Introduction to the National Traffic System

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Revision 1.4

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1 Introduction

1.1 Overview

Knowing how to 'Relay' messages is something ALL hams should understand. This function has demonstrated its value in many modern emergencies including the Mexico City earthquake (any), Gurneyville floods, Yosemite fires, and the Whittier earthquake.

The purpose of this guide is to introduce the National Traffic System (NTS) to prospective NTS Traffic Handlers and how it works on Amateur Radio Packet.

NOTE: This guide assumes the reader has some rudimentary knowledge of AX.25 Packet Radio and does not introduce that topic here. While some references to Packet Radio commands and behaviors are given, the reader is strongly encouraged to develop a basic understanding of Packet Radio prior to participating in NTS packet operations.

1.2 Intended Audience

This guide is for use by Amateur Radio Operators interested in relaying messages or members of ARES/RACES organizations who need to understand the concepts of relaying messages in support of local their served agencies.

This guide is also used by emergency preparedness personnel in served agencies and other organizations to understand the message handling capability of amateur radio, and how it could be used in support of a total emergency response.

1.3 References

This guide is not inclusive and should be used in conjunction with other documents, several of which were sources for this guide. These references include:

- Public Service Communications Manual, ARRL, no date

- FSD-3 Message Handling, ARRL, no date

- FSD-218 Message Handling, ARRL, no date

- FSD-220 Communications Procedures, ARRL, no date

- Radiogram Blank Form, ARRL, no date

1.4 Revision History

1996 Original, Karl KK1A@K7WWA.CA, NTS:NCN-Packet ZIP Coordinator

June 1999 Rev 1.1, Jim KN6PE@N6LDL.CA, EC City of Cupertino

September 1999 Rev 1.2, Jim KN6PE@N6LDL.CA, EC City of Cupertino

November 2002 Rev 1.3, Jim KN6PE@N6LDL.CA, EC City of Cupertino

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2 Background to NTS

2.1 History of NTS

Since the dawn of radio, the handling of messages accurately and speedily has been held in highest esteem. In the early days, the range of the average spark gap station varied from 5 to 10 miles. As better antenna systems, receivers, and higher power rotary spark-gap transmitters evolved, distances of 400 miles and more could be achieved by stations operating on 200 meters and down as early as 1914.

Obviously, longer distance communications could not be achieved reliably without relays. The American Radio Relay League was founded by Hiram Percy Maxim primarily as a long distance radio relay system. By the end of 1915, over 600 stations in almost every state and province had been appointed as *Official Relay Stations* whose operating standards were kept very high. The technical capability had been present for a long time before; but it is most definitely the organizational structure created by the ARRL that quickly increased the distance that a message could travel from 50 Miles in 1914 to reliable transcontinental messages by 1917.

At the same time, the commercial communications systems were fragile and often made unusable during disasters. Even at this early stage, Amateurs proved their worth to those communities that found themselves helpless without emergency communications.

During the early days, communications were strictly by Morse Code and suffered under the worst combinations of noise, poor receiver selectivity, and transmitter frequency instability. Dedicated and skilled operators handled a message with almost a feeling of sacred trust. A message from coast to coast often had to be painstakingly relayed 8 or more times. To "botch" or delay such a message was not looked at very kindly by "The Brethren." An operator was judged not so much for the amount of messages that he/she could handle nor the "sweetness" of his/her fist as much as how accurate and reliable of a relay the operator proved to be. It was a high priority to have an efficient continental system established not only for amateur radio communications but also for public service and disaster communications.

For accuracy and efficiency, a specific format eventually was determined that proved to be most effective. The standard NTS format in its present form is almost identical with that which also evolved in a parallel manner in the military and commercial message services; which, by the way, were for the most part staffed by hams as well.

The present day National Traffic System (NTS) evolved out of this eighty-year history of public service and disaster communications tradition. The NTS is still sponsored by the American Radio Relay League. It features an orderly method of reliably moving messages across the continent on a daily basis as a public service through a system of voice and CW nets, and now also Packet Radio BBS forwarding systems. Packet radio forwarding, although made possible only as recently as 1984, appears as a natural choice to continue this fine tradition, as it is proving accurate, fast, and more and more reliable.

2.2 The NTS Structure

To ensure reliability, the NTS structure is based on a hierarchy of local, section, regional, and area nets. The Section Traffic Manager (STM) or the Section Manager (SM) appoints the section and/or local net managers. The Area Staff appoint the Region and Area net managers.

A message originated at the local or section level is taken to the region net by an assigned liaison station appointed by the section net manager. Likewise, a liaison station, appointed by the region net manager, takes traffic to the area net.

There are three Area nets in North America; Pacific, Central, and Eastern. Traffic is transferred from Area to Area by members of the Trans-Continental Corps (TCC) appointed by the TCC Director. Traffic then flows down from Area net, to region nets and then to section and sometimes local nets where it is delivered. Thus traffic is both originated and delivered at the section and/or local net level. The rest of the NTS is simply a relay system.

Packet radio networks form a natural media to help facilitate the accurate and speedy handling of such messages. Because messages are still delivered in NTS section and local nets, the existing NTS format is important to maintain for reasons of interface. There are literally hundreds of section and local nets meeting daily across the continent on both voice and CW that deliver third party traffic as a public service and as a training for disaster communications.

2.3 Introducing Packet BBS Message Forwarding

In 1984, Hank Oredson W0RLI made a free software program, known as a Bulletin Board System (BBS), available to the amateur community that ran on the inexpensive Xerox 820 computer. Similar to the telephone dial-up BBS that existed before the Internet, Amateurs accessed the BBS by radio. The BBS was a place where Hams could post messages on any topic or send messages to each other through the use of mailboxes.

Soon afterwards, Hank added an automatic forwarding system whereby one mailbox on one BBS could automatically forward to any other mailbox on another BBS at any time that would be convenient. This allowed for automatic relays of bulletins, personal messages, and NTS messages. This system became implemented on a widespread basis nationwide by 1985 through a system of VHF/HF gateway mailbox systems.

Messages were entered at a VHF (usually 2 meters) BBS that were then forwarded automatically to an HF gateway BBS for the long distance relay. Traffic for closer destinations was relayed on 2 meters and later through VHF and UHF "backbone" systems. These relay systems are constantly being improved and longer distances are now being covered through coast to coast satellite links, more efficient network nodes, higher speed backbones, and a better organized national HF packet system.

At the section level, STMs and Net Managers are appointing Packet Net managers to interface between the section net and the linked packet BBS system. Liaison stations are assigned to pick up the traffic at various BBSs to be taken to the section net if they grow "Old". Likewise outgoing traffic from the section net is often brought to a linked packet BBS for relay by packet. The packet system is especially valuable for missed HF net schedules, overload traffic, high volume disaster welfare traffic, fair traffic, and relay to regions during unfavorable propagation.

3   Getting started with NTS

Handling NTS messages by packet consists of the following steps: See the associated sections of this document for more details on performing the associated step.

1.   Select the packet frequency of the BBS where NTS messages are delivered

2.   Connect to that BBS

To Send NTS Messages

Action	See Section
Collect all data needed for originating the NTS message	
At the Packet BBS, enter "ST" (Send Traffic) along with the correct NTS Address	5.2
At the Subject Prompt, enter the message subject in NTS format	5.4

Enter the NTS Message including the
        Preamble
        Address
        Message Text
        Signature
	
	4.1
	4.2
	4.3
	4.4

Enter the BBS Command "/EX" to save and send the message	

To Deliver NTS Messages

Action	See Section
At the Packet BBS, enter "LT" (List Traffic)	7.1
Deliver a Message by Phone	7.3
Mailing and hand-delivering messages	7.4
Delete all delivered messages with the BBS "K" (Kill message) command	7.6

To Service NTS Messages

Action	See Section
Service the message back to the originator if it is undeliverable	8
Delete all serviced messages with the BBS "K" (Kill message) command	8.3

3.   When done, disconnect from the BBS

4   Formatting an NTS Message

To ensure a consistent way of delivering traffic from one point to another, a standard message format was developed.

This section describes the format of an NTS message. Regardless of mode of transmission (CW, voice, packet, etc.), every NTS Message originated and handled contains the following parts. Refer to the sample message in *Section 4.5.*

4.1   Preamble

The Preamble is the first line in all NTS messages and is made up of several parts and has the general format as follows:

NR <Number> <Handling Instructions> <Station of Origin> ARL <Check>
    <Place of Origin> <Time Filed> <Date>

Refer to the example here of a preamble line as you review the Preamble components.

> Nr 101 W N1ABC 8 Brattleboro VT 1652z Oct 18

1. Number. This is a sequential number beginning with 1 each month or year to be assigned by the originating station. Some operators optionally put the characters "Nr" before the number to make it very clear that this is a Number.

2. Precedence (R, W, P, or EMERGENCY). The Precedence follows the message number, for example, 207R or 207EMERGENCY. The four categories of Precedence are:

    •   EMERGECNY: Any message having life or death urgency to any person or group of persons. This includes official messages to welfare agencies during emergencies requesting supplies, materials, or instructions vital to relief of stricken populace in emergency areas. In Packet messages, EMERGENCY should be spelled out.

    •   PRIORITY: Important messages having a specific time limit. Official messages not covered in the Emergency category are covered here. Use the abbreviation "P" in packet messages.

    •   WELFARE: A message that is either (a) an inquiry as to the health and welfare of an individual in the disaster area or (b) an advisory or reply from the disaster area. Use the abbreviation "W" in packet messages.

    •   ROUTINE: Most traffic normally will bear this designation. During a disaster, Routine traffic should be handled last or not at all when circuits are busy with other traffic. Use the abbreviation "R" in packet messages.

3. Handling Instructions. This is an optional field. Handling instructions (HX) serve to convey any special instructions to handling and delivering operators. When used, this "prosign" is inserted in the message preamble between the precedence and the station of origin. While their use is

optional, once inserted, it is mandatory with all relaying stations. The following definitions apply:

- HXA *number* - Collect landline (phone calls) delivery is authorized by the addressee within *number* miles (if no number, authorization is unlimited).

- HXB *number* - Cancel message if not delivered within *number* hours of filing time; service the originating station.

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

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

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

- HXF *number* - Hold delivery until *number* (date).

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

4. <u>Station of Origin.</u> This is the first amateur station to handle the message. Typically, this would be your callsign if you are transmitting the message.

5. <u>Check</u>. This is the number of words in the "text" (see 4.3 below) of the message. Some operators optionally precede this number with the characters "ARL" making the format for this number to read <u>ARL *check.*</u>

6. <u>Place of Origin</u>. This is the general location where the message originated (not necessarily location of station origin) and is usually <u>city and state</u>, or occasionally an event, such as <u>1963 Worlds Fair, NY</u>.

7. <u>Time Filed</u>. This is an optional field and is represented in Universal Coordinated Time (i.e.: 1230z).

8. <u>Date</u>. Usually is mmm dd format (i.e.: Sep 18) and must correspond with date of time filed.

4.2 Address

This is the address of the person to whom the message is addressed. It should be as complete as possible and include a <u>phone number</u> if known. Adding to the example above, the message now looks like this:

```
Nr 101 W N1ABC 8 Brattleboro VT 1652z Oct 18
To Richard Wilson  K6LRN  SFO SM
POB 4212
San Rafael CA 94930
(415) 555-1234
BT
```

After the address, enter a "BT" (break) on the next line to separate the Address from the Message Text.

Please be sure to show ALL helpful address information. (Space or Apt Nr ...)

NOTE: While it is encouraged that all originating stations give as complete an address as possible, some disaster related NTS traffic as well as everyday NTS

traffic has been delivered with as little information as the first and last name and the city. However, the probability of delivery is proportional to the amount of address information provided.

4.3   Message Text

If possible, the text should be limited to 25 words. Adding to the example above, the message now looks like this:

```
Nr 101 W N1ABC 8 Brattleboro VT 1652z Oct 18
To Richard Wilson  K6LRN  SFO SM
POB 4212
San Rafael CA 94930
(415) 555-1234
BT
STILL IN NEW YORK X
WILL RETURN SOON
BT
```

Some additional rules for writing text are:

1. The number of words in the text are counted and entered into the field "Check" in the Preamble (see above).

2. If a phone number is part of the text, the entire phone number (including Area Code) is counted as one word.

3. Periods (.) are not used to end sentences. To separate a sentence, use an "X" and count it as a word.

4. Use ARRL Numbered Radiograms whenever possible. See *Section 6 ARRL Numbered Radiograms* for more information.

5. After the Message, enter a "BT" (break) on the next line to separate the Message Text from the Signature.

4.4   Signature

This section states the name of the person or persons originating the message. The signature should begin on a new line. The words in the signature are NOT counted in the "Check" field. See example below.

After the Signature, enter a "AR" (END OF MESSAGE) on the next line to indicate the end of the transmission.

4.5   Example #1 – Annotated NTS Message

NTS Message	Comments
Nr 101W N1ABC 8 Brattleboro VT 1652z Oct 18	Standard preamble format
To Richard Wilson K6LRN SFO SM	Addressee
POB 4212	Give the FULL address
San Rafael CA 94930	Include Zip
(415) 555-1234	Include a phone number!
BT	'BT' as a Separator
STILL IN NEW YORK X WILL RETURN SOON	Five words per line makes it easy to verify the check number. Count the 'X' as one word.
BT	
John	Signature
AR	End-of-Message Prosign

Figure 1: Annotated NTS Message

In the <u>Preamble</u> above, note the characters "Nr" preceding the sequential number. This is optional and you may see some traffic like this. This message is marked as a Welfare message (101<u>W</u>) with N1ABC being the first Amateur Radio Operator to handle it. There are eight (8) words in the "text" of the message. Note that the sentence separator "X" counts as one word. The message was originated from Brattleboro VT at 1652z (Universal Coordinated Time) on Oct 18.

The address starts on the next line and includes a phone number.

"BT" (shorthand for BREAK) is used as a Message Separator between the Address and Text, then again between the Text and the Signature.

The prosign "AR" follows the signature and indicates the END of MESSAGE.

5 Sending NTS Traffic by Packet

Sending an NTS Message means to write and address the message, then enter it on the Packet BBS.

5.1 Creating an NTS message

All NTS messages are created using the following basic steps. On a clean ARRL Radiogram form, do the following:

1. Enter the address of the recipient. This includes phone number. Refer to *Section 4.2 Address*.

2. Write the body of the message. If possible, use the ARL Radiogram numbers listed in *Section 6 ARRL Numbered Radiograms*. Follow any rules for creating the text as listed in *Section 4.3 Message* Text.

3. Enter the name of the originator. Refer to *Section 4.4 Signature*.

4. Build the preamble of the message. Refer to *Section 4.1 Preamble*.

The ARRL Radiogram form is an excellent way for capturing this information.

Once the NTS Message is correctly formatted, it is ready for entry into the Packet BBS. Addressing an NTS message is a combination of using the Destination Packet Address and the Message header.

5.2 Destination Packet Address

Make sure you are connected to the BBS.

When sending an NTS message, we use the ST (Send Traffic) command. At the BBS Prompt, enter the following:

```
BBS>  ST  ZZIPP@NTSxx
```

The ZZIPP is the 5-digit ZIP code of the Destination City, and the xx is the 2-letter State or Province code used by the Post Office. Do not insert any spaces when using the Canadian ZIP codes.

Most BBS's will route with the @NTSxx until the message reaches the destination state, and then it is sent to the proper area within that state using the 5-digit ZZIPP code.

The list of valid NTSxx designators is listed here.

Table 1: List of Valid NTS State Designators

NTSAB (Alberta)
NTSAK (Alaska)
NTSAL (Alabama)
NTSAR (Arkansas)
NTSAZ (Arizona)
NTSBC (British Columbia)
NTSCA (California)
NTSCO (Colorado)
NTSCT (Connecticut)
NTSDC (Dist. of Columbia)
NTSDE (Delaware)
NTSFL (Florida)
NTSGA (Georgia)
NTSGU (Guam)
NTSHI (Hawaii)
NTSIA (Iowa)
NTSID (Idaho)
NTSIL (Illinois)
NTSIN (Indiana)
NTSKS (Kansas)
NTSKY (Kentucky)
NTSLA (Louisiana)

NTSLB (Labrador)
NTSMA (Massachusetts)
NTSMB (Manitoba)
NTSMD (Maryland)
NTSME (Maine)
NTSMI (Michigan)
NTSMN (Minnesota)
NTSMO (Missouri)
NTSMS (Mississippi)
NTSMT (Montana)
NTSNB (New Brunswick)
NTSNC (North Carolina)
NTSND (North Dakota)
NTSNE (Nebraska)
NTSNF (New Foundland)
NTSNH (New Hampshire)
NTSNJ (New Jersey)
NTSNM (New Mexico)
NTSNS (Nova Scotia)
NTSNV (Nevada)
NTSNY (New York)
NTSOH (Ohio)

NTSOK (Oklahoma)
NTSON (Ontario)
NTSOR (Oregon)
NTSPA (Pennsylvania)
NTSPE (Prince Edward Isl)
NTSPQ (Province Quebec)
NTSPR (Puerto Rico)
NTSRI (Rhode Island)
NTSSC (South Carolina)
NTSSD (South Dakota)
NTSSK (Saskatchewan)
NTSTN (Tennessee)
NTSTX (Texas)
NTSUT (Utah)
NTSVA (Virginia)
NTSVI (Virgin Islands)
NTSVT (Vermont)
NTSWA (Washington)
NTSWI (Wisconsin)
NTSWV (West Virginia)
NTSWY (Wyoming)
NTSYU (Yukon).

> ***Note:*** APO/FPO San Francisco, Seattle, New York, and Miami should be sent to the respective states of these post offices. <FPO SFO to NTSCA, Etc.>

5.3 Addressing International traffic

Currently, International or DX traffic has only 1 PACKET-ONLY outlet. Send it to:

```
BBS> ST IATN@NTSFL
```

The other method is addressing it to your region NTS net.
(Ex: ST RN6@NTSCA)

5.4 Formatting the 'Subject Line'

After entering the Packet Address, the BBS will prompt for a Subject.

The subject is used to help local operators determine if they want to pick up the message and deliver it based on their location or proximity to the destination.

The format for the Subject Line is as follows.

Subject >   (Prompt from BBS)

QTC <Count> <Precedence> <City> <State Code> <Area Code & Prefix> <Callsign>

1. QTC - required characters, Q-signal abbreviation for "Number of messages following:"

2. Count - If there is only ONE message, leave the <count> off or set to "1". Otherwise, the default = 1.

3. Precedence - If the precedence is R (ROUTINE), you can optionally leave it off. Otherwise, W (welfare), P (priority), or E (EMERGENCY).

4. City - Destination city.

5. State - Destination State. Use the state 2-letter code for the State or province code for Canada (Same as the "xx" in "NTSxx").

6. Area Code & Prefix - List the Area code and Prefix only (such as 408-746). If you DON'T know then phone number, then put in a '?'. Ex: (-?-), (415)?, (207)?, etc. You don't need the whole number listed, the prefix will tell the DELIVERING station if it is a local call for them.

7. CallSign - If the message isn't going to a ham, then leave the <Callsign> off.

All of the above syntax is to allow BBS users to analyze a Packet message listing quickly, take what traffic they can, and then get off the BBS so someone else can either read & kill messages, send traffic, or read bulletins.

The following is an example of addressing the NTS message shown in *Figure 1: Annotated NTS Message*.

```
ST  94930@NTSCA

Subject:  QTC 1 R San Rafael CA (415-555)

Enter the body of the message, then press CNTL-Z or
/EX to send:
```

Note: Please DON'T PACK messages for DIFFERENT CITIES into the same BBS message. This will require MUCH word-processing down-the-line to divide the messages for relay or delivery (watch the SYSOP rip that 100' tower section up again, and foaming at the mouth go raging off in search of careless authors!).

5.5   Example #2 - Address and Message

The following example shows how an NTS message is sent. It assumes you are logged on to the BBS. The BBS prompt is indicated by: BBS>. All user input is indicated as being underlined.

```
BBS>
BBS>  ST 94930@NTSCA
Subject:  QTC 1 W San Rafael CA (415-555)
Enter the body of the message, then press CNTL-Z or
/EX to send:

Nr 101W N1ABC 8 Brattleboro VT 1652z Oct 18
To: Richard Wilson  K6LRN  SFO SM
POB 4212
San Rafael CA 94930
(415) 555-1234
BT
STILL IN NEW YORK X
WILL RETURN SOON
BT
John
AR
/EX

Message #12543 Saved
BBS>
```

Figure 2: Sample BBS dialog with address and message
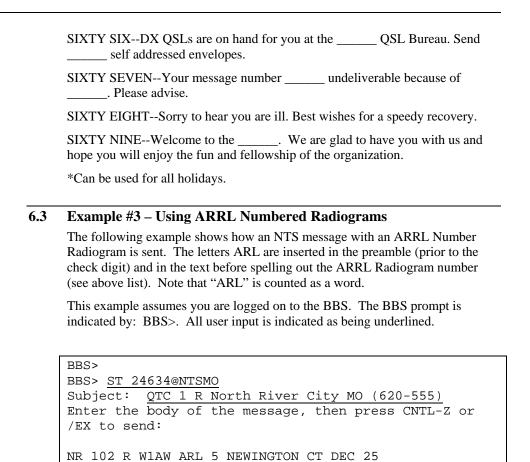
6 ARRL Numbered Radiograms

Standard kinds of messages can result during an emergency as well as during routine traffic handling. To reduce the amount of transmitted message duration without reducing content, the ARRL developed the ARRL Numbering for Radiograms.

The letters ARL are inserted in the text before spelled out numbers. These numbers represent texts from the following list.

6.1 Group One -- "Relief Emergency" Use

ONE--Everyone safe here. Please don't worry.

TWO--Coming home as soon as possible.

THREE--Am in _____ hospital. Receiving excellent care and recovering fine.

FOUR--Only slight property damage here. Do not be concerned about disaster reports.

FIVE--Am moving to new location. Send no further mail or communication. Will inform you of new address when relocated.

SIX--Will contact you as soon as possible.

SEVEN--Please reply by Amateur Radio through the amateur delivering this message. This is a free public service.

EIGHT--Need additional _____ mobile or portable equipment for immediate emergency use.

NINE--Additional _____ radio operators needed to assist with emergency at this location.

TEN--Please contact _____. Advise to standby and provide further emergency information, instructions or assistance.

ELEVEN--Establish Amateur Radio emergency communications with _____ on _____ MHz.

TWELVE--Anxious to hear from you. No word in some time. Please contact me as soon as possible.

THIRTEEN--Medical emergency situation exits here.

FOURTEEN--Situation here becoming critical. Losses and damage from _____ increasing.

FIFTEEN--Please advise your condition and what help is needed.

SIXTEEN--Property damage very severe in this area.

SEVENTEEN--REACT communications services also available. Establish REACT communication with _____ on channel _____.

EIGHTEEN--Please contact me as soon as possible at _____.

NINETEEN--Request health and welfare report on _____. (State name, address and telephone number.)

TWENTY--Temporarily stranded. Will need some assistance. Please contact me at _____.

TWENTY ONE--Search and Rescue assistance is needed by local authorities here. Advise availability.

TWENTY TWO--Need accurate information on the extent and type of conditions now existing at your location. Please furnish this information and reply without delay.

TWENTY THREE--Report at once the accessibility and best way to reach your location.

TWENTY FOUR--Evacuation of residents from this area urgently needed. Advise plans for help.

TWENTY FIVE--Furnish as soon as possible the weather conditions at your location.

TWENTY SIX--Help and care for evacuation of sick and injured from this location needed at once.

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

6.2   Group Two -- Routine messages

FORTY SIX--Greetings on your birthday and best wishes for many more to come.

FIFTY--Greetings by Amateur Radio.

FIFTY ONE--Greetings by Amateur Radio. This message is sent as a free public service by ham radio operators at _____. Am having a wonderful time.

FIFTY TWO--Really enjoyed being with you. Looking forward to getting together again.

FIFTY THREE--Received your _____. It's appreciated; many thanks.

FIFTY FOUR--Many thanks for your good wishes.

FIFTY FIVE--Good news is always welcome. Very delighted to hear about yours.

FIFTY SIX--Congratulations on your _____, a most worthy and deserved achievement.

FIFTY SEVEN--Wish we could be together.

FIFTY EIGHT--Have a wonderful time. Let us know when you return.

FIFTY NINE--Congratulations on the new arrival. Hope mother and child are well.

*SIXTY--Wishing you the best of everything on _____.

SIXTY ONE--Wishing you a very Merry Christmas and a Happy New Year.

*SIXTY TWO--Greetings and best wishes to you for a pleasant _____ holiday season.

SIXTY THREE--Victory or defeat, our best wishes are with you. Hope you win.

SIXTY FOUR--Arrived safely at _____.

SIXTY FIVE--Arriving _____ on _____. Please arrange to meet me there.

SIXTY SIX--DX QSLs are on hand for you at the _____ QSL Bureau. Send _____ self addressed envelopes.

SIXTY SEVEN--Your message number _____ undeliverable because of _____. Please advise.

SIXTY EIGHT--Sorry to hear you are ill. Best wishes for a speedy recovery.

SIXTY NINE--Welcome to the _____. We are glad to have you with us and hope you will enjoy the fun and fellowship of the organization.

*Can be used for all holidays.

6.3   Example #3 – Using ARRL Numbered Radiograms

The following example shows how an NTS message with an ARRL Number Radiogram is sent. The letters ARL are inserted in the preamble (prior to the check digit) and in the text before spelling out the ARRL Radiogram number (see above list). Note that "ARL" is counted as a word.

This example assumes you are logged on to the BBS. The BBS prompt is indicated by: BBS>. All user input is indicated as being underlined.

```
BBS>
BBS> ST 24634@NTSMO
Subject:  QTC 1 R North River City MO (620-555)
Enter the body of the message, then press CNTL-Z or
/EX to send:

NR 102 R W1AW ARL 5 NEWINGTON CT DEC 25
DONALD R. SMITH
164 EAST SIXTH AVE
NORTH RIVER CITY MO 24634
PHONE 620-555-5678
BT
ARL FIFTY ARL SIXTY ONE
BT
DIANA
AR
/EX

Message #634 Saved
BBS>
```

Figure 3: Sample BBS dialog with ARRL radiogram message

7 Delivering NTS Traffic

Delivering NTS Traffic means logging on to a packet BBS, listing an NTS message on the BBS, and delivering it to the addressee.

As stated earlier, handling third party traffic is especially valuable during disasters. The NTS is a system of experienced traffic handlers who are able to handle large volumes of third party traffic accurately and efficiently during disasters (the goal of the NTS). With more and more of this traffic being originated, relayed, and delivered on packet, it is important that the NTS packet traffic handler understands the procedures for originating and delivering a third party message.

NOTE: The following sections assume the reader is familiar with packet radio and has access to a local packet node that handles NTS traffic by packet. Contact the your local ARRL representative for information on the frequencies and locations on NTS packet stations in your area.

7.1 Finding NTS Messages on Packet

First, connect to a local BBS system.

There are several packet commands that are useful for the NTS Packet Traffic Handler. The critical commands are listed here.

NOTE: While most packet system commands are fairly standard, there may be some variations from one packet system to another. When in doubt, enter the command to list the system command descriptions (usually "?", or "H", or "help").

Packet Command	Meaning
LT	List Traffic This command will display ALL the BBS messages that are coded with a "T" (for traffic)
R *message_number*	READ *message_number* This command displays the message from the BBS. If you can deliver the message, save it to disk or dump it on your printer.
SR *message_number*	SEND REPLY This command tells the station who placed the message on packet who will try to deliver the message, and about when.
K *message_number*	KILL *message_number* This command removes the message from the BBS.

Figure 4: Critical Packet Commands

If a message is marked TF, it has been forwarded 'Down the line' by the BBS, and will be deleted during 'Clean-up' time.

7.2 Using telephone directories and directory assistance

If the message doesn't have a phone number, check the phone book (be sure to check for close or alternative spelling possibilities due to possible errors or typos).

Call 411 and repeat the above process (especially necessary for new listings). Granted, this second step may cost the operator 25 cents, but it is felt that this is

well worth it for the benefit of Amateur Radio. However, if the instructions HXG are present, calling 411 is not required. Many stations refuse to spend even 25 cents at this point. A Traffic Handler can't be forced to do it mainly because the NTS is a Volunteer system. However, it is considered a minimum procedure for a NTS station to do. If the HXG is present, and the number given is incorrect, service the message. <ARL 67> (See *Sections 8 Servicing a Message* and *Section 6 ARRL Numbered Radiograms*.

7.3   Delivering a messages by telephone

Be friendly, clear, and pleasant. Assume that the recipient knows nothing about Amateur Radio. Allay their fear about any costs. A good opening may be as follows.

> "Hello Mrs. Smith? My name is *your-name*. I am an Amateur Radio operator here in Podunk Hollow and I have a radio message for you from your Uncle Dave in Iowa Flats. It is dated Sept. 15 and is for you and Mr. Smith. It reads (read the text now) signed, Uncle Dave"

Pause here for any response. Usually you will get profuse thanks. Sometimes, you will get questions on how the message was relayed or questions about Amateur Radio.

If the person who received the message seems to be a bit stunned or apprehensive, you might ask if she understood the message and if she would like to send a message back to Uncle Dave. Explain that the service is FREE and is a public service of Amateur Radio. Remember to get as complete an address as possible for any replies, including a telephone number. Thinking of yourself as an ambassador from Amateur Radio often helps.

7.4   Mailing and Hand Delivering Messages

If no phone number can be obtained, a good NTS operator will deliver the message by hand to the address given (if it is reasonably close to your QTH). In the case of PO Boxes or addresses too far away, it is recommended that the message be mailed on ARRL radiogram forms, stating the reason for the mailing (Mailed because no phone number given or listed).

Writing the message on a post-card is the least expensive way (Radiogram postcards are available from ARRL).

7.5   Delivering a Message by Mail

If all else fails, mail it; but make it neat. You can get ARRL radiogram blanks from the ARRL in pads or in post card form at most good ham radio stores or from ARRL Headquarters. Otherwise, make it look professional by typing it.

Give your home phone number and address if they have questions. Explain that this message is a free public service of Amateur Radio.

7.6   Deleting Delivered Messages

Once you have delivered the message to the originator as undelivered, you should delete it from the BBS so someone else does not try to deliver it as well. Use the BBS "K" (Kill message) command to delete the original message.

NOTE: It is VERY BAD practice to delete any message that has not been properly handled. If you ARE NOT WILLING to take responsibility for its correct handling (delivery or servicing), DO NOT take responsibility for its deletion.

8   Servicing a Message

If the message can not be delivered by phone or dropped off directly at the recipient's location, mailing is not required, only preferred.

The NTS Traffic Handler is permitted to *service* the message back to the originator found in the NTS preamble (not necessarily the same station who first put the message onto packet). Service means to return the message to the originator of an undelivered message.

To do this, read the station of origin and place of origin from the PREAMBLE, and enter that in the ADDRESS FIELD. Using the example in *Figure 1: Annotated NTS Message*, the address in a return message wold be: N1ABC Brattleboro VT. The message may be sent to "03060@NTSVT" (Get the ZIP code from the callbook, www.arrl.org, www.qrz.com, or other ZIP lookup internet site).

If you can't find or get the ZIP code, then you could send the message to NTSVT@NTSVT. This type of addressing can be used in NTS, hoping that the originating station is known at the local or section net level.

Many times NTS can get a message delivered even when the phone number is not known at the originating end through the judicious use of local telephone directories and alternate spellings. It is strongly advised that all originating stations give as complete an address as possible and it is left to the discretion of the delivery operator to what extent he/she will put forth the necessary effort to get the message delivered. Obviously there would be a difference in how one would treat a disaster message versus a simple "Welcome to the Radio Club" message. Regardless, it is often cleaner and of greater service to simply mail the message as the worse case, rather than service it back to the originator.

Some so-called "junk" messages actually contain the optional handling instruction HXG in the preamble, which reads: "Delivery by mail or landline toll call not required. If toll or other expense is involved, cancel message and service originating station".   (Bulk rate)

8.1   Rules for Servicing a Message

The rules are a little vague as to when a message should be serviced. We all must be sensitive to the fact that the whole system is a Volunteer, and that we cannot force deliveries. However, all operators must strongly oppose the arbitrary destruction of messages. In other words, if the message cannot be delivered, it should not be accepted. If it is accepted it must be delivered or serviced back telling the originator the reason why it is undeliverable.

There are several stations that send "Bulk" greeting & comment messages. If you accept one of these messages, but can't deliver it without cost or toll, don't hesitate to service it.

If there is no one at a local BBS who is willing to deliver a NTS message by mail, then the NTS packet manager at that BBS should service the originator. In the reply message, tell him/her: "Message undeliverable, No station willing to accept for delivery" (it died on the BBS, no one wants your junk mail).

Likewise, if only a Post Office Box is given, a telephone number may be able to be obtained through the directory or 411.

Lately we see many so-called NTS operators on local and section nets refusing to deliver messages that do not have phone numbers. This practice is abhorrent to many Old timers. A good NTS operator will take the message and do all

he/she can do to find a way to deliver it. Don't accept it unless you are willing to deliver it or service it.

8.2 Formatting the Service Message

In servicing a message, you can be succinct using the ARL SIXTY SEVEN message which reads, "Your message number ___ undeliverable because of ___-Please advise." See *Section 6 ARRL Numbered Radiograms* for information on Radiogram numbering. An example could be:

```
NR 123 R W6ABC ARL 9 Podunk Hollow CA Sep 16
To N1ABC
Brattleboro VT 03060
BT
ARL Sixty Seven 101 Phone
number incorrect no listing
BT
Joe W6ABC@W6PW.CA
AR
```

Figure 5: Example #1 Service Message

If the message originator requests some type of service back, a brief message should be composed. In this example, the original handling instructions were marked as HXC (Report date and time of delivery (TOD) to originating station).

```
NR 123 R W6ABC ARL 8 Podunk Hollow CA Sep 16
To N1ABC
Brattleboro VT 03060
BT
TOD Message 101 Sep 5 at 1737 PST
BT
Joe W6ABC@W6PW.CA
AR
```

Figure 6: Example #2 Service Message

This message tells N1ABC, that his message number 101 was undeliverable and why. N1ABC has the option of sending W6ABC a corrected phone number, if available, or of canceling the message. If W6ABC doesn't hear from N1ABC in a few weeks he can assume that the message can be filed.

8.3 Deleting Serviced Messages

Once you have serviced a message back to the originator as undelivered, you should delete it from the BBS so someone else does not try to deliver or service it as well. Use the BBS "K" (Kill message) command to delete the original message.

NOTE: It is VERY BAD practice to delete any message that has not been properly handled. If you ARE NOT WILLING to take responsibility for its correct handling (delivery or servicing), DO NOT take responsibility for its deletion.