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Packet Type II



Santa Clara County ARES®/RACES/ACS
Last Updated: 9 October 2023

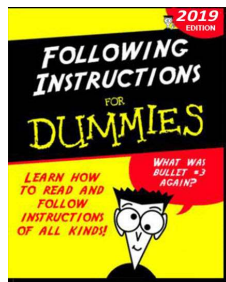
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HOUSEKEEPING

- Introductions
- Pen/pencil & paper
- Cell phones
- Side conversations
- Questions
- Corrected Handouts
- Breaks
- Restrooms (code: 9033)
- In case of emergency
- No wandering or exploring other areas of the building.



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Overview: Packet Classes

<p>Packet Type III, Part A</p> <ul style="list-style-type: none"> • Role of the Packet Operator • Packet Network Overview • Packet Network Components • Packet Station HW & SW • Accessing the Network • Standard Workflow <p>Packet Type III, Part A+</p> <ul style="list-style-type: none"> • Packet Operations Self-Paced Exercise workbook 	<p>Packet Type III, Part B</p> <ul style="list-style-type: none"> • Packet Operations • Diagnosing Setup Problems • Selecting a BBS • Creating Messages • Event Documentation • Productivity Hints • Exercises
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Packet Type II: Advanced Techniques, such as County EOC Packet Station Setup & Operations, Operating without Outpost.

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Learning Objectives

At the end of this class, you should be able to:

- Understand the setup and operation of the county EOC radio room packet station
- Set up and use a terminal program to access a BBS
- Without Outpost...
 - Connect to a JNOS BBS
 - Send and receive plain text messages with BBS commands
 - Send and receive PacketForms with BBS commands

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A Note on receiving Class Credit

To get credit for this class, there are 3 things that you need to do:

1. Attend the classroom session.
2. Complete the evaluation by the Saturday, one week after the class. See the instructions at the end of this material.
3. Complete the exercise by the Saturday, one week after the class.

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Fictitious Examples

- We use fictitious call signs in this presentation to avoid SPAM

- W6XRL4: Herman Munster



- XNDEOC: City of Xanadu Emergency Operations Center



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What about Xanadu?

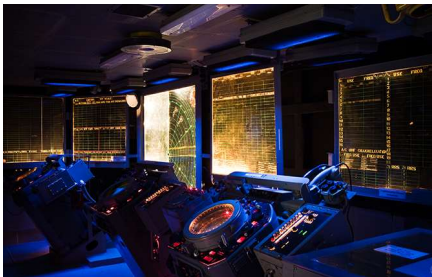
- Xanadu received lasting fame in the western world thanks to the Venetian explorer Marco Polo's description of it in his celebrated book *Travels* (c. 1298).
- Distant and mysteriously lost Xanadu, thus, came to represent a place of mystery, splendid luxury and easy living.
- Fortunately, you get to visit Xanadu only during Packet classes and Packet exercises.
- Only use an XNDxxx tactical call that has been specifically assigned to you for an exercise or training event and then only for the duration of that event, including any homework follow-up.
- **PLEASE NEVER USE** XNDxxx tactical calls during any other time. Instead, use one of your City's extra tactical calls for practice (with your EC's permission, of course).



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How to process high volume traffic efficiently

COUNTY EOC PACKET STATION SETUP & OPERATIONS

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Packet Net Operations at County EOC

- County message handling can be non-stop action
- Have separate send & receive stations
- Learn to use the automation
 - Automated polling every 5 minutes by Telnet
 - Automated ICS 309 Logging
- Watch message handling order
- Move the messages to the Traffic Manager as quickly as possible
- Balance outgoing and incoming traffic
- Follow the *SCCo Radio Room packet procedures*

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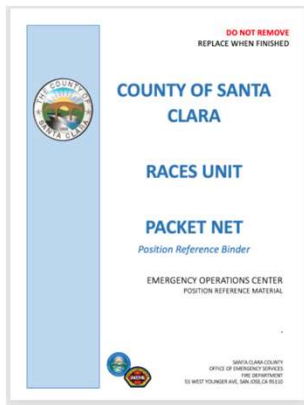
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SCCo Packet Net Reference Binder

Reference Binder

What's inside

- There is a "standardized" binder for every position in the SCC EOC, including *each position in the RACES radio room*.
- The **Packet Net** binder contains the material from the previous binder, with updates in progress.
- General content includes:
 - activation and operation
 - end-of-shift and demobilization
 - Packet-specific activities

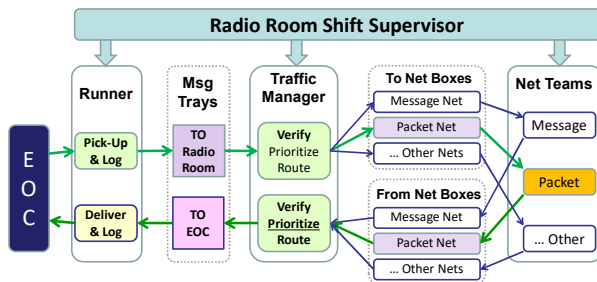


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County Radio Room Traffic Routing

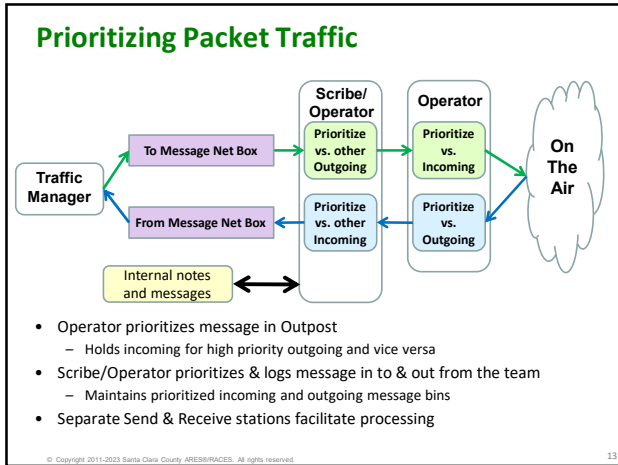


- For small, low traffic events, radio room supervisor may also perform the traffic manager role

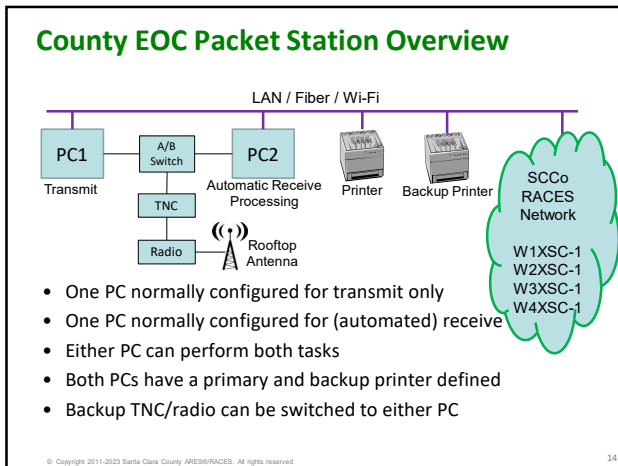
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Summary of Steps to be Discussed

- What you need to know to operate without Outpost
- Setting up PuTTY for BBS access (serial)
- The connection basics
 - Start of shift: Configure optimized TNC settings
 - Per session: Using you FCC call sign, -OR-
 - Per session: Using a tactical call sign (plus your FCC call sign)
 - End of shift: Restore default TNC settings
- Managing Messages on JNOS
 - Access user and bulletin areas (mailboxes)
 - Read a message
 - Send a message
- Reading notices and bulletins on JNOS
- Working with PackItForms

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What you need to know
Operations without Outpost

1. Connect Parameters
2. TNC Standard Settings and Manual Workflow
3. TNC User Commands
4. TNC Init Settings
5. BBS User Commands
6. BBS Init Settings

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1. Three Connect Parameters
Operations without Outpost... need to know

- **Call Sign or Tactical Call of the user**
*example : W6XRL4
 XNDEOC*
- **TNC Comm Port Settings**
*example : COM3,9600,8,N,1
 COM5,9600,7,E,1*
- **BBS Connect Name**
*example : W1XSC-1
 W3XSC-1*

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5. Eight BBS user commands
Operations without Outpost ... need to know

- HELP** [command] or ?
 When entered alone, generates a summary of available commands. With a command as a parameter, provides details on that command.
H List = shows all the List command options and what they do
- LIST**
L = by itself will display the headers for all **unread** messages, if any.
LA = List **ALL** messages, both **read** and **unread**
LM = Lists **MY** messages addressed to me
L> addr = Lists all messages that have "addr" in the **To:** field of the message
- READ #**
= The message number to be displayed.
- KILL #**
= The message number to be deleted.
- AREA** [Area_name]
A = Lists all available bulletin areas.
AF = Gives a full listing with descriptions of areas.
A area_name = moves you to that area. Then use the List and Read commands to view messages.

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5. Eight BBS user commands
Operations without Outpost ... need to know

- SEND** [option] <dest_address>
S[P] = Send Private; *example: SP w6xrl4@w5xsc.ampr.org*
S[B] = Send Bulletin; *example: SB xsctest*
S[C] = Send Copy; to multiple destination addresses
example: SC w6xrl4@w5xsc.ampr.org
 (BBS then prompts with Cc: for all other addresses)
- BYE**
 Disconnects from the BBS
- XM #**
 displays or sets the page length for viewing messages

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6. BBS Init Settings; Page Length
Operations without Outpost ... need to know

- The BBS "XM" command displays or sets the page length
 - **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)
- 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 <ENTER> to see the next page; 'n' to stop
 - Good for reading content on the screen
 - Will cause Outpost to hang if not set back to XM 0
- Note: The SCCo Packet Installer includes **XM 0** in the BBS Init Commands for all SCCo BBSs. Outpost will send **XM 0** as soon as it connects to the BBS so message output is never paused.

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SETTING UP PUTTY FOR BBS ACCESS

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Serial Access

Setting up PuTTY

1. Install and run PuTTY
2. Select the **Session** tab
3. Select Connection Type = "Serial"
4. Enter the Com Port
 - Verify with Windows Device Manager
4. Enter the Speed (baud rate)

NOTE: Not all TNCs use 9600,8,N,1 as the configuration. All fields must match what you actually have set in your TNC.

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Set up Session Logging

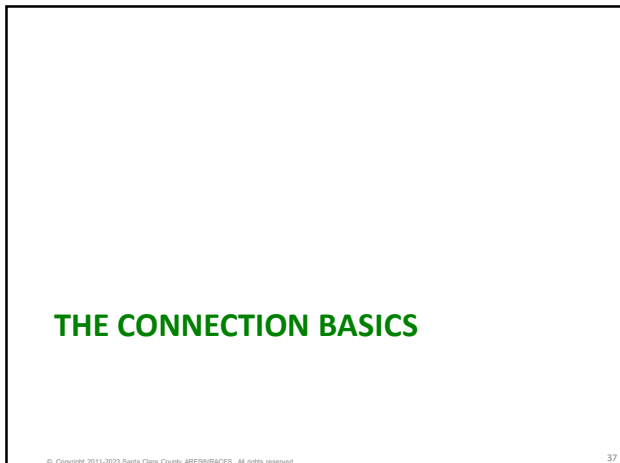
Setting up PuTTY

5. Next, click on the **Session > Logging** tab
6. Set Session Logging to
 - ⊙ All session output
7. Set up a log file name
 - NOTE:** &H does not work on Windows
8. ... if the file exists:
 - ⊙ Always append to the end

Why do logging at all?

- During manual operations, it is easy to loose track of what is going on.
- Logging creates a history of your manual interactions and a reference if you ever need to go back and check if you got it all right.

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Start of Shift: Configure TNC settings

The connection basics

- TNC settings affect overall performance
 - Start with the factory defaults
 - Make other settings for efficient use of the BBS
- To be **absolutely positively certain** that all TNC settings are at the **current SCCo** standard values, at the TNC prompt, perform the following:
 - cmd: **XMITLVL** (for KPC-3+) to display the existing transmit level <value>
 - cmd: **INT Term** (just in case)
 - cmd: **restore default**
 - PRESS (*) TO SET BAUD RATE**
 - Enter your call sign
 - cmd: **INT Term**
 - cmd: **XMITLVL <value>**
 - cmd: **cd software**
 - Apply SCCo standard TNC settings for **manual** operations

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Start of Shift: Configure TNC settings

The connection basics

- Outpost configures the TNC at the start of each Send/Receive session
- For manual operation, you only need to send these commands once, at the start of your shift

NOTE: Manual Ops commands are slightly different from the Outpost list of commands.

TNC Type	Manual Ops: Start of Shift	Manual Ops: End of Shift
Kantronics KPC-3+	INTERFACE TERMINAL MONITOR OFF CD SOFTWARE NEWMODE ON BBTTCONV ON BEACON EVERY 0 SLOTTIME 10 PERSIST 63 PACLEN 128 MAXFRAME 2 FRACK 6 RETRY 8 CHECK 30 TXDELAY 40 XFLOW OFF STREAMEV OFF STREAMSN 500	STREAMSN 77C

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MANAGING MESSAGES WITH JNOS COMMANDS

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BBS Connect & Login

- Ready to connect to BBS
- Set your call (FCC or tactical) in the TNC for login
 cmd: MYCALL W6XR14 OR cmd: MYCALL XNDEOC
- Connect
 cmd: C W5XSC-1
- JNOS gets login info from MYCALL
- No login prompt needed

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HELP

JNOS Commands

- Basic commands can be seen with HELP command

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KILL
JNOS Commands

- The **KILL** command allows you to delete messages from your mailbox
K[il] <message_number>
- At least one message number must be supplied. The message numbers you can select from can be displayed with the "**L[ist]**" command.
- Messages will not disappear until you disconnect and connect again

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SEND
JNOS Commands

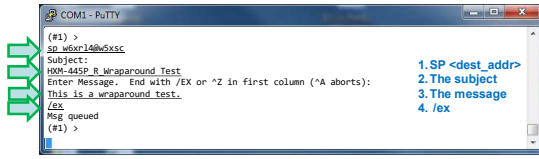
- The send (S) or send private (SP) command allows you to enter a message and send it to a user
S[P] <user>@<domain> where
 <user> = recipient's name
 <domain> = <bbscall>
 <bbscall>.ampr.org
 internet domain
- Send an SCCo specific Notice
SB < NoticeArea | <category>@<distribution>>
 - SCCo Notices: SB < NoticeArea >
 - General purpose bulletins: SB <category>@<distribution>
- As above, but ANY <user> may read the message from the mailbox. The < NoticeArea > may be...
 - xscperm
 - xscevent
 - xsctest

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Send a Message from the Keyboard
JNOS Commands

- Connect to the BBS using a terminal program
- Use these BBS commands
 - SP <user>@<domain>** – Send a message to a user at a specific domain.
 - When prompted, enter an SCCo standard subject
 - When prompted, type the body of message
 - When done, on the next line, add **/EX** and press **[Enter]**



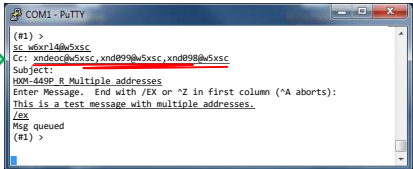
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Send Copy

JNOS Commands

- The send copy command allows you to enter a message and send it to multiple users
 - SC <user>@<domain>**
- Enter the send copy command with one address
- JNOS responds with "Cc:"
 - Enter other addresses to receive a copy, separated with commas



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BYE

JNOS Commands

- When you are all done with the BBS, disconnect from the BBS
 - B[ye]**
- On disconnecting
 - Outgoing messages will be processed
 - Deleted (killed) messages will be removed

Don't Forget!!!
All SCCo BBSs have a
2 minute inactivity timer!

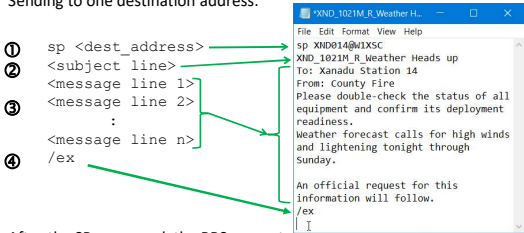
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FYI... Manual message basics

Troubleshooting Hint

- Knowing how manual packet works will help you **troubleshoot problems**.
- Sending to one destination address:



- After the SP command, the BBS prompts for the subject, then the message.
- Once the ***ENTIRE*** message sequence is created, highlight and copy all of it and then paste it into PuTTY at the BBS Prompt.

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FYI... Manual message basics
Troubleshooting Hint

- Knowing how manual packet works will help you **troubleshoot problems**.
- Sending to multiple addresses:

- 1 `sc <dest_address>`
- 2 `<other_addresses>`
- 3 `<subject line>`
`<message line 1>`
`<message line 2>`
`:`
`<message line n>`
- 4 `/ex`

- After the **SC** command (Send Copy), the BBS prompts with a **CC:** for additional destination addresses.
- Once the ***ENTIRE*** message sequence is created, highlight and copy all of it and then paste it into PuTTY at the BBS Prompt.

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FYI... Manual message basics
Saving the message

- There are reasons to save the message before sending it
 - You have copy for your records.
 - You can save all your messages before sending them.
 - Avoids having to re-enter the message if something goes wrong.
- Where you save the message is up to you. But:
 - If this is your PC, then save them anywhere where you can find them.
 - If this is a shared PC, then create a directory on the C: Drive.
- For instance: your directory structure could look like this:
 - C:\MyMessages
 - C:\MyMessages\XND-23-1009T (activation number)
- Use the message subject as the name of the file.

BUT... Manual PacketForms will do a lot of this for you!

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READING BULLETINS ON JNOS

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Bulletin Review
Bulletins



- Bulletins are messages intended for a broad audience
- The SCCo BBSs support two types of bulletins:
 - **Notices** are a special type of bulletin specific to Santa Clara County
 - Only distributed to SCCo BBSs (W*XSC)
 - SCCo uses 3 special categories for specific content
 - General **Bulletins** are globally compatible, used for everything else
 - User-defined *category* (e.g.: "quake", "ARES") identifies content
 - User-defined *distribution* controls how widely it is distributed (e.g.: "XSC", "BAY", "NCA", etc.).
- Regardless of the bulletin type, when configured in Outpost, Outpost will automatically download them

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SCCo Notice Areas
Bulletins

NOTICE

- SCCo ARES/RACES has three special **notice** categories:
 - **xscperm**
 - Used for notices that do not expire
 - examples: standard county procedures
 - **xscvent**
 - Notices posted here automatically expire after 8 days
 - examples: Drills, public service events, incidents, other activations
 - **xscstest**
 - Good for user testing; automatically expires after 1 day
 - **allxsc**
 - Where you can write city and jurisdiction notes
 - Notices posted here automatically expire after 8 days

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General Bulletins Overview
Bulletins

- Bulletins are messages that are intended for broad readership
- Bulletins content varies from amber alerts and earthquake reports to jokes and recipes
- Bulletin sender controls how widely the bulletin is distributed
 - Can be as narrow as "local" (this BBS only)
 - Can be as wide as "ww" (worldwide)!
- In JNOS, bulletins are sorted into shared areas (mailboxes) for easier reading

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General Bulletins – Why Do They Matter?
Bulletins

- Standard way to distribute information between BBSs of all types throughout the world
- Use them for fun or for emergency communications
- Use them for distributing information to broader areas:
 - Santa Clara County
 - San Francisco Bay area
 - Northern California
 - All California
 - And wider ...
- Example:
 - During the 2009 cable cut, information about anticipated service restoration times were distributed via bulletins by a ham who had information from the telecom carrier

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General Bulletin Addresses
Bulletins

- Address format: **category@distribution**
- **Distribution**
 - A six-character or shorter keyword which defines how widely the bulletin will be distributed
 - Sender picks from a pre-defined list
 - Acceptable distributions:
 - local Local BBS only
 - xsc XSC Operational Area (Santa Clara County)
 - bay San Francisco and Monterey Bay area
 - nca No. California (generally north of the Tahachapi Mountains)
 - ca California
 - wusa Western USA (generally, West of the Mississippi River)
 - usa United States of America
 - noam North America (Canada, USA, Mexico, ...)
 - ww worldwide

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General Bulletin Addresses (continued)
Bulletins

- Address format: **category@distribution**
- **Category:**
 - A six-character or shorter description of the main topic of the bulletin.
 - Sender picks the category based on the contents of the bulletin
 - Example categories:
 - amber – Amber alerts
 - quake – Earthquake reports
 - flood – Flood reports
 - swpc – Space Weather Prediction Center
 - mtv, cup, sjc, etc. – City bulletins
 - humor or humour – Jokes, stories, etc.
 - Any category works on our SCCo BBSs because we sort bulletins by distribution, not category
 - Uncommon/unusual categories may be held on other BBSs until the sysop decides where it should go

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**THE
PACKET
ZONE**

Submitted for your approval...

- You just arrived at **XND Fire Station 14** to take over as Packet Operator. This is great... Your first MAC assignment!
- As you enter, the last shift Packet Op rushes past you saying... *"there's a couple of ICS 213's on the desk to be sent!"*
- At least you won't be bored.
- Over your shoulder, you hear him yell back... *"Oh yeah, I could never get Outpost to work after IT updated the Windows O/S... and they just left."*
- The PC is running; you click the Outpost icon... Error; and you have never seen this error before ☹️
- OK, deep breaths. You know what to do, right?

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Manual PackItForms

Fortunately, PackItForms is a message creation system designed to work with both Outpost or as a **standalone** solution for forms-based messages.

- What's new with the PackItForms 3.10**
 - Enhanced standalone message management, including:
 - Manages setting up and using user and tactical IDs
 - Takes care of message numbering
 - Includes a Plain Text message form
 - Creates a standalone ICS-309 log
 - Creates copy-ready text (all BBS commands) to paste into PuTTY
 - Easy message saving
- What's the same**
 - Tight integration with Outpost
 - Supports all PackItForms
 - Formats a standard packet form for sending
 - Processes a received packet form


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Get ready for Manual PackItForms

Things to do before you get started:

- Create a directory where you will save your messages.
- Consider a naming convention that is relevant for your assignment, examples:
 - C:\MyMessages\X14-23-1009T (by Activation Number)
 - C:\PacketMessages\2023-10-09 (by date)
 - C:\Xanadu_Station_14 (by assignment)
- Identify a starting message number
 - Can be any number; PackItForm will append a **M** for Manual to make it unique.



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Manual PackItForm messages

Manually create a PackItForm message

1. Run PackItForms with the *manual.cmd*
2. Set up your user ID, tactical ID, and Next message number
3. Pick and fill in a PackItForm
4. Create the packet message
5. Send the message with PuTTY
6. Save a copy of the message

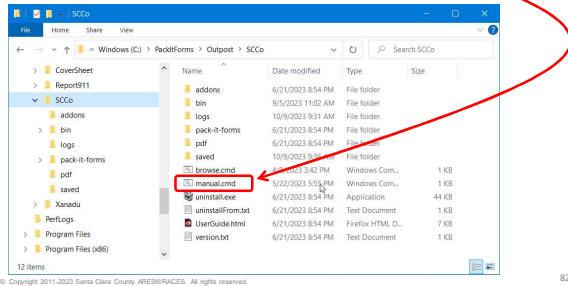
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1. Running manual PackItForms

1. Open your File Explorer and navigate to C:\PackItForms\Outpost\SCCo
2. Find the file *manual.cmd*, and run it (double-click on it)



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2. Set up manual PackItForm

Setup Page

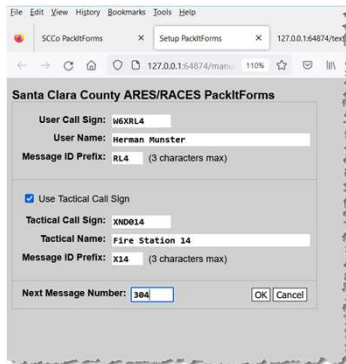
The setup page loads when you first start.

3. Fill in or update all fields:
 - Your user information
 - Tactical Call information
 - Next Message Number

FYI... User and Tactical Call information will persist from run to run.

FYI... The Next Message Number will increment automatically.

4. Press **OK** when done



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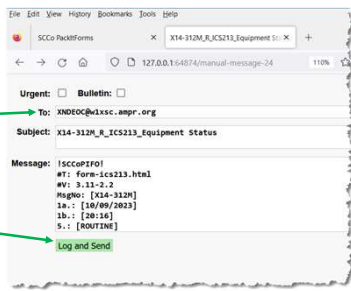
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4. Create the packet message

Message Page

On the Message Page,

- If needed, check the box if this message is **Urgent** or a **Bulletin** .
- In the **To:** field,
 - enter the Destination address
 - multiple addresses, separate with commas.
- When done, press **Log and Send**



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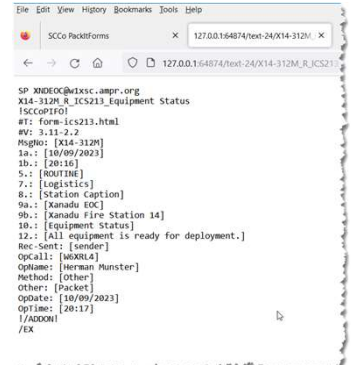
4. Create the packet message

BBS Command Page

The complete packet-ready text is ready for sending.

- Copy the text. Put your mouse cursor in the text area, and then either:
 - From the browser menu, **Edit > Select All** **Edit > Copy**
 - or enter --
 - <ctrl>-a <ctrl>-c** (same as the menus)

Reminder: PackitForm creates a properly formatted Subject line... do not change this!



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5. Send the message

What are the Steps?

- Make sure you previously copied the packet message from the **BBS Command Page** (previous page)
- Start PuTTY
- Connect to the BBS
- Once at the BBS prompt:
 - Put the cursor in the PuTTY text area after the BBS prompt, and then
 - Mouse **right-click** to paste in the message.

The complete packet-ready text is pasted into PuTTY and will start being transmitted to the BBS.

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

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Manual packet operations; not many changes
 This is a tool change, not a process change

1. **First Shift...**
 - a. Show up, request a safety and assignment briefing
 - b. Find a workspace for your packet operations
2. **Initial station setup...**
 - a. Find, assess, and set up the packet station
 - b. equipment check-out
3. **Packet Operations...**
 - a. Download notices, send yourself a test message
 - b. Send the formatted check-in message with your Tac Call
 - c. Manage the message flow
4. **Incoming Shift Change...**
 - a. Request a safety and assignment briefing
5. **Outgoing Shift Change...**
 - a. Archive the event documentation
6. **Securing Operations...**
 - a. Send the formatted check-out message with your Tac Call
 - b. Archive the event documentation
 - c. Shutdown

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Amateur Packet Radio Field Reference, Type II

- Taking a quick look inside

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(the unofficial)
Amateur Packet Radio Field Reference, Type II
 For SCCo RACES Responders
 November 2023

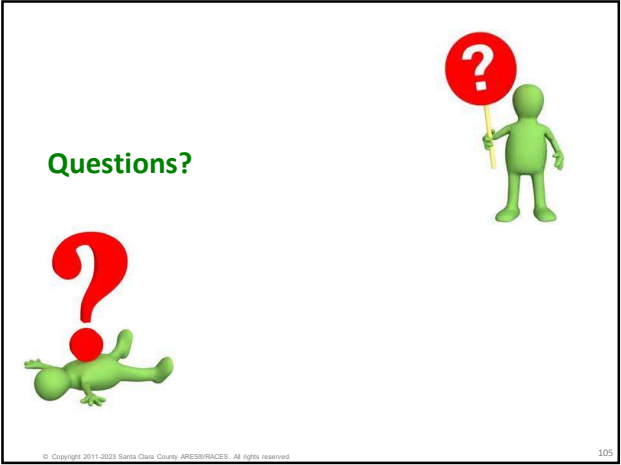
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Could manual packet ops really happen to me?

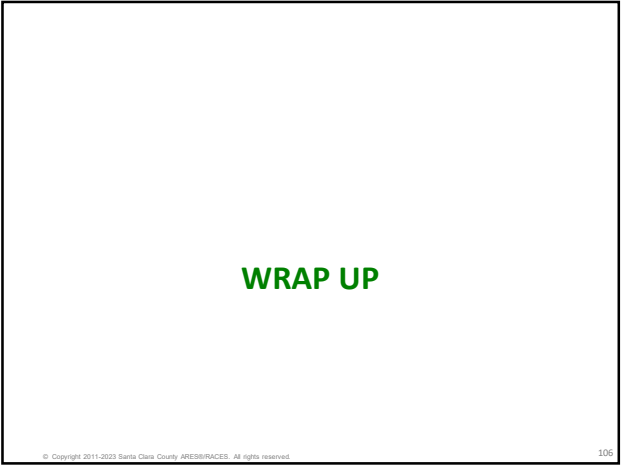
- Better to be safe than sorry... Build your USB packet thumb-drive now!
- Directories (suggested)
 - x:\Programs
 - Putty installer (<https://www.putty.org/>)
 - Putty standalone executables (<https://www.putty.org/> > Alternative binary files)
 - SCCo PacketForm Directory (C:\packetForms\Outpost\SCCo)
 - SCCo Packet Installer - <https://www.scc-ares-races.org/data/packet/client-software.html>
 - SCCo PIFO only Installer (<download_dir>\sccsetup162Mpub_includes\ScCoPIFOsetup3.13pub.exe)
 - Office Libre Portable version (<https://www.libreoffice.org/download/portable-versions/>)
 - x:\SCC Notices
 - downloaded text version
 - Archive of the Outpost SCC Notices directory to reload if necessary
 - x:\TNC Init files
 - text version, seven total
 - x:\Docs
 - Too many to list here... (<https://www.scc-ares-races.org/data/packet/index.html>)
 - Unofficial Amateur Packet Radio Field References, Type III, Type II, e-book edition
 - x:\Miscellaneous
 - Pre-defined messages to be edited prior to sending
 - x:\MyMessages<event>
 - Or whatever directory name you choose.

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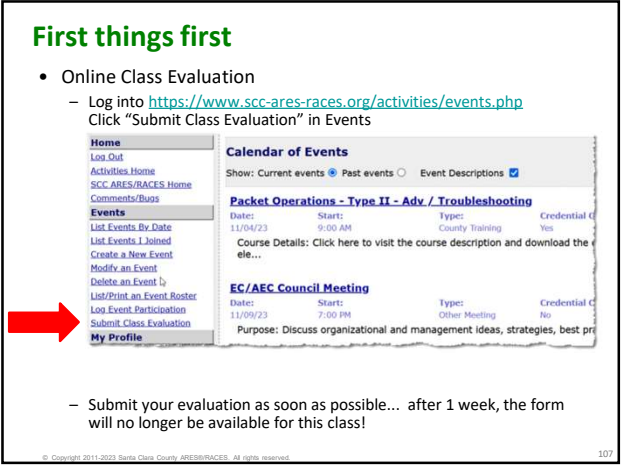
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Exercise Scenario

- You've been dispatched by the *Xanadu EOC* to provide communications for a field location.
 - The EOC's tactical call is XNDEOC on W1XSC.
 - Your tactical call is: XND### (Assigned by your instructor)
 - Your Message Prefix: X## Where "##" are the last two digits of your tactical call
 - Your assignment Name: Xanadu Post ##
 - Operate using your home city's primary or secondary BBS.
- You arrive at your assignment and set up the station, but discover that Outpost on the packet PC does not work! Looks like you need to do all packet operations manually.
- Your assignment will be mailed to you ahead of time.

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Thank You!

Please complete the Course Evaluation **on or before** next Saturday 11-November!

Please complete the Assignment **on or before** next Saturday 11-November!

Office Hours:
 Sunday, 5 November, 3:00p to 5:00p (zoom)
 Wednesday, 8-November, 7:30p to 9:00p (zoom)

If you have questions or feedback about this or other training activities, you can join our packet discussion group.
<https://scc-ares-races.groups.io/g/packet>

Questions, comments, suggestions?
 kn6pe@arrl.net

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