX
TX	W3TX (Transaction complete.)

(/.../) denotes release of the PTT for the mandatory listening pause if not using QSK.

Short pause after preamble is one extra word space long. Optional greetings, names and farewells omitted.

Additional examples demonstrate placement of prosigns with various components:

3) MULTI-LINE SIGNATURE			4) MESSAGE WITH OP NOTES:		
NR	PREAMBLE		NR	PREAMBLE	
	ADDRESSEE	<AA>		ADDRESSEE	<AA>
	ADDRESS	<AA>		ADDRESS	<AA>
	CITY, ST, ZIP	<AA>		CITY, ST, ZIP	<AA>
	TELEPHONE FIGS	<BT>		TELEPHONE FIGS	<AA>
	TEXT	<BT>		OP NOTE	<BT>
	SIG	<AA>		TEXT	<BT>
	ADDRESS	<AA>		SIGNATURE	<AA>
	ADDRESS	<AR> N		OP NOTE	<AR> N
5) NO TEL, LONG ADDRESS			6) SHORT ADR, NO ZIP		
NR	PREAMBLE		NR	PREAMBLE	
	ADDRESSEE	<AA>		ADDRESSEE	<AA>
	INSTITUTION	<AA>		CITY, ST *	<BT>
	ADDRESS	<AA>		TEXT	<BT>
	CITY, ST, ZIP	<AA>		SIGNATURE	<AR> N
	TELEPHONE FIGS	<BT>			
	TEXT	<BT>			
	SIGNATURE	<AA>			
	OP NOTE	<AR> N			

* If the addressee is a known ham, and the address is simply a call sign, the <BT> follows that call sign.

3.3.2.3 Key Points

QSK: Before the NR, indicates that the station is using full break-in. It is sent only once at the start when sending one or more messages to one station.

NR: Before the message number begins copy thereafter.

Preamble: No prosign at the end; slight extra pause.

Precedences: Sent as written; R, P, W, but EMERGENCY is spelled out.

HX_: See the notes after HX code list re: multiple HX codes.

ARL: Followed by a space is sent before the check if one or more ARRL Numbered Radiograms are in the text.

ARRL Numbered Radiograms: Numbers are preceded by “ARL” in the text and the numbers are always sent spelled out; “ARL” in the text IS counted in the check.

<AA>: Is always used at the end of each address line, and after signature and address lines, if any, except after the last line. If no zip code is present in the message, <AA> is still used between the state and the telephone figures.

Telephone Figures: Are written in three groups, area, prefix, and number, each separated by a word space. Foreign telephone numbers are sent as grouped in the formatted message. The group series is preceded by <AA>, followed by <BT> (or <AA> if an Op Note is used). Note that no hyphens are used between telephone figure groups.

Zip Codes: Are sent as written, the groups following the state, followed by <AA> (or <BT> if no tel figures or op note).

Nine Digit Zips: Are formatted with the word “dash” which is sent as an extra group. Foreign zips may contain letters and figures and spaces.

<BT>: Is always used at the start and end of the text, including in booked message sending; the <BT>s are **not counted** in the check.

Listening Pause: (for VOX or PTT operation) is mandatory after the <BT> at the start of the text, and after <BT> before NR in each booked message’s variable parts.

X: Used for a period. It IS counted for the check; it is never used as the last text character.

R: Used as a decimal in figure groups.

<AR>: Is always used at the end of the message copy, or end of book copy, being equivalent to “END” to stop copy on voice.

Quantity To Follow Letter(s) always follow <AR>:

N, indicating NO MORE messages to follow,

B1, or 1, indicating ONE MORE message to follow,

B, indicating MORE messages to follow;

<AS> “Wait,” may be sent by a station needing an extended pause during the transaction.

Op Note(s): Limited to end of address section and end of signature section, are preceded by <AA> and introduced with the words “OP NOTE.” The <AA> after the tel figures in the address may seem unnecessary, Op Note being sufficient, but is used to be consistent with use after the signature where ambiguity may result.

Spaces (pauses): Spaces are important when transmitting on CW. They separate and thereby define the word groups for meaning and for counting the check. Keep the spaces between elements and letters clear, and pauses between groups clear and noticeably longer than those between letters. Avoid inserting group spaces where there are none by irregular sending (GLENWOOD vs. GLEN WOOD – two different places.)

Check Count: Is the number of groups of letters-/figures without internal spaces, each group with a space on the left and a space on the right, in the text; not counting the <BT> prosigns.

K: Go ahead, is not used at the end of the quantity letters. The prosign <AR> means “end of message,” the quantity-to-follow letters alert the receiving operator to go ahead; Likewise, “K” is not necessary in the contacting calls at the beginning of the exchange.

Figure Zero: Some operators will send a “T,” or long “T” (long T = zero, after the old telegraph fashion), for a ZERO, where no ambiguity would result—mainly in time figure groups. Remembering this will help avoid surprises. Experienced operators use this technique to save transmission time, particularly in net reports; as in “T 3 T T Z” for 0300Z. The T’s are usually sent with a little extra spacing to accentuate their use for this purpose.

3.3.2.4 Repeats, For Clarity (“?”, I Say Again)

Repeating group(s) for clarity, or to better the chance of correct copy, is done by sending the character “?” after the group or phrase then repeating the group or phrase. Unusual words or names may be repeated in this fashion, as in:

“.. BARSCZC ? BARSCZC....”

Telephone numbers may be repeated when radio conditions are poor. Garbled telephone groups can disable a radiogram when that number is unlisted. Example:

“..MD 00789 <AA> 301 555 3470 ? 301 555 3470 <BT>...”

3.3.2.5 Repeats, For Correction (“?”, I Say Again)

A transmission error is corrected by sending the character “?” then repeating the groups beginning with the last group or prosign sent correctly.

“RIVER CITY MD 00780 ? MD 00789”; or

“<AA> 304 ? <AA> 314 OAK STREET <AA>...”; going back to <AA>.

The formal prosign symbol used for denoting an error is <HH> (.....), often shortened to two i’s (.. ..), in conversational or operational CW. These are not recommended for marking errors in transmitting messages. Use the “?” meaning “I say again.”

3.3.2.6 No Extraneous Words

No extraneous words, symbols or characters are used in transmitting the message.

The experienced traffic handler knows what part of the message comes next from the sequence of words. Extra words, such as “CK,” fully spelled month, date out of order or with year included, “TEXT,” “SIG,” etc., are confusing and counterproductive. An experienced operator writes down everything he hears except for those prosigns and abbreviations which trigger a special response. Do not transmit anything else you do not want written down.

Format Discrepancies: It is controversial, but sending along improperly formatted groups (such as a date in the PBL of “7/13” if received that way), is often done to avoid altering the message. It may be acceptable to do so as long as the incorrect format does not violate the group or syntax content rules. Sending a preamble month fully spelled out (AUGUST vs. AUG) is another example. A fully spelled state in the address, on the other hand, is simply unconventional, but not disallowed. The time to fix these problems is at formatting time! Technically the receiving operator is not obligated to accept an improperly formatted message.

3.3.2.7 Making Note Of Words In Doubt

When you are copying a message, any group(s) received about which you have doubt should be marked by underlining, or some other convenient means. It is amazing how much you can forget after copying another five or ten words. If you can not interrupt for a repeat immediately, underline or otherwise mark the group, phrase, address, etc., so that you remember to go back at the end of the message and clear it up.

If the sending station is using QSK you may interrupt at any time for a repeat of a group just sent. If an earlier group is

needed wait for a break point or the end of the message and request a fill or confirmation.

3.3.3 Jumping Ahead

There are occasions when the receiving station may wish the sender to jump ahead, i.e., skip a known or already received part of a message.

Receiving Station, Sending Station With QSK:

A receiving operator asking for a repeat of a message part, such as the preamble, or addressee, might not need all of that part. When it copies what it needs the station will then send the specific group or part where the sending station should resume transmission.

A receiving operator, upon recognizing the addressee, may tell the sending station to go directly to the text by sending <BT>. The sender transmits <BT> and sends the text. If, however, there is an address op note, the sending operator should send that op note before continuing with <BT> and the text.

A receiving operator, recognizing a “standard message” from an originator might interrupt the sending with “SIG” as soon as the address is received and the text is recognized. The sending operator skips the text, sends <BT>, and follows with the signature. If the receiving station interrupts with a QSL as soon as the text is recognized it is indicating it knows both the text and signature, however the sending operator should send the signature and signature op note, if present, when the op note is not “standard” for that message. If in doubt the sending operator should at least confirm the receiving station has the op note.

Sending Station

When the sending station encounters an address, such as a known amateur on the net or local delivering area, or is sending a message directly to an amateur recipient, it may abbreviate the address to simply the call sign and continue, or ask the receiving operator if more information is needed before continuing, even if the address is written out in full. This can save time in transmitting the message. With great care, other addresses may be so abbreviated. This may save transmission time when handling repeated messages to a particular addressee, for example, but assumptions should be carefully avoided. Sending the full message is the formal treatment.

In similar fashion the sending station may ask the receiving station if it already has a standard message text and/or signature when there is no doubt about accuracy.

Experienced operators often use these shortcuts to avoid duplicate transmission of message information repeated or well known. Booking, when possible, is a more formal treatment.

3.3.4 Interruptions, With QSK

When the sending station is operating full break-in (QSK), the receiving operator can interrupt at any time.

The receiving operator sends the last group copied, or a fragment sufficient to identify a group, and the sending operator will resume with the next group, or the group containing the fragment, respectively.

3.3.4.1 Examples, QSK

(Transmissions indented to convey timing.)

1) Continuing after group sent:	
TX:	... TO SEE YOU AT
RX:	YOU (interrupts after "AT")
TX:	AT HAMFEST... (continues after "YOU")
2) Repeating group containing fragment:	
TX:	... TO SEE YOU AT HAMFEST
RX:	HAM (in middle of word)
TX:	HAMFEST... (repeats "HAMFEST.")
3) Repeating group containing fragment:	
TX:	... TO SEE YOU AT HAMFEST
RX:	HAM (at end of word)
TX:	HAMFEST... (repeats whole word)
4) Correcting and continuing:	
TX:	... TO SEE YOU AT
RX:	YOUR (error in the request)
TX:	YOU AT HAMFEST... (corrects error)

3.3.4.2 QSK Tips

The QSK interrupt method should be used immediately when copy of a group is missed.

If there is some other reason for interrupting, the receiving station may send <AS> (wait). When ready, a specific group(s) to begin with may be sent (from anywhere in the message), in which case transmission is resumed after the specified group(s). The receiving station may also send a message part

name (PBL, ADR, TXT, SIG, etc.) in which case transmission resumes with that part.

When using QSK it is generally considered good practice to interrupt immediately at the point where copy was missed, or otherwise wait until the next breakpoint or the end of the message to request fills. In other words, it is considered less desirable to interrupt at various times and force the sending operator to back up to earlier parts of the message for fills.

When done, however, some receiving operators will ask for the fills (using formal fill requests), then use “K” to ask the sending station to resume where it left off. Better to use a specific group, part, or prosign to indicate the resumption point. It is the more consistent and reliable method.

On PTT/VOX operation, asking for fills from any previous part of the message is acceptable at the mandatory breaks. See the next section.

3.3.5 Interruptions, With VOX or PTT, CW

Operation with VOX (receiver turns on following delay after last character sent), or manual push-to-talk transmitters, requires the operator to pause to allow interruptions. Such stations do **not** send QSK ahead of NR at the start of the message. The receiving station must wait for the customary interruption opportunities.

It is mandatory to pause after the prosign <BT> at the start of the text (and after <BT> ahead of NR in the variable parts of books) to listen for requests from the receiving station. The receiving operator will ask for a “fill” using the formal Fill Requests during the pause. These pauses are shown as “(/.../)” in the examples.

If the receiving station needs no “fills” it is not expected to transmit anything during these pauses. If a fill IS required the receiving station should interrupt quickly to seize the gap. If nothing is heard in a few seconds, the transmitting station continues with the message.

The disadvantage of not using QSK is obvious. The receiving operator is forced to go into the formal “asking for fills” mode of operation at the break(s) or at the end of the message.

3.3.5.1 Examples, Non-Qsk

TX:	NR 1 R W1AW 12 NEWINGTON CT JUL 1 (short pause)
	DONALD R SMITH <AA>
	164 EAST SIXTH AVENUE <AA>
	RIVER CITY MD 00789 <AA>
	301 555 3470 <BT> (/.../) - (first fill opportunity)
RX:	CTY ORIG (fill request 1)
TX:	NEWINGTON CT
RX:	WA EAST (fill request 2)
TX:	SIXTH
RX:	<BT> (RX sends the prosign for the start of the text as the marker to resume. Some operators may say “K” at this point, implying the <BT> where the TX station left off at the pause.)
TX:	THANKS FOR MESSAGE X HOPE... (resumes with text); or
	<BT> THANKS FOR MESSAGE X HOPE... (optionally including the <BT>)

These fills could have also been requested after the entire message was completed. Many ops will clear fills in the PBL and ADR at the first break, and get any others at the end.

3.3.6 Fill Requests, Primary And Alternatives

The receiving operator may use formal FILL REQUESTS for repeats of any prior part of the message received that is in doubt. This may be done at any time, however it is considered good practice to do so only at the required listening pauses or end of the message rather than at random times.

If the transmitting operator is using QSK the receiver can ask for repeats any time during the message transmission using a simple interruption as noted above in Interruptions with QSK and QSK Tips. At any other time the receiving operator should use the formal methods for asking for fills outlined below.

Abbreviations Used To Ask For Fills Or Confirmation:

The optional [IN (part)] prefix limits the search for the fill to a particular part of the message, to limit the range only when ambiguity would otherwise result; as in: PBL, ADR, TXT, SIG, book message number, etc. Alternatively, a specific sub-part name may be requested, such as LAST NAME ADDEE, ST ADR, ZIP, TEL, etc. Abbreviations for message parts are in the Abbreviations and Prosigns List at the end of the chapter.

When there are duplicate groups in the message be specific. Use several groups in the blanks, or limit with the optional [IN (part)] statement. (Which may be placed ahead or after the request. It is shown in this manual ahead, suggesting this makes it easier for the receiving operator to locate the position of the request.)

There are three fill request methods, differing in response only. The first is the shortest and most efficient, suggested as best practice. Examples will use only method 1.

Fill Request Method 1, Responding only with group(s) requested, the [IN (part)] limiter being optional as required (as in IN TXT, IN SIG, IN ST ADR, etc.):

Type	CW Abbreviation
Word After:	[IN (part)] WA ___; Respond only with group requested, within limits;
Word Before:	[IN (part)] WB ___; Respond only with group requested, within limits;
All After:	[IN (part)] AA ___; Respond only with all groups after group given, within limits;
All Before:	[IN (part)] AB ___; Respond only with all groups before group given, within limits;
Between, a range of groups.	[IN (part)] BN ___ ES ___; (“ES” = “and”), or [IN (part)] BN ___ ? ___; Respond only with all groups between those given, within limits.
Confirm:	[IN (part)] CFM ___; Respond CFM (or C) if group(s) correct, otherwise send correct group(s), within limits; [Archaic option: Send N (to flag error), pause, then send the correct group(s).]
Part:	(part); (NR, PBL, ST ADR, TEL, SIG, etc.)

Respond by re-sending the requested part; as in: RX: SIG (no query required); TX: BILL SMITH.

Note that there is no “?” used after the requests. The interrogatory is implied.

<AR> or K is not sent after the requests or replies (even though some operators will use <AR> if the fill response is long or complicated. The pause at the end of a request or response is usually sufficient signal.

Fill Alternatives, differing only in the responses:

Method 2, Responding with the **Flanking Groups**:

WORD AFTER: [IN (part)] WA ___;

Respond with group given, word after, & next group;

WORD BEFORE: [IN (part)] WB ___;

Response: go back two groups, give that group, the requested group, and the group given;

ALL AFTER: [IN (part)] AA ___;

Respond with all groups, starting with group given;

ALL BEFORE: [IN (part)] AB ___;

Respond with all groups up through, and including, the group given;

BETWEEN (group 1) AND (group 2), (The “ES” = “and”):

[IN (part)] BN ___ ES ___ ;

[IN (part)] BN ___ ? ___ ;

Respond with first group given through, and including, the second group given;

CONFIRM and PART requests as in METHOD 1 above.

Method 3, Responding with the **Request** (seldom used on CW):

WORD AFTER: [IN (part)] WA ___;

Respond with WA ___, then word after;

WORD BEFORE: [IN (part)] WB ___;

Response: WB ___, then group requested;

ALL AFTER: [IN (part)] AA ___;

Response: AA ___, then all after;

ALL BEFORE: [IN (part)] AB ___;

Response: AB ___, then all before;

BETWEEN (group 1) AND (group 2), (The “ES” = “and”):

[IN (part)] BN ___ ES ___ ;

[IN (part)] BN ___ ? ___ ;

Response: BN ___ ES ___, then groups between those given;

CONFIRM and PART requests as in METHOD 1 above.

Reminder: Abbreviations to be used carefully and literally:

C: Yes, affirmative; and optionally the affirmative reply to CFM (group(s)).

CFM: (group(s)), request: Receiving station request to confirm if group(s) are copied correctly.

CFM: reply, the affirmative reply to CFM (group(s)); sometimes simply “C” is used;

N: No, negative;

R: Received and understood. (Does **not** mean C or CFM)

73: Best regards (plural, 73’s is redundant).

3.3.6.1 Example Of Fill Requests And Responses

In the message sent as:

7 R W3TX 12 COLLEGE PARK MD JUL 1	(PBL)
JOHN R SMITH <AA>	(ADDEE)
164 EAST SIXTH AVENUE <AA>	(ADR)
RIVER CITY MD 00789 <AA>	(CITY, ST, ZIP)
301 555 3470 <BT> (/.../)	(TEL)
THANKS FOR LETTER X SEE	(TEXT)
YOU AT MEETING NEXT WEEK	(TEXT)
X 73 <BT>	(TEXT)
HUGH W3TX <AR> N	(SIG)

REQUEST	RESPONSE
WA FOR	LETTER
WB LETTER	FOR
WB FOR	THANKS
IN TXT AA WEEK (limited range)	X 73
AA WEEK (unlimited range)	X 73 <BT> HUGH W3TX
IN TXT AB SEE (limited range)	THANKS FOR LETTER X
AB SEE (full range)	NR 7 R W3TX...(through)...FOR LETTER X
BN SMITH ES AVENUE	<AA> 164 EAST SIXTH; (The <AA> is within the requested range. Such prosigns in range are included in the response.)
BN RIVER ES TEL	CITY MD 00789
WA JOHN	R
WA HUGH	W3TX
SIG (requesting a part)	HUGH W3TX
CFM LETTER	CFM (or “C”); (confirming single group)
CFM NEXT WEEK X 73	CFM (or C); (confirming several groups)

CFM LETTERS	LETTER, (singular); or [N LETTER]* (response to error)
CFM WEEK 73	WEEK X 73, (missing X); or [N WEEK X 73]*; (response to error)
* These options using N (negative) are archaic but functional.	

3.3.7 Verifying The Check

When receiving traffic, it is customary to copy text five or ten groups to a line to enable a quick count of the groups. Doing this will enable you to anticipate the end of the message without having to stand by to count. A surprise indicates a probable check error.

Since every operator verifies the group count, a check discrepancy can flag both sending and copying errors.

Make a quick check of the text to find obvious possibilities such as words that could have been sent as either one or two groups. The importance of the use of clear separation between groups when sending can not be overemphasized. (The “GLENDALE” vs. “GLEN.. DALE” case.) Clear sending will reduce such errors.

Ask for fills using the fill request guidelines. “CFM ___” may be used for likely items. Often a check discrepancy results from missing an “X” or some other simple error.

Do not spend a lot of time fishing for the problem. The discrepancy may be found sooner or later by fishing, but only after trial and error and the expenditure of much time.

Wise operators using QSK go directly to the QTB method to save time wasted searching group by group. The QTB method involves sending the first initials of each group in the text with

the other station interrupting as soon as the discrepancy is detected. Either station may initiate the QTB sequence.

If the RX station is confident it copied the transmitted check correctly, but it has a different group count, RX may immediately begin the QTB series. The TX station will interrupt when the initial sequence error is detected.

If the RX station is not sure it copied the check correctly it may ask “CFM CK ##.” The TX station will either confirm with “CFM” (or “C”) or send the correct check. If a corrected check matches the count, the problem is fixed.

If the check still disagrees with the count the RX may ask “CK ##?” (its count), in which case the TX station will no doubt make a quick verification of its count, amend the check, or begin the QTB series to the RX station. The RX station will interrupt when the initial sequence error is detected.

The process is slightly different in each case. See the QTB section following.

Notes:

- 1. Do not** re-send entire messages or parts of messages in an attempt to find errors unless the receiving station makes specific requests for parts or fills, or QSM.
- 2. Do not** send entire messages or parts of messages back to the sending station unless specifically requested to do so.

3.3.7.1 First Initials, QTB

The following text is sent with a check of 13:	
TX:	THANKS FOR THE LETTER X SEE YOU AT MEETING NEXT WEEK X 73
With the text copied incorrectly with a check of 12 (note “THE” is missing.):	
(RX)	THANKS FOR LETTER X SEE YOU AT MEETING NEXT WEEK X 73

The exchanges would go as follows, indents reflect timing:

- If the RX station is confident it copied the transmitted check correctly, but it has a different group count, the RX station may initiate the QTB sequence:

RX:	QTB T F L	(the incorrect sequence);
TX:	FOR THE	(TX interrupts to add THE)
RX:	QSL 73 W3RX	(the count now agrees).

Note that the TX station will back up a sufficient number of groups to be able to send a unique and unambiguous series of groups to correct the copy.

- If the RX station is not sure it copied the check correctly it may ask “CFM CK ##.” Note this is simply a verification of the copied check.

RX: CFM CK 13

TX: CFM (or C), (since the check IS 13 on the original);

The receive station now knows there is either a sending or a receiving error (or a miscount check error on the original). It may begin a QTB series at this point as above, or;

3. The RX station may ask for a verification of the count:

RX: CK 12?; or COUNT 12?, (using the received group count);

The TX station will make a quick check of the count. (Note that the query is not a normal fill request, and ends with a question mark.)

If TX finds an error on its copy, it will amend the check and inform the RX station of the amended check, as in CK 13/12. The amended check now becomes part of the message.

That is **not** the case in this example,

4. Therefor the TX station may initiate the QTB sequence:

TX:	T F T...	(the correct sequence)
RX:	WA FOR	(interrupting with a formal fill request)
TX:	THE	(responding with the next group);
RX:	QSL 73 W3RX	(the check now agrees).

In either case, if the stations were operating slow VOX/PTT the stations would wait until the end of the message. The station copying the QTB would listen to the full sequence and RX would make the “WA FOR” request, or TX would send the correction, at the end of the sequence.

3.3.7.2 QSM, QSZ, Alternatives

As a last resort in very difficult or confused copy, the receiving station may request “QSM” (repeat the last message sent), and may additionally request QSZ (#). The TX station repeats the message (or part).

As in a fill request, the receiving operator may ask “QSM TXT,” although “TXT” is sufficient, or may ask “TXT QSZ (#).”

3.3.7.3 Amending The Check

If the sending station and receiving station eventually agree that they have the same text, and the check is in error, the CHECK may be amended by adding a slash followed by the corrected number as in 12/13, which is sent as 12/13.

Text or check is never changed to force agreement!

The original check value is preserved throughout the life of the message as it moves through the system. An amended check becomes part of the message to be carried on through to delivery.

The sending station should have caught the discrepancy before sending the message, and amended the check. If you fail to catch a check discrepancy and inadvertently acknowledge the message, and can not reach the sending station, you can only amend the check for future reference. If the error has fatally flawed the message, a service message back to the originating station may be the only recourse.

If such errors are encountered with a message already having an amended check, only the amended value may be changed once the text is verified. An omitted “ARL” can be added to the amended part. Multiple amendments are not used, i.e., 12/13/14 would be 12/14.

An Op Note may be added if there is a particular suspicion about the nature of the error.

3.3.7.4 Acknowledging Receipt

Use QSL. When the receiving station is certain that it has copied the message(s) correctly, and accepts same, the response to the sending station is “QSL” for all messages received; one message, several messages, a book of messages, or any mix thereof.

Acknowledgments such as “QSL NR ##” (the message number) are considered poor practice.

See *Station Operations* section for examples of acknowledging and terminating the exchange with proper ID. QSL [DE] W3RX.

3.3.8 Booking, Time Saving Option, Special Events

Considerable time can be saved in sending two or more messages with fixed parts, such as fixed addressees, fixed texts, etc., by “booking” the messages as they are sent. Booking is usually done in the head of the sending operator, and it is done at the option of the operators and is not mandatory. The economy of booking is based mainly upon the size of parts that would otherwise have to be repeated.

There are many permutations of booking depending on the fixed and variable parts. Booked messages can have fixed preambles (except for message number), fixed addressees, fixed texts, fixed signatures, or various combinations of each.

3.3.8.1 Booking Is Optional

Choosing to book is an option of the sending operator and is not mandatory. Booking should not be used if the receiving operator objects.

Booking two messages with only a fixed signature is hardly worth the effort. Booking 12 messages with a fixed 25 word text is another matter. The text would be sent only once.

The decision to book is made based on the amount of time and effort to be saved and the wishes of the stations involved.

3.3.8.2 Sending The Basic Book

The basic book with a common text and variable address and signature would be formed as follows during transmission:

BOOK OF THREE R W3FT ARL 3 BALTIMORE MD JAN 15

<BT> (/.../)* ARL FORTY SIX <BT> (/.../)*

NR 1 (addressee) <BT> (signature) <BT> (/.../)*

NR 2 (addressee) <BT> (signature) <BT> (/.../)*

NR 3 (addressee) <BT> (signature) <AR>

END BOOK <AR> N

(Using <AA> at the end of each of the address lines, of course.)

The (/.../) denotes the expected listening pauses when not using QSK.

3.3.8.3 Notes On Book Structure

The book is introduced by sending “BOOK OF (#)...,” (where “#” is the quantity of messages booked, spelled out as a word) followed by the fixed parts, then the variable parts. Parts of the book are separated by <BT> until the end of the last message which ends with <AR>. The book is closed by sending “END BOOK,” followed by the customary <AR> N (or <AR> 1, <AR> B, where more follow). Generally:

The Preamble is kept intact except for the message number and sometimes the check or date. The message # is a variable part.

The Addressee, Address, and Op Note are usually kept together.

The Text is kept intact as a fixed part or a variable part, except for blanks in a fixed text to be filled-in within a variable text part. The associated check stays in the same part of the book except when a fixed text has blanks to be filled in within variable parts using variable length additions. There the check moves to the variable parts.

<BT>: If the fixed parts include a text, <BT> is still used to mark the start and end of the text. If the fixed parts include no text, a single <BT> is inserted between the fixed address and signature. If the text is the last fixed part, only one <BT> is used to separate it from the NR of the first variable part. If the fixed part contains only a signature it is preceded by a <BT> to distinguish it from a stand-alone address, and is of course followed by the <BT> to begin the variable parts.

Each variable part begins with transmission of NR (#), the message number associated with that part, followed by any variable parts of the preamble (identified by part name), and then the address, text and/or signature of the variable parts, each separated by a single <BT>.

In other words, the variable parts of the book are separated from each other, and from the fixed parts, by the SINGLE prosign <BT>. No double <BT> is ever required.

The Signature, and its Op Note are kept together.

A message with a very long text may be originated as two or more separate messages and easily sent as a book. The variable parts would simply be: NR (#) CK (#) <BT> (text part) <BT>.

In summary, the purpose of the booking format is to combine all fixed parts of several messages into one block to be sent first, followed by all the variable parts, sent next, all in such a way that exact replicas of the individual messages may be reconstructed by the receiving station at a later time.

Rules for book transmission are generally the same as for single messages except for the opening and closing references to the book, and the need to identify variable parts of the preamble when separated from the main preamble. (See examples below.)

No extraneous words such as “fixed parts,” or “variable parts,” etc., are required during transmission. They are considered poor practice.

The sending station does not stop sending the book for acknowledgment until the book is completed unless sending individual book parts each to different stations on a single frequency. In that case each station may be excused when its part(s) are received and acknowledged.

Messages are usually booked when relaying them as a batch to another single station for relay or delivery. That station must “un-book” any messages which are to be relayed to separate stations later, or group them in smaller batches as needed. The operator should be practiced at both booking and un-booking visually on the fly when sending message traffic.

3.3.8.4 Books To A Single Station

When sending a book to a single station it is customary to send the book continuously from start to end. Stopping for acknowledgment after each variable part takes extra time.

Full QSK permits interruptions at any time.

On slow VOX/PTT it is customary to listen after the mandatory <BT> at the start of a text, and between <BT> and NR at the start of each variable part. These are the points where the receiving operator expects a listening opportunity. Nothing is sent by the receiving operator until the end unless it has fill requirements.

3.3.8.5 Example 1, Fixed PBL and TXT, to one station

Given the 3 messages:

2 R W3VPR ARL 15 ANNAPOLIS MD JAN 1	
JIM SMITH	
13 OAK LANE	
BOSTON MA 01033	
ARL SIXTY ONE X HAVING	
A WONDERFUL TIME HERE X	
HOPE TO SEE YOU SOON	BETTY AND JOHN
3 R W3VPR ARL 15 ANNAPOLIS MD JAN 1	
BILL JONES	
4 CEDAR RD	
BALTIMORE MD 21228	
410 555 3434	
ARL SIXTY ONE X HAVING	
A WONDERFUL TIME HERE X	
HOPE TO SEE YOU SOON	HARRY OP NOTE REPLY MDD

```

4 R W3VPR ARL 15 ANNAPOLIS MD JAN 1
  CHUCK K3FT
  C/O BTN 146R67
  BALTIMORE MD
  ARL SIXTY ONE X HAVING
  A WONDERFUL TIME HERE X
  HOPE TO SEE YOU SOON          GEORGE
    
```

They are sent as follows, assuming contact has been made:

```

"BOOK OF THREE          R W3VPR ARL 15 ANNAPOLIS MD JAN 1
  <BT>(/.../)*          ARL SIXTY ONE X HAVING
  A WONDERFUL TIME HERE X
  HOPE TO SEE YOU SOON <BT>(/.../)*
NR 2      JIM SMITH <AA>
  13 OAK LANE <AA>
  BOSTON MA 01033 <BT> BETTY AND JOHN <BT>(/.../)*
NR 3      BILL JONES <AA>
  4 CEDAR RD <AA>
  BALTIMORE MD 21228 <AA>
  410 555 3434 <BT> HARRY <AA>
  OP NOTE REPLY MDD <BT>(/.../)*
NR 4      CHUCK K3FT <AA>
  C/O BTN 146R67 <AA>
  BALTIMORE MD <BT> GEORGE <AR>
END BOOK <AR> N"
    
```

* The (/.../) denotes the expected listening pauses when not using QSK.

Note the fixed parts of the book never contain a message number, the variable parts of the book all contain a unique message number, and where a text is included the text is begun and ended with a <BT>. A <BT> separates the address from the signature where no text is present.

<BT> always separates each variable part before the prosign "NR," and implies a listening pause for non-QSK.

3.3.8.6 Example 2, Fixed PBL and ADDEE, to one station

Given the two messages:

```

3 R W3XYZ 10 CROWNSVILLE MD JAN 5
  BOB W3BOB
  TWO OPERATORS ARRIVED AT BWI
  TO OPERATE PACKET X THANKS
  JIM N3EI
5 R W3XYZ 11 CROWNSVILLE MD JAN 5
  BOB W3BOB
  NEED SIX MOBILES WITH TWO
  METERS FOR SEARCH TEAMS X
  ADVISE
  BRIAN N3QXW
    
```

They are sent as follows, assuming contact has been made and the stations are ready to copy with special requests made:

```

"BOOK OF TWO R W3XYZ CROWNSVILLE MD JAN 5
  BOB W3BOB <BT>(/.../)*
NR 3 CK 10 <BT>(/.../)*          TWO OPERATORS ARRIVED AT BWI
  TO OPERATE PACKET X THANKS <BT>
  JIM N3EI <BT>(/.../)*
NR 5 CK 11 <BT>(/.../)*          NEED SIX MOBILES WITH TWO
  METERS FOR SEARCH TEAMS X
  ADVISE <BT>
  BRIAN N3QXW <AR>
END BOOK <AR> N"
    
```

* (/.../) fill opportunity is shown for non-QSK operation only.

Note the use of <BT> to separate the parts, and CK to introduce the variable checks.

Note the lack of a <BT> between the PBL and "BOB W3BOB," thus indicating that the line is an address, shortened for this example, not a signature. A fixed-signature-only book would set the signature apart with a <BT> before, and then <BT> after to end the fixed parts. Note the economy of this booking is minimal unless the address is full length, but still saves some time, particularly with large books. The PBL and address is only sent once.

3.3.8.7 Example 3, Fixed PBL, TXT and SIG, to one station

```

"BOOK OF TWO R W3XYZ 10 BALTIMORE MD MAR 10
    
```

```

<BT>(/...)* WELCOME TO FISTS CW CLUB
X ENJOY YOUR MEMBERSHIP 73 <BT>
KJ3E <BT>(/...)*
NR 2 JOHN A SMITH
(address lines) <BT>(/...)*
NR 3 HARRY J JONES
(address lines) <AR>
END BOOK <AR> N"
    
```

* (/.../) fill opportunity is shown for non-QSK operation only.

3.3.8.8 Example 4, Fixed PBL and TXT except ARL blank

Used in holiday traffic solicitations, for example.

```

"BOOK OF TWO R W3XYZ ARL 3 ANNAPOLIS MD MAR 5
<BT>(/...)* ARL SIXTY BLANK <BT>(/...)*
NR 1 JOHN A SMITH
(address lines) <BT>(/...)*
CHRISTMAS <BT> BARBARA <BT>(/...)*
NR 2 HARRY B LEVIN
(address lines) <BT>(/...)*
HANUKKAH <BT> BOB AND JUDY <AR>
END BOOK <AR> N"
    
```

* (/.../) fill opportunity is shown for non-QSK operation only.

“BLANK” (or “XXX”) is used as place holder for additions in the variable parts, or, where there are two ARL blanks, two may be used. Each blank is usually limited to a single group addition. If not, the check should move to the variable part of the message.

A fixed part check must agree with the final un-booked version of each message. Where blanks are filled with variable length insertions the check would move to the variable parts to agree with the final text for that version.

3.3.8.9 Example 5: Fixed PBL and TXT except misc. blank

Used where numerous messages are sent with a variable word or phrase implied by a blank in the fixed text. Note the different checks in the variable parts.

```

"BOOK OF TWO R W3XYZ ANNAPOLIS MD MAR 5
<BT>(/...)* HAPPY BLANK ANNIVERSARY <BT> (/...)*
NR 1 CK 3 JOHN A SMITH
(address lines) <BT>(/...)*
40TH <BT> MOM AND DAD <BT>(/...)*
NR 2 CK 4 HARRY B LEVIN
(address lines) <BT>(/...)*
THIRTY FIFTH <BT> UNCLE BILL <AR>
END BOOK <AR> N"
    
```

* (/.../) fill opportunity is shown for non-QSK operation only.

“BLANK” (or “XXX”) is used as place holder for additions in the variable parts. The check indicates the variable additions.

3.3.8.10 Asking For Fills In Books

It is customary when asking for fills in books to specify the part name or message number limits to help the receiving station find what you are asking for when ambiguity would otherwise result. From the example in the last section (using the “IN NR #” position limiter):

Rx Request	Tx Response
IN NR 2 WA HARRY	B
IN NR 1 CK	4
WB BLANK	HAPPY

(In the fixed text implied since no number was given. “IN FIXED PARTS” may be used to introduce the request if ambiguity would otherwise result.)

3.3.8.11 Books To Multiple Stations

When sending a book of messages with different addressees to different receiving stations on the same frequency it is customary to check each station is ready to copy before starting, and to say the call sign of the station to copy each variable part just

ahead of the prosign NR introducing that part. This assures each station knows what to copy. The TX station arbitrates relays.

In a stack of numerous stations copying such a book off net, it is efficient to stop at the end of each station’s variable part(s), get fills settled and acknowledgment with that station, and excuse the station from the stack so it may return to the net for other business.

Transmission of books to multiple receiving stations is usually encountered only on Section or Local nets, seldom on Region or higher nets where liaisons are dispatched singly. It requires skill in dispatching, and by the sending station to control the sending process, but it can save considerable net operating time when done properly. It is an optional strategy. It is often used for transmitting widely distributed books or “bulletins” to jurisdiction reps in emergency nets where considerable time can be saved. (See *Dispatching Messages To All Stations On Net, QNC*, Chap. 4.)

Note that the TX station performs like a net control when handling a group of stations receiving parts of a book. If the stations are dispatched from a net, the Net Control Station will assign the messages to each receiving station and the sending station copies along, or the sending station is advised by the

NCS which stations will handle which messages at the time of the dispatch. The sending station controls the exchange on the assigned frequency or on the net until the assignment is complete.

Example follows using the messages in example 1.

3.3.8.12 Example: Book Of 3, To Three Stations

At the listening points after the first and second messages the receiving stations are called specifically, thus dispensing with the need for listening breaks at those points.

TX:	QRL?...	(off net, no response)
TX:	W3XA W1TX QRV?	(on or off net)
RX1:	QRV	
TX:	XB, or [W2XB] (? not required.)	(TX uses suffixes or tactical calls.)
RX2:	QRV	
TX:	XC	
RX3:	QRV	
TX:	BOOK OF THREE	R W3VPR ARL 15 ANNAPOLIS MD JAN 1
	<BT>(/...)*	ARL SIXTY ONE X HAVING A WONDERFUL TIME HERE X HOPE TO SEE YOU SOON <BT> (/...)*
RX3:	XB STN ORIG **	
TX:	W3VPR	
RX3:	R	
** (W3XB needed a fill. Fixed part fill requests from any RX station are generally accepted here (non-QSK) so all stations can benefit. The suffix ID is optional. This fill sequence may also be done when this station is called later.)		
TX:	W3XA NR 2	JIM SMITH <AA> (alerts RX1 to copy next part) 13 OAK LANE <AA> BOSTON MA 01033 <BT> BETTY AND JOHN <BT>
	W3XA	(checking the receiving station for acknowledgment)
RX1:	QSL W3XA	(station automatically excused from the stack)
TX:	W3XB NR 3	BILL JONES <AA> (alerts RX2 to copy next part); 4 CEDAR ROAD <AA> BALTIMORE MD 21228 <AA> 410 555 3434 <BT> HARRY <AA> OP NOTE REPLY MDD <BT>
	W3XB	(checking with receiving station)
RX2:	WA 4	
TX:	CEDAR	
RX2:	QSL W3XB	(station excused from the stack)
TX:	W3XC NR 4	CHUCK K3FT <AA> (alerts RX3 to copy next part) C/O BTN 146R67 <AA> BALTIMORE MD <BT> GEORGE <AR>
	END BOOK <AR> N	
RX3:	QSL W3XC	
TX:	73 W3TX	(EXCHANGE COMPLETE)

Note: (/.../) = customary listening points for NON-QSK. QSK interrupting is done at any time. Each station is excused from the stack when done.

A receiving station can ask for fills for any part of the message before acknowledging its particular parts. Fills can be requested by interruption if the sending station is so equipped, otherwise requests are accepted at the customary break points or when the TX station calls directly. Late arriving recipients wait until the book is finished to engage the TX station.

When sending bulletins (QNC), all stations are polled after the message for acknowledgment. (See Chapter 4.)

3.3.8.13 Special Event Book Solicitations

When sending continuing books, as in holiday solicitations where one huge book may be transmitted all day long, the book will usually have a fixed preamble except for the number

and possibly the check. The text may be one of several choices, or contain a basic fixed text with a blank or blanks to be filled in based on choices of the originators. The sending station may transmit new messages sporadically during the event time, calling the receiving station(s), announcing the continuing book, and sending the new message number, check, address, text choice or blank information for the variable text, and signature.

One or a team of receiving stations may complete the messages for transmission as books or singles on later nets. Generally, only messages with one text choice, even if there is a blank to be completed in the variable text parts, are booked for transmission throughout the NTS. Messages with variable texts are permitted, of course, but are usually an economy only for a large number of messages to one addressee.

Traffic may be presorted by NTS Region or local delivery areas to facilitate handling through the Section and higher nets.

The stations may agree in advance that the text will be sent from the originating station as “TEXT 1,” or “TEXT 2,” etc., each with its own check. The receiving station would enter the appropriate text and check in the message(s) to be forwarded. Transmitting such books through the nets may be done in simi-

lar fashion although this is seldom if ever done. Normally the forwarding station would book together only those messages with one text version, sending those with different texts in separate books to keep the confusion to a minimum. For stations working together much time can be saved in transmission, as in this example.

BOOK OF TWENTY SIX	R W3FT BALTIMORE MD DEC 20
	TEXT 1 CK 15 <BT>(/.../)* (text of 15) <BT>
	TEXT 2 CK 18 <BT>(/.../)* (text of 18) <BT>
	TEXT 3 CK 22 <BT>(/.../)* (text of 22) <BT>(/.../)*
(The PBL and the texts above could have been sent earlier in the event and omitted here.)	
NR 10	JOE SMITH <AA>
	10 OAK DR <AA>
	PODUNK MD 21228 <AA>
	410 555 1234 <BT> (/.../)* TEXT 2 <BT> MARY SMITH <BT>
(... messages 11 through 35 ... <BT>)	
NR 36	JOHN DOE <AA>
	24 EAST 16TH ST NW <AA>
	TOWSON MD 21204 <AA>
	410 555 5678 <BT> (/.../)* TEXT 1 <BT> UNCLE JOE <AR>
END BOOK <AR> N	(N for this batch. Stations may resume with variable parts later.)
* (/.../) fill opportunity is shown for non-QSK operation only.	

3.4 Sending Multiple Messages

When transmitting a series of two or more single messages, books, or a mix of singles and books, the following sequence is customary. Transmission of the entire batch is continuous and extraneous exchanges between the stations are minimized.

The receiving station usually is aware of the quantity of messages to be passed. This information is part of the net listing and dispatching information. If the situation warrants the transmitting station may inform the receiver of the quantity at the start of the exchange along with the QSK, as in “QTC 3 QSK....”

If the transmitting station is QSK the receiving station can interrupt whenever a group is in doubt. Otherwise, the receiv-

ing station must wait for one of the customary listening pauses after an eligible <BT>.

The transmission of the series of messages is then normally done in one continuous flow without interruption unless a fill is needed. The sending station sends the “<AR> B” or “<AR> 1” statements at the end of each intermediate message, followed by a brief listening pause, and the next message is then begun with “NR” without waiting for a “K” or “T” from the receiving station.

On slow VOX/PTT operation, the sending station should listen during the eligible listening pauses in case the receiving station needs to make a fill request or has a problem, particularly when sending a long series of single messages or long books. The receiving station should not send anything unless a break is needed.

3.4.1 Example: Two Messages And Book Of 2, Total 4

RX:	QRL? (no reply)
RX:	W3TX W3RX QRV (or ... QSZ 2 QRV if needed)
TX:	W3TX QSK (or W3TX QTC 4 QSK... if needed)
	NR 22 R W1AW 11 NEWINGTON CT DEC 22
	GEORGE SMITH <AA>
	45 OAK DRIVE <AA>
	PODUNK MD 21200 <AA>
	410 555 1234 <BT> (/.../)*
	ADVISE IF YOU RECEIVED MY
	EMAIL DATED DECEMBER 7 X
	73 <BT> STEVE <AR> B (/.../)*
	NR 309 R W3FT ARL 3 BALTIMORE MD DEC 22
	WILLIAM JONES
	13 SLEEPY HOLLOW PKWY
	PODUNK MD 21200
	410 555 2456 <BT> (/.../)*
	ARL SIXTY CHRISTMAS <BT> BUCK <AR> B (/.../)*
	BOOK OF TWO R W3VPR ARL 15 ANNAPOLIS MD DEC 23
	<BT> (/.../)*
	ARL SIXTY ONE X HAVING
	A WONDERFUL TIME HERE X

```

HOPE TO SEE YOU SOON <BT> (/.../)*
NR 2      JIM SMITH <AA>
          13 OAK LANE <AA>
          BOSTON MA 01033 <BT>
          BETTY AND JOHN <BT> (/.../)*
NR 3      BILL JONES <AA>
          4 CEDAR RD <AA>
          BALTIMORE MD 21228 <AA>
          410 555 3434 <BT>
          HARRY <AA> OP NOTE REPLY MDD <AR>
END BOOK <AR> N
RX:      QSL W3RX
TX:      W3TX
         (EXCHANGE COMPLETE)
    
```

* (/.../) listening pause for fills for non-QSK. Optional greetings and farewells are not shown.

3.5 Station Operations

Stations passing traffic individually and on nets should be familiar with message formatting outlined in chapter 1 and sending methods outlined in previous sections in chapter 2. Chapter 4 will present net operating methods. This section presents the common practices of two stations engaged in the traffic exchange, whether on a net, sent off frequency from a net, or meeting by themselves.

The customary practices help the stations know what to expect of each other. Once contact is made the same basic sequence of exchanges is used by all stations when passing traffic, regardless of how they got together.

3.5.1 Exchange On Net Frequency

The typical net dispatch and exchange is as follows:

NCS: “W3RX W3TX HR (dest. [qty])*”

* (Quantity is usually only given if there is more than one message assigned to the receiving station and the NCS wishes to have the station send fewer than the total to permit other net business to be injected.)

RX: W3RX QRV

TX: [W3TX] (TX sends the message(s) <AR> N

RX: QSL W3RX

TX: W3TX (end of transaction) The NCS resumes control of the net.

Listen to the dispatch carefully in case the NCS specifies a different calling order. The first station call sign in the dispatch usually initiates the exchange. If the TX initiates the exchange it would first ask QRV? Other arrangements are made for relays or to first establish contact, etc. See the *Net Operating* chapter for more information.

3.5.2 Moving Off Net Frequency

The art of moving off net frequency and making contact requires a little care and practice.

The first station addressed transmits first when acknowledging being sent off frequency from a net. The NCS will send the two call signs, the assigned frequency, and the traffic destination (plus optional quantity) to be passed. The two stations acknowledge in that order by each saying “T” (or “G,” the longer form, “going”); as in:

NCS: W3RX W3TX UP 6 3RN;

RX: “T”;

TX: “T”

In some cases the Net Control Station will give the call signs in a different order based on the type of dispatch. Listen to the instructions carefully. Transmitting in the right order will avoid “doubling.” The NCS needs to hear that both of the dispatched stations have acknowledged and are “going.” Otherwise the NCS will have to call to verify it was heard, wasting net time.

Explanations of dispatching methods and the station responses are outlined in the NET OPERATING chapter.

3.5.2.1 Calling Order, Searching, Direction, Time

When two stations move off to exchange traffic certain customs of calling and answering are used. These customs help prevent the confusion of two stations calling each other at the same time, or on two different frequencies, or each station thinking the other is going to do the calling.

The receiving station calls first, so the transmitting station tunes around to find it. (The receiving station picks the frequency to be free of interference.)

The receiving station selects the frequency as close as possible to the assigned frequency. It is also customary that any shifts or searches are also done in the same direction, i.e., if stations move down to the assigned frequency, and find the frequency busy, they would move down another 1kHz or so (i.e., away from the net), or to the next available clear frequency. This is not a hard and fast rule, but moving in the opposite direction should be done in limited fashion since most stations would not be expecting it. Moving too far in the expected direction will usually result in the other station becoming lost as well.

The RX station makes frequent short calls to help the TX station find, and not miss, the calls. If contact is not made in about 30 seconds to a minute, the stations return to the net and report no contact.

3.5.2.2 Repeat Calls

The RX station makes the first call:

RX: QRL?, (if no response);

RX: W3TX W3RX QRV, (or if no reply, repeats the call without the QRV)

RX: W3TX W3RX, (repeating until contact is established)

TX: W3TX QRV?

RX: QRV (or QSZ (#) QRV), and the exchange is begun.

Note that “DE” and “K” or “<AR>” are omitted in the calls. They are not required. Full ID is made after the exchange.

If unsuccessful the call is again repeated by the receiving station, keeping the calling time short and the listening time short so the other station will not pass by and miss the call.

The process is repeated for usually no longer than thirty seconds to one minute or so. Beyond that time the chance of hooking up diminishes. It is prudent after a reasonable time to go back to the net, all stations reporting “no joy,” and let the NCS arbitrate a solution. (See *Net Operations*, chap. 4)

3.5.2.3 Two Station Exchange

The receiving station calls, long method:

RX: QRL?, (if no response, then)

RX: W3TX W3RX (if no reply, see above)

TX: W3TX QRV?

RX: QRV (or QSZ (#) QRV)

TX: QSK, (or QTC 4 QSK),

TX: (W3TX then begins the exchange with “NR...,” or “BOOK OF (#)” ending “<AR> N”);

RX: QSL W3RX (or QSL 73 W3RX, etc.); (or settles fills and then acknowledges)

TX: W3TX (or TNX 73 W3TX, etc.)

Experienced stations sometimes use a shortcut as follows, the short method:

RX: QRL?, (if no response, then)

RX: W3TX W3RX QRV, (assumes contact, declares QRV)

TX: [W3TX] (or W3TX QSK, or W3TX QTC 4 QSK)..., and the exchange is begun.

This shortcut is not used if the RX station needs to ask for QSZ. The QRV is omitted forcing the TX station to ask QRV?

Note that “DE” and “K” or “<AR>” are omitted in the calls. They are not required. Full ID is made after the exchange.

“QSL” is sufficient to acknowledge the message(s). “R” is also in use, but “QSL” is the less ambiguous choice. Making comments such as “QSL NR (#),” etc., is considered poor practice.

3.5.2.4 Relay Station Assistance

If a relay station is dispatched to aid in the exchange the relay station will usually initiate the contact for obvious reasons. The relay station will initiate an exchange with the sending station then pass the message to the receiving station, often keeping the original holder on frequency for any queries or confirmations.

3.5.2.5 Special Requests, Rx Station

If the receiving station wished to ask for multiple group transmission or spelling it makes the first call without the “QRV”:

RX: W3TX W3RX, the sending station will make contact:

TX: W3TX QRV?, at which point the RX request may be made:

RX: W3RX QSZ QRV

TX: and the exchange is then begun by the TX station.

3.5.2.6 Expeditious Assigned Exchanges

The assigned traffic is exchanged promptly.

Stations handle only assigned traffic. If other traffic comes up, or some traffic may not be passed, or is refused, the stations return to net and inform the NCS. The NCS may have made other arrangements for other traffic held, and can schedule other changes.

Stations pause briefly to listen for calls from others when their business is concluded, then return to net promptly. Failing to pause can cause missing another station assignment. Chatting with stations is considered poor practice and may keep others waiting. The stations can list “WDS for (call sign)” on the net and be assigned to have conversations, on or off the net frequency.

3.5.2.7 Returning To The Net

The order of transmitting when returning to a net is not important except that stations should not interrupt ongoing transactions. Receiving-station-first may be exercised when returning if two stations know they are returning together.

Job Completed: Stations report back into the net by sending:

STN: “(suffix)” (or number + letter for 2x1’s)

NCS: “(suffix),” repeats the suffix to acknowledge.

It is not necessary for the returning station to indicate the traffic passed. The NCS assumes it cleared the dispatched traffic. It is not necessary for a returning station to remind the NCS of its remaining pending business.

Additional Business: If a returning station has additional business to list, or wishes to report a change in the original dispatched traffic count:

STN: “(full call) PSE ADD QTC (list) <AR>”; or

“(full call) PSE CORRECT PODUNK 6 TO 5 <AR>”; or

“(full call) PSE QTA LITTLEBURG <AR>”; or

“(full call) PSE QNX <AR>,” etc.

Or the station may reply to a specific request from the NCS for a volunteer to take a liaison job or accept listed traffic.

NCS: “(suffix),” repeats the suffix to acknowledge.

If Unable To Complete The Assignment: Stations return to the net in less than a minute. All stations report to the NCS when returning that the assignment is incomplete:

STN: “(full call) NO JOY,” or

“(full call) NO (suffix),” (the suffix is that of the station to be contacted when dispatched)

The station may add a brief explanation of the problem encountered, such as no clear frequency, unable to copy, interference, suggest frequency (freq.), etc.

NCS: “(suffix) <AS>,” repeats suffix to acknowledge; or

“(suffix) R <AS>”

(The NCS arbitrates a solution to the problem or dispatches the station for other business.)

See the chapter on *Net Operating* for details on these moves.

3.5.3 Moving To A Stack Of Two Or More Stations

A station may be dispatched off net to pass traffic to a particular station already participating in an exchange at a stack (off-net frequency). In some cases there may also be another station waiting in line. The NCS will assign the order of business at the stack. The two stations at the stack control the frequency. The third station is dispatched using the QNQ instruction:

NCS: “W3RX QNQ UP 5 W3TX PODUNK”; (station 3 for the stack)

(W3RX moves up 5 and waits for W3TX to finish its exchange, then calls.)

The fourth station is dispatched with the additional “AFTER (call sign)” instruction (This is seldom done. The NCS will usually wait for a station from the stack to return before dispatching an additional station, limiting the stack total to 3.):

NCS: “W3RX QNQ UP 5 W3TX AFTER W3XX PODUNK”; (station 4+ for the stack)

(W3RX contacts W3TX following the exchange with W3XX, then exchanges Podunk.)

The station moves to the stack frequency, waits for its turn, and then promptly calls its station immediately following the exchange of the station it is to follow. Calls should be made promptly so the assigned station does not escape back to the net. The miss will require repeat dispatching and wasted net time.

Books For Multiple Receiving Stations (See 3.3.8.11, 12):

On nets below Region and Area level the NCS may dispatch a number of stations to receive particular parts of a book held by one transmitting station. The NCS will either assign the traffic to the receiving stations before the dispatch, or will do so within the dispatch syntax. In either case the transmitting station acts as a temporary NCS to pass the traffic either on the net or off frequency. Off frequency as each station receives its part(s) of the book, the transmitting station will settle with that station and release that station to return to the net.

(See the chapter on *Net Operating* for more information.)

3.6 Proword, Prosign And Abbreviation List

<AA>	CW PROSIGN (.-.-), END OF LINE, used at end of addressee, institution name, street address, and city/state/zip lines, and after telephone number groups if they are followed by an Op Note; used in address and signature sections (they are used like carriage-return/line-feed commands).
AA	CW; All After (used to get fills).
AB	CW; All Before (used to get fills).
ADEE, ADDEE	CW; Addressee, name of person or organization in message address part.
ADR	CW; Address, second part of message as a whole. Also street address within that message part; as in STREET ADR, ST ADR, or simply ADR.
AFFIRMATIVE	Yes. Also CHARLIE. "C" on CW.
AFTR	CW short form of "after," and "after" in stack dispatch command.
AMATEUR CALL	Voice introductory word used for amateur call signs.
ANC	Alternate Net Control, backup for NCS.
<AR>	CW PROSIGN (.-.-), END-OF-MESSAGE. End of written copy.
AREA	Telephone area code.
ARL	Letter group used before ARRL NUMBERED RADIOGRAMS in text, and before figures of PBL check if Numbered Radiograms are present in the text.
<AS>	CW PROSIGN (.-...), Wait, stand by. NCS ack. line ending prosign.
B	CW; More messages to follow, sent after <AR> at end of message. (<AR> B)
B1	CW; One message to follow, often shortened to "1," after <AR>, end of msg.
BACK	Operational word after call sign or suffix on voice; station returning to the net.
BACK-SLASH	Voicing for symbol "\" and formatting email/URL/BBS addresses.
BK	Break, break me; break-in (interrupt transmission on CW). Archaic on tlc nets.
BN, BETWEEN	CW; Between; for getting fills, "BN (group) ES (group)" (ES = and). BTWN
BOOK	A group of messages with some common parts which may be transmitted in a special sequence to save time, the common parts sent only once.
BOOK of (qty)	PROWORDS to begin transmission of a book of messages, (qty) as a word.
BREAK	PROWORD, voice version of <BT> below. (Quick check or separator on voice.)
<BT>	PROSIGN (---) CW BREAK, used at the start and end of the text, and between fixed and variable parts of booked messages. Not counted in CK.
C	CW; YES, affirmative. YES, AFFIRMATIVE, or CHARLIE on voice..
CFM	CW; Confirm, used to request confirmation of a group (no "?" needed), or reply in the affirmative to confirm a group. (CFM (group) -- CFM.)
CHARLIE	Yes, affirmative, used on voice.
CITY ORIG	CW; City of origin in PBL; sometimes CTY.ORG. See Place of Origin.
CITY ADR	CW; City in ADR; sometimes CTY; also ADR CITY.
CK	CW abbreviation for CHECK, the group count in the preamble.
CL	CW; Closing station, closed.
CLR	CW; Clear, clear of business or traffic.
CLOSE	Term used to denote a station leaving the air; or to close the net (end QND).
CLOSED	Term used to denote a station off the air, or secured. Also key word to denote the end of the directed net session. (equiv. to CW QNF)
CONFIRM	Query and response to verify a group in a message on voice modes, no query (?) is used. (Equiv. to CFM on CW). (CONFIRM (group) -- CONFIRM.)
CU	CW; See you. Variation of SU. (A farewell.)
CUL	CW; See you later. (A farewell.)
DASH	Written word used as substitute for the hyphen (for zip code extra 4, etc.).
DE	CW; "This is," "From," preceding identifying call sign of transmitting station.
DIRECTED NET	All communications are controlled by the NCS; QND.
DOT	Used in formatting messages as period in email, URL, BBS addresses.
EC	Emergency Coordinator.
EE	CW (dit dit), traditional farewell at end of CW exchanges.
END	PROWORD END ends message copy on voice.
END BOOK	PROWORDS; end copy of a book of messages begun with BOOK OF (qty).
ES	CW; AND. Used operationally, not as substitute for text "and." (BN__ ES__).

EXERCISE	Used as first and last groups in exercise/drill messages. See Test Messages.
FIGURE(S)	Voice introductory group for figure(s) groups.
FORMAL	Formal Traffic. A message in full ARRL standard format.
FREE	Designates directed net termination; “Net is Free”
G	CW; Going, response to net control instruction to go off frequency. Used by multiple stations, or after being excused. Letter T used for routine departures.
GA	CW; Go ahead, continue, or equiv. to CW “K,” voice GO AHEAD or GO.
GA,GE,GM,GN	CW; Good afternoon, evening, morning, night.
GO	Short for GO AHEAD, continue; equiv. to (“K”), GA on CW.
GOING	Voice response of station dispatched off net freq., see G.
GROUP	In message text, a series of letters, figures, and/or “/”s, with no spaces between them, taken as a whole with a space before and a space after.
GRP	CW; Abbreviation for group.
<HH>	CW;(.....) Error in sending in conversational CW. Also “I I” used: (.. ..). Not to be used during transmission of a formal radiogram. The prosign “?” is used in transmission of a radiogram. See “?.”
HX	ARRL Radiogram Handling Instructions, optional part of preamble, [HX_].
<II>	CW; (.. ..), Also HH as above. Error in sending, short form of <HH> in conversational CW. The prosign “?” is used in transmission of a radiogram.
INFORMAL	Net traffic or business other than formal messages; words, announcements.
INITIAL(S)	Voice primary introductory word for single letter or multi-letter abbreviations.
K	CW; Go ahead (over). Reply expected. (Invitation to transmit.)
LAST FOUR	Last four digits of telephone figures. Also TEL LAST 4.
LETTER GROUP	Letters in abbreviations. Equivalent (second choice) to INITIALS for introducing 2 or more letters.
LIAISON	Station carrying traffic between nets.
LIST	The NCS command for a station to list its net business. Also, the traffic list itself.
MGR	Manager. See NM. Also organization manager in personal titles.
MIXED GROUP	Voice introductory words for groups with mixed letters, figures, “/”s, or “R.”
MORE	Traffic to follow; END NO MORE (...MORE, ...ONE MORE). See CW N, B
N	CW; No, negative. CW; Used after <AR> to indicate no more messages to follow. (<AR> N)
NCS	Net Control Station
NEGATIVE	No.
NM	Net Manager. See MGR.
NO JOY	The rechecking station’s report of no contact or failed exchange off net.
NR	CW; PROSIGN (number), message follows, begins copy. <AR> stops copy. CW; number, also used to refer to the message number or other figure groups.
NUMBER	PROWORD number begins message copy on voice. END stops copy. Number, used to specify the message number in asking for fills on voice.
OP NOTE	Message Part: Notes after ADR or SIG relating to handling station info regarding delivery and replies respectively, introduced “OP NOTE.”
OPEN	OPEN the Net; the beginning of directed net operation.
OVER	Operational word for “go ahead.” Reply expected. (Invitation to transmit.)
PASS	Pass traffic: exchange traffic with another station.
PBL	CW; Preamble, first line of information in ARRL message format, NR to DATE.
PLC ORIG	CW; Place of origin in preamble (PBL). City of Origin. (Where the signing originator is located — not necessarily same as Station of Origin location.)
PLS	CW; Please. Variation of PSE.
PREC	CW; Precedence.
PRFX, PFX	CW; Telephone prefix figures. Sometimes PFX, or TEL PFX. Not AREA code.
PSE	CW; Please. Also PLS.
R	CW; Roger, received and understood (Does not mean yes!) CW; Used as decimal point symbol in mixed figure groups (146R670).
RELAY	Act as intermediary between stations (QNB on CW). Also, carry traffic between destinations (QSP on CW).
RE-LIST	Place a dispatched message back on the net list.
REP	Net REPresentative, liaison station.

ROGER	Received and understood, on voice. (Does not mean yes!).
SEC	Section Emergency Coordinator
SECURED	Station excused from the net, or net closed.
SIG	CW; Signature, last part of message CW; Signal in conversational CW.
<SK>	PROSIGN (...-.) Out, end of transmissions, no reply expected, from the old telegraph (...-):3, (—, long dash): 0 = 30, end of shift.
SLASH (/)	Voicing for symbol “/”; also SLANT, SLANT BAR, STROKE, DIAGONAL.
SM	Section Manager
ST	CW; State; specify if in PBL, ADR, TXT, SIG, etc. ST ADR: street address.
STN	Station.
STN ORIG	Station of Origin in message PBL, “Station of Origin” on voice.
STACK	Two stations on a frequency dispatched off the net, possibly other stations waiting to call one when they are done.
STM	Section Traffic Manager
STN ORIG	CW; Station of origin in PBL.
SU	CW; See you, variation of CU.
SVC	Abbrev. for SERVICE, used ahead of message NR for service messages.
T	CW; Going, short form of G, response to net dispatch off frequency.
T (zero)	Letter “T” or long “T” optionally used as zero in figure groups where no ambiguity would result; as in 23TTZ (2300Z), the T’s often sent with extra spacing.
TEL	CW; (TEL NR) Telephone figures. (See Area, PFX, Last Four.)
Telephone Figures	Voice introduction for telephone figures when no zip in address.
TEST	Word used to modify the Precedence for exercise messages; TEST R, etc.
TEST MESSAGE	Used in message texts to indicate exercise or drill content. See EXERCISE.
TIME FILED	Time of message filing, 24h-Z unless marked, optional in PBL ahead of date.
TKS, TNX, TU	CW; Thanks, Thanks, Thank You.
TXT, TEXT	CW; Message Text part.
WA	CW; Word after, used to ask for fills.
WB	CW; Word before, used to ask for fills.
X	Period substitute. The CW period (.-.-) is not permitted in message sending. “X” is never used as the last message text group.
ZIP	Zip code figures, including extra 4 if present.
1	CW; Short form of B1, indicating one message to follow, after <AR>. (<AR> 1)
33	Hugs farewell.
73	Best regards (73 is singular, meaning best regards, plural) farewell.
88	Love and kisses. (161 = 73+88).
? (prosign)	CW; PROSIGN (...-.), Query, used two ways when sending the formal radiogram on CW: 1) As a symbol meaning ERROR in transmission. Resume with the last group sent correctly. 2) As a symbol for “I SAY AGAIN” for repeating a group for clarity or emphasis. (See also “? - query”)
? (query)	Query. Used operationally for the interrogatory after a regular Q-Signal, as in “QSL?,” and as the query in conversational CW. See “? (prosign).”
Note 1 (//)	(//), quick pause; (/.../) fill pause; denotes release of PTT switch or listening. These are symbols used in this manual only. They are not prosigns.
Note 2	Abbreviations are shown primarily for use on CW. Use appropriate introductory words (initial/initials) for such groups voiced in message texts.
Note 3 Q-sig:	Do not use Q-Signals operationally on voice. Say it in words. (Q-Signals in the texts of messages are permissible.) CW QN-signals are special for ARRL nets.

3.7 Net And International Q-Signals

ARRL QN Signals For CW Net Use		International Q-Signals
QNA*	Answer in prearranged order.	A Q-Signal followed by a ? asks a question. A “Q”
QNB*	Act as a relay Between ____ and ____ .	signal without the ? answers the question in the affirm-
QNC	All net stations Copy. I have a	ative unless otherwise indicated

	message to all net stations.		
QND*	Net is Directed (controlled by a net control station).	QRA	What is the name of your station?
QNE*	Entire net stand by.	QRG	What is my exact frequency?
QNF	Net is Free (not controlled).	QRH	Does my frequency vary?
QNG	Take over as net control station.	QRI	How is my tone? (1-3)
QNH	Your net frequency is High.	QRK	What is my signal intelligibility? (1-5)
QNI	Net stations report In.*	QRL	Are you busy?
	I am reporting into the net. (Follow with a list of traffic or QRU.)	QRM	Is my transmission being interfered with?
QNJ	Can you copy me?	QRN	Are you troubled by static?
	Can you copy ____?	QRO	Shall I increase transmitter power?
QNK*	Transmit messages for ____ to ____.	QRP	Shall I decrease transmitter power?
QNL	Your net frequency is Low.	QRQ	Shall I send faster?
QNM*	You are QRMing the net. Stand by.	QRS	Shall I send slower?
QNN	Net control station is ____.	QRT	Shall I stop sending?
	What station has net control?	QRU	Have you anything for me? (Answer in negative.)
QNO	Station is leaving the net.	QRV	Are you ready?
QNP	Unable to copy you.	QRW	Shall I tell ____ you're calling him?
	Unable to copy ____.	QRX	When will you call again?
QNQ*	Move frequency to ____ and wait for ____ to finish handling traffic. Then send him traffic for ____.	QRZ	Who is calling me?
QNR*	Answer ____ and Receive traffic.	QSA	What is my signal strength? (1-5)
QNS	Following stations are in the net.* (Follow with list.) Request list of stations in the net.	QSB	Are my signals fading?
QNT	I request permission to leave the net for ____ minutes.	QSD	Is my keying defective?
QNU*	The net has traffic for you. Stand by.	QSG	Shall I send ____ messages at a time?
QNV*	Establish contact with ____ on this frequency. If successful, move to ____ and send him traffic for ____.	QSK	Can you work break-in?
QNW	How do I route messages for ____?	QSL	Can you acknowledge receipt?
QNX	You are excused from the net.* Request to be excused from the net.	QSM	Shall I repeat the last message sent?
QNY*	Shift to another frequency (or to ____ kHz) to clear traffic with ____.	QSO	Can you communicate with ____ direct?
QNZ	Zero beat your signal with mine.	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 ____?

* For use only by the Net Control Station.

Notes on the 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.

From FSD-218 ARRL, 225 Main St., Newington, CT 06111

Chapter 4 - Net Operations

4.0 Net Operations, Net Controls And Stations

Earlier chapters dealt with the skills required to format and to pass traffic from one station to another. In order to provide a discipline to facilitate passing traffic among larger numbers of stations an additional layer of skills and organization is required. This additional layer is the referred to as the network, or "net" for short.

Chapter 4 on *Net Operations* is the reference for both the net control stations (NCS) and participating stations, and presents background information on nets and the methods and language used in operating them. The syntax used in net operations is shown in sequence so that commands and responses may be reviewed together. Additional net control topics are presented in chapter 5.

This chapter will present information on calling the net, preparing the traffic list, checking into nets, listing traffic, assign-

ing and dispatching traffic on and off net frequency, the disciplines of the directed net, excusing stations, and closing the net.

It is assumed that the reader is familiar with message formatting (Chapter 1) and the skills required for exchanging individual and book messages on voice (Chapter 2) and CW (Chapter 3).

Voice and CW methods and syntax will be presented in each section so that they may be easily compared. The functions by topic are essentially the same on both modes.

Notes in the syntax sections will point out variations and differences between NTS Area, Region, Section, and Local nets. Options will also be included where several methods are in use, the best current practice being shown as primary.

This is a complex chapter. The newer student should concentrate on understanding the basics of checking into the net and listing traffic, basic assigning, dispatching and excusing, and then flesh out his understanding of the more difficult topics and techniques in combination with experience on the air in the nets. The experienced operators will be glad to help you along, and they will notice and appreciate your progress.

Station call signs used in examples are intended to be generic and in no way are intended to relate to the holders of those call signs in any way.

4.1 Types Of Nets

4.1.1 NTS, Daily Traffic Nets

The ARRL National Traffic System is composed of nets operating at different levels as a function of area covered. They are linked for traffic flowing in both directions by assigned liaison stations, and scheduled to operate sequentially to permit traffic to flow throughout the country.

A complete “cycle” of NTS nets consists of the sequence of Local/Section nets, Region nets, Area net, Region nets, and Section/Local nets. Notice that the Local/Section nets and Region nets meet twice during the cycle, the early sessions for outbound traffic, the later for inbound traffic.

This sequence begins with the Eastern Area, then one hour later each for the Central and Pacific Areas. Currently there are several partial or full cycles of this sequence in regular operation, an afternoon Cycle 2, early evening Cycle 3, and the evening Cycle 4, although the structure provides for up to 4 cycles each 24 hours, or, in emergencies, continuous operation. Part of the morning Cycle 1 operates in the Pacific Area.

Traffic is carried between Area Nets by the stations of the Transcontinental Corps, or TCC.

Area Nets: Eastern (EAN), Central (CAN), Pacific (PAN); each have a “transmit” and “receive” liaison from each Region Net in the Area, plus TCC liaisons to the other Area Nets, and liaisons to and from special nets such as international connections and the Atlantic Region Net (ARN).

EAN: Regions 1, 2, 3, 4, 8, 11, ARN

CAN: Regions 5, 9, 10

PAN: Regions 6, 7, 12

Region Nets: 12 Regions; each provide the TX and RX reps for the Area Nets mentioned above, and have liaisons from each Section Net within their region.

Section Nets: Each NTS affiliated Section net, or combined Section’s net, provides liaisons to the early and late sessions of their respective Region Net.

Local Nets: Within Sections; sometimes meeting only once daily, generally have liaisons from and to their respective Section Nets. Such nets generally cover smaller areas such as those covered by local VHF/UHF repeaters.

The above nets operate on a variety of bands and modes although most HF operation is on 80 or 40 meters. The NTSD, the digital branch of the NTS, operates in parallel with the voice and CW nets providing manned and monitored digital message forwarding between Regions and/or Areas using HF Amtor/Pactor or other modes.

Net Directory: US and Canada boundaries for each Area and Region are shown in the ARRL Net Directory along with traffic routing lists, state abbreviations, Third Party Traffic Country Lists, as well as lists of the NTS nets and schedules, emergency nets, and other independent nets registered with the ARRL.

PSCM: For more information on the NTS system consult the ARRL Public Service Communications Manual (PSCM) or your local Section Traffic Manager (STM).

4.1.2 Welfare, Incoming/Outgoing Public Traffic

During disasters special public welfare nets may be set up to facilitate the movement or archiving of large amounts of public traffic related to the emergency. These nets work closely with the regular NTS nets (and may be one and the same), and operate using the protocols presented in this manual. Traffic is usually, but not always, in formal ARRL format.

4.1.3 Emergency Nets, ARES/RACES

During disasters local ARES/RACES groups will run nets to facilitate the movement of traffic for served agencies and for handling public welfare traffic. These nets are managed by Section and Local ARES/RACES officials and operate using the protocols presented in this manual. They may use special message forms and numerous ad hoc structures to meet the local needs. Public welfare traffic is handled in formal ARRL format. The regular NTS activates special support for such nets as required. Traffic may be written formal traffic or tactical communications as required by the situation and served agency needs.

4.1.4 Special Nets

Disaster, Specific Served Agencies: ARES/RACES may, from time to time, set up nets devoted to serving one or a small number of specific served agencies in order to accommodate the needs of those agencies. Liaison with other ARES/RACES or NTS nets is arranged by the local ARES Emergency Coordinators or RACES Officers. These nets also use these net protocols.

In addition, local ARES/RACES or other amateur groups may evoke special nets for other special purposes such as those listed below. Generally they all use the standard net protocols,

making only minor changes to suit the special purposes. These may use formal written traffic as well as tactical traffic as needed.

- Administrative, Emergency Coordination nets;
- Volunteer Coordination, Manpower, Maintenance nets;
- Skywarn nets in support of NOAA/NWS;
- Social and Special Purpose nets, such as Swap nets, Special Interest Groups, Technical Discussion nets, Etc.;
- Public Service Event nets, special nets, usually local in scope, to facilitate the safe operation of events such as parades, walkathons, bike rides, etc. These nets may use mostly tactical traffic, but in certain emergency situations generate formal written traffic to preserve a record of unusual events and better serve the organizing officials.

4.2 Traffic Nets

This section presents the concept of the traffic net, its purpose and jobs, and skills required of its participants. Subsequent sections deal with the NCS and individual station skills required to conduct and participate in nets.

4.2.1 Purpose Of A Net

The purpose of a traffic net is to provide a controlled meeting of stations having business to conduct. The net is directed by a net control station which controls everything that goes on during the net meeting.

A net format, or schedule of operation, is established for the net to insure the orderly flow of intended business, and to help stations participating on a regular basis to know the order of business to be expected. The net format is established by the net manager and sets the business sequence. The net protocols presented in this chapter provide the syntax and procedures for operating in the net and managing the net operation, but do not establish or affect the net format or the discretion of the net manager to set the net format.

If the net control does his or her job properly, all stations having traffic to pass will get their chance in an orderly fashion.

By setting and keeping regular meeting times, the net becomes a known quantity. Stations with traffic can count on there being a regular means at a regular time for passing their traffic. The net's connections with other nets are established and maintained so that stations will know that traffic can be relayed to its destination. The ARRL National Traffic System (NTS) is so organized and operates daily to maintain scheduled traffic pathways nation-wide.

The key to successful net operation is order and discipline. The net control bears a large responsibility in this regard, but the individual station checking into the net must know the correct operating methods in order for the net control to maintain smooth operation. An operator not familiar with normal net operation methods can disrupt the flow. The role of the net control station is obviously very important, but, as in the case of the orchestra leader and players, the individual operator is just as much a part of the team.

Participating in a well run traffic net and having all your business handled efficiently is a rewarding experience, and a lot of

fun. When the NCS and participating stations know the words used, and how to respond, the net goes smoothly.

The protocols in this manual hopefully reflect the best current practices used in efficient net operations throughout the ARRL National Traffic System.

4.2.2 Net Manager (ARRL Appointment)

Net Managers are appointed in the NTS for Local and Section Nets, reporting to the Section Traffic Manager; and for Region and Area Nets, reporting to the Area staffs.

The Net Manager (NM) designs the format for the net, establishes the schedule of operations, days and times, makes sure the format is consistent with the NTS structure and guidelines; maintains manning assignments, establishes liaison assignments and agreements, and supports day to day operations. The NM assures that the net meets standards set by the NTS and its Terms Of Reference, particularly with respect to schedules and liaison assignments with other NTS nets for which the net is responsible, as well as standard operating practices operators expect to find.

The NM is responsible for training net members in traffic handling, net operations, and liaison duties based on the best amateur practice of the day as stipulated in the TOR and this Appendix. Operating and traffic handling protocols should be as uniform as possible throughout the NTS according to those standards.

The NM is responsible for maintaining an operational plan for regular operations and for emergency operations. The NM cooperates with the Section Traffic Manager, for Local and Section Nets, in establishing emergency plans with the Section Emergency Coordinator for the Amateur Radio Emergency Service (ARES), and for RACES cooperation.

The NM is responsible for collecting the daily net operation statistics and reporting summary data monthly to the STM for Local and Section Nets (for the SM's column in QST and NTS), for providing the net members with certificates of participation (with endorsements for NCS and liaison duty), and for assisting operators in applying for the ORS appointment and moving up in the system. Region and Area operators are sought and promoted from these ranks.

The NM of Region and Area Nets is responsible for net operations, reporting the net operation statistics monthly to the appropriate Area staff, and for seeking, training, and promoting operators for higher level nets and/or the TCC, per the requirements of the Area staff.

NM's should maintain a newsletter/roster to share information with all NCS stations.

4.2.3 Net Control Station (NCS)

The net control station calls the net at the scheduled time and frequency, checks in all stations, lists all traffic and other business for the net, assigns stations to receive traffic, instructs stations when and where to pass traffic, controls all transmissions on net frequency, maintains a list of all participating stations and their whereabouts, and checks stations out of the net. The net control will arbitrate the net's adaptation to unusual

circumstances which might arise due to missing personnel or outlets, liaison needs, and emergencies of any sort.

Responsibilities of the NCS include knowing the proper routing for traffic, the areas served by the net, required and possible alternative liaisons, emergency plans for the net, directing how to make best use of station capabilities, frequencies and modes, asking questions of net stations when information is needed, and the ability to anticipate the needs and frustrations of stations waiting to check into the net or conduct business.

The net control station reports on each net session to the Net Manager including information on which stations were present, liaison stations, traffic handled, session time, newcomers, and other information required by the Net Manager. Net reports are filed within a few days in order to keep current the information on net operations.

It is crucial that the NCS keep a record of all listed business and stations in the net, and be able to update the record as traffic is dispatched, stations leave and return to the net, and business is cleared and stations are excused. Notes should also be made regarding which stations can hear each other when propagation is poor. Prudent use of relays by the NCS can expedite what otherwise might be ineffectiveness.

This can be a daunting task on large traffic nets. Much has been written on the subject. See the chapter on *Net Control* for more information beyond the basic mechanics in this chapter.

Unscheduled liaisons from higher nets or the TCC should be handled by the NCS with priority. Traffic from these stations should be dispatched promptly for delivery or holding for later outlets.

NCS Tasks are summarized in a later section as an introduction to net operations.

4.2.4 Alternate Net Control Station (ANC)

The Alternate Net Control backs up the NCS in case the NCS is not able to make the session, or leaves the net for any reason.

The Alternate Net Control function is optional, is used primarily on large Local or Section Nets, and is called for each session at the discretion of the NM. This station should monitor the net operation, record all the same information that the net control does, and be prepared to step in immediately and assume the net control duties should it become necessary for any reason. Net Managers have been known to ask NCS stations to pretend to have a transmitter failure during a net to check the ability of the ANC or other stations to pick up the NCS duties.

If the net format does not call for an ANC, any station on the net should be ready to step in and perform the duties of NCS if that station leaves the air or fails to show up.

The ANC should be called upon for relay help under difficult radio conditions. The NCS may ask additional stations to be assistant net controls for such purposes.

4.2.5 Liaison Stations, Duties

Liaison stations are assigned to carry messages between nets. In the NTS, each Region and lower net Net Manager is responsible for assigning liaison stations going to and from higher level nets, and for stations going to and from other NTS

cycles of operation at Section level. Liaison stations always check into nets giving their liaison assignment so that the net control will know that all representation is present and accounted for.

The NM may also require liaisons be assigned to other affiliated nets or the NTSD, the digital system.

The NCS should always assure that all liaison assignments are filled, even if volunteers must be solicited, or the NCS performs the task(s). An NTS net frequently feeds another net or function. Even if all traffic to that destination has not been cleared, the rep needs to be excused on time. Additional stations can be sent, of course, or traffic can be held until the next cycle.

Auxiliary (AUX) liaisons (extra help) may be assigned by the NCS to help carry large amounts of traffic to the assigned nets.

Liaison stations must check in promptly to their assigned nets. This permits efficient net operation and assures the continuity of the entire system.

Liaisons must know how to group their traffic for delivery on their respective target destination nets, and how to re-book or un-book traffic accordingly. The outlets are different at Local, Section, Region, and Area nets. See also the section on *The Traffic List*.

4.2.6 Learning The Other Jobs On The Net

Stations do not have to wait for the Net Manager to solicit them to perform the various jobs on the net.

When a station has learned the basic traffic handling and net skills, and becomes familiar with the specific assignments, it may express the interest in accepting a job, or volunteer to fill a vacancy, temporary or permanent, as the situations present themselves. Many amateurs have been baptized by fire by volunteering for liaison or NCS duties when a station was not present on the net, and afterwards have become regulars at the task. Other experienced stations on the net are always willing to answer questions or train newcomers in the various jobs.

All stations are welcome and encouraged to learn and move up in the system.

4.2.7 Net Format

The format of the net, that is, the opening and closing statements, liaison list, sequence of calling liaisons, etc., is a matter determined by the Net Manager and documented for the NCS stations. This subject, being the responsibility of the NM's and subject to considerable variation based on the level of the net and other local considerations, is **not** specified or stipulated in this manual.

Consult with the NM regarding the net format. You should also find that the format is followed closely day to day and the basics can readily be learned by listening to the net.

Net operation protocols in this manual deal with the NCS and participating station syntax and procedures. These are the instruments of net operating. The format is the event program.

Although formats vary across the country and with the level of the nets, the basic syntax for commands and requests is uniform throughout the system. This manual deals with those mat-

ters that are uniform so that operators may understand instructions and know how to respond anywhere in the NTS.

Generally, liaisons are called after the net preamble, traffic dispatching is begun, and other stations, with or without traffic, are then checked in. Stations are often excused as soon as there is no more business for them, except for liaisons on lower nets which may be held to accommodate late checking stations, but only until it is time for them to leave for their assigned destination nets.

4.2.8 Traffic Handlers

The backbone of Section and Local traffic nets is made up of the regular stations checking in to bring traffic to the net, or to receive traffic for delivery in the local area.

On Area and Region Nets the assigned liaisons are the conduits for the traffic. Once accounted for, all the net business can be conducted.

On the other hand, on Local and Section nets, traffic is received for delivery throughout the net coverage area. It is essential that there be stations present capable of delivering all such traffic for the system to work. This means stations throughout the coverage area should check into these nets even if they have no traffic of their own. Having outlets is the key to success.

Traffic for the public or served agencies is inserted into the system by stations checking into Local and Section level nets with originated traffic.

Daily NTS traffic can not be delivered unless stations check into their Local or Section level nets at the other end of the cycle to receive and deliver it, or pass it to other Local nets.

Participate by checking into your Local or Section NTS nets often—daily if possible. Learn the other net jobs as you participate.

Automated digital traffic handling systems rely on traffic handling stations to originate and deliver traffic. (In this case we are speaking of formal ARRL radiograms as opposed to packet mail and other types of messages.) Manual operator nets assign liaisons to the NTS digital system to assure the cross-feed. If your station is digitally equipped you can be of help here.

New amateurs will find it quite amazing that they can check into your local net, pass a radiogram to a local station, and find out that the message may be delivered anywhere in the country that night or the next day by this magical system of liaisons and nets.

If you have never delivered a radiogram to someone, and hear one listed on a net that you might be able to handle, ask an experienced operator to walk you through the process after the net. Delivering radiograms to the public is a richly rewarding experience... it's easy and fun; a great chance to have a conversation about Amateur Radio, offer to originate a reply message, and perhaps encourage someone to get into the service.

4.3 Net Control Station Tasks

The practice of having a radio net control has been used throughout the years by many services. The job is more than just being a police traffic officer on the net frequency. A good

net control can efficiently take care of business while making the activity fun for the participants.

The NCS should call the net no later than 1 minute after the scheduled start time. If the assigned NCS is not present, the ANC (if any) or any other station on the net should assume net control and begin. The NTS system relies upon scheduled nets and reliable liaison between nets.

The station controlling a net (NCS) has the following general tasks which are applicable to voice and CW nets alike. Some tasks are not performed on Area or Region Nets.

NCS Tasks:

1. Opening (calling) the net on time
2. Transmitting the net preamble (*)
3. Checking in the ANC, or any other format required specific stations (*)
4. Checking in single liaison stations from a net
5. Checking in multiple liaison stations from a net (*)
6. Checking in stations, open and specific net calls
7. Listing traffic and business on the net control sheet (**)
8. Assigning traffic
9. Dispatching formal traffic and other business
10. Re-checking stations and asking for check-ins often
11. Handling additional business
12. Maintaining order and directing business
13. Adjusting the net to prevailing conditions
14. Excusing net liaisons in time to meet assigned nets
15. Excusing net stations
16. Closing the net on time
17. Filing net reports with the net manager (**)

(*) Usually on Section/Local nets only, or as required by the net format.

(**) These strategies for managing operations will be discussed in the chapter on Net Control.

Manual Topics:

The subsequent sections of this chapter will deal with the NCS syntax to accomplish these tasks and the syntax used by stations when responding to NCS commands and requests, listing their traffic, and performing other duties.

Presentation of written descriptions of voiced and transmitted syntax requires certain symbology and abbreviation, thus a key for the written chapter appears first in the following section. The key is followed by notes regarding certain syntax conventions used throughout the manual, Q-Signal use, and station ID requirements on directed nets.

The operating protocols are then presented generally in the order of the task list above, except that the methods used by stations to check in and list traffic are discussed first. These techniques are used at various times during the net, thus are presented before beginning discussion of the “flow” of the net.

4.4 Key To The Manual Syntax

Sections are divided into parts for VOICE, with examples as needed; and CW, with examples as needed; and further divided showing variations for Voice or CW where different methods are used in different situations or net types. Alternative choices are usually in brackets. Differing methods or situations are often shown as numbered cases.

Lines transmitted in each part are shown by sender, introduced with:

NCS	- for the net control station;
ANC	- alternate net control station;
STN	- for any other station; (may be suffix);
XA, XB, etc.	- for particular additional net stations; (may be suffix);
TX	- for a station holding traffic to be transmitted; (may be suffix);
RX	- for a station assigned to receive specified traffic; (may be suffix);
RLY	- for a station assigned to relay between stations. (may be suffix);

Symbolic statements within the line syntax:

(____)	Items in parentheses filled in by user;
[____]	Items in brackets are optional items;
(call sign)	Full call sign of station addressed;
(suffix)	Suffix of call sign, number and letter if 2x1;
(1 letter)	Arbitrary letter used on CW for recognition;
W3RX	Receiving station full call sign**;
W3TX	Transmitting station full call sign**;
W3RLY	Relaying station full call sign**;
W3STN	Any other station**;
W3XA, W3XB, etc.	One of several RX or TX stations**;
(net name)	Name of net, full words or abbreviation on voice, figures/letters on CW. Where assignments are compound, as in “EAN TX,” stations include the modifier when referring to jobs by net name;
(job)	Station net job, such as NCS or ANC;
(assignments)	Station’s assigned jobs/liaisons, by net name compound as above when required. “From” listings before “To” listings;
(dest)	Message destination, may be multiple;
(qty)	Message quantity, may be multiple;
[prec]	Precedence appended to qty. Omitted in manual;
(dest [qty])	Destination, and optional quantity (NCS discretion) for messages;
(req)	Informal requests added to station transmissions;
<AS>, <AR>, etc.	CW prosign concatenated letters.

See also the *Prosign and Proword List* at the end of chap. 3.

** Call signs used in this manual: All call signs used in this manual are intended to be generic for example purposes and

are in no way related to the holders of those call signs. (Suffixes of the above calls are often used in syntax to relate to the full call sign.)

(Data): Information to be filled in by the station transmitting in shown in parentheses.

[Options]: Options are shown within brackets, [], within the flow of the syntax as needed, and around additional choices for syntax. Other options are shown at the end of the section or part. Generally options are shown in their order of preference unless otherwise noted.

Syntax, Written: Groups transmitted in a line are shown in CAPS. Components in parentheses to be filled in are shown in lower case as shown above.

Notes: Explanations, tips, caveats, etc., are included at the end of the section as needed.

Greetings, Thanks, Farewells, etc. are omitted from the formal protocols for clarity. Traffic handling and net operating are enjoyable activities and the niceties are frequently used to sustain a pleasant atmosphere. Examples are given where they are often used, or as “[option words]” in brackets. They are often inserted before the key words of the NCS or Station syntax to avoid interfering with the self completing nature of commands and replies; as in: W3XYZ 73 GL QNX, as opposed to W3XYZ QNX 73 GL [K], where “K” would mark the end of the uncertain length farewell. This is a minor point however, and a 73 or GE will frequently be heard after the command or reply. Names (abbreviated on CW) are frequently used to maintain the friendly atmosphere.

4.5 Notes And Definitions, Syntax And Conventions

The NCS makes its net Calls, Assigns and Dispatches traffic, and Excuses stations according to protocols developed over years of organized net operating. There are a number of conventions regarding the conduct of business which aid in the running of efficient nets. These conventions apply to the NCS and also affect how individual stations respond to the flow of business. These conventions are discussed below for use in the subsequent Net Call protocols, but most also apply to net operations throughout the assigning, dispatching, and excusing functions as the net progresses.

4.5.1 Flow

Area: On Area Nets the stations checking in are primarily liaisons from or to other nets. The NCS knows which stations should be present and can manage the checking in of stations and the flow of the net to expedite the movement of traffic. Some net formats or NCS preferences direct this process using the Open net call, taking stations at random as they check in, while others may make Specific calls for liaisons in preferred order.

In either case, the NCS may list a station’s traffic then either dispatch the traffic with outlets already in the net, or call for outlets needed which have not yet checked in and then dispatch the traffic. Traffic is automatically assigned to the RX liaisons by default. On these nets traffic is normally dispatched off net frequency to permit ongoing net business. The NCS

continues checking in new stations until all the expected liaisons are accounted for, then continues the net until all listed business is cleared.

The Area nets have both a receive rep and a transmit rep from each Region level which permits parallel movement of both incoming and outgoing traffic between the Region TX and RX liaisons. The TCC stations handle traffic to and from other Areas. The NCS, therefore, is in charge of configuring the flow of traffic between these Region reps and TCC stations to optimize the amount of traffic flowing per unit of time, clearing all stations within the allotted time, and excusing liaisons in time to return to their Regions. Region reps to Area Nets check in as RX or TX, or BOTH if one station is assigned both functions.

Region: Region nets have liaisons from the Sections below, and liaisons to the Area net in early sessions, and from the Area net in late sessions. The NCS functions at this level are essentially the same, except that there is only one liaison per Section net and one for the Area net. The NCS must adjust the sequence of dispatching to accommodate the loading for particular liaisons that develops each session. These nets may also use Open or Specific calls to check in all liaisons.

Section: Section nets usually check in liaisons at the beginning of the net with Specific calls, list the traffic, and then make Specific calls for outlets for delivery of incoming traffic while routing the outbound traffic on early sessions to the appropriate liaison. On late sessions the source net liaison often brings the greatest load of traffic for local delivery. The Open net calls are used to check in outlets from the Section's local delivery areas. The NCS may be faced with a wide variety of problems finding outlets for incoming traffic. There are numerous tools at its disposal which are presented in this section. It may make Specific calls for outlets for unassigned traffic to be delivered, use its knowledge of which stations can handle certain areas, or move traffic toward other local nets or assign stations to store traffic for later forwarding or nets.

4.5.2 Auxiliary Stations

Auxiliary (AUX) liaisons may be assigned at any level to help the primary liaisons with heavy traffic loads. These stations check into destination nets indicating such status.

4.5.3 Missing Liaisons

If liaison stations are absent, the NCS should find other stations to perform those assignments by using the Call for Volunteers for Missing Liaisons. If no station volunteers for an unfilled liaison job, the NCS should take the job, if at all possible, or make an attempt to pass the word to the target net affected.

On any net, missing or late liaisons can cause the postponement of traffic handling and delivery, and delay the net finishing its business while waiting or asking for volunteers. Liaison stations from other nets know not to be late.

4.5.4 Servicing Visiting Liasons

Unscheduled liaisons from higher nets or the TCC should be handled by the NCS with priority. Those liaisons may be on a tight schedule needing to check numerous nets. Other stations visiting the net should be helped to the greatest extent possible

and not turned away holding traffic for the net's area. Net stations should be promptly asked to accept traffic from each of these stations for delivery or holding.

4.5.5 Transactions

A transaction on the net consists of an NCS request or command and the response(s) from the stations specifically addressed, a station call and the NCS response or processing, words for the net, etc.; and also consists of an exchange on or off net of traffic between stations. A dispatch and the full traffic exchange on net frequency is one transaction, for example.

Stations checking into the net, already checked in, or returning stations should not seek the attention of the NCS in the middle of such transactions except for urgent business or emergencies. This is an interruption considered poor practice, with few exceptions. This also applies to a QNA liaison calling sequence per the net format. Other stations should wait for later calls.

On some nets returning stations may be permitted to check back into the net in batches, each sending their suffix ("suffix BACK" on voice) in a series. The NCS will acknowledge their return likewise (en-mass) at its discretion. If the NCS immediately acknowledges the first returning station, take that as a signal that a series of calls is not desired. The NCS may stop the process at any time and deal with a problem or make a dispatch or call when required.

Interruptions are sometimes made to catch an excused station for words or traffic, to inform the net or stations of traffic routing changes, or suggestions on or off the net prior to exchanges, or when other matters need to be brought to the attention of the NCS affecting commands and actions. Such interruptions should be made with care, sparingly, and only when essential for problem solving or enhancing net efficiency. They are discussed in subsequent sections.

Opinions regarding better ways for the net to conduct business or route traffic may not be based on the knowledge and information available to the NCS, or in agreement with the NCS discretion in directing the net. It is often wise to be tactful and request to be recognized at a time convenient to the net and make a request or suggestion regarding changes, thus permitting the NCS to act on the information at the net's convenience. To do otherwise often creates the opportunity for a station to open mouth and insert foot.

Interrupting during transactions can be disruptive, irritating to both NCS and net stations, and counterproductive. It is controversial to even suggest the practice, but occasionally it can be helpful, and will be appreciated in such cases. A wise NCS will be willing to change decisions based on better information. Patience, common sense, judgment, and courtesy, however, must always apply.

4.5.6 Tail Ending

Generally stations wait for an Open or Specific net call in which they are eligible to call, but, if carefully done, can make their call at the end of a transaction following the last participating station's transmission, and/or before the NCS resumes the net. The NCS will often make an Open call following such transactions, but stations generally need not wait. If there are

no transactions in progress, tail ending can expedite net business flow.

Caution is in order. Tail ending for general purposes is not considered good practice during a sequence of liaison or other specific net calls, as in the QNA type series at the beginning of many Section/Local Nets. Calling out of order in such cases is disruptive. The NCS may ignore such interruptions.

4.5.7 Pause Tail Ending

Some nets or NCS stations will accept stations in other categories, or returning stations, to check in even if not in the category called, but expect the station to pause to allow the NCS request to be responded to first by any eligible stations. This is a form of “pause tail-ending.” Such a respectful pause is a courtesy to the NCS and the called station(s).

4.5.8 Specific Single Responder Calls

The NCS may call for single responders for net jobs, expected liaisons by net name, or specific stations by call sign. This method gives the NCS the ability to control the check-in sequence and/or fill a specific need immediately.

Other stations should not call except using pause tail ending.

4.5.9 Open And Specific Calls, Multiple Responders Expected

The NCS may call for multiple liaisons from a single net, specific categories of stations, or other specific requests where more than one station is likely to reply.

The general approach for dealing with this situation on voice involves having the responding stations make limited calls and wait to be acknowledged by the NCS before proceeding. On CW the single letter approach is customary. See *Open Net Calls, CW*.

Stations not in the category called should not call except using pause tail ending.

4.5.10 Stations Reply Only In The Category Called

Other stations not in the category called should wait for the NCS to complete the sequence and then respond in an appropriate category or wait for an Open call.

In the **Specific Call** sections following, for single or multiple responders, it is assumed that the call is “closed to others” unless otherwise indicated. The customary practice of the net may dictate otherwise. Stations should listen to an unfamiliar net to determine the practice in use.

An immediate call by a station not in the category called prevents any appropriate stations from responding to the NCS call. This forces the NCS to repeat the call, thus delaying the net for all. In such net calls, at least pause tail ending is mandatory. Better to wait for an appropriate net call except perhaps for stations returning to the net from off frequency. The NCS may ignore stations calling which are not in the requested category.

4.5.11 Returning Stations

Stations returning from off the net may have need to report failed contact, and certainly need to check back into the net in a timely fashion. There also may be other business pending for their stations, previously listed, or listed while they were off net. The NCS may call specifically for returning stations often

to avoid the pressure to check in during other calls. Open or Returning Calls should be made frequently during the net, or the NCS should leave pauses following transactions to permit tail ending, or should permit pause tail ending.

4.5.12 QNU, Net Has Traffic For You, Stand By

The NCS may advise stations checking in that the net has traffic for them, but this is not often done. Listen to the NCS and the net stations carefully. Make note of traffic listed for your station and be prepared for the dispatch. QNU, or the voice equivalent, may optionally be used to inform a station why it is being asked to wait after listing no traffic, for example.

4.5.13 Checking In Stations

Some techniques or net formats require different replies from stations checking into the net. The NCS may ask a station to “list” its traffic in the voice two step method. The NCS will use the single letter method of checking in new stations in multiple responder calls on CW.

The NCS will assign traffic by default to liaisons, or to stations by knowing what traffic they can handle, by asking specific stations if they will accept it, or by calling for volunteers to take the traffic.

The NCS may acknowledge a station checking in and ask it to stand by. The NCS may acknowledge the station and then dispatch it for traffic handling. The NCS may skip acknowledgment, call for an outlet if needed, and immediately dispatch the station for traffic, or use a shortcut split dispatch. The various techniques are presented in the Net Call and Dispatch sections.

4.5.14 Operational Words, Q-Signal Use, Etc.

It is important to note that the NCS transmits key words or symbols which constitute commands or requests. Such commands are usually self completing, that is, are sufficiently clear to stand both for a command or request, and an end of transmission marker. Likewise, certain station acknowledgments, replies, or other transmissions are self completing as well.

The regular Q-Signals used on CW can be sent with a query (?) or without to make the NCS intention clear. The net “QN” signals are not used with queries.

Q-Signals are **not** used operationally on voice nets. Use the voice syntax words.

The use of words like Go Ahead or Over, <AR> or <K> on CW, are not shown or needed in self completing commands. It is, therefore, efficient to omit these words or symbols at the end of most NCS transmissions. They persist at the end of some NCS transmissions, and in certain of those from stations, in order to clearly mark the end of transmissions of uncertain length or where required. Although it is sometimes argued that silence is just as effective, on lower nets, and when long traffic lists or other long transmissions are sent, the use of Over or <K> can help prevent “doubling” by two stations by clearly marking the end of transmissions.

Over is useful on some two meter repeater nets where audio delay systems remove squelch tails and obscure releases of the PTT switch. Voice operators using fast VOX, and CW stations using QSK are not so concerned about “doubling.” The CW prosigns “K,” <AR>, etc., and Over on voice are very clear in

their meaning and are effective in marking the end of transmissions. The point is to use them only when necessary.

Users of VHF/UHF repeaters should be cautious to allow system components to fully “key up” before speaking, and transmission timers should be carefully reset to prevent shutdown.

“Every single word not absolutely needed may be dispensed with profitably.”—*Operating an Amateur Radio Station*, p. 17, CD4/1-83, ARRL, Newington, CT.)

All communications on a directed net are under the direction of Net Control. Stations must seek recognition from the NCS prior to making comments or other interruptions. The urge to insert a comment or offer to help should be resisted in favor of first getting the attention of the NCS. Critiques of the NCS job or station activities should be reserved for off net, or preferably off the air.

4.5.15 Station Identification On Directed Nets

The NCS must ID at the start of the net and every ten minutes. Using the net name or abbreviation during Open net calls is customary, adding the NCS call sign at the appropriate time intervals. The NCS must ID with full call sign when closing the net.

Liaisons and other stations checking into the net will give their full call sign at their initial check in time. When they are dispatched off frequency they may acknowledge with their suffix

letters (voice, number and letter for 2x1 calls, etc.; “T” or “G” on CW), and use suffixes when returning to the net with their job completed. They do not need to ID every ten minutes on the net during the net. Stations already checked in and seeking to be acknowledged by the NCS on the net may use their suffix for that purpose.

It is, however, customary for stations to sign with full call sign after an exchange of words with another station on the net, an announcement, etc., and after exchanging traffic on the net frequency as shown in chapters 2 and 3. Sending the full call sign clearly identifies the source of the transmissions in this case, and also alerts the NCS to the conclusion of the exchange.

Stations must also use their full call signs every ten minutes and when concluding exchanges off the net frequency.

When individually excused from the net, stations acknowledge with their full call signs at departure. If stations are excused by the act of the NCS closing the net, or excusing a list of stations, no individual station ID’s are required in response.

4.6 Listing Traffic, Stations Checking Into Net

Before going on to net operations stations will need to know how to prepare and transmit the Traffic List, and the basic check-in sequence used in various situations.

1. The Traffic Listing Sequence:

ID	1	TFC STATUS	— TRAFFIC LISTING —				REQ	END MARK
		2	3	4	5	6	7	
CALL	JOBS	TRAFFIC QTC	FORMAL TFC	QNC’S	WDS NET	WDS STN		OVER, <AR>
CALL	JOBS	TRAFFIC QTC	FORMAL TFC	QNC’S	WDS NET	WDS STN	[REQ]	OVER, <AR>
CALL	JOBS	WITH TRAFFIC (VOICE ONLY, TWO STEP CHECK-IN)						
CALL	JOBS	WITH TRAFFIC (VOICE ONLY, TWO STEP CHECK-IN)					[REQ]	OVER, <AR>
CALL	JOBS	NO TRAFFIC, QRU						
CALL	JOBS	NO TRAFFIC, QRU					[REQ]	OVER, <AR>

The full traffic listing sequence may include some or all of the following items in order:

Full Call Sign: (Always sent first.)

- Jobs, Assignments:** (assignments), jobs, liaison net names, if any.
- Traffic Status:** No Traffic, With Traffic, Traffic.
- Formal Traffic:** (destination) (quantity) [precedence] [information]
- Messages For All Stations, (QNC):** formal radiogram traffic, (not informal words).
- Words For The Net:** informal words, all net stations, announcements.
- Words For Stations:** informal words for listed station(s).
- Added Requests Or Statements [optional]:** Not considered traffic. Requests, statements, offers to take traffic, etc., primarily for benefit of the NCS.

“Over,” or “<AR>“ (CW)] (as required)

Each of the 7 categories are discussed in the following sections of the same number.

Over, <AR>: The full traffic list of uncertain length is always ended with “Over” (<AR> on CW). In the “No Traffic” (QRU) and Voice “With Traffic” cases, if any “added requests” are included, the “Over” (<AR> on CW) is also used to terminate the sequence. The “No Traffic” (QRU) and Voice “With Traffic” cases without “added requests” are self completing and require no “Over” or <AR>.

All Business At First Opportunity: In any case, when called upon to check in to list traffic, a station lists all its business at the first check-in opportunity. A station with multiple liaison jobs, for example, does not have to wait for each NCS liaison call and check in multiple times. It should reply at the first chance with all its assignments and all business. The NCS will note its assignments.

Preparing For The Next Net: Stations usually keep some form of list of traffic received on a net when they are liaisons. Knowing the outlets on the next net permits the station to make a list presorted accordingly. This enables the station to be well prepared with its traffic list when checking into the next net.

NCS Fills: The NCS may ask for repeats of the traffic list, or requests as needed, as in “HOW MANY FOURTH RE-

GION?,” or on CW “QTC 4RN?” or “UR L QTC?” (your last QTC?), etc.

2. The Check-In Sequence: The method used by a station checking into a net varies with the type of net call, the mode, the number of expected responders, and the net format itself.

Single Step Method: When the NCS calls for a specific station, or a specific single liaison from another net, the appropriate responding station checks in and completes its entire check-in sequence; call sign, listing all its assignments, traffic status, and if holding traffic, its entire traffic list. When the NCS makes a general call for check-ins, and a particular single station is recognized to check in, this single step method is also used for the station response.

In other words, when it is clear that only one station is to respond to the NCS and check in, this full sequence is used on the respective modes:

NCS recognizes or expects one station, and the STN replies:

Voice:

- (call sign) (assignments) NO TRAFFIC; or
- (call sign) (assignments) NO TRAFFIC [(requests)] Over; or
- (call sign) (assignments) TRAFFIC (traffic list) [(requests)]. Over.

CW:

- (call sign) (assignments) QRU; or
- (call sign) (assignments) QRU [(requests)] <AR>; or
- (call sign) (assignments) QTC (traffic list) [(requests)] <AR>.

The optional requests may also be brief statements or offers to relay or take listed traffic. “No Traffic” or QRU, without requests, does not require an ending “Over” or <AR>.

Voice, Two Step Method: When the NCS calls for a category in which there may be multiple responders, the stations attempting to check in transmit their call signs, assignments, and state only their traffic status, i.e., say that they either have “No Traffic,” or are “With Traffic.”

This technique is used mostly on Section or Local nets to help sort out multiple responders to Open or Specific category net calls.

The NCS will respond to those having “No Traffic” by acknowledging them or dispatching them. The NCS will ask those stations “With Traffic,” one at a time, to “List” their traffic. At that point the station will complete its entire check-in sequence, call sign, listing all its assignments and its full “Traffic List.”

NCS makes a net call expecting multiple responders. Stations reply:

Voice:

- (call sign) (assignments) NO TRAFFIC; or
- (call sign) (assignments) NO TRAFFIC [(requests)] Over; or
- (call sign) (assignments) WITH TRAFFIC; or
- (call sign) (assignments) WITH TRAFFIC [(requests)] Over.

Stations with no traffic are acknowledged by full call sign and asked to wait. Stations with traffic wait for NCS to ask “(call sign) **Please List,**” then the method becomes the same as for a single responder (see 4.8.2, *Open Net Calls* for more information):

- (call sign) (assignments) TRAFFIC (traffic list) [(requests)] Over

Note that “requests” are permitted in both the “No Traffic” and “With Traffic” two step check in sequences. Such “requests” are not considered “traffic” for the status reported. See the explanation in the section on Adding Requests below.

CW, Two Step Method: On CW nets the multiple responder issue is resolved by each station sending a single letter, waiting to be recognized by the NCS (who will repeat the single letter as a signal to proceed), then the station checks in with its entire sequence, listing all its assignments, status, and traffic list if holding traffic. Once recognized, the station therefor replies as a single responder.

CW:

- STN: (1 letter)
- NCS: (repeats 1 letter)
- STN: (call sign) (assignments) QRU; or
- STN: (call sign) (assignments) QRU [(requests)] <AR>;
- STN: (call sign) (assignments) QTC (traffic list) [(requests)] <AR>.

Note that “requests” are permitted in both the “QRU” and “QTC” listing sequences. Such “requests” are not considered “traffic” for the status reported. See the explanation in the section on Adding Requests below.

4.6.1 Assignments

Jobs/Assignments: If a station has any specific net job, or liaison assignments from or to other nets, these are listed as the assignments immediately following the call sign: (call sign) (assignments).

	1	2	3	4	5	6	7	
CALL	JOBS	STATUS	FORMAL TFC	QNC'S	WDS NET	WDS STN	[REQ]	OVER, <AR>

Jobs, such as Alternate Net Control (ANC), are said in plain words on voice, and given as the letter abbreviations on CW. They are given before other liaison assignments.

Liaison Assignments; are specifically assigned to stations by the NCS stations on nets, or assigned in advance by the Net

Manager (and may be listed on a net roster). They are **not** used simply to indicate a net visited by a station prior to checking in, but to indicate that their station has been designated as an official representative from or to a net.

Liaison assignments are given on voice as the full name of the net in words, or the abbreviation without introduction or phonetics, and on CW as the abbreviation.

When a station represents more than one net, the names of the nets from which it is coming are listed before those to which it is going.

Typical liaisons:

Area Nets Region Listing:

EAN: Regions 1RN, 2RN, 3RN, 4RN, 8RN, ECN (11), ARN, CAN, PAN, TCC

CAN: Regions RN5 (5), 9RN, TEN (10), EAN, PAN, TCC

PAN: Regions 6RN, 7RN, TWN (12), CAN, TCC

Each Region has a TX rep, voiced as in “FIRST REGION TRANSMIT,” or “ONE R N TRANSMIT,” on voice; 1RN TX on CW; and an RX rep voiced in similar fashion. ECN is the Eastern Canada Net, ARN is the Atlantic Region Net. EAN, CAN, and PAN are the Eastern, Central and Pacific Area Nets; TCC the Trans-continental Corps. Certain TCC liaisons may be identified by their TCC schedule letters, as in “ROMEO,” or “VICTOR.”

Region Nets, 12 Regions, listed above: Each provide the TX and RX reps for the Area Nets mentioned above, and have single liaisons on both sessions representing each of the Section Nets within their Region. Region nets meet twice in any given full cycle.

Section Nets: ARRL Sections, or combined Sections, each provide liaisons to the early and late sessions of their respective Region Nets, earlier or later NTS cycle nets, and receive liaisons from and to Local Nets in the Section. Section nets meet twice in any given full cycle. Section Net names vary throughout the US. Consult with the NM or operators for the abbreviation used.

Local Nets: NTS affiliated local nets (usually covering limited areas or parts of a Section, and often on 2 meters or UHF) generally have liaisons to/from the Section Nets. Consult with the NM or operators for the abbreviation used.

Auxiliary Liaisons: Additional stations over and above the normal liaisons sent between nets are called auxiliary liaisons and check into nets indicating AUXILIARY on voice, AUX on CW. They may be used at all levels. “W3XX 3 R N TRANS-

MIT AUXILIARY,” or “W3XX THIRD REGION TRANSMIT AUXILIARY”; or W3XX 3RN TX AUX on CW.

Both: On Area Nets where a station is performing both the TX and RX functions from/to Region it checks in as “BOTH,” as in: W3RX 3RN BOTH.

From, To: In those rare cases where the direction of a liaison (bringing incoming or taking outgoing traffic) is not clear, the word From or To (or both) may be used ahead of the respective net name(s); as in W3XX FROM MEPN TO MDD, or W3XX FROM AND TO MDD for a roving liaison, or W3XX FROM 3RN TO BTN AND MDD..

The NTS nets are listed in the *ARRL Net Directory*.

Examples of assignments, CW only. They are given on voice in similar fashion with TX voiced as “transmit,” RX as “receive,” AUX as “auxiliary,” net names as either the abbreviation or full words.

On Eastern Area Net:

W2XX CAN; station on EAN going to CAN (TCC schedule ALPHA).

W3TX 3RN TX; TX station from 3RN, to the EAN.

W3XX 3RN AUX TX; TX station helping bring extra 3RN traffic to EAN.

W3RX 3RN RX; RX station to 3RN, checking into EAN.

W3RX 3RN BOTH; station performing both TX and RX 3RN duties on EAN.

On Third Region Net (3rn) Early:

W3TX EAN TX; station to EAN, TX.

W3XX EAN BOTH, going to EAN as TX and RX.

On 3rn Late:

W3RX EAN; station from EAN, RX bringing down EAN traffic.

On Section Net:

W3XX 3RN; station on MDD Section net, to early 3RN or from late 3RN.

W3XX ANC 3RN MDD; ANC, from 3RN and to MDD. FROM and/or TO may be used.

4.6.2 Traffic StatusThe traffic status follows the assignments. (call sign) (assignments) (status):

	1	2	3	4	5	6	7	
CALL	JOBS	STATUS	FORMAL TFC	QNC'S	WDS NET	WDS STN	[REQ]	OVER, <AR>

Status

Voice:

... NO TRAFFIC, or NO TRAFFIC [(requests) Over];

... WITH TRAFFIC, or WITH TRAFFIC [(requests) Over]; (two step),

... TRAFFIC (traffic list) [(requests)] Over; (when listing).

CW:

... QRU, or QRU [(requests) <AR>];

... QTC (traffic list) [(requests) <AR>].

Traffic:, QTC: is used to introduce the traffic list even when the only traffic listed is informal words for the net or a station. It is not required when listing only requests/statements.

All stations checking into traffic nets should give a traffic status, whether checking in on voice with a two step process or not. Failure to give traffic status leaves the question unanswered which forces the NCS to ask. This wastes valuable net time.

No Traffic, QRU case: “Over” or <AR> is **not** required unless a request/statement is included.

4.6.3 Listing Formal Radiograms

	1	2	3	4	5	6	7	
CALL	JOBS	STATUS	FORMAL TFC	QNC'S	WDS NET	WDS STN	[REQ]	OVER, <AR>

Formal TFC: (dest) (qty [prec]) [(information)] ... (dest) (qty [prec]) [(information)]...

Following (call sign) (assignments) (traffic), the general format for listing formal radiograms (the first of a series of types of traffic constituting the “traffic list”) follows. Note that the optional precedence ([prec]) is omitted for Routine traffic:

Book Of (qty): May be used ahead of group of messages to alert the NCS so dispatching of all recipients may be made together. (qty) is the total number of messages in the book. See BOOK OF (qty) below.

<AA>: The <AA> separator may be inserted between items on CW for clarity if necessary.

W3XX QTC LAUREL 1 TEL 301 555 <AA> 3RN 2 <AR>

The use of <AA> has diminished in recent years and is more often omitted in favor of appropriate pauses. On Area/Region Nets where the list is very succinct the <AA> between items is omitted, and items are listed in specific order.

(dest) (qty [prec])

(dest. = destination, qty. = quantity, prec. = precedence above R. Items in brackets are optional.):

... (dest) (qty [prec]), for each message listed; or

(dest) (qty [prec]) (information)

To help determine outlets in the local area:

... (dest) (qty [prec]) [(Tel. area + prefix)] [zip code];

For a station on the net:

... (station call sign) (qty [prec])

For a station not on the net, to help determine an outlet:

... (dest) (qty [prec]) [FOR (station call sign)]

Notes:

(dest), Destination: net name, “through,” city, or call sign.

The **Destination**, (dest), is stated in different ways depending on the net and its outlets. The destination could be a station on the net, a city in the local net area, a net name, or the next higher or lower net in the NTS system for traffic going out of the local area or net jurisdiction.

Net Stations: Traffic for net stations is listed as: (call sign) (qty [prec]). Traffic for an amateur in a given city/town may be listed as (dest) (qty [prec]) FOR (call sign). This can help with finding outlets.

Group Of Net Stations: Traffic for a group of net stations, such as served agency liaisons in various jurisdictions, types of liaisons, etc., may be listed as (station type) (qty [prec]), etc. Example: TRAFFIC ALL EOCS TWO; QTC ALL EOCS 2.

On Section and Local Nets the destination may be listed for outlet locations in the Section or Local Net covered area, stations on the net, other Nets, or Through (see below). Stations

checking into Section or Local nets should prepare and keep handy a list of toll free telephone exchanges that can be called, a zip code directory, and maps of the area. Club directories are useful. Access to an internet data base for verifying names, addresses, zips and phone numbers for message addressees, and city/town/zip map data bases, can be useful, particularly if searches by category can be made. Thus a station can volunteer to take listed traffic with confidence.

The out-of-jurisdiction traffic destination is listed as the name of the net represented by a liaison station for outbound traffic. This is usually a Region net or Local Net when you are in a Section net; an Area Net or Section Net when in a Region net; a Region or other Area Net when on an Area Net; or the name of a special liaison net connection or digital system target. Consult with the NCS regarding the proper target destination if you are not familiar with the net’s liaison arrangements or routing.

“Through,” or “Thru” on CW, may be used to refer to the name of the next higher net on Local, Section, or Region Nets, particularly if you do not know that net name.. “TRAFFIC THROUGH TWO,” or QTC THRU 2, would be routed to the liaison to the next higher net.

Traffic on Area and Region Nets is mostly listed for the liaisons carrying traffic to other nets. The (dest) is therefor the target net (net name). These net/liaison names are usually letter groups, or mixed number/letter groups, as in “2RN,” “EPA,” “EAN,” CAN, ARN, etc.

On Area nets the sequence of liaison destination listing is specified in the net format; as in (for Eastern Area Net): 1RN, 2RN, 3RN, 4RN, 8RN, ECN, ARN, CAN, PAN, (other); and traffic would be listed: 1RN 3.. 2RN 6.. CAN 5... , etc., omitting those for which no traffic is held. Similar orders are used on CAN and PAN. On VOICE these Regions may be voiced as “FIRST REGION,” “SECOND REGION,” and so forth. Some operators may choose to say “ONE R N,” “TWO R N,” etc. Introducers and phonetics are seldom used.

Note To Liaisons: When carrying traffic to Region Nets where message addresses are for parts of states in which there is more than one Section, it may be difficult to know which Section liaison should receive it. Often such Sections will have a list of zip codes available for their parts of the state. Obtaining that information is very useful to enable listing traffic for the correct Section rep without having to ask for routing during the net.

(qty [prec]), Quantity The number of messages for the destination of a given precedence. Books are counted 1 for each separate message contained therein.

[prec], Precedence for the given quantity (not given for Routine traffic). Messages of different precedence are listed sepa-

rately, as in: PODUNK 2 PRIORITY.. PODUNK 3 WELFARE.. PODUNK 4, the last 4 being Routine. On CW: PODUNK 2 P.. PODUNK 3 W.. PODUNK 4. A book with different precedences on the various messages may still be listed accordingly in the Book list — (dest) (qty [prec]) for each.

Note that the [prec] syntax is omitted throughout this manual. The precedence should be appended to the (qty) with a space where necessary. Remember to append the precedence after the (qty) if the traffic is not Routine, and special handling is practical or required. Priority (P) and Welfare (W) messages for each destination are listed separately when required so that the NCS may note and handle them accordingly.

Priority or Welfare traffic is seldom listed separately on Area/Region Nets unless the holding station sees some compelling time dependence requiring special handling. The liaisons normally can not move the traffic until the next scheduled Region or Section net. In those cases where a time urgency is noted, special handling should be arranged by the NCS and stations involved.

EMERGENCIAS should be declared to the net rather than listed as traffic to be processed. The net operations should immediately be devoted to handling the Emergency traffic by any means available.

(Information): Tel., Zip, County, For (call sign), etc.: These optional information notations following (qty [prec]) are often used on Section or Local nets to help indicate to possible outlets if the addressee is within their range. This helps the NCS and listening stations. On Area/Region Nets such information is not required. All traffic on those nets is directed to liaisons.

Book Of (qty): Books are listed as the destination/quantity of individual messages contained therein. For a book that can be

handled by one station there is no need to advise the NCS that the messages are booked. Simply list the individual messages and quantities by precedence.

List books **last** in the formal traffic list to prevent ambiguity in the list, otherwise a separator must be added to continue after the Book List with any additional single destination listings.

A book with different precedences on the various messages may still be listed accordingly in the Book list — (dest) (qty [prec]) for each.

On Area and Region Nets all book traffic must be re-booked by the sender for each liaison outlet available on the net. In other words, a book of 7, 3 for 2RN and 4 for 3RN, must be listed as “2RN 3.. 3RN 4” for the normal separate dispatching. Books are seldom sent to multiple stations simultaneously on these nets, and are not usually listed as such. It is permitted, however, and may be listed as in “BOOK OF TEN 2RN 6.. 3RN 4” on EAN, or “BOOK OF 12 EPA 8.. WPA 4” on 3RN. The NCS may elect to dispatch multiple liaisons, as also done below.

On Local/Section Nets if the booked messages can be received by multiple separate stations, it is helpful to advise the NCS of this so that all the receiving stations may be dispatched together. This can be an economy for these nets. In all cases the individual destinations and quantities are separately listed. Those to be received by separate stations may be grouped together and introduced as a book to help the NCS; as in “BOOK OF 5 DC 1.. LAUREL 2.. BOWIE 2.” The fixed parts of the book will be sent once to all stations thus saving valuable time (if the NCS can schedule dispatching the receiving stations together without incurring other more serious delays).

Listing Examples:

Voice:

W3XX TRAFFIC WPA TWO.. EAN FIFE.. OVER; or
 [W3XX TRAFFIC WESTERN PENNSYLVANIA TWO.. EASTERN AREA FIFE OVER]
 W3XX TRAFFIC LAUREL ONE PHONE 301 555 OVER;
 W3XX TRAFFIC LAUREL ONE.. WHISKEY THREE ROMEO X-RAY ONE OVER;
 W3XX TRAFFIC LAUREL ONE FOR WHISKEY THREE X-RAY ALPHA OVER;
 W3XX TRAFFIC LAUREL ONE PRIORITY.. LAUREL TWO OVER.
 W3XX TRAFFIC BOOK OF 5 LAUREL TWO.. PODUNK TWO.. W3RX ONE OVER.

CW:

W3XX QTC WPA 2 EAN 5 <AR>;
 W3XX QTC LAUREL 1 TEL 301 555 <AR>;
 W3XX QTC LAUREL 1.. W3RX 1 <AR>;
 W3XX QTC LAUREL 1 FOR W3XA <AR>.
 W3XX QTC LAUREL 1 P.. LAUREL TWO <AR>
 W3XX QTC BOOK OF 5 LAUREL 2.. PODUNK 2.. W3RX 1 <AR>.

4.6.4 Listing Formal Messages For All Stations (QNC)

	1	2	3	4	5	6	7	
CALL	JOBS	STATUS	FORMAL TFC	QNC'S	WDS NET	WDS STN	[REQ]	OVER, <AR>

Such traffic is not usually handled on Area or Region nets. This is a formal radiogram to be sent, not informal words. List in the traffic list after other formal traffic as:

Voice: ... MESSAGE FOR ALL STATIONS (qty [prec]). (Q-Signals are not used operationally on voice, and, although QNC might be used in that fashion here, saying it with words is consistent.)

CW: ... QNC (qty [prec])

4.6.5 Listing Informal Words For The Net (Announcements)

	1	2	3	4	5	6	7	
CALL	JOBS	STATUS	FORMAL TFC	QNC'S	WDS NET	WDS STN	[REQ]	OVER, <AR>

Such traffic is not usually handled on Area or Region nets. This is distinct from and **not** formal traffic for the net stations. List informal words and announcements after formal traffic as:

Voice: ... WORDS FOR THE NET; or [ANNOUNCEMENT FOR THE NET]

CW: ... WDS FOR NET; (This is sometimes listed as a QNC in error, forcing the NCS to make note of the informality when sent and not count the words as formal traffic passed.)

4.6.6 Listing Words With Stations

	1	2	3	4	5	6	7	
CALL	JOBS	STATUS	FORMAL TFC	QNC'S	WDS NET	WDS STN	[REQ]	OVER, <AR>

Such traffic may be listed on nets at any level.

Words are listed last in the traffic list to avoid conflict with any subsequent formal message for a call sign and the resultant need for a separator.

Words may be requested with a station or stations on the net listed by call sign, liaison name, or title. The group [WITH] is sometimes used following “WORDS,” but is not required. Listing a request to have informal words:

Voice:

- ... WORDS (call sign); or
- ... WORDS (call sign) WORDS [WITH] (call sign)... ;
- ... WORDS (call sign) (call sign)... , etc., for multiple listings;
- ... WORDS (title, NCS, liaison, name, etc.); or even
- ... [WORDS YOU] for the NCS, in the ultimate shorthand.

CW:

- ... WDS (call sign); or WDS (call sign) WDS (call sign)...; or
- ... WDS (call sign) (call sign)...], for multiple listings;

... WDS (NCS); or even [WDS U] for the NCS in shorthand.

Note: The use of WORDS (call sign), or WDS (call sign), may be repeated for each individual station desired, but may also be listed as shown for multiple listings.

Together: Multiple call signs following a single “WORDS” request may or may not be interpreted as a request to talk with all of the stations together at the same time. Although not widely used, it is suggested that a desire to talk to a number of stations together on or off net be listed as:

Voice: ... WORDS (call sign) (call sign).. TOGETHER;

CW: ... WDS (call sign) (call sign).. TOGETHER;

Otherwise a sharp NCS will have to ask. Without the “TOGETHER” the default assumption for multiple listings is the request to talk to each separately.

4.6.7 Adding Requests, Comments

	1	2	3	4	5	6	7	
CALL	JOBS	STATUS	FORMAL TFC	QNC'S	WDS NET	WDS STN	[REQ]	OVER, <AR>

[(requests)] are optional additional requests or information to be passed to the NCS and may be included after either “No Traffic” (QRU) , “With Traffic” (two step voice), or the full traffic list. Added requests are therefor not considered or treated as “traffic.”

When present, requests/statements are followed by “Over” or <AR> since they are of uncertain length.

Although added requests in the two step “With Traffic” case can be withheld for the full listing check in sequence, the added request option is shown in this case for those stations checking in “With Traffic” and wishing to volunteer for an assignment, to take traffic, or simply indicate that they have a

“Request” or “Comment,” etc. When recognized to check in, such stations may present their full list of business, including a fully expanded list of requests or statements.

Requests/statements may be listed on nets at any level. They are not listed as “traffic.” If the NCS is calling for stations with additional business for the net, a station with only requests or statements may ask to be recognized and then list them informally without giving a “status.”

In either case the NCS often has to record such requests or comments to service them. Remember to transmit them at copy speed unless they are of an immediate operational nature, such as volunteering to take specific traffic or take a specific job.

Requests, Query, Info By Stations With No Traffic, Etc.

Such additional comments may be included even if you check in with “No Traffic.” In this case, limit the size of requests so as not to slow down the check in process for several stations attempting at the same time. For long requests it is better to indicate that you have a “Request” and let the NCS ask you to make it, as in:

... W3XYZ NO TRAFFIC [REQUEST] OVER; or [QUERY]; or [INFO], etc.

The NCS will ask you to make your request, query, or statement, etc..

Requests, Query, Info Following The Traffic List:

Following the traffic list, words may be added to make a specific request of the NCS regarding a station’s net business.

Such items may include brief requests for being excused from the net promptly, explaining that you are substituting for another station, or volunteering to accept traffic previously listed on the net, other requests, queries, comments, etc. Keep them brief.

Avoid adding comments to the traffic list unless they are essential to your business. Requesting expeditious release from the net, offering to accept specific traffic , etc., are certainly acceptable additions at the end of the list. Comments of a more social nature or not related to net business at hand should be avoided or listed as a request to have words with the NCS or net.

If the request or info is essential to the operation of the net, so list.

4.6.8 Examples Of Traffic Lists And Requests

ID	TFC STATUS		— TRAFFIC LISTING —				REQ	END MARK	
	1	2	3	4	5	6			7
CALL	JOBS	TRAFFIC, QTC	FORMAL TFC	QNC'S	WDS NET	WDS STN		OVER, <AR>	
CALL	JOBS	TRAFFIC, QTC	FORMAL TFC	QNC'S	WDS NET	WDS STN	[REQ]	OVER, <AR>	
CALL	JOBS	WITH TRAFFIC (VOICE ONLY, TWO STEP CHECK-IN)							
CALL	JOBS	WITH TRAFFIC (VOICE ONLY, TWO STEP CHECK-IN)						[REQ]	OVER, <AR>
CALL	JOBS	NO TRAFFIC, QRU							
CALL	JOBS	NO TRAFFIC, QRU						[REQ]	OVER, <AR>

There are many permutations. The no-traffic cases are shown here to demonstrate the requests addition when used. A few examples follow:

VOICE	(use proper voicing rules where needed)
1) W3XYZ	NO TRAFFIC (“over” not required)
2) W3XYZ	NO TRAFFIC REQUEST TO BE EXCUSED OVER
3) W3XYZ	NO TRAFFIC REQUEST, or ... QUERY, or ... INFO, OVER
4) W3XYZ	NO TRAFFIC CAN TAKE LAUREL OVER
5) W3XYZ	TRAFFIC PODUNK 1 PRIORITY.. 3RN 3.. WORDS WITH W3ABC OVER
6) W3XYZ	TRAFFIC 3RN 3.. BOOK OF 5 PODUNK 2.. LAUREL 2.. BTN 1 OVER
7) W3XYZ	TRAFFIC PODUNK 2 PHONE 410 555.. WJ3K 1.. 3RN 3.. ALL STATIONS 1.. WORDS FOR THE NET.. WORDS W3ABC.. CAN TAKE LAUREL.. NEED TO BE OUT BY SEVEN THIRTY PLEASE OVER
8) W3XYZ	THIRD REGION TRANSMIT.. TRAFFIC FIRST REGION 2.. SECOND REGION 4.. EIGHTH REGION 3.. W2FR 1 OVER

(Introducers and phonetics for net names are usually omitted. Spelling town names is useful, as are phonetics for call signs unfamiliar to the net.)

CW:	
1) W3XYZ	QRU (no <AR> or K required)
2) W3XYZ	QRU QNX PSE <AR>
3) W3XYZ	QRU REQUEST, or QRU QUERY, or QRU INFO <AR>, etc.
4) W3XYZ	QRU QSP LAUREL <AR>
5) W3XYZ	QTC PODUNK 1 P.. 3RN 3.. WDS W3ABC <AR>
6) W3XYZ	QTC 3RN 3.. BOOK OF 5 PODUNK 2.. LAUREL 2.. BTN 1 <AR>
7) W3XYZ	QTC PODUNK 2 TEL 410 555.. WJ3K 1.. 3RN 3.. QNC 1.. WDS W3ABC.. QSP LAUREL.. QNX BY 730 PSE <AR>
8) W3XYZ	3RN TX.. QTC 1RN 2.. 2RN 4.. 8RN 3.. W2FR 1 <AR>

Notes:

1. The prosign <AA> may optionally be used to separate items for clarity on CW if necessary (as in 6), but is seldom used when listing liaison traffic on the higher nets.
2. Pausing between items aids in clarity when transmitting the list. Send at copy speed.
3. Listing BOOKS (6) is usually only done at Local/Section level and is shown above (BOOK OF 5) to aid the NCS in choosing to dispatch the PODUNK, LAUREL, and BTN together.

4. Note the use of the call sign, assignments, and the word “TRAFFIC” on voice (QTC on CW) to begin the traffic list. It is used even if the list contains only informal business such as “WORDS.” This is the formal way to introduce the traffic list. “TRAFFIC” or QTC is not used to introduce requests/statements alone.
5. Note in example 5 the PODUNK 1 P priority message.
6. Note in example 8 “3RN TX” is the station’s “assignment,” the only example with same.

4.7 Opening The Net, Net Preamble

The NCS calls the net promptly at the scheduled time. If the assigned station is not present by one minute after the scheduled time, the alternate net control (if called for in the format) or any other qualified net station should begin the net. If the assigned station shows up thereafter it is the option of the operating NCS to relinquish net control. This rapidly becomes impractical once stations are checked in and business listed, etc.

A “directed” net is one in which all communications are directed by a net control.

Net formats vary widely. Consult the Net Manager or other net control stations for your traffic net. Typically:

Voice:

NCS: CALLING THE (net name) NET.. THIS IS (call sign) NET CONTROL [NCS may insert name and location.] THIS IS A DIRECTED NET

[NCS transmits the Net PREAMBLE, if specified in the net format].. [STATIONS WITH EMERGENCY TRAFFIC PLEASE?, if specified in the net format. If no response continue, else handle immediately.]

NCS: THIS IS (call sign) (net name) [ALTERNATE NET CONTROL PLEASE?, if in format]

(ANC checks in with full call and traffic list.)

The NCS will then proceed with calling LIAISONS depending upon the net format or style, or may begin with an Open call by asking for “stations with or without traffic.”

CW:

(The CQ is used and the net name is often repeated 3 times on the first opening net call):

NCS: CQ (net name) (net name) (net name) DE (call sign) QND [PSE] QNZ (net name)...

The NCS will then proceed with calling liaisons depending upon the net format or style. This is often begun with QNA followed by a series of calls and check-ins for net liaisons, else the Open call (net name) QNI [or (net name) K] is made. The CQ is usually dropped on subsequent open net calls.

Notes:

1. Area and Region Nets may call specific liaisons immediately, or may make an Open net call. Area and Region Nets expect mostly liaison stations to check in. The TX liaisons on Area Nets are usually expected to check in first to get the traffic listed, and the RX reps are often called by the NCS as soon as they are needed.
2. Section nets will usually call specific liaisons before going to Open calls. Some Local/Section nets have numerous Specific net calls to help sort out check-in categories, and the net may call for stations wishing to leave early, and calls for comments from remaining stations during the course of the net. The NCS interweaves the dispatching of traffic with the more social activities. CW nets and Area/Region Nets seldom have alternate net controls (ANC). Any capable station may assume net control if

there is a problem. These nets seldom have social commentary, using instead the listing of “words” between stations as needed.

3. All communications are at the direction of the NCS.
4. See also *Open Net Calls* in a later section.

4.8 Net Calls, Checking Stations Into The Net

Net Calls are used to control the process of checking in stations in the opening phase of the net operation and throughout the net as needs arise. The NCS checks liaison and other stations into the net as a result of Open calls for any station, or Specific calls for liaisons, specific stations, categories, relay stations, or to solicit information or volunteers.

Open Calls anticipate multiple responders. Specific Calls for a specific station or single liaison anticipate a single responder. Other Specific Calls anticipate any responder in the category called. Separate sections deal with single and multiple responder cases since the NCS strategy for handling these situations and the station responses vary accordingly.

In the following sections the call types are separated into Specific Calls (single responder), Open Calls (any station), and Specific Calls (limited categories), to show the different methods.

4.8.1 Specific Calls, Job, Liaison, Call Sign, 1 Responder

This is the workhorse **Single Responder** net call for a specific station or liaison.

Other returning stations or stations already checked into the net usually do not respond after such calls since the calls are considered “closed to others.” This is particularly so during a net opening sequence of liaison calls (QNA series). Returning or net stations may use tail ending after a pause at the discretion of the NCS.

If a station assigned a specific job is not present the NCS should solicit a volunteer to perform the job. This is often done right after finding no response to a call for an assigned station, but may be delayed for a reasonable grace period. See *Call Volunteers For Missing Liaisons*.

If the single station called is a traffic addressee or an anticipated outlet for traffic, and does not check in, the NCS should repeat the call during the net, or ask for an alternate relay to move the traffic at some point. See the section *Assign, Call Net Unassigned Traffic List*.

Commands shown here are for checking in stations for specific jobs, specific liaisons, specific outlets, or specific returning stations. The syntax for questions or commands to specific stations in other transactions is shown elsewhere, as in calls for relays, holding traffic, dispatching, excusing, etc.

Stations check in with No Traffic or with their full Traffic List, listing all business at this opportunity if checking in for the first time. This is the **Single Responder** case.

The Specific Job, Liaison, Station, Single Responder Call:

Voice: At ID time: The NCS begins the call:

... [THIS IS] (call sign) (net name)...; or

... (net name) [THIS IS] (call sign)...; etc.

NCS: (specific net job) [PLEASE?]; for a job, as in ANC, or

NCS: (net name) [REP PLEASE?]; for a liaison, or

NCS: (call sign) [PLEASE?]; for a specific station.

Response: Specific station.

STN: (call sign) (assignments) NO TRAFFIC [(req) OVER];
or

(call sign) (assignments) TRAFFIC (traffic list) [(req)]
OVER

Acknowledgment by NCS:

NCS: (call sign) STAND BY; or [(call sign) WAIT]; or
[(call sign) THANK YOU PLEASE STAND BY], etc.,
or the NCS may call an outlet and/or dispatch the sta-
tion for traffic.

Calling A Specific Returning Station:

NCS: (call sign)?; or [(suffix)?]; query makes call clear;

STN: (suffix) BACK; or reports no joy if applicable.

NCS: repeats the (suffix) to acknowledge, or dispatches sta-
tion.

Voice Examples:

(Mixed group abbreviations for net names are shown for sim-
plicity. Saying the net name in words, as in “First region
transmit” is consistent with voicing rules. Saying the mixed
group without introduction and phonetics is also a customary
shortcut used.)

NCS: 1RN TRANSMIT?, or [FIRST REGION TRANSMIT?]

STN: W1TX 1RN TRANSMIT.. NO TRAFFIC

NCS: W1TX STAND BY.. 2RN TRANSMIT?

STN: W2TX 2RN TRANSMIT.. TRAFFIC 3RN 3.. W2FR 1
OVER

To acknowledge and go on with the series:

NCS: W2TX STAND BY...;

Or to acknowledge by implication, calling an outlet and dis-
patching using the Immediate Dispatch or Split Dispatch
(These techniques will be presented again in the Dispatch sec-
tions.)

Voice:

<p>* CALL LIAISON, IMMEDIATE DISPATCH:</p> <p>NCS: 3RN RECEIVE? STN: W3RX 3RN RECEIVE NO TRAFFIC NCS: W3RX W2TX UP 5 3RN (BOTH STATIONS ARE ACKNOWLEDGED BY IMPLICA- TION.)</p>	<p>* SPLIT DISPATCH:</p> <p>NCS: W3RX... STN: HERE (implied RX QRU) NCS: ... W2TX UP 5 3RN (COMPLETING THE SPLIT DISPATCH. IF W3RX CHECKS IN WITH TRAFFIC, THE TWO STATION DIS- PATCH IS USED.)</p>
---	---

(If NCS knows the RX rep is present, but not yet checked in,
the dispatch may be immediate.)

STN: W2TX 2RN TRANSMIT TRAFFIC 3RN 3 W2FR 1
OVER (as above, repeated);

NCS: W3RX W2TX UP 5 3RN (knowing that W3RX was
present)

Stations acknowledge and depart:

W3RX: RX GOING;

W2TX: TX GOING; both stations depart for stack frequency.

NCS: W2FR?; calls next outlet;

W2FR: W2FR NO TRAFFIC

NCS: W2FR UP 5 W2TX AFTER W3RX FR; (Immediate
dispatch.)

W2FR: FR GOING

Calling a returning station:

NCS: W3XX?; or XX?

STN: XX BACK; (returning station, job completed);

NCS: XX; or immediately dispatches W3XX for another job.

The Specific Job, Liaison, Station, Single Responder Call:

CW: At ID time: The NCS begins the call:

... [DE] (call sign) (net name)...; or

... (net name) [DE] (call sign)...

QNA (“Answer in prearranged order.”) is optional. When used
it is customary to use QNA once to call a series of specific
liaisons or stations by call sign at the opening of the net. If
these calls are made singly at another time, use the QNA for
each one, or add a query to the end of the call sign for each
call. The query is optional for a (net name) liaison, but rec-
ommended for a (job) or (call sign) call to avoid ambiguity
with other syntax.

1. In A QNA Sequence, checking in the station after each
specific call, then continuing the series:

NCS: QNA ANC; for a job; (check in station with job); or

... (net name); for a liaison; (check in liaison); or

... (call sign); for specific station; (check in station).

“K” is not needed since each call is part of the QNA series.

2. Or, as INDIVIDUAL Calls at any other time not in QNA
series:

NCS: ANC?; or [QNA ANC];

... (net name); or [(net name)?]; or [QNA (net name)]

... (call sign)?; or [QNA (call sign)]

The query is not required in the QNA case. “K” is not needed.

Response, CW, Specific station:

STN: (call sign) (assignments) QRU [(req) <AR>]; or
 ... (call sign) (assignments) QTC (traffic list) [(req)] <AR>.

Acknowledgment by NCS:

NCS: (call sign) <AS>; or [(call sign) GE TU PSE <AS>];
 ... or NCS may call an outlet and/or dispatch the station for traffic.

Call For Returning Stations, CW

NCS: (call sign)?; or [(suffix)?] ; query makes the call clear;
 STN: (suffix); or reports no joy if applicable.
 NCS: repeats (suffix) to acknowledge, or dispatches station.

CW:

CW Examples:

NCS: QNA 1RN TX;
 STN: W1TX 1RN TX QRU
 NCS: W1TX <AS> 2RN TX; (<AS> ends W1TX QNI, 2RN TX is the next call.)
 STN: W2TX 2RN TX QTC 3RN 3 FR 1 <AR>
 NCS: W2TX <AS>; to acknowledge and go on with QNA series, or
 To acknowledge by implication by calling outlet and dispatching immediately.

<p>* CALL LIAISON, IMMEDIATE DISPATCH: NCS: 3RN RX STN: W3RX 3RN RX QRU NCS: W3RX W2TX UP 5 3RN (BOTH STATIONS ARE ACKNOWLEDGED BY IMPLICATION.)</p>	<p>* SPLIT DISPATCH: NCS: W3RX... STN: T (implied RX QRU) NCS: ... W2TX UP 5 3RN (COMPLETING THE SPLIT DISPATCH. IF W3RX CHECKS IN WITH TRAFFIC, THE TWO STATION DISPATCH IS USED.)</p>
---	--

(If NCS knows the RX rep is present, the dispatch may be immediate.)

STN: W2TX 2RN TX QTC 3RN 3 FR 1 <AR>, (QNI as above, repeated);
 NCS: W3RX W2TX UP 5 3RN (knowing that W3RX was present)

Stations acknowledge and depart:

W3RX: T;
 W2TX: T; both stations depart for the stack frequency.
 NCS: W2FR; (no “?” since in QNA series, otherwise W2FR?)
 W2FR: W2FR QRU
 NCS: W2FR QNQ UP 5 W2TX FR; or [W2FR QNQ UP 5 W2TX U 1]
 W2FR: T; immediately dispatched up 5.

And a call later, not in a QNA sequence, “?” added:

NCS: PAN?, or [QNA PAN]; for the PAN rep
 NCS: W2MTA?, or [QNA W2MTA]; for W2MTA.

Notes: The No Traffic, or QRU, statement is self completing unless a request is placed thereafter.

On CW the query (?) is recommended following a specific call sign request in order to avoid conflict with the syntax of a normal dispatch sequence. It is sometimes omitted, but this practice can encourage stations to respond during a dispatch which is considered poor practice. Responding with a “dit” during a dispatch sequence (the “are you awake” response on slow training nets.) is considered an interruption by the NCS station and should be dispensed with. The split dispatch is the exception used by experienced NCS stations and participants.

The NCS acknowledges a new station by call sign, or may optionally dispatch it to receive or send traffic. The Stand By,

or <AS> concludes the acknowledgment transaction, and is self completing. The acknowledgment by the dispatched stations ends that type transaction.

Returning stations, called specifically to expedite net business, are acknowledged by suffix, or immediately dispatched. In both cases the syntax is self completing.

See *Dispatching, 2 Stns To Stack, Full, Immediate, Split*, for more information on the Immediate and Split methods and alternatives.

On Area/Region Nets is it not uncommon for the NCS to apparently ignore the station’s transmission altogether, call for a rep for the listed traffic if not already checked in, and/or immediately dispatch the two stations off frequency to begin handling traffic. This dispenses with the need to acknowledge the station which understands from the dispatch that it is checked in with traffic listed. This is a subtle, rapid, efficient way of doing business often used on such nets.

The NCS may use these Specific calls throughout the net, to check in a specific station by call sign for whom traffic is listed, or, after having traffic listed for a particular net, to check in the specific liaison immediately for a dispatch.

Calling a net station with (call sign)? or (suffix)? to ask a question, expecting the station to first acknowledge, is of the same form.

NCS notifies the station “Net Has Traffic For You,” or QNU, only if there is a need to notify the station of pending business or to explain why the station is asked to wait.

Auxiliary liaisons from the called net will check in during Open calls, or a tail end opportunity, since the “(net name) call” (for a single liaison net) is for one expected assigned primary responder.

NCS may hold a TX rep who is QRU until the RX rep shows up in case help is needed to that Region Net. Section/Local

Nets may also hold their outbound liaisons for late listed traffic.

On Area Nets the RX and TX stations check in accordingly. A station performing both tasks should check in indicating “Both” in the assignments block, and reply whichever assignment is called first.

Stations should not interrupt transactions.

Greetings: The NCS and stations usually utter greetings, etc., before the command syntax so that commands remain self completing, as in:

Voice:

NCS: W1TX GOOD EVENING BILL.. STAND BY;

(STAND BY is a line terminating command ending the transaction, no reply expected.)

CW:

NCS: W1TX GE BL <AS>

NCS: 3RN RX?

STN: GE JIM W3RX 3RN RX QRU (QRU is the line ender.)

NCS: TU GE W3RX W2TX UP 5 3RN; immediate dispatching.

4.8.2 Open Net Calls,QNI (Any Station)

The Open Call is made anticipating multiple responders in any category. New stations, returning stations, or stations already in the net may gain the attention of the NCS to be heard.

The NCS makes, and periodically repeats, calls for additional stations to check in (the Open call), or calls for Specific types of stations to check in. These calls are repeated during the net “idle” time while other stations are busy handling traffic or other business. Such calls should be made frequently so as to avoid making stations wait for long periods to check into or return to the net. Having to wait a long time to check in is a frustrating experience.

Many net controls will wisely make Open calls, or calls for returning stations, between dispatches, or leave obvious pauses for tail ending. If the NCS fails to make frequent Open calls, stations are forced to tail end to be recognized, but only following completed net transactions.

The NCS may use a pause between transactions as a subtle way to leave the door open for a tail end call from a returning station or net station.

Dealing with multiple stations checking in following an Open net call may be avoided on Area/Region Nets. Stations are almost always assigned liaisons known to the NCS prior to calls. Those liaisons may be called in Specific calls. On the other hand, the NCS always has the option of taking new stations one at a time in the Open call, dealing with returning stations and net stations with additional business in the mix by immediately recognizing those.

The returning station transmission and its acknowledgment are usually very short if there are no problems to be reported. The NCS may handle a series of such returns, each returning station transmitting as soon as the previous one is acknowledged (tail ending the previous transaction in other words.).

If specific liaisons or stations not yet checked in are needed for a dispatch, the NCS uses the Specific Call for Single Responders to limit the call. Likewise with needed returning stations (using the query).

On Area Nets RX and TX stations check in accordingly. When a station is performing both functions, it checks in with “BOTH” in the assignments block. Using the net name alone, implying both, can be ambiguous thus forcing the NCS to check.

Strategies to deal with multiple responders are shown in the following parts. Stations on Section/Local voice nets generally make a limited content call to gain the acknowledgment of the NCS before transmitting full traffic lists or long requests. This two step process is not required for the single responder net calls, and is therefor seldom heard on Area/Region Nets.

One of the alternative methods presented is often selected based upon the net format or customs of a particular net or NCS. A few moments of listening to Open calls on an unfamiliar net will reveal the method of choice for responders.

- **Tip:** On some Local/Section VOICE nets, and particularly on VHF/UHF repeaters, “doubling” during replies to Open calls leads to numerous repeats by stations. An optional reply method, introduced into a Section net by W3BOB, paralleling a technique used in other services, can be helpful. Stations begin their transmission by saying first “THIS IS,” then release the PTT switch briefly to see if another station is transmitting, then continue if clear. It is not customary (yet) in the amateur service, but it does work (based on year’s of testing). The “THIS IS” introduction to the call also allows time for repeater multiple receive site systems to become keyed up and voted, thus preventing the truncation of the beginning or call sign prefix.

Open Net Call Cases:

Several options are used to respond to the Open Net Call on Voice:

Case 1. Full call sign and assignments followed by NO TRAFFIC, or WITH TRAFFIC; numerous stations responding in a series of spaced calls, with NCS taking a list and working it when the pile-up subsides, or the NCS interrupts to acknowledge;

Case 2. Full call sign and assignments followed by NO TRAFFIC, or WITH TRAFFIC, single calls by all stations in one time window, with NCS taking one at a time;

Case 3. Single letter (phonetically) by all stations in one time window, with NCS taking one at a time; a rare innovation on voice, but customary on CW.

On CW a single letter sent, and acknowledged by the NCS before checking in, is the customary practice. This resolves the CW responder choices to one case only. See Case 3 for the CW Open Call.

Note that a method using station suffixes is not included on Voice since the sending of suffixes by new stations would be a conflict with the syntax used by returning and net stations

wishing to be recognized, thus forcing the NCS to check the net station list.

On both modes the NCS may stop the process and assign, dispatch, excuse, or make Specific calls at any time. For new or returning stations the NCS may call for an outlet and/or dispatch stations using the full dispatch, immediate dispatch, or a split dispatch as shown in the *Specific Call* and *Dispatch 2 Stns To A Stack* sections.

Stations should not interrupt transactions.

The (net name) used here is this example net's name, of course.

The Open Net Call, an open call for returning, new, or net stations.

Voice:

At ID time the NCS begins the call:

... (net name) [THIS IS] (call sign)... , or
... [THIS IS] (call sign) (net name)... , etc.

At other times the NCS omits the ID and makes the call:

NCS: (net name); or

... [(net name) STATIONS WITH OR WITHOUT TRAFFIC?]; or
... [(net name) ADDITIONAL STATIONS WITH OR WITHOUT TRAFFIC?];

The call is sometimes ended with PLEASE, or Over, but these words are not required.

1. Case 1 Responses, No Traffic or With Traffic, series of calls (Two Step):

New Stations Not Already Checked In

STNS: (call sign) (assignments) NO TRAFFIC [(req) OVER]

STNS: (call sign) (assignments) WITH TRAFFIC [(req) OVER]

The NCS takes the list, stops the series, checks in stations.

Acknowledging stations with NO TRAFFIC:

NCS: (call sign) STAND BY; or

... [(call sign) PLEASE STAND BY]; or
... [(call sign) (call sign) (call sign)... STAND BY]; or dispatches station(s) for traffic, each in turn.

Acknowledging stations WITH TRAFFIC, each in turn:

NCS: (call sign) LIST; or [(call sign) PLEASE LIST]

STN: (call sign) (assignments) TRAFFIC (traffic list)[(req)] OVER

NCS: (call sign) STAND BY; or dispatches station for traffic.

Returning Stations

STN: (suffix) BACK; or [(call sign) NO JOY], etc., per the section on Returning Stations

NCS: (suffix); or [(suffix) ROGER STAND BY] if problem; or the NCS may dispatch the station for traffic, or call for its contact, relay, or an outlet and dispatch both stations.

Net Stations (on the net) with ADDITIONAL BUSINESS

STN: (suffix); to be recognized by the NCS

NCS: (suffix); to recognize the station

STN: makes its request or statement; per the section on *Additional Business*,

NCS acknowledges, or the NCS may dispatch the station for traffic.

The NCS may then continue the Open call adding:

NCS: ADDITIONAL STATIONS?; or [NEXT?]; or [OTHERS?]; or simply repeats the Open call.

At the end of a dispatch (after the station(s) reply), or after Stand By as an end marker, additional stations may try to check in (tail ending). It is not necessary for stations to wait for a repeat of the Open call, but they should not interrupt transactions:

Notes:

The NCS may ask for a station to repeat its attempt by repeating the call, suffix, or single letter heard, or asking for a relay. The station repeats the original call, sending its full traffic list only after being asked by the NCS or a relay station for the NCS.

The NCS notes if multiple stations are heard and calls for a specific station heard, additional stations, or repeats the Open call until all stations are handled. The pond is fished until empty to avoid making stations wait, even if some business is handled along the way.

Voice Examples, series of calls made:

NCS: MEPN STATIONS WITH OR WITHOUT TRAFFIC? ... (or THIS IS W4TX MEPN.. STATIONS WITH OR WITHOUT TRAFFIC?)

STNS: W1RX NO TRAFFIC.. W2RX NO TRAFFIC W2TX WITH TRAFFIC, etc.

NCS: W1RX W2RX STAND BY.. W2TX PLEASE LIST

TX: W2TX TRAFFIC PODUNK 2.. 3RN 1 OVER

NCS: W2TX STAND BY; or may call outlet and/or dispatch W2TX

NCS: ADDITIONAL STATIONS?

Or, in the same series of attempts or at a later time:

STN: STN BACK; returning station, SUFFIX only, job completed.

NCS: STN; acknowledged... the NCS knows STN was off frequency and a net station with additional business:

STN: XX; station already checked in and standing by;

NCS: XX

STN: W3XX PLEASE ADD TRAFFIC 3RN 1 OVER

NCS: ROGER STAND BY; or dispatches the station for traffic.

Case 2: Responses, No Traffic or With Traffic, one station taken, (Two Step, 1):

STNS: (call sign) (assignments) NO TRAFFIC [(req) OVER], or

STNS: (call sign) (assignments) WITH TRAFFIC [(req) OVER]

All stations make one transmission immediately following the NCS Open call shown above for case 1, then all stand by.

The NCS acknowledges a station heard, asking for the traffic list if required, asks the station to stand by or dispatches the station for traffic as above.

The primary difference in taking one at a time is preventing ongoing interference or duplications, and dealing with problems and listing one at a time. The technique choice is made by the NCS or stipulated in the net format.

Returning Stations and net stations with Additional Business are accepted as in case 1 and in the respective sections. These stations usually pause a few seconds to permit new stations a chance to be heard.

The NCS notes if multiple stations are heard and calls for a specific station heard, additional stations, or repeats the Open call until all stations are handled. Stations may tail end, but not interrupt, transactions.

Examples are as shown for case 1, except calls taken 1 at a time.

Case 3: Responses, single letter only, one station taken. (Similar to CW method.):

Voice:

STNS: (1 letter); phonetically of course

NCS: (1 letter)

STN: (call sign) NO TRAFFIC [(req) OVER]; or ... (call sign)(assignments) TRAFFIC (traffic list)[(req)] OVER

NCS: (call sign) STAND BY; or dispatches station for traffic.

All stations make one transmission immediately following the NCS Open call, then stand by. The primary difference in the method is saved time in the station transmission. This technique parallels the CW method.

Returning Stations and net stations with Additional Business are accepted as above and in the respective sections, the stations using the regular suffix or full call methods.

The NCS notes if multiple stations are heard and calls for an additional letter heard, or repeats the Open call until all stations are handled. Stations may tail end, but not interrupt, transactions.

Voice Examples:

NCS: MEPN STATIONS WITH OR WITHOUT TRAFFIC?

STNS: YANKEE X-RAY BRAVO; all in one time window, NCS picks one;

NCS: X-RAY

STN: W3XX PACKET TRAFFIC 3RN 1 OVER

NCS: W3XX STAND BY; or calls 3RN rep and/or dispatches station.

NCS: BRAVO (goes on to next station heard on the first attempt)

CW: (Case 3 only.)

CW Open Net Call, an open call for returning, new, or net stations.

At ID time the NCS makes the call:

NCS: [CQ] (net name) [DE] (call sign) [QNI or K]; or ... [DE] (call sign) (net name) [QNI, K, or nothing]; At other times NCS omits the ID and makes the call:

NCS: (net name) [K]; or (net name) QNI;

“K” is not required in the QNI case (it is sufficiently self completing). “K” is optional for the call “(net name) [K].” Listen to the NCS to determine the style in use.

Responses, CW

New Stations not already checked in:

STN: (1 letter)

NCS: repeats (1 letter)

STN: (call sign) (assignments) QRU [(req) <AR>]; or ... (call sign) (assignments) QTC (traffic list) [(req)] <AR>.

Returning Stations, per the section on *Returning Stations*;

STN: (suffix); **job completed**

NCS: (suffix); or

STN: [(call sign) NO JOY], etc., **if problem**;

NCS: [(suffix) R <AS>],

The NCS may dispatch the station for traffic, or call for its contact, a relay, or an outlet and dispatch both stations.

Net Stations, per the section on *Additional Business*.

STN: (suffix); to be recognized by the NCS

NCS: (suffix); to recognize the station

STN: makes its request or statement.

NCS: [R] <AS>; or the NCS may dispatch the station for traffic.

More?

The NCS notes if multiple stations are heard and calls for a specific letter heard, or repeats the Open call until all stations are handled. Tail ending without the Open call is customary.

At the end of a dispatch (after the station(s) reply), or after checking in a station and <AS> is sent as an end marker, additional stations may try their single letters (tail ending). It is not necessary for stations to wait for a repeat of the (net name) Open call, but they should not interrupt transactions.

The NCS may stop the process at any time to dispatch, call for liaisons, etc., as needed.

CW Examples (MDD is net name):

NCS: MDD [K], (or [MDD QNI])

STNS: X.. E.. R.. ; single letters by three separate stations

NCS: R

STN: GE W3RX MSN QTC PODUNK 2.. 3RN 1.. W3XX 1 <AR>

NCS: W3RX [GE] <AS>.. X; having heard the X in the first round

STN: W3XX QRU

To acknowledge only:

NCS: W3XX [optional greetings] <AS>

Or NCS may call outlet and/or dispatch W3XX as in:

NCS: W3XX W3RX UP 5 XX; or [W3XX W3RX UP 5 U
1]

W3XX: T;

W3RX: T; stations leave, ending the dispatch transaction;

The NCS might continue with another letter heard, or if the NCS is quiet:

STNS: X.. E.. L.. ; three stations tail end the end of the dispatch or the pause;

NCS: X; and the X station checks in, etc.

Or, in the same series of attempts or at a later time:

STN: RLY; returning station, suffix only, job completed;

NCS: RLY; acknowledged... the NCS knows RLY was off frequency;

STN: TX; station already checked in and standing by;

NCS: TX; the NCS knows this is not a returning station;

STN: W3TX PSE ADD QTC 3RN 1 <AR>

NCS: W3TX <AS>; or [R <AS>]; or may dispatch W3TX immediately;

NCS: MDD [K]; to repeat the Open call, or stations may send a single letter tail ending the <AS>.

Notes:

1. The NO TRAFFIC, or QRU, statements are self completing unless a request is added at the end.
2. See the section on *Dispatch, 2 Stns To Stack, Full, Immediate, Split*, for additional examples of calling for outlets and immediate dispatching.
3. Stations should not interrupt transactions.

4.8.3 Specific Net Call, Limited Categories By Type

This is a Specific Call with multiple responders possible. The NCS might wish to limit an otherwise Open call. Stations in the category check in to this call as in Open net calls above.

Other stations not in the category should wait for the NCS to complete this sequence and then respond in their category or wait for an Open call.

Some nets accept returning stations after a pause, considering the returning station's tail ending call an acceptable interruption to the specific category call.

These limited category calls are sometimes used on Local and Section nets to sort the listing of various types of business. They are seldom used on Area/Region Nets except for calling RETURNING STATIONS to the exclusion of others.

Call Specific Categories.

At ID time NCS begins the call: (net name) (call sign)...

Voice:

NCS: STATIONS WITH EMERGENCY OR PRIORITY TRAFFIC?;

NCS: STATIONS WITH [FORMAL TRAFFIC?], [INFORMAL TRAFFIC?], [ANNOUNCEMENTS?], etc.; or

NCS: STATIONS [(in other specific categories)?];

In very large nets, for example, the NCS may wish to take calls by groups of suffix letters, or by counties, etc., as in:

NCS: STATIONS [...SUFFIXES ALPHA THROUGH MIKE PLEASE?], etc.

Responses:

New Stations, in the category called only, check in as above in the Open call case.

Other Stations waiting to check in, including net stations, should wait for the NCS to make an open call or call in their category, or use pause tail ending.

Returning Stations pause to permit the called category stations to reply, tail ending as permitted..

Specific Call, Returning Stations

NCS: RETURNING STATIONS?; or ... [(net name) THIS IS (call sign) RETURNING STATIONS?]

STN: (suffix) BACK; job completed, or [(call sign) NO JOY], etc.

This call is often made frequently during the net to expedite returning stations back into the net for additional business. (A specific single returning station may also be selectively called. See the later sections on calling liaisons, etc.)

CW: Specific category net calls on CW are seldom required and virtually never heard on Area/Region Nets.

NCS: [(specific categories)?]; or [(specific categories) QNI]

In very large nets, for example, the NCS may wish to take Open calls by groups of alphabetic suffix letters, counties, etc., as in:

NCS: [...SUFFIXES A THRU M QNI], [PODUNK COUNTY?], etc.

Special Option: Stations with formal traffic only:

NCS: [(net name) QTC QNI]; or [(net name) STNS W TFC QNI], has been suggested by WJ3K, MDC Section MDD NM, to call for stations with formal traffic when needed. Such calls are seldom used on CW nets, but could save some time on large nets getting to the listing of traffic ahead of a long series of QRU outlet stations. This is useful in large disaster related nets to expedite traffic, particularly when Section/Local NTS Nets are an integral part of the Section's emergency response plans and communications structure.

Responses

New Stations, in the category called only, check in as above in the Open call case, single letter method.

Other Stations waiting to check in, including net stations, should wait for the NCS to make an open call or call in their category, or use pause tail ending as permitted.

Returning Stations pause to permit the called category stations to reply, then check in, tail ending as permitted.

STN: (suffix); job completed, or [(call sign) NO JOY], etc., if problem;

NCS: (suffix); or (suffix) R <AS>. NCS may dispatch the station for other business.

Specific Call, Returning Stations

No CW Specific Call for returning stations is made. The Open net call is used, or a specific station is called for. Returning stations customarily check back by tail ending at the end of transactions. Net calls or pauses are made frequently so as not to keep stations waiting..

Notes:

1. Stations should not interrupt transactions.
2. During the handling of new checking stations the NCS may hear a returning station, acknowledge it, and then dispatch that station or other business, then resume the Specific CALL.

4.8.4 Call Volunteers For Jobs, Liaisons, Or Auxiliary Help

This is a Specific Call with multiple responders possible.

The NCS may call for a liaison replacement volunteer, or for an Auxiliary liaison station to help carry extra traffic, or for a station to perform a net job called for in the format.

A late arriving liaison may or may not hear this call, and may check in following an Open net call. The NCS should make that station aware of a change or arrange for a job swap.

This is a call open to any volunteer station; returning, new, or already checked in. Responders to this call are assumed to be volunteering.

Specific Call, Volunteers:

At ID time NCS begins call "(call sign) (net name)..."

Voice:

NCS: VOLUNTEER FOR (net name)?; or [NEED (net name)]; liaison;

NCS: [HELP (net name)?]; or [HELP WITH (net name)?]; Auxiliary

NCS: VOLUNTEER FOR (job)?; or [NEED (job)]; as in ANC job.

New Station Response, a station not previously checked into the net, two step:

STN: (call sign)(assignments) NO TRAFFIC [(req) OVER];
or ... (call sign)(assignments) WITH TRAFFIC [(req) OVER]

The NCS picks a responder, confirms the assignment, then lists traffic, if any.

NCS: (call sign) [THANKS FOR] (net name)... ;

... (call sign) [THANKS FOR] (net name) AUXILIARY... ;

... (call sign) [THANKS FOR] (job)... ;

For station with no traffic, NCS adds:

NCS: ... STAND BY; or dispatches station for traffic.

For a station with traffic, NCS adds:

NCS: ... PLEASE LIST

STN: (call sign)(assignments) TRAFFIC (traffic list)[(req)] OVER

NCS: (call sign) STAND BY; or dispatches station for traffic.

The station may indicate in its (assignments) the net name for which it is volunteering, or for which it was assigned and is arriving late.

New stations on Area/Region Nets will sometimes dispense with the two step method and check in with full traffic list when volunteering.

The NCS may also check in and thank the other volunteers not accepted for the task.

Net Station Response: A volunteering net station or returning station (2nd syntax) will be recognized and the NCS will confirm it is assigned the job:

STN: (suffix); or [(suffix) WILL DO [(net name)] or [job]

NCS: (call sign) [THANKS FOR] (net name)...

... (call sign) [THANKS FOR] (net name) AUXILIARY...

.. (call sign) [THANKS FOR] (job)...

The NCS may add:

NCS: ... STAND BY; or dispatch the station for traffic.

The NCS may shorten the acknowledgment of task to simply a "(call sign) THANK YOU," or may simply assign the task to the station on the net records, acknowledge with an optional "ROGER," and immediately dispatch the station for traffic, the assignment of task being implied. The NCS may also thank the other volunteers not accepted for the task.

CW: Specific Call, Volunteers

NCS: QNC NEED (net name); or [QNC VOL (net name)?]; for liaison sub;

NCS: QNC HELP (net name)?; for Auxiliary liaison;

NCS: QNC VOL (job)?; or [QNC NEED VOL (job)]; as in ANC job.

The QNC attention getter is optionally omitted.

New Station Response, a station not previously checked into the net:

STN: (1 letter)

NCS: repeats (1 letter)

STN: (call sign) (assignments)....; or

... (call sign) (assignments) WL DO [(net name)] or [(job)]...

... adding either: ... QRU; or ... QTC (traffic list)[(req)] <AR>

The station may indicate in its (assignments) the net name for which it is volunteering, or for which it was assigned and is arriving late, thus dispensing with the "WL DO."

The volunteer statement may also be appended after the traffic status or list, followed by <AR>.

The NCS confirms assignment of task:

NCS: (call sign) [TU] (net name) <AS>;

... (call sign) [TU] (net name) AUX <AS>;

... (call sign) [TU] (job) <AS>; or dispatches station for traffic.

The NCS may also check in and thank the other volunteers not accepted for the task as in the Open call.

Net Station Response, a volunteering net station:

STN: (suffix); or [(suffix) WL DO [(net name)] or [(job)]

Returning Station:

STN: [(suffix) WL DO [(net name)] or [(job)]

The NCS confirms assignment of task:

NCS: (call sign) [TU] (net name) <AS>;

... (call sign) [TU] (net name) AUX <AS>;

... (call sign) [TU] (job) <AS>;

Or NCS dispatches station for traffic.

The NCS may shorten the acknowledgment of task to simply a “(call sign) TU <AS>,” or may simply assign the task to the station on the net records, acknowledge with an optional “R,” and immediately dispatch the station for traffic, the assignment of task being implied.

The NCS may also thank the other volunteers not accepted for the task.

Notes:

1. The No Traffic, or QRU, statement is self completing unless a request is added.
2. Since stations responding to this type call are assumed to be volunteering, and may omit their volunteer statement, other stations should consider this call **not** open to others.
3. Stations should not interrupt transactions.

4.8.5 Call Liaisons, One Net, Multiple Stations Expected

This is a Specific Call with multiple responders possible. This case may be encountered on Section or Local nets when asking for multiple packet/NTSD reps for example.

Participating liaisons should know the category has multiple reps so they do not check in with full traffic lists resulting in wasted net time asking for repeats.

Area Nets have TX and RX liaisons, Region Nets only single liaisons, therefore those nets rarely need to deal with this situation.

Auxiliary reps, if any, from the called net may check in during this call (in addition to assigned liaisons) on the assumption and understanding that multiple responders are possible.

Other stations not in the category should wait for the NCS to complete this sequence and then respond in their category or wait for an Open call. Returning stations may pause tail end.

Responders to this call are assumed to be multiple liaisons from the called net name (which could be a linked net, packet, NTSD, etc.). The NM establishes the multiple rep policy.

Call Multiple Liaisons From One Net, Voice:

At ID time, NCS begins call (net name) (call sign)...

Voice:

NCS: (net name)?; or [(net name) REPS PLEASE?]

(as in “MEPN.. PACKET REPS PLEASE” where multiple reps are expected, etc.)

New Station Response, multiple reps know to use the Two Step method:

STNS: (call sign) (assignments) NO TRAFFIC [(req) OVER]; or ... (call sign) (assignments) WITH TRAFFIC [(req) OVER]

The NCS notes all stations heard, then replies to stations with NO TRAFFIC:

NCS: (call sign) STAND BY; or [(call sign) THANK YOU STAND BY]

Several stations may be done at once, as in [W3XB W3XA W3XD... STAND BY];

And to stations WITH TRAFFIC, each in turn:

NCS: (call sign) LIST; or [(call sign) PLEASE LIST]

STN: (call sign)(assignments) TRAFFIC (traffic list) [(req)] OVER

NCS: (call sign) STAND BY; or station dispatched for traffic.

When all stations heard are processed, then:

NCS: ADDITIONAL (net name)?; continuing until no more.

The NCS may elect to respond to callers one at a time as in the Open call (cases 2 or 3) in order to better control the flow. Additional stations may tail end after each transaction.

The NCS may stop the process at any time, assign, dispatch, excuse, or make Specific calls as needed.

CW: The expected multiple reps should know from the regular net format that they should use the single letter technique for getting the NCS acknowledgment. The single letter method is the default on CW nets. Here the one letter method deals with multiples well, and is also widely used for Open nets calls.

Note QNA may not be repeated at this calling point. It is customary to use QNA once at the beginning of a series of liaison calls. “QNA (net name)” or “(net name)?” may be used for later calls for this multiple liaison case.

Call For Multiple Liaisons From One Net, CW:

After a QNA:

NCS: (net name); (NCS and reps know this net liaison may have multiple responders),

Or as individual calls later:

NCS: (net name)?; or [QNA (net name)];

New Station Responses: Single letter method:

STN: (1 letter)

NCS: repeats (1 letter)

STN: (call sign) (assignments) QRU [(req) <AR>]; or ... (call sign) (assignments) QTC (traffic list) [(req)] <AR>

NCS: (call sign) <AS>; or dispatches station for traffic.

The NCS repeats the call until there are no more replies, then goes on to the next net liaison, or to Open calls.

Notes:

1. The No Traffic, or QRU, statement is self completing unless a request is added.
2. The NCS usually acknowledges the station by call sign and may then optionally dispatch it to receive or send traf-

fic, but it may skip the call sign and immediately dispatch the station to exchange traffic, implying the acknowledgment, or call for a receiving station for the listed traffic and immediately dispatch the stations together. See *Dispatch, 2 Stns To Stack, Full, Immediate, Split*, for details and examples.

3. Stations should not interrupt transactions.

4.8.6 Call For Specific Information Or Assistance

This is a Specific Call with multiple responders possible. The call is typically used when the NCS needs information to expedite the net.

Any station, returning, new, or already checked into the net may answer the request. Responders are assumed to be offering a reply to the request.

At ID time NCS begins call (net name) (call sign)...

Voice:

NCS: (request)?; [OVER] may be used if an end marker is needed.

New Stations checking in for the first time respond as in the Open net call above, adding the answer in the request (req) block.

Net Stations already checked into the net:

STN: (suffix)

NCS: repeats (suffix)

STN: responds with answer.

Returning Stations:

STN: Checks back as in the **Returning Stations** section, then adds the answer.

NCS: Acknowledges return or dispatches the returning station.

CW:

NCS: QNC (request)?; K may be used if an end marker is needed (if the remark is a statement of need, etc.). The query (?) is a sufficient end marker for a question.

New Stations Checking In For The First Time

Adding the answer in the (req) block.

STN: (1 letter)

NCS: repeats (1 letter)

STN: (call sign) (assignments) QRU [(req) <AR>]; or

... (call sign) (assignments) QTC (traffic list) [(req)] <AR>

Response: Stations Already Checked Into The Net

STN: (suffix)

NCS: repeats (suffix)

STN: responds with answer.

Response: Returning Stations

STN: Checks back as in the RETURNING STATIONS section, adding the answer at the end.

NCS: Acknowledges return or dispatches the returning station.

Notes:

1. Stations wishing to make spontaneous suggestions, comments, or queries do so as in the section on Additional Business, always recognized by the NCS before commenting.
2. Stations should not interrupt transactions, except in the rare case where its reply would alter the NCS choice of action based on the previous answer. In this case the station would still obtain NCS recognition before commenting.

4.8.7 Call To Verify Copy

This is a call to specific station(s) to determine if stations can copy each other or the NCS. The NCS asks a station if it can copy another, or instructs it to call the station and verify copy.

The NCS may also use the Establish Contact dispatch command, with no further instructions appended, to ask a station to make contact with another station. See also the section on *Dispatch, 2 Stations, Establish Contact..., QNV*.

The NCS also makes note of stations that are weak or need relay when checking into the net. Verifying copy and asking for relay volunteers is part of a strategy used by the NCS to plan for later dispatching of traffic.

Voice:

NCS: W3XB HOW COPY W3XA?

XB: I COPY; or NO COPY; or

NCS: W3XB ESTABLISH CONTACT WITH W3XA;

XB: calls W3XA, verifies copy, then reports.

CW:

NCS: W3XB QNJ W3XA?; or W3XB COPY W3XA?

XB: QNJ; or QNP; or C or N; or

NCS: W3XB QNV W3XA

XB: calls XA, verifies copy, then reports.

Note the implied "YOU" usage of QNJ and QNP when no [call] is appended. See the Q-Signal list.

4.8.8 Call For Relays

This is a Specific Call, possibly with multiple responders.

In difficult conditions, or for aiding weak calling stations, the NCS should use stations on the net for relays or for making calls for the net to check in stations having difficulty copying the NCS (or vice versa).

The NCS calls for any volunteer to relay a calling station or relay NCS commands. Any station may volunteer.

The NCS may use this call in combination with the verify copy methods to select a station capable of acting as a relay for a traffic exchange dispatch as shown in the dispatch sections.

Only the response of a station already in the net is shown below. Others may respond.

A station makes a transmission which the NCS can not copy. The NCS then asks:

Voice:

NCS: RELAY?; or [STATION WHO CAN RELAY THE CALLING STATION?]

STN: (suffix)

NCS: (suffix) RELAY THE STATION, or (suffix) RELAY PLEASE;

STN: Station relays the transmission; or contacts the caller, secures its call sign and traffic status or list, or request, reports the call sign and information to the NCS, then signs its own full call sign.

CW:

NCS: QNC QNB?; or [QNB?] by some operators.

STN: (suffix)

NCS: (suffix) QNB

STN: Station relays the transmission; or contacts the caller, secures its call sign and traffic status or list, or request, reports the call sign and information to the NCS, then signs its own full call sign.

Notes:

1. On both modes a new station checking in for the first time would respond as in the open call adding “Relay” or “QNB” in the (req) block. Returning stations check back as usual adding the “Relay” or “QNB” if they can relay.
2. Stations wishing to spontaneously relay a station not heard by the NCS should transmit their (suffix), wait to be recognized, then inform the NCS of the relay as in the section on Additional Business, always recognized first by the NCS. A series of “helpful” relay transmissions without NCS permission can lead quickly to net disorder.
3. Returning stations offering to relay should first check back as in the Returning Stations section, then add the offer the relay help. The NCS should acknowledge the station’s return then ask it to perform the relay.
4. Stations should not interrupt transactions.

4.8.9 Call To Relay Net Calls, Specific Station

A station is addressed to make a net call for the NCS for any number of reasons.

Voice:

NCS: (call sign) CALL THE NET; or ... [(call sign) MAKE A NET CALL PLEASE]; or ... [(call sign) MAKE (SPECIFIC TYPE) NET CALL PLEASE], limited;

STN: (call sign) FOR NET CONTROL (net name); or ... (call sign) FOR (NCS call sign) (net name); or ... (call sign) FOR NET CONTROL (net name) (SPECIFIC TYPE);

The station may add “STATIONS WITH OR WITHOUT TRAFFIC,” etc.

CW:

NCS: (call sign) NET CALL PSE; or [(call sign) CALL NET]; or ... [(call sign) MAKE (SPECIFIC TYPE) NET CALL PSE], limited

STN: (call sign) FOR (net name) [QNI] [K]; or ... [DE] (call sign) FOR (NCS call sign) (net name) [QNI];

Station makes the net call using its own call sign, records stations checking in, reports the information to the NCS, then signs its full call sign returning control to the NCS.

The NCS may use relays to call for liaisons, volunteers, other relays, etc., using the same techniques above, addressing the net station by call sign and passing the call request in the (SPECIFIC TYPE) syntax.

Excusing Or Requesting Information By Relay:

The same technique may be used through a relay station to request information or to excuse stations not copying the NCS (using RELAY TO.... or QNB..., (call sign), (command), etc.).

Voice:

NCS: W3XB RELAY TO W3XA 73 EXCUSED

... W3XB SEND W3RX W3TX UP 5 PODUNK 2;
(See dispatching sections.)

CW:

NCS: W3XB QNB W3XA 73 QNX

... W3XB CALL FOR QSP LAUREL; etc., etc.

Since there is not customary syntax for many such relayed commands, plain English is often used to obtain the result.

4.8.10 Check In Late Arrivals, Liaisons Or Stations

A station arriving late should check in as other stations do in response to an Open or Specific net call, getting NCS attention first, using the check in method appropriate for the mode and type of net call.

Excuses for being late are not required or expected, but as friendly amateurs the expression “sorry late” is often used.

Late liaisons should be informed if volunteers have taken their assignment or if they will still have the job. A swap or auxiliary assignment may be made.

The NCS should determine if the new station can handle any of the pending business. This may be done through specific requests to the station, or by calling the net’s Unassigned Traffic List to inform all newcomers of pending business.

See *Assign*.

4.8.11 Call Net Unassigned Traffic List

See the section below on ASSIGN, Call Net UNASSIGNED TRAFFIC LIST for making net calls for outlets. This is a technique used mostly on Section/Local Nets. Area/Region Nets have specific assigned liaisons which may be called, or volunteers for missing liaisons may be solicited.

4.9 Assigning Traffic

The NCS assigns which stations are to take listed traffic. This is a step separate from both checking in stations and dispatching traffic. The NCS makes note on the net record of which stations will accept traffic. This does not mean that the NCS can force a station to take traffic, but that the NCS solicits the receiver, then assigns that station the job. Accepting traffic is voluntary for non-liaison stations. Liaisons accept traffic for their target net by default.

Dispatching involves making decisions about the sequence of exchanges to minimize net time and optimize net efficiency, and is more easily done once assignment has been made. Stations are then dispatched to handle the traffic.

On Local/Section Nets the NCS should be familiar with which stations can handle traffic for certain areas. The NCS may ask such stations if they will accept the traffic in case they may have some reason to refuse on that particular net session. Alternatively the NCS may make a net call asking which station can take listed traffic.

The NCS generally should assign traffic promptly on nets where that involves asking for recipients in order to be able to dispatch efficiently. The sooner dispatching begins the sooner all traffic is handled.

The NCS on some Section/Local nets may prefer to check in all liaisons and target stations before assigning in order to assess the traffic load and distribution before planning the dispatching. Picking the best path for delivery, or balancing loading, can be done once the total list is made, but usually at the expense of total net time. This is almost never done on Area/Region Nets.

4.9.1 Assign, Default To Liaisons

On all NTS traffic nets the liaisons automatically accept traffic for their destination nets. Assignment is by default. Dispatching traffic to liaisons may begin immediately. When there is a missing liaison the NCS may take remedial actions as outlined in previous sections.

4.9.2 Assign, Call Net Unassigned Traffic List

On Area and Region Nets asking for outlets for unassigned traffic is done by asking for the liaison for which the traffic is listed. Volunteers for missing liaisons or alternate paths may be solicited. On Area Nets a Region transmit rep may be asked to assume the duties of a missing receive rep.

On Local/Section Nets there may be unassigned traffic on the net record. In order to make stations aware of the business on the net frequency, and for others who may not yet have checked in, the NCS may elect to transmit a list of pending traffic to solicit volunteers to accept it.

Alternatively, the NCS may ask specific stations if they can take listed traffic as shown in the next section, or may simply assign and dispatch knowing a station's outlet range.

The NCS should know which stations on the net can handle such traffic, but that may not always be possible, particularly for unusual destinations. NCS may also ask net stations where the destination is located, or ask for suggestions for alternate paths.

Additional information, either listed at the holder's check in time, or asked for at this point, such as telephone area and prefix, zip, or county, can often facilitate finding an outlet or path. The NCS should aggressively pursue vague addresses, etc., by asking for help from net stations to use directories, club rosters, zip code checks, etc. to find paths for delivery.

Finding ways to deliver traffic on Local and Section Nets is determined by NCS leadership in many cases.

Calls are usually made for one destination at a time to minimize sorting out responders, but entire lists may be presented to the net, particularly if no outlets are snared in first tries.

Where applicable, the NCS may add quantity, (qty), and/or telephone area codes and prefixes to the destination (dest) to aid stations in deciding if they can handle the traffic.

Stations should have their toll free telephone list, zip code directory, and maps handy.

Responders are assumed to be volunteering to take traffic.

Voice:

NCS: NET HAS TRAFFIC FOR (dest) [(dest)...] RELAY?; or ... [STATION TO TAKE (dest) [(dest)...] OVER]

Net Stations

STN: (suffix); multiple responders possible

NCS: repeats (suffix)

STN: (call sign) CAN TAKE (dest) [(dest)...]; etc. The (call sign) is often omitted since the station is already recognized.

NCS: will assign traffic to that station, or dispatch it;

New Stations Checking In

STN: replies with full call sign, NO TRAFFIC or WITH TRAFFIC, and adds ... CAN TAKE (dest) [(dest)...] OVER; adding the offer in the (req) block.

NCS: Will acknowledge, assign traffic to that station, (call sign) ROGER.. STAND BY; or ask a station with traffic to LIST their traffic to complete checking into the net, (call sign) ROGER.. PLEASE LIST.

Examples, Voice

A new station checking in:

NCS: NET HAS TRAFFIC FOR PODUNK AND HOMETOWN.. RELAY?

STN: W3XX WITH TRAFFIC CAN RELAY PODUNK OVER (new station)

NCS: W3XX ROGER.. PLEASE LIST

STN: W3XX TRAFFIC 3RN 2 OVER

NCS: W3XX ROGER STAND BY; or W3XX W3TX UP 5 PODUNK

A net station, recognized before offering:

NCS: NET HAS TRAFFIC FOR PODUNK AND HOMETOWN RELAY?

RX: RX (net station)

NCS: RX

RX: W3RX CAN TAKE PODUNK; or WILL TAKE PODUNK

NCS: ROGER STAND BY; or W3RX W3TX UP 5 PODUNK; etc.; or

A returning station per the Returning Stations section:

NCS: NET HAS TRAFFIC FOR PODUNK AND HOMETOWN RELAY?

STN XA BACK.. CAN TAKE PODUNK (returning station)

NCS: XA ROGER STAND BY; or W3XA W3TX UP 5 PODUNK

(Returning with a problem, use full call sign with No Joy, etc., then comment.)

CW:

CW Net Unassigned Traffic List Call

NCS: QNC QSP (dest) [(dest)...]?; or ... [QNC QTC (dest) [(dest)...] QSP?]

Net Stations

STN: (suffix); (net station) multiple responders possible;

NCS: repeats (suffix)

STN: (call sign) QSP (dest) [(dest)...] <AR>. The (call sign) is often omitted since the station is already recognized.

NCS: Will assign traffic to that station, or dispatch it.

New Stations, CW

STN: New stations may reply with single letter, be recognized by the NCS, then check in as in the Open call, adding: QSP (dest) [(dest)...] in the (req) block.

NCS: Will assign traffic, then acknowledge or dispatch the station.

CW Examples

A new station:

NCS: QNC QSP PODUNK?

STN: X (new station checking in for the first time)

NCS: X

STN: W3XYZ QTC 3RN 2.. QSP PODUNK <AR>

NCS: W3XYZ <AS>; or W3XYZ W3TX UP 5 PODUNK; or

A net station on frequency, recognized before offering:

NCS: QNC QSP PODUNK?, or [QNC QTC PODUNK QSP?], (held by TX)

RX: RX (station already checked into the net)

NCS: RX

RX: W3RX QSP PODUNK, or simply QSP PODUNK;

NCS: R <AS>; or W3RX W3TX UP 5 PODUNK; etc.; or

A returning station per the Returning Stations section:

STN: XA.. QSP PODUNK, (returning station, job complete, adding the offer to QSP)

NCS: XA R <AS>; or W3XA W3TX UP 5 PODUNK, (Immediate dispatch.)

(Returning with a problem, use full call sign with No Joy, etc., then comment.)

Notes:

1. In case 2, the net station is shown being recognized by the NCS to transmit before it offers to take the traffic (list). This is consistent with the normal directed net procedure with possible multiple responders. In the STN reply the station's (call sign) is often omitted since the station is already recognized. The full call sign is the formal treatment and always avoids possible suffix conflicts.
2. Use of the suffix alone (not shown) for a net station, implying it will take the traffic, is in conflict with the syntax for additional business and returning stations. (The suffix-

alone method may be heard on some nets, however, where the NCS will pick a station heard and assign the traffic. Confusion may sometimes be a result.)

3. A net station may choose to respond without recognition (not shown) and add the QSP (list) statement on its first transmission, thus negating the need for the NCS to first acknowledge it. This method is avoided, although heard on some nets, since it is outside the normal directed net procedures. There is potential for doubling on voice or non-QSK CW.
4. Destinations on Area and Region Nets are usually net names or call signs.

4.9.3 Assign, Unassigned Traffic, Specific Station Request

The NCS may ask a specific station on the net if it can take listed traffic. The asked station may answer in the affirmative or negative without explanation, or may make suggestions to the NCS about possible routing or alternatives.

Voice:

NCS: (call sign) RELAY (dest)?, or (suffix) RELAY (dest)?;

STN: AFFIRMATIVE; or NEGATIVE; or (suggestion); etc.

NCS: may assign the traffic, dispatch the station, or ROGER the suggestion.

CW: (Unassigned traffic solicitation.)

NCS: (call sign) QSP (dest)?, or (suffix) QSP (dest)?;

STN: C; or N; or (suggestion); etc.

NCS: may assign the traffic, dispatch the station, or R the suggestion.

Notes:

1. These calls are questions, followed by the appropriate inflection or “?” on CW.
2. On Area and Region Nets destinations are usually net names, and stations may be asked if they can take traffic for a Region or Section Net not their own in some circumstances, as in:
3. NCS: W3TX QSP 4RN?; asking the 3RN TX rep to help with 4RN RX.
4. The station accepting the traffic may be immediately dispatched as shown in *Dispatch, 2 Sns To Stack*.

4.9.4 Assign, Special Outlets

Traffic routing in the NTS from Section to Region to Area and back down to Region and Section is established to move traffic efficiently throughout the system. Nothing here is meant to suggest bypassing normal daily routing of traffic within that system. It is important to maintain the integrity of the system by the use of proper routing.

There are situations at Section and Local level addressed here. Finding outlets for traffic delivery is the primary issue.

The NCS may solicit volunteers to take traffic to other nets with which the current net has no normal connection, or make other similar arrangements using the net station's versatility. Many independent nets are potential outlets even if they are

not normally traffic nets. Club and ARES nets are fine examples of potential outlets.

Stations may be asked to take traffic for amateurs for hand delivery at club meetings, or at special events, for example.

Stations may be asked to take traffic which they can pass by toll free calls to stations who can make the delivery.

Stations may be asked to contact MARS stations who might be able to handle the traffic by making personal schedules to meet on the air, or through their service when permissible.

Stations should be familiar with the various strategies discussed in the chapter on Delivering Messages.

The NCS should be aware of the potential use of the NTSD (NTS digital) as a parallel path for liaison to Region or Area connections.

4.9.5 Assign, Store And Forward

A station may be asked, or a volunteer solicited, to store and forward the traffic to a Local, ARES/RACES net, or other net in the destination area meeting at another time.

Stations checking in from outside the net's normal coverage area are usually afforded the courtesy of having a net station store and forward their traffic if necessary. TCC stations or unscheduled liaisons from higher or other nets should be afforded the same courtesy. TCC operators often rely on such service to clear eastbound traffic in the US system.

A station may store and forward any such traffic for handling on a another session of the current net, or even for later insertion into another NTS path suitable for delivery, including the NTSD (digital) system. Having stations prepared to store traffic for subsequent forwarding can be of great value when handling large amounts of welfare traffic during disasters.

Use this alternative to avoid having to send a station away claiming no outlet for its traffic, unless the station itself is capable of holding the traffic without undue delay or inconvenience.

The NCS may direct a net station to take the traffic to hold for later delivery, or request a volunteer. The typical requests to a net station are:

Voice;

NCS: (call sign) RELAY (dest) FOR (____)?; or ... (call sign) TAKE AND HOLD (dest)?; etc.

CW:

NCS: (call sign) QSP (dest) FOR (____)?; ... (call sign) QSP (dest)?; etc.

The blank may be another net or a later net or session, the next NTS cycle, another mode, the next day, a station call sign, etc. If the station accepts, the traffic is assigned or immediately dispatched.

The NCS may simply dispatch a station to take and hold the traffic.

4.9.6 Assign, Books

Book traffic sent to Region or Area nets must be re-booked for the liaisons found on those nets respectively. Books are not

usually listed as such on those nets. The total quantity of messages for each liaison outlet is listed instead.

On Local/Section Nets if a book is listed requiring several receiving stations the NCS will typically ask for stations to accept each single book part until all possible are assigned. The book holder should make note of the assigned stations. The NCS may then decide if it is in the interest of the net efficiency to dispatch the book to all the assigned stations simultaneously on the net, off net frequency, or to break up the book transmission to individual or sub-group exchanges.

Local/Section Nets, particularly when serving in support of ARES/RACES served agencies, will encounter books destined to all offices of an agency, all emergency operation centers, to all Skywarn operators, etc., which are often best transmitted simultaneously to all recipient stations. With a large number of recipients the economy is obvious. It is the essence of booking. It is easily done on or off the net.

See the section on *Dispatching Books* for more information about how this is managed.

4.10 Dispatching Traffic, Overview

This is where the work on the net begins. Net calls and assigning are intended to bring the NCS and stations to the point of dispatching, which directs the exchange of traffic.

The NCS dispatches assigned traffic with syntax shown in the following dispatch sections, divided into commands for exchanges on the net and those for stations sent off the net frequency.

Once the affected stations acknowledge the command they proceed to exchange traffic per the guidelines discussed Chapter 2 for Voice and Chapter 3 for CW, Station Operations, for passing the message(s) on net or going off frequency. This is briefly reviewed in the Exchange sections of this chapter later.

The NCS keeps track of all business listed, assigned, and dispatched; and determines the order of dispatching to optimize net efficiency.

4.10.1 Full Call Signs

Full call signs are used in the dispatch commands to address the station(s).

4.10.2 Suffixes, Conflicts

Where call sign suffixes are called for in station responses, the holders of 2 by 1 calls use their number and suffix letter.

The NCS may also use a unique acknowledgment for stations with identical suffixes, and the stations may thereafter use the unique sequence when returning. For example, W1XYZ and W2XYZ are both on net. W1XYZ sends suffix XYZ returning, the NCS repeats XYZ. W2XYZ returns and sends XYZ, the NCS repeats YZ, and W2XYZ uses YZ thereafter. Of course the NCS could use 1XYZ, 2XYZ. Using single letters on CW is not done since that conflicts with the syntax used by new stations checking in.

4.10.3 Syntax: Order, Alternatives, Appending

General: The sequence of call signs, prosigns on CW, frequency, and traffic destination-quantity are specific for each type of dispatch. The order is significant and important.

Destination-Quantity Last: Putting the (dest [qty]) always last in dispatches (with no excusing statements) appears to be a preference of many net controls to be consistent in form (2 station, QNQ, QNV). There are several methods in use in this regard for dispatching single stations to a stack (off net frequency). See the *QNO Off Net Dispatch*. The old published QNK signal places the (dest [qty]) next to last, hence that form is shown for reference only (The QNK form of dispatch is seldom used today.). The form closest to the published definition is shown as the “literal usage.”

The **Voice** dispatching syntax equivalent to these “QN” signals is frequently shown here with reduced wording reflecting best current practice.

Excusing In Advance: Syntax for excusing in advance is appended at the end of the dispatch line. NCS may excuse, in advance, one or both of the stations dispatched off frequency. These stations do not return to net, and check out as part of their acknowledgment. The NCS still needs to know or have reasonable confidence that the assignment is or will be completed. This may be done by monitoring the stack frequencies even if the net is closed.

4.10.4 Over, K

Many dispatch commands are self completing, not requiring Over or “K” as a signal to reply. Those “go ahead” signals are omitted in the syntax shown except where they are suggested to mark the end of transmissions of uncertain length.

4.10.5 Precedences

Traffic is handled in order of precedences as much as possible with the means at hand to do so. Emergency traffic is handled immediately, and it is important to use any means available to get Emergency traffic delivered promptly, including telephone, public safety services, etc. Death and serious injury or illness messages are often best delivered by public safety or private relief agencies such as the American Red Cross.

It is a myth, however, that all Priority traffic must be handled before any Welfare or Routine traffic. The P, W and R traffic is handled in order, but it is often misunderstood that it is the option of the NCS to dispatch lower level traffic while there is higher precedence traffic pending. The NCS may need to wait for an available outlet to be free.

It is equally important for the NCS to consider the overall net workload, time available, and situation. Nets operating during disasters may dispense with handling Routine traffic, and perhaps even Welfare traffic, for extended periods until the higher priority traffic is cleared. Multiple nets may be needed.

4.10.6 Flow

Some NCS stations on Local/Section Nets prefer to check in all liaisons before dispatching in order to assess the traffic load and distribution. On other nets the NCS may call specific liaisons bringing traffic, then call for outlets and dispatch immediately. Some call the net only with Open calls, taking stations as they come, then dispatching, or calling outlets and dispatching, as needed. In general, the sooner the traffic is dispatched, the sooner the net finishes its business.

4.10.7 Quantities

There is some economy, or less inconvenience for waiting stations, to handle stations with smaller quantities of traffic before those with larger ones in many cases. There are exceptions. The primary object of managing the net’s traffic flow is to get all the traffic moved in the allotted time while optimizing net efficiency by moving the maximum amount of traffic per unit of time. More on quantity and sequencing permutations in the chapter on Net Control.

4.10.8 Net Or Stacks

The NCS may dispatch traffic on the net frequency or “stack” several stations on a number of frequencies off the net. Exchanging traffic on the net frequency interrupts other net business which is an important factor considered by the NCS. Dispatching sections below are divided accordingly.

4.10.9 Dispatched Traffic Only

Stations exchange only traffic dispatched by the NCS. If a change is desired the station(s) should return to the net and arrange the change with the NCS. Minor changes in the quantity in the block dispatched may be handled, and the corrected count reported upon return, or, if the stations are excused, they should return and notify the NCS of the change (or notify by other means).

4.10.10 Books

The NCS may dispatch a number of stations in one dispatch command to receive parts of a book. The book may be sent on net or off frequency. The book sender will call all the recipients to control the sending process.

Dispatching books to multiple stations simultaneously is a decision that must be made by the NCS based upon conditions, the economies for the net, and the capabilities of the stations involved. It is of course optional.

This is seldom, if ever, done on Area/Region Nets where books for multiple stations are not listed. All traffic is sent to one liaison at a time. Traffic to that liaison may be in book form of course. It is possible to dispatch a book to multiple liaisons on these nets, however.

4.10.11 Formal And Informal Traffic, All Stations

On Local/Section Nets informal announcements and formal traffic to all stations is sometimes listed. This will require that the NCS have all net stations on the net frequency for such traffic to be passed. This traffic could be system bulletins, or simply a request for a substitute for a later assignment, etc. This kind of traffic is seldom handled on Area or Region Nets. Net newsletters, emails, BBS bulletins, distribution via lower nets, etc., are often substituted. A request for a substitute for a net assignment is often passed to the NCS or NM who may then make net requests. QNC messages may be given to single stations or groups of stations piecemeal if required.

4.10.12 Words

Listed informal words between stations are often dispatched after formal traffic, or whenever the respective stations are free. Be patient. If words are more urgent, related to net business for example, so list. Words are often held for the last assigned traffic then dispatched to the stations who are excused in advance from their off net stack.

4.10.13 Verify Copy Checks, Prior To Dispatching

The NCS may check stations to confirm mutual copy directly, by asking them to make contact with others, or do so via relays, all prior to dispatching traffic. The QNV dispatch, used without a frequency and destination included, is sometimes used to direct a station to check copy with another station. See *Net Calls, Verify Copy*, and the QNV and QNQ type dispatches.

The NCS should know when stations have returned to net from off frequency, or may call them specifically as outlined in Specific calls. If copy is in doubt the QNV, directed to the station the NCS knows can copy, or QNB dispatches may be used.

The NCS should make note of which stations need relay upon checking into the net, and which stations may need relay to exchange traffic. The appropriate dispatch method may then be chosen and executed. This can often be the most difficult part of managing traffic nets.

4.10.14 Immediate Dispatch, Alternative To Acknowledgment

Immediate dispatches may be used for on net or off net dispatching. This is simply a shortcut skipping a station acknowledgment and going directly to a dispatch command.

See *Dispatch, 2 Stns To Stack* for examples.

Outlet Needed: The NCS will copy a new station checking in with traffic after any type net call, and then will immediately call for an outlet by either call sign or liaison name using the Specific Call. The outlet may check in with call sign and either no traffic or with a traffic list. The NCS will then execute a full dispatch of the new station and the responding outlet. This method acknowledges both the new station and the outlet by implication. (See also the *Split Dispatch*.)

Outlet Already In The Net: The NCS will copy a new station checking in with traffic after any type net call, and then will immediately execute a full dispatch of the new station and the outlet listening on the net. This method acknowledges the new station by implication.

Acknowledging: If the outlet is not available the NCS in both cases will acknowledge the new station and ask it to wait, or dispatch its other traffic if possible.

4.10.15 Awake?

It is considered poor practice to interrupt the NCS during dispatches with acknowledgment after the call sign (a dot or dash on CW). This practice is used on some Slow Nets or training nets as an “are you listening” confirmation where it is effective due to the slow speeds and long time between calls. It is dispensed with when moving up to Section and higher nets. Stations should listen to the NCS carefully at all times and be prepared to respond to the NCS commands, replying only with the customary acknowledgment after the command is completed.

An exception to this guideline occurs when Split Dispatches are used in Immediate Dispatching or to check for a returned station. New stations and returning stations not yet checked into the net, upon hearing their call signs followed by a pause,

should recognize the NCS is asking for an acknowledgment. Note the unique circumstances here.

Stations listening on the net should know not to respond to their call sign during a dispatch, but listen for their call sign or suffix at other times followed by a pause suggesting that the NCS is asking for an acknowledgment. It is suggested that using the query (?) after the call on CW, or the equivalent voice inflection, makes the call clear when the NCS wishes to check the presence of a station or pose a question. The query resolves the syntax conflict.

4.10.16 The Split Dispatch

This is a subtle technique used by experienced NCS and net stations and should be used with care. The NCS may always determine the presence of all involved stations prior to the dispatch, and then execute the full command sequence—the more formal and complete method.

Splits may be used for on-net or off-net dispatches.

See *Dispatch, 2 Stns To Stack* for examples.

Split, Check For Station Present Or Able To Copy NCS:

Some NCS stations pause in the dispatch to check that a station is present (returned) or able to copy the NCS, then continue the dispatch syntax to complete the command. The technique is often done without a query on CW. The NCS will pause after a call sign as a signal for the addressed station to reply with a “Here” on voice, or “T” or “HR” on CW, then complete the rest of the Split Dispatch command.

Although the method conflicts with the “Awake?” comments, it is sometimes used to expedite business on Area/Region level nets primarily to verify a station is present, returned but not yet checked back in, or copying the NCS. It is not used just to verify that a net station is listening.

Although this seems like a fine point, experienced operators understand when they are being engaged by the NCS and assist in expediting the dispatch. The pause after the call sign is the key signal (taking on the role of a proword or prosign). The query (?) or inflection helps, but is suggestive of a separate transaction, followed by a full or immediate dispatch.

Split, expediting checking in the outlet:

The NCS will copy a new station checking in with traffic after any type net call, and then will call for the expected outlet by call sign (W3RX...), in actuality beginning a dispatch sequence.

If the outlet station has no traffic it may simply reply with “Here,” or “T” or “HR” on CW, and the NCS will immediately continue by adding “.W3TX (freq) (dest [qty])” to finish the Split Dispatch of both stations off the net to the stack frequency. If, instead of the implied no-traffic check in, the outlet station checks in with a traffic list, the NCS will default to the full dispatch command for both new stations, acknowledging them by implication with the immediate dispatch.

If there is no response from the outlet in response to its call sign, the NCS will call for the outlet by (net name), the Specific Call for the liaison. If the outlet is present it will check in with no traffic or with a traffic list. The NCS will then execute

a full dispatch as in the Immediate Dispatch. This accommodates unscheduled or substitute liaisons.

If there is no response for the requested outlet after both types of call, the NCS will either dispatch the new station with another outlet or simply acknowledge it and ask it to wait.

In some cases, if the NCS knows who the RX rep is, and expects the station is on frequency (not yet checked in), the NCS may simply immediately dispatch both to the stack without even checking in the outlet (RX) station. This acknowledges both stations by implication, and also implies and acknowledges that the outlet has no traffic. The outlet station, of course, could add a traffic list, etc., after the dispatch before going to the stack.

4.10.17 Relays

As in other NCS operations, relays may be utilized to facilitate contact and/or dispatching of stations not hearing the NCS or each other. Relays may be assigned to assist in the traffic exchange or simply to relay the dispatch. As discussed in Net Calls, Relays, the NCS may initiate the request for a relay, instruct a relay, or a net station may volunteer to assist by first sending its suffix to gain NCS permission to transmit. See the QNB dispatch section.

4.10.18 Swapping Traffic

On occasion two stations, or additional stations sent to a stack, may have traffic for each other. The NCS may dispatch such traffic by simply listing the (dest [qty]) for each. Some NCS stations simply will add “Swap” ahead of the destinations, or in some cases simply say “Swap.”

4.10.19 Multiple Destinations

The NCS may dispatch multiple messages to different destinations by simply sending all the destinations in the dispatch sequence. The receiving station will take them all.

4.10.20 Missed Dispatch Components

A station missing part of the dispatch may ask for repeats with simple requests such as: Where? Who? After? Traffic? Again? (Where?, Who?, Afr?, QTC?, Agn?, or ? on CW). The station may send (suffix) followed by the question for missed parts of a 2 or 3 station dispatch. The NCS may answer the question or repeat the dispatch if needed.

4.10.21 Returning Stations

Returning stations from off frequency check back in as described in the section Returning to Net. Stations signify the job complete, or report problems, by choice of syntax. Stations should return promptly after a brief pause to check for other calling stations. Other business may be pending. The “(suffix) back” on voice, or “(suffix)” on CW, when successful, or “(full call) no joy” when not, are distinct and functional since the NCS knows which stations are dispatched.

4.10.22 Net Traffic Count

The net counts and reports the total number of messages transmitted from a holding station to a receiving station at the direction of the NCS during the directed net. Best current practice finds most Area and Region nets excusing stations in advance sent to stacks to handle their last listed traffic, closing the net, and then monitoring to ascertain that assigned traffic was passed. This last step is key to ethically assuring the accu-

racy of the net traffic count. The NCS may monitor the net frequency after the net is closed in case stations have difficulty and return to report.

4.10.23 Stations Listen Closely

Listen to the net control carefully throughout the net. All stations checked into the net should pay close attention since dispatch commands or questions may be directed to their station at any time. An experienced NCS has a plan for moving the listed business which often relies on a tight sequence of events. A missed and repeated dispatch wastes valuable net time for all. A postponed dispatch upsets the entire plan. Help the NCS execute an efficient and smooth running net.

4.10.24 NCS In Control

Give clear and concise instructions in the expected manner. The NCS gives commands and maintains control at all times. This is done even if the operator may be struggling with complex routing or dispatch sequence questions between transmissions, or is in a state of panic. The seasoned NCS will take a deep breath, plan the next best move, and issue the command in a calm manner, which convinces all other stations that things are running smoothly.

When choices must be made, ask questions if needed, but make the choices.

Maintain control. If some degree of disorder or confusion on the net develops, stop the action and ask questions, direct particular stations to transmit, restate questions, or otherwise insert your influence in such a way as to settle things down and get on with business in an orderly fashion. See the chapter on *Net Control* for additional tools in the NCS tool box.

Mistakes are made, and in the true amateur radio spirit, they are fixed in a pleasant way. The old saying goes, “If you have never made a mistake, you have never been a net control.”

It is a lot of fun playing this music as competent players at the direction of an experienced leader. A snappy efficient traffic net on which all station’s listed traffic is passed with dispatch (pun intended) is a rewarding experience for all.

4.11 Dispatching Traffic On Net Frequency, Overview

Traffic may be dispatched on the net frequency at the expense of other net business and risk of making stations wait to check in or return to net. The policy regarding this action is often set by the net format, however the NCS may choose to do so based on net workload, available time, etc.

Brief Words for the NCS, are passed when disruption of other activities is minimal. WORDS between other stations, an unknown duration activity, are dispatched when the stations are free, usually after formal traffic involving those stations is passed.

Announcements and messages (QNC), etc., for all stations are obviously best done on the net when all check-ins are present, usually at the start of the net so other dispatching may proceed.

On some Local/Section nets, particularly on VHF/UHF repeaters, handling traffic on net is customary and is often done after brief informal traffic is passed and stations having no pending

business are excused. This avoids making stations wait unnecessarily. Formal traffic is usually considered a higher priority than informal business in most other net situations.

Stations checking in following Open and Specific calls of any type may be asked to wait, or they may be dispatched to exchange traffic on the net with the full dispatch syntax.

Immediate, or Split dispatching methods may be used as shown in the later section, *Dispatch, 2 Stns To Stack*, using “Here,” or “HR” on CW, for the frequency. This is a special shortcut used mostly on Region/Area nets, and is not duplicated here in the “on-net” part.

Limited Quantity: It is not uncommon for the NCS to have stations pass one message at a time on the net frequency to permit breaks to check in new or returning stations. The NCS may accomplish this with a limited quantity dispatch on the net frequency, or may simply interrupt exchanges on net frequency between messages to make Open or returning station calls.

Call Signs, Examples: Call signs W3RX receiving station, W3TX, W3RLY, etc., are used to show examples of dispatch syntax rather than using some form of shorthand. Suffixes RX, TX, RLY, etc., are used in similar fashion for calls and acknowledgments. These call signs are used for example purposes and not related in any way to the holders of those call signs.

4.11.1 Dispatch, 2 Stations, On Net

Assuming both stations copy each other and the NCS:

If the NCS can not be heard by one of the stations, the QNV may be used and directed to the station that can copy the NCS, or the QNB relay method may be used, both shown later.

1. **Customary Dispatch Method**, first station addressed initiates the call:

Voice:

NCS: W3RX W3TX HERE (dest [qty])

RX: W3RX [GOOD EVENING] READY TO COPY

TX: [W3TX] [GOOD EVENING]...; sends traffic

RX: ROGER 73 W3RX

TX: 73 W3TX

This is often shortened to:

NCS: W3RX W3TX HERE (dest [qty])

RX: READY TO COPY

TX: sends traffic

RX: ROGER 73 W3RX

TX: 73 W3TX

NCS: resumes net

CW:

NCS: W3RX W3TX HR (dest [qty])

RX: W3RX [GE] QRV

TX: [W3TX] [GE]...; sends traffic

RX: QSL 73 W3RX

TX: 73 W3TX

NCS: resumes net

This is often shortened to:

NCS: W3RX W3TX HR (dest [qty])

RX: QRV

TX: sends traffic

RX: QSL 73 W3RX

TX: 73 W3TX

NCS: resumes net

2. **The (QNK) method.** This form of dispatch on net is considered archaic and is discouraged in best current practice in favor of the dispatch in case 1. (QNR method likewise.)

“QNK: Transmit messages for ____ to ____ “

TX receives the dispatch and makes the first call, the exchange on net implied. The dispatches would be of the form:

Voice:

NCS: W3TX SEND W3RX (dest [qty]); or

NCS: [W3TX SEND (dest [qty]) TO W3RX]; literal usage.

TX: W3TX READY TO COPY?

RX: READY TO COPY (TX would then send the message(s) as above.)

CW:

NCS: W3TX QNK W3RX (dest [qty]); on net is implied; or

NCS: [W3TX QNK (dest [qty]) W3RX]; literal usage

TX: W3TX QRV?

RX: [GE] QRV (TX would then send the message(s) as above.)

Notes:

1. The FIRST station addressed makes the first call to begin the exchange.
2. Since both stations copy the NCS, only the RX first dispatch is needed here, thus enabling the short exchange. The order may be reversed, if needed, in which case the TX station initiates the exchange. This is seldom necessary unless only the TX is hearing the NCS.
3. If one station is not hearing the NCS, the QNV method, Establish Contact, may be used to direct the dispatch to the station copying the NCS. If RX and TX are not hearing each other, the QNB, RELAY, method may be used.
4. The NCS resumes control after both stations identify.
5. The NCS may dispatch a limited quantity of traffic on net, or one at a time for example, thus providing for a gap to check returning or new stations. Listen to the quantity carefully.
6. If the quantity is omitted, exchange the total for the destination(s).
7. The NCS may interrupt between messages to make net calls for any purpose even if the full quantity is dispatched.
8. NCS may excuse either or both of the stations in advance in which case the instruction would be part of the initial dispatch, however this is not often done for ON-Net dis-

patches. The NCS may excuse the station(s) when finished.

4.11.2 Dispatch, 2 Stations, Establish Contact, On Net, QNV

This technique combines the normal two station dispatch and a verify copy test to begin the exchange of traffic ON Net.

In this case the (freq) in the command will specify the Net Frequency using “Here.” This is a special use of the QNV method.

The normal Off Net use of QNV is presented later.

(QNV: “Establish contact with on this frequency. If successful, move to and send him traffic for”)

When the NCS is unsure if two stations can copy each other well enough to exchange traffic, or is unsure one station is able to copy the NCS, this conditional dispatch is used.

The technique is used to execute the dispatch command even if the NCS knows both stations can copy each other but one may not be hearing the NCS. The NCS should know from checking in the stations those which require relay. The station copying the NCS is addressed first.

Case 1: TX hears the NCS.

Case 2: RX hears the NCS.

The QNV Dispatch On Net:

Case 1: TX hears the NCS:

Voice:

NCS: W3TX CALL W3RX IF OKAY HERE (dest [qty])

TX: W3RX W3TX [HERE (dest [qty])] READY TO COPY?

If RX can copy, traffic exchanged, else TX reports no joy:

RX: READY TO COPY

TX: [W3TX]...; sends traffic;

RX: ROGER 73 W3RX

TX: 73 W3TX; TX makes last transmission;

NCS: resumes net

CW:

NCS: W3TX QNV W3RX HR (dest [qty])

TX: W3RX W3TX [HR (dest [qty])] QRV?

If RX can copy, traffic exchanged, else TX reports no joy:

RX: QRV

TX: [W3TX]...; sends traffic;

RX: QSL 73 W3RX

TX: 73 W3TX; TX makes last transmission;

NCS: resumes net

Case 2: RX hears the NCS:

Voice:

NCS: W3RX CALL W3TX IF OKAY HERE (dest [qty])

RX: W3TX W3RX [HERE (dest [qty])] READY TO COPY

If TX can copy, traffic exchanged, else TX reports no joy:

TX: [W3TX]...; sends traffic;

RX: ROGER (RX does not sign, forcing the long method)

TX: 73 W3TX

RX: 73 W3RX; RX used the long method to permit it to make the last transmission so the NCS can hear the end of the exchange.

NCS: resumes net

CW:

NCS: W3RX QNV W3TX HR (dest [qty])

RX: W3TX W3RX HR (dest [qty]) QRV

If TX can copy, traffic exchanged, else TX reports no joy:

TX: [W3TX]...; sends traffic;

RX: QSL (RX does not sign, forcing the long method)

TX: 73 W3TX

RX: 73 W3RX; RX used the long method to permit it to make the last transmission so the NCS can hear the end of the exchange.

NCS: resumes net

Notes:

1. The first station addressed initiates the call. Note that it is shown repeating the essence of the dispatch to alert the other station to what is happening.
2. The frequency and destination is sometimes omitted by experienced stations on Area/Region Nets, the ready-to-copy being sufficient.
3. NCS may include quantity in case the stations wish to reply that conditions are not good enough for that much traffic.
4. If copy is satisfactory, the two stations exchange the traffic. If the stations can not copy each other the NCS may use a relay or make other arrangements such as band/mode change.
5. The addressed station makes the last transmission as the signal for the NCS to resume the net. Other signals such as “Back To Net,” or <AR>, may be heard in use.
6. Note that in the reversed order cases, the meaning of the “send him traffic for” part of the QNV definition is assumed also reversed; “receive from him traffic for”
7. This is an exceptional use of QNV ignoring the “move to” definition, the “Establish contact with” being key.
8. NCS may excuse either or both of the stations in advance in which case the instruction would be part of the initial dispatch, however this is not often done for ON Net dispatches. The NCS may excuse the station(s) when they finish.

4.11.3 Dispatch, 3 Stations, Relay On Net, QNB

This technique involves the use of a third station for relay. There are several conditions possible to consider.

If either RX or TX can copy the NCS, and the RX and TX can copy each other, then the NCS can use the appropriately ordered dispatch to establish contact and pass their traffic as above (QNV). Should that not be possible, the methods below may be used.

The NCS may determine in advance, or through a relay station, if the two stations can copy each other and which relay station copies both.

Verify Copy

To verify copy the NCS or stations will usually ask HOW COPY [call], reply I COPY [call] or NO COPY [call]; on CW, QNJ [call]?, reply QNJ [call], or QNP. Note the ME/YOU usage of QNJ and QNP when no [call] is appended. See the Q-Signal list.

The QNV Establish Contact command may be used without further instructions to check copy. (W3RX QNV W3TX). See also *Net Calls, Calls To Verify Copy*.

Relay Cases:

Case 1: All three stations copy NCS, but RX and TX can not copy each other. RLY relays the exchange.

Case 2: RX and TX can not copy each other, and can not copy NCS. RLY station calls and relays the dispatch and the exchange.

Case 3: The RX and TX can copy each other, but not the NCS. The RLY station simply relays the dispatch.

The NCS selects the case to use based on the verification of copy.

The NCS may elect to include (qty) in the dispatch in case a station or the relay was not able to copy it earlier, or the stations wish to object to the quantity under the conditions.

Case 1: Full Relay, On Net, All Stations Copy The NCS, RX and TX can not copy each other.

NCS: W3RLY RELAY W3RX W3TX HERE (dest [qty])

RLY: W3TX W3RLY READY TO COPY

TX: [W3TX]...; sends the traffic to RLY;

RLY: ROGER W3RLY ; short method saves a transmission;

TX: 73 W3TX; signs to complete the first exchange;

RLY: W3RX READY TO COPY?

RX: READY TO COPY

RLY: sends traffic to RX;

RX: ROGER 73 W3RX; short method saves a transmission;

RLY: 73 W3RLY

NCS: resumes net

CW:

NCS: W3RLY QNB W3RX W3TX HR (dest [qty])

RLY: W3TX W3RLY QRV

TX: [W3TX]...; sends the traffic to RLY;

RLY: QSL 73 W3RLY; short method saves a transmission;

TX: 73 W3TX; signs to complete the first exchange;

RLY: W3RX W3RLY QRV?

RX: QRV

RLY: sends traffic to RX;

RX: QSL 73 W3RX; short method saves a transmission;

RLY: 73 W3RLY

NCS: resumes net

Case 2: Full Relay, On Net: This is one of many combinations of poor copy situations encountered. The dispatch syntax is not in wide usage. The NCS may often resort to plain English to direct the desired results.

RX and TX can not copy each other, and can not copy NCS. RLY copies all.

Voice:

NCS: W3RLY CALL AND RELAY W3RX W3TX HERE (dest [qty])

RLY: W3RX W3RLY; may ask HOW COPY if desired;

RX: W3RX

RLY: W3TX W3RLY HERE (dest [qty]) READY TO COPY

TX: [W3TX]...; sends the traffic to RLY;

RLY: ROGER W3RLY; short method saves a transmission;

TX: 73 W3TX; signs to complete the first exchange;

RLY: W3RX READY TO COPY?

RX: READY TO COPY

RLY: sends traffic to RX

RX: ROGER 73 W3RX; short method saves a transmission;

RLY: 73 W3RLY

NCS: resumes net

CW:

NCS: W3RLY CALL ES QNB W3RX W3TX HR (dest [qty])

RLY: W3RX W3RLY; may use [QNJ] to verify copy if required;

RX: W3RX

RLY: W3TX W3RLY HR (dest [qty]) QRV

TX: [W3TX]...; sends the traffic to RLY;

RLY: QSL 73 W3RLY; short method saves a transmission;

TX: 73 W3TX

RLY: W3RX W3RLY QRV?

RX: QRV

RLY: sends traffic to RX;

RX: QSL 73 W3RX; short method saves a transmission;

RLY: 73 W3RLY

NCS: resumes net

In the ultimate case the NCS may not even know if the RX and TX stations can copy the RLY. This can be established before the dispatch; or plain English may be used, or a syntax sequence might be employed such as (ES = and):

NCS: W3RLY QNV [ES] QNB W3RX W3TX HR (dest [qty])

RLY: calls each station to verify copy and pass the dispatch, then mediates the exchange.

Case 3: Relaying The Dispatch, On Net

RX and TX copy each other, but not the NCS. There is no customary syntax widely accepted for this technique. The following form may be used, or plain language may be used instead.

Voice:

NCS: W3RLY SEND W3RX W3TX HERE (dest [qty])

RLY: W3RX W3TX HERE (dest [qty]); equivalent to normal dispatch.

RX: calls TX, receives traffic, both sign.

RLY: 73 W3RLY; to mark the end of the exchange for the NCS;

NCS: resumes net

CW:

NCS: W3RLY SEND W3RX W3TX HR (dest [qty])

RLY: W3RX W3TX HR (dest [qty]); equivalent to normal dispatch.

RX: calls TX, receives traffic, both sign;

RLY: 73 W3RLY; to mark the end of the exchange;

NCS: resumes net

Notes:

1. The NCS may use the same relay technique to excuse a station or stations not copying the NCS, or to make other types of dispatches or requests.
2. The RLY station may use terms such as [End Of Traffic], [Back To Net], or <AR> on CW, or equivalent to signal the NCS that the exchange is complete, although the NCS can usually detect completion from the sequence of RLY transmissions.
3. NCS may excuse either or both of the stations in advance, in which case the instruction would be part of the initial dispatch, however this is not often done for ON Net dispatches. The NCS may excuse the station(s) when they finish, with relay if required.

4.11.4 Dispatch, Books To Multiple Stations On Net

This technique is customary for dispatching and sending booked traffic to multiple receiving stations on the net, each receiving different parts of the book. It is applied to books of messages, with separate message numbers going to separate addressees, with one combination of other fixed and variable parts.

For a bulletin type book, with one message number and text (no variable parts except addressee) to multiple or all stations on the net, see the QNC method in the next section..

The technique of booking messages is a transmission method to avoid repeating common parts of a number of individual messages. It is applicable to books of messages which can be handled by one station as well as those which can be handled by a number of different receiving stations. In the later case, the only difference in the transmission is the method and syntax used to manage the exchange of the variable parts with the separate receiving stations. Review the sections on Books To Multiple Stations in Chapters 2 and 3, and the reviews in the Exchanges On Net section later in this chapter, for the exchange examples.

Sending a book to multiple stations is seldom done on Area/Region nets, although possible. Sending booked traffic to a single liaison is always acceptable.

Dispatching book traffic to multiple stations is an option of the NCS based upon the conditions, economies for the net, and the capabilities of the stations involved.

During the assigning process the NCS assigned each part of the book to specific RX stations and the TX station should have copied along (if that was not possible, the NCS will include the recipients in the dispatch as needed).

Dispatch And Exchange, Tx Polls Ready To Copy:

Voice:

NCS: W3TX HERE BOOK [OF (qty)]; or to specify the recipients:

NCS: W3TX W3XA (dest [qty]) W3XB (dest [qty]) (etc.) HERE BOOK [OF (qty)]

TX: XA READY TO COPY?, or [W3XA READY TO COPY?]

XA: READY

TX: XB?, or W3XB?, (the TX may use suffixes to check stations ready);

XB: READY, etc., until all stations report ready;

TX: BOOK OF.. (Sends book, settling with each RX station along the way.)

CW:

NCS: W3TX HR BOOK [OF (qty)]; or to specify the recipients:

NCS: W3TX W3XA (dest [qty]) W3XB (dest [qty]) (etc.) HR BOOK [OF (qty)]

TX: W3XA QRV?

XA: QRV

TX: XB, or W3XB (? not required. TX may use suffixes to check stations ready);

XB: QRV, etc., until all stations report ready;

TX: BOOK OF.. (Sends book, settling with each RX station along the way.)

On both modes the TX station checks each RX station is ready to copy, then sends the fixed parts. TX identifies the station which is to copy the next variable parts, and after those parts are sent, again addresses that RX station to settle fills and acknowledge. When the total book exchange is completed the TX station sends its full call sign to return control to NCS.

The full example of the sequence is shown in chapters 2 and 3, Books to Multiple Stations, and reviewed in Exchanging Traffic On Net later in this chapter..

NCS Option To Poll – It is the option of the NCS to choose to poll the RX stations to see if they are ready to copy, giving the (dest) assigned each in the query, thus saving the listing of the assignments in the dispatch. TX copies along for the records. This is seldom required.

Voice:

NCS: ALL STATIONS READY TO COPY? W3XA PO-DUNK?

XA: READY, etc., until all stations report ready.

NCS: XB HOMETOWN AND RIVER CITY? (call suffixes used in poll)

XB: READY, etc., until all stations report ready. The NCS then dispatches the book by sending:

NCS: W3TX HERE BOOK [OF (qty)];

CW:

NCS: QNC QRV? W3XA PODUNK?

XA: QRV

NCS: XB HOMETOWN AND RIVER CITY? (call suffixes used in poll)

XB: QRV, etc., until all stations report ready. Then NCS dispatches the book:

NCS: W3TX HR BOOK [OF (qty)]

The TX station still negotiates fills and the acknowledgment of each different variable part(s) with the respective RX station.

Notes:

1. See the rules for exchanging books and Books To Multiple Stations in Chapters 2 and 3, and the reviews in Exchanges On Net later in this chapter. The second NCS dispatch option of repeating the assignments is seldom required. The TX station will either copy the assignments earlier in the net and address the RX stations for each destination, or ask who is taking that destination, at the beginning of each variable part(s). TX may, however, ask the NCS to list the recipients after the simpler dispatch. The TX station functions much like the NCS in this type exchange, having the advantage of having all stations listening on frequency.
2. The TX station groups all different parts to one station together so the exchange with that station may be contiguous.
3. The TX call for each station to check if ready to copy is usually done using suffixes or tactical calls for efficiency. The ready to copy query may be omitted after the first station call.
4. See also *Dispatch, Message(S) To All Stations (QNC), On Net*.

4.11.5 Dispatch, Message(s) To All Stations, On Net, QNC

Formal Bulletin Radiograms, ARES/RACES All Station Traffic, etc. These messages are single formal radiograms with one message number and text typically addressed to the net stations (net name initials, etc.), to several nets or groups, or to all or a subset of the ARES/RACES or other liaisons on the net. Liaisons accept and forward the message to other nets based upon the message address.

If separate numbers or addressees are given in the message use the Book To Multiple Stations method above.

These messages are treated as a book of messages to multiple stations with the exception that they have no variable parts. They are listed on the net as a book to all specific type recipients or to all stations; as in a message from a served agency

headquarters to all the liaisons on the net for district offices in all jurisdictions, or from the NM to all stations, etc.

The NCS will usually have the occasional bulletin traffic sent at the beginning of the net after all stations are checked in. Bulletins and books for the net delay the beginning of normal traffic handling and are seldom done on Area/Region Nets. A cumbersome alternative is to dispatch each net station off frequency with the book holder during the net.

Case 1: A QNC message is really a book of messages to multiple stations on the net. It may be handled in the same fashion as the book transmission above (previous section) with only minor changes in the dispatch and sending syntax. The TX station polls ready to copy and polls for acknowledgment. This is the recommended method for passing such traffic.

Case 2: The NCS makes the ready to copy poll, TX polls for acknowledgment;

Case 3: A shortcut method omitting the ready to copy poll but with NCS making the poll for acknowledgment. Open loop traffic handling is risky business. See notes at end of section.

Case 1: Presentation of QNC as a book, TX poll ready to copy and poll to acknowledge:

Voice:

NCS: W3TX HERE MESSAGE TO NET; or ... [W3TX HERE BOOK (dest [qty])] (where the list of net stations is presumed known by TX)

Or the recipients are tediously listed after W3TX:

NCS: W3TX W3XA W3XB, etc., HERE MESSAGE TO NET, or ... [W3TX W3XA W3XB, etc., HERE BOOK (dest [qty])]

TX: XA READY TO COPY?; or [W3XA READY TO COPY?] (TX polls.)

XA: READY

TX: XB?, or W3XB? (the TX may use suffixes to check the stations)

Etc., calling each station (about 2 seconds each); then the book is transmitted:

TX: NUMBER (msg) END NO MORE; or [BOOK OF (#)...] (Note these books often have one number, multiple addressees.)

TX then calls each station for fills/acknowledgment:

TX: XA?, or W3XA?; (See case 3 below re NCS polling.)

XA: ROGER W3XA (Note ROGER acknowledges message, call sign meets ID rules.)

TX: XB?, or W3XB? (the TX station may use suffixes to check stations) etc., polling all stations, about 3 seconds each;

TX: [THANK YOU 73] W3TX; returns control to the NCS

CW:

NCS: W3TX HR QNC; [W3TX HR BOOK (dest [qty]), or to specify recipients:

NCS: W3TX W3XA W3XB, etc., HR QNC; or [HR BOOK (dest [qty])];

TX: XA QRV?, or [W3XA QRV?]; (See case 2 below re NCS option.)

XA: QRV

TX: XB, or W3XB (? not required. TX may use suffixes to check stations);

Etc., calling until all stations report ready, then the book is transmitted:

TX: QNC NR... (msg) <AR> N; or ... [BOOK OF (#)... <AR> END BOOK <AR> N] (Note these books often have one number, multiple addressees.)

Roll then called for fills/acknowledgment:

TX: XA, or W3XA; (? not required. See case 3 below re NCS polling.)

XA: QSL W3XA (Note QSL acknowledges message, call sign meets ID rules.)

TX: XB, or W3XB etc., polling all stations;

TX: [TU 73] W3TX; returns control to the NCS

Case 2: The NCS, having the net list, may at its option call the net stations to check each is ready to copy to save having to pass the list to the TX station. TX copies along for records.

Voice:

NCS: ALL STATIONS W3XA READY TO COPY?

XA: READY

NCS: XB?, or W3XB? (NCS may use suffixes to check stations)

Etc., polling all stations. The TX station makes a list of recipients for the record.

NCS: W3TX HERE MESSAGE TO NET; or [W3TX HERE BOOK (dest [qty])]

TX: sends the message, then polls each station for acknowledgment. (TX may ask the NCS to perform the acknowledgment as in case 3 below.)

CW:

NCS: QNC W3XA QRV?

XA: QRV

NCS: XB, or W3XB (? not required. NCS may use suffixes to check stations)

XB: QRV

Etc. polling all stations. TX makes list of recipients for record.

NCS: W3TX HR QNC; or [W3TX HR BOOK (dest [qty])]

TX: sends message, then polls the stations for acknowledgment, or asks NCS to perform that task as in case 3 below.

Case 3: Shortcut method, with all stations on frequency, omitting the check for ready to copy, and with the NCS calling roll for acknowledgment (TX can copy along for records).

This method is not consistent with traffic exchanging procedures. It assumes that All stations on the net are paying attention and ready to copy.

Voice:

NCS: ALL STATIONS W3TX HERE MESSAGE TO NET

TX: NUMBER... (msg) END NO MORE; services any fills; then returns control to the NCS with the following request:

TX: NET CALL?, or [NET ACKNOWLEDGE?]

NCS: STATIONS ACKNOWLEDGE WHEN CALLED.. W3XA?

XA: ROGER W3XA

NCS: XB?, or W3XB? Etc., until all stations acknowledge.

CW:

NCS: QNC W3TX HR QNC

TX: transmits the message, services any fills; then returns control to the NCS with the following request:

TX: NET QSL?; or [NET PSE QSL?]

NCS: QNC W3XA QSL?

XA: QSL W3XA

NCS: XB, or W3XB (? not required) Etc., until all stations acknowledge.

Notes:

1. Transmitting to all stations without polling is risky business. Any net station distracted, unable to copy the dispatch, etc., will miss the traffic and require wasted net time to recover.
2. Some nets consider the transaction complete without an acknowledgment from each receiving station. This is also questionable and risky open loop traffic handling, but may be expedient in some cases. In these cases the NCS will sometimes ask each station receiving the traffic to acknowledge at a later time when convenient, such as when excusing the station. The NCS may assist with fills or repeat the message at that time if required. This technique should be used with care, and the TX station needs to have confirmation of delivery for each message.
3. Assuming stations are ready to copy, and/or assuming stations copied a message, without confirmation, can lead to missed traffic and cumbersome corrective actions, not to mention the risk to served agencies in missing important traffic.
4. The NCS poll for the ready to copy check (optional), TX transmission, and NCS poll for net station acknowledgment may be used effectively with minimal overhead.
5. The case 1 method is customary, efficient and certain, and his highly recommended.
6. The TX sending station in cooperation with the NCS must make sure careful records are kept of which stations received the message(s). It is the responsibility of the TX station to assure that the message is passed to all the intended addressees, relist those undelivered, or create service messages back to the originator regarding those not delivered for whatever reason. In other words, the book is treated as individual messages to each addressee (even though not named), each serviced in the same fashion as any other single radiogram.

7. For served agency and other critical traffic it is more certain to use unique numbers and addresses, sent using the Book To Multiple Stations methods.

4.11.6 Dispatch, Informal Announcements, Etc.

The NCS will usually have such traffic sent at the beginning of the net after all stations are checked in. Announcements for the net delay the beginning of normal traffic handling and are seldom done on Area/Region Nets. Some Local/Section Nets provide a time for such words at the top of the net. Notices, net business topics, etc., not for written copy, are then expected and handled early. Acknowledgment by individual stations is not required, except at the discretion of the sending station or NCS, in which case an NCS poll may be conducted.

When the NCS is ready (HERE, or HR, may be omitted.):

Voice:

NCS: W3TX [HERE] WORDS FOR NET, (informal announcement, etc.)

CW:

NCS: W3TX [HR] WDS [FOR] NET, (informal announcement, etc.)

The NCS may ask the net if anyone needs fills. Stations call to be recognized as in ADDITIONAL BUSINESS, then make their request.

4.12 Dispatching Traffic Off Net, Stacks, Overview

Net Managers work in cooperation with other nets on the bands to identify frequencies where stations can move off nets without mutual interference. Some net controls are able to check for clear frequencies with second receivers before dispatching. Net operations, however, have no special priority over other amateur activities. Each frequency should be checked by operators before setting up a stack operation. “Is this frequency in use?” on voice, or “QRL?” on CW, is the customary courtesy check to assure a frequency is not in use.

Stack Definition: The NCS may “stack” several stations on a frequency off the net. The first two stations on the frequency begin the stack and control the frequency, and exchange their traffic (send, receive, or swap). When they finish their exchange, the next station waiting in line calls one of those two stations. Those two then assume control of the stack.

Additional station(s) sent to the stack may either receive or transmit traffic, or swap traffic, and may carry instructions from the NCS related to stations being excused.

Limiting The Stack: Stacks are usually limited to two operating stations and one station waiting in line. The NCS, after sending the first two stations to the stack, will dispatch additional stations one at a time thereafter. Subsequent stations are often dispatched after the return of one of the stack stations, limiting the stack to 2 or 3 stations, or based on timing or monitoring if earlier stations were excused in advance. See *Dispatching 1 Station, Addition to a Stack*.

Mixed Stacks are not permitted. No station, having completed a stack exchange, should have to wait for another station’s exchange to be completed before doing another assignment on

that stack. This would be difficult, confusing, and generally unworkable. The NCS will arrange the order so that each station is sent to the stack to exchange specific traffic. (Each additional station dispatched to the stack carries the next assignment.) When the exchange is completed, and no station calls it with another exchange, a station returns to the net and is dispatched again for additional business. In other words, once a station relinquishes control of the stack it must return to the net unless excused in advance. The NCS manages the sequence and makes it easy for stations to understand the order.

Pausing Before Return To Net. Stations should briefly pause and listen for any waiting station to call before going back to the net. A missed assignment requires the NCS to have to repeat the dispatch at a later time when the stations are available.

Un-Dispatched Communications: It is considered poor practice to have a QSO on the stack frequency before or after the exchange is completed unless it is listed and dispatched by the NCS, or both stations are excused and no others are waiting.

Other stations should not engage active stations in the stack with words or traffic without being dispatched there by the NCS, unless the stack is clear and the involved stations are excused from the net.

Frequency Instructions: (freq) may be expressed as a frequency, an offset UP # or DOWN #, (DWN # or DN # on CW), another band, mode, etc.

Immediate And Split Dispatches are optionally used. A new station will list its traffic, the NCS will call a receive rep, and the NCS will continue the dispatch to the stack. The methods are presented in the dispatch sections. See *Dispatch, 2 Stations to Stack*.

Acknowledging The Dispatch: Stations acknowledging being dispatched off frequency generally use the words “(suffix) GOING” on voice (sometimes simply “GOING,” or “(call sign) GOING”); and “T” (or “G”) on CW. In all cases the stations customarily acknowledge in the sequence given in the dispatch syntax so all stations may be heard by NCS.

Failure To Contact: Stations should be familiar with the methods for moving off frequency and making contact. The receiving station, or relay station if involved, moves to the assigned frequency or nearest clear frequency in the same direction, checks if it is in use, and initiates the call. The sending station searches and responds.

If contact is not made in about 30 seconds both of the stations return to the net and report no joy as shown in Returning Stations. Additional stations dispatched to the stack unable to make contact return in similar fashion.

See Chapters 2 and 3, *Station Operations, Moving Off Frequency*.

4.12.1 Dispatch, 2 Stns To Stack, Full, Immediate, Split

These are the workhorse dispatch commands for initiating a stack off the net frequency.

Case 1: Two station syntax. If the NCS can not be heard by one of the stations, the Establish Contact and Move Off dis-

patch (QNV) may be used and directed to the station that can copy the NCS, as shown in the QNV section.

Case 2: The archaic CW QNY usage for two stations, avoided.

Case 3: Immediate Dispatch, Skipping Acknowledgment, 4.12.1.1.

Case 4: Split Dispatch, 4.12.1.2. See also the discussion of stacks in Overview And Dispatch, QNQ.

Case 1: Two Stations To Stack:

Voice:

NCS: W3RX W3TX (freq) (dest [qty])

RX: RX GOING (acknowledging in the order dispatched)

TX: TX GOING

To Excuse in advance:

NCS: W3RX W3TX (freq) (dest [qty]) W3RX EXCUSED; or ... [... W3TX EXCUSED]; or [... BOTH EXCUSED]

RX: 73 W3RX GOING; excused station uses full call sign at departure.

TX: TX GOING

CW:

NCS: W3RX W3TX (freq) (dest [qty])

RX: T (acknowledging in the order dispatched)

TX: T

To Excuse a station in advance:

NCS: W3RX W3TX (freq) (dest [qty]) W3RX QNX; or ... [... W3TX QNX]; or [... BOTH QNX]

RX: 73 W3RX G; excused station uses full call sign at departure.

TX: T

Notes:

1. On both modes the station first addressed acknowledges first, second station next. Off frequency, the receiving station calls first. (See the sections on the EXCHANGE for the stack operation.) In the case of swaps, the first station dispatched may assume the receiving roll first, or the order of the traffic, if given, may be used to determine the sequence.

Case 2: CW, “QNY”:

This net “QN” signal, resembling the QSY change frequency signal, is archaic and is discouraged for the 2 station dispatch in favor of case 1. QNY does not convey sufficient information to the stations, and is even less effective for adding a station to a stack.

“QNY: Shift to another frequency (or to ____ kHz) to clear traffic with ____ .”)

Cases 3 and 4: Immediate and Split Dispatches may be used to dispatch a station following any Open or Specific call. They are shown in full detail only in the following two sections, but may be used in other dispatches, such as the QNQ type.

On both modes they are of the following form. Only CW is shown. On voice the same method is used with appropriate voicing rules, and “Here” as the Split Dispatch station reply and “(suffix) Going” as the dispatch acknowledgments, Traffic for QTC, Over for <AR>:

4.12.1.1 Immediate Dispatch, Skipped Acknowledgment, Examp.

Case 3: Immediate dispatch, following a QNI. CW. Two types, A and B:

A: NCS CALLS FOR LIAISON		B: NCS ASSUMES LIAISON PRESENT	
QNI	W3TX 3RN TX QTC 2RN 3 <AR>	QNI	W3TX 3RN TX QTC 2RN 3 <AR>
NCS	2RN RX	NCS	W3TX W2RX UP 5 2RN
STN	W2RX 2RN RX QRU	W3TX	T (IN THE ORDER DISPATCHED)
NCS	W3TX W2RX UP 5 2RN	W2RX	T
3TX	T (IN THE ORDER DISPATCHED)		
2RX	T		

(Note that w2rx was not yet checked into the net. See note below.)

The stations are acknowledged by implication, the act of being dispatched indicating the NCS recognized both of them and their traffic lists, if any.

In example B, if W2RX had traffic, it could (and should) list before leaving frequency so the NCS can plan for handling the business.

The NCS may also immediately dispatch a returning station, or dispatch a single station with a QNQ, without first acknowledging, in the same manner.

4.12.1.2 Split Dispatch, Example

CASE 4: Split Dispatch, following a QNI, CW (similar form on voice).

A new station checks into the net and lists its traffic. The call to W2RX by the NCS checks if a new liaison is present ready

to check in, or returned to net, or if W2RX station is copying the NCS:

QNI: W3TX 3RN TX QTC 2RN 3 <AR>

NCS: W2RX... (pause for RX reply, new or returning station; the first part of the SPLIT)

2RX: T.. (W2RX replies, QRU implied if checking in. If W2RX had traffic, it would list, and the split would be aborted in favor of a full immediate dispatch..)

NCS: ... W3TX UP 5 2RN (the rest of the SPLIT dispatch)

2RX: T (in order dispatched)

3TX: T

The outlet fails to reply by call sign. The Split is aborted:

QNI: W3TX 3RN TX QTC 2RN 3 <AR> (from the beginning)

NCS: W2RX... (pause for W2RX, no reply)

NCS: 2RN RX, (immediately calls for liaison)

STN: W2XX 2RN RX QRU, (2RN rep QNI's, perhaps unexpected rep call sign or sub)

NCS: W2XX W3TX UP 5 2RN, (defaults to **Immediate Dispatch**, acknowledging both .)

2XX: T (in order dispatched)

3TX: T

When no liaison responds at all, NCS tries the last resort, soliciting a volunteer:

QNI: W3TX 3RN TX QTC 2RN 3 <AR> (from the beginning)

NCS: **W2RX...** (pause for W2RX, **no reply**)

NCS: 2RN RX, (immediately calls for liaison, **no reply**)

NCS: VOL 2RN RX?, (if reply, NCS handles the station with **Immediate Dispatch**); or

NCS: W3TX <AS> (if no volunteer, simply acknowledges W3TX, asking it to wait)

If W3TX had other traffic, the NCS could call for an outlet, or use an immediate dispatch for that traffic without asking W3TX to wait (thus extending the function of the Immediate Dispatch).

The NCS could also initiate a SPLIT dispatch by beginning with a call for an expected returning station not yet checked back into the net. This may be used to expedite dispatching another station waiting on net with pending business (ahead of other stations checking in or returning). Assume W2RX is the returning station:

NCS: **W2RX...** (pause for returning RX to reply; the first part of the SPLIT)

2RX: RX.. (W2RX replies, checking back in)

NCS: ... **W3TX UP 5 2RN** (the rest of the SPLIT dispatch)

2RX: T (in order dispatched)

3TX: T

The Split dispatch may be used also to expedite a returning station, or an expected liaison not yet checked into the net, for a QNQ addition to an existing stack.

NCS: **W2RX...** (pause for RX to reply; the first part of the Split)

2RX: RX.. (W2RX replies, checking back in, or listing traffic if checking in for the first time.)

NCS: ... **QNT UP 5 W4TX 2RN** (the rest of the SPLIT dispatch if RX was QRU, else the Immediate Dispatch is used — W2RX QNT UP 5 W4TX 2RN.)

2RX: T

For the QNQ case, remember to use the "AFTER (station)" following W3TX for all voice stack additions, and on CW for the 2nd or additional stations to wait on the stack. (See the *Dispatch, 1 Station, Off Net, Added To Stack, QNQ* section for voice examples.)

Notes:

1. Remember that the first part of the SPLIT call is for returning stations not yet checked back in, or expected new stations not currently checked in, or to verify a station is able to copy the NCS. It is not used as a check to see if net stations are paying attention. (See the "Awake?" and Split Dispatch comments in earlier sections.)
2. Generally, if more than a simple acknowledgment by the station or liaison called occurs, the NCS will default to the two call sign Immediate Dispatch to avoid the interruption of a listing from obscuring the Split Dispatch continuity. The cost in time of the default to immediate is small compared to the possibility that both stations would not hear or understand the full Split syntax.
3. Both stations are not excused in advance unless the NCS can monitor the stack frequency to verify the traffic is exchanged, or NCS has reasonable certainty that the traffic will be passed.

4.12.2 Dispatch, 2 Stations To Stack, Other Bands/Modes

Dispatching to other bands and modes may be helpful in difficult propagation conditions. The command syntax is the same as above for dispatching 2 stations to a stack, and the (freq) statement is simply expanded to indicate the band/mode. The NCS may check with each station, directly or through relay, to verify they can work the proposed band/mode. Excusing in advance may be appended as above. Example on 75 meter SSB net:

NCS: W3RX W3TX 7095 PAN,(CW) or, W3RX W3TX
14090 AMTOR PAN 27

4.12.3 Dispatch, 2 Stations, Establish Contact, Move, QNV

This technique involves directly the two stations involved in the dispatch, as opposed to using a third station as relay as discussed in the RELAYS (QNB) section.

When the NCS is unsure if two stations can copy each other well enough to exchange traffic, a conditional dispatch is used.

QNV: "Establish contact with ____ on this frequency. If successful, move to ____ and send him traffic for ____"

The technique may also be used to evoke a RELAY of the dispatch command from one of the stations to the other when one station is not copying the NCS. The order of the dispatch may be reversed accordingly.

Voice:

1. TX copies the NCS:

NCS: W3TX CALL W3RX IF OKAY (freq) (dest [qty])

TX: W3RX W3TX (freq); if no copy, TX reports to NCS;

RX: W3TX W3RX (freq); or [W3RX GOING]; or [(suffix) GOING] (RX receives the command and moves off, TX follows)

TX: TX GOING; or

2. If the RX copies the NCS, W3TX and W3RX are dispatched in reverse order.

CW:

1. TX copies the NCS:
NCS: W3TX QNV W3RX (freq) (dest [qty])
TX: W3RX W3TX (freq); if no copy, TX reports to NCS;
RX: W3TX W3RX (freq); or [W3RX G]; or [T] (RX receives the command and moves off, TX follows)
TX: T; or
2. RX copies the NCS: W3TX and W3RX are dispatched in reverse.

Notes:

1. The first station addressed initiates the call and repeats the command to move for the other station. If copy is satisfactory, the two stations depart as shown, including signing out if excused in advance. If the stations can not copy each other the NCS may use a relay or make other arrangements such as band/mode change.
2. The dispatch may be directly to other bands or modes as well.
3. Skipped acknowledgment immediate and split dispatches after QNI may be used.
4. NCS may include quantity in case the stations wish to reply that conditions are not good enough for that much traffic.
5. Note that in the reversed order cases, the meaning of the “send him traffic for” part of the QNV definition is assumed also reversed, i.e., “receive from him traffic for”
6. NCS may excuse stations in advance in which case the instruction would be at the end of the initial dispatch and relayed by the calling station (often at the stack).
7. Both stations are not excused in advance unless the NCS can monitor the stack frequency to verify the traffic is exchanged, or NCS has reasonable certainty that the traffic will be passed.

4.12.4 Dispatch, 3 Stations, Relays, Off Net, QNB

This technique involves the use of a third station relay. There are several conditions possible to consider. If either RX or TX can copy the NCS, and the RX and TX can copy each other, then the NCS can use the appropriately ordered dispatch as above (QNV) for them to establish contact, move off, and pass their traffic. Should that fail or not be possible, the methods below may be used.

The NCS may determine in advance, or through a relay station, if the two stations can copy each other and which relay station copies both.

Verify Copy: To verify copy the NCS or stations will usually ask HOW COPY [call], reply I COPY [call] or NO COPY [call]; on CW, QNJ [call], reply QNJ or QNP, or C or N. Note the implied ME/YOU usage of QNJ and QNP when no [call] is appended. See the Q-Signal list. The Establish Contact QNV dispatch may be used without further instructions to verify copy. (W3RX QNV W3TX) See *Net Calls, Calls to Verify Copy*.

Relay Cases:

Case 1: When NCS AND the RLY station know in advance that all three stations, RLY, TX and RX, are able to copy the NCS, but RX and TX can not copy each other, the process becomes a simple triple dispatch.

Case 2: RX and TX can not copy NCS, and can not copy each other.

Case 3: RX and TX can not copy NCS, and RLY copy doubtful.

Case 4: The RX and TX can copy each other, but not the NCS. The RLY station simply relays the dispatch.

The NCS may elect to include (qty) in the dispatch in case a station or the relay was not able to copy it earlier, or the stations wish to object to the quantity under the conditions.

Case 1: Relay, Triple Dispatch, Off Net, All Stations Copy NCS

The RLY station should wait and listen to check that both stations copy and leave. All three stations reply directly to the NCS (in the order of the dispatch works well).

Voice:

NCS: W3RLY RELAY W3RX W3TX (freq) (dest [qty])

RLY: (suffix) GOING

RX: (suffix) GOING

TX: (suffix) GOING

CW:

NCS: W3RLY QNB W3RX W3TX (freq) (dest [qty])

RLY: T

RX: T

TX: T

The RLY station initiates contact on the stack frequency.

All three stations return normally.

Case 2: Relay, QNB, Off Net

RX and TX can not copy NCS, and can not copy each other:

This is one of many combinations of poor copy situations encountered. The dispatch syntax is not in wide usage. The NCS may often resort to plain English to direct the desired results.

The RLY station in this case repeats the dispatch and stations reply in a manner confirming receipt.

Voice:

NCS: W3RLY CALL AND RELAY W3RX W3TX (freq) (dest [qty]); or ... [W3RLY CALL W3RX AND W3TX (freq) AND RELAY (dest [qty])]

RLY: W3RLY FOR RELAY W3RX W3TX (freq) (dest [qty])

RX: W3RX (freq); or [(suffix) GOING]

TX: W3TX (freq); or [(suffix) GOING]

RLY: W3RLY (freq); or [(suffix) GOING],

RLY verifies RX and TX copy, then leaves last. The RLY station initiates contact on the stack frequency. Upon their return, and hearing RX and TX, RLY informs the NCS:

RLY: RLY RX TX BACK, confirming all stations returned.

NCS: RLY RX TX

CW:
 NCS: W3RLY CALL ES QNB W3RX W3TX (freq) (dest [qty]); or ... [W3RLY CALL W3RX ES W3TX (freq) QNB (dest [qty])]
 RLY: W3RLY FOR QNB W3RX W3TX (freq) (dest [qty])
 RX: W3RX (freq); or [T]
 TX: W3TX (freq); or [T]
 RLY: W3RLY (freq); or [W3RLY G]; or [T]
 RLY verifies RX and TX copy, then leaves last.
 The RLY station initiates contact on the stack frequency.
 Upon their return, and hearing RX and TX:
 RLY: RLY RX TX
 NCS: RLY RX TX

Case 3: Full Relay, Rx, Tx, Rly Difficulty

In the ultimate case the NCS may not even know if the RX and TX stations can copy the RLY. This can be established before the dispatch, plain English may be used, or a syntax sequence might be employed such as:

NCS: W3RLY QNV [ES] QNB W3RX W3TX (freq) (dest [qty])

RLY: calls each station to verify copy and pass the dispatch, then mediates the exchange at the stack.

In poor conditions the matter may be better handled by having the RLY station establish contact with RX as first step (QNV without a dispatch), RLY establish contact with TX second, then, if okay, dispatch the three stations to the stack.

Alternatively the NCS may choose to have RLY and TX make contact and move off to get the traffic into the hands of the RLY station, and make later arrangements for passing it to RX, perhaps on another band or mode, or with another relay.

Case 4: Relay Of Dispatch, For Off Net

The RX and TX can copy each other, but not the NCS. The RLY station simply relays the dispatch. There is no customary syntax widely accepted for this technique. Plain language may always be used. The following syntax may be employed:

Voice:

NCS: W3RLY SEND W3RX W3TX (freq) (dest [qty])
 RLY: W3RX W3TX (freq) (dest [qty]) ; equivalent to normal dispatch.
 RX: RX GOING
 TX: TX GOING
 RLY: W3RLY; listens on net to relay return of RX and TX.
 NCS: resumes net
 Upon their return, and hearing RX and TX:
 RLY: RLY RX AND TX BACK (RLY direct transmission like a returning station)

NCS: RLY RX TX

CW:

NCS: W3RLY SEND W3RX W3TX (freq) (dest [qty])

RLY: W3RX W3TX (freq) (dest [qty]); equivalent to normal dispatch.

RX: T

TX: T

RLY: W3RLY ; listens on net to relay return of RX and TX;

NCS: resumes net

Upon their return, and hearing RX and TX:

RLY: RLY RX TX (RLY direct transmission like a returning station)

NCS: RLY RX TX

For the Exchange see *Exchanging Traffic, Off Frequency, With Relay*, for cases 1, 2 and 3. Case 4 is a normal 2 station exchange.

Notes:

1. NCS may excuse a station in advance in which case the instruction would be part of the initial dispatch and relayed.
2. Both stations are not excused in advance unless the NCS can monitor the stack frequency to verify the traffic is exchanged, or NCS has reasonable certainty that the traffic will be passed.
3. The NCS may use the same relay technique to excuse a station or stations not copying the NCS, or to make other types of dispatches or requests.
4. The RLY station will have to relay the return of the dispatched stations.
5. In each case the first station addressed in the dispatch replies first.

4.12.5 Dispatch, 1 Station, Off Net, Added To Stack, QNQ

These commands are used for dispatching an additional station to an existing stack where two stations are already exchanging traffic. Stacks off net are started as shown in the two station dispatches. A station on a stack may switch from sending to receiving traffic, or vice versa, based on the next station assigned to contact it on the stack, or traffic may be swapped.

Limiting The Stack, Use Of After. The NCS usually limits the number of stations on the stack to 3 (2 exchanging and 1 waiting to call its station). The NCS will usually wait until one of the first two stations returns, thus reducing the stack to 2, before dispatching an additional station (or dispatch based upon time or monitoring if stations are excused in advance).

All commands to add a station to a stack should make it clear that there is already a two station stack operating on the frequency (to understand that the frequency will be busy), and the order of calling. On voice the [AFTER (call sign)] inclusion is used for all such single addition dispatches to make this clear. On CW the QNQ dispatch signal contains that information for the first additional station, and [AFTER (call sign)] is used to specify the sequence for the 4th and extra additions (infrequently done except as last business dispatches). On CW: "QNQ: Move frequency to and wait for to finish handling traffic. Then send him traffic for"

This new station might be assigned to exchange traffic with a station already in control of the stack which is due to exchange with the other waiting station first. Failure to indicate the sequence usually results in disorganization and confusion at the stack.

Mixed Stacks are not permitted. No station, having completed a stack exchange, should have to wait on the stack for another station's exchange to be completed before doing another assignment on that same stack. This would be difficult, confusing, and generally unworkable.

Pausing Before Return To Net. Stations should pause and listen for any waiting station to call before returning to net. Missed assignments cause loss of valuable net time.

Tag: If timing is such that a single addition to a stack is sent off late and the stack stations return to net right afterwards, the NCS may re-dispatch the addition's target station using the normal QNQ type command immediately... with caution. If it is likely that the additional station may soon return no joy, the NCS may choose to wait for that event and re-dispatch the two together. The NCS needs to watch the stack timing, but interruptions can sometimes get in the way. Ultimately, waiting for the stations playing tag to return to the net is certain... at the expense of net time.

Dispatch, Additional Station To The Stack, QNQ

Skipped acknowledgment immediate QNQ dispatches after QNI may be used.

It is permissible to send a station to a stack to either receive or send traffic, the last part of the definition being reversed by implication, or the stations may swap traffic.

Case 1: QNQ, one station dispatched to move to the stack.

Case 2: The old "QNY," avoided.

The first station addressed is the sole responder to these commands.

Case 1: Dispatch 1 Station To Stack, Qnq:

One station dispatched to MOVE and WAIT to clear traffic with a station already on a stack. The use of AFTER for both the third station and a fourth (or more) is peculiar to VOICE operation since the dispatched station must be informed that it is being dispatched to an already operating stack. Note there are two sequence choices shown for the "AFTER (call sign)" syntax. Putting the (dest[qty]) last is shown as first choice (second in brackets) although both will be heard in use. Only the first choice is shown in most examples.

Voice:

NCS: W3XC (freq) W3XB AFTER W3XA (dest[qty]); or ... [W3XC (freq) W3XB (dest[qty]) AFTER W3XA]

XC: XC GOING; (note W3XC and W3XB are to exchange)

To EXCUSE a station in advance, add the following at the end:

NCS: ... W3XC EXCUSED; or ... W3XB EXCUSED; the other station in the exchange; or ... BOTH EXCUSED

STN: 73 W3XC GOING; excused station signs out at departure; or if W3XB is excused, it is the responsibility of

the dispatched station to inform the other station in the exchange that it is excused when the exchange on the stack is completed.

Voice Examples:

NCS: W3TX UP 5 W3RX AFTER W3XX 3RN; or ... [W3TX UP 5 W3RX 3RN AFTER W3XX]; or with excusing,

NCS: W3TX UP 5 W3RX AFTER W3XX 3RN W3RX EXCUSED

TX: TX GOING

NCS: W3TX UP 5 W3RX AFTER W3XX 3RN W3TX EXCUSED; or

NCS: W3TX UP 5 W3RX AFTER W3XX 3RN BOTH EXCUSED

TX: 73 W3TX GOING

CW:

The QNQ-Signal automatically informs the dispatched station it is going to an existing stack. For the 3rd station:

NCS: W3XD QNQ (freq) W3XB (dest [qty]);

Or, for a 4th station (or more), in order to make the stack sequence unambiguous:

NCS: W3XE QNQ (freq) W3XB AFTER W3XD (dest [qty]); or ... [W3XE QNQ (freq) W3XB (dest [qty]) AFTER W3XD]

STN: T; The station acknowledges and departs for the stack:

To Excuse a station in advance, add the following at the end of the line:

NCS: ... W3XD QNX; or ... W3XB QNX; the other station. ... BOTH QNX

XD: 73 W3XD G; station excused signs out at departure; or if W3XB is excused, it is the responsibility of the dispatched station to inform the other station in the exchange that it is excused when contact is made on the stack.

CW Examples:

NCS: W3TX QNQ UP 5 W3RX 3RN; or

NCS: W3TX QNQ UP 5 W3RX 3RN W3RX QNX (other station)

TX: T; or

NCS: W3TX QNQ UP 5 W3RX 3RN W3TX QNX; or ... W3TX QNQ UP 5 W3RX 3RN BOTH QNX

TX: 73 W3TX G (excused station signs out at departure)

For a 4th (or more) station:

NCS: W3TX QNQ UP 5 W3RX AFTER W3XX 3RN; or ... [W3TX QNQ UP 5 W3RX 3RN AFTER W3XX];

NCS: W3TX QNQ UP 5 W3RX AFTER W3XX 3RN W3RX QNX

TX: T

NCS: W3TX QNQ UP 5 W3RX AFTER W3XX 3RN W3TX QNX; or ... W3TX QNQ UP 5 W3RX AFTER W3XX 3RN BOTH QNX

TX: 73 W3TX G

Immediate Dispatch Of New Station To The Stack

Skipped acknowledgment for new stations on both modes:

Voice:

STN: W3TX 3RN TRANSMIT TRAFFIC 1RN 4 2RN 3
OVER; (new QNI)

NCS: W3TX UP 5 W2RX AFTER W3XX 2RN

STN: TX GOING

CW:

STN: W3TX 3RN TX QTC 1RN 4 2RN 3 <AR>; (new QNI)

NCS: W3TX QNQ UP 5 W2RX 2RN;

STN: T

Case 2: The “QNY,” 1 Station Usage:

The archaic QNY dispatch, although sometimes used in the past to dispatch a single station to a stack, should never be used for that purpose due to its ambiguity and not informing the dispatched station that it is going to an existing stack.

Use the QNQ methods in case 1 above.

Notes:

- Both stations are not excused in advance unless the NCS can monitor the stack frequency to verify the traffic is exchanged, or NCS has reasonable certainty that the traffic will be passed.

4.12.6 Dispatch, Books To Multiple Stations, Off Net

Sending books to multiple stations is not usually done on Area/Region Nets. Booked traffic to a single liaison is acceptable of course.

Dispatching book traffic to multiple stations is an option of the NCS based upon the conditions, economies for the net, and the capabilities of the stations involved. During the assigning process the NCS assigned each part of the book to specific RX stations, and the TX station should have copied along (if not, the NCS will add the (dest [qty]) in the dispatch).

Voice:

NCS: W3TX W3XA W3XB (etc.) (freq) BOOK [OF (qty)];
or

NCS: W3TX W3XA (dest [qty]) W3XB (dest [qty]) etc.
(freq) BOOK [OF (qty)] (to specify recipients)

STNS: TX GOING, XA GOING, XB GOING, etc.;

At the stack after checking the frequency is clear:

TX: W3XA W3TX READY TO COPY?

XA: READY

TX: XB?, or W3XB? (TX uses suffixes or tactical calls to check stations);

XB: READY, etc., (polling until all stations report ready)

TX: BOOK OF... (Sends book. Each station excused after its part of the book. Ch. 2.)

CW:

NCS: W3TX W3XA W3XB (etc.) (freq) BOOK [OF (qty)];
or

NCS: W3TX W3XA (dest [qty]) W3XB (dest [qty]) (etc.)
(freq) BOOK [OF (qty)] (to specify recipients)

STNS TX: G, XA: G, XB: G, etc.;

At the stack after checking the frequency is clear:

TX: W3XA W3TX QRV?

XA: QRV

TX: XB, or W3XB (? not needed. TX uses suffixes or tactical calls to check stations);

XB: QRV; etc., until all stations report ready;

TX: BOOK OF... (Sends book. Each station excused after its part of the book. See Chapter 3.)

The normal “T” acknowledgment for each station GOING is dispensed with in favor of “(suffix) G” where there are numerous stations responding for large books. If there are only 2 or 3 stations, the usual “T” from each, in order, without the suffix is sufficient.

Notes:

- See the *Books To Multiple Stations* in Chapters 2 and 3, and the reviews in Exchanges On Net later in this chapter. The TX station functions much like an NCS at the stack in this type exchange. The TX call for each station to check if ready to copy is usually done using suffixes for efficiency (full calls if suffix conflicts). The TX station groups all different parts to one station together so the exchange with that station may be contiguous.
- It is incumbent upon the NCS to dispatch all the assigned stations possible off with the TX station at the same time else repeat transmissions of the traffic will be required.
- All stations are not excused in advance unless the NCS can monitor the stack frequency to verify the traffic is exchanged, or NCS has reasonable certainty that the traffic will be passed.

4.12.7 Dispatch, Message To Multiple Stations, Off Net, QNC

Dispatching messages to all stations off net is an unusual event. The NCS is out of the loop for such activity off net thus removing options discussed in sending messages to all stations on the net. If required, handle the message to a group of stations off net using the *Dispatching Books To Multiple Stations, Off Net*, method above. Use the dispatch of all recipients option so that each station is clearly notified to move off net. Example:

NCS: W3TX W3XA W3XB W3XC W3XD UP 5 ARES
BULLETIN

The QNC/book is sent after TX polling ready to copy, and acknowledged by a TX poll at the end. See *Dispatching Message(s) to All Stations, on Net, QNC*.

4.12.8 Dispatch, Excusing In Advance

Dispatched stations are not excused in advance unless the NCS can monitor the stack frequency to verify the traffic is exchanged, or NCS has reasonable certainty that the traffic will be passed. Excusing them and closing the net is risky should the stations have difficulty. There would be no net to assist, and the traffic count of the net would be in question.

The NCS may close the net after the last such dispatch and monitor the net frequency or stack frequency for any stations reporting problems or amended quantities.

If the dispatched station is excused, the station signs out with its full call sign. If the station already on the stack is ordered excused, the dispatched station must carry the command to the stack and inform that station. Signing out when excused using the full call sign meets the ID requirements.

Excusing stations in advance is discussed in most dispatching sections above. The call sign and EXCUSED, or QNX on CW, is used at the end of the dispatch line.

The generic form adds the following to the end of the dispatch:

Voice:

NCS: ... (call sign) EXCUSED; or ... BOTH EXCUSED

CW:

NCS: ... (call sign) QNX; or ... BOTH QNX

Two station dispatch to stack, example:

Voice:

NCS: W3RX W3TX UP 5 3RN W3RX EXCUSED

RX: 73 W3RX GOING (excused station signs out at departure)

TX: TX GOING; or

NCS: W3RX W3TX UP 5 3RN BOTH EXCUSED

RX: 73 W3RX GOING (excused station signs out at departure)

TX: 73 W3TX GOING (excused station signs out at departure)

CW:

NCS: W3RX W3TX UP 5 3RN W3RX QNX

RX: 73 W3RX G (excused station signs out at departure)

TX: T; or

NCS: W3RX W3TX UP 5 3RN BOTH QNX

RX: 73 W3RX G (excused station signs out at departure)

TX: 73 W3TX G (excused station signs out at departure)

Single additions to a stack:

Voice:

NCS: W3TX UP 5 W3RX AFTER W3XX 3RN W3RX EXCUSED

TX: TX GOING; and excuses RX after exchange. Or;

NCS: W3TX UP 5 W3RX AFTER W3XX 3RN W3TX EXCUSED

TX: 73 W3TX GOING; signs clear. Or;

NCS: W3TX UP 5 W3RX AFTER W3XX 3RN BOTH EXCUSED

TX: 73 W3TX GOING; signs clear and excuses RX after exchange.

CW Examples:

NCS: W3TX QNQ UP 5 W3RX 3RN W3RX QNX, (3rd)

NCS: W3TX QNQ UP 5 W3RX AFTER W3XX 3RN W3RX QNX, (4th & +)

TX: T; and excuses RX after exchange. Or;

NCS: W3TX QNQ UP 5 W3RX 3RN W3TX QNX, (3rd)

NCS: W3TX QNQ UP 5 W3RX AFTER W3XX 3RN W3TX QNX, (4th & +)

TX: 73 W3TX G; signs clear. Or

NCS: W3TX QNQ UP 5 W3RX 3RN BOTH QNX, (3rd)

NCS: W3TX QNQ UP 5 W3RX AFTER W3XX 3RN BOTH QNX, (4th & +)

TX: 73 W3TX G; signs clear and excuses RX after exchange.

Notes:

1. If RX is excused, it is the responsibility of TX to inform RX it is excused after the exchange on the stack. A written reminder is useful when moving off to the stack.
2. RX may be dispatched in like fashion, traffic flow reversed, or swaps may be ordered..
3. Additional stations dispatched one at a time to existing stacks are not asked to excuse other stations in the stack exchange sequences other than the one with which they are assigned to exchange traffic. Others return to net or have already been excused in advance.

4.13 Exchanging Traffic

In the following sections the exchanges on net and on a stack with and without the help of a relay station are shown for review. Remember that the dispatch may contain multiple messages, multiple destinations, books, bulletins, and/or traffic swaps.

The exchange of message traffic between stations constitutes a transaction. Each radiogram transmitted is introduced and ended with appropriate prosigns, prowords, or operational words, fills are negotiated as required, and the message(s) acknowledged at the end.

It is customary not to interrupt during these transactions, and, in a series of messages, until after all messages are concluded and acknowledged. This is marked by the stations signing with their farewells and full call signs. This is the signal that control is returned to the net or, off net, that the stack assignment is finished and the next station may call its contact.

On net the NCS may interrupt between individual messages to make net calls, or may dispatch limited quantities of listed traffic to accomplish that same purpose. If interrupted for a net call, the NCS will signal the stations to continue afterward, usually by sending the transmitting station's suffix and "K" or "Go Ahead," etc.

Problems perceived with listed traffic may be addressed by stations making a normal "additional business" call to the NCS, followed when recognized by the question or suggestion.

There may be rare occasions when interruptions may be needed. An erroneous dispatch might be caught, for example, where the correct recipient or another station may wish to interrupt to prevent the sending station from having to repeat the

message(s). Off net at a stack such an interruption may release the assigned receiving station from having to copy, and to be able to return to the net for other business. Care should be taken, however, not to interrupt the sequence of the stack, i.e., permit the stations to complete any other exchanges assigned.

In some cases a recipient will simply copy a message erroneously dispatched to it, allow the transmitting station to mark the message passed, then re-list the message later. Alternatively, the stations may return to net and correct the dispatch by re-listing the traffic.

Other routing matters, duplications, or corrections to a message, etc., may likewise be handled with an interruption to the NCS prior to the beginning of the exchange on net, or before stations acknowledge a dispatch. On or off the net, the station wishing to interrupt would send its call suffix, wait to be recognized, then make the input. The unusual interruption would be read by the NCS or stations as an urgent injection.

Such interruptions should be made with care, sparingly, and only when essential for problem solving or enhancing net efficiency. See also the sections on *Net Calls; Flow, Call Types, Transactions, and Tail Ending.*

Note that messages are acknowledged with “Roger” on Voice, “QSL” on CW. Expressions such as “Roger Your Message Number #” or “QSL” on Voice are considered poor practice. Roger on Voice and QSL on CW imply all messages were received. Also remember that a “Go Ahead,” or “K” on CW, is not required between each message transmitted in a series except when agreed upon on VHF/UHF repeaters. See Chapters 2 and 3 regarding Sending Multiple Messages.

4.13.1 Exchanging Traffic, On Net

See chapters 2 and 3, *Station Operations*, for the details of making contact and exchanging the traffic. The two station exchange, multiple messages to one station, books to one station, and books to multiple stations are all reviewed below.

1. Review Of Typical Exchange, Single Message, On Net
See the later section for the exchange off net.

Voice:

NCS: W3RX W3TX HERE (dest [qty])
RX: W3RX [GOOD EVENING] READY TO COPY;
TX: W3TX [GOOD EVENING] NUMBER... END NO MORE; sends traffic
RX: ROGER [73] W3RX

Voice:

RX: W3TX W3RX READY TO COPY; (short method of calling ready)	
TX: (optional LISTENING BETWEEN GROUPS and/or quantity)	
book of two R W3VPR ARL 15 ANNAPOLIS MD DEC 23	
break (.../)	ARL SIXTY ONE X HAVING
A WONDERFUL TIME HERE X	
HOPE TO SEE YOU SOON break (.../)	
number 2	JIM SMITH
	13 OAK LANE
	BOSTON MA 01033 break
BETTY AND JOHN break (.../)	
number 3	BILL JONES
	4 CEDAR RD

TX: [THANKS] 73 W3TX
Often shortened to:
NCS: W3RX W3TX HERE (dest [qty])
RX: READY TO COPY
TX: NUMBER... END NO MORE (sends traffic, services fills)
RX: ROGER 73 W3RX; the short method, signing at acknowledgment.
TX: 73 W3TX
NCS: resumes net
Or:
RX: ROGER; the long method
TX: 73 W3TX
RX: 73 W3RX (forcing RX to send last for NCS copy if needed)
CW:
NCS: W3RX W3TX HR (dest [qty])
RX: W3RX [GE] QRV
TX: W3TX.[GE]...; sends traffic
Often shortened to:
NCS: W3RX W3TX HR (dest [qty])
RX: QRV
TX: NR... <AR> N, (sends traffic, services fills)
RX: QSL 73 W3RX; short method
TX: 73 W3TX
NCS: resumes net
Or:
RX: QSL; the long method
TX: 73 W3TX
RX: 73 W3RX (forcing RX to send last for NCS copy if needed)

2. Review Of Sending Multiple Messages To One Station

This same technique is used ON Net and OFF Net in stacks once contact is made. The exchange of 4 messages is shown below written out, not voiced in all cases. Use the proper voicing rules for the type message groups sent.

```

BALTIMORE MD 21228
410 555 3434 break
HARRY OP NOTE REPLY MDD
end book more (/.../)
number 22 R W1AW 11 NEWINGTON CT DEC 22
GEORGE SMITH
45 OAK DRIVE
PODUNK MD 21200
410 555 1234 break (/.../)
ADVISE IF YOU RECEIVED MY
EMAIL DATED MARCH 7 X
73 break
STEVE
end one more (/.../)
number 309 R W3FT ARL 3 BALTIMORE MD DEC 22
WILLIAM JONES
13 SLEEPY HOLLOW PKWY
PODUNK MD 21200
410 555 2456 break (/.../)
ARL SIXTY CHRISTMAS (/.../)
BUCK
end no more
RX: ROGER W3RX
TX: W3TX (Exchange complete)
    
```

The batch is sent continuously unless RX interrupts for repeats, otherwise fills requested at end of series.

CW: Sending Multiple Messages To One Station

This same technique is used On Net and Off Net in stacks once contact is made.

```

RX: W3TX W3RX QRV; (short method of calling ready)
TX: QSK...; if applicable, or [QTC 4 QSK...] to indicate quantity;
book of two R W3VPR ARL 15 ANNAPOLIS MD DEC 23
<BT> ARL SIXTY ONE X HAVING
A WONDERFUL TIME HERE X
HOPE TO SEE YOU SOON <BT>
NR 2 JIM SMITH <AA>
13 OAK LANE <AA>
BOSTON MA 01033 <BT>
BETTY AND JOHN <BT>
NR 3 BILL JONES <AA>
4 CEDAR RD <AA>
BALTIMORE MD 21228 <AA>
410 555 3434 <BT>
HARRY <AA>
OP NOTE REPLY MDD <AR> end book <AR> B
NR 22 R W1AW 11 NEWINGTON CT DEC 22
GEORGE SMITH <AA>
45 OAK DRIVE <AA>
PODUNK MD 21200 <AA>
410 555 1234 <BT>
ADVISE IF YOU RECEIVED MY
EMAIL DATED MARCH 7 X
73 <BT>
STEVE <AR> 1
NR 309 R W3FT ARL 3 BALTIMORE MD DEC 22
WILLIAM JONES <AA>
13 SLEEPY HOLLOW PKWY <AA>
PODUNK MD 21200 <AA>
410 555 2456 <BT>
ARL SIXTY CHRISTMAS <BT>
BUCK <AR> N
RX: QSL W3RX
TX: W3TX (Exchange complete)
    
```

The batch is sent continuously unless RX interrupts for repeats, otherwise fills requested at end of series.

3. Review Of Book Sending, To One Station

On both modes the exchange is sent continuously with no RX interruptions unless fills required.

Voice: Transmission shown written (not voiced). Use proper voicing rules:

```

RX: W3TX W3RX READY TO COPY
TX: "book of three R W3VPR ARL 15 ANNAPOLIS MD JAN 1
      break (/.../)      ARL SIXTY ONE X HAVING
                          A WONDERFUL TIME HERE X
                          HOPE TO SEE YOU SOON break (/.../)
number 2      JIM SMITH
              13 OAK LANE
              BOSTON MA 01033 break BETTY AND JOHN break (/.../)
number 3      BILL JONES
              4 CEDAR RD
              BALTIMORE MD 21228
              410 555 3434 break HARRY OP NOTE REPLY MDD break (/.../)
number 4      CHUCK K3FT
              C/O BTN 146R67
              BALTIMORE MD break GEORGE
end book no more
RX: ROGER 73 W3RX
TX: THANK YOU 73 W3TX (exchange complete)
* (/.../), expected listening pauses for interruptions
    
```

CW:

```

RX: W3TX W3RX QRV
TX: QSK BOOK OF THREE R W3VPR ARL 15 ANNAPOLIS MD JAN 1
      <BT>(/...)*      ARL SIXTY ONE X HAVING
                          A WONDERFUL TIME HERE X
                          HOPE TO SEE YOU SOON <BT>(/...)*
NR 2      JIM SMITH <AA>
          13 OAK LANE <AA>
          BOSTON MA 01033 <BT> BETTY AND JOHN <BT>(/...)*
NR 3      BILL JONES <AA>
          4 CEDAR RD <AA>
          BALTIMORE MD 21228 <AA>
          410 555 3434 <BT> HARRY <AA>
          OP NOTE REPLY MDD <BT>(/...)*
NR 4      CHUCK K3FT <AA>
          C/O BTN 146R67 <AA>
          BALTIMORE MD <BT> GEORGE <AR> END BOOK <AR> N
RX: QSL 73 W3RX
TX: TNX 73 W3TX (exchange complete)
    
```

(/.../), PTT interrupts shown for non-QSK operation only.

4. Review Of Sending Books To Multiple Stations

TX polls all stations ready to copy, sends fixed parts then variable parts addressing each receiving station in turn. (For the QNC all-station bulletin see the dispatch and next sections.) This same technique is used ON Net and OFF Net in stacks. The same form is used on CW (not shown), using NR, <AA>, <BT>, QRV, CW fill requests, and QSL, etc. See Chapter 3.

Voice: Unlike the two station exchange, the TX station initiates the sequence. Message parts are shown written, not voiced. Use appropriate voicing rules.

```

TX:      W3XA W3TX READY TO COPY?
RX1:     READY TO COPY; or [READY]
TX:      XB?, or W3XB?; (TX may use suffixes or tactical calls in this sequence.);
RX2:     READY
TX:      XC?
RX3:     READY
TX:      book of three R W3VPR ARL 15 ANNAPOLIS MD JAN 1
          break (/.../)      ARL SIXTY ONE X HAVING
                              A WONDERFUL TIME HERE X
                              HOPE TO SEE YOU SOON break (/.../)
RX3:     XB STATION OF ORIGIN      (W3XB needs fill. Fixed part fill requests
          from RX stations are accepted here so all stations can benefit. ID is optional.)
TX:      WHISKEY TREE VICTOR PAPA ROMEO
RX3:     ROGER
TX:      W3XA number 2      JIM SMITH      (alerts RX1 to copy next part)
                              13 OAK LANE
                              BOSTON MA 01033 break BETTY AND JOHN break
          W3XA?      (checking with receiving station for acknowledgment)
RX1:     ROGER W3XA      (station excused from the stack if off net)
TX:      W3XB number 3      BILL JONES      (alerts RX2 to copy next part)
                              4 CEDAR ROAD
                              BALTIMORE MD 21228
    
```

410 555 3434 break HARRY	
OP NOTE REPLY MDD break	
W3XB?	
RX2:	WORD AFTER figure FOUR
TX:	CEDAR I spell C E D A R
RX2:	ROGER W3XB (station excused from the stack if off net)
TX:	W3XC number 4 CHUCK K3FT (alerts RX3 to copy next part);
C/O BTN 146R67	
BALTIMORE MD break GEORGE	
end book no more	
RX3:	ROGER W3XC
TX:	W3TX (EXCHANGE COMPLETE)

5. Review Of Sending Bulletins, QNC, To Multiple Stations

These messages generally have one message number, and are addressed to a group of recipients. TX polls all stations ready to copy, sends the message, then polls all stations for fills and acknowledgment. (See the dispatch section and Chapters 2 and 3.) This same technique is used ON Net and OFF Net in stacks. The same form is used on CW (not shown), using NR, <AA>, <BT>, QRV, CW fill requests, and QSL, etc. See Chapter 3.

Voice: Unlike the two station exchange, the TX station initiates the sequence. Message parts are shown written, not voiced. Use appropriate voicing rules.

TX:	W3XA W3TX READY TO COPY?
XA:	READY; (ready to copy)
TX:	XB?, or W3XB?; (TX may use suffixes or tactical calls in this sequence.);
XB:	READY
TX:	XC?
XC:	READY
TX:	book of three number 6 R W3TX 10 ANNAPOLIS MD JAN 1
DISTRICTS A B AND C break (/.../) (fixed multiple address)	
ADVISE TOTAL NUMBER OF PERSONS	
IN SHELTERS IN YOUR JURISDICTION break (/.../)	
JIM SMITH DIR STATE EOC 012315 JAN 91	
end book no more	
TX:	XA? (checking with receiving station A for acknowledgment)
XA:	ROGER W3XA (station excused from the stack if off net)
TX:	XB? (checking with receiving station B for acknowledgment)
XB::	WORD AFTER PERSONS
TX:	IN
XB:	ROGER W3XB (station excused from the stack if off net)
TX:	XC? (checking with receiving station C for acknowledgment)
XC:	ROGER W3XC
TX:	W3TX (EXCHANGE COMPLETE)

The TX operator is responsible for keeping a record of recipients and servicing messages for which there is no outlet. Likewise for messages addressed to “ALL STATIONS,” or “ALL DISTRICTS,” etc. The list of successfully delivered messages must be made available to the originator (or originating agency). Such agency traffic is often marked by the date/time group shown after the signature, and is referenced in replies (“Your Number 6 012315,” or sometimes simply “Your number 012315”). The message number sorts those sent in the same minute. When present, this time stamp obviates the need for a time-filed in the preamble. Local agencies may insist on using local time, in which case a time-filed should be used to indicate EST or EDT, and the date changed from the default UTC date to local date to agree with the time (see Ch. 1).

4.13.2 Exchanging Traffic, On Net, With Relay

See chapters 2 and 3, Station Operations, for the details of making contact and exchanging the traffic.

Typical Exchange:

Voice:

- NCS: W3RLY RELAY W3RX W3TX HERE (dest [qty])
(The RLY station contacts RX to verify copy, then solicits the traffic from TX.)
- RLY: W3RX W3RLY
- RX: W3RX
- RLY: W3TX W3RLY READY TO COPY
(TX sends the traffic to RLY.)
- RLY: (fills) or ROGER W3RLY
- TX: 73 W3TX
- RLY: W3RX READY TO COPY?;
- RX: READY TO COPY;
(RLY sends the traffic to RX.)
- RX: (fills) or ROGER W3RX
- RLY: [Excuses one or both of the stations if NCS so ordered.]
- RLY: 73 W3RLY;
- NCS: resumes the net after the last RLY transmission.

CW:
NCS: W3RLY QNB W3RX W3TX HR (dest [qty])
(The RLY station contacts RX to verify copy, then solicits the traffic from TX.)
RLY: W3RX W3RLY
RX: W3RX
RLY: W3TX W3RLY QRV
(TX sends the traffic to RLY.)
RLY: (fills) or QSL W3RLY
TX: 73 W3TX
RLY: W3RX QRV?
RX: QRV
(RLY sends the traffic to RX.)
RX: (fills) or QSL W3RX
RLY: [Excuses one or both of the stations if NCS so ordered.]
RLY: 73 W3RLY [Excuses one or both of the stations if NCS so ordered.]
NCS: resumes the net after the last RLY transmission.
If either station is unable to copy RLY, the RLY station may ask the other to attempt to establish contact and pass the traffic directly as a last resort to complete the assignment.
Notes: The destination may be given by RLY in cases where stations were not copying NCS.
[End Of Traffic], or [Back To Net], or equivalent, is sometimes heard to signal the NCS that the exchange is complete although the NCS can usually determine this from sequence.

4.13.3 Exchanging Traffic, Off Frequency, Stacks
See chapters 2 and 3, *Station Operations*, for the details of making contact and exchanging the traffic. The frequency should be checked clear by the receiving or relay station which makes the first call. Those chapters discuss details of the searching process for the two stations essential to connecting successfully.

Pausing For A Call, An Essential Responsibility
When the stations complete the assigned exchange(s), BOTH stations should pause a moment to allow time for an additional station sent to the stack to call one or the other. Returning to the net too quickly can make a station miss a stack assignment forcing the net to repeat the process.
Also, see *Dispatch, 1 Station, Addition To A Stack* for additional details about stack operation and control.
Exchange only traffic dispatched by the NCS.
Typical Exchanges, First Two Stations Beginning Stack

Voice:
Short method. See Chapter 2.
RX: IS THIS FREQUENCY IN USE?; if no response:
RX: W3TX W3RX READY TO COPY
TX: [W3TX]... ; traffic sent
RX: ROGER 73 W3RX
TX: 73 W3TX

The W3TX W3RX READY TO COPY call may be made on the first attempt. If no contact, repeat calls are made without the ready to copy statement, forcing the TX station to ask RX “READY TO COPY?” after contact, and RX to reply.
or; Long method. See Chapter 2.
RX: IS THIS FREQUENCY IN USE?; if no response
RX: W3TX W3RX; call repeated until contact
TX: [W3TX] READY TO COPY?; (forced to ask)
RX: READY TO COPY
TX: ... ; traffic sent
RX: ROGER, (long method)
TX: 73 W3TX
RX: 73 W3RX
Both stations pause and listen for calls before returning.

CW:
Short method. See Chapter 3.
RX: QRL?; if no response
RX: W3TX W3RX QRV
TX: [W3TX] QSK ... ; or [W3RX W3TX QSK ...]; traffic sent
RX: QSL 73 W3RX
TX: 73 W3TX
The W3TX W3RX QRV call may be made on the first attempt. If no contact, repeat calls are made without, forcing the TX station to ask RX “QRV?” after contact, and RX to reply QRV.
Or; Long method. See Chapter 3.
RX: W3TX W3RX; call repeated until contact
TX: W3TX QRV?; or [W3RX W3TX QRV?]
RX: QRV
TX: QSK ... ; traffic sent
RX: QSL
TX: 73 W3TX
RX: 73 W3RX
Both stations pause and listen for calls before returning.
Additional Station Assigned, Calls And Joins Control Of Stack
The next waiting additional station to join in control of the stack calls its station promptly after the exchange is complete.
Voice:
XD: W3TX W3XD READY TO COPY [(dest)]; or ... W3RX W3XD READY TO COPY [(dest)]?, depending on the exchange direction;
CW:
XD: W3TX W3XD QRV [(dest)]; or ... W3RX W3XD QRV [(dest)]?, depending on the exchange direction;
The traffic is exchanged and both stations pause for additional calls before returning to the net.
If the NCS excused the additional station, it already signed out of the net when departing to the stack. If the NCS excused the

stack station, the additional station must pass the command to that station at the conclusion of the exchange, as in:

Voice:

XD: ROGER 73 YOU ARE EXCUSED W3XD

CW:

XD: QSL 73 UR QNX W3XD

The additional station may optionally indicate they are BOTH excused if that is the case; [...BOTH EXCUSED...]; or on CW, [...BOTH QNX...]. Words thereafter are permissible if desired.

Notes:

1. Sending Books and Multiple Messages to one station and Books To Multiple Receiving Stations (or Bulletins) is done in the same form off net as on net once contact is made. In the multiple station cases each receiving station is excused from the stack to return to net when its parts are concluded. See review of *Exchanges On Net* above and in Chapters 2 and 3 for details..
2. Multiple traffic destinations and/or swaps may be involved.
3. If an exchange is incomplete, and there is an additional station waiting for the stack, the additional station may be able to assist with relay if there is difficulty. If that fails, the free station involved in the failed exchange should return to net and report no joy, and the next additional business should be handled on the stack as assigned.
4. If the last stations are not able to complete the exchange they should both return to the net to report.
5. If the quantity passed is altered, the TX station (or RX station if asked, or if the TX station is excused) should notify the NCS on return to the net frequency.
6. The failed exchange or altered quantity should be reported to the NCS even if both stations were excused in advance.
7. If the net is closed the NCS will often be listening to make note of the change or assist.

4.13.4 Exchanging Traffic, Off Frequency, With Relay

The dispatch of a third station to relay:

Typical Exchange

NCS: W3RLY RELAY W3RX W3TX (freq) (dest [qty])

The RLY, RX and TX arrive at the stack frequency where the RLY station assumes control:

Voice:

RLY: IS THE FREQUENCY IN USE? If no response, then RLY establishes contact:

(The RLY station contacts RX to verify copy, then solicits the traffic from TX)

RLY: W3RX W3RLY

RX: W3RX

RLY: W3TX W3RLY READY TO COPY

TX: sends the traffic to RLY.

RLY: ROGER STAND BY

(RLY holds the TX station in case any confirmations needed.)

RLY: W3RX READY TO COPY?

RX: READY TO COPY

RLY: sends the traffic to RX.

RX: ROGER 73 W3RX

RLY: [Excuses one or both of the stations if NCS so ordered.]

RLY: W3TX 73 W3RLY

TX: 73 W3TX

CW:

NCS: W3RLY QNB W3RX W3TX (freq) (dest [qty])

RLY: QRL? If no response, then RLY establishes contact:

(The RLY station contacts RX to verify copy, then solicits the traffic from TX)

RLY: W3RX W3RLY

RX: W3RX

RLY: W3TX W3RLY QRV

TX: sends the traffic to RLY.

RLY: QSL <AS>

(RLY holds the TX station in case any confirmations needed.)

RLY: W3RX QRV?

RX: QRV

RLY: sends the traffic to RX.

RX: QSL 73 W3RX

RLY: [Excuses one or both of the stations if NCS so ordered.]

RLY: W3TX 73 W3RLY

TX: 73 W3TX

All stations signed full calls to conclude the exchange.

The destination may be given by RLY in cases where stations were not copying NCS.

When the stations complete the assigned exchange(s), ALL stations pause to listen for calls, then return to net. Returning to the net too quickly can make a station miss a stack assignment forcing the net to repeat the process.

The RLY station listens for RX and TX on the net and relays them as returned to the NCS as required.

If either station is unable to copy RLY, the RLY station may ask the other to attempt to establish contact and pass the traffic directly as a last resort to complete the assignment.

See the sections dealing with *Dispatching 2 Stations With Relays, On Net And Off Net*, for explanations of the function of the Relay Station during the Dispatch and the Exchange.

Failed exchanges or altered quantities should be reported back to the NCS on net, even if all stations are excused, as discussed in normal stack exchanging above.

4.14 Returning To The Net

Stations report the job completed, or report problems, using different syntax when returning to the net.

The NCS should be advised of the nature of problems to help facilitate solutions.

Stations must pause to listen for calls before returning. After pausing for calls from another station dispatched to the stack, the free stations should return promptly. Other business may be pending for their stations.

It is considered poor practice to have a QSO on the stack frequency before or after the exchange is completed unless words were listed and dispatched by the NCS.

Net or other stations at the stack should not engage in a QSO or unassigned traffic with a stack station unless dispatched there by the NCS for WORDS or traffic.

The NCS should always make frequent calls, or tail end pauses, during the net to permit returning stations to be able to check back in promptly. Such opportunities permit stations not able to complete their exchange to check back into the net to make other arrangements promptly.

Returning stations having no further pending business on the net may be excused immediately upon their return if not already excused in advance.

Stations may be excused in advance as discussed in Dispatching, Excusing In Advance. A station may be asked to carry an order from the NCS to excuse a station on the stack with which it is to make an exchange.

Stations should not interrupt transactions when returning. The practice of “tail ending,” checking back into the net at the conclusion of a transaction, or pause tail ending, is permitted on most if not all nets. If you are not sure about how to do this without interrupting transactions, wait for the NCS to make an Open call or a call for returning stations.

On some nets returning stations may be permitted to check back into the net in batches, each sending their suffix (“suffix BACK” on voice) in a series. The NCS will acknowledge their return likewise at its discretion. Technically this violates the transaction between a returning station and the NCS acknowledgment. If the NCS interrupts and acknowledges after the first station take this as a message that the NCS will not accept strings of returns. Check with your net regarding policy. STNS: RX TX XX, NCS: RX TX XX.

The NCS may stop the process and deal with a problem or make a dispatch or call when required.

It is considered poor practice for a station to return to the net and remind the NCS of its additional pending business. The NCS lists all business and may dispatch it in any order desired to accomplish an efficient net. NCS errors or omissions may be politely corrected with an “additional business” call if necessary.

4.14.1 Returning, Completed Exchange

Voice:

STN: (suffix) BACK; implying job complete

NCS: repeats (suffix); or may immediately dispatch the station for an exchange.

Example:

RX: RX BACK

NCS: RX; or [W3RX W2TX UP 5 3RN]; or

... [W3RX 73 YOU ARE EXCUSED]; etc.

CW:

STN: (suffix); implying job complete

NCS: repeats (suffix); or may immediately dispatch the station for an exchange.

Example:

RX: RX

NCS: RX; or [W3RX W2TX UP 5 3RN]; or [W3RX 73 QNX]; etc.

The NCS automatically reads this re-check syntax as indicating that the dispatch assignment was completed successfully. It is not necessary for returning stations to add words indicating that they passed the assigned traffic, nor for the NCS to ask if the traffic was passed.

The NCS may ask for confirmation or questions regarding conditions on the assigned frequency for future reference if there is some reason to do so.

4.14.2 Returning, Unable To Contact Or Complete Exchange

(Call Sign) + No Joy, No (Suffix), Lost (Suffix), (Comments), etc.

Stations unable to make contact, or unable to make or complete the exchange(s) dispatched, should return to net promptly, even if excused in advance. If the net is closed the NCS may be monitoring their stack, or be monitoring the net frequency to assist.

Both returning stations should report the failure.

See Chapters 2 and 3 regarding searching for and contacting the assigned station(s). Learning the appropriate methods can help avoid missing exchanges. The receiving station, or relay station if assigned, finds a clear frequency close to that assigned, and initiates the call. The transmitting station searches to find that station. If no joy in thirty seconds to a minute the chances of connecting become slight and the stations should return to net and so report.

The use of the full call sign shown here for reporting back with no joy is intended to make the station’s report distinct from the suffix used for return after successful completion of the job. This alerts the NCS to wait for the extra words. (Some nets may optionally prefer the use of the suffix followed immediately by the no joy report.)

Stations report the problem to the NCS upon returning.

Voice:

STN: (call sign) NO JOY [comments]; or

STN: (call sign) NO (suffix); suffix of dispatched contact;

STN: (call sign) LOST (suffix) [comments];

NCS: (suffix) ROGER STAND BY; or may re-dispatch when both back, or use relay.

CW:

STN: (call sign) NO JOY [comments]; or

STN: (call sign) NO (suffix) ; suffix of dispatched contact;

STN: (call sign) LOST (suffix) [comments];

NCS: (suffix) R <AS>; or may re-dispatch when both back, or use relay.

Notes:

1. Additional brief information [comments] may optionally be appended to the report such as “interference,” “conditions,” “no clear frequency,” etc. (QRM, CONDX, QRN, FREQ QRL, etc., on CW). If the RX station, or RLY, is able to find a prospect for a good frequency, or has a suggestion for another band or mode, that information should be passed to the NCS as well (briefly).
2. NCS replies with suffix, ROGER and “STAND BY”; (suffix, R, <AS>, on CW), re-lists the traffic, and will re-dispatch the assignment. NCS may arrange a relay station to help, or arrange other solutions to problems. Stations may be dispatched to other bands or modes to complete the assignment, or hooked up with individual relays for later dispatching.

4.14.3 Returning, Revised Quantity Handled, Add/Cancel

There may be times when stations on the stack discover they have more or less traffic to pass than listed and dispatched, or may find the RX station may not be able to handle some. The honest mistake here is distinguished from the case of stations taking the initiative to swap traffic not dispatched but listed and pending on the net. The latter is considered poor practice.

The addition of one or two messages passed to complete the assignment in the dispatched block may take less time than returning to net and starting over from scratch. This is, of course, an exception to the “handle only traffic dispatched” rule, but the judgment call can save the net some time. The stations pass what they can, in the original dispatched block, and then return to the net and notify the NCS of the change for traffic count purposes. Even an excused station should return to net and inform the NCS of changes in quantity passed.

A station suddenly finding it has a significant additional quantity of traffic to pass should return to net and clear the quantity with the NCS. Other dispatches may have been planned based on the original workload estimate.

The NCS bases dispatching and timing upon quantities of listed traffic and may have already assigned the additional traffic to another station waiting on net, or expects the dispatched stations to complete their exchange in a certain amount of time.

The NCS may simply acknowledge the statement, or immediately dispatch the station for another exchange. Listen carefully.

Voice:

STN: (call sign) BACK CHANGE (dest qty) TO (qty)

STN: (call sign) BACK CANCEL (dest qty)

STN: (call sign) BACK [PLEASE] ADD (dest qty)

NCS: (suffix) ROGER STAND BY; or may dispatch the station.

CW:

STN: (call sign) CHANGE (dest qty) TO (qty)

STN: (call sign) QTA (dest qty)

STN: (call sign) [PSE] ADD (dest qty)

NCS: (suffix) R <AS>; or may dispatch the station.

4.14.4 NCS Call For A Specific Returning Station

Based on listed traffic and the desired dispatching order, the NCS may wish to call a returning station before being flooded with numerous other calls.

This may seem like an obvious option, but returning stations can be taken by surprise. When returning and waiting for a chance to check back in listen for the call.

Voice:

NCS: (call sign)?; or [(suffix)?], returning station specific call (The query inflection is used to distinguish the call from a dispatch.)

STN: (suffix) BACK; for job completed; or, if problem, ... (call sign) NO JOY; or (call sign) NO (suffix); etc.

NCS: either acknowledges with suffix or begins dispatch command

CW:

NCS: (call sign)?; or [(suffix)?], returning station specific call (The (?) is sent to distinguish the call from a dispatch.)

STN: (suffix); implying job complete; or, if problem, ... (call sign) NO JOY; or (call sign) NO (suffix); etc.

NCS: acknowledges with suffix, or begins dispatch command.

Notes:

1. The use of full call sign and query (?) clearly marks a request to reply by the NCS. This is the same method used by NCS to Call Specific Liaisons, Stations By Call, Jobs.
2. Immediate or split dispatches may be used.

4.15 Additional Business, Information, Or Requests

During the net operation stations check in and list business for the net, the NCS records the business, assigns and dispatches the listed business, and eventually excuses the stations and closes the net. Other sections deal with the mechanics involved in those activities.

There are numerous occasions during a net when additional business or requests need to be dealt with. The essence of the directed net governs the mechanics of how this is done as well.

Stations wishing to make transmissions first call to be recognized by the NCS, and, when recognized, make their request or list additional business. An orderly conduct of net operation is maintained by this discipline.

The NCS from time to time may have additional requests for the net stations. This is also done in a uniform way to make clear exactly what the NCS is doing.

4.15.1 Station Requests To List Business

Obtaining recognition of the NCS to transmit for matters not as a specific immediate reply to an NCS request or net call is done by transmitting the call sign suffix.

Stations with additional business wait for the completion of a net transaction then seek to be recognized. This may be done following an Open Net Call or any other net transaction except Specific Calls closed to others as shown in other sections. Tail ending and pause tail ending may be used.

Stations once recognized may

- Add Or Cancel Traffic (See next section for syntax.);
- Offer To Take Listed Traffic;
- Offer To Store And Forward Listed Traffic;
- Volunteer (for liaison or net jobs, etc.);
- Offer Or Request Information;
- Offer To Relay Stations Or Relay Traffic Between Stations;
- Make Comments (to the NCS, and with permission, to the net—words for net);
- Request To Be Excused; etc.

The NCS will reply or add such business to the net task list and attempt to service it.

The NCS may make Specific Net Calls as a result of many of the above requests. See the section on *Net Calls*. Some requests may be acted upon immediately, others later at the NCS discretion.

Voice:

STN: (suffix); to request recognition

NCS: repeats (suffix); to recognize the station

STN: [(call sign)] (req) [OVER]; makes its request or comment.

NCS: [(call sign)] [ROGER] STAND BY;
 ... [(call sign)] [(req)] STAND BY];
 ... [(call sign)] (reply) STAND BY];

(Or the NCS processes the request or dispatches the station.)

CW:

STN: (suffix); to request recognition

NCS: repeats (suffix); to recognize the station

STN: [(call sign)] (request) [<AR>]; makes its request or comment.

NCS: [(call sign)] [R] <AS>;
 ... [(call sign)] [(request)] <AS>;
 ... [(call sign)] (reply) <AS>;

(Or the NCS processes the request or dispatches the station.)

CW Example:

STN: XX

NCS: XX

STN: CAN QSP PODUNK FOR LATE SESSION

NCS: R <AS>

Notes:

1. The method used is the essence of the directed net. Request to be recognized, be recognized, then make the request or comment.

2. The station's (suffix) and the NCS repeat of the (suffix) are self completing, implying "go ahead"; Over and "K" are not needed. Over, or <AR>, in the listing are used as end markers in transmissions of uncertain length as shown in initial check in methods. A request such as "Need To Close Station," or "QNX PSE," are sufficiently succinct to be self completing
3. The station response after being recognized includes the station's full call sign optionally for the most formal business listing, but is often dispensed with for simple requests and when there is no ambiguity about which station is transmitting.
4. The NCS responses are varied, ranging from a simple STAND BY, or <AS>, the end marker for the transaction, to a repeat of the request for the benefit of the net, or a reply to a request. If a station is volunteering for a liaison or auxiliary assignment the NCS will acknowledge with the full call sign and confirmation of the assignment, or, if only one station responds, will make it clear some way that the assignment is granted. "R" is often sufficient. The station needs to know clearly from the NCS that an assignment is granted or made.
5. ROGER, or "R," is used instead of the call sign to acknowledge requests primarily as a pleasant way to assure the station that its transmission is understood, and is often dispensed with.
6. Generally the NCS acknowledgments for task related requests are the same as shown for NCS calls for stations to perform various tasks, as presented in the respective sections.
7. The NCS may immediately make a net call based upon the request rather than formally acknowledge it, the net call providing that function by implication. The NCS may immediately dispatch the station for traffic which the station volunteered to take. Acknowledgment is implied.
8. In summary, the process minimally includes the suffix call, the suffix recognition, the request, and the NCS acknowledgment, or immediate dispatching of the request.
9. If a station needs to contact a station being excused, it simply inserts its (suffix). This may be done as an interruption to the transaction for emphasis. The NCS will suspect that the station probably needs contact and acknowledge. Interrupting a transaction in this fashion should be used sparingly, otherwise the NCS may choose to ignore the interruption.
10. A large variety of other words have been contrived on some Local/Section Nets for special purpose calls to the NCS (Contact, Relay, Break, Comment, Info, and so on.). Generally the (suffix) method is sufficient and preferred in most cases. This is the customary best practice.

4.15.2 Adding Or Canceling Traffic

It is assumed such calls are made by stations already checked into the net.

Voice:

STN: (suffix); to request recognition, or adds comment below when returning to net.

NCS: repeats (suffix); to recognize the station

STN: [(call sign)] PLEASE ADD TRAFFIC (dest [qty]) OVER

STN: [(call sign)] PLEASE CHANGE (dest qty) TO (qty) [OVER]

STN: [(call sign)] PLEASE CANCEL (dest [qty]) [OVER]

NCS: [ROGER] STAND BY; or dispatches station

CW:

STN: (suffix); to request recognition, or adds comment below when returning to net.

NCS repeats (suffix); to recognize the station

STN: [(call sign)] PSE ADD QTC (dest [qty]) <AR>

STN: [(call sign)] PSE CHANGE (dest qty) TO (qty) [<AR>]

STN: [(call sign)] PSE QTA (dest [qty]) [<AR>]

NCS: R <AS>; or dispatches station

(Please may be optionally sent as PSE or PLS.)

CW Example:

STN: XX

NCS: XX

STN: [W3XX] PSE ADD PODUNK 2 <AR>

NCS: R <AS>; or [W3RX W3XX UP 5 PODUNK]

The call sign is optional in the request since the NCS has already replied with the suffix to recognize the station. If there are stations with similar suffixes on the net the full call sign is used to avoid having the NCS adjust the wrong hook. “Over” and <AR> are used only as required.

The NCS will acknowledge or dispatch the station for related or other business, or excuse the station if it has no further pending business.

The NCS, having no outlet for a station’s traffic, may request if the station will hold the traffic. See *Excusing Stations*.

4.15.3 NCS Addressing A Station On The Net, Replies

When the NCS needs to address a station standing by on the net it will send “(call sign)?,” and sometimes “(suffix)?.” The query (?) and the voice inflection is recommended to avoid conflict with dispatching syntax and station’s calls.

The station replies with its (suffix) to acknowledge. (Experienced ops on Area/Region Nets may sometimes reply with a simple “Here,” or “HR” or “T” on CW.)

Questions by the NCS should be answered as briefly as possible... with a simple “Affirmative” or “Negative,” “C” or “N” on CW, when possible. If a station can not do something asked of it by the NCS, excuses or explanations are usually not needed, although a suggested alternative may be useful.

Such calls are used for checking for specific returning stations (to expedite a dispatch), to make requests or solicit outlets or liaisons or auxiliary help, etc., etc. Numerous examples of

calls for single and multiple responders are shown in the Net Calls sections.

Again, the full call and query distinguish the call from a dispatch, acknowledgment, or station checking back in.

CW Example:

NCS: W3XX?; or [XX?]

STN: XX (or sometimes HR, T or K)

NCS: CAN U GO EAN TX AUX?

STN: C

NCS: W3XX W3TX UP 5 EAN 12

4.15.4 Net Unassigned Traffic

The NCS may make net calls periodically to solicit stations to handle unassigned business on the net task list. This may be done through specific calls to individual stations, specific calls for individual items, or the total list. See the sections on *Assign, Call Net Unassigned Traffic List*; and *Assign, Unassigned Traffic, Specific Station Request*.

CW Example:

NCS: QNC QTC PODUNK LAUREL DC QSP?; or

NCS: W3RX QSP PODUNK?

4.15.5 Emergencies

Should a station have an emergency, or come into the possession of emergency related information about an immediate threat to life or property which needs to be passed to officials, the station may declare an emergency to the NCS.

The station should declare “Emergency This Is (call sign)” on voice, “EMERGENCY DE (call sign)” on CW, and then assist the NCS and the net stations in getting the information passed. Attempts to deliver the message(s) or information should not be limited to Amateur Radio. Use of telephone, internet, other radio services, etc. should be considered with the intention of delivery in the shortest time with certainty and reliability.

The internationally recognized distress call “MAYDAY” is also often used to declare such emergencies.

Use public safety agencies to assist. Use public safety agencies or private relief agencies such as the American Red Cross for notifications about deaths or serious injuries/illness.

International distress calls usually require notification of the US Department of State for assistance or coordination.

Maritime emergencies within or near US coastal waters may be assisted through the US Coast Guard. Aircraft emergencies may be assisted through the Federal Aviation Administration.

Public safety agencies (the police and fire departments) can usually handle such calls and contact the appropriate agencies.

Any incident within a local jurisdiction should be reported to that jurisdiction’s public safety agencies as well as any other specific agency selected. Local officials are prepared to take care of notifying and protecting citizens that may be affected.

See the FCC rules regarding handling emergency communications.

4.15.6 Avoiding Spontaneous Comments, Criticism

Stations making transmissions without the permission of the NCS may be ignored by the NCS. Such transmissions are considered very poor practice. Take no offense, just be patient and seek recognition before transmitting. Without such direction a net may quickly fall into disorder.

Stations persisting in making such transmissions will likely be excused by the NCS, or informed that their activity constitutes interference to the net.

Stations, even if recognized, should avoid what is considered the bad practice of making critical comments about how the net should be run or actions of other stations. A good NCS will ask for help or information when needed. The time for a critique of the net is after it is closed, preferably off frequency or, better, off the air.

Guidance from an experienced station or the NM may be offered with the appropriate tact and diplomacy—with NCS permission. The NCS may tactfully advise stations regarding conduct or procedures.

On the other hand, time permitting, and with NCS permission, tutorial information may be presented for the benefit of the net. This is not usually directed at any particular station. A station may certainly volunteer to explain something to another station, or the net, or assist in a task, all in the spirit of amateur radio cooperation and helpfulness.

If you have never made a mistake, you have never been a net control.

4.16 Excusing Stations

Any station checking into a net is obligated to remain in the net until either excused by the NCS or the net is closed by the NCS. Honoring this obligation is not only a courtesy to the NCS and net participants but also important to the conduct of net business. Leaving the net without notice, short of emergencies or equipment failure, is considered poor practice.

Farewells are shown before “EXCUSED” or “QNX,” the line ending commands, but are sometimes reversed.

4.16.1 Excusing By Request

If a station must leave the net:

Voice:

STN: (suffix)

NCS: (suffix)

STN: REQUEST TO BE EXCUSED [PLEASE OVER]; or ...
CANCEL MY TRAFFIC REQUEST TO BE EX-
CUSED [PLEASE OVER]; or; ... REQUEST TO BE
EXCUSED FOR (#) MINUTES [PLEASE OVER];

NCS: ROGER 73 (call sign) YOU ARE EXCUSED

STN: THANK YOU 73 (call sign), or;

STN: MUST LEAVE THE NET 73 (call sign) [OVER],
checking out of net.

NCS: ROGER 73 (call sign) YOU ARE EXCUSED

CW:

STN: (suffix)

NCS: (suffix)

STN: PSE QNX; or [NEED QNX]; or ... QTA TFC PSE
QNX; or ... QNT (#); request out for (#) minutes;

NCS: 73 (call sign) QNX

STN: TU 73 (call sign), or;

STN: QNO 73 (call sign), checking out of net.

NCS: 73 (call sign) QNX

4.16.1.1 Roving Liaisons

During disaster services many nets may be operating continuously in a given area. Liaisons roving between these nets to carry traffic should always check out of the net they are leaving and into the destination net. Stations should never leave a net without informing the NCS. Trying to work two nets at the same time sooner or later will cause inconvenience to one or both. A non-responding station will often cause wasted net time, delay other stations, or trigger the NCS to assign traffic to other handlers. This can disrupt the effectiveness of net routing during such situations.

When leaving temporarily the NCS will hold the station’s traffic listed until return. NCS may not be able to hold the holders or recipients of traffic if a station is gone for an extended period. The NCS may ask if or when the station will return, and if listed business should be held.

A traffic assignment is canceled or reassigned if the original assignee leaves the net. When a station wishes to leave permanently the NCS will cancel its traffic or will ask permission to do so.

Two operator liaison stations, checked into each net, can greatly alleviate these problems by physically passing traffic between operators while stations remain resident on their nets.

If a station was assigned as a liaison, NCS will assume that it is still going to perform the liaison duties. If not, the station should advise the NCS it will not when it makes the request to leave. The NCS will find a replacement if possible. The NCS may ask to verify that the liaison job will be completed.

4.16.2 Excusing Stations Individually

Many traffic nets excuse each station individually as the net business for that station is concluded. The NCS may excuse any station at any time. Stations may request to leave the net temporarily, or to be checked out of the net, at any time as above.

The choice of method is often determined by the format of the net. On Area/Region Nets, where most stations are liaisons, stations are excused when there is no further business pending for that station. On Area Nets a TX rep may be held in case help is needed until the RX rep from that Region checks into the net.

Stations may be excused in advance when dispatched off the net with their last traffic assignment. The methods are shown in the DISPATCH section.

Voice:

NCS: (call sign) THANK YOU NO FURTHER BUSINESS
73 YOU ARE EXCUSED; or ... (call sign) [73] YOU
ARE EXCUSED

STN: [73] (call sign)

CW:

NCS: (call sign) TU QRU 73 QNX; or (call sign) [73] QNX

STN: [73] (call sign)

On some Area/Region nets the NCS syntax may be even shortened to (call sign) GE where sufficient rapport exists. The response may be simply (call sign) to ID.

It is not unusual to hear additional comments appended at the end by the station excused, such as [GE] or [CU], [CUL], [dit.. dit], etc.

Notes:

1. The “You Are Excused,” and “QNX” on CW, are command line ending self completing statements requiring no “Over” or “K.” Farewells are usually placed ahead of them, but it is possible to hear “Good Evening” or “73,” etc., appended at the end. This is not a critical issue since the excusing is an act of finality, the end marked with a pause following a contiguous transmission.
2. Other NCS farewell remarks, including the operator’s name and thanks for checking in or helping, are pleasant-ries helpful and encouraging for newcomers to hear. The exchanges should be brief as possible on busy nets, however.
3. **Dit Dit:** If desired, the traditional “dit dit” (E E) is appended and responded to by the other station with “dit dit.” This is an evolved form of the old “shave and a haircut, two bits” ditty used earlier where the first station sent “E S E,” and the other station replied “E E.” A newer form making the rounds is the shorter “E” replied to with “E” by the other station. Such CW niceties may be used any time a station is signing clear.

4.16.3 Excusing In Advance As Part Of Dispatch

See the section on *Dispatch, Excusing In Advance* and the other sections on dispatching. Syntax and examples are shown in those sections.

4.16.4 Excusing With Request To Cancel, No Outlet (QTA)

The NCS will usually ask a station if it wishes to cancel traffic for which there is no outlet, or, in some cases, may simply inform the station that there is no outlet and excuse it. The later is done on Area/Region Nets when there is a missing liaison, although the NCS may ask other Region reps if they might relay the traffic. The station may also request further net action even if excused.

It is considered poor practice for a station to call to remind the NCS of its additional pending business unless it is clear that the NCS has failed to list or dispatch it.

The NCS lists all business and may dispatch it in any order desired to accomplish an efficient net. The exception, of course, might occur if the NCS errs and either begins to excuse a needed outlet, or excuses the holder itself, without having dealt with the traffic. The station may then seek recognition and remind the NCS. The request to be recognized may be

done as an interruption to a transaction, if necessary, or a response to being excused.

Voice:

NCS: W3TX HOLD (dest [qty])?;

TX: AFFIRMATIVE; or NEGATIVE CAN SOMEONE STORE AND FORWARD?; or

NCS: W3TX NO OUTLET (dest [qty])

TX: CANCEL; or requests store and forward;

NCS: 73 YOU ARE EXCUSED; or arranges relay

Or the direct release,

NCS: W3TX NO (dest) 73 YOU ARE EXCUSED

TX: 73 W3TX; or may request store and forward.

CW:

NCS: W3TX HOLD (dest [qty])?;

TX: C; or N STORE AND FWD PSE?; or

NCS: W3TX NO (dest [qty])?

TX: QTA; or requests store and forward;

NCS: W3TX 73 QNX; or arranges the relay;

Or the direct release,

NCS: W3TX NO (dest) 73 QNX

TX: 73 W3TX; or may request store and forward, etc.

4.16.5 Excusing Multiple Stations In A Group

On some nets, particularly at Local/Section level, numerous stations may have checked in to be available for outlets. If the NCS determines those stations will not be needed it may excuse a list of them all at once without required acknowledgment.

Voice Example:

NCS: NO BUSINESS FOR THE FOLLOWING STATIONS..
THANKS FOR CHECKING IN.. W3XA W3XB
W3XC W3XD 73.. NO RESPONSE NECESSARY..
YOU ARE EXCUSED;

Or simply

NCS: W3XA W3XB W3XC W3XD [THANKS 73] [NO RE-
SPONSE] YOU ARE EXCUSED

Excusing one or two stations may be responded to by each in order as shown elsewhere. Excusing more than two stations should be understood to require no response. If stations have followed ID guidelines elsewhere in this manual there is no ID issue here.

CW: Although the same technique could be used on CW it is virtually never done. Stations are excused individually, and rarely by closing the net.

4.16.6 Excusing By Closing The Net

It is not mandatory for a net to excuse all stations individually. Many large voice nets excuse all stations at the end of net business simply by closing the net. This is a matter of individual net policy.

If stations have followed ID guidelines elsewhere in this manual there is no ID issue here.

On Voice the NCS may, according to format, state that “All Stations Are Excused” to formalize the act. See *Closing The Net*.

On CW closing the net with stations remaining on frequency is usually announced after QNC to make clear the announcement affects all stations. See *Closing The Net*.

The NCS should not close the net until all business is handled, stations sent off frequency are excused in advance, traffic canceled, and/or liaisons assigned or substitutes assigned, if at all possible.

Stations may be asked to “store and forward” traffic for which there was no outlet. In cases where a liaison had to depart to meet a net schedule an auxiliary station may be assigned to take traffic quickly and follow to the next net in hopes of catching outlets.

Primary liaisons must be excused in time to meet their next scheduled net on time.

4.17 Closing The Net

The net is closed by the NCS to officially terminate the directed activity. This may be done at the conclusion of net business, dispatching of the last assigned traffic with stations excused in advance, after a minimum session time, or at a net format scheduled time determined by net policy.

The caveats regarding the integrity of the net traffic count discussed in the dispatching sections applies. If stations are off net frequency passing traffic, the NCS should monitor the stack, monitor the net frequency, or at least have a reasonable certainty that the traffic will be passed.

Some Local/Section nets have prepared closing statements for their nets. Consult with the Net Manager.

4.17.1 Releasing Liaisons On Time

Liaisons must be excused in time to meet their next net scheduled time, even if all their business is not concluded. The NCS should ask in such cases if the stations involved might be able to make a schedule to meet at another time to clear their traffic, or suggest alternatives if possible.

Auxiliary liaisons may be solicited to handle the traffic load to the assigned net in order to avoid delaying the primary liaison. Stations holding traffic are likely candidates.

Subsequent NTS scheduled nets rely upon liaisons arriving on time.

4.17.2 Unfinished Business

No Outlet:

There may be no outlet for some traffic during a net session. The NCS will make every attempt to find an outlet, seek alternate routing, ask another station to hold and/or forward it later, or assign a special liaison to carry it to another net.

The NCS may ask the holding station if it wishes to cancel the message (“QTA” on CW). A request to cancel (or “hold”) traffic is done as a courtesy to the holding station. The NCS reserves the right to close the net without handling the traffic. See the section on *Excusing, Request To Cancel Traffic, No Outlet (QTA)*.

Unassigned Liaison:

The NCS is responsible for attempting to fill any unassigned liaison assignments... even to the extent of taking the job. The NCS will ask for a volunteer to fill the slot. The system depends upon the liaison links and every effort should be made to make the connections. The destination nets will be waiting for the arrival of liaisons.

Store And Forward:

Traffic may be given to volunteer stations to be held for later sessions or later nets as an alternative to canceling its movement for another day. This is an often overlooked possibility. Volunteer when possible. The holding station may not be available for other nets or on subsequent days.

Final Dispatch:

The NCS may close the net, turning the frequency over to stations to conclude dispatched final exchanges on the net frequency. There is no need to keep the net open for such transactions.

4.17.3 Close Of The Net, Closing Statement, NCS

Adhere to the net schedule for closing time: Other nets may need the frequency. Liaison stations and others may have other nets or schedules to meet. If all business is not concluded at closing time, ask stations to hold traffic for later nets, or ask stations to meet after the net and finish up on another frequency if necessary, or assign auxiliary help.

Closing Early: Terminating the net early is permissible under certain circumstances. The net manager should set a minimum time for a net session which will give fair chance to stations bringing traffic or other business to the net. On nets where most stations are liaison stations, as in the case of Region and Area NTS nets, this minimum time may be very short since the NCS knows when all expected stations have checked in and listed traffic. A few minutes are always allowed for other stations who might wish to check in.

After the minimum net time has elapsed, the NCS may terminate the net when net business is concluded.

The close of the net is the official termination of the directed period of the net session—the end of NCS control. Net session time begins with the calling of the net and ends at this point. Traffic count for the net is the number of formal radiograms passed between stations as dispatched by the NCS during the directed session period.

Closing the net while traffic is still being passed off frequency presents some risk if problems are encountered as discussed before. The NCS may close the net after the last traffic is dispatched, and will usually monitor and confirm that all tasks are completed, monitor the net frequency, or at least have reasonable certainty that the traffic in progress will be completed.

Closing Statement:

Some net formats call for a closing statement in addition which might indicate the net schedule, next meeting time, etc., as needed. Consult with the NM. Such remarks are give before the official “CLOSED,” or “QNF,” statement which officially terminates the directed net.

Closing:**Voice:**

NCS: [(closing statement)]...; (net name) IS NOW CLOSED 73 THIS IS (call sign); or [ALL STATIONS ARE EXCUSED (net name) IS NOW CLOSED 73 THIS IS (call sign)]; when there may still be stations on the net.

CW:

NCS: [(closing statement)]...; (net name) QNF 73 [DE] (call sign) <SK>;

Or;

NCS: [QNC] (net name) QNF 73 [DE] (call sign) <SK>; the [QNC] when there may still be stations on the net.

Notes:

1. The CW prosign <SK> stands for “Out. Clear (end of communications, no reply expected.)” derived from the old Morse “30” (di-di-di-dah-dit.. long-dah) denoting the telegrapher’s end-of-shift closing. Some stations prefer <AR> for end of record transmission, or “CL” for “closing station,” or no ending sign at all.

Chapter 5 - Net Control

5.1 Net Control

The mechanics of controlling the net are presented, for the most part, in Chapter 4. The NCS should refer to the syntax and guidelines in that chapter as the primary reference for operation of the net. Obviously the NCS should be fluent in the use of those techniques to run a net most efficiently.

Some of the specific NCS tasks are expanded in this chapter to include operational guidelines and tips, net record keeping (net control sheets), net reporting, and examples of net operations at Area, Region, and Section level.

The guidelines in this chapter, although primarily for message traffic nets, may be applied to other nets where station’s business is listed and commands issued to accomplish the net mission.

5.1.1 Net Control Station Duties

The NCS makes the net “happen,” directing all activities and managing the sequence of traffic dispatching to achieve an efficient and orderly net to accomplish the mission (stated below and in the following section). The NCS is a manager, supervisor, tutor and mentor, and facilitator. The NCS, becomes the individual the net stations expect to take care of the business of controlling what they do... a task respected and understood.

The net control will arbitrate the net’s adaptation to unusual circumstances which might arise due to missing personnel or outlets, liaison needs, and the need to use other bands and/or modes. The NCS will oversee emergencies of any sort, implementing the emergency plans of the NTS, and decide questions of routing, maintaining order and discipline, setting the example for the highest standards of operating practice, provide on the job training for stations, and the use of station’s capabilities to the fullest extent possible.

NCS Tasks:

1. Opening (calling) the net on time
2. Transmitting the net preamble (*)
3. Checking in anc, or any other format required specific stations (*)
4. Checking in single liaison stations from a net
5. Checking in multiple liaison stations from a net (*)
6. Checking in stations, open and specific net calls
7. Listing traffic and business on the net control sheet (**)
8. Assigning traffic
9. Dispatching formal traffic and other business
10. Re-checking stations and asking for check-ins often
11. Handling additional business
12. Maintaining order and directing business
13. Adjusting the net to prevailing conditions
14. Excusing net liaisons in time to meet assigned nets
15. Excusing net stations
16. Closing the net on time
17. Filing net reports with the net manager (**)

(*) Usually on Section/Local nets only, or as required by the net format.

(**) These strategies for managing operations will be discussed in the chapter on Net Control.

5.1.2 NCS Mission, Traffic Nets

On traffic nets, the NCS is 1) responsible for getting all net traffic cleared in the allotted time while maximizing efficiency to the greatest extent by moving the greatest amount of traffic possible per unit of time, and 2) assuring that all liaisons to subsequent NTS nets are assigned and released to check into their destination nets on time.

5.1.3 Level Of Training, Net Stations

Inexperienced net operators can dramatically slow down or confuse the net operation. We all, however, were beginners at some point. Hopefully new stations will always be welcomed warmly and have operations explained to them as needed. They should leave the net with a feeling of accomplishment and contribution, treated with respect and courtesy.

Newcomers can be helped along, and others can be taught new techniques as needed, preferably off net. The NCS is perhaps in the best position to provide feedback to the Net Manager concerning the need for training and tutoring. Such observations should be passed along, and the situation of a struggling net should be dealt with. Corrective action at this level is key to the success of the NTS in maintaining an efficient system to serve the public.

5.2 Alternate Net Control Station (ANC)

The Alternate Net Control backs up the NCS in case the NCS is not able to make the session or leaves the net for any reason.

The Alternate Net Control function is optional, is used primarily on large Local or Section Nets, and is called for each session at the discretion of the NM. This station should monitor

the net operation, record all the same information that the net control does, and be prepared to step in immediately and assume the net control duties should it become necessary for any reason.

If the net format does not call for an ANC, any station on the net should be ready to step in and perform the duties of NCS if that station leaves the air or fails to show up by one minute after scheduled net starting time.

The ANC should be called upon for relay help under difficult radio conditions. The NCS may ask additional stations to be assistant net controls for such purposes.

5.3 Net Control Topics

5.3.1 Use Of Fast VOX, QSK

Use full break-in (QSK) on CW, and set the VOX on voice to drop out after every word, or syllable (minimum delay). You may have to modify SSB equipment to accomplish this.

Dispatch sequences are continuous phrases during which no interruptions are expected, except in the Split Dispatch. Other calls and commands are likewise brief succinct phrases. The QSK and fast VOX will be very helpful in responding to replies and avoiding talking over tail ending calls. They will also be helpful in detecting unexpected interference.

On voice you may have to obtain or modify linear amplifiers to permit fast VOX operation. Solid state switching will do the trick. Failing that, operate manually and release the PTT switch between words or phrases. Most radios return to full receive immediately upon the release.

QSK on CW is virtually a must. Fortunately most modern rigs offer the feature. The amplifier considerations apply, and some rigs may need an outboard transistor circuit to key amplifier relay circuits. The effort in arranging for relay free QSK will pay big dividends in speed, proper character weighting, and in reduced wear and tear on the equipment. Care should be taken when modifying amplifiers for QSK (or fast VOX) to assure that spurious generating instabilities and/or key clicks are not introduced by improper sequencing of switchover on make and break. The mere application of bias to class AB or B linear amplifiers can cause an output tank transient which rings the circuit and can cause spurious outputs through momentary oscillations. Modified amplifiers should be checked carefully for both near frequency unwanted outputs and spurious outputs anywhere in the spectrum which might be radiated by the antenna system. The sequence of the switching should not alter the keying waveshape of the exciter such that the rise and fall times are conducive to generating unwanted sidebands.

Stations will acknowledge your commands instantly. Listen in the gaps. You can catch the “E” QNI attempt on CW, or the “4 Alpha” on voice, tail ending. You may not always be obligated to respond, but you will be better informed to make the choices for your next command. The advantage of hearing between groups for the NCS is as valuable as when sending traffic.

5.3.2 New Stations, Visitors

Newcomers will very much appreciate a warm greeting, request for name and location, thanks for checking in when rec-

ognized and when excused, and perhaps even a few brief words on what is happening. This may be done after other pressing business is dispatched, often as the prelude to excusing that station. Mentors will often arrange with the NCS to have words with the newcomer off net or after the net is closed. What a missed opportunity it is to pass up that chance!

Keep the net roster close at hand. Stations always appreciate being addressed by name. The newcomer on Tuesday will be surprised to hear you use the correct name on Thursday when you are NCS. If the Net Manager does not maintain a specific roster, each NCS should. Newcomers may be listed as such in net reports so they might be put on the roster distributed by the NM.

Help the newcomer learn and understand the syntax and net format. Consider having a regular net member always at the ready to take a newcomer off net frequency and send a welcome message... get an email address... send some information... get particulars for the roster for the Net Manager. Remember what it was like just starting out?

As NCS you are the one responsible for doing these things. Others may not want to interrupt and make suggestions. The NM should have a policy for dealing with these matters.

5.3.3 Clear Tcc Stations And Unscheduled Reps

Every effort should be made to clear TCC station's traffic, even if it is stored for later.

Unlike other stations which are committed for the duration of the net, unscheduled arriving TCC stations may have to check into numerous nets, perhaps running concurrently. Getting their business handled promptly should be a high priority. Check them in, assign an outlet, and dispatch their traffic immediately if possible.

Unscheduled reps from higher nets should be treated in like fashion.

5.3.4 Find Volunteers For Missing Liaisons Or Outlets

Fill empty jobs. Others will watch to see that such matters are taken care of. If you, the NCS, plan to cover for missing stations, so state.

Attempt to route traffic for which no assignment has been made. Ask advice, or have a station take the traffic to another net or take it to store and forward on a later net or session.

5.3.5 Opportunities For Stations To Check In

Nothing pushes stations to become frustrated, or attempt to break the net, more than long periods of time without an opportunity to check in or return to net. Stations failing to make contact after being dispatched off frequency need to get back and get their problem solved or their time is being wasted. So, too, is the net's time.

The NCS should make frequent net calls, or at least leave pauses between transactions to offer tail ending opportunities. Avoid passing traffic or words on the net when there are stations expected back from off frequency. Fish the pond with Open or Specific calls until there are no more replies, even if a few commands are issued between calls. Simply continue the call afterwards. Taking one or two check-ins, leaving more

waiting, and then engaging in a long series of commands or other net business can deter stations from ever wanting to check into the net again.

On Area and Region Nets, where most all of the stations are liaisons, there is a deeper level of patience among the stations waiting to check in. They know the NCS will get to all the TX reps and outlets eventually. They know the NCS knows all of the stations expected to be present. There the NCS has some latitude in the chosen sequence, hence some use the Open net call, others the Specific call for particular liaisons, to maintain control in their particular style. Leaving gaps, or calling for returning stations specifically on occasion, can expedite matters well to keep stations from having to wait.

5.3.6 Use Customary Practices

Experienced traffic handlers expect the NCS to adhere to the usual net format, use customary operating syntax, and to understand their needs while making the experience of net operating pleasurable and rewarding. The NCS job is a leadership role, and experienced traffic handlers will readily respond to good leadership and operate as a supportive team to accomplish the mission. Remember that the NCS is there at the pleasure of the stations to help them get their job done. Customary practices help the net to flow smoothly.

Properly done, this will make the NCS virtually “invisible” to stations who come to the net to get their traffic cleared in a prompt fashion.

Use the customary syntax for net calls, requests, dispatching and excusing... and the stations will respond. Imagine dispatching two stations off frequency by saying “W3RX WHY DON’T YOU GO UP 5 KILOHERTZ AND MAYBE CALL W3TX AND SEE IF YOU CAN TAKE THOSE TWO MESSAGES FOR PODUNK?.” The reply might be “BECAUSE I JUST DON’T WANT TO!.” The dispatch “W3RX W3TX UP 5 PODUNK 2” is a command, is expected and is shorter. RX and TX will acknowledge in order and be gone instantly. Another way to look at this is that the NCS syntax is just so much “overhead” needed to get the business done. Minimize overhead! Participating in an efficient, snappy net is enjoyed by all.

5.3.7 Avoid Extraneous Words

Avoid a running stream of consciousness or thinking out loud as NCS. There is no need to use the awful “UHHH” to keep the VOX keyed, or to send a long series of double dits while thinking. Such commentary between expected NCS actions is considered irritating and a waste of net time by net participants, and it does suggest an NCS not in control. It will quickly destroy the confidence of net stations. Let go of the PTT switch or keep your fingers off the key when the temptation to make such idle chatter creeps upon you. Long periods of silence also make stations uncomfortable. If you need a moment to think, make an open net call, or call for returning stations. The listening pause is then expected, giving you time to plan the next move.

The NCS should not, however, dispense with friendly greetings, use of operator names, etc., which maintain a pleasant atmosphere on the net. Names are often omitted in this manual

to simplify the material, but that is not a suggestion to behave that way on the air.

“Every single word not absolutely needed may be dispensed with profitably.” (Operating an Amateur Radio Station; P. 17, CD-4, 1/83, ARRL, Newington, CT)

5.3.8 Maintain Control Of The Net

Always try to use consistent and customary syntax for all calls, acknowledging, dispatching, and excusing, etc. The NCS asks questions in a different way than issuing commands. Deal with stations according to the type request or command issued. Stations will get the message that they are expected to operate with standard practices.

When the NCS asks questions of the net at large, it should call each responder in turn for the answer, unless there is an obviously sufficient single answer obtained. Stations naturally like their opinion to be heard. If serviced they are less likely to transmit without NCS permission.

Stations reply with their call suffix and wait for it to be repeated by the NCS before continuing. The NCS may ignore those who do not first seek such recognition.

In other words, there should be no question left in the minds of the operators about what the NCS expects them to do, or which station is expected to transmit.

Maintain control. If there is a flurry of calling activity repeating a suffix or single letter heard will often sort one out of the pile, or make a Specific or Open Net call to let the confusion dissolve. Stations will respond to the NCS calls. This will stop over eager callers and sort out pile-ups. Remember that not all stations can hear each other at all times.

Maintaining the appearance of calm control is very helpful to the net. It is contagious, and makes everyone feel comfortable. You may panic freely between transmissions, then take a deep breath and make a calm call or send a snappy command sequence. Everyone will marvel at what a crisp net you are running.

5.3.9 Ask Questions If Information Is Needed

Stations are generally happy to answer questions, and will respect your desire to get information required for making good NCS decisions. Ask and ye shall receive... most of the time.

5.3.10 Think Ahead, Keep The Net Tight

Try to devise a few commands ahead. Issue one, make an Open Call or call for returning stations (or clearly pause for tail ending), and then you are ready to issue the next without delay.

Few stations make note of the dispatching permutations. When you make an Open Call no one knows you are just hard at work planning the next move. Vamp until ready. An Open call can buy a few seconds of thinking time and panic recovery. In a pinch a QNE, or Net Please Stand By, will suffice. Avoid idle chatter to fill the time. Few stations want to listen to NCS chatter on busy traffic nets.

Avoid erroneous dispatches or changing instructions if at all possible. It is too easy to lose stations off net frequency before a dispatch error may be withdrawn. Trying to interrupt acknowledgments is difficult, but might be done if uttered imme-

diately after the command. Having stations chase others down to make corrections can be done as a last resort, but it is hardly efficient. You often will have to wait for stations to return and untangle the mess later.

Plan ahead and give clear and concise commands. If an error is made, let the stations return to net, issue a one word apology (optionally), and be ready to issue a dispatch that will work.

If traffic is passed to the wrong station, consider letting that station relay it on to the correct station to give sent points for its trouble, and to avoid having to give the “CANCEL” , or “QTA” order.

5.3.11 Dealing With Improper Conduct Or Techniques

Ignore calls from those who interrupt transactions or violate Specific CALLS. Make note of the station, complete the business in progress, then call that station to service its request. If you make a specific net call expecting multiple responders, and the station does not leave a pause for legitimate replies, acknowledge it and repeat the net call. The station should get the message, hopefully.

Sometimes a comment such as “(call sign) Stand By For (call sign) Thanks,” or on CW “(suffix) <AS> (new call sign) K” will do the trick. Remember that net stations do not always hear each other!

If a station persists in interrupting, service it, even if out of order, and put the matter to rest. A brief explanation at excusing time or after the net can turn a confrontation into a friendly bit of help gratefully received. The offender and other net stations will not appreciate a contest of wills on the net.

QNM (You are QRMing the net, Stand by.) can ultimately be drawn from your holster in difficult cases. It is virtually never used, however. Your best weapon is usually courtesy and efficiency. Everybody respects the NCS running a net in that fashion. It, in and of itself, discourages confrontations and rudeness.

As a last resort, any station may be excused from the net at any time. Technically, if you excuse an offending station from the net, and it persists in interrupting, it may be guilty of intentional interference. Most stations will get the message if excused and not cross that line.

Try to keep the matter from getting to this level. Throughout the years discipline on NTS nets has been taught by politely ignoring the undesired behavior and acknowledging the correct procedure. A “FB” or “Well Done” can reinforce the correctly learned method. A kind word of explanation will often settle things. Mentors and separate training off net or by landline or email is helpful.

As NCS you are the only station in the net directly communicating with each station with solicitations and commands and are, therefore, both the example and the tutor. The overwhelming majority of amateurs are eager to learn to do these things well. They learn from you both technique and demeanor. The more they learn, the more fun they have... and the greater the feeling of accomplishment.

5.3.12 Traffic For All Net Stations, QNC

Formal traffic for all net stations is seldom if ever listed and passed on Area or Region nets. When such traffic is necessary on Local or Section nets the NCS must usually press for getting stations checked into the net and standby to copy the traffic. Such traffic might be formal radiograms to all stations, or informal words or announcements to all stations.

Net formats often stipulate if this type traffic is to be handled, and how. When done, it is often sent at the beginning of the net after all stations are checked in, before any other traffic is dispatched. Alternatives are to pass formal traffic to each station as opportunities present themselves in the sequence of dispatching.

Local/Section Nets may send informal announcements or bulletins at the start of the net prior to checking in stations. This is an open loop method. Stations who want to hear such transmissions must be present on time.

Open loop transmission of formal radiograms for all stations is not so easy. It is recommended that the NCS or the holder of the message check that each station is ready to copy, transmit the message, and then check that each station acknowledges the message. See chapter 4 regarding QNC traffic dispatching. If sent open loop, assuming all stations are on time, each station, upon checking in, might be asked by the NCS if they acknowledge the traffic. NCS can give fills or arrange retransmission as required. The sender may note the recipients as they check in.

Once business for all stations is taken care of, the NCS should get all other traffic assigned and dispatched promptly.

5.3.13 Informal Words

Words between stations are usually handled off net, generally after formal traffic, but also at times convenient to the net and stations involved. They are dispatched as in formal traffic commands using the term “WORDS” in place of the traffic (dest.-qty.). Stations with words are usually dispatched to stacks as the last stations to use the frequency. Brief words may be done on the net frequency... if they are really brief (Ask!), else done at QNF.

5.3.14 Consider Station Locations And Signal Conditions

When preparing for dispatching, consider those stations which have difficulty copying the NCS or each other, and which stations might provide relays for those problems.

Issue “verify copy” commands to gain information for effective dispatching. The QNV dispatch command may be used without additional information to request two stations to verify copy before executing the exchange.

Call for relay stations able to assist, and have them check with target stations.

By the time the dispatch is made the NCS should be able to obtain the best probability for a successful exchange.

Consider the use of other bands to utilize propagation to advantage.

The NCS might use to great advantage multiple receivers to monitor other frequencies and bands to manage and monitor

dispatching effectively. Using a transceiver for other bands permits commanding on another band while continuing the net on the primary.

5.3.15 Get Traffic Moving Promptly

High level NTS nets usually begin dispatching as soon as the first traffic is listed. This is customary since the inbound and outbound liaisons are usually separate and known in advance. Assignment of traffic is by default.

On Local/Section Nets the NCS may need to ask for outlets or information to find paths. The NCS may sometimes ask for liaisons to check in first and list traffic in order to get a clear picture of the outlets needed and the loading volume. Outlets may then be assigned wisely and traffic dispatched in an efficient order thereafter. Even in this case, however, most stations will know in advance which station can handle their traffic. Getting traffic listed and sorted is still overhead. The business of the net has begun when traffic is being exchanged.

For example, two stations checking in with traffic for the same town, one holding other traffic as well, can be handled efficiently if two separate outlets from that town are dispatched in parallel to separate stacks, followed immediately by servicing the other traffic.

Use Immediate or Split dispatching when possible, if the net stations are so experienced.

5.3.16 Finding Outlets, The Traffic Auction

On Local/Section Nets the inbound traffic may be for any part of the covered area, and outlets for each area may or may not be present on a given session. At this level the delivery of traffic is often determined by the toll free calling range of individual stations. These nets often find it helpful to have traffic listed with additional information to help in this regard (See chapter 4, *Traffic List, Assigning*, etc.); phone prefixes and zip codes or county are helpful.

Once inbound traffic is listed the NCS should be familiar with the area and outlets to the greatest extent possible. This permits a directed assignment of traffic to specific stations to expedite matters as much as possible.

For any traffic where that is not so clear, the traffic auction may begin, i.e., the NCS may have to call for volunteers to take the traffic.

This may be done at least two ways: 1) Ask a particular net station if it can take specified traffic; or 2) Ask the net for volunteers for the traffic; listing one, several, or all of the unassigned messages in the call. (The specific calls for outlets and calling the net's unassigned traffic list are shown in chapter 4.) Relays, two meter outlets, store and forward to local nets, etc., should be considered. Once assignment is accomplished the dispatch may be issued promptly.

5.3.17 Handling Precedences (From Chapter 4)

Traffic is handled in order of precedences as much as possible with the means at hand to do so. Emergency traffic is handled immediately, and it is important to use any means available to get Emergency traffic delivered promptly, including telephone, public safety services, etc. Death and serious injury or illness

messages are often best delivered by public safety or private relief agencies such as the American Red Cross.

It is a myth, however, that all Priority traffic must be handled before any Welfare or Routine traffic. The P, W and R traffic is handled in order, but it is often misunderstood that it is the option of the NCS to dispatch lower level traffic while there is higher precedence traffic pending when the NCS needs to wait for an available outlet to be free.

It is equally important for the NCS to consider the overall net workload, time available, and situation. Nets operating during disasters may dispense with handling Routine traffic, and perhaps even Welfare traffic, for extended periods until the higher priority traffic is cleared. Multiple nets may be needed.

5.3.18 Emergencies

Should new or net stations declare an Emergency, they will check in with the word EMERGENCY, or use the international call MAYDAY. The NCS should stop all net activity and process the declaration by whatever means are possible to get the situation resolved. The response should use the fastest communications means possible and not be limited to amateur radio circuits.

The NCS may have to employ ingenious methods to expedite resolution. Net stations may be assigned to directly assisting the caller and handling the case on another frequency, for example. Calls to public safety or private relief organizations should be made promptly when necessary. Net stations should stand by to assist as information develops. Regular traffic handling may be suspended, or continued if the emergency is handled off frequency. Liaisons to other nets should still be excused for their assigned nets, or substitutes assigned.

The Net Manager should be contacted to assist when local disaster issues are involved and the net's emergency response plan must be evoked. Section officials should be notified if the emergency is likely to trigger a disaster response locally. The NCS should extend net operations as warranted or ordered.

Death and serious injury or illness messages are often best delivered by public safety or private relief agencies such as the American Red Cross.

5.3.19 Disaster And Welfare Traffic, Multiple Nets

During disasters large volumes of welfare traffic may be encountered along with inquiries from large numbers of stations checking into the net from outside the affected area. The Net Manager should have a policy for dealing with this situation. The NCS must adjust how traffic is handled, and there are several points of interest.

The ARRL *PSCM* and the NTS *Terms of Reference* provide for operation of the NTS during emergencies. Net controls and TCC stations should be familiar with the changes that might affect nets at Area, Region and Section levels, changes in liaisons and scheduling, etc..

In addition, at Section level, the Section's emergency plans should include NTS support, and net controls should be familiar with how the Section's activities are organized, and what changes might be needed on their nets. Extra liaisons with

other Section nets are likely, and routing of traffic to and from served agencies must be clearly established.

Served agency traffic is essential to recovery in disaster areas and, if not sent with Emergency or Priority precedences, should still be given the highest level of attention.

Public outbound welfare traffic from the affected area is given high priority over incoming welfare traffic. The latter may not be able to be delivered or serviced for days until relief agencies and government officials have organized shelters and collected victim lists. Local amateur resources may be tied up with more pressing business. Telephones may be out or restricted, and transportation limited. Therefore, it is often necessary to establish a means of archiving incoming traffic for review by local ARES/RACES operators when time permits. A special net provision may be made to do this, perhaps with a number of packet liaisons to a BBS system, etc.

Inquiries from concerned stations from outside the affected area can become an overwhelming burden on traffic nets, preventing normal traffic business. Section and Local nets often establish “lightning rod” nets to service this problem with a number of stations present that can answer the most frequently asked questions and give general status reports. The regular published net frequencies are often used for this purpose and traffic essential to recovery operations is handled on separate frequencies or nets. More shifts of net controls and liaisons are needed. Net controls need to be practiced in this exercise.

The NCS, on its own, may have to organize the opening of multiple nets for handling these situations. The Net Manager should be notified to organize the required shifts of operators, and to pass the word to the Section management.

5.3.20 Net Control Sheets Are Important

It is crucial that the NCS keep a record of all listed business and stations in the net, and be able to update the record as traffic is dispatched, stations leave and return to the net, and business is cleared and stations are excused.

Notes should also be made regarding which stations can hear each other when propagation is poor. Prudent use of relays by the NCS can expedite what otherwise might be ineffectiveness. This can be a daunting task on large traffic nets when conditions are poor, but can facilitate getting the traffic moved..

The NCS should at all times know where every station is, what business is handled and still pending, stations excused, etc. Unless the NCS has an extraordinary memory this usually requires some form of net control sheet or computer program. Some examples are given in the specific net sections of this manual.

5.3.21 Net Reports Required

The net control station reports on each net session to the Net Manager including information on which stations were present, liaison assignments, traffic handled, session time, newcomers, and other information required by the Net Manager.

Net reports are filed promptly within a few days in order to keep current the information on net operations. The Net Manager must report net statistics with a deadline, usually early in the month, and should not be forced to receive a large number

of reports immediately after the end of the month or chase after stations for reports as the deadline approaches. Forty eight hours works!

A generic report format for Area, Region, and Section nets is shown in the respective net sections later in this Chapter. Consult with the Net Manager for the exact format desired.

Net reports are transmitted by radio by NTS convention, or as amended by the Area Staffs. Such administrative reporting by email has been approved in some cases.

Booking:

Note that net reports are sent by radio as individual messages and are not transmitted in booked form. This is a traditional convention.

5.4 Traffic Sequencing, Control Strategy

Keep in mind that the NCS is (a) responsible for getting all net traffic cleared in the allotted time while maximizing efficiency to the greatest extent by moving the greatest amount of traffic possible per unit of time, and (b) assuring that all liaisons to subsequent NTS nets are assigned and released to check into their destination nets on time.

The simplified basic NCS task list (see ch. 4, *NCS Tasks*):

1. Open the net;
2. call for stations to check in and list traffic;
3. assign outlets;
4. dispatch traffic;
5. loop until all business is listed and cleared;
6. excuse stations with no further pending business;
7. close the net.

The Net Manager sets the format for the net, and nothing in this manual is intended to interfere with that discretion. Here we are concerned with the tools for accomplishing the net mission and NCS tasks as set forth in the format. Information about the role each type net plays in the overall NTS may be found in the ARRL *Public Service Communications Manual*, ARRL, Newington, CT, 06111, FSD-235 as amended.

The NCS task of accomplishing the part (a) responsibility is dependent upon how the tasks of checking in stations, assigning outlets and dispatching are accomplished. The strategies for expediting these tasks vary somewhat as a function of whether the NCS is running an Area, Region, Section, Local, ARES/RACES, or special disaster traffic net.

In any of the cases the general approach is to check in liaisons and begin to assign and dispatch traffic as quickly as possible. Following that opening, individual non-liaison stations are usually checked in with Open net calls, and their traffic is assigned and dispatched. The sequence of dispatching is tailored to assure that outbound liaisons are loaded as fully as possible and excused in time for their next assignment without fail. Auxiliary helpers may be assigned to assist outbound reps to help assure that all traffic is cleared. Such stations must also be excused in time for their net assignment. The NTS system relies upon prompt scheduled liaison representation.

On Region and Area nets the primary stations checking in are liaisons, therefore the task of assigning outlets is predetermined by default. As soon as traffic is listed by a new liaison station the NCS may dispatch that station with an outlet and get things moving. Pending traffic is dispatched as soon as the target liaison outlet is free. Thus the assigning process is totally dispensed with unless a volunteer is needed to perform missing liaison duties or help is needed to carry excess loading.

On Section and lower nets traffic sources and outlets are not limited to scheduled liaisons. Any station checking in may bring traffic or volunteer to receive traffic for its area. The NCS should be familiar with which stations can handle traffic to specific areas, assign traffic to those stations, and save time by avoiding fishing for outlets. Specific stations should be asked to accept listed traffic. Alternate paths should be called for. The pending unassigned net traffic list should be transmitted to solicit recipients. Additional information provided at the time of traffic listing (or asked for), such as phone prefixes or zip codes, can be helpful in executing the assignments or traffic auction. Stations should be asked to store and forward traffic from unscheduled TCC stations or liaisons from higher nets if immediate outlets are not available..

With station's checking in, and some assigning completed, the NCS attacks the dispatching sequence problem. This can present many permutations of easy station pairing, or complex problems with many stations holding much traffic for each other.

Sequencing, Area And Region Levels:

All stations expect to be present for the normal scheduled net duration, thus giving the NCS the flexibility to dispatch traffic to them in the order which optimizes the net throughput. The process of checking in stations, listing traffic, and assigning outlets can be thought of as an overhead activity for the convenience of the NCS, albeit an essential one. Getting traffic passed is the work of the net. The sequence of dispatching traffic then becomes the primary task which determines the net throughput per unit of time and total net time to clear all station's hooks.

It is usually the case that the order of checking in stations becomes an essential tool to increase dispatching efficiency. That is evident in the time saved by checking in liaisons, calling immediately for an outlet station, then promptly dispatching the two stations for a particular part of the listed traffic. The NCS may use Immediate and Split dispatching to save time by avoiding extraneous transmissions and wasted exercises of having stations checked in, waiting unnecessarily, and later dispatched with the full syntax (see Chapter 4, *Dispatching*). The NCS reviews all listed traffic, calls for specific liaison or station outlets in preparation for dispatching traffic, and continuously adjusts throughout the net to keep stations busy... in parallel to the greatest extent possible. This permits getting all stations cleared in minimal time—if the puzzle fits together well.

On an area net, for example, if there are 6 TX and 6 RX reps free, and each TX rep has one message for a different RX rep, then all six messages may be passed more or less in parallel. If

the NCS can dispatch all the pairs of stations to separate stacks in quick succession, the total task may take one message transmission interval plus the dispatching sequence time to the off-net stack and the station's return time. Each pair of stations would be slightly behind the pair dispatched before them by the time it takes the NCS to order the exchange. The NCS can anticipate each station returning to net after a little more than one exchange interval, thus making them all available for additional work at an expected time. It is obvious that the parallel dispatching of such pairs of stations is a far better strategy than having each of them transmit their messages one after the other on one stack or on the net frequency (as might happen with a totally inexperienced NCS).

There is a price to pay for such parallel dispatching, however. Twelve stations will be returning to re-check in quick succession, thus making the NCS busy when other tasks might be at hand... a small price, but worth considering.

This example, then, may be likened to 6 separate and independent blocks of message exchange—one message long in this case. These blocks may be moved about and dispatched at any time during the net, and even used to fill time and keep stations busy between other longer exchange sequences.

On the other hand, if each of the 6 TX reps had one message for just one of the RX reps, the 6 messages would have to be passed in series to the RX rep, no matter when done, thus taking a net time of 6 exchange intervals plus dispatching and moving overhead time. The RX station in this case can be said to have "multiple tasks," i.e., the station has pending business with more than one station, and in other examples may have multiple message exchanges with each. This example, then, may be likened to 6 distinct message exchange blocks all linked to the availability of the RX rep. In this example, it is not mandatory for all six exchanges to run contiguously, however, but they must be run separately in terms of net time.

The NCS may dispatch the station pairs at various times to permit making certain a particular station will be available for other tasks. This makes the 6 sequence exchange with RX much like a sub-task that runs and continues in the background, possibly interrupted from time to time. This might be done, for example, if the RX rep was needed to clear a station just released from a large traffic exchange on another stack, and such station was subsequently needed for other work. The NCS also has the flexibility to dispatch the 6 TX stations in a large variety of different orders, thus timing the deployment of each station so that it may be assigned to different jobs when other stations are free. If another TX rep had 6 or 7 messages for a TCC rep, those might be passed during the same interval required for a contiguous exchange of the 6 messages in series in this example. It makes sense to arrange such parallel moves on the net as one of the tools available to the NCS.

The NCS has at least two types of blocks to deal with so far—the single independent blocks, and the multiple task blocks linked to the availability of a particular station. In addition, the size of each of these block types may be of variable length, i.e., where each station has a different number of messages to

exchange. The net may also have a huge variety of mixes of independent and linked pairings listed.

The imperative for efficient dispatching is clear when considering the difference in time required to complete 6 exchanges in series on one stack, one right after the other with the RX rep remaining in control of the stack, as opposed to dispatching the one RX rep and the TX reps 6 separate times. Even though experienced stations may be dispatched, make contact, and return to the net with only ten or twenty seconds of overhead, this time adds up. It is therefore often an efficient strategy to execute the series transaction contiguously on one stack when possible, but the savings are not absolute. Significant other benefits to solving the net's traffic puzzle may be enabled by interrupting the series, in addition to picking the optimum order for the exchanges.

The two previous examples are fairly easy to visualize. In the first case there are 6 independent unit blocks of station pairing, and, in the second example, 6 pairings tied to one station potentially consuming 6 times as much net time. It begins to become clear that getting parallel dispatches done for independent pairings may lead to a good solution to the net puzzle. If each pairing of stations had been different quantities of messages, then the NCS can visualize them as blocks of a size directly proportional to the number of messages in each, and they may be dispatched to fill available slots in the sequence of the net accordingly... keeping in mind that the series linked cases can become the bottlenecks in the flow.

In a third example situation there might be a TX station holding a large block of messages for a single RX station with no multiple tasks, or for an RX station with many multiple tasks. In the first case the strategy for handling the block depends on whether the TX station has other business pending. If it does, the NCS may need to take care of the other TX pairings first. Conversely, if the TX is free, the NCS may need to take care of the multiple RX tasks first in the second case. Often the status of both the TX and RX stations is not either extreme. The NCS may hold the large block until both stations are down to their last assignment, then dispatch them off net excused in advance.

In some cases, a benefit to the net during the early phase can be realized by reducing the number of returning station net transactions and re-dispatching by handling a few larger blocks early. This, however, is a gamble on some occasions.

A situation may become clear after numerous stations check in that a bottleneck station situation is developing involving a station off with a large assignment. The NCS, therefore, may choose to treat large blocks conservatively, waiting to be certain it is safe to dispatch them based on the overall net workload.

The NCS is usually not limited by the number of simultaneous stacks available. Frequencies may be used which do not interfere with other nets so that as many parallel exchanges as possible may be dispatched.

Nearing the end of work, when there are only two choices and there are no other assignments pending for the stations, there is no net traffic throughput difference in one pair of stations pass-

ing ten while another waits with one, or vice versa. It makes a big difference, however, to the station holding the single in terms of waiting time. Therefore, the NCS must give consideration to the factor of waiting times for stations if only to make the net experience a pleasant one. Earlier in the net, getting the single passed for a station with other pending business is an imperative.

On most traffic nets, stations may be excused as soon as they have no further pending business, or excused in advance when sent to a stack for their last assignment. To some extent, the NCS must balance the throughput objective with a reasonable and courteous treatment of those stations who are volunteering their time to participate in the net. In that respect, dispatching stations with smaller amounts of traffic before those with larger amounts is often considerate, releasing the more lightly loaded stations sooner. Being considerate may also be efficient. Waiting stations are not doing productive work, but understanding and experienced operators appreciate that there are going to be situations where waiting is required.

An ideal situation would be for all stations to be checked in with their traffic listed (or telepathed to the NCS before net) so the NCS could work out the optimum strategy. All the easy pairings, large blocks, and bottlenecks would be seen ahead of time and dealt with using one fixed plan. The time expended in doing this, however, often reduces the net throughput per unit of time by putting a big block of overhead up front. Things usually do not work out that way. The reality is that the net stations are occupied elsewhere before net. The NCS is faced with checking them in using open calls or specific liaison calls and building the plan "on the fly" so to speak. Added to this reality is the possibility of difficult propagation, failed exchanges, multiple relays, etc., which can totally alter the plan of attack.

The process, put so well by Gary, W2CS, devolves into an "opening game," a "middle game," and an "end game."

1. The opening involves checking in as many stations as possible, dispatching them to stacks to get as much traffic moving as possible, and using a sequence to pre-determine the return of those stations in a manner permitting an efficient subsequent middle game.
2. The middle game involves planning the dispatching choices to maximize the amount of traffic being passed per unit of time, avoiding bottlenecks where stations with heavy loads could keep others waiting, and balancing the residue for the final dispatches. Here the NCS attempts to whittle down the listed traffic to permit the clean execution of the end game.
3. The end game involves dispatching last assignments for the remaining stations such that they can all be sent to stacks, with the minimum number of stations waiting in line, all stations excused in advance, clearing the last business of the net. At this point the NCS can close the net, job accomplished. It may monitor the stacks and the net frequency to accommodate problems and assure the validity of the net's traffic count.

Sequencing, Section And Local:

The net puzzle at Section/Local level is different than on the Area/Region nets where all stations are liaisons accepting assignments by default. At this level, the assignment of traffic becomes a significant part of the NCS workload. The only stations expected to check in with certainty are the liaisons from source nets and to destination nets. On early sessions, traffic bound for the Region nets may come from source liaisons or from any number of local stations checking in with traffic for the system, or traffic for swapping within the Section. The Section nets are often like bulletin boards for distribution of traffic beyond the range of Local VHF/UHF nets (if any). On late sessions the inbound liaisons from Region may bring most of the traffic for local delivery.

The NCS expects traffic to be listed for any number of local area destinations with no certain outlets guaranteed. The tools available to the experienced NCS are its knowledge of what traffic may be handled by known stations who frequent the net, the ability to ask for relays, the ability to arrange storing and forwarding, and the ability to route traffic to other non-NTS nets in the Section or other outlets.

Every net session presents a new combination of problems—new permutations of traffic distribution. All the liaisons show up with one message for one other separate net station, or QRU, at one end of the yardstick, or they all show up with numerous messages for every other station on the net with some books of 20 for multiple stations thrown in for good measure at the other end of the yardstick. The challenge for the NCS is to provide the most efficient throughput however the loading is presented, accommodate missing liaisons, fix failed dispatches, solicit auxiliary help, and, solicit outlets. The solicitation of outlets may be aided by extra listing information, such as zip codes, phone numbers, or county, or such information may be requested by the NCS for the benefit of listening net stations.

Unfortunately, the NCS must often resort to conducting an “auction” to find outlets for traffic for some areas of the Section. The net must constantly encourage newcomers and Section ARES/RACES groups to provide regular stations to check into the net to make outlets available. This investment in effort pays big dividends for Section emergency operations when required. The Section and Local nets are also where newcomers get their first experience with the NTS and are trained to move up to NCS and liaison roles moving up in the system.

In other respects, the role of the NCS is much like that on the Area/Region nets described above. The opening game, middle game, and end game are executed in a similar fashion, optimizing the net’s throughput and efficiency. Blocks are dispatched to stations with multiple tasks while parallel time is filled with dispatches of independent blocks to keep the traffic moving.

If station A has traffic for B and C, B has traffic for A and C, and C has traffic for A and B, the classic simple series game begins assuming those stations have no other pressing business. A and B go to a stack and swap. C waits then swaps with A while B returns to net. B is re-dispatched to the stack and swaps with C, perhaps both excused in advance. The NCS may have several of these games ongoing while simultaneously

working numerous single block exchanges in parallel with those. Often the larger blocks are saved for the late middle or the end games. Stations are excused when they have no further business, preferably in last pairings at a stack and excused in advance.

Although work still continues on the ideal mathematical algorithm to permit computer control of the sequencing choices for maximum efficiency (not simply record keeping), these guidelines in the hands of a good NCS will satisfy the net’s requirements quite well if practiced with courtesy and wisdom. It is an art form, however, and every NCS will use his or her own style and methods for handling the unusual or difficult situations. The NCS should feel free to dispense with canned syntax and revert to plain English when absolutely necessary. All resources at its disposal should be considered and used. When information or help is needed, ask and ye shall receive.

The stations coming to the net have one purpose—to clear their hooks. The NCS is there at the pleasure of those stations to help make that happen efficiently, and to assure the net fulfills its obligations to the system. Any qualified station can perform the duties of NCS, and should prepare for that eventuality.

A key to the NCS management of the net puzzle is some form of record keeping to aid in visualizing the traffic loading, pending business, and the whereabouts of all stations. Net control sheets of various forms are devised for this purpose based on the type of net. Some examples are shown in later sections.

Chapter 4 presents the NCS with a number of tools and strategies for executing these tasks no matter what comes along. The guidelines in earlier sections of this Chapter should be part of the tool kit as well. The NCS is left with using the tools naturally while concentrating on the strategy for getting to the end game—the most efficient net. Stations and net controls alike find such nets a most enjoyable and rewarding experience... and the NTS lives up to its reputation as an efficient traffic handling system.

This all must all be done while appearing invisible to the stations, remaining calm and in control, willing to accept the curve ball without being abrupt, working through poor propagation and the need for assigning relays, coaching new inexperienced stations, and putting up with the QRN and QRM.

Learn the tools well, then try being net control. The experienced operators will be happy to help with suggestions and explanations... even during the net if required. There is considerable personal reward in having stations responding to standard syntax in expected fashion and getting the job done. The NCS is the orchestra leader, the stations the players.

And remember, if you have never made a mistake, you have never been net control.

5.5 Openings And Closings, Typical Nets, Generic

Net opening and closing statements vary widely throughout the system in terms of comments added relative to schedule, affiliations, etc. They are determined by the Net Managers as part of the net format discretionary choices beyond the typical

barest essentials shown in case 1 below. Basic opening and closing syntax is also shown in Chapter 4, Net Operations.

Items in parentheses () are filled in by the NCS, items in brackets [] are optional.

Voice:

Openings:

1. CALLING THE (net name) THIS IS A DIRECTED NET THIS IS (call sign); or
2. CALLING THE (net name) AFFILIATED WITH THE ARRL NATIONAL TRAFFIC SYSTEM [CYCLE (#)] MEETING HERE DAILY AT (time) THIS IS A DIRECTED NET THIS IS (call sign)

Closings

1. (net name) IS CLOSED 73 THIS IS (call sign)

CW:

Openings:

1. CQ (net name) (net name) (net name) DE (call sign) QND [PSE] QNZ

Closings

1. [QNC] (net name) [QRU] QNF 73 DE (call sign) [<SK>]

The prosign <SK> evolved from the old Morse 30, (...- = 3, long dash = 0; together in current Morse = <SK>), indicating “Out; clear (end of communications, no reply expected.)” the end of the telegrapher’s shift. Some operators prefer no ending prosign, others <AR> or CL.

5.6 Area Nets

The Eastern, Central, and Pacific Area nets meet to exchange traffic from their constituent Regions, with TCC liaisons carrying traffic to the subsequent Area net to the west, and to bring traffic east. Schedules shown for 2001 local times. Consult the ARRL *Net Directory* for changes.

EAN: Regions 1, 2, 3, 4, 8, ECN (11), ARN (13), CAN, PAN, TCC

CYCLE 2	M-F	7243	2:30 PM (Eastern time)
	S-SUN	7050	2:30 PM (Eastern time)
CYCLE 3	Dly	3670 / 7050	5:30 PM (Eastern time)
CYCLE 4	Dly	3670	8:30 PM (Eastern time)

CAN: Regions RN5 (5), 9, TEN (10), PAN, TCC

CYCLE 2	Dly	14345	2:30 PM (Central time)
CYCLE 4	Dly	3670 / 7062	8:30 PM (Central time)

PAN: Regions 6, 7, TWN (12), TCC

CYCLE 2	Dly	14345	2:30 PM (Pacific time)
CYCLE 4	Dly	3652/7052	8:30 PM (Pacific time)

See the ARRL *PSCM* for the full NTS cycle structure and times, and the TCC schedules. Consult Area staff for the latest schedule of net operations.

Each Region has a TX rep, voiced as First Region Transmit, or One R N Transmit, on voice, 1RN TX on CW; and an RX rep voiced/sent in similar fashion. ECN is the Eastern Canada Net, ARN is the Atlantic Region Net. EAN, CAN, and PAN are the Eastern, Central and Pacific Area Nets. TCC the Transcontinental Corps.

EAN cycle two voice frequencies of 14317, 7260, 7250, 7238, 7233, 7228 and 7210 are often used for stacks. EAN cycle 4 stacks are usually at -30, -25, -20, -15, -10, -5, +5, +10 KHz. from the net. These will change from time to time to adapt to changing band use and conditions.

5.6.1 Area Typical Formats

Voice and CW Area nets are run in a similar fashion. Cycle 2 weekday EAN voice contends with daytime propagation on 40 meters and may have 4RN liaison on 20 meters. It may use 80 meters for some dispatches. Daily EAN Cycle 4 nets meet on 80 meters, using 40, 160, or even 20 meters for some dispatches when skip or QRN demands. CAN and PAN will often switch to 40 meters in summer, 80 in winter.

Two styles of calling Area nets are in general use. In the first the NCS calls TX reps by region, lists their traffic, calls RX reps as needed to begin dispatching, and loops until all TX reps are accounted for and traffic cleared. The second style opens the net with an Open net call, taking stations as they QNI, dispatching and looping until all reps and traffic are cleared. In this later case the TX reps may check in first, the RX reps dragging their feet to give way unless called.

The occasional non-liaison station will be serviced after the regular stations, time permitting.

5.6.2 Area CW Transcript

Example EAN CW transcript (with references to the example NCS sheet).

```

NCS   QRL? (NO RESPONSE)
1     NCS   CQ EAN EAN EAN DE W2XXX QND QNZ DE
        W2XXX EAN K
      STN   U
      NCS   U
      STN   KW1U 1RN TX QTC 3RN 4 8RN 2 PAN 1 <AR>
        (T in 1RN col.)
      NCS   3RN RX?
      STN   W3IPX 3RN RX QRU (W3IPX in 3RN R row)
      NCS   W3IPX KW1U DWN 5 3RN (moves markers -5,
        slashes 1U's 3RN 4)
      IPX   T (ack)
      1U    T (ack)
      STN   F (QNI tail end call)
      NCS   F
      STN   WB4FDT 3RN TX QTC 1RN 1 2RN 2 CAN 2 FR 1
        <AR> (T 3RN)
10    NCS   W2FR?
      STN   W2FR CAN QRU (W2FR in CAN R row)
      NCS   W2FR WB4FDT DWN 10 CAN 2 FR 1 (markers -10,
        slash CAN & FR)
      FR    T (ack)
      FDT   T (ack)
      STN   N (QNI tail end call)
      NCS   N
      STN   KJ4N 4RN TX QTC 3RN 3 <AR> (T in 4RN col.)
      NCS   KJ4N QNQ DWN 5 W3IPX 3RN (adds 4N -5,
        slashes 4N's 3RN)
      4N    T (ack)
      STN   A (QNI tail end call)
      NCS   A
      STN   VE3AWE ECN BOTH QTC ARN 2 <AR>
20    NCS   ARN?
      STN   WA3YLO ARN QRU
    
```


	NCS	WA3YLO VE3AWE +5 ARN 2		NCS	W2FR TU HWI 73 QNX
	YLO	T		2FR	73 W2FR
	AWE	T		NCS	W1RX QNQ DWN 10 WB4FDT 1RN 1 BOTH QNX
	NCS	EAN DE W2XXX QNI		1RX	TU 73 W1RX G
	STN	W		NCS	W8TX 73 QNX
	NCS	W		8TX	73 W8TX
	STN	GE W2TX 2RN TX QRU	60	STN	1U
	NCS	W2TX GE <AS>		NCS	W8RX KW1U DWN 15 8RN 2 W8RX QNX GE
	STN	T		8RX	73 W8RX G
30	NCS	T		1U	T
	STN	GE W8TX 8RN TX QRU		STN	C
	NCS	W8TX TU <AS> 2RN RX?		NCS	C
	STN	W2RX 2RN RX QRU		STN	W2CS PAN QRU
	NCS	W2RX QNQ DWN 10 WB4FDT 2RN 2		NCS	GE W2CS QNQ DWN 15 KW1U PAN 1 BOTH
	2RX	T			QNX 73
	NCS	W2TX 73 QNX		2CS	TU 73 W2CS
	2TX	73 W2TX		STN	YLO
	STN	R	70	NCS	WA3YLO TU TONY 73 QNX
	NCS	R		STN	73 WA3YLO
40	STN	W1RX 1RN RX QRU		STN	AWE
	NCS	W1RX TU <AS> (FDT has 1 pending.)		NCS	VE3AWE TU 73 QNX
	STN	X		AWE	73 VE3AWE
	NCS	X		STN	IPX
	STN	W4RX 4RN RX QRU		NCS	IPX
	NCS	W4RX GE QRU 73 QNX		STN	4N
	STN	W4RX E E		NCS	KJ4N TU QRU 73 QNX
	NCS	E E DE W2XXX EAN K		4N	73 KJ4N
	STN	I	80	NCS	W3IPX TU JN 73 QNX
	NCS	I		STN	W3IPX GE
50	STN	W8RX 8RN RX QRU		2RX	2RX
	NCS	W8RX GE <AS>		NCS	W2RX QRU 73 QNX
	STN	73 W8RX		STN	72 W2RX
	STN	FR	85	NCS	QNC EAN QNF 73 DE W2XXX

5.6.3 Area CW Net Control Sheets

EAN NCS Sheet Example (The K2KIR method.)

1. From beginning of net to LINE 50 of transcript.

-30	-25	-20	-15	-10	-5	+5	+10	Station	1RN	2RN	3RN	4RN	8RN	ECN	ARN	CAN	PAN	FR
								O W1RX	R									
				O				2RX		R								
					O			W3IPX			R							
								O W4RX				R						
								O W8RX					R					
						O		VE3AWE						R/B	2/			
						O		WA3YLO							R/B			
				O				W2FR								R		
								O W2CS									R	
					O			KW1U	T		4/		2				1	
				O				WB4FDT	1	2/	T					2/		1/
					O			KJ4N			3/	T						
								W2TX /		T								
								O W8TX					T					
								O										

In the stack down 10, FDT and FR will finish first; FDT has 2RN 2 pending for W2RX. In the stack down 5, KW1U will clear first and return with 8RN 2 and PAN 1 pending. NCS may selectively call RX reps to prepare, or continue open calls.

2. At QNF, two stacks still working, all 5 stations excused in advance.

-30	-25	-20	-15	-10	-5	+5	+10	Station	1RN	2RN	3RN	4RN	8RN	ECN	ARN	CAN	PAN	FR
				O				W1RX /	R									
								W2RX /		R								
								W3IPX /			R							
								W4RX /				R						
			O					W8RX /					R					

WB4FDT/3RNTX	KJ4N/4RNTX	W8TX/8RNTX	QTC/18/18	QNF/0150Z
CONDX	GOOD	X	73	<BT>
W2XXX	<AR> N			

5.7 Region Nets

Regions 1, 2, 3, 4, 8, ECN (11), ARN (13), RN5 (5), 9, TEN (10), 6, 7, TWN (12), meet in the respective cycles, early and late sessions if in a complete cycle, to swap traffic among the Section reps and send traffic up to area (early session), and distribute incoming area traffic (late).

Consult the ARRL *Net Directory* for the schedule of these nets.

5.7.1 Region Typical Formats

At least two styles of calling Region nets are in general use. In the first the NCS calls reps by Area and Section, lists their traffic, calls specific reps as needed to begin dispatching, and loops until all reps are accounted for and traffic cleared. The second style opens the net with an Open net call and takes stations as they QNI.

As in Area nets, all the liaison assignments are known in advance. On the early session the NCS makes certain that TX and RX reps (or at least one station to cover both) are assigned to the Area net. Often the early session NCS is the Area RX rep, another station being assigned as TX. The TX rep will often return to the late session as the NCS with the RX rep bringing down the area traffic for the net. Any of the net stations could perform the duties of Area RX or TX in addition to their other assignments, except that the early NCS should avoid the Area TX job, and the late NCS should avoid the Area RX job, in both cases to avoid making the NCS a primary traffic exchanger..

The NCS will solicit volunteers for missing Area net liaisons. The Section nets are responsible for providing their own liaisons, but the NCS may ask for help to relay traffic to Sections missing a rep..

Although these nets are generally for liaisons from Area and each Section, the occasional non-liaison station will be serviced after the regular stations, time permitting. Such stations check in as “(call sign) NIL” followed with the traffic list.

TCC representatives and AUX reps (auxiliary assistant liaisons) are always serviced.

5.7.2 Region CW Net Transcript

The voice net is run in a similar fashion using the voice techniques in Chapter 4.

5.7.3 Region Net Control Sheets

Net control sheets for early 3RN transcript, two stages, marker method: (At line 18)

3RN 142345ZMAR	EAN	EPA	WPA	MDD	NCS	+4	-5	
NCS K3GHH	1							
EANTX W3KOD	-					O		
EPA N3DRM O		-	2		1/			
WPA W3NGO	1/		-			O		
MDD N3DE	1/		3	-		O		
QTC/ QNF/								

(At QNF):

3RN 142345ZMAR	EAN	EPA	WPA	MDD	NCS	+4	-5	.
----------------	-----	-----	-----	-----	-----	----	----	---

The 3RN net has reps from EPA, WPA and MDD, to EAN RX and EAN TX. The other Regions vary depending on the served Sections.

3RN Early Session Example:

```

1   NCS   QRL?
      (NO RESPONSE)
      NCS   3RN 3RN 3RN DE K3GHH QND PSE QNZ QNA
            EAN TX
      STN   W3KOD EAN TX QRU
      NCS   W3KOD TU <AS> EPA
      STN   N3DRM EPA QTC WPA 2 GHH 1 <AR>
      NCS   N3DRM TU <AS> WPA
      STN   W3NGO WPA QTC EAN 1 <AR>
      NCS   W3NGO TU <AS> MDD
10  STN   N3DE MDD QTC WPA 3 EAN 1 <AR>
      NCS   N3DE <AS>
      NCS   W3KOD W3NGO UP 4 EAN 1
      KOD   T
      NGO   T
      NCS   N3DE QNQ UP 4 W3KOD EAN 1
      DE    T
      NCS   3RN DE K3GHH QNI
            (NO RESPONSE)
      NCS   N3DRM QRV
20  DRM   (Sends GHH 1.)
      NCS   QSL DE K3GHH
      DRM   N3DRM
      NCS   3RN QNI
      STN   NGO (Returning.)
      NCS   W3NGO N3DRM DWN 5 WPA 2 N3DRM QNX
      NGO   T
      DRM   73 N3DRM G (Signs out excused in advance.)
      STN   DE (Tail ends transaction, returning.)
      NCS   N3DE QNQ DWN 5 W3NGO WPA 3 BOTH QNX
            73
30  DE    73 N3DE G
      STN   KOD
      NCS   W3KOD EAN 1 QRV?
      KOD   QRV
      NCS   (Sends EAN 1 to KOD.)
      KOD   QSL W3KOD
      NCS   W3KOD TU 73 QNX
      KOD   73 W3KOD
38  NCS   QNC 3RN QNF 73 K3GHH <SK>
    
```

NCS K3GHH	(1)						
EANTX W3KOD X	-						
EPA N3DRM X		-	(2)		(1)	O	
WPA W3NGO X	(1)		-			O	
MDD N3DE X	(1)		(3)	-		O	
QTC/9 QNF/2356Z							.

Traffic figures or “W” for Words listed under Section column. Each Section station is both TX and RX. Dispatches to stacks +4 or -5 marked with hex nuts or magnets on sheet clamped to metal plate. Traffic quantity digits are slashed upon dispatch, crossed off when cleared (shown here in parentheses), struck through if canceled. Area type net control sheets may be used

for larger nets. The NCS column is for “other” traffic, marked here for NCS when the N3DRM traffic for K3GHH was listed.

A simpler “traffic list” method may be used. This method is a minimal record keeping technique but is often used on Section or Local nets due to the large number of traffic listing permutations precluding the use of specific outlet columns.

3RN 142345ZMAR	STN	QTC	QTY	QSP	NET	+4	-5	.
NCSRX K3GHH	GHH	EAN	(1)	KOD	6/			
EANTX W3KOD X	DRM	WPA	(2)	NGO			4/	
EPA N3DRM X		GHH	(1)	GHH	3/			
WPA W3NGO X	NGO	EAN	(1)	KOD		1/		
MDD N3DE X	3DE	EAN	(1)	KOD		2/		
		WPA	(3)	NGO			5/	
QTC/9 QNF/2356Z								.

In this example the QNI’s are listed after their pre-written liaison positions on the left, the NCS assumed to be EAN RX rep, else the RX is listed separately. Each is marked with an “X” when excused in advance or from the net. Each station suffix holding traffic is entered in the STN column, destination in QTC column, quantity in QTY column, assigned recipient in QSP column (defaults on this Region net). The STN and QSP

stations assigned to stacks are noted with the sequence number in the frequency columns and the QTC column marked. When either station returns the traffic QTY is marked off (shown in parentheses here) and the sequence number is slashed. Marker hex nuts or magnets may be used instead, moving the QSP station marker to the frequency column in the traffic row, the STN marker over the STN suffix, until those stations return.

5.7.4 Region Net Reports

Example Region net report for the transcript net. Check with the Net Manager for the format desired for each specific net.

33 R K3GHH 15 BALTO MD MAR 14					
WB4FDT		<BT>			
3RN	MAR	14	2345Z	QNS	
K3GHH/NCS/EANRX	W3KOD/EANTX	N3DRM/EPA	W3NGO/WPA	N3DE/MDD	
QTC	NINE	QNF	2356Z	73	
<BT>	K3GHH	<AR>	N		

5.8 Section And Local Nets

Section nets throughout the US vary in coverage area and format to accommodate Section needs. Consult the ARRL Net directory for specific schedules.

Some of these “Section” nets actually cover two or more ARRL Sections combined. In some cases a Section may have more than one net covering the area or parts thereof.

Some Sections are also serviced by nets covering multiple Sections which do not regularly send liaisons to the Region net serving the area. This is done to expedite traffic flow within states containing more than one ARRL Section, for example.

Local nets such as VHF/UHF repeater traffic nets generally receive and send traffic to Section nets for relay up to Region level.

5.8.1 Section Typical Formats

Section and Local nets use a wide variety of formats depending upon the net purposes and coverage areas. Some NTS affiliated nets also serve as emergency nets and/or social nets for the covered area. Many training nets at Section and local levels are also NTS affiliated. The general rules for assigning all liaisons and releasing them to higher nets on time applies to all NTS affiliated nets. The integrity of the entire system depends upon reliable net liaison.

The Section and Local nets of the NTS are the roots of the system. Originated traffic is inserted in these nets, and outlets check into these nets to provide toll free calling range delivery for any traffic addressed to destinations in their coverage area. All amateur stations are welcome and encouraged to participate in these nets. The ARRL appointment of Official Relay Station (ORS) is available for those stations wishing to become regular participants living up to the standards and tradi-

tions of the NTS. Net Managers provide “Net Certificates” to participants with endorsements for NCS and liaison duties.

The Net Manager is responsible for establishing the net format to suit the needs of the net mission and to maintain the standards of the NTS when affiliated. This manual, therefore, does not stipulate net formats. The typical NTS operating protocols used on NTS nets are, or should be, relatively uniform everywhere, however. Operators who learn these basic protocols should be able to function well on any of these Section or Local nets.

Some net formats are observed to include some of the following activities:

1. Calling for stations with emergency or priority traffic at the opening;
2. Calling for an Alternate Net Control station;
3. Transmitting an opening explanatory preamble;
4. Calling for stations with announcements or bulletins, and transmitting same;
5. Calling for “new” stations desiring to enroll or request information about the net;
6. Calling for liaisons for Local or other concurrent nets meeting in the area;
7. Calling for liaisons from preceding, subsequent, or next higher level nets;
8. Calling for stations holding only formal traffic;
9. Calling for stations holding informal traffic or other business;
10. Excusing stations early which have no traffic or can not take listed traffic;
11. Conducting 1 minute comments round-table fashion, exchanging social comments, or servicing questions after formal traffic is handled; etc., etc.

Throughout these special functions the standard NTS listing, assignment, and dispatching of traffic is accomplished with standard protocols, often before social activities begin.

Section nets described in the following sections are, therefore, examples only.

5.8.2 Section Voice Net Transcription

MEPN is a Section net of the NTS, MDC, with early excusing, a social net with station comments, and a Section-wide emergency net..

1 NCS THIS IS K3XXX IS THE FREQUENCY IN USE?
(NO RESPONSE)
NCS CALLING THE MEPN THIS IS THE MARYLAND EMERGENCY PHONE NET K3XXX NET CONTROL STATIONS WITH EMERGENCY OR PRIORITY TRAFFIC?
(NO RESPONSE)
NCS ALTERNATE NET CONTROL PLEASE?
STN THIS IS WA3WRT ALTERNATE NET CONTROL NO TRAFFIC OVER
NCS WA3WRT ROGER THANK YOU PLEASE STANDBY
HIS IS K3XXX CALLING THE MARYLAND EMERGENCY PHONE NET A DIRECTED

10 NET AFFILIATED WITH THE ARRL NATIONAL TRAFFIC SYSTEM. (PREAMBLE)
THIS IS K3XXX THE NAME IS JOHN
NCS ARE THERE ANY ANNOUNCEMENTS FOR THE NET PLEASE?
(NO RESPONSE)
NCS STATIONS HOLDING TRAFFIC FOR WEST VIRGINIA OR DELAWARE PLEASE?
(NO RESPONSE)
NCS WEST VIRGINIA REP (THIS IS AN ARES LIAISON ONLY.)
STN W3FZT WILL GO TO WEST VIRGINIA NO TRAFFIC
NCS W3FZT ROGER NO TRAFFIC EXCUSED TO WEST VIRGINIA
STN FZT GOING
20 NCS DELAWARE REP?
STN W3PVO DELAWARE NO TRAFFIC (CYCLE 2 DE IS SEPARATE FROM MDC.)
NCS W3PVO GE GEORGE NO TRAFFIC DELAWARE COMMENTS? 73 YOU ARE EXCUSED
PVO (COMMENTS AND SIGNS OUT)
NCS 3RN REPS PLEASE (MULTIPLE LIAISONS POSSIBLE FROM CYCLE 2 3RN.)
STN N3KGM 3RN WITH TRAFFIC; KB3AMO 3RN NO TRAFFIC
NCS KB3AMO THANK YOU STAND BY N3KGM GOOD EVENING PLEASE LIST
KG THIS IS N3KGM FROM 3RN TRAFFIC BOWIE
M ONE HAGERSTOWN TWO OVER
NCS N3KGM ROGER THANK YOU STANDBY ANY OTHER 3RN REPS?
(NO RESPONSE)
30 NCS MDD REP PLEASE (MDD IS COMBINED DE/MDC CYCLE 4 NET.)
STN HELLO THIS IS WA3YLO TO MDD NO TRAFFIC
NCS GOOD EVENING TONY WA3YLO N3KGM 3905 BOWIE (IMMEDIATE DISPATCH.)
STN YLO GOING; KGM GOING
NCS HAGERSTOWN PLEASE?
STN KD3JK EMERGENCY POWER NO TRAFFIC WILL TAKE HAGERSTOWN
NCS GOOD EVENING BOB KD3JK 3905 N3KGM AFTER WA3YLO HAGERSTOWN TWO
JK JK GOING (ADDED TO THE STACK AT 3905.)
NCS BTN REP PLEASE (LOCAL VHF REPEATER NET IN BALT. METRO AREA.)
STN WA1QAA TO BTN NO TRAFFIC
40 NCS WA1QAA THANK YOU PLEASE WAIT
NCS PACKET REPS PLEASE (MULTIPLE LIAISONS EXPECTED.)
STN N3WKE PACKET NTS NO TRAFFIC
NCS N3WKE THANKS STAND BY OTHER PACKET REPS?
(NO RESPONSE... PAUSE FOR ADDITIONAL PKT REPS.)
STN FZT BACK NO TRAFFIC (TAIL ENDS AFTER PAUSE.)
NCS FZT (ACKNOWLEDGES FZT)
NCS THIS IS K3XXX ANY STATIONS WITH FORMAL TRAFFIC FOR THE MEPN?
STN W3DFW WITH TRAFFIC
NCS W3DFW PLEASE LIST OVER
50 DFW W3DFW TRAFFIC MDD ONE OVER

60 NCS W3DFW ROGER PLEASE STAND BY (MDD REP IS BUSY WITH ONE WAITING)
 NCS ANY OTHER STATIONS WITH FORMAL TRAFFIC? (SPECIFIC CALL.) (NO RESPONSE) 80
 NCS ANY FORMAL OR INFORMAL TRAFFIC FOR THE NET PLEASE? (SPECIFIC CALL.)
 STN AMO
 NCS AMO
 STN KB3AMO PLEASE ADD TRAFFIC WORDS WITH N3WKE OVER
 NCS SHORT?
 AM NO
 O
 NCS N3WKE KB3AMO 3900 WORDS 90
 STN WKE GOING; AMO GOING
 S
 NCS ADDITIONAL STATIONS WITH FORMAL OR INFORMAL TRAFFIC? (NO RESPONSE)
 NCS STATIONS WHO WOULD LIKE TO CHECK IN AND LEAVE AT THIS TIME ALPHA THROUGH MIKE PLEASE (SPECIFIC LIMITED CALL, USED ON THIS NET.)
 STN W3ABC..WB3BFZ..W3BOB.....
 S
 NCS W3ABC WB3BFZ W3BOB THANKS FOR JOINING US TONIGHT 73
 NCS OTHERS WISHING TO LEAVE AT THIS TIME ANYWHERE IN THE ALPHABET? 100
 STN K3USO..K3ORW.....
 S
 70 NCS K3USO K3ORW THANK YOU 73 HAVE A GOOD EVENING OTHERS? (NO RESPONSE)
 NCS MEPN THIS IS K3XXX STATIONS WITH OR WITHOUT TRAFFIC PLEASE? (OPEN NET CALL.)
 STN YLO BACK (AFTER PAUSING FOR OTHERS)
 NCS WA3YLO W3DFW 3892 MDD ONE (IMMEDIATE DISPATCH.)
 STN YLO GOING; DFW GOING 107
 S
 NCS K3XXX MEPN STATIONS WITH OR WITHOUT TRAFFIC? * (Notice that Q-Signals are not used in voice net operations.)
 STN WA4GGH NO TRAFFIC.. WA3UVQ NO TRAFFIC.. W3SOG NO TRAFFIC

5.8.3 SECTION VOICE NCS SHEET (Traffic List Method.)

NCS Sheet * (shown at line 100 status in the transcript.)

MEPN*	D/T	STN	TRAFFIC	QTY	QSP - FREQ #	E/O stns
LIAISONS	OTHERS	KGM	BOWIE	(1)	YLO 3905-1	W3ABC
NCS K3XXX		KGM	BOWIE	(1)	YLO 3905-1	W3ABC
ANC WA3WRT	KD3JK/EP		HAGERSTOWN	(2)	JK 3905-2	WB3BFZ
3RN N3KGM	W3DFW	DFW	MDD	(1)	YLO 3892-1	W3BOB
... KB3AMO		AMO		(W)	WKE 3900-1	K3USO
WVA W3FZT	WA4GGH					K3ORW
DTN W3PVO	WA3UVQ					
MDD WA3YLO c	W3SOG					
BTN WA1QAA c o						
PKT N3WKE/NTSD						
.						.
QNI/ 19	QNF/			QTC/ 4		.

Liaisons in left column, early excused stations in right column. Traffic listed in traffic list using suffix of holder under STN, traffic with tel nrs, quantity as digits only or “W” for words, assigned RX station under QSP, stack freq. and order under FREQ #. Traffic assigned when QSP indicated, dispatched when FREQ # indicated. Traffic circled when stations return, or left digit(s) if no joy, struck through if canceled. Stations commented appended with “c,” excused with “o,” early outs on left side appended with “e.” This is a manually marked sheet only.

5.8.4 Section Voice NCS Sheet (Marker Method.)

NCS Sheet (shown at line 100 status in the transcript.)

MEPN	TRAFFIC	QTY	QSP	3905	3900	3892
NCS K3XXX						
ANC WA3WRT						
3RN N3KGM	BOWIE	(1)	YLO	1/		
	HAGERSTOWN	(2)	JK	2/		
KB3AMO	WKE	(W)	WKE		1/	
WVA W3FZT						
DTN W3PVO						
MDD WA3YLO c				1/		1/
BTN WA1QAA co						
PKT N3WKE/NTSD					1/	
KD3JK/EP				2/		
W3DFW	MDD	(1)	YLO			1/
W3ABC e						
WB3BFZ e						
W3BOB e						
K3USO e						
K3ORW e						
WA4GGH						
WA3UVQ						
W3SOG						
QNI/19 QNF/		QTC/ 4				

One line per station. Liaison assignments are written in as stations QNI. Traffic listed under TRAFFIC, QTY digits or “W” for Words, and QSP as assigned to RX. When dispatched the freq. column is marked with the order number at the stack, crossed off when stations return, or may be marked by moving magnets or hex nuts as in Area/Region sheets. QTY digits circled when traffic passed and stations return, left unchanged if no joy, struck through if canceled. Early outs marked with “e,” comments “c,” excused “o.”

5.8.5 Section Voice Net Report

Example Section voice net report. Consult the Net Manager for the desired format for the specific net.

45 R K3XXX 29 DAYTON MD MAR 14					
KE3OX		<BT>			
MEPN	TUE	MAR	14	2300Z	
QNS	NNI/NCS	WRT/ANC	KGM/3RN	AMO/3RN	
FZT/WVA	PVO/DTN	YLO/MDD	QAA/BTN	WKE/PKT/NTSD	
JK/EP	DFW	GGH	UVQ	SOG	
ABC	BFZ	BOB	USO	ORW	
QNI/19QTC/4	QNF/2325Z73				
<BT>		K3XXX	<AR> N		

Note that suffixes were optionally used for regular stations known to the NM. Stations with similar suffixes would be shown with additional characters or with the full call sign. Newcomers would be shown with full call sign appended with name and QTH.

5.8.6 Section CW Net Transcription

(MDD is a Section net of the NTS, MDC, cycle 4.)

	NCS	QRL? — (NO RESPONSE)		STN	GE MR JN KC3Y MSN QTC 3RN 2 BALTO 1 <AR>
	NCS	CQ MDD MDD MDD DE K3GHH QND PSE QNZ	10	NCS	GE BUCK NR3Q KC3Y UP 6 3RN 2 (IMMEDIATE DISPATCH 3Q, 3Y.)
		QNA 3RN3 (BEGINS QNA SERIES.)		STN	(NR3Q) T, (KC3Y) T (STNS ACK IN ORDER OF S DISPATCH.)
	STN	GE N3DE 3RN3 QRU		NCS	BTN (AGAIN QNA OMITTED IN SERIES OF CALLS.)
	NCS	N3DE GE HARRY TU PSE <AS> 3RN4 (QNA NOT REPEATED TO CALL 3RN4.)		STN	GE DE AA3LN BTN QRU
	STN	GE NR3Q 3RN4 QRU		NCS	AA3LN GE LEE PSE <AS> PKT
	NCS	NR3Q GE TU RAY PSE <AS> DTN (ACK 3Q, <AS> ENDS ACK, CALLS DTN.)		STN	GE K3NNI PKT QRU
	STN	GE WA3WIY DTN QRU		NCS	K3NNI GE JB PSE <AS>
	NCS	WA3WIY GE HAL PSE <AS> MSN		NCS	MDD DE K3GHH QNI (FIRST OPEN NET CALL FOR NON-LIAISONS.)
				STN	W (SINGLE LETTER QNI METHOD STANDARD

FOR MULTIPLE RESPONDERS.)

20 NCS W
STN W3ZNW GE JN QRU
NCS W3ZNW GE WOODY PSE <AS>
STN Y (TAIL ENDING THE <AS>.)
NCS Y
STN GE JN W3YVQ QRU
NCS W3YVQ QNQ UP 6 KC3Y BALTO 1 (SINGLE AD-
DITION TO STACK.)
YVQ T
NCS MDD DE K3GHH QNI
STN V R
NCS V (SELECTS V, REMEMBERS R.)
STN HI JN W3FZV QTC WDS NR3Q <AR>
30 NCS W3FZV GE PHIL PSE <AS> R (HEARD IN EAR-
LIER ATTEMPT.)
STN GE AA3SB QRU
NCS AA3SB GE RBN <AS>
(NO TAIL END CALLS.)
NCS MDD K
(NO RESPONSES)
NCS N3DE TNX HRY 73 QNX
DE TU JN 73 N3DE GE
NCS GE AA3SB QRU RBN TU 88 QNX
DE 88 AA3SB E E
40 NCS E E MDD K
STN 3Q (3Q RETURNS, JOB COMPLETED.)
NCS NR3Q W3FZV DN 10 WDS W3FZV QNX 73 K
(IMMEDIATE DISPATCH AND EXCUSE.)
3Q T (NORMAL ACK, NOT EXCUSED.)
FZV R TU 73 W3FZV G (FZV SIGNS OUT SINCE EX-
CUSED.)

50 STN YVQ
NCS YVQ
STN 3Y
NCS KC3Y TNX MSN QRU 73 QNX (IMMEDIATE ACK
AND EXCUSE.)
STN 73 KC3Y E E
NCS E E DE K3GHH MDD K
(NO RESPONSES)
NCS AA3LN TU BTN QRU 73 QNX
LN R 73 JN CU AA3LN E E
NCS E E MDD K
(NO RESPONSES)
60 NCS K3NNI TU PKT QRU 73 GE QNX
NNI 73 K3NNI E E
NCS E E W3YVQ QRU 73 QNX
YVQ 73 W3YVQ GE
NCS W3ZNW TNX WDY 73 QRU QNX
ZNW 73 JOHN W3ZNW E E
NCS E E MDD K
STN 3Q
70 NCS NR3Q TNX RAY QRU 73 QNX
3Q R 73 CU NR3Q GE
NCS GE MDD K
(NO RESPONSES)
NCS MDD QNF 73 DE K3GHH <SK>

5.8.7 Section CW NCS Sheets (Traffic List Method.)

NCS SHEET (shown at line 71 just before QNF in transcript)

MDD* 142300ZMAR	STN	TRAFFIC	QTY	QSP	FREQ
NCS K3GHH	3Y	3RN	(2)	NR3Q	+6 1
3RN3 N3DE o		BALTO	(1)	YVQ	+6 2
3RN4 NR3Q o	FZV	NR3Q	(W)	NR3Q	-10 1
DTN WA3WIY o					
MSN KC3Y o					
BTN AA3LN o					
PKT K3NNI o					
W3ZNW o					
W3YVQ o					
W3FZV o					
AA3SB o					
QNI/11 QTC/3	QNF/				

Liaisons pre-listed on left and called in order, additional QNI below. Stations with QTC shown under STN, QTC under TRAFFIC, Qty. in digits or W for Words, assigned to QSP station, dispatched up 6 or down 10 in order shown. QTY circled when QSP returns, left unchanged if NO JOY, crossed out if canceled. Excused stations appended with "o."

5.8.8 Section CW NCS Sheets (Marker Method.)

NCS SHEET (shown at 71 just before QNF in transcript)

MDD* 142300ZMAR	TRAFFIC	QTY	QSP	+6	-10	.
NCS K3GHH						
3RN3 N3DE o						
3RN4 NR3Q o						
DTN WA3WIY o						
MSN KC3Y o	3RN	2	3Q	1/		
BTN AA3LN o	BALTO	1	YVQ	2/		
PKT K3NNI o						

W3ZNW o						
W3YVQ o						
W3FZV o	NR3Q	W	3Q		1/	
AA3SB o						
QNI/11 QTC/3	QNF/2313Z					

One line per station. Liaison assignments are written in as stations QNI. Traffic listed under TRAFFIC, QTY digits or “W” for Words, and QSP as assigned to RX. When dispatched the freq. column is marked with the order number at the stack, crossed off when stations return, or may be marked by moving magnets or hex nuts as in Area/Region sheets. QTY digits circled when traffic passed and stations return, left unchanged if no joy, struck through if canceled. Excused stations marked as “o.” FZV was excused in advance down 10, marked “o” as dispatched..

5.8.9 Section CW Net Report

Example Section CW net report.. Consult with the Net Manager for the desired format for the specific net.

23 R K3GHH 24 BALTO MD MAR 14				
WJ3K <BT>				
MDD	TUE	MAR	14	2300Z
QTC	THREE	IN	13	MINS
QNS	K3GHH/NCS	N3DE/3RN3	NR3Q/3RN4	WA3WIY/DTN
KC3Y/MSN	AA3LN/BTN	K3NNI/PKT	W3ZNW	W3YVQ
W3FZV	AA3SB	X	73	
<BT>		K3GHH	<AR> N	

Some nets report only suffixes except for newcomers which would be shown full call sign with name and QTH appended as in N3XYZ/BOB/SPARKS. Other nets may report statistics as mixed groups QNS/11 QTC/3 QNF/2313Z, and perhaps the duration rather than end time as QND/13.

5.9 New Traffic Handlers

As NCS you may wish to share with new stations the training material in this manual, and perhaps the following tips regarding moving up in the NTS system.

As a new station participating in traffic handling it will seem at first like there is a great deal to learn. One of the easiest ways to get your feet wet is to join a training net in your area. Some nets like the Maryland Slow Net welcome trainees from anywhere in range (80 meters, 3717 kHz, 19:30 daily local time. They will assign you to go off the net frequency with a personal trainer who will help you with your sending, basic traffic handling and net operating skills, send you training radiograms, and help you become proficient and comfortable in short order.

You may also learn a great deal about traffic handling and net operating by simply listening to the nets in your area. The ARRL *Net Directory* lists all registered nets in your Section as well as the NTS nets covering your area. Local traffic handlers and members of ARES/RACES, and the Section Traffic Manager or Section Emergency Coordinator, can help you with training literature.

Remember to ask your home net NM to provide you with a “Net Certificate” to recognize your traffic net participation once you get involved.

You may also apply for the ARRL appointment of “Official Relay Station,” or ORS, to recognize your interest in the NTS and willingness to adhere to good operating practices and handle radiograms faithfully. Contact your Section Traffic Manager for details and assistance.

If you find the NTS a rewarding experience, you will be joining a long tradition of devoted traffic handlers practicing an art since 1914 in service to the public.

Good luck and have fun!

5.10 New Liaisons

Liaison stations carry traffic between NTS nets. They are the links that make the NTS system work. If you have learned how to handle traffic, receive and send single and multiple messages and books, you should be able to take a liaison job. Check with the NCS or Net Manager regarding the particular requirements for the liaison job of interest. Section liaisons to Region nets, for example, are expected to attend both Region sessions in a given NTS cycle. Check also that your equipment and antennas are suitable for operating on the target net.

Liaisons from Region nets to Area nets are either transmit reps (TX) or receive reps (RX). Although there are various arrangements made, it is often customary for the RX rep to be NCS on an early Region net, the TX rep being busy accepting traffic to carry to the Area net. The RX rep then goes to the Area net to accept traffic for the later Region session. The TX rep returns to that later Region session to be NCS, relieving the RX rep to pass traffic. Sometimes the TX and/or RX reps do not run the Region nets. You may volunteer to be a liaison to Area without being obligated to be Region NCS.

Learn how “through” traffic is listed on your Region net. It is usually directed to one of the three Area nets, EAN, CAN, or PAN. Traffic for other Sections in your Region net are identified and listed for the Section name (or sometimes the Section net name if different). These Section liaison names can be learned by listening to the Region net a few times. See chapter 4, for details on liaison assignments and listing traffic.

As a liaison from your Section net to the Region net, listen for the opening of the Region net and see if the NCS is calling for liaisons by net name, as in “EPA” on CW, or “Eastern Pennsylvania Please” on voice, or if the NCS is calling for stations to check in with an open call, as in “3RN QNI” or “Third Region Net... stations with or without traffic please.”

If the call is by net name, you simply check in when your net is called. Assume for the examples you are from the EPA Section net, as in:

NCS: QNA EPA

YOU: W3XX EPA QRU; if you have no traffic; or

YOU: W3XX EPA QTC EAN 2 WPA 1 <AR>; listing your traffic.

NCS: W3XX GE TU PSE <AS>; acknowledging you

If the NCS makes an open net call, use the single letter method for checking in:

NCS: 3RN QNI

YOU: X

NCS: X

YOU: W3XX EPA QRU; if you have no traffic; or

YOU: W3XX EPA QTC EAN 2 WPA 1 <AR>; listing your traffic.

NCS: W3XX GE TU PSE <AS>; acknowledging you

If you are new to the net, the NCS may ask you your name and QTH for his roster, and welcome you to the net.

Listen carefully and wait for the NCS to issue you a dispatch command to pass some of your traffic. You may be ordered to pass your traffic on the net frequency or move off the net.

NCS: W3NGO W3XX UP 4 WPA 1

NGO: T; the first station addressed acknowledges first;

YOU: T; you acknowledge and follow.

(The receiving station would call you first UP 4.)

If you are ordered to pass the message on the net, the “UP 4” would be replaced with “HR,” or “HERE” on voice, or might even be omitted, implying the net frequency.

NCS: W3NGO W3XX HR WPA 1 (W3NGO would ask if you are ready to copy.)

NGO: QRV?

YOU: QRV (and W3NGO would send you the message(s)).

Remember the receiving station initiates the call off frequency. On net, the first station addressed in the dispatch makes the first call. See chapter 2 or 3, *Station Operations*, for the details on how to move off the net, make contact, and exchange your traffic at either location.

You may always ask a sending station to QRS if you would like a slower sending speed on CW.

Return to net, make sure there are no other business transactions in progress, then check back in by sending your suffix if your job is completed.

YOU: XX

NCS: XX; (this exchange tells the NCS you have completed your assignment); or;

If you were not able to exchange your traffic, return as above except use your full call sign (or suffix if the net prefers) followed by “NO JOY.” The NCS will help you resolve the problem.

YOU: W3XX NO JOY; or W3XX NO NGO; (making it clear the job was not completed))

NCS: XX R <AS> (The NCS will wait for NGO and help solve the problem.)

The NCS may also dispatch you for other business and later make arrangements for the NGO traffic.

When all your traffic is passed, the NCS will excuse you... and you’re done.

If you have sharpened your skills and are assigned as liaison to an Area net, the process is virtually the same. The NCS may use open calls or call for Region reps by name. In this case the rep name is compound, i.e., 3RN TX, or 3RN RX; “Third Region Transmit,” or “Third Region Receive.” Check in the same way as shown above. Full call signs will be used in the dispatches, and most traffic is dispatched off the net frequency.

You can listen to both the Region nets and Area nets to see if you can handle the pace of business and sending speeds, etc. Area nets may also need you to be ready to switch to other bands to adjust for propagation. If you are dispatched to another band and can not operate there, simply inform the NCS “Unable 20 meters.,” if so dispatched, or whatever is appropriate. The NCS help will work out a solution.

Remember to ask your home net NM to endorse your net certificate for liaison duty when you have accomplished this level.

5.11 New Net Controls

If you are participating in a Local or Section NTS net and would like to try your hand at being the NCS a few tips might be helpful.

1. Listen to the experienced net control and make note of how the net opening call is made. Note the sequence of liaisons checked into the net, and how other stations are checked in. The NCS will then assign and dispatch traffic during the net, making frequent pauses or calls to check in additional stations. Stations will be excused as soon as their business is concluded. This sequence is the format of the net. The language used for commands and responses is the standard syntax covered in this manual.
2. The Net Manager can provide a summary of the net format for you to use, and suggest means or forms to use to keep the net records as the net is run (net control sheets).
3. Listen to the syntax used by the NCS to make the net calls, ask for liaisons or outlets for traffic, and then dispatch stations to pass traffic on the net or off net on stack frequencies. Note the language used for sending two stations off net, and that used for adding an additional station to such a stack. Listen to the language used to excuse stations. This syntax used by the NCS and net stations is based upon the standard net operating protocols used

throughout the NTS. The Net Manager can provide training literature to help you understand what the syntax means and how it is used.

4. Listen to the nets from which liaisons are sent to your net, and those nets to which liaisons are sent from your net. Learn the times and frequencies of those nets from another NCS station, net stations, the Net Manager, or the ARRL Net Directory.
5. Obtain (from the NM), or make, a roster of stations who frequent your net, noting the names of the operators, their locations, areas for which they can handle traffic, and the call signs of operators who perform liaison duties. This will be a great help when you become the NCS. Use names and friendly greetings or farewells to keep a friendly net atmosphere. Try to place those words ahead of line-ending command syntax as much as possible so the net stations will know when to respond without you using “K” or “OVER.”
6. The Net Manager can provide you with specific requirements for the required net report message. Listen to and

copy some net reports sent by net controls to the Net Manager reporting the details of net sessions. Reporting on each net will be part of your job as a net control. These reports should be sent to the NM as soon as possible, certainly within two days.

7. Practice keeping the record of transactions during the nets. This will help you develop your own shorthand methods for noting the listed traffic, the stations to receive it, where the traffic is dispatched, and which stations are cleared and excused. The alternate net control keeps the same records as the NCS to be ready to step in and take over the net if required. Volunteer to be an alternate net control. If your net does not use an alternate net control, you may still practice this function by simply listening and tracking the net business. Ask the Net Manager about trying your hand at the job when you feel ready. Most NCS stations will be glad to stand aside and help you take a turn at the helm.

Remember to ask your home net NM to endorse your net certificate for NCS duty when you have accomplished this level.

Chapter 6 - NTSD - NTS Digital

Extensive contributions from N3QA and N4SS are appreciated.

6.1 National Traffic System - Digital

NTS Digital (NTSD) is currently configured as a parallel system to the manually operated NTS nets, providing 24 hour continuous service as links between Regions through manned BBS stations operating on multiple HF bands. Hubs in each of the three U.S. NTS Areas, Eastern, Central and Pacific, are key stations in the Area interconnects.

The Regional NTSD stations have access to and from Section level liaison packet operators by way of VHF/UHF packet interfaces. These packet liaisons carry traffic to and from the Local and Section NTS manual nets, thus providing the links to origination and delivery.

Area and Region digital coordinators are assigned to manage the system throughout the NTS.

Since they are manned stations, traffic routed via the NTSD is monitored to assure that traffic is kept moving, and any path loss is circumvented by manual intervention... the traffic being diverted to the manual nets as necessary.

These stations often operate with scanning radios capable of being accessed on the optimal band for the path desired. Although there is a variety of software available for such BBS operation, numerous stations are using WinLink as a platform and Pactor as the HF mode. VHF/UHF links are often via normal ground packet direct, or via a large variety of packet node station interconnections.

NTSD handles only ARRL formatted formal radiograms.

The following overview of NTSD operation is provided by the former Third Region Digital Coordinator, N3QA, and the Eastern Area Digital Coordinator, N4SS, for which we are very grateful.

All call signs used in this manual are intended to be generic for tutorial purposes and not related to the holders of those call signs in any way.

6.2 Protocol For NTS Digital Station Operations

6.2.1 ARRL Standard Message Uploading

Sample ARRL Formatted Message for Digital Systems. Note that the entire message, including preamble, address, text and signature, is uploaded in the TEXT upload to the digital system. The “TO” and “SUBJ” fields are used for routing purposes.

(BBS prompt: Enter “To” line.)	(Notes.)
ST 99999@NTSCA <enter>	TO: upload line.
Subj.	
QTC SOMETOWN / 555 555 <enter>	SUBJECT: upload line.
Msg.	MSG.: field lines:
NR 1 R HXG N3QA ARL 5 CHESTERTOWN MD JAN 1	Preamble..
GUY ANYONE	Address
123 MAIN STREET	
SOMETOWN CA 99999	
555 555 5555	
ARL FIFTY SEE YOU SOON	< blank line or BT, text start
	Text
	< blank line or BT, text end
JOHN Q PUBLIC	Signature
	< blank line for clarity
/EX <enter>	UPLOAD, message end.
(Text example with Op Notes shown.)	(Text field)
NR 1 R HXG N3QA ARL 5 CHESTERTOWN MD JAN 1	Preamble
GUY ANYONE	Address
123 MAIN STREET	
SOMETOWN CA 99999	
555 555 5555	
OP NOTE DELIVER ON WEEK DAYS	Address Op Note
	< blank line or BT, text start
ARL FIFTY SEE YOU SOON (text)	
	< blank line or BT, text end
JOHN Q PUBLIC	Signature
OP NOTE REPLY VIA N3QA 3RD REGION NTSD	Signature Op Note
	< blank line, no characters
/EX <enter>	UPLOAD message, end.

Once the BBS sees the /EX at the start of a new line, your message will be acknowledged and stored on the BBS for forwarding. You may then enter another message by using the “ST” command again or end the connection by using the “B” for Bye command.

Notes:

ST	(S)end (T)raffic - "To" line introducer, used to indicate an NTS message, followed by a space.
ST 99999@NTSCA	To: Destination Zip Code and the letters NTS followed by the STATE (not ARRL Section) abbreviation of the destination. There may be spaces between the parts, i.e., 99999 @ NTSCA.
QTC	QTC (message): Subject line introducer, followed by a space.
QTC SOMETOWN / 555 555	Subject line. Town of the destination and the area code and prefix of the phone, or "NO PHONE," and/or call sign of an amateur addressee; 30 characters max., including the QTC.
NR (#)	NR, space, (#): Serial number of your message. Usually starts with "1" at the beginning of a year or month. Preamble starts at this point.
R (Precedence)	<u>R</u> outine precedence. The standard precedence level for normal message traffic. Others: <u>P</u> riority, <u>W</u> elfare, <u>E</u> MERGENCY. The word <u>TEST</u> precedes the precedence for exercise messages.
HXG (Handling-Instructions)	Delivery by mail or toll call not required. If expense involved, cancel message and send a service message to the originating station.
N3QA (Stn-of-Orig)	Call sign of the station originating the message.
ARL 5 (Check)	Check (word count) of the text portion of the message. In this case the ARL indicates that the message contains an ARRL Numbered Radiogram text. There are many ARL numbered messages to make the message transmission shorter. See Ch. 1.
CHESTERTOWN MD	Place-of-Origin. Place where the message originated (the location of the person for whom the message is originated).
(Opt. Time-Filed)	Not shown. 24 hour UTC unless marked EST, etc. (1830EDT), placed just before a space before the month.
JAN 1	Month and day the message originated, UTC unless Time-Filed is not Z, then time and date must agree. Preamble ends at this point following the day figure(s).
ADDRESS:	The name, address, and telephone number of the addressee follow the preamble. Address begins on a new line.
Address Op Note	Follows the end of the address if needed (re delivery). New line.
(Blank line or BT)	Blank line marks the start of the text. A "BT" may optionally be used on a line of its own as a break between the address and the text (for those who use software with BT's to generate their messages). The "BT" is consistent with the <BT> and "BREAK."
TEXT:	Next comes the text of the message. (Note that exercise message texts contain the words "test message," or "exercise" as the first and last groups of the text.
(Blank line or BT)	Blank line marks the end of the text. A "BT" may optionally be used as a break between the text and signature (as above).
SIGNATURE:	Name of the person(s) sending the message.
Signature Op Note	Follows the signature if needed (re reply). New line.
/EX spacing)	Blank line precedes the following "/EX" for clarity (no characters.).
/EX	The characters which tell the BBS that the message is ended. The "/EX" or "/ex" must be the only characters at the beginning of a new line. Commands may be in upper or lower case.

* Message formatting on the digital modes is best done with a simple, but precise, method. In the above example note that there is no line space between the preamble section and the address section. There is a blank line (or "BT") between the address and the text section and a second blank line (or "BT") between the text section and the signature section of the message. Keep the message text to five (5) words per line. That makes confirming the word count, or check, simple for the receiving operator.

6.2.2 One Single Message Per Upload

Booking is considered poor practice on digital systems and is difficult to process at the delivery points.

6.2.3 Vhf Connections

This exact protocol is specific to NTS Digital station N3QA. The procedure is the same for any WinLink station. N3QA operated on 145.650 MHz packet radio from Chestertown,

Maryland, on the Eastern Shore. VHF packet stations that could not connect on a direct path could access N3QA through the NEBALT node (KE3GP-8) port 1, which was also on 145.650 MHz, or via any other node with a good path to the NEBALT node. Many VHF SYSOPS have nodes on multiple frequencies: Thus the need to indicate the port on the node stack corresponding to the frequency desired for the connection, e.g., C 1 N3QA in the sample text. The number "1" in the command indicates to the system that one needed to put out the call to N3QA on 145.650 (port 1 on NEBALT). If the system operates on only one VHF frequency, it may be that only a sequence like C N3QA is required.

The above connect sequence will be similar on any VHF packet system. In general, for a single frequency system:

C (CALL SIGN)

On a multiple frequency system:

C (PORT #) (CALL SIGN).

6.2.4 Checking For NTS Traffic On Vhf Packet

Note that on WinLink stations there is a special command for listing NTS traffic that is still pending. The command is not found on most packet BBS software. It is: "NTS."

The LT command to List Traffic is also available. The LT command lists all NTS traffic including those messages which have already been forwarded but have not been archived.

Notes: On WinLink a keyboard operator would see a total of six (possibly eight if bulletins are allowed) status code two-letter combinations. The first letter is either P or T or B: P for Personal messages, and T for Traffic (NTS) messages, or B for bulletins.

The second letters are: N for Not forwarded to a distant station nor accepted by a local station; Y for Yes forwarded or accepted; and K which means the message is in the process of being forwarded at that very moment on another port (HF or VHF).

Most of the NTSD stations do not allow bulletins. On those which may, the Y/N/K have the same meaning.

On different BBS stations there are other status letters in use. Most frequently: Y on WinLink equates to F for Forwarded on the most popular FBB type packet BBS. P/T/B are the same as is N.

6.2.5 Example, Listing Traffic Via VHF Packet

Simulating N3DE as "you," N3QA as the NTSD station:

You (N3DE as Example):

C NEBALT

{Connected to NEBALT....

C 1 N3QA

BBS Response (blank lines not shown):

[WinLink-2.9-BFHIMR2T\$]

3RN NTS DIGITAL - NTS ONLY

Accepting NTS messages for destinations outside of 3RN.

BBS Response to the "nts" request:

NR	TS	SIZE	TO	FROM	AT	FILED(Z)	SUBJECT
21305	TN	512	NTSMD	WX4H	NTSMD	0314/1822	WALDORF 301 555
21304	TN	973	NTSMD	WX4H	NTSMD	0314/1822	BOOK OF THREE MD
21303	TN	269	34467	WX4H	NTSNH	0314/1821	MORLAND 603 399
21302	TN	371	01436	WX4H	NTSMA	0314/1821	BALDWINVILLE 978 939

N3DE DE N3QA>

You (seeing one for MD):

R 21305

BBS Response:

Nr: 21305 To: NTSMD From: WX4H Filed: 03/14 18:22 UTC
WALDORF 301 555

NR 1400 R HXG AD4IH 15 SAN MARCOS CA MAR 14
ROBERT L SOMEONE

Use command NTS to list NTS messages awaiting action.

New HF pactor scan freqs effective 10 March 2000.

Info on the web at: www.qsl.net/n3qa

(Use lower case letters)

You have 360.0 of 360 daily BBS usage minutes left.

N3DE de N3QA>

You:

nts

Note: The listing for "LT" looks the same as the example below, however it includes traffic that has already been accepted or forwarded. The "NTS" command is a major step toward avoiding dupes. It is unfortunate that none of the BBS system except WinLink contain such a command. Many local ops on a packet BBS will read an NTS message and act on it, but not kill it at the BBS. Any operator following would see that the message had been read, but would have no idea as to whether or not it was accepted for delivery or forwarding.

Most VHF BBS use the "TF" to indicate that a message has been forwarded to another BBS. One should **not** download for action any message that has been forwarded. On WinLink the equivalent is "TY" to indicate an NTS message which has been forwarded.

If one uses the command "NTS" rather than "LT" one will never be shown messages that have been forwarded or accepted for delivery. On WinLink there are four traffic status indicators. Note the following:

- 1) TN for Traffic **not** previously accepted by a station checking nor forwarded to another BBS.
- 2) TY for Traffic YES it has been forwarded. Do not download TY marked traffic for delivery or forwarding.
- 3) TK is traffic that is in the process of being sent on another port, e.g., on an HF port if one is checking in on the VHF port. Persons using the NTS command will never see any of these except TN which represent available traffic.

5105 SOME ST
WALDORF MD 20601
301 555 5555
MAKE USNCVA REUNION 2000 THE
BEST EVER X SEE YOU
IN SAN DIEGO IN SEPTEMBER
SCOTTY DAVIS REUNION HOST
SVC TO AD4IH LAKELAND FLORIDA
Accept NTS Message (YES, NO, CANCEL)?

Note: Unless “YES” is the response when an operator is asked if he accepts the traffic, then it remains available for a different operator to receive. There is no need to re-list unless one mistakenly responds “YES” rather than “NO.”

“Cancel” is only available to the operator to whom the message is addressed or to the operator who put the message onto the system. It allows for “cancellation” of the message if there is an error. Other operators who attempt to “Cancel” receive an error message.

You (Note you must use YES or NO. Y or N will not be accepted):

YES

Note: Entering “YES” converts the listing of the message status to “TY.” On WinLink one should never read a message with “TY” status to deliver or forward on a local net. The exception to that is if the operator who originally accepted the message lost it and wanted to re-read the message again. He could then issue the “LT” command and get the listing of all traffic (forwarded and not forwarded) remaining on the system. Messages are not “Killed,” but remain on the system for a certain period of time. Again, the use of the “NTS” command prevents a lot of problems concerning dupes.

BBS Response:

NTS Message Accepted

N3DE de N3QA>

You: (If there are more messages you can handle then issue another R # command. Otherwise use the B for Bye command):

b

Note: In the listing of traffic available above there is a message listing “booked” traffic. Unfortunately the only way an operator can see where the traffic is actually destined is to read the message using the “R #” command. The operator should **not** accept the traffic if he cannot handle it.

This situation should be avoided by the practice of putting each message in as a separate piece of traffic. Booked traffic works well on CW and Voice nets, but it does not on digital. The exception is that a packet representative from a section net could accept booked traffic and disseminate it at the section level.

6.2.6 Example, Sending NTS Traffic On Vhf Packet

Simulating N3DE as “YOU,” and N3QA as the NTSD station.

You (N3DE as Example):

C NEBALT

{Connected to NEBALT...

C 1 N3QA

BBS Response (blank lines omitted):

[WinLink-2.9-BFHIMR2T\$]

3RN NTS DIGITAL - NTS ONLY

Accepting NTS messages for destinations outside of 3RN.

Use command NTS to list NTS messages awaiting action.

New HF pactor scan freqs effective 10 March 2000.

Info on the web at: www.qsl.net/n3qa

(use lower case letters)

You have 359.5 of 360 daily BBS usage minutes left.

N3DE de N3QA>

You:

ST 99999 @ NTSCA

Note: The spaces between the 99999 and the NTSCA are optional. Personally, I like to put them in simply because it is easier to read for the person typing them into the system.

BBS response:

Subj:

* You:

QTC SAN SOMEWHERE / 415 555

Note: For an NTS message the subject is formally supposed to begin with “QTC” followed by the city of destination. The phone area code and exchange should be given in the listing if they are available. If there is no phone number it is best to include that information as “NO PHONE.” Messages should have a phone number for the addressee if it is at all possible. If there is an amateur call for the addressee that should be listed. Note that on most BBS systems there is a limit of about 30 characters in the “subject” line. More will be truncated.

BBS Response:

Msg:

You:

NR 1 R HXG N3DE 15 BALTIMORE MD MAR 13

DAN ANYONE

123 SOME STREET

SAN SOMEWHERE CA 99999

415 555 5555

ARL FIFTY ALL IS WELL

HERE X WE HOPE THE

SAME WITH YOU X LOVE

MOM AND DAD

/EX

Note: The BBS only stops accepting text when the /EX is received at the beginning of a new line. Otherwise, the actual NTS message preamble, address groups, body, and signature are all “text” to any BBS. A blank line before the “/EX” line helps to make the end of the signature section easier to read for the receiving operator. It is good form.

BBS Response:

Message Filed

N3DE de N3QA>

You:

B

(BYE, disconnect command)

Note: Letter case does not matter on the commands. In practice many hams use upper case all of the time to avoid the need

to capitalize words. If you wish to post an additional message simply issue an additional “ST” command.

6.2.7 Hf Direct Downloading And Uploading Commands

When connecting directly to the NTSD station the commands for listing traffic, downloading traffic, and uploading messages are the same as above without the need to establish connections through other packet BBS links.

Remember, when on HF pactor or amtor, unlike a packet BBS, there is only **one** QSO permitted at a time. Multiple connects are not permitted. Listen before transmitting, and also remember that such fixed NTSD stations do not “own” their frequency. Give the right of way to any QSO’s in operation on or near the desired calling frequency.

Note that on NTSD there are HUB stations in the Eastern, Central and Pacific Areas. They are N4SS in the East, W5SEG in the Central, and K6YR in the Pacific areas. Most traffic for out of area flows through the hub stations, but at times any of the NTSD stations acts as a mini-TCC and goes direct to another area’s hub. See the latest frequency list.

6.2.8 Uploading Files Of Multiple Messages, Smf Command

This command is for keyboarders only. It allows a keyboarder to prepare a file of messages to be uploaded to a WinLink MBO. This file must contain all the required commands normally used to send files: each message must begin with a Sx

command, followed by the title of the message, the message itself and the terminating /EX line.

The /EX line may then directly be followed by the next Sx command. Make sure there are no extra blank lines in-between.

The message file is terminated by the /EOF line, that is a line with the characters /EOF beginning in position 1 of the line. The /EOF follows directly on the next line after the /EX of the last message. (See the example in the next section.)

After WinLink receives the /EOF it will acknowledge the transmission.

Caution:

Any addressing errors detected by WinLink will terminate the link immediately along with an appropriate explanation. The user should then correct the message file accordingly and remove all preceding messages from that file as they have already been received by WinLink. Failure to remove those messages will result in duplicate messages sent.

Keyboarders will find that this means of “uploading” traffic is significantly faster than the traditional means of typing commands and text. Not only does it speed up the typing part, it also eliminates all the link change-overs associated with interactive operations.

MBOs and BBSs should not use this command to move messages due to the lack of BID/MID control on the receiving end.

6.2.8.1 SMF Example

ST N3QA	(UPLOAD ADDRESS)
QTC N3QA	
	(BLANK LINE)
NR 2403 R KJ3E 18 CALIFORNIA MD AUG 24	(MSG 1)
CAL N3QA	
	(BLANK LINE)
HAL HF MODEM ARRIVED THIS AFTERNOON X LOOKS NEAT X TAKING MY TIME SETTING IT UP X 73	
	(BLANK LINE)
AL KJ3E	
	(BLANK LINE)
/EX	
ST L8L6L6@NTSON	(MSG 2)
QTC HAMILTON / VE3ABC	
	(BLANK LINE)
NR 2402 R HXG KJ3E 16 MONETA VA AUG 24	
RICHARD APPLE VE3ABC 800 KENWOOD AVE HAMILTON ON L8L 6L6	
	(BLANK LINE)
PLEASE SEND A SASE TO FISTS QSL BUREAU TO RECEIVE SIX QSL CARDS THERE FOR YOU	
	(BLANK LINE)
STAN K4UK MGR FISTS QSL BUREAU	
	(BLANK LINE)

/EX	
ST L4R2H1@NTSON	(MSG 3)
QTC MIDLAND / VA3XYZ	
	(BLANK LINE)
NR 2401 R HXG KJ3E 16 MONETA VA AUG 24	
KENNETH SMITH VA3XYZ	
20 ALLEN ST	
MIDLAND ON L4R 2H1	
	(BLANK LINE)
PLEASE SEND A SASE TO FISTS QSL BUREAU TO RECEIVE SIX QSL CARDS THERE FOR YOU	
	(BLANK LINE)
STAN K4UK	
MGR FISTS QSL BUREAU	
	(BLANK LINE)
/EX	
/EOF	(UPLOAD)

6.3 Interfacing With Section NTS SSB And CW Nets

The NTSD operates in parallel with the manual NTS system of nets. Once inbound traffic arrives at a Region NTSD station, however, the systems merge.

Operators from the Local and Section manual nets need to access the NTSD, offload the inbound traffic, and see that it is passed to the outlet stations on those nets. The majority of amateurs available to deliver traffic to the public and served agencies check into those nets.

Often the inbound traffic from NTSD Region stations is forwarded to a controlled VHF/UHF packet BBS or node station where it can be picked up by local packet operators for delivery, or forwarding to the manual nets. It is important that this packet server be monitored and controlled to assure that all NTS traffic is handled in a timely fashion, or serviced as required. An open loop packet system without such safeguards endangers the integrity of the NTS system.

Additional stations are needed, and encouraged, to establish regular contact from the Local/Section manual nets to the NTSD Region servers to receive and distribute messages. Developing equally reliable NTSD WinLink servers for each Section over the long term will enhance our capabilities. All of these stations can likewise handle outbound traffic routed via the NTSD.

In this later case, the routing of outbound traffic via the manual pathways to Region Nets, or alternatively, via NTSD, is a matter of concern. A balance must be struck between loading on the respective paths so as not to “starve” one or the other. Consult with the Section Traffic Manager in your Section for guidance on loading ratios, preferences of the leadership, etc.

Manual operators are more easily starved of motivation than automated digital equipment—an obvious concern here. The manual NTS operators, the backbone of the NTS since its inception, are a valuable national resource to be preserved. When all the advanced equipment fails, the mics and keys at

individual station locations will enable us to sustain the overall system.

On the other hand, the NTS system will benefit from a smoothly operating reliable digital forwarding system, manned by live operators to assure functioning and delivery, and increased volume of error free throughput during the heaviest workloads. This will be especially evident in disaster services when the traffic loads become very high in both volume and criticality.

In mid 2000 there is a notable shortage of stations devoted to providing the link between the NTSD system and the Local and Section connections. Some traffic must be pulled from NTSD servers and forwarded to manual Region nets to get it into the target Sections. Plenty of jobs available! The NTSD folks have put the effort into building the system—give them a hand.

Hopefully, in the near term, these two systems will work together hand in glove to improve NTS service overall.

6.4 Thoughts About “Why Digital?”

by Nick Zorn, N4SS, Eastern Area ADC

1. Digital is approximately equal to CW in weak signal ability to successfully pass messages. There are instances when each is superior to the other. Both CW and digital are superior to 'fone in weak signal conditions.

2. Digital is superior to both CW and 'fone in accuracy. Further, messages handled via digital circuits present themselves in printed form which eliminates the problems most of us have, even with our own handwriting. Mine is seriously deficient. Also, digital always sends things perfectly, which is something I can't say for my own CW sending. Also, digital receives perfectly or not at all. Current software allows for compression which reduces the size of a given message to be transmitted and also adds more error checking functions.

If errors occur it merely aborts and breaks the link. So digital promotes accuracy. Please note that none of this contemplates the use of Baudot or plain ASCII.

3. Since most mbos operate continuously (except during threats of lightning damage) they offer more opportunities to transmit traffic and thus better speed than the cyclic nets. The software in use allows for scheduled fully automatic forwarding throughout the day.

4. Usually, and especially under good signal conditions over longer paths, digital can pass messages faster than they can be read by human operators. For these reasons digital is a better choice for Area and probably Region operations. It must be stressed that digital can only augment and never replace local and section nets because of the origination and delivery functions.

5. Contrary to present practice, digital is more suited than 'fone for non-tactical emergency communications. In situations where accuracy is critical digital is the only choice. Appropriate equipment and support (and access) will have to be provided for digital to provide the support that it is capable of to served agencies.

6.5 Equipment And Software References

Information about mbo and keyboarder software may be found at www.winlink.org on the Internet. Be sure and read the guidelines presented there concerning versions available and how stable they are. The Airmail software is recommended for beginners and those who intend to keyboard only.

AirMail is not only for beginners. It is great software to connect with the WinLink BBS systems. (In fact, it is required to

connect with any of the WinLink 2000 BBS systems around the world which forward not only radio messages but also email. At this time none of the NTSD sysops use WinLink 2000. They probably will not do so for some time.)

Once a connecting station using AirMail is recognized as a regular user, the WinLink sysop can assign traffic destined for that station to be automatically downloaded to the station. The AirMail software will automatically accept it and put it into the Inbox - just like an email system. This works not only with personal messages, but also with NTS messages, either by call sign, Zip Code, State, etc.

At this time (mid 2000) AirMail is compatible with SCS, AEA, KAM, and MFJ data controllers. It is not yet compatible with the HAL P-38 or DXP-38 controllers.

For hardware questions refer to the manuals for your TNC and the Winlink Help files. For more involved questions contact the Area Digital Coordinator or an experienced Winlink mbo Sysop.

6.6 NTSD Frequency List (May 2002)

Consult NTSD station lists provided on NTSD server resources for station frequencies, schedules, modes and links.

All FSK frequencies are mark. Use LSB. Stations using AFSK will have to tune approximately 2100 hertz above the desired mark frequency. Clover frequencies are LSB dial on all bands.

NTSD Frequencies 2002 (All "mark" frequencies), kHz (Table frequencies are for pactor unless marked clover.)

3621	7066 Clover	10128	14067 Clover	21076
3622	7067 Clover	10129	14073.5	21093.5
3628 Clover	7071	10141	14096	21096 Clover
	7072.5	10143 Clover	14098	
	7100.5		14112.5	
	7104.5 Clover		14114 Clover	

6.7 NTS Digital Guidelines, NTSDGD4

I. Scope And Purpose

The NTS Digital System (NTSD) is a continuous system of computer-assisted, automatic digital stations, serving as Mailbox Operations (MBOs), each under the control of a system operator (sysop). Forwarding operations occur on both a fully automated basis and manually depending upon prevailing circumstances, routing plans and sysop preferences. MBOs access other system MBOs automatically or manually, and "keyboard" operators access MBOs manually.

This Guidance supplements NTS Area Terms of Reference, and should be interpreted consistent with the *Public Service Communications Manual (PSCM)*, Section II, published by the ARRL. It describes routing approaches, sets NTSD station roles and coordination standards, and outlines generally accepted principles and practices within the NTSD.

II. NTSD Routing Approaches

Area Digital Coordinators (ADCs) have the flexibility to implement a variety of routing plans consistent with NTS principles and other requirements. One approach uses Area Digital

Hubs -- MBO stations designated in the three geographical areas, Eastern, Central and Pacific by the respective ADCs, providing scheduled inter-area forwarding and coordination. This approach permits ADCs the flexibility to establish one or more such MBOs to achieve a systematic and scaled digital-routing plan under this Guidance. The area hub approach has access and capacity limitations. Another approach is an "open system" in which any digital station may forward to an MBO within an area at any time. This approach increases flexibility, but, to some extent, requires more effort by keyboarding operators to locate and poll traffic coming into a region or area.

III. Coordination And Roles

ADCs exchange information with respect to status and operation of MBOs and disseminate received information to the NTS levels within the area. ADC-designated digital station operators making changes will consult with and issue information through the ADC.

A. Area Digital Coordinators

1. Qualifications – ADCs must presently serve as an NTSD MBO sysop or have past MBO sysop experience and have the capability to promptly activate such an operation.
2. Duties – The ADC duties include the following:
 - a) Designate digital stations at the region and area levels;
 - b) Assign digital stations to a MBO polling schedule;
 - c) Issue standard operating procedures;
 - d) Issue certificates in recognition of participation;
 - e) Coordinate the standard frequency plan; and
 - f) Collect digital statistics and report activity.

B. Station Operations.

Digital station operators perform functions consistent with Area, Region and Section responsibilities as prescribed for the NTS in accordance with the PSCM. Digital station operations at the NTS section and local level are the responsibility of the Section Traffic Manager (STM). To the extent feasible, ADCs should coordinate digital operations with the STMs.

1. AREA/REGION HUB MBOs -- One or more stations are designated by the ADC as a Hub or as Hub backups and perform forwarding tasks according to the digital routing plan. These stations:
 - a) Operate fully automatically under computer control;
 - b) Scan multiple bands according to prescribed plan;
 - c) Auto-forward according to prescribed schedules; and
 - d) Submit reports and station information to the ADC.
2. DIGITAL RELAY STATIONS (DRS) -- Perform functions of relay involving posting of message files and removing traffic from NTSD MBOs for appropriate nets or TCC functions in support of NTS objectives observing NTSD principles and practices. DRSs are designated by the ADC and:
 - a) Perform assigned relay duties to clear area MBOs
 - b) Route incoming traffic via area/region nets
 - c) Handle assigned TCC schedules and traffic
 - d) Submit periodic reports as required.

IV. Digital Station Operating Principles And Practices

- A. NTSD operates in parallel with the other NTS nets and circuits but on a continuous basis and at all levels. Access is available to all, both “keyboarders” and sysops consistent with proscribed NTSD station roles and this Guidance. Roaming in other areas is discouraged except as necessary to accomplish manual forwarding due to system failures. Stations may be excluded for causing interference or unauthorized removal of traffic.
- B. NTSD has established a core of common frequencies covering all bands that provide suitable propagation. Area and Regional MBOs may add additional frequencies for their own forwarding use but are not required to publish the additional frequencies. This core list may change from time to time but provisions must be coordinated through the ADC with the NTSD sysops within the area. All

NTSD MBOs are expected to scan the core list frequencies.

- C. MBO sysops are encouraged to provide multiple modes, with an emphasis on the faster ones. Every effort should be made to avoid using AmTOR for MBO forwarding. Ideally an NTSD MBO should be available on PacTOR, and Clover or PacTOR II. VHF packet should be used to provide higher speed access for local “keyboarders.”
- D. The use of VHF packet should be limited to those BBSs KNOWN to be reliable for NTS use. General packet circuits should never be used to route NTS traffic. In general, a single relay by packet represents a reliable disposition of NTS formatted traffic. HF packet should NEVER be used to forward NTS traffic.
- E. NTS traffic received into NTS digital circuits will be routed via NTS circuits and/or nets except in rare emergency cases when no NTS outlet is then available or some other more expeditious and reliable route is available. Such exceptions should not become the basis for establishing a routine circuit for such traffic.
- F. NTSD sysops should handle their traffic giving due regard to message precedence, just as is done in the cyclic nets.
- G. TCC stations may use NTSD circuits to forward traffic routed through schedules. Such traffic may be placed on the selected MBO by the sending TCC station and removed by the receiving TCC station. Use of the “P” type may be necessary to ensure that ONLY the receiving TCC station gets the traffic. Standard reports to the appropriate TCC Director are required, and traffic sent or received using type “P” should be counted as though it had been “T.” Counts of traffic received and traffic forwarded should be reported by the individual MBO sysop to the ADC. Originations and deliveries are not included in these reports but should be reported to the STM as part of the Station Activity Report (SAR).
- H. NTS digital stations are expected to forward or ensure delivery of all traffic on hand in a timely manner. If a station experiences a system failure it is the sysop's responsibility to find a way to clear the traffic on hand. If it is not possible to extract all messages on hand from the failed disk drive, then that sysop must notify at least one of the other NTSD sysops (preferably the ADC) and ask that a notice be passed throughout the system advising of the failure. Any sysop who has recently passed traffic to the failed MBO should then review the situation and reinstate any messages so forwarded. The sysop of the failed MBO should, after recovery, try to establish which messages were on hand, pass a list of them to all other NTSD sysops for further follow up and place all of them on hold. When sufficient time has passed that no further demand is expected to be made regarding these messages the failed MBO sysop may delete them.
- I. MBO sysops should participate at least occasionally in their local and section nets to maintain cyclic net proficiency.

- J. Since the NTS Digital System operates on a continuous basis, traffic should never be removed from an NTS MBO and taken to a cyclic net for later transmission unless it has reached the (digitally serviced) point nearest its destination. There is one exception to this: if an opportunity exists to DIRECTLY DELIVER a message to a station for delivery through the net, then it is proper to remove the traffic from the MBO. Removing traffic from an MBO to increase the traffic count of a cyclic net only delays traffic and is not an acceptable practice.
- K. Keyboarder stations are responsible for ensuring that messages they remove from a BBS or MBO are marked as forwarded (that is their status is changed to “TY” or “TF.” Failing to do so will lead to duplicated attempts to relay and deliver such messages. Likewise, Keyboarders should NEVER download messages marked as already forwarded.

V. Area Digital Standard Operating Procedures

ADCs are authorized to develop and implement Area Standard Operating Procedures (SOPs) for the designated NTSD stations within the area. Such SOPs shall be consistent with this Guidance and shall be filed with the Area Staff Chair and League headquarters.

NTSDGD4 - N4SS - EAS/CAS/PAS - 6/0

Chapter 7 - Station Reporting SAR - PSHR

7.1 Membership In The NTS

All stations are welcome to join in the ARRL National Traffic System activities.

ORS Appointment:

“Individual station participation in NTS is recognized by issuance of certificates, and by appointment to the field organization’s traffic handling position, entitled Official Relay Station.” (Public Service Communications Manual; p. 26, FSD-235 2/96, ARRL, Newington, CT)

Forms for filing applications for appointments are available at the ARRL Web site.

Stations holding the ORS appointment do so with pride, being responsible for operating with the highest standards and transmissions in accordance with the best engineering practices of the Amateur Radio service. They are responsible for regularly participating in the NTS net system and reporting monthly to the Section Traffic Manager, by whom Section net certificates are issued and endorsed for net control and/or liaison duties performed. Region and Area net staffs so recognize stations participating at that level. All stations, whether appointed ORS or not, are welcome to participate in NTS traffic handling nets.

SAR, Station Activity Report:

Section ARRL leadership is always interested in activity reports from stations participating in the NTS, even if only one message is handled during the reporting month. The monthly Station Activity Report is filed with the Section Traffic Manager or Section Manager.

PSHR, Public Service Honor Roll Report:

In addition, monthly Public Service Honor Roll reports are welcome from all stations regardless of the earned traffic handling and public service activity point total. Those stations reporting above the established minimum threshold are included in the monthly QST Public Service Honor Roll listing.

There are numerous other independent nets operating throughout the country giving operators a variety of chances to participate in this public service activity. These nets usually also work in cooperation with the NTS.

7.2 Station Activity Report (SAR), Traffic

Monthly activity reports of individual stations' message traffic handling are to be sent to the Section Manager, or Section Traffic Manager as delegated, within the first days of the next month (the SM and STM both report activities to ARRL early in the following month). Traffic handling conducted on the non-amateur Military Affiliate Radio System (MARS) frequencies are not to be counted in amateur radio activity reports to the ARRL.

7.2.1 Categories Of Activity - Orig, Rcvd, Sent, Divd

See ARRL *Public Service Communications Manual*, [Section 2, NTS Chapter 10.2], and the ARRL PSHR Reference section in this chapter.

Messages handled by amateur stations are counted according to the following four categories of activity:

Originated:

(An off-the-air function) Any ARRL standard format message traffic prepared by you (the first party) for someone other than yourself (a third party), and filed at your amateur radio station for initial transmission over the air. Count one point. In other words, this is a radiogram which you created for another person using your station's message number and call sign.

Note: A message that you create for yourself does not qualify as an Origination, but will be covered later under the SENT category.

Received:

(An on-the-air function) Any ARRL standard format radiogram received over amateur radio by your station. This will include message traffic received, whether for yourself, for relay to another amateur station (the second party), or received for delivery to the message addressee (a third party). Count one point.

Note: Messages received by other means, such as telephone, postal, E-mail, MARS, in-person, etc., are not counted as Received, however they may cause you to Originate a message for later transmission.

Sent:

(An on-the-air function) Any message traffic to be sent by your station to another amateur station (a second party), whether such a message is initially transmitted from your station as your Originated message for a third party, a message for yourself, or one that was received from another amateur station. Count one point.

Note: Messages sent by means of telephone, postal, E-mail, etc. do not count as Sent, however they may qualify for counting as Delivered.

Delivered:

(An off-the-air function) Any message traffic that is delivered by you to the message addressee (a third party), provided that the message was received at your station by amateur radio and that the addressee is someone other than yourself. This delivery is done by telephone, postal, E-mail, in-person, etc. Count one point.

Note: A message sent by amateur radio to the final addressee at another amateur station is counted as a sent message, not as a delivered message.

7.2.2 Explanations And Examples

In the identification of who are the first, second and third parties that are involved in third party message traffic handling, the radio amateur operators are always either the first or second party. Therefore message traffic may be passed between first and second parties in their own behalf, whether or not their two nations have concluded third party agreements.

The monthly message traffic total is the sum of the message Originated, Received, Sent, and Delivered points. Note that in some cases the same message would be counted twice; for example:

The same message received by amateur radio and relayed to another station by amateur radio is counted both in the Received and the Sent categories, while a message received by amateur radio and then delivered is counted both in the Received and the Delivered categories.

A message Originated by you for a third party and then Sent by amateur radio is counted as Originated and Sent.

A message Originated by you, such as a net report for you as the NCS, or a message from you to a friend, is only counted as Sent when transmitted by your amateur station.

A message Received by amateur radio for you at your station is counted only as Received.

A message received for a fellow amateur provides two choices... deliver it by phone and get a Delivered point, or deliver it on the radio and get a Sent point.

When transmitting or receiving messages in BOOK form, count one point for each individual message Sent and Received in the book of messages.

7.2.3 SAR Reporting Technique

At the end of each month, send a message to the SM or STM including your call sign, the month being reported, the message traffic handled in each category and the total points. This informs the section management and the ARRL about section and station activities in traffic handling.

The monthly SAR traffic report may be combined with the PSHR report from the same station. See the examples in the section on PSHR reporting.

The categories may be condensed into one mixed group as follows, providing that you carefully observe the correct order of figures, and use a zero if no credit in a category:

[ORIG] / [RCVD] / [SENT] / [DLVD]

7.2.3.1 Example Sar Message

Traffic report SAR only.

NR 6 W3XYZ 7 SPARKS MD SEP

1

Section Traffic Manager (STM)

address (Locally usually only the STM's call sign is required.) =

AUGUST TRAFFIC 3/5/6/2 TOTAL 16

X 73

= W3XYZ

Where the mixed group reads Originated 3, Received 5, Sent 6, Delivered 2. Zeros in any category should be preserved to maintain clear the meaning of the 4 entries in the mixed group, as in 0/5/6/0. The use of 73 is optional.

This is an example only. Internal Section Activity Reports may well be tailored by the Section leadership.

7.2.3.2 Example Sar Message, Automated Text

Text formatted (single spaced) for automated text data processing option (MDC Section):

NR 6 W3XYZ 6 SPARKS MD SEP 1

Section Traffic Manager (STM)

address (Locally usually only the STM's call sign is required.) =

W3XYZ 0208 SAR 3/5/6/2/16 X

73

= W3XYZ

The "0208" groups are Year/Month (YYMM), August 2002 in this example. The mixed group categories are as in the previous example with the total added at the end. This is an example only. Internal Section Activity Reports may well be tailored by the Section leadership.

7.3 Public Service Honor Roll (Pshr)

Amateur operators are encouraged to report their public service activities to their Section Manager, or as they may delegate to either the STM or the Section Emergency Coordinator (SEC), in the following categories: (It's optional to report, if your point total is below current minimum. SMs appreciate hearing about your activity.)

See the following sections for reporting technique, PSHR criteria, and the full explanation from ARRL.

7.3.1 Pshr Categories

This listing is to recognize radio amateurs whose public service performance during the month indicted qualifies for 70 or more total points in the following 6 categories (as reported to their Section Managers). Please note the maximum points for each category:

1. Participating in a public service net, using any mode. --1 point per net session; maximum 40.
2. Handling formal messages (radiograms) via any mode. --1 point for each message handled; maximum 40.

3. Serving in an ARRL-sponsored volunteer position: ARRL Field Organization appointee or Section Manager, NTS Net Manager, TCC Director, TCC member, NTS official or appointee above the Section level. -- 10 points for each position; maximum 30.
4. Participation in scheduled, short-term public service events such as walk-a-thons, bike-a-thons, parades, simulated emergency tests and related practice events. This includes off-the-air meetings and coordination efforts with related emergency groups and served agencies.-- 5 points per hour (or any portion thereof) of time spent in either coordinating and/or operating in the public service event; no limit.
5. Participation in an unplanned emergency response when the Amateur Radio operator is on the scene. This also in-

cludes unplanned incident requests by public or served agencies for Amateur Radio participation. -- 5 points per hour (or any portion thereof) of time spent directly involved in the emergency operation; no limit.

6. Providing and maintaining a) an automated digital system that handles ARRL radiogram-formatted messages; b) a Web page e-mail list server oriented toward Amateur Radio public service -- 10 points per item.

Amateur Radio stations that qualify for PSHR 12 consecutive months, or 18 out of a 24 month period, will be awarded a certificate from Headquarters upon written notification of qualifying months to the Public Service Branch of Field and Educational Services at ARRL HQ.

7.3.2 PSHR Reporting Technique

PSHR categories may be listed as mixed groups for each category as follows:

1/#	2/#	3/#	4/#	5/#	6/#	TOTAL #
-----	-----	-----	-----	-----	-----	---------

Where the # is the points in each category 1 through 6, and total points.

Categories for which no point are claimed may be omitted from the report at the discretion of the STM or SM. The monthly SAR and PSHR reports for a station may be combined.

7.3.2.1 Example Message - SAR And PSHR Combined

NR 6 W3XYZ 16 SPARKS MD SEP 1					
Section Traffic Manager (STM)					
address (Locally usually only the STM's call sign is required.) =					
AUGUST	TRAFFIC	3/5/6/2	TOTAL	16	
PSHR	1/40	2/40	3/10	4/40	
5/15	6/10	TOTAL	155	X	
73					
= W3XYZ					

The use of "X 73" is optional. This is an example only. Internal Section Activity Reports may well be tailored by the Section leadership.

7.3.2.2 Example Message - Pshr Only

NR 6 W3XYZ 12 SPARKS MD SEP 1					
Section Traffic Manager (STM)					
address (Locally usually only the STM's call sign is required.) =					
AUGUST	PSHR	1/40	2/40	3/10	
4/40	5/15	6/10	TOTAL	155	
X	73				
= W3XYZ					

The use of "X 73" is optional. This is an example only.

7.3.2.3 Example Message - Sar/Pshr, Automated Text

Text formatted (single spaced) for automated text data processing option (MDC Section):

NR 6 W3XYZ 18 SPARKS MD SEP 1					
Section Traffic Manager (STM)					
address (Locally usually only the STM's call sign is required.) =					
W3XYZ	0208	SAR	3/5/6/2/16	X	
W3XYZ	0208	PSHR	1/40	2/40	
3/10	4/40	5/15	6/10	TOTAL	
155	X	73			
= W3XYZ					

The "0208" groups are Year/Month (YYMM), August 2002 in this example. The use of "X 73" is optional. This is an example only.

7.3.3 ARRL PSHR Reference, Effective May 1, 2002

Extract from ARRL:

<http://www.ARRL.org/FandES/field/pshr/>

A New Season for Public Service Honor Roll

Starting May 1, 2002, a new season for the Public Service Honor Roll (PSHR) begins! It has been eleven years since the qualification criteria were last revised. The idea behind updating the PSHR program was initiated largely by the comments and opinions of Amateur Radio operators who are active in all areas of public service communications.

Under the guidance of the ARRL Volunteer Resources Committee, a study was conducted and a survey was taken. (See March, 2001, *QST's Public Service Column*, p. 96). Many ideas and suggestions that covered everything from generalities to specifics about the program were received and incorporated into the thought and discussion process.

An ongoing challenge with PSHR is how to effectively balance the many different facets of Amateur Radio public service communications. It seemed that areas such as traffic handling, net operations, on-the-scene emergency response, public safety and support communications all needed to be covered. Leadership and management roles within Amateur Radio public service communications and the ARRL Field Organization also needed recognition. The assignment of point values was a delicate task, too. The resulting criterion attempts to present a balanced program without being too complicated.

What does it all mean?

1) Participation in a public service net -- 1 point, maximum 40.

A public service net is one that is regularly scheduled and handles Amateur Radio formal messages. Here are examples of public service nets: Local and section nets that are affiliated with the National Traffic System (NTS); NTS region, NTS area, and independent nets that handle traffic; ARES, RACES, Skywarn nets that meet on a regular basis; net sessions that are activated during emergencies and threats of potential emergencies; public service and safety nets; nets that are established for training radio amateurs in public service and emergency communications.

2) Handling formal messages (radiograms) via any mode -- 1 point for each message handled; maximum 40.

A "handled" message is defined as a message that is originated or sent or received or delivered. PSHR will follow the same method as Brass Pounders' League to count an individual operator's traffic total (also known as station activity report) to reach the figure for the new PSHR Category 2. There is one point granted for each message handled; maximum 40 points per calendar month.

Here is a reference from the Public Service Communications Manual on how to count messages. [Section 2, NTS Chapter 10.2]

<http://www.ARRL.org/FandES/field/pscm/sec2-ch10.html#2>

Originated--One point for each message from a third party for sending via your station. This "extra" credit is given for an off-

the-air function because of the value of contact with the general public.

Sent--Every message sent over the air from your station to another amateur receives a point in this category. Thus, a message that is eligible for an Originated point as above receives another point when it is sent on the air.

Likewise, a message that is received on the air conveys a Sent point when it is relayed to another station. A message that you initiate yourself, while it gets no Originated point, gets a Sent point when cleared. All Sent points require on-the-air sending.

Received--A message received over the air gets a Received point, whether received for relaying (sending) or for delivery to the addressee. Any message received which is not eligible for a Delivery point (such as one addressed to yourself) is nevertheless eligible for a Received point.

Delivered--The act of delivery of a message to a third party receives a point in this category, in addition to a Received point. This is strictly an off-the-air function and must be coupled with receipt of the message at your station. Thus you can't get a Delivered point unless you first get a Received point.

Further example for clarification: If I send a message originated on behalf of myself, I know I get only one point for a message SENT. However, if I originate a message on behalf of a third party, and then send it, I get TWO points, (origination and sending), even though ONE message was handled.

3) Serving in an ARRL-sponsored volunteer position: ARRL Field Organization appointee or Section Manager, NTS Net Manager, TCC Director, TCC member, NTS official or appointee above the Section level. -- 10 points for each position; maximum 30.

ARRL Field Organization appointees (in alphabetical order) include the following: Assistant Section Managers, District Emergency Coordinators, Emergency Coordinators, Local Government Liaisons, Net Managers, Official Bulletin Stations, Official Emergency Stations, Official Observers, Official Observer Coordinators, Official Relay Stations, Public Information Coordinators, Public Information Officers, Section Emergency Coordinators, Section Managers, Section Traffic Managers, State Government Liaisons, Technical Specialists.

The Section Manager is the ARRL-member elected League official the section. NTS Net Managers would include the following nets: NTS Region and NTS Area. TCC (Transcontinental Corps) Director is in charge of organizing his/her TCC membership roster of operators that comprise the corps. TCC members are those operators that are assigned to relay traffic from one NTS area to another, conducting liaison with NTS nets to do so. NTS official or appointee above the Section level includes NTS Area Staff Chairs, NTS Area Digital Coordinators and NTS Digital Stations.

More information about the structure of the NTS and the positions and nets that are mentioned in this article may be found in the ARRL's Public Service Communications Manual. It is on the ARRLWeb.

4) Participation in scheduled, short-term public service events such as walk-a-thons, bike-a-thons, parades, simulated emer-

gency tests and related practice events. This includes off-the-air meetings and coordination efforts with related emergency groups and served agencies.

-- 5 points per hour (or any portion thereof) of time spent in either coordinating and/or operating in the public service event; no limit.

This category recognizes the value of public safety communication events that Amateur Radio is often called to participate in. Simulated emergency tests, exercises, and drills are covered by this category. Points are gained by the amount of time that an Amateur Radio operator spends directly involved in operating the event. This also recognizes the value of off-the-air time it takes to meet with the organization or public service agency to plan and coordinate Amateur Radio involvement.

5) Participation in an unplanned emergency response when the Amateur Radio operator is on the scene. This also includes unplanned incident requests by public or served agencies for Amateur Radio participation.

--5 points per hour (or any portion thereof) of time spent directly involved in the emergency operation; no limit.

This category recognizes an Amateur Radio operator who is directly involved in an actual emergency operation. This includes the operator who is on the scene or out in the field, in the shelter, at the emergency operations center, at the hospital, or other served agency's headquarters or their temporary command center.

The second sentence of Category 5 invites the Amateur Radio operator who is an active participant in an unplanned incident - or in other words, an emergency operation-- to take credit for his/her participation even though he/she is not physically at the emergency scene.

The intent behind Category 5 is to also include the Amateur Radio operators -- like net controllers, net operation and other radio amateurs that support communications in unplanned incidents-- that are not actually on the emergency scene or at the shelter, etc, but are spending time and efforts for supporting the same emergency communication efforts.

As an example, if the National Weather Service activates SKYWARN, Amateur Radio operators serve as weather spotters from their home (or car, or work, or other locations) during the weather event. Then, a tornado strikes and the Red Cross calls out the ARES members to serve in shelters and to provide support for damage assessment communications. These operators would be among those to qualify for points under Category 5.

There would likely be several net control operators, net liaison operators, traffic handlers, etc, who are away from the disaster scene, but are spending time to support the Amateur Radio emergency communication effort on behalf of the served agencies (Red Cross and National Weather Service, in this example). They, too, would qualify for points under Category 5.

6.) Providing and maintaining a) an automated digital system that handles ARRL radiogram-formatted messages; b) a Web page e-mail list server oriented toward Amateur Radio public service -- 10 points per item.

The portion, "a," is a carry-over from the previous PSHR criteria as this sub category recognizes the efforts it takes to provide and maintain an automated digital system (like a packet bulletin board or a PACTOR system) that handles ARRL radiogram-formatted messages.

The portion "b," is a new item. Since the last time PSHR criteria were revised, newer technologies like Web pages and e-mail list servers have become popular and effective ways to communicate news and information to the community of radio amateurs that are involved in emergency and public service communication operations and preparedness.

Starting May 1, 2002

The new PSHR qualification criteria goes into effect on May 1, 2002. Therefore, the August, 2002, QST will be the first month to report the results under the new criteria. If an Amateur Radio operator is presently in the middle of his/her quest for qualifying for the PSHR certificate under the old criteria, those months will continue to count toward the certificate.

If you qualify for PSHR during a given month, send your results to either your Section Traffic Manager or Section Manager. These leaders, in turn, will forward the PSHR qualifiers to ARRL Headquarters for notation in the monthly PSHR listing in QST. Further questions about the program may be sent to Steve Ewald, WV1X, at ARRL Headquarters (sewald@ARRL.org).

Public Service Honor Roll Criteria

Effective May 1, 2002

This listing is to recognize radio amateurs whose public service performance during the month indicted qualifies for 70 or more total points in the following 6 categories (as reported to their Section Managers). Please note the maximum points for each category:

- 1.) Participating in a public service net, using any mode. --1 point per net session; maximum 40.
- 2.) Handling formal messages (radiograms) via any mode. --1 point for each message handled; maximum 40.
- 3.) Serving in an ARRL-sponsored volunteer position: ARRL Field Organization appointee or Section Manager, NTS Net Manager, TCC Director, TCC member, NTS official or appointee above the Section level. -- 10 points for each position; maximum 30.
- 4.) Participation in scheduled, short-term public service events such as walk-a-thons, bike-a-thons, parades, simulated emergency tests and related practice events. This includes off-the-air meetings and coordination efforts with related emergency groups and served agencies.-- 5 points per hour (or any portion thereof) of time spent in either coordinating and/or operating in the public service event; no limit.
- 5.) Participation in an unplanned emergency response when the Amateur Radio operator is on the scene. This also includes unplanned incident requests by public or served agencies for Amateur Radio participation. -- 5 points per hour (or any portion thereof) of time spent directly involved in the emergency operation; no limit.

6.) Providing and maintaining a) an automated digital system that handles ARRL radiogram-formatted messages; b) a Web page e-mail list server oriented toward Amateur Radio public service -- 10 points per item.

Amateur Radio stations that qualify for PSHR 12 consecutive months, or 18 out of a 24 month period, will be awarded a certificate from Headquarters upon written notification of qualifying months to the Public Service Branch of Field and Educational Services at ARRL HQ.

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--end extract--

Chapter 8 - Delivering, Servicing, Originating

8.0 Delivering, Interfacing With The Public

This manual is intended to provide guidance in the art of message formatting, exchanging, net operations and delivery. Messages transmitted by amateur stations are used to pass information between amateurs, members of the public, and officials of served agencies helping the public in times of emergency.

This chapter presents guidelines for interfacing with the people we serve when delivering messages, sending service messages, soliciting replies, and originating message traffic. Tips on disaster and public service communications operations are included.

8.1 Delivering Messages

Delivering messages to members of the public is a very important part of the message handler's responsibility.

It is customary to route messages to an amateur station within toll free calling distance of the addressee. The receiving station typically calls the addressee by telephone and delivers the message.

If the addressee can not be reached in a timely fashion, or at all, it is the obligation of the receiving station to "service the message" back to the originator by radio message. An optional alternative is to mail the message to the addressee if telephone attempts are unsuccessful, informing the originator by service message. If the mailed message is returned by the post office, servicing the message again is customary.

Messages sometimes may be partially garbled in transmission, although we make every effort to prevent this. Messages may also be prepared with incorrect or incomplete information. Some of the strategies in the sections below may help recover from such problems without having to service the message.

A message should be delivered when the handling amateur is confident that he has received it correctly and is ready to make a proper presentation.

The entire message including op notes is often sent to an amateur addressee while op notes are omitted and ARRL Numbered Radiograms are translated for public recipients.

Some points to consider in delivery preparation and style follow.

8.1.1 Finding Addressees

A complete and accurate address section of a message is the key to successful delivery. As mentioned in the section on message formatting, having the addressee's name as it might be found in the telephone directory along with an accurate street address, etc., will allow the delivering station to recover from most garbling or origination errors. A few useful tips follow for recovering from an incorrect telephone number (or none at all), or a bad address:

1. Checking the directory under the addressee's name even if a number is given will catch changed or incorrect numbers. The originator may have had an old or incorrect number.
2. Scan the telephone directory for names, addresses, or telephone numbers that have a significant match to parts of the message address. For unusual names this is a short task, not so for the Smith listings. A search with data base is much faster.
3. Contact the information operator for persons not found in the directory. New listings are constantly being assigned by the telephone company for people who move, etc.
4. If a telephone number is not listed (for privacy), the telephone information operator will usually say so. Messages in this case may be serviced back as "unlisted" or mailed at the discretion of the receiving station. Today many residential phones will not accept blocked numbers, or private numbers, from the calling end. Remove your blocking for the call.
5. Some areas have available a document known as a "Criss-Cross," often available for review at the library (or by telephone), or on the internet, which can be of great help in solving the tough ones. The document consists of listings by street address, by telephone number, and name. A little detective work with a map to check for proper street name and hundred block in a zip area can lead to finding the number by looking up the address. A zip code directory is very useful.
6. Police departments often have copies of the "Criss-Cross" at the local stations. A personal visit to the police station during slack hours is better than trying to ask for such information over the telephone. Police officers may not have the time to look things up for you.
7. Messages may always be hand delivered if the receiving station is willing. Take a written copy along to deliver.
8. Messages may be relayed to other amateurs who can make the telephone contact. Amateurs may sometimes be located through friends in clubs, etc., when they have unlisted numbers.
9. Check if the address or telephone number does not seem to match anything in your area. There is a Baltimore in

MD and one in Ohio (discovered after hours of futile searching).

10. Repeat calls at different times to allow for the schedules of shift workers. Service after 48 hours, but persist in calling for addressees which might be away on vacation.
11. Important messages sometimes may be delivered by using the information from the “Criss-Cross,” or other sources, to contact a neighbor of the addressee to either deliver the message or to help you get in touch with the addressee.
12. In emergencies, the telephone company, police department, and the American Red Cross, are well prepared to handle delivery of death or serious injury/illness messages. They are trained in dealing with the impact. Always consider the possible reaction.

If the addressee's telephone number is unlisted, you may ask the telephone company supervisor to give your number to the addressee so that you may be called for the message.

8.1.2 Delivering Messages, Style, Example

Messages are important to both the addressees and the originators, and, because our free public service is a novelty to many, we have an opportunity to serve the public and make a good impression on the people we encounter. Much of what people know about Amateur Radio will be learned from the experience of receiving a message, and how well (or poorly) the delivering amateur presented himself or herself.

In today's telemarketing world, the first consideration in delivery style is to make immediately clear that your call is not a sales pitch or solicitation. Ascertain if you have reached the correct residence or location then explain who you are and why you are calling.

Use care to explain that you have a greetings message so that the party on the phone does not jump to the conclusion that you are bearing bad news. People naturally think a “radiogram” is used only for the worst kind of news.

If the message is bad news, extra effort has to be made to soften the blow. Explain that the message might not be good news and you wish to help them understand the content clearly. This is a difficult and delicate matter requiring serious tone, calm voice, and sympathetic attention to the reactions of the party on the line. Messages concerning death or serious illness might be better handled if you contact the local American Red Cross or police for assistance.

Message Delivery Example:

A good way to deliver a routine message might be as follows:

“Good (evening), is this the (addressee last name) residence? (on the affirmative) May I speak with (addressee name) please?”

If asked, identify yourself and your purpose without revealing the message contents (reserved for the addressee). When contact is made:

“Good (evening) Mr. (Mrs., Ms.) (name), this is an Amateur Radio operator here in (city). We are the Hams you hear about who help with communications during emergencies. We also send radiograms for people as a daily free public service, and I

have a greetings message here for you from (place of origin). I will read it through for you and would be happy to repeat it if you care to write it down.”

This allows the person to ask you to wait until they get pencil and paper before starting, if they wish.

Read the message text slowly and clearly, using plain language (translating ARL messages with blanks filled properly), and saying “period” for X-RAY as needed, etc., then say:

“.. and the message is signed by (signature) from (place of origin) at (time filed, if present) on (date).”

Reading the message preamble, prowords, Op Notes, or full addressee information, is not done unless there is some information contained therein which might need to be discussed to verify the correct delivery.

Ask if they would like you to repeat the message again to permit them to write it down, or simply to hear it again. Repeat the message, if required.

Offer to send a message back, or perhaps a message to another party of the addressee's choice. A reply may have been requested in the text by ARL SEVEN, or in the preamble by HXE. These requests are honored differently. See the later sections below.

Recipients may or may not ask about how the message system works. This is your chance to talk about Amateur Radio. They will be amazed to hear your story.

8.1.3 Answering Machine Delivery

Leaving messages on answering machines is a controversial subject for a number of reasons. Often such machines do not give sufficient information to be sure you have reached the right addressee, and certainly not the individual addressee within a household. There is no assurance that the message will be saved and recovered properly or privately. There may be risk in leaving your contact information on a stranger's answering machine. Etc., etc.

Optionally you may choose to leave word on the machine that you have a greetings message for the addressee name, and leave your number for them to call for the message. Some amateurs are more comfortable simply indicating that they have a greetings message for the addressee name and they will call back later to attempt delivery.

Generally the delivery of the radiogram is not considered completed until the delivering station has contacted the addressee directly.

8.1.4 Sending Service Messages

An amateur has an ethical obligation to keep a message “in play” until delivered, and to honor requests for service information specified in the handling instructions. The amateur has only three choices for the disposition of message traffic: 1) RELAY it, 2) DELIVER it, or 3) SERVICE it back to the originator. It is understood that a receiving station shall send back a service message for an undeliverable message even without any HX code or other instruction to do so.

If a station is unable to deliver a message after trying all the strategies it has available, it must originate a “SERVICE MESSAGE” back to the station of origin including as much

information as possible to explain the problem. Do not report to, or send a service message to, the station who relayed the message to you. Deal only with the originator, you have the ball once you accept the message.

When a service message is required look up the full address of the originating station in the call book, including telephone number if possible, to use in the address block of the service message. Use the ARL SIXTY SEVEN numbered radiogram and indicate in the text of the service message the original message number and addressee last name, and then add the explanation. The ARL SIXTY SEVEN message has two blanks and reads: “Your message number ____ undeliverable because

of ____ . Please advise.” Adding the last name after the message number backs up the number in case it is garbled in transmission. Note that “number” is included.

Service messages are given special handling since they affect timely delivery of messages. The service message designator “SVC” is placed ahead of the message number, and the precedence of the service message is the same as the message being serviced. (Note: The use of SVC, although stipulated in ARRL literature, is seldom used in current practice. Service messages are often seen without the SVC designator. It is retained in the examples and formatting information in Chapter 1.) No service message is required for normal timely deliveries.

Example Preamble:

NR SVC 6	PREC R	HX__	STN ORIG W3HAM	CK ARL 20	PLACE OF ORIG HAGERSTOWN MD	TIME FILED	MON JUL	DY 10
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Service messages from your station use your message number, the precedence of the message being serviced, your call sign and your city-of-origin.

There are several categories of messages requiring service.

8.1.4.1 HXC And HXD

HXC and HXD preamble requests are confirmations of handling which require service messages back to the station of origin.

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.”

These service messages are done without the knowledge of the addressee since they are your responsibility as the handling station. HXC replies are negated by a service message for the undelivered message. The HXD information may be included within a service message: Examples:

1. HXC Service Of Delivered Message

SVC 12 R W3RX 10 PODUNK MD AUG 23				
JOHN A HAM W3TX				
123 OAK ST				
BALTIMORE MD 21200				
410 555 1000				
NR	45	HARRISON	DLVD	PHONE
AUG	23	2205Z	X	73
= JOHN W3RX				

2. HXD Service Of Delivered Message

SVC 12 R W3RX ARL 16 PODUNK MD AUG 23				
JOHN A HAM W3TX				
123 OAK ST				
BALTIMORE MD 21200				
410 555 1000				
NR	45	RCVD	W3RLY	AUG
23	2205Z	X	DLVD	HARRISON
PHONE	AUG	23	2220Z	X
73				
= JOHN W3RX				

3. HXD Service, Message Relayed

SVC 12 R W3RX 16 PODUNK MD AUG 23				
JOHN A HAM W3TX				
123 OAK ST				
BALTIMORE MD 21200				
410 555 1000				
NR	45	HARRISON	RCVD	W3RLY
AUG	23	2205Z	X	SENT
W3XX	AUG	23	2235Z	X

73
= JOHN W3RX

4. HXD With Service Of Undeliverable Message

SVC 12 R W3RX ARL 17 PODUNK MD AUG 23
JOHN A HAM W3TX
123 OAK ST
BALTIMORE MD 21200
410 555 1000
NR 45 RCVD W3RLY AUG
23 2205Z X ARL SIXTY
SEVEN 45 HARRISON PHONE UNLISTED
X 73
= JOHN W3RX

8.1.4.2 Unable To Comply With Hx Codes

The inability to comply with any other HX codes should be cause to generate a service message back so indicating.

8.1.4.3 Delays

Delayed messages due to not being able to contact the addressee by telephone within 48 hours of message origination, or for other reasons in the handling process, should be cause to generate a service message back to the station of origin, so indicating in the text:

REF NR 234 MESSAGE ARRIVED LATE THIS STATION X DLVD APR 20 2200Z.

When the addressee can not be reached within 48 hours of origination, service the message and ask if the originator wishes you to cancel the message (QTA), and continue trying to contact people who might be away on vacation, etc.. Two days is about the limit for “sitting” on a message before servicing. Keep trying to make contact with the addressee until you hear back from the originator. It is considerate to confirm late delivery once successful.

ARL SIXTY SEVEN 234 SMITH 410 555 1212 NO ANSWER TWO DAYS X WILL CONTINUE TO TRY X QTA QUERY,

and later:

REF NR 234 SMITH DLVD PHONE APR 12 2300Z. This may be a service message.

8.1.4.4 Mailing

MAILING messages to addressee when telephone contact is not possible (an optional choice of the delivering station) should generate a service message back to the station of origin. If the mail is returned another service message is indicated.

ARL SIXTY SEVEN 234 SMITH NO LOCAL OUTLET X MAILED APR 10,

or

ARL SIXTY SEVEN 234 NO PHONE ANSWER TWO DAYS X MAILED APR 10, etc.

and;

ARL SIXTY SEVEN 234 SMITH MAILED APR 10 X RETURNED APR 13 BY POST OFFICE UNDELIVERABLE , if returned.

8.1.4.5 Garbled

If the message was garbled, repeat the parts in question so the originator may compare data with the original or check back with the person for whom the message was sent.

ARL SIXTY SEVEN 234 J SOTH 10 OAK RD PODUNK MD NO PHONE GIVEN X UNLISTED X CONFIRM INFO.

Ask for the message to be re-filed to you if garbled.

ARL SIXTY SEVEN 234 SMITH MESSAGE GARBLED PSE REFILE.

Ask for additional information, or numbers verified, if desired.

ARL SIXTY SEVEN 234 SMITH MISSING ADDRESS AND PHONE 410 555 1212 INCORRECT X PSE REFILE.

8.1.4.6 Undeliverables

Undeliverable messages for any other reason should be serviced back to the station of origin as soon as possible, explaining the problem. There are numerous situations that might prevent delivery, among which are incorrect and unlisted telephone numbers, addressee unknown, etc. In the case of incorrect and unlisted telephone numbers the service message should contain the telephone number received in case the unlisted number was garbled in the original transmission.

Indicate if the telephone number is unlisted or private if there was none given in the message and you learn that in your checks.

ARL SIXTY SEVEN 234 SMITH PHONE UNLISTED.

If a number was given, but it was incorrect, and you were not able to make contact due to the correct number being unlisted or private, so indicate. Do not service back changed or corrected telephone numbers, or other information, without permission of the addressee.

ARL SIXTY SEVEN 234 SMITH PHONE 410 555 1212 INCORRECT AND UNLISTED.

If the address or telephone number does not seem to match anything in your area, attempt to find the correct location, forward the message there, or service as unknown address and no listing. A good atlas or web search can find errors in state, town, zip, address, etc.

ARL SIXTY SEVEN 234 J SMITH 190 OAK RD PODUNK MD X NO NAME ADDRESS OR PHONE MATCH FOUND.

Report if the addressee is unknown at a valid address, a former resident, etc.

ARL SIXTY SEVEN 234 SMITH ADDRESSEE UNKNOWN
X NO LISTING.

Report silent keys only with permission.

ARL SIXTY SEVEN 234 SMITH REPORTED DECEASED,
and, if a mass roster mailing, you might add: “. PSE RE-
MOVE FROM MAILING LIST BY REQUEST”

Do not send back forwarding addresses without permission.
Simply report such undeliverables as unknown.

ARL SIXTY SEVEN 234 SMITH ADDRESSEE UNKNOWN
AT ADDRESS.” Only the addressee on the message should
authorize sending information back.

8.1.4.7 Example Service Message

In addition to the examples of HXD undeliverable texts shown for that case, there are many possible formats for the text of service messages. Examples of some texts are shown in the previous sections. The ARL SIXTY SEVEN is most often used in these messages, but plain text may be used as well when it better suits the purpose.

Last name of the addressee on the original message is shown optionally added to the message number for a redundant verification of the message being serviced.

Sent from your station to the station of origin (W3TX):

1. Service Undeliverable Message

SVC 12 R W3RX ARL 14 PODUNK MD AUG 23				
JOHN A HAM W3TX				
123 OAK ST				
BALTIMORE MD 21200				
410 555 1000				
ARL	SIXTY	SEVEN	234	SMITH
410	555	1234	INCORRECT	X
NO	LISTING	X	73	
= JOHN W3RX				

8.1.5 Generating A Reply, HXE, ARL Seven, Offers

Replies may be generated based on:

1. **HXE** in preamble (“Delivering station get reply from addressee, originate message back.”),
2. **ARL SEVEN** request in the text (“Please reply by Amateur Radio through the amateur delivering this message. This is a free public service.”), or
3. based on a routine OFFER by the delivering station to generate reply.

8.1.5.1 HXE Approved

If the addressee agrees to send a reply, the delivering station may originate a message from its station back to the party signing the original message (at the city-of-origin), or to the station-of-origin if necessary, as a regular third party message origination. The city-of-origin on the reply should agree with the location of the person for whom the message is being originated.

8.1.5.2 HXE Denied, Service Message

In the HXE case, when the addressee does not wish to reply, the delivering station may send a service message back to the station-of-origin over its own signature referencing the original message and indicating that there is “no reply” to the HXE request. The city-of-origin and signature should be yours. REF NR 234 SMITH HXE NO REPLY.

8.1.5.3 Arl Seven Approved

If the addressee agrees to send a reply, the delivering station may originate a message from its station back to the party signing the original message (at the city-of-origin), or to the station-of-origin if necessary (addressed to the original message signature c/o station-of-origin if an address is not available), as

a regular third party message origination. The city-of-origin on the reply should agree with the location of the person for whom the message is being originated.

8.1.5.4 Arl Seven Refused, Optional Service

In this case, when the addressee does not wish to reply, the delivering station may send a service message back to the station-of-origin over its own signature, with permission, referencing the original message and indicating that there is “no reply,” but this is an optional courtesy and voluntary. The city-of-origin should be yours. REF NR 234 SMITH NO REPLY. Discuss the possible reply with the addressee, and honor a request to send nothing back. The ARL SEVEN option is the addressee’s, who might also wish to have you originate a “no reply” message over their signature.

8.1.5.5 Offer To Reply

Once a message is delivered, offer to originate a message reply, reminding the party that it is a free public service. Help them gather the required addressee information, and to create a short and clear text (possibly with ARRL Numbered Radiograms). Ask if they would like to send a message to anyone else as well. Assure them of your best effort to get the message delivered but that no guarantee can be made.

Be certain to guide the originator in understanding the restrictions imposed by FCC content rules or international regulations.

Such originations use your message number and the city-of-origin of the party for whom the message is being originated, as in any other third party traffic origination.

Never originate messages for a third party without their permission.

Respect privacy. Do not generate messages containing information about a third party without their permission.

8.1.6 Soliciting Messages

You do not have to deliver a message to originate traffic. Feel free to solicit messages from friends and neighbors, or even by posting notices at work. Exposing the public to the services offered by Amateur Radio can be very rewarding. It may suddenly become clear to people why you spend so much time in the shack, and why Amateur Radio is such an important resource. See section 8.2 regarding solicitations.

Never originate messages for a third party without their permission.

8.1.7 Keeping Records

Keep records for all traffic originated and delivered for your own benefit. Comply with current FCC and international regulations regarding keeping records of third party traffic crossing international borders.

Having a copy of a message delivered years before can be of great help if you get one garbled for the same party again.

8.1.8 Putting Traffic Into The NTS

All amateurs are welcome to check into the Local or Section level traffic nets to send originated traffic. If you are not able to do so, you may give your traffic to other stations who can, or contact your local Section Net Manager, the Section Traffic Manager (STM), ARES EC, SEC, or Section Manager (SM) for help. (Also see *The ARRL Net Directory* for net listings.)

8.2 Collecting Messages From The Public

Messages may be solicited from friends, neighbors, work associates, nursing homes and hospitals (with management permission), etc., and at public events of virtually any type. (See *Public Event Solicitations*.) Setting up message booths at ARES public service events is an excellent opportunity for this sort of activity.

As mentioned in the section on message formatting, the originating station operator is the best person to gather the required information for proper message preparation while still in contact with the originating party. Get sufficient information to re-contact the party at a later time if there is a delivery question or problem.

8.2.1 Address Information

Remember to collect a complete addressee name (as most likely to be listed in the directory at the delivery point), and add children's names at the end of the line. Get a full street address including any apartment or institution information. Include the zip code and telephone information, even if you have to call the originating party back at a later time to get it. If the telephone number is not available, you might call long distance information or search the web resources to get it and include it in the message.

8.2.2 Originator Information

Record the name, address, and telephone number of the originating party, on the message blank for your reference information. Note the time, method, and place of origination to jog your memory at a later time.

This information will be very helpful if you receive a service message or a reply for the originator.

8.2.3 Help With Text

Help originators design a short and concise text. Use ARRL radiograms if possible. If the party needs to send much more than 25 words, you may break the message into two or more messages to keep the size of each one reasonable. Remember, when doing this, to make each message make sense on its own just in case the several messages do not all arrive at the destination at the same time. You can work on this together with the originator.

8.2.4 Business Prohibition

Explain to originators, as diplomatically as possible, the prohibition of business traffic. Messages which facilitate the regular business affairs of ANY party are not allowed. This applies to the affairs of companies, organizations, government, whether profit or non-profit, charitable, etc. See 97.113 in the rules, as amended..

8.2.5 Public Event Solicitations

A great way to serve large numbers of people is to set up an amateur operation at a public event or public area (with appropriate permission). The amateurs have an opportunity to explain Amateur Radio to people, and offer to send radiograms. Stress that the message service works even when the phones, cel-tels and email are no longer in service during emergencies.

Experience indicates that the people encountered at these places may not be prepared with proper address information. Advertising in advance is a great way to gather a larger and better prepared crowd. Be prepared to re-contact people later at home to get the needed information if necessary.

Have a team of amateurs greet and talk with the public. Most groups wisely have an amateur coach the originator and fill in the message form as the person dictates the information This will usually insure legible hard copy for use by the sending operators. Direct entry into laptops for packet forwarding is also an impressive technique to use, although the public is equally impressed by hearing CW as their message goes out. Consider using linked laptops to the sending station table and a printer for hard copy archiving.

Consider a limited text, or choice of several texts, in order to permit booking messages to the greatest extent possible. This is not much of a limitation for most event solicitations. ARRL Numbered Radiograms with a variable blank entry are handy for this purpose—especially for holiday greetings type messages.

Organize all the messages according to destination area, such as in-Section (group by town or county), in-Region (as in EPA, and WPA when in MDC), and out of Region (1RN, 2RN, 4RN, 8RN, EAN, CAN, PAN, ARN, etc., when in 3RN), and then group the “books” within each. This will allow the traffic handlers to carry all the traffic up through the net system without having to reorganize at each level.

Notify the NTS net managers in advance when planning a large batch of messages. NTSD stations may also need to provide special capacity for handling unusually large digital loading.

8.3 Sending Organizational Messages

Traffic is often generated for various types of organizational activity, such as QSL bureaus, license renewal reminders or congratulations, welcoming messages from nets or clubs, even announcements, etc. Such message traffic is often created in book form but may also be customized individual messages. These messages may be originated for delivery in local areas or throughout the NTS.

On occasion, such originations are much like public service event solicitations and may be handled in a similar fashion. Some of these originations are one time “mass mailings” presenting mainly problems of volume. Others may be continuing message generation based on organizational or individual policies for sending welcome message, greetings, or reminders, requiring a consistent long term working relationship with local NTS operators.

A few tips and suggestions are in order.

8.3.1 Legality, Propriety

Remember that amateur messages are communications which must comply with all FCC regulations in Part 97, as amended. Traffic may not directly or indirectly support the commercial purposes of any party, must not be encrypted (i.e., configured in such a way as to obscure the meaning of the transmitted message groups), and must meet all FCC and international regulations regarding third party traffic, etc.

Do not originate messages for a third party (someone other than yourself) without their permission. Do not originate messages containing information about a third party without their permission. Respect privacy.

Although not a legal question in all cases, it is customary to limit amateur message traffic to matters not related to “causes.” Without enumerating all such cases here, it is suggested that it is wise to consult with the local STM regarding propriety of message content for “mass mailings.”

8.3.2 Mass Mailings And Book Messages

All messages created for mass message submissions and book transmission should meet the same standard criteria as individual radiograms, and should be handled according to standard protocols. Some additional reminders:

1. **Preamble:** Message numbers should contain only figures, no punctuation, and no leading zeros. Do not use the optional HX code handling instructions unless really necessary. Do not use the optional filing time on Routine messages unless there is some compelling importance to the origination time. If multiple stations originate fractions of the total submission, the station of origin for each should be so entered accordingly. The place of origin may be a more complicated question. If the message source is a public event, the place of origin may best be shown as the location of the public event to indicate the appropriate information for the addressee. If the source is an organization, it may be wiser to use the place of origin for the station of origin for that fraction of the submission in order to aid routing of service messages.

2. **Address:** Use complete address names (as might be listed in phone books at the destination). Include the zip code for digital system routing purposes. Include a valid working telephone number. Sending a large number of messages without telephone numbers is unworkable. Amateur traffic handlers are not a free mailing service! Use the information available in “criss-cross” type publications, data base sites on the internet, or commercial CD’s to get valid address and phone information. NTS injection points should refuse large submissions with any deficiency in the addressing.
3. **Text:** Use a minimum number of text variations. If variable words or phrases need to be included, attempt to group them so they may be sent in books as a single blank to be filled in within the variable text parts of the book as one group or phrase. See chapters 2 and 3 with respect to the use of BLANKS in message booking. Use ARRL Numbered Radiograms to the greatest extent possible. This can greatly facilitate the movement of the traffic through the NTS.
4. **Insertion:** Establish, with the help of the local STM and Net Managers, and operators, a means of handling the outbound traffic within the limits of the manpower and resources at the origination point. Ask the local STM or Net Managers to advise and consult with the NTS Region and Area staffs regarding large traffic load insertions before the event.
5. **Sort:** For large amounts of traffic, organize all the messages according to destination area, such as in-Section (group by town or county), in-Region (as in EPA, DE, and WPA when in MDC), and out of Region (1RN, 2RN, 4RN, 8RN, EAN, CAN, PAN, ARN, etc., when in 3RN), and then group the “books” within each. This will allow the traffic handlers to carry all the traffic up through the net system without having to reorganize and re-transmit at each level. It is not uncommon for auxiliary liaisons to be assigned to carry traffic through the Section to Region, and through Section and Region to Area, thus avoiding any re-transmission until the higher nets are reached.
6. **Service:** Establish, with the help of the local STM and Net Managers, and operators, a means for handling the incoming service messages which will be received. The operators handling service messages for the originators should be readily available for receiving service messages from the NTS net operators. Regular net participation, or, at a minimum, 24/7 email service locally should be made available. When a message is inserted into the NTS, the originating station is responsible for handling any service messages generated in the process of handling the traffic. There are no special exceptions to standard operating practices for this type message origination. Prompt responses to service requests and re-filing should be forthcoming.

If messages are originated using a club call sign, or at a public service event, the club or originating station(s) must make op-

erators readily available to the NTS for handling service messages.

These large submissions of organizational traffic are to be serviced with the same techniques and integrity as any other amateur messages. The ball is in play until the messages are delivered, relayed, or serviced, and, when stipulated with HX codes in the preamble, serviced if delivered. See the earlier sections of this chapter with regard to servicing messages and replies..

7. **Maintain** a ready record of all messages submitted to the NTS, and a means to record the history of service message requests or inputs. These records should contain re-contact information for all message originators in order to handle service message inputs. This is particularly important for traffic originated for the public or organizations, amateur or non-amateur.

8.4 Disaster Communications Traffic

The properly trained and practiced traffic handlers and net operators are the backbone of disaster communications. Amateurs having these skills may come from the NTS, or from ARES/RACES groups, even if these groups operate on separate bands. The important point is that they share the same abilities so that they will all understand each other when joining together to help the public in times of emergency.

Operators in the field, at shelters, emergency operating centers, at the American Red Cross and other served agencies, and in surrounding areas, will all encounter the need to pass written traffic accurately and promptly at some time during these situations.

Train in advance. Teaching operators how to handle this traffic during the emergency will hinder the effort and tie up valuable manpower.

The NTS, ARES, and RACES all work together during disasters. Be sure to have a program to train people in local clubs, groups, and ARES/RACES, so skilled people will be available when needed.

8.4.1 ARES

The Amateur Radio Emergency Service (an ARRL field organization) serves the public affected by disasters, and all agencies with whom prior agreements have been made to supply support communications in such situations. An exception is Civil Defense, or Emergency Management, which is served by RACES and covered by separate FCC rules and regulations. Both ARES and RACES operators need to work together, however. The ARES “customers” typically have need to communicate with the emergency management officials during such events.

Welfare messages for the public, to and from the affected area, will all be written formal traffic. Messages for agencies will be a mix of tactical traffic, sometimes verbally handled, and formal messages, which must be delivered to officials in order for them to have written record of requests for assistance, damage assessment, command information, and the like.

It is very important for amateurs to train with the officials for whom they might be handling traffic. It is easy for amateurs to

communicate compared with the difficulty faced by officials when they have to write clear concise messages for delivery by third parties. They are used to getting on the phone and explaining what they need. Practicing with them will help them get used to the methods of writing good traffic and getting to trust what Amateur Radio can do for them. Being known in advance may be the only way an amateur might ever be allowed on the scene of a disaster to help.

8.4.2 RACES

As mentioned above, the Radio Amateur Civil Emergency Service is an Amateur Radio service provided for government emergency management. It is governed by separate rules in the amateur regulations, Part 97.407, but it is manned by regular amateurs enrolled by emergency management for the purpose. The RACES rules limit operations to prevent Amateur Radio from becoming used as a business communications service for government. Amateurs performing service under RACES may also serve ARES and the NTS. Joint enrollment is strongly encouraged these days, and that suggests joint training and uniform traffic handling capabilities.

A large proportion of RACES traffic is formally written. In some cases the message format is different than the ARRL form presented in this manual. This form difference is designed to make RACES traffic more easily understood by operations officials, and their message centers, which deal with traffic from a variety of services and modes of transmission. Amateur radio is happy to accommodate these differences. The exact procedures may be learned by joining the local RACES group. The basic methods of message transmission and net practices are the same.

8.4.3 Welfare Traffic

Welfare messages are generated by concerned people during disasters. Welfare messages from the affected area usually involve requests for assistance, or report on the status of affected people and property. Incoming welfare messages to the affected area requesting information on people or property are usually generated without any prior knowledge of status.

Outbound welfare traffic almost always has priority over incoming traffic. People affected by a disaster often need to communicate requests for help or advise others of their safety. These people come to the available amateur to originate their messages, or the amateur travels through the affected region and makes himself available for contact as part of the ARES/RACES operation at shelters, etc.

Incoming welfare traffic creates a big problem. When many people are involved in a disaster, huge numbers of incoming requests for information may overload the limited amateur facilities and manpower in the area.

Additionally, there is great difficulty finding particular individuals in a disaster area for the purpose of delivering messages. American Red Cross shelters may not even have lists of sheltered people for up to 72 hours after the onset. Telephone service may be out, or limited by officials.

During disasters, it is important not to solicit inbound messages unless the amateurs in the area have approved incoming traffic, and have provided for the stations to archive it, or han-

dle it with a means to deliver it. Amateur leadership in the area will advise when it is possible to handle incoming traffic. ARRL bulletins from WIAW will announce the NTS situation in this regard, or local leadership will announce the status on local nets. Typically the NTS will move inbound welfare traffic as close to the delivery area as possible, and have stations archive it where the local amateurs can check through it as time permits. Local BBS servers or emergency prepared packet stations can help in this work.

Incoming messages for served agencies regarding the relief operation have to be handled. Such traffic should be handled separately, routed through reliable paths, and should not be listed as welfare traffic.

No matter how upset outside originators may be, neither they nor you can do anything to make it possible to deliver traffic in the area until emergency organizations have done their work. An undeliverable message sent, and not answered, may actually generate more concern than no message at all. Listen, and do not transmit. You may hear enough information to help concerned people without wasting the time of amateurs on scene. On the other hand, a judgment may be made and inbound traffic accepted to help the concerned feel that they have at least made a reasonable attempt. Check that the area is accepting and archiving such traffic.

Overloading the message system with incoming welfare traffic may seriously hinder the passing of urgent traffic affecting the stabilization of the situation. Arranging for separate paths to the archiving site can help. This way the concerned originators of inbound inquiries at least will know that there are competent traffic handlers making the effort to service their requests.

A team of traffic handlers can sort through the archived incoming welfare traffic and service those regarding the public at the fringe of the affected area, outside that area, or otherwise reachable. Occasionally public safety may request, to help prevent overloads, that the telephone system not be used, however.

Quite often the relief organizations and public safety officials will expedite the installation of special telephone service, etc., thus dramatically relieving the pressure for welfare status reports.

The obvious point is that qualified traffic handlers are needed in quantity during such events. Untrained, but concerned, operators will attempt to do their best, but will not have the calm confidence of knowing the system and how to operate therein. Training is key. Every amateur in your local club or area should get at least a minimum of familiarity training in handling messages and where to find the nets that move them.

8.4.4 Tactical Vs. Formal Traffic

Handling routine traffic for people on a day to day basis is done with calmness and organization. There is no reason not to conduct operations during a disaster in the same fashion. In fact, it is more important to do so at such times. Official traffic and welfare traffic for the public is critically important at these times, demanding that the amateur system work at its best.

One of the most frequently asked questions about handling traffic during emergencies is why bother with formal traffic

when it is so much faster to communicate with verbal exchanges. The reason is simple. Amateur radio does not manage the operations during such emergencies. It is the conduit for communications between officials... the FAX machine they rely upon to get a written record from point A to point B. They are busy people, and will respect and appreciate the professionalism of amateurs who can deliver their information in clearly legible, accurate, timely, written form.

Communicating with another amateur, back and forth, can convey complete understanding of a tactical message. That same clarity can be lost, or content forgotten, when a third party must be informed of the verbal content; particularly when there are facts and figures to convey. The official will probably have to write them down when told as well. Do it for the official, and he can carry the message form around in his hand until it is serviced.

It is entirely reasonable that ARES/RACES operations may from time to time use abbreviated message formats for handling written forms of tactical traffic. Often such forms (incident reports) indicate an addressee, text, source, and date/time group. Note that many served agencies require that the source be identified by full name, and perhaps title, to authenticate the message. Some consider a message without such a signature as invalid.

Even medical emergency reports during public service events are appreciated when they are written and handed to a public safety official at a command post. That official may have dozens of other matters in progress, and can not be expected to remember what an excited ham yells into his communications van.

There are many circumstances when verbal delivery is acceptable, but amateurs should make careful judgments about when it is safe to do so. When in doubt, write it out...and keep a copy of it in case you are asked to repeat it. Matters of utmost urgency may be delivered verbally, and then followed up with a written record (marked as handled if appropriate).

We communicate, we do not administrate. The message handling skills presented in this manual serve us well during emergencies. The same operating disciplines and verification of copy can produce the same quality of service for such messages of record.

Remember, the NTS is chartered to serve the ARES field organization during emergencies. Check around and ascertain if there are sufficient numbers of competent traffic handlers available to relieve the "iron men" during major events. The time and effort spent in training will pay big dividends.

Chapter 9 - Tactical Nets, Public Service Events

9.0 Introduction

Background: Amateur radio has a long standing tradition of providing support in events where the official sponsoring organization can not provide all the communications required for adequate public safety. Competent service rendered by amateurs has proven valuable, and often essential, to public safety

in these events by providing rapid alerting of officials when people need help. The FCC protects amateur radio from incursion by commercial and government interests by limiting our support to the public safety issues and those not related to “regular business affairs” of any party.

Other Tactical Operations: For the purpose of this manual tactical net operating is connected to public service events, although tactical nets can be run for any purpose. Traffic nets use the formal methods presented in chapter 4, Net Operations; and nets having both traffic handling and social activities generally use the formal methods for the traffic handling parts.

There are many other types of amateur nets that can be run in tactical fashion. Administrative nets for coordinating activities during disasters, social nets, swap nets, technical nets, etc. All such nets may be run in the same pattern as the formal traffic nets, but abbreviated or custom syntax may be substituted.

Experienced net operators will appreciate the basic structure of the “directed net” in all such activities. The role of the NCS is to help conduct the operation in an orderly fashion.

Mission: The amateur mission in public service events is accomplished by providing communications for officials responsible for the event and public safety. As amateurs, we are not responsible for that safety. We facilitate the mission of officials who are, and can help by providing communications in depth over the full geographical area of the event.

Our mission is to communicate, not administrate, for the responsible officials. We are the telephone or FAX service between officials. Our job is to pass their information and emergency requests back and forth with speed and accuracy.

Planning And Teamwork: Working together to provide communications for this type event requires the support of planners, operators and equipment support people. Your ideas on how to do an effective job are valuable and most welcome during planning and operation.

Thorough planning with the officials prior to the event is essential to effective operation and full and proper use of the amateur resources. You should appoint a representative or ask the ARES EC to coordinate with the event officials during planning and operations.

When this kind of service is well planned with the officials, and well conducted by the operators, it provides a very rewarding opportunity to serve the public with our skills.

Even if you are new to this art you will find that your fellow operators, net controls, club officers, ARES members, and/or EC, will work together to help you do a good job in the true Elmer spirit of our service. If we operate effectively we set an example for other amateurs and other officials we might someday serve. Outsiders listening to our communications will judge Amateur Radio and our club or group based on what they hear.

ARES: The Amateur Radio Emergency Service (ARRL field organization), led by the local Emergency Coordinator (EC), often supports these type events. The organizing and response skills, essential to the ARES role in emergencies, makes such groups well qualified to do the job, and working such events

gives them valuable practice and experience. Joint operations with ARES, clubs, and individuals, provides benefits for everyone involved.

Authority: The applicable FCC rules have been clarified regarding support of public service type events. They have been moved from previously issued policy statements into the body of part 97. Note the words emphasizing the role of amateur radio in support of the public rather than the sponsoring organization.

“Best Amateur Practices”: Participating operators should be familiar with “best amateur practices” reviewed in the following sections. The examples have been tailored to this type event, relative to those used in formal nets, in order to simplify them for tactical operations.

These operating practices are presented as a guide and not intended to make our operations so formalized as to interfere with the friendly atmosphere characteristic of our service. Calm and confident operators can pass the typical information in these events without every word being scripted in advance.

Using these practices will help maintain control and order and help assure that essential information gets through.

Perhaps a good way to demonstrate the tactical net is to present the operation in the setting of a typical public service event. The following section does that, showing basic syntax that may be used by the NCS and stations. Later sections deal with the questions of verbal versus written traffic and planning for such events, etc.

Call signs shown are intended to be generic for example purposes only and not related to the holders of those call signs in any way.

9.1 Tactical Net Practices, Event Example

For the following examples and procedures, assume a public service event is to be held with a large public participation, such as a walk-a-thon. The officials have provided medical stations along the course with medical staffs to assist the public with problems. Amateurs are stationed at each medical station and at a key location where contact is maintained with public safety officials and the event officials (a fixed location in this example, but often event officials move about and require a shadow operator to follow along to maintain contact).

9.1.1 Example Event Station Assignments

The amateur stations are to use two meter portable or mobile equipment, a local repeater, and tactical call signs:

MED1: (The station at the public safety and event command post.)

MED2, MED3, MED4, MED5, MED6: The stations on the course.

NCS: The net control station.

The NCS is at a central location free of the responsibility of serving anyone but the net business. The NCS is able to communicate with the stations directly on simplex as well as through the repeater system in use. Additional “home” stations may be used for simplex relay where the geography demands.

A second operator at the NCS station is often helpful to handle off air jobs.

Although simplex operation is possible here, and conserves spectrum use, the choice is yours based upon many other considerations such as HT and home station coverage, etc.

A net station with a public safety agency mobile or field command post is an important provision for expediting emergency calls to public safety organizations. A home station standing by to make telephone calls to public safety agencies is also a wise precaution. This station may also back up the NCS and help relay when needed. Both are often used, the field command post usually being primary since they are usually in direct contact with police and fire resources on the course as well as with dispatch centers.

Any number of variations of this format is possible. Each event will present a different configuration problem to be matched with communications providers.

A rehearsal with a roving communicator to test the course for difficult communications areas is advisable. See the later section on event planning.

9.1.2 Directed Net Procedures

An amateur radio “directed” net is one in which all communications are supervised by the net control station (NCS). The NCS is responsible for communications on net frequency, sending stations off frequency, and assuring that all traffic is handled in an orderly fashion with appropriate priorities.

Stations check into the net, maintain a close listening watch for NCS instructions, and check out only with permission from the NCS. If a station can not listen carefully to the net for a period of time, it should check out and check back in when it is again able.

The NCS maintains a log of all stations checked into the net and keeps track of stations sent off frequency for passing traffic or for conversation.

Stations should not interrupt net “transactions,” i.e., the exchanges between other stations and/or NCS until those stations have completed their exchanges... except in an emergency.

Stations use their full call sign when first checking into the net. Tactical call signs may be used thereafter providing that full call signs are given by net stations at the end of transactions.

The proword “over” is not required at the end of NCS calls or the “no traffic” check-in type transmissions. They are considered self completing. “Over” is generally used for transmissions of uncertain length, such as traffic lists, comments and explanations, or when repeater delay lines remove squelch tails which obscures releases of the PTT switch.

The use of “this is... (pause with PTT release)... (call sign)...” by calling net stations may be used to avoid “doubling” with other stations.

Optional items are shown in brackets, []. Variable items to be filled in by the transmitting station are shown in parentheses, ().

9.1.3 Checking In, Without Traffic

The Open call. NCS asks for stations to check in with the Open call, recognizing the possibility of multiple responders, using the two step listing method:

NCS THIS IS N3FFB NET CONTROL STATIONS
WISHING TO CHECK IN YOUR CALLS PLEASE

MED4 W3XYZ MED 4 NO TRAFFIC

NCS W3XYZ MED4 ROGER...OTHERS?

The NCS may also check stations in using a roll call method based upon the list of manned sites or participating stations.

Stations use their full call sign when first checking in.

9.1.4 Checking In With Traffic

The Open call. NCS asks for stations to check in with the Open call, recognizing the possibility of multiple responders, using the two step listing method:

NCS ADDITIONAL STATIONS?

MED4 W3XYZ MED 4 WITH TRAFFIC

NCS MED 4 PLEASE LIST

MED4 THIS IS MED 4 TRAFFIC MED 3 ONE OVER;
(implying a formal message); or

THIS IS MED 4 TRAFFIC WORDS MED 2 OVER;
(informal words)

NCS W3XYZ MED 4 PLEASE STAND BY...; (or may
dispatch stations);

(... THIS IS N3FFB NET CONTROL... added at ID
time.)

The NCS may also check stations in using a roll call method based upon the list of manned sites or participating stations. In the roll call case the two step method is not used. The single station responder simply responds with its call sign and either no traffic or lists its traffic.

NCS MED 4; in the roll call sequence;

MED4 THIS IS W3XYZ MED 4 NO TRAFFIC; or

MED4 THIS IS W3XYZ MED 4 TRAFFIC WORDS MED
1 OVER

NCS W3XYZ STAND BY; (or may dispatch the business).

Stations use their full call sign when first checking into the net.

Note that formal radiograms are not often used on such event tactical nets, except for official to official traffic when formal written record is mandatory. Written records of emergency requests are often written out on short form incident reports, but still contain the essential information required and are retained for officials to review after the event.

Stations with full format radiograms should advise the NCS of same during busy tactical nets, and request dispatch to simplex or off the net. The “. . . TRAFFIC MED 3 ONE” listing above would cover such cases. Other traffic is often simply listed as “WORDS,” even if an incident report is written. Policy in such matters is decided during event planning with officials.

9.1.5 Listing Additional Business

At a convenient break in net activity later, following other net transactions:

MED4 MED 4; to request acknowledgment
 NCS MED 4; acknowledgment
 MED4 MED 4 TRAFFIC MED 1 ONE OVER; or
 MED 4 WORDS MED 2 OVER; or
 MED 4 WORDS MED 2 AND MED 3 TOGETHER
 OVER; or
 MED 4 HAS PRIORITY TRAFFIC FOR MED 1
 OVER; etc.
 NCS ROGER STAND BY; or may dispatch the business.
 The NCS will arrange for passing the traffic as net priorities
 allow.
 MED4 MED 4 NEED TO BE OUT OF THE NET FOR A
 FEW MINUTES OVER
 NCS MED 4 EXCUSED
 MED4 MED 4 W4XX (note end of transaction ID)

9.1.6 Emergency Traffic

When EMERGENCY traffic is listed, the net is interrupted and
 the EMERGENCY traffic is handled immediately.

MED2 EMERGENCY, THIS IS MED 2 OVER
 NCS STATIONS STAND BY, MED 2 GO AHEAD
 MED2 MED 2 HAS EMERGENCY TRAFFIC FOR MED 1
 OVER
 NCS EMERGENCY MED 1 CALL MED 2
 MED1 MED 2 THIS IS MED 1 READY TO COPY
 MED2 THIS IS MED 2 BREAK NEED BALTIMORE
 CITY AMBO AT MED 2 FOR 40 YEAR OLD
 MALE SUBJECT WITH BROKEN ARM SUBJECT
 CONSCIOUS AND BREATHING SIMPLE FRAC-
 TURE BREAK MED OFFICER JONES END NO
 MORE OVER
 MED1 ROGER MED 1 W1XX
 MED2 THANK YOU MED 2 W2XX

Note that the proword BREAK may be used in such tactical
 message traffic as a separator between comments and the ac-
 tual content. This type message is likely to be written on an
 incident report of some sort, thus clarity and sending at copy
 speed is warranted.

Note that a follow up message from MED 1 to MED 2 would
 be typical to confirm the dispatch of the ambo.

Authority, Emergency messages of this type are to be origi-
 nated by the medical officials assigned to this event if possible.
 If none is available, and you encounter an emergency situation,
 notify the NCS to expedite the required response with officials.
 Event officials or medical personnel should make decisions
 regarding medical emergencies if at all possible. Often the
 officials in charge will request that no calls for emergency
 transport be made without the approval of the responsible
 event leadership or medical staff.

Confirmation: The station delivering the message should
 originate a priority message back to the official or station
 originating the request with information that an emergency
 response is in route, if possible, or at least that notification has
 been made. The station on scene should make note to check
 for such a response within a reasonable time, although it is
 difficult in some events to get feedback from busy public
 safety officials regarding the dispatch of the emergency re-
 sponse. As amateurs, however, we can inform the station on
 scene that the call was passed to those officials.

Documentation: The station delivering an emergency message
 to public safety officials should do so in writing when possible.
 This may be done after the first verbal transmission to expedite
 the call (submit the written follow-up marked “handled”).

All emergency calls should be logged by the sending station,
 receiving station, and NCS. Emergency message info should
 be held for the medical supervisor and/or event officials to be
 presented on demand. It is often necessary for those officials to
 report all the circumstances and response information for li-
 ability reasons and others.

Forms: Forms may be prepared and distributed to all operators
 prior to the event. It is very helpful to Police/Fire officials to
 be given emergency calls written out on a form. They are usu-
 ally very busy, and remembering what someone has yelled into
 their command post begs for error and omission. Giving them
 the courtesy of a written message lets them know you under-
 stand, and demonstrates your group’s professionalism.

INCIDENT REPORT FORMS are often used to receive and
 pass the messages to the officials at the command point(s).
 These forms may be customized for the event, or a generic
 type form may be used for public service and ARES opera-
 tions.

Privacy: Names of injured persons should not be broadcast
 over the air unless absolutely required for their safety. Respect
 and protect the subject’s privacy.

9.1.7 Tactical Dispatching, On And Off Net Fre- quency

This dispatching is very similar to that used on formal traffic
 nets. Note that the first station addressed in the dispatch com-
 mand acknowledges or calls first. The receiving station initi-
 ates the frequency check and calls the transmitting station off
 frequency. This understanding avoids confusing simultaneous
 transmissions possible on repeaters.

On Net Frequency:

MED4 MED 4
 NCS MED 4
 MED4 MED 4 WORDS MED 5 OVER
 NCS MED 5 CALL MED 4; (“HERE” implied); or
 MED 5 MED 4 HERE WORDS; (paralleling traffic
 net dispatches).

The Exchange:

MED5 MED 4 THIS IS MED 5
 MED4 MED 5... (MED4 sends his words) OVER
 MED5 ROGER MED 5 W5XX

MED4 THANK YOU MED 4 W4XX

The formal radiogram would be listed as message traffic and passed according to normal exchange and voicing rules as shown in chapter 2. The dispatch would be:

On Net Frequency:

NCS MED 5 MED 4 HERE MED 5 ONE; and so on with the full call signs at the end of the transaction.

MED 5 READY TO COPY

MED 4 (sends his traffic)

Off Net Frequency:

MED4 MED 4

NCS MED 4

MED4 MED 4 WORDS MED 5 OVER; or
MED 4 TRAFFIC MED 5 ONE OVER

NCS MED 5 MED 4 (frequency) MED 5 WORDS; or
MED 5 MED 4 (frequency) MED 5 ONE; for the radiogram, where (frequency) could be another repeater, simplex, etc.

MED5 MED 5 GOING; or W5XX GOING; or (suffix) GOING;

MED4 MED 4 GOING; or W4XX GOING; or (suffix) GOING

Off frequency the receiving station checks the frequency is clear, calls the sending station, and, after the traffic is passed, both stations sign their full amateur call signs before returning to net.

9.1.8 Returning To Net, Job Completed

Stations returning to net after a successful exchange after being sent off frequency by the NCS, following any net transactions:

MED5 MED 5 BACK (returning, job completed)

NCS MED 5 (acknowledgment of return)

MED4 MED 4 BACK (returning, job completed)

NCS MED 4 (acknowledgment of return)

9.1.9 Reporting Back To Net, Job Not Completed

Stations returning after failure to make contact or complete their exchange, following any net transactions:

MED5 MED 5 BACK NO JOY; or MED 5 BACK NO MED 4

NCS MED 5 ROGER STAND BY

MED4 MED 4 BACK NO JOY; or MED 4 BACK NO MED 5

NCS MED 4 ROGER; or

The NCS may immediately dispatch the business on the net

NCS MED 5 MED 4 HERE WORDS; or

MED 5 MED 4 HERE MED 5 ONE; for the radiogram; or

The NCS may ask for advice, assign an alternative frequency, or arrange a relay for the communications

.Often missed contact is due to dispatches to repeaters that are, or become, busy. It is helpful for the NCS to be able to monitor repeaters before dispatching. If the dispatch was to a simplex frequency the transmitting station should notify the NCS that the calling receiving station could not be heard. Relays may then be quickly arranged, possibly through a “home” station.

9.1.10 Reporting Back To Net With Additional Requests

If returning stations have additional business with the net, they check back in as in:

MED5 MED 5 BACK WITH TRAFFIC OVER

NCS MED 5 PLEASE LIST

MED5 MED 5 TRAFFIC MED 1 ONE PRIORITY OVER

NCS ROGER STAND BY; or

MED 1 MED 5 HERE MED 1 PRIORITY (immediate dispatch)

Stations pass traffic and identify as above in the section on Tactical Dispatching, On and Off Net Frequency, On Net Frequency, The Exchange.

9.1.11 Stations Requesting To Be Excused

It is expected that all stations checked into the net will remain on the net monitoring the NCS unless specifically excused.

Excusing From The Net

MED4 MED 4

NCS MED 4

MED4 REQUEST TO BE EXCUSED

NCS W4XX [THANKS 73] YOU ARE EXCUSED

MED4 [MED 4] W4XX (although optional, the use of the tactical call sign when signing out associates that call sign with the amateur licensee for monitoring purposes. If stations use their full call signs at the conclusion of net transactions the ID rules can be met throughout the net. The tactical call sign use then is little different than the use of suffixes in directed traffic nets.

Temporary Excusing

MED4 MED 4

NCS MED 4

MED4 MED 4 REQUEST TO LEAVE THE NET FOR (...) MINUTES OVER

NCS MED 4 YOU ARE EXCUSED

MED4 [MED 4] W4XX

W4XX would return with “NO TRAFFIC,” or sometimes simply “W4XX MED 4 BACK” to check back in implying no traffic, or would add “WITH TRAFFIC” if returning with additional business for the net.

9.1.12 NCS Excusing Stations

In public service events it is typical that the event officials will be consulted prior to excusing stations covering sites or tasks for the event. Other station serving at home or for strictly amateur radio purposes may be excused by the amateur incident commander. See the next section.

When net business is concluded the NCS will call the stations remaining in the net and excuse them individually. In service situations typical of these events, it is better to be sure each station is checked out at the proper time than to assume that all operators will hear the net close.

Excusing Stations Individually

NCS MED 3 THANK YOU 73 YOU ARE EXCUSED

MED3 [MED 3] 73 W3XX (although optional, the use of the tactical call sign when signing out associates that call sign with the amateur licensee for monitoring purposes. If stations use their full call signs at the conclusion of net transactions the ID rules can be met throughout the net. The tactical call sign use then is little different than the use of suffixes in directed traffic nets.

9.2 Authority For Closing Stations

Stations participating in the event should secure permission from the event officials before closing operations. This is normally done, or coordinated, by the net control station, and each station in the net is excused as the officials approve.

9.3 Identification Procedures

The FCC rules for station identification are as follows (in applicable part as amended):

(From FCC 89-180, The Amateur Radio Service.)

97.119 Station Identification.

(a) Each amateur station, except a space station or telecommand station, must transmit its assigned call sign on its transmitting channel at the end of each communication, and at least every 10 minutes during a communication, for the purpose of clearly making the source of the transmissions from the station known to those receiving the transmissions. No station may transmit unidentified communications or signals, or transmit as the station call sign, any call sign not authorized to the station.

Note that a “communication” in the rule means an exchange, or series of exchanges, between stations, and not each single transmission. When stations address the NCS with their tactical call sign, or the NCS calls stations with tactical call signs, these administrative exchanges set up a transaction between two stations. Stations ID with their full call signs at the end of those transactions on net or off frequency. (There is no need to use tactical calls off net.) This applies to words between stations, passing of formal traffic, etc. The syntax shown here is typical of that used on the “directed” traffic net specifically to provide for this ID arrangement.

Stations use their full call sign when first checking into the net. Tactical call signs may be used thereafter for asking permission to transmit, or by the NCS to address stations.

The tactical call signs in the examples are usually used for clarity and to help the net control keep an accurate record of requests and stations based on function.

A roll call at intervals for ID purposes is not required if ID is done as shown.

The net control should identify within the 10 minute limits, and should state the purpose of the net, pausing for additional check-ins as often as possible.

Avoid over-identification which wastes net time. You do not have to periodically identify if you are in a net and make no transmissions. Identify with full call sign when you check in, when you exchange traffic or words during the net or off frequency, and when you check out.

It is customary that the tactical call sign and the station’s call sign both be given in the transaction ending ID on the net to associate the two clearly. Example:

NCS MED 1 CALL MED 2 (dispatching pending business)

MED1 MED 2 MED 1

MED2 MED 2

MED1 NEED MORE WATER AT THIS MED STATION
PLEASE HAVE THE TRUCK STOP HERE NEXT

MED2 [MED 2] ROGER W2XX

MED1 THANKS [MED 1] W1XX

Obviously the dispatch set up the identification using the tactical calls, therefore it is not mandatory to use both calls to meet the legal ID requirement. The amateur call sign should be last in the sequence if both are used..

9.4 Repeater Delays

Remember that there may be a delay in repeater transmitter response time. Operate your push-to-talk switch and then PAUSE a second or two to allow the repeater to activate before talking. Failure to do so will cause the first part of your transmission to be cut off.

The use of “this is... (pause with PTT release)... (call sign)...” by net stations may be used to avoid “doubling” with other stations, again keeping the delay in mind for both parts.

9.5 Transmission Speed, Voicing Rules

When sending a message or listing traffic, remember that the station on the other end trying to write it down is probably not a shorthand expert. Send slowly and clearly...it takes less time to do it right the first time than having to repeat. Experienced traffic handlers say a portion of text, pause while spelling it to themselves, and then continue as they visualize the receiving station has finished writing.

Public safety dispatchers infrequently use phonetics or spelling for much of the traffic passed, but they do use phonetics or spelling for critical groups such as letters in tag numbers. For street names, etc., remember that even though they may have a computer aided dispatching computer system backing them up to catch errors, amateurs should strive to get incident addresses passed accurately.

Use the voicing rules presented in chapter 2 to optimize the accuracy of groups or names you must have copied correctly. Letter spelling may be used for critical words. Phonetics are not that often required on FM voice operations, but their use for abbreviations, initials, mixed groups, and proper names, etc., will prevent common mistakes. Use the appropriate introductory words for initials, figures, mixed groups, amateur calls, etc. In other words, using the proven techniques of traffic handling can and will help maintain the accuracy needed and avoid the errors of speech perception.

No matter how urgent the message, or how excited the operator might be, if the receiving station has to write down the request, it will get written only as fast as he can write it. If he is rushed, he may get it wrong, or not be able to read it a few minutes later. Contrary to the emotions of the moment, the fact is that the more urgent the message, the more slowly and carefully the message should be sent.

Someone's Life May Depend On Your Accuracy In Communicating.

9.6 Written Traffic Vs. Verbal Traffic

This is a controversial subject. There are those who insist that written traffic has no place in tactical event net operations—that verbal communicating is perfectly satisfactory in all cases, and that written messages are for those “traffic handlers” among us. There are others who argue that ALL third party traffic must be written out.

Perhaps the best approach is to accept that a mix of the two is probably wise. These events can present situations where all forms of communicating are appropriate at different times. An important part of deciding which to use might consider the number of hands your message must pass through to get to the delivery point, and how busy the addressee's are likely to be.

In many cases the message should be written out for the official's benefit, and in other cases for the benefit of the handling amateurs. In the later case, for example, a complex message for an event coordinator might best be written out and passed to the shadow operator formally for verbal delivery when the official has a moment to listen. The opposite might be true for a message to a public safety official.

Giving the Police or Fire officials written incident forms will be well received. Many of these can be written out from verbal transmission, but some may be more complex. In such cases, the skills of the “traffic handler” are prerequisite for getting a complex message passed and delivered accurately.

Permitting officials to talk over your radio is the opposite extreme, and can be very helpful.

Using verbal communications to direct logistics for participating amateurs is the norm. ARRL formatted messages in these events is a rare exception to the norm.

Incident Report Forms may be created for the presentation of any written messages to officials when necessary. Such traffic may be voiced in the same fashion as the standard format less the preamble and so forth, but some form of addressee and signing authority is typical. The words “TO” and “FROM” may be used to introduce such parts. The “BREAK” may be

used to introduce and end the text as is customary. A date/time group after the signature may be used to “time stamp” the message if desired.

Generally speaking, verbal communications often suffice when the officials are listening to our radios, or are standing next to our operators. When they are busy or distracted, common sense dictates when a written note would be the right way to pass information to them. The transmission on the air could be either verbal or written traffic.

It is generally accepted that amateurs supporting such events are not, simply by participating, responsible for running or supervising the event itself. Certainly amateurs should not engage in yelling at each other demanding that event matters be resolved. The officials should interact among themselves to resolve event issues, using us as communicators to gather information and issue commands. We should coach them in the methods of creating clear messages and requests, and should make them aware of the limits of our service, the lack of radio privacy, and appropriate message content. Often we must translate the hurried request ourselves into a verbal or formal message that makes sense. The station interfacing with the official should be careful doing any such translating.

“We communicate. We do not administrate.” At least we avoid the later unless we wish to take full responsibility and accept liability for our decisions and communications.

What you do off the air is your business, but you still represent the amateur community. What you do on the air is subject to regulation and exposed to wide listening.

Amateur Radio generally is present to help assure the safe conduct of these events. We serve the participating public.

9.7 Planning, Preparation, And Execution Checklist

Proper planning and preparation for these type events can not be overemphasized. The following checklist may contain a few items that could be helpful:

1. Meet with the event and public safety officials well in advance of the event. Help them to understand what amateur radio can do for them, what it is not permitted to do, and how to structure their plans to allow for the effective use of your resources. These officials will probably have to make extensive plans for their own people, and you want to have your part in the operations well known in those plans.
2. Investigate the liability questions for amateurs exposed to risk in the event. Consider the liabilities that might extend to the operators and the event organizers resulting from communications problems.
3. Document the course, positions and responsibilities of officials, public safety provisions, and strategies required to perform the event. Document exactly to whom each type emergency or regular message is to be sent, and where those parties will be at all times, fixed or roving. Stay in close touch with the planners until event time. Adapt to last minute changes.

4. Use the official plans and course information to create a manning and radio operations plan.
5. Plan for sustaining communications with officials who are able to answer questions arising during the event.
6. Review the radio environment. Drive the course (for a day event, drive daytime in the higher solar noise; for a week-day event, drive a weekday in the higher commercial noise environment). Check the availability of your favorite hill-top to facilitate communications on the weekday or weekend as appropriate. Check if rain or snow might be a path problem. Check coverage for the type radios you will specify to be used during the event. Check out the intermod. Check out local desensing caused by close stations. Two 2 meter stations can not usually operate at full capability closer than a few hundred feet or more depending on power levels. Some HT's are notoriously bad in this regard. Evaluate what equipment and antennas to specify for the operators. You may discover problems you never thought possible. The day of the event is no time for surprises.
7. Plan for backing up the primary radio coverage and net control. Assign an alternate net control. Look at direct simplex paths between all stations, if possible, to cover for loss of repeaters, NCS, or home stations. Consider using home stations for relay or phone calls, alternate repeaters (with permission), and other bands for backup. Check out your choices and make sure they work.
8. Solicit your required manpower. Be sure to allow plenty of time so that fellow amateurs may adjust or reserve their time for the event. Line up extra manpower to cover for last minute cancellations and no-shows. Plan for any required training. Help newcomers learn and gain confidence in what they will do during the event (or team them up with veteran operators).
9. Document and distribute the operation plan. Include maps and other aids to present the entire event situation as best you can. It is better to share all the info than to limit info to specific jobs. Include info on what, where, when, how... and how long. List needed equipment, antennas, personal supplies, clothing, food, fixed-portable-mobile-power requirements, etc., that exist for each operator or job. Specify the name, location, and time for meeting with officials for each assignment. Arrange for parking as required.
10. Meet with the officials and review your final plans with them before the event. Things have a way of changing without you learning about them. This is the time to make final adjustments. The officials will be encouraged to know that your part of the event is ready to go.
11. Arrange for media coverage and publicity if appropriate. Invite your ARES, RACES and NTS operators to participate, of course.
12. Arrange for the repeater(s) control operator(s) to be available to respond to equipment or other problems during the event.
13. Practice with your operators, as required, to prepare for the event. Help them check out their equipment to be certain it will do the job.
14. Run the event. Have experienced stations monitor and possibly record the operation for later review. Keep good NCS records and log emergency traffic.
15. When the event is over, review the event with fellow participants. Get their assessment of the amateur radio and the official's performance.
16. Review the event with the served officials. Document improvements to be included in future events.
17. Share the experience information with other groups, ARES leadership, and prospective "customers." Report the activity to the SEC and SM for the monthly review of Section public service.
18. Follow up on media and other coverage of the amateur effort. Stories about amateur radio activity usually require consultant support.

Area/Region Net Schedules, July 2002

Eastern Area

ARN Atlantic Region Net / IATN (International Assistance and Traffic Net)						
	Winter	14.303	Dy	1130Z	6:30 AM	EST
	Summer	14.303	Dy	1100Z	7:00 AM	EDT
	As needed	14.303				
	Net Name	Frequencies		Local Day	Local Time	
EAN	Eastern Area Net	7.050		S-Sn	2:30 PM	ET
EAN	Eastern Area Net	3.670	7.050	Dy	5:30 PM	ET
EAN	Eastern Area Net	3.670	1.810	Dy	8:30 PM	ET
EAN	Eastern Area Net	7.243		MTWThF	2:30 PM	ET
—						
1RN	First Region Net	7.233	3.948	Dy	1:45 PM	ET
1RN	First Region Net	7.233	3.948	Dy	3:30 PM	ET
1RN	First Region Net	3.602		Dy	6:30 PM	ET
1RN	First Region Net	3.602		Dy	7:45 PM	ET
1RN	First Region Net	3.602		Dy	9:30 PM	ET
—						
2RN	Second Region Net	7.237	3.930	Dy	1:45 PM	ET
2RN	Second Region Net	3.925		Dy	4:45 PM	ET
2RN	Second Region Net	3.925	1.930	Dy	6:30 PM	ET
2RN	Second Region Net	3.690	1.812	Dy	7:45 PM	ET
2RN	Second Region Net	3.690	1.812	Dy	9:30 PM	ET
—						
3RN	Third Region Net	7.243	3.913	Dy	4:00 PM	ET
3RN	Third Region Net	3.590		Dy	7:45 PM	ET
3RN	Third Region Net	3.590		Dy	9:30 PM	ET
—						
4RN	Fourth Region Net	7.243		Dy	1:45 PM	ET
4RN	Fourth Region Net	7.243		Dy	3:30 PM	ET
4RN	Fourth Region Net	3.567		Dy	7:45 PM	ET
4RN	Fourth Region Net	3.567		Dy	9:30 PM	ET
—						
8RN	Eighth Region Net	7.240	3.955	Dy	12:30 PM	ET
8RN	Eighth Region Net	3.955	7.240	Dy	4:30 PM	ET
8RN	Eighth Region Net	3.530	7.040	Dy	7:45 PM	ET
8RN	Eighth Region Net	3.530	7.040	Dy	9:30 PM	ET
—						
ECN	Eastern Canada Net	3.655		Dy	7:45 PM	ET
ECN	Eastern Canada Net	3.655		Dy	9:30 PM	ET

Central Area

	Net Name	Frequencies		Local Day	Local Time	
CAN	Central Area Net	14.345		Dy	2:30 PM	CT
CAN	Central Area Net	3.670	7.052	Dy	8:30 PM	CT
—						
RN5	Fifth Region Net	7.280		MTWThFS	10:30 AM	CT
RN5	Fifth Region Net	7.280		Sunday	1:30 PM	CT
RN5	Fifth Region Net	7.280		Dy	3:30 PM	CT
RN5	Fifth Region Net	3.650	7.045	Dy	7:30 PM	CT
RN5	Fifth Region Net	3.650	7.045	Dy	9:30 PM	CT
—						
9RN	Ninth Region Net	7.283		Dy	12:30 PM	CT
9RN	Ninth Region Net	7.282		Dy	4:00 PM	CT
9RN	Ninth Region Net	3.640		Dy	7:45 PM	CT
9RN	Ninth Region Net	3.640		Dy	9:30 PM	CT
—						
TEN	Tenth Region Net	7.2775		Dy	1:45 PM	CT
TEN	Tenth Region Net	7.2775		Dy	3:45 PM	CT
TEN	Tenth Region Net	3.590		Dy	7:45 PM	CT
TEN	Tenth Region Net	3.590		Dy	9:30 PM	CT

Pacific Area

	Net Name	Frequencies		Local Day	Local Time	
PAN	Pacific Area Net	14.345		Dy	2:30 PM	PT
PAN	Pacific Area Net	3.652		Winter Dy	8:30 PM	PT
PAN	Pacific Area Net	7.052		Summer Dy	8:30 PM	PT
—						
6RN	Sixth Region Net	7.275	3.916	Dy	3:30 PM	PT

6RN	Sixth Region Net	3.655		Dy	7:45 PM	PT
6RN	Sixth Region Net	3.655		Dy	9:30 PM	PT
—						
RN7	Seventh Region Net	7.238		Dy	9:45 AM	PT
RN7	Seventh Region Net	7.238		Dy	3:15 PM	PT
RN7	Seventh Region Net	7.042	3.560	Dy	7:30 PM	PT
RN7	Seventh Region Net	3.560	7.048	Dy	9:30 PM	PT
—						
TWN	Twelfth Region Net	3.923	7.233	Dy	7:00 AM	MT
TWN	Twelfth Region Net	3.923	7.233	Dy	4:15 PM	MT
TWN	Twelfth Region Net	3.570	7.063	Dy	8:30 PM	MT
TWN	Twelfth Region Net	3.570		Dy	10:00 PM	MT

NTS Routing Table By State

Note: Regions are not the same as call sign prefix numbers in all cases.

STATE	CL	ST	RN	AREA	DIVISION	SECTIONS
APO/FPO AE NY			2	EAN	HUDSON	
APO/FPO AA			4	EAN	SOUTHEASTERN	
APO/FPO AP SF			6	PAN	PACIFIC	
-						
ALABAMA	4	AL	5	CAN	SOUTHEASTERN	AL
ALASKA	7	AK	7	PAN	NORTHWESTERN	AK
ALBERTA	VE6	AB	7	PAN	CANADA	AB
ARIZONA	7	AZ	12	PAN	SOUTHWESTERN	AZ
ARKANSAS	5	AR	5	CAN	DELTA	AR
-						
BRITISH COLUMBIA	VE7	BC	7	PAN	CANADA	BC
-						
CALIFORNIA	6	CA	6	PAN	SOUTHWESTERN	LAX ORG SB SDG
CALIFORNIA	6	CA	6	PAN	PACIFIC	EB SCV SJV SF SV
COLORADO	0	CO	12	PAN	ROCKY MOUNTAIN	CO
CONNECTICUT	1	CT	1	EAN	NEW ENGLAND	CT
-						
DELAWARE	3	DE	3	EAN	ATLANTIC	DE
DISTRICT OF COL.	3	DC	3	EAN	ATLANTIC	MDC
-						
FLORIDA	4	FL	4	EAN	SOUTHEASTERN	NFL SFL WCF
GEORGIA	4	GA	4	EAN	SOUTHEASTERN	GA
GUAM	2	GU	6	PAN	PACIFIC	GU (PAC)
-						
HAWAII	6	HI	6	PAN	PACIFIC	HI (PAC)
-						
IDAHO	7	ID	7	PAN	NORTHWESTERN	ID
ILLINOIS	9	IL	9	CAN	CENTRAL	IL
INDIANA	9	IN	9	CAN	CENTRAL	IN
IOWA	0	IA	10	CAN	MIDWEST	IA
-						
KANSAS	0	KS	10	CAN	MIDWEST	KS
KENTUCKY	4	KY	9	CAN	GREAT LAKES	KY
-						
LABRADOR	VO2	LB	11	EAN	CANADA	MAR
LOUISIANA	5	LA	5	CAN	DELTA	LA
-						
MAINE	1	ME	1	EAN	NEW ENGLAND	ME
MANITOBA	VE4	MB	10	CAN	CANADA	MB
MARYLAND	3	MD	3	EAN	ATLANTIC	MDC
MASSACHUSETTS	1	MA	1	EAN	NEW ENGLAND	EMA WMA
MICHIGAN	8	MI	8	EAN	GREAT LAKES	MI
MINNESOTA	0	MN	10	CAN	DAKOTA	MN
MISSISSIPPI	5	MS	5	CAN	DELTA	MS
MISSOURI	0	MO	10	CAN	MIDWEST	MO
MONTANA	7	MT	7	PAN	NORTHWESTERN	MT
NEBRASKA	0	NE	10	CAN	MIDWEST	NE
NEVADA	7	NV	6	PAN	PACIFIC	NV
NEW BRUNSWICK	VE1	NB	11	EAN	CANADA	MAR
NEW HAMPSHIRE	1	NH	1	EAN	NEW ENGLAND	NH
NEW JERSEY	2	NJ	2	EAN	ATLANTIC	SNJ
NEW JERSEY	2	NJ	2	EAN	HUDSON	NNJ
NEW MEXICO	5	NM	12	PAN	ROCKY MOUNTAIN	NM
NEW YORK	2	NY	2	EAN	ATLANTIC	NNY WNY

NEW YORK	2	NY	2	EAN	HUDSON	ENY NYCLI (NLI)
NEWFOUNDLAND	VO1	NF	11	EAN	CANADA	MAR
NORTH CAROLINA	4	NC	4	EAN	ROANOKE	NC
NORTH DAKOTA	0	ND	10	CAN	DAKOTA	ND
NORTH WEST TERR.	VE8	NWT	10	CAN	CANADA	NWT (EAST)
NORTH WEST TERR.	VE8	NWT	7	PAN	CANADA	NWT W & YUKON VY1
NOVA SCOTIA	VE1	NS	11	EAN	CANADA	MAR
-						
OHIO	8	OH	8	EAN	GREAT LAKES	OH
OKLAHOMA	5	OK	5	CAN	WEST GULF	OK
ONTARIO	VE3	ON	11	EAN	CANADA	ONT
OREGON	7	OR	7	PAN	NORTHWESTERN	OR
-						
PENNSYLVANIA	3	PA	3	EAN	ATLANTIC	EPA WPA
PRINCE EDWARD ISL	VE1	PE	11	EAN	CANADA	MAR (VE1, VY2)
PUERTO RICO	4	PR	4	EAN	SOUTHEASTERN	PR
-						
QUEBEC	VE2	PQ	11	EAN	CANADA	PQ
-						
RHODE ISLAND	1	RI	1	EAN	NEW ENGLAND	RI
-						
SASKATCHEWAN	VE5	SK	10	CAN	CANADA	SK
SOUTH CAROLINA	4	SC	4	EAN	ROANOKE	SC
SOUTH DAKOTA	0	SD	10	CAN	DAKOTA	SD
-						
TENNESSEE	4	TN	5	CAN	DELTA	TN
TEXAS	5	TX	5	CAN	WEST GULF	NTX STX WTX
-						
UTAH	7	UT	12	PAN	ROCKY MOUNTAIN	UT
-						
VERMONT	1	VT	1	EAN	NEW ENGLAND	VT
VIRGINIA	4	VA	4	EAN	ROANOKE	VA
VIRGIN ISLANDS	2	VI	4	EAN	SOUTHEASTERN	VI
-						
WASHINGTON	7	WA	7	PAN	NORTHWESTERN	EWA WWA
WEST VIRGINIA	8	WV	8	EAN	ROANOKE	WV
WISCONSIN	9	WI	9	CAN	CENTRAL	WI
WYOMING	7	WY	12	PAN	ROCKY MOUNTAIN	WY
-						

NTS Routing Table By Area/Region - Ean

Note: Regions are not the same as call sign prefix numbers in all cases.

STATE	CL	ST	RN	AREA	DIVISION	SECTIONS
CONNECTICUT	1	CT	1	EAN	NEW ENGLAND	CT
MAINE	1	ME	1	EAN	NEW ENGLAND	ME
MASSACHUSETTS	1	MA	1	EAN	NEW ENGLAND	EMA WMA
NEW HAMPSHIRE	1	NH	1	EAN	NEW ENGLAND	NH
RHODE ISLAND	1	RI	1	EAN	NEW ENGLAND	RI
VERMONT	1	VT	1	EAN	NEW ENGLAND	VT
-						
APO/FPO AE NY	2			EAN	HUDSON	
NEW JERSEY	2	NJ	2	EAN	ATLANTIC	SNJ
NEW JERSEY	2	NJ	2	EAN	HUDSON	NNJ
NEW YORK	2	NY	2	EAN	ATLANTIC	NNY WNY
NEW YORK	2	NY	2	EAN	HUDSON	ENY NYCLI (NLI)
-						
DELAWARE	3	DE	3	EAN	ATLANTIC	DE
DISTRICT OF COL.	3	DC	3	EAN	ATLANTIC	MDC
MARYLAND	3	MD	3	EAN	ATLANTIC	MDC
PENNSYLVANIA	3	PA	3	EAN	ATLANTIC	EPA WPA
-						
APO/FPO AA			4	EAN	SOUTHEASTERN	
FLORIDA	4	FL	4	EAN	SOUTHEASTERN	NFL SFL WCF
GEORGIA	4	GA	4	EAN	SOUTHEASTERN	GA
NORTH CAROLINA	4	NC	4	EAN	ROANOKE	NC
PUERTO RICO	4	PR	4	EAN	SOUTHEASTERN	PR
SOUTH CAROLINA	4	SC	4	EAN	ROANOKE	SC
VIRGIN ISLANDS	2	VI	4	EAN	SOUTHEASTERN	VI
VIRGINIA	4	VA	4	EAN	ROANOKE	VA
-						

MICHIGAN	8	MI	8	EAN	GREAT LAKES	MI
OHIO	8	OH	8	EAN	GREAT LAKES	OH
WEST VIRGINIA	8	WV	8	EAN	ROANOKE	WV
-						
LABRADOR	VO2	LB	11	EAN	CANADA	MAR
NEW BRUNSWICK	VE1	NB	11	EAN	CANADA	MAR
NEWFOUNDLAND	VO1	NF	11	EAN	CANADA	MAR
NOVA SCOTIA	VE1	NS	11	EAN	CANADA	MAR
ONTARIO	VE3	ON	11	EAN	CANADA	ONT
PRINCE EDWARD ISL	VE1	PE	11	EAN	CANADA	MAR (VE1, VY2)
QUEBEC	VE2	PQ	11	EAN	CANADA	PQ
-						

NTS Routing Table By Area/Region – Can

Note: Regions are not the same as call sign prefix numbers in all cases.

STATE	CL	ST	RN	AREA	DIVISION	SECTIONS
ALABAMA	4	AL	5	CAN	SOUTHEASTERN	AL
ARKANSAS	5	AR	5	CAN	DELTA	AR
LOUISIANA	5	LA	5	CAN	DELTA	LA
MISSISSIPPI	5	MS	5	CAN	DELTA	MS
OKLAHOMA	5	OK	5	CAN	WEST GULF	OK
TENNESSEE	4	TN	5	CAN	DELTA	TN
TEXAS	5	TX	5	CAN	WEST GULF	NTX STX WTX
-						
ILLINOIS	9	IL	9	CAN	CENTRAL	IL
INDIANA	9	IN	9	CAN	CENTRAL	IN
KENTUCKY	4	KY	9	CAN	GREAT LAKES	KY
WISCONSIN	9	WI	9	CAN	CENTRAL	WI
-						
IOWA	0	IA	10	CAN	MIDWEST	IA
KANSAS	0	KS	10	CAN	MIDWEST	KS
MANITOBA	VE4	MB	10	CAN	CANADA	MB
MINNESOTA	0	MN	10	CAN	DAKOTA	MN
MISSOURI	0	MO	10	CAN	MIDWEST	MO
NEBRASKA	0	NE	10	CAN	MIDWEST	NE
NORTH DAKOTA	0	ND	10	CAN	DAKOTA	ND
NORTH WEST TERR.	VE8	NWT	10	CAN	CANADA	NWT (EAST)
SASKATCHEWAN	VE5	SK	10	CAN	CANADA	SK
SOUTH DAKOTA	0	SD	10	CAN	DAKOTA	SD
-						

NTS Routing Table By Area/Region – Pan

Note: Regions are not the same as call sign prefix numbers in all cases.

STATE	CL	ST	RN	AREA	DIVISION	SECTIONS
APO/FPO AP SF			6	PAN	PACIFIC	
CALIFORNIA	6	CA	6	PAN	PACIFIC	EB SCV SJV SF SV
CALIFORNIA	6	CA	6	PAN	SOUTHWESTERN	LAX ORG SB SDG
GUAM	2	GU	6	PAN	PACIFIC	GU (PAC)
HAWAII	6	HI	6	PAN	PACIFIC	HI (PAC)
NEVADA	7	NV	6	PAN	PACIFIC	NV
-						
ALASKA	7	AK	7	PAN	NORTHWESTERN	AK
ALBERTA	VE6	AB	7	PAN	CANADA	AB
BRITISH COLUMBIA	VE7	BC	7	PAN	CANADA	BC
IDAHO	7	ID	7	PAN	NORTHWESTERN	ID
MONTANA	7	MT	7	PAN	NORTHWESTERN	MT
NORTH WEST TERR.	VE8	NWT	7	PAN	CANADA	NWT W & YUKON VY1
OREGON	7	OR	7	PAN	NORTHWESTERN	OR
WASHINGTON	7	WA	7	PAN	NORTHWESTERN	EWA WWA
-						
ARIZONA	7	AZ	12	PAN	SOUTHWESTERN	AZ
COLORADO	0	CO	12	PAN	ROCKY MOUNTAIN	CO
NEW MEXICO	5	NM	12	PAN	ROCKY MOUNTAIN	NM
UTAH	7	UT	12	PAN	ROCKY MOUNTAIN	UT
WYOMING	7	WY	12	PAN	ROCKY MOUNTAIN	WY