Amateur Packet Radio
Field Reference, Type II

For SCCo RACES Responders

October 2024

Table of Contents

Rev: 241031

1   Quick Reference

Frequencies (MHz)

Call Sign	Connect	User Access	My Pri, Sec BBS
W1XSC	W1XSC-1	145.750, 223.620, 433.570	
W2XSC	W2XSC-1	145.730, 223.560, 433.590	
W3XSC	W3XSC-1	144.310, 223.540, 433.450	
W4XSC	W4XSC-1	145.690, 223.600*, 433.550	

*223.600 is primarily for BBS forwarding; O.K. for back-up user access, testing.

BBS Locations

Call Sign	Location
W1XSC	San Jose
W2XSC	Crystal Peak (South County)
W3XSC	Palo Alto
W4XSC	Frazier Peak (East of Milpitas)

3.12 Notes on Manual ICS 309 Comm Log

1. From the PackItForm **Home Page**, clicking on **Edit ICS 309 Log** opens the ICS 309 form for editing and printing.

2. All fields are editable.

3. Required fields are highlighted in RED.

4. **Trash Can** symbol deletes the entry.

5. **Plus** symbol adds another line for a manual entry.

6. **Erase All** – clears the form.
   Once pressed, **Undo Erase All** is displayed that will restore the form

7. **Generate CSV File** – creates a .csv file of the Comm Log.

8. **Print** – prints the Comm Log to the selected printer.

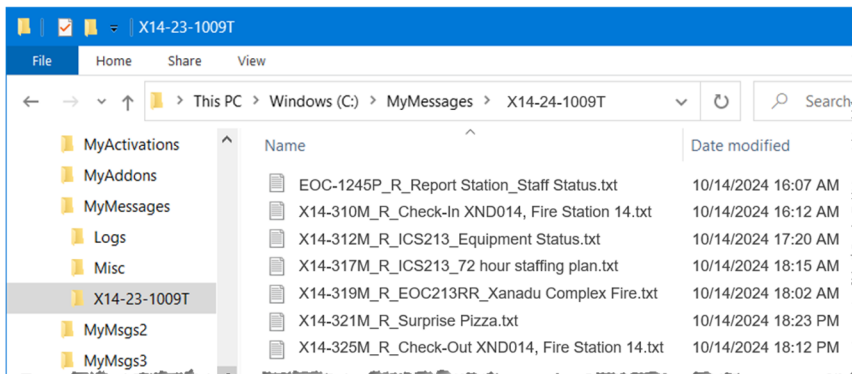9. **Save** – Saves any changes you made.

3.10 Notes on Outpost Tags

- Messages sent from Outpost occasionally have "tags" inserted in messages that you might see.
- Some of the more common tags are:
    - !RRR! Request Read Receipt
    - !RDR! Request Delivery Receipt
    - !SCCoPIFO! This is a PackItForm message
    - !/ADDON! The end of a PackItForm or other Addon message
    - !UG! Mark message as urgent (lists as RED in the Outpost listing)
- PackItForms will ignore many Outpost tags that it sees and they will not show up in the message.

3.11 Viewing saved messages

1. View your saved messages in the directory set up in Section 3.6. For example: C:\MyMessage\X14-24-1009T\
2. Sort by clicking on the **Name** or **Date Modified** column headers.

2 Introduction

2.1 Purpose

This handbook is not an official Santa Clara County RACES deliverable.

This handbook provides the field packet radio operator with a job aid for the different tasks and activities that are needed to be successful in the field.

It builds on a reasonable working knowledge of:

1. Digital communications using amateur packet radio
2. Amateur packet radio hardware, software, and configuration
3. SCC RACES packet procedures, protocols, and standards

The experienced packet radio operator can use this handbook as a job aid and real-time reminder of the tasks that need to occur when deployed to the field. It is intended to ensure task consistency, completeness, and operational alignment with SCCo RACES policies and procedures when carrying out field packet radio operations.

2.2 How to use this Handbook

This handbook is not a tutorial on Amateur Radio Packet and will not teach you all about packet, the hardware, software, and local procedures. You are encouraged to attend SCCo RACES packet classes, acquire and use a packet station, and participate in weekly and monthly packet practice, and regular exercises where packet radio is deployed.

This handbook does provide a summary of how to operate packet radio in the field. However, the packet operator is responsible for keeping current with environmental, procedural, and SCCo RACES packet system changes by:

1. periodically checking the www.scc-ares-races.org website joining,
2. monitoring the packet@scc-ares-races.groups.io mailing list, and
3. attending SCCo RACES packet training courses

Updates to this handbook should be made by the handbook user as soon as you become aware of them.

2.3 Other References

Have these SCCo RACES documents available to reference:

1. Standard Outpost Configuration Instructions - 08/04/2018
2. Standard TNC Parameter Settings – 10/31/2022

3 Manual Packet Operations
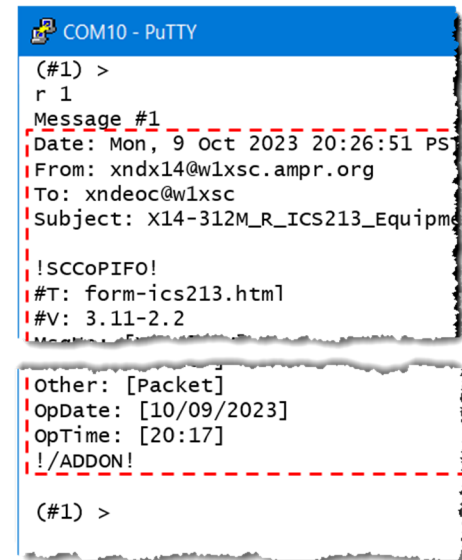
3.1 TNC Commands

1. **HELP** [command]
   When entered alone, lists all available commands. With a command, provides details on that specific command.
2. **MYCALL** xxxxxx
   Tells the TNC what its call sign is. Can be an FCC or Tactical Call sign
3. **CONNECT** call1 [via call2, call3, …]
   Call1 = Call sign of the station to be connected to. Adding "via call2…" connects to the BBS by digipeaters.
4. **CONVERS**
   Puts the TNC into Conversational mode. Then, whatever you type is immediately transmitted.
5. **<Cntl>C**
   Puts the TNC into Command Mode. Enter TNC commands at the prompt.
6. **RESTORE DEFAULT**
   Resets the TNC to the factory default settings; performs the AUTOBAUD routine. Defaults INTface to NEWUSER.
   Hard reset can also be performed with internal jumpers.
7. **INTFACE** [TERM | …]
   When set to TERMinal, the full command set of the TNC is available.
8. **XMITLVL** [<value>]
   If blank, displays the current transmit level. If a value is included, sets the transmit level.

3.9 Receiving a PackItForm message manually

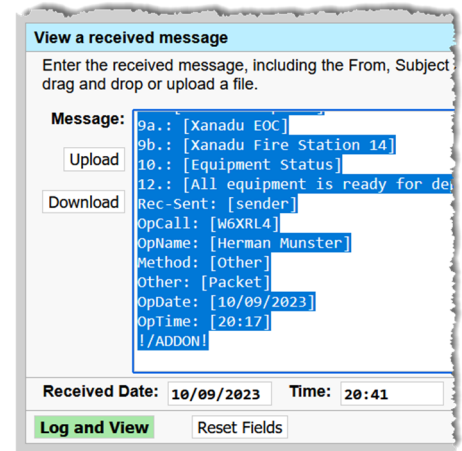**3.9.1 Receive a PackItForm message**
PuTTY is displayed.

____ 1. Connect to the BBS using PuTTY.

____ 2. List your messages with **LM**

____ 3. Read your messages with **R #**

____ 4. Highlight all text from **Date:** to **!/ADDON!** (inclusive).

____   **Copy Text** from PuTTY: just select the text to copy it to the clipboard.

3.9.2 Recover the Message
HOME Page is selected.

____ 5. Put your cursor in the lower "**View a received message**" section, and enter **Edit > Paste** or **<ctrl>V** to paste in the message.

____ 6. Press **Log and View**.

- This entry is logged to the ICS 309
- The received message is opened in its PackItForm.

____ 7. Once the PackItForm is opened, print it and hand it off for delivery.

3.8.6   Sending Plain Text Messages with PuTTY

PackItForms does support manual Plain Text message sending and receiving.

- from the **Home Page, dropdown menu**, pick **Plain Text Message**. The Message Page opens.

- Message ID and Handling order are filled in, **DO NOT CHANGE THIS!**

- Fill in…
   - To: destination packet address
   - The rest of the Subject text
   - Your plain text message

- Finally, press **Log and Send**

The rest of the send process is the same.
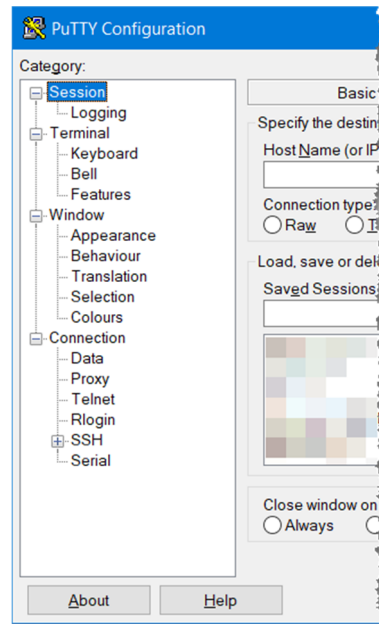

3.2   BBS Commands

1. **HELP** or **?** [command]
   H = List of available commands. **?** is the same as **H** or **HELP**
   H <cmd> = Provides details on the command.
       example: **H List** = shows all **List** command options and what they do.
2. **LIST**
   L = Displays the headers for all unread messages, if any.
   LA = Lists ALL messages, both read and unread
   LM = Lists MY messages addressed to me
   L> addr = Lists all messages that have "addr" in the message's To: field
3. **READ #**
   # = The message number to be displayed.
4. **KILL #**
   # = The message number to be deleted.
5. **AREA**
   A = Lists all available bulletin areas.
   AF = Gives a full listing of areas with descriptions (if available).
   A area_name = Positions you to that area. Then, use the List and Read commands to view messages.
6. **SEND [option] <dest_address>**
   S[P] = Send Private; example: *SP w6xrl4@w5xsc.ampr.org*
   SB = Send Bulletin;   example: *SB mtv@xsc*
   ST = Send Traffic; this is used for NTS packet messages
   SC = Send Copy; to multiple destination addresses
           example: **SC** w6xrl4@w5xsc.ampr.org   (enter the 1st address)
           (BBS then prompts with **Cc:** for the other addresses. Enter other addresses each separated by a comma.)
7. **BYE**
   Disconnects from the BBS
8. **XM** [lines to display]
   XM = Displays the current page length setting
   XM 24 = Sets the page length to 24 lines
   XM 0   = Turns off pagination (required when using Outpost)
   NOTE: If a page length is set, message listings, messages and other content longer than the page length are paused and a "More (N=no)?" prompt is shown. Press SPACE to see the next page or '**n**' to stop

3.3 Connecting to the TNC with PuTTY
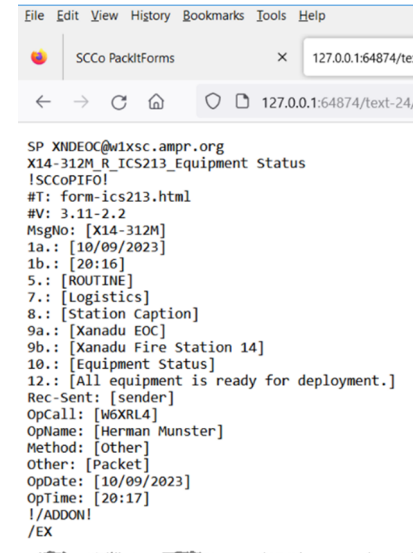
Set up PuTTY as follows:

1. Getting Started	
____	Find and run PuTTY
2. Session category	
____	Connection Type: Serial
____	Enter serial port name (i.e.: COM3)
3. Session > Logging category	
____	Session Logging: "All session output"
____	Log file name: Enter a path and file name
____	What to do if…: "Always append to the end of it"
4. Terminal > Keyboard category	
____	Backspace key: "Control-H"
5.Connection > Serial category	
____	Speed (baud): 9600 Data Bits: 8 Stop Bits: 1 Parity: None Flow Control RTS/CTS
6. Window > Translation category	
____	Change "Remove character set" to **Win1252 (Western)**
7. Session category	
____	Saved Sessions: Enter a name in the field, click **Save**
____	Click **Open** to start the session
8. Verify	
____	Put cursor in the PuTTY text area.
____	Make sure the TNC is turned on.
____	Press **Enter** and confirm you see the TNC Prompt (`cmd:`)

BBS COMMAND Page is displayed.

___ 12. **Copy the message**. Put your mouse cursor in the text area, and then either: **Edit > Select Al**l, then **Edit > Copy** or enter**<ctrl>A <ctrl>C**.

NOTE: Do not change the subject line.
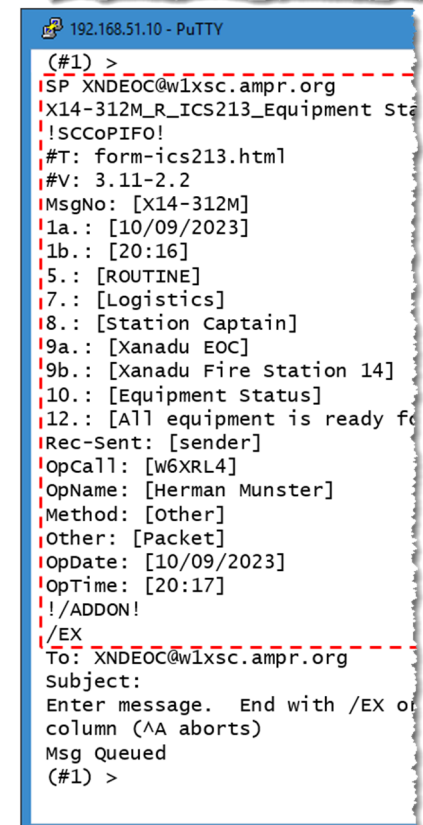

3.8.5   Send the message with PuTTY

PuTTY is displayed.

___ 13. Make sure you previously copied the packet message from the **BBS Command** Page (previous section).

   NOTE: Include the blank line below the **/EX** statement.

___ 14. Start PuTTY

___ 15. Connect to the BBS Verify you get the BBS Prompt.

___ 16. **Paste the message** in PuTTY:

   - Put the cursor in the PuTTY text area after the last BBS prompt, and then

   - **M**ouse ***right-click*** to paste in the message.

Reminder: All SCCo BBSs have a 2-minute inactivity timer.

3.8 Sending a manual PackItForm message

3.8.1 Run manual PackItForms

___ 1. Open File Explorer, navigate to C:\PackItForms\Outpost\SCCo

___ 2. Find and double-click on **manual.cmd**.

3.8.2 Setup Manual PackItForm
SETUP Page is displayed.

___ 3. Fill in or update all fields:
- User information
- Tactical call information
- Select your Archive Folder **(messages are auto saved here)**
- Select Terminal Encoding
- Next Message Number

___ 4. Press **OK** when done.

3.8.3 Pick and fill in a Form
HOME Page is displayed.

___ 5. From the dropdown menu, select a PackItForm.

___ 6. Press **Create Message.**

___ 7. Fill in the PackItForm as usual.

___ 8. When done, press **Create Message**.

3.8.4 Create the packet message
MESSAGE Page is displayed.

___ 9. If needed, check the boxes if this message is **Urgent** ☐ or a **Bulletin** ☐.

___ 10. In the **To**: Field:
- enter a single Dest address
- multiple addresses separated with commas.

___ 11. When done, press **Log and Send**.

3.4 Start of Shift: Configure TNC Settings

HINT!!! **Create TNC Init Command text files**

Create text files that contain the *Start-of-Shift* and *End-of-Shift* TNC commands for the TNCs you might use. This should be done before you ever find yourself needing to send and receive packet messages manually.
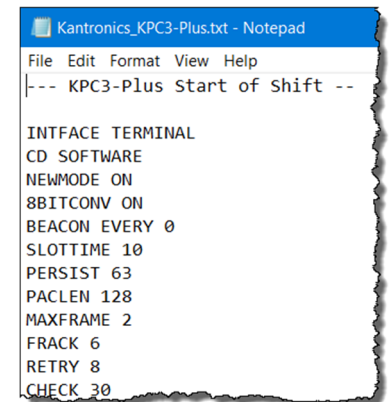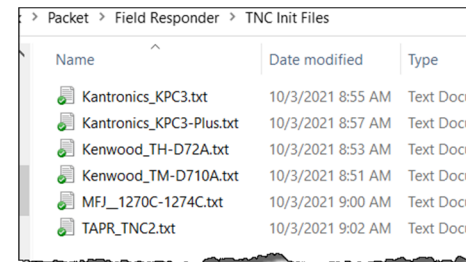
1. For each TNC that you use, create a text file with the "Start of Shift" and "End of Shift" TNC commands.

2. Each file should contain both sets of commands.

   CAUTION: Do NOT cut-and-paste directly from the PDF into your terminal emulator; it may not work.

   **Best practice: copy the commands first into a text editor (Notepad), save it, and then copy-and-paste from there into your terminal program.

3. Save each file with the TNC Name.

TNC Reset

Insure **all** TNC settings are at the **current** SCCo standard values

1. Get current Transmit Level

___ Connect to the TNC with PuTTY

___ **cmd: XMITLVL** (for KPC-3+) Record the value displayed.

2. Reset the TNC

cmd: restore default
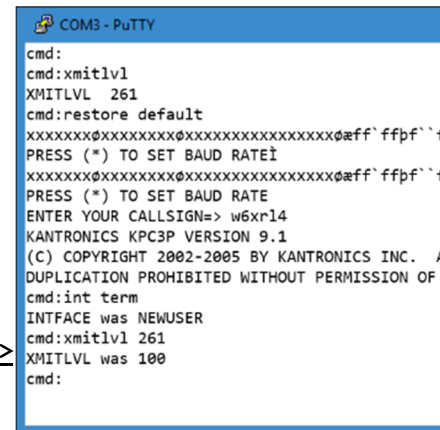Watch for…

___ **PRESS (*) TO SET BAUD RATE**
When you see this text, PRESS "*****" and enter your call sign at the prompt.
ENTER YOUR CALL SIGN:<callsign>

___ **cmd: INT Term**

___ **cmd: XMITLVL <value>**

___ **cmd: CD software**

3. Start of Shift

____   If assigned a tactical call sign, then check or enter it now:
`cmd: mycall <TacCall>`

4. Send Start-of-Shift TNC commands

____   Select and copy (**`<cntl>C`**) the entire "Start of Shift" command list from the text file.

____   At Putty, mouse **right-click** to paste the TNC commands

3.5   End of Shift: Restore TNC Settings

When your shift is over and before you pack up the gear or turn it over to someone else, return the TNC to "normal" settings.
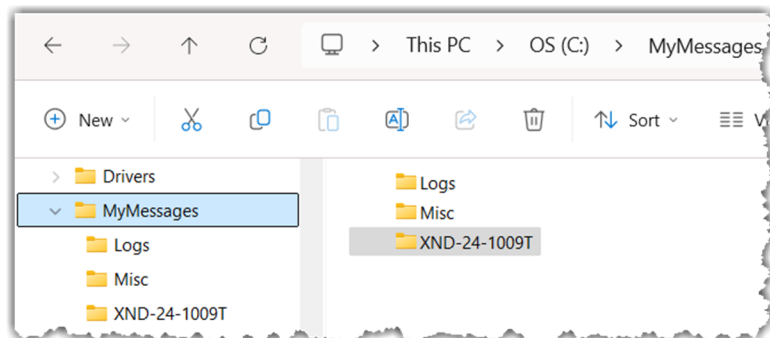
1. End of Shift TNC cleanup

____   Disconnect from the BBS.

____   Cut-and-paste the "End of Shift" TNC commands into PuTTY at the TNC command prompt

```
--- KPC3-Plus End of Shift --

STREAMSW $7C
```

3.6   Getting ready for Manual Messaging

Directory structure for manual messages

1. Create a directory structure (your choice) for your manual text message files, such as:

   * C:\MyMessages\XND-24-1009T   (Activation no, example below)
   * C:\MyMessages\2024-10-09   (date)
   * C:\MyMessages\XND-F14   (assignment)
   * Other
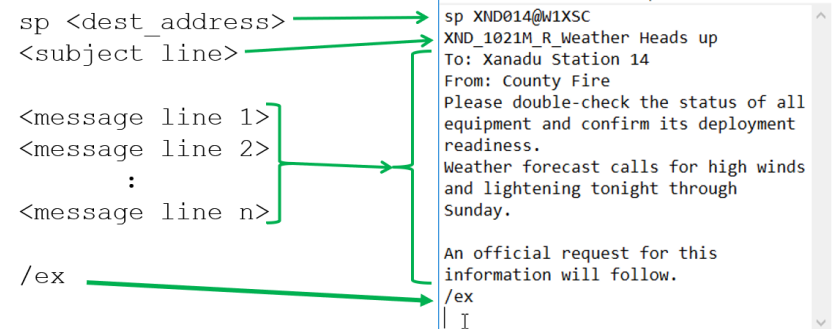
2. Identify a starting message number.

3.7   Manual message basics

Knowing how manual packet works will help you troubleshoot problems. Manually create a message without Outpost or PackItForm for test purposes.

1. Manually create a packet message

____   Open Notepad or any other text editor.

____   Create a message with the four key elements of a manual packet message:

sp <destination>	**S**end **P**rivate
<subject line>	standard SCCo Subject line format
<message lines>	the essence of the message to send
/ex <CR>	End of Message

____   Create a round-trip test message (send to yourself) with whatever message content you want (example below).

____   Use the Subject as the file name and save to your **manual data** folder.

2. Use PuTTY to the manually send the packet message

____   Highlight the entire message from the saved file.
Select All with **<ctrl>A**, then **Copy** using **<Ctrl>C.**

____   Start PuTTY.

____   Connect to the BBS.

____   Put the cursor in the PuTTY screen by the BBS Prompt.
Paste using **M**ouse **right-click** into Putty.
The message should start transmitting immediately.