

# **An Introduction to Generating and Sending ARRL Format Message Traffic on Packet**

**For Rancho Cucamonga RACES By Ken Miller, K6CTW**

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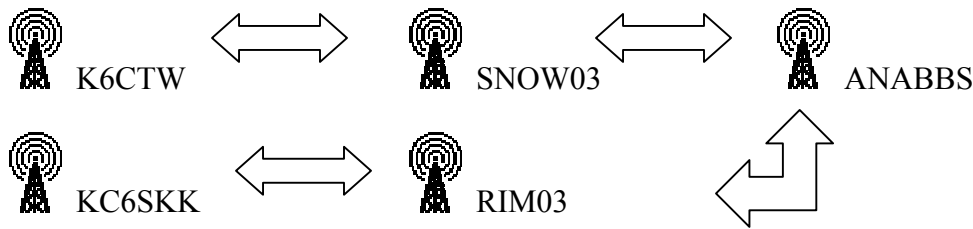
The following is a step by step procedure used to send formal message traffic via packet. This procedure was developed using a PK-232MBX and the PK-Term for Windows TNC interface and terminal emulation program. Although this may not be exactly what you are using, the actual packet commands and procedures will remain then same once you are within the terminal window. This document also contains reference sections which define basic packet commands, the hierarchical addressing structure for packet messages and a list of all the ARRL numbered reaiograms. There is also a list of reference pages at the end which show you where some of this information was gathered and where you can also find out more about packet usage on your own.

The station receiving this traffic in this example will be KC6SKK, Bill, in Rialto. We will be sending this through the ANABBS (Anaheim Packet BBS) while digipeting through a local machine SNOW03. Dan, W6QZ, is the manager/operator of the ANABBS (a.k.a W6QZ-1 on 145.03 MHz) that we will be using to forward the traffic. Bill, KC6SKK, leaves his packet system on 24/7 and the ANABBS polls his system every 2 hours to both deliver traffic to Bill as well as to pick up traffic for relay. This is a common service and arrangements can be made with W6QZ should you decide to avail yourself of this service after you have become more comfortable with packet and have your own system up 24/7. I also recommend that when you log on the first time that you register with this BBS as it not only lets Dan know that you are there and making use of the system, but it also eliminates a lot of the extraneous data that is sent to first time/non-registered users.

The procedure that will be illustrated takes the following steps:

- 1 Connecting to the packet network.
- 2 Connect to the BBS that will forward on your traffic
- 3 Enter the traffic using standard commands
- 4 Disconnect

As you will see that the procedure is quite straightforward, and easy to learn. Also, this example should help to explain how a message is prepared by an originating station, addressed within the packet system for routing, and then sent on a packet BBS. Although there are actually other ways to send this traffic (my VHF machine could actually go direct to Bills through another digipeter) the following diagram should help illustrate the route that we are using.



### Step 1 - Connecting to the packet network

The first step in the process is to get into the packet network, and for us that will mean connecting to the SNOW03 digipeter. SNOW03 is located in the Angeles Mountains to the North of us and is on 2 meters at 145.030 MHz (simplex). With PK-Term, start a VHF session (Ctrl-N) and then in the input box at the top, enter SNOW03 and then press the “Connect” button at the right end of the input box. Within a few seconds, you will see the message “connected SNOW03” in the received window for this session. At this point, your system is connected into the packet network. Another method would be to go to the “Command Window” and type in “C SNOW03”. The result will be the same. There are other ways to connect into the system using digipeters but this should work fine.

### Step 2 - Connect to the BBS that will forward on your traffic

This step is also quite simple. Move the cursor into the input window (or the command window) and type c anabbs (or W6QZ-1). This is the packet “connect” command followed by the system to which you now want to connect. This should then be followed by the BBS sending you a connect message and welcome (assuming you are a new user that is not registered with the BBS) and then gives you a list of packet commands that are available followed by a prompt “>”. That is your signal that the BBS is now ready for your first command. Now it’s time to send our message so we tell the BBS that we want to send a message to Bill, KC6SKK and that we know that he is a registered user of this system. The command for this is:

**S KC6SKK @ W6QZ**

If this message had been going to someone else that is on packet, but on another system somewhere, e.g. San Francisco, then you would need to use that stations full hierarchical packet address. Please look at the later section on this for further information on this addressing scheme and how to use it.

Upon recognizing our send command, the BBS will then respond with the command SUBJECT: to which we will reply:

**THANKS**

The BBS will then tell you to

## **ENTER MESSAGE XXX—END WITH CTRL-Z OR /EX ON A SINGLE LINE**

At this point you are now ready to enter the actual message in the packet message. Note that the XXX in the message string above will be replaced on an actual system with the message number.

### **Step 5 - Enter the traffic using standard commands**

Now that all of the preliminaries for getting the packet system to recognize, title, and route the message, the sending operator would then begin entering the preamble of the message. Continuing with our example of a routine thank you note, our example will contain then following block of data as the first line being sent:

**NR 46 R HXG K6CTW ARL 5 RANCHO CUCAMONGA CA 0345Z AUG 7**

For those that are not familiar with the ARRL Radiogram format, I will be attaching, at the end of this, the ARRL writeup on generating a radiotelegram using one of their standard messages. This example of a message will also contain ARL numbered messages (you can decode it on your own)..

The first group, or block of characters, is the abbreviation signifying that the message number or NR is next. This prosign, the NR, is not really needed by the receiving operator but is used to signify the start of a message and to help organize them for quick review when viewed in the log. Then the actual number of the message is next. The number is usually the number of messages sent in that calendar year, but some operators re-start the numbering at the beginning of each month.

The next group on the message is the Precedence, that is the priority for handling of the message. The available designators are:

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

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

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

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

The next group are the message handling instructions. These are used to provide guidance to the relaying and delivering operators on how this message is to be handled (as per the instructions of the originating operator). Although including these instructions is optional, it is still a good idea to have them there to further define the way this message will be treated.

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

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

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

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

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

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

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

Following the handling instructions is the callsign of the station where the message originated. The next group sent is the check number. The check is the number of words in the text portion of the message. Since our message contains ARRL numbered radiogram messages, the number of actual words is preceded by the group ARL.

The place of origin, which includes the city and state or province is the next group sent. Also, there is no comma between the city and state or province.

The last groups in the preamble are the filing time values which may include the optional local standard time in 24 hour, military time format, then the required month and day. A second carriage return is sent to signify the end of the message preamble and to separate it from the next block in the message which is the recipient's address.

**WILLIAM CUNNINGHAM KC6SKK  
250 NORTH LINDEN AVE SP 14**

**RIALTO CA 92376**  
**TEL 909 555 1234**

It should be noted that the address section is separated from the preamble by a blank line and that a carriage return is used to separate the elements of the address block. In addition, an additional carriage return is once again sent at the end of the address block further separate it from the text of the message.

With all the preamble and address now sent, it is finally time to send the text of the message. Our message here is only five words, but it does provide an adequate example. The sending operator would then transmit

**ARL FIFTY THREE MESSAGE 73**

Here, as in the previous sections a second carriage return is once again used to identify the end of a section of the message, in this case it is the text block, from the final section of the message, the signature block. The signature section for our sample message is as follows:

**KEN K6CTW**

An additional carriage return is once again used to identify the end of a section of the message. In this case it is the signature block and therefore the end of the message. In our example, there was only the one message. It may be that in sending traffic to a station there may be a number of messages and they should be separated from each other by 3 or more carriage returns. Continuing this single message example, the sending operator now types, on a blank line, just the characters shown below followed by a carriage return:

**/EX**

This tells the BBS program that this is the end of the block of text/data that is being sent. In a few seconds, the BBS program will let you know that all is OK by saying that the message has been saved and giving it a number within that BBS. An example of this would be (from the ANABBS):

**MESSAGE XXX SAVED**

**>**

At this point your message ( number XXX) has been correctly placed within the system and it will be delivered as soon as the system can get it there. This completes transmission and since there is nothing left to do, you may exit the BBS system and disconnect from the packet network by typing in the command:

**BYE**

In a few seconds you will see the message from the BBS and then from the digipeter letting you know that you are no longer working with the BBS program and that you have been disconnected from the packet system at the digipeter.

The actual traffic will look like the following:

**NR 46 R HXG K6CTW ARL 5 RANCHO CUCAMONGA CA 0345Z AUG 7**

**WILLIAM CUNNINGHAM KC6SKK  
250 NORTH LINDEN AVE SP 14  
RIALTO CA 92376  
TEL 909 555 1234**

**ARL FIFTY THREE MESSAGE 73**

**KEN K6CTW**

Congratulations, you have now successfully sent your first message through the packet system. Following this tutorial, you will find the additional information that was mentioned at the beginning. I hope that this will get you started in this great digital mode and an excellent way to transfer messages. As a next follow on, there will be a tutorial on sending "bulk" traffic. Bulk traffic being that which contains a number of messages or a message or messages that contain a lot of characters.

## Basic Packet Commands

(Be careful with spaces; again, the 'n' indicates a number.):

? or H

Help - Gives a basic HELP COMMAND listing. It is not context sensitive - it always displays the same information.

? (letter)

HELP with COMMAND - Detailed HELP for individual system commands.

Example: type '? U' for HELP with UPLOADING.

B

To log off (say goodBye) the BBS, type B

I

Information - about this BBS - equipment, stations served, links, SysOp, etc, type

I (call)

INFORMATION - from the user database; for the callsign.

K (nnnn)

Kill (erase) a message; type K and the message number.

Example: to erase message 6112, type K 6112

L

List messages that have been received since the operator last checked in, type L

LL (nnnn)

LIST the last nnnn messages.

Example: LL 15 will list the last 15 messages.

R (nnnn)

Read a message; type R, a space, and the message number.

Example: to read message 4350, type R 4350

SP (callsign)

Send a personal message; to another ham who uses this MailBox, type SP, a space, and the station callsign.

Example: SP N6XYZ

SP [callsign] @ [mailbox callsign].[hierarchical address]

Send a personal message to a station who uses another BBS; type SP, the callsign of the receiving station, @, the callsign of the ham's BBS, a period, the local area (optional and headed by a #), the 2 letter state abbreviation, the country abbreviation (three letters) and the continent abbreviation (two letters).

Example: SP WA0PXW @ WA0PXW.#CENE.NE.USA.NA



## HIERARCHICAL ADDRESSING

All BBS software writers have devised a scheme called HIERARCHICAL ADDRESSING. With hierarchical routing designators, a significant improvement in traffic routing is apparent. No longer will a missing callsign in a BBS forwarding file cause a message to remain unforwarded; sysops will no longer burn the midnight oil trying to keep their forward files up-to-date, and messages will move much more directly toward their destination.

The format for hierarchical routing is:

**ADDRESSEE @ BBSCALL.#LOCALAREA.STATE.PROVINCE.COUNTRY.CONTINENT**

It may look complicated, but it's not. First, note that each section of the format is separated by a period.

Codes used for the countries and continents are standardized and accepted throughout the world. The Continental Designators are:

NA - North America (Some INTERNET users are using NOAM instead  
SA - South America of NA because NA means NAMIBIA on INTERNET  
EU - Europe KOKKV will accept either)  
AS - Asia  
AF - Africa  
AA - Australia

The continental and Country Designators are available in the 'Files' section of the local BBS.

State and province codes are the recognized two-character codes established by the American and Canadian Post Offices. These may be found in the Callbook, the local phone directory, or any zip code listing.

The code for local area or county is headed by an octothorpe (#) and is optional, since the operator seldom knows what code is being used back in upper New York state or in Iowa City, IA. If it's known, use it, since it will help get the message closer to where it is going.

The Japanese networks (and possibly other areas) want to use routing numbers for the local area and/or county codes. These could become confused with zip and postal codes, so the # in front of these local area codes destroys their designation as numbers.

As examples, the code for Northern California is #NOCAL, and the code for Southern California is #SOCAL. For messages going outside of the US or Canada, the local area is optional and the state is normally eliminated.

Some routing examples using the hierarchical format:

WB9LOZ @ W6PW.#NOCAL.CA.USA.NA  
N6KZB @ KD6SQ.#SOCAL.CA.USA.NA  
KC3XC @ N4QQ.MD.USA.NA  
JA1ABC @ JA1KSO.#42.JPN.AS  
VK4AHD @ AX4BBS.AUS.AU

Two very important points need to be emphasized:

1. Hierarchical addressing DOES NOT indicate a forwarding PATH.
2. Only ONE BBS callsign should be included in the address.

A list of BBS calls separated by dots WILL NOT get your message to its destination. The addressing scheme is said to be one area inside another area.

EXAMPLE 1:

Ed's Hierarchical Address: KB6DRN @ K6RAU.#NOCAL.CA.USA.NA

Ed's Call-----: KB6DRN  
Ed's BBS-----: K6RAU  
Ed's Local Region: #NOCAL (optional)  
Ed's State-----: CA  
Ed's Country-----: USA  
Ed's Continent---: NA

EXAMPLE 2:

Marks's Hierarchical Address: WB9QZB @ N3AIA.IL.USA.NA

Mark's Call-----: WB9QZB  
Mark's BBS-----: N3AIA  
Mark's State-----: IL  
Mark's Country---: USA  
Mark's Continent-: NA

Note that each element of the hierarchical address must be six or fewer characters.

There are several BBS programs that implement hierarchical addressing now, including the W0RLI, AA4RE and WD6CMU software. Check the ID block displayed when logging onto the BBS: if it has an 'H' in the block (such as [RLI-9.07-CH\$] or [4RE-02.4-HM\$]), the BBS system supports hierarchical addressing.

This section explains how the BBS software uses hierarchical addressing. First, it's necessary to understand how the software matches items in the '@ BBS' address with items in the forward file.

For example, if a message is sent to W3IWI, who operates his own BBS and is located near Baltimore, Maryland, the following would be entered:

```
SP W3IWI @ W3IWI.MD.USA.NA
```

If the only entries in the forward file are California BBSs, plus a list of state abbreviations, the following would define the message forwarding process. The software attempts to match the items in the forward file and the left-most code in the address field. In this case, it would look for, and not find W3IWI. As there is no match, it will then move to and compare the next code to the right. It will find MD, and that match will be sufficient to forward the message. If it had found and matched the callsign (W3IWI), it would take precedence (because it is more 'left' than MD) and would, of course, also ensure delivery.

## ARRL Numbered Radiograms

The letters ARL are inserted in the preamble in the check and in the text before spelled out numbers, which represent texts from this list. Note that some ARL texts include insertion of numerals.

### Group One—For Possible “Relief Emergency” Use

- ONE** Everyone safe here. Please don't worry.
- TWO** Coming home as soon as possible.
- THREE** Am in \_\_\_\_\_ hospital. Receiving excellent care and recovering fine.
- FOUR** Only slight property damage here. Do not be concerned about disaster reports.
- FIVE** Am moving to new location. Send no further mail or communication. Will inform you of new address when relocated .
- SIX** Will contact you as soon as possible.
- SEVEN** Please reply by Amateur Radio through the amateur delivering this message. This is a free public service.
- EIGHT** Need additional \_\_\_\_\_ mobile or portable equipment for immediate emergency use.
- NINE** Additional \_\_\_\_\_ radio operators needed to assist with emergency at this location.
- TEN** Please contact \_\_\_\_\_. Advise to standby and provide further emergency information, instructions or assistance.
- ELEVEN** Establish Amateur Radio emergency communications with \_\_\_\_\_ on \_\_\_\_\_ MHz.
- TWELVE** Anxious to hear from you. No word in some time. Please contact me as soon as possible.
- THIRTEEN** Medical emergency situation exists 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.**

### **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.

## References

1. Lincoln Amateur Radio Club Packet Manual  
<http://larc.unl.edu/packet/index.html>
2. ARRL FSD-3 ARRL Numbered Radiograms  
<http://www.arrl.org/FandES/field/forms/fsd3.pdf>
3. ARRL FSD-218 Message Format,Precedences, Handling Instructions,  
QN Signals, Q Signals, ARRL Numbered Radiograms  
<http://www.arrl.org/FandES/field/forms/fsd218.html>