

Packet Type III Part B

Santa Clara County ARES®/RACES/ACS
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Housekeeping

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

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Overview: Packet Classes

Packet Type III, Part A

- Role of the Packet Operator
- Packet Network Overview
- Packet Network Components
- Packet Station HW & SW
- Accessing the Network
- Standard Workflow

Packet Type III, Part A+

- Packet Operations Self-Paced Exercise workbook

Packet Type III, Part B

- Packet Operations
- Diagnosing Setup Problems
- Selecting a BBS
- Creating Messages
- Event Documentation
- Productivity Hints
- Exercise

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 know how to:

- Verify the setup of an existing packet station
- Select a BBS and connect to it
- Create a message with Outpost and PacketForms
 - Properly format the subject line
 - Send a proper check-in message
- Retrieve SCCo notices and send local notices
- Produce event documentation for archiving
- Conduct packet messaging field operations

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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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I figured by not doing my packet assignment
I'd lighten your workload by giving you one
less bunch of messages to check.

PACKET IIIA HOMEWORK AFTER-ACTION

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Type III Part A Homework observations

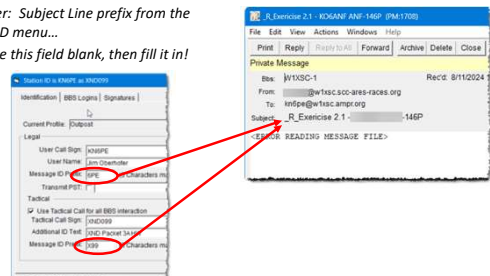
- We had 85% of the class complete the assignment.
- For the most part, everyone did quite well.
- Held 2 office hours; 5 folks checked in with various questions on the homework and BBS access in general.

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Type III Part A Homework observations

What happened to the Message ID?!

- This is a reoccurring issue
- Reminder: Subject Line prefix from the Station ID menu...
- If you see this field blank, then fill it in!

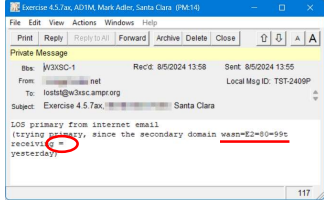


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Type III Part A Homework observations

Problems with messages from the Internet

- Original message:
[LOS primary from internet email](#)
 (trying primary, since the secondary domain wasn't receiving yesterday)
- The word of interest is: "wasn=E2=80=90t"
- =E2=80=90 encodes to a right single quotation mark (') in UTF-8; was likely intended to be an apostrophe (').
- Equal sign (=) points to quoted-printable format
- And the source?



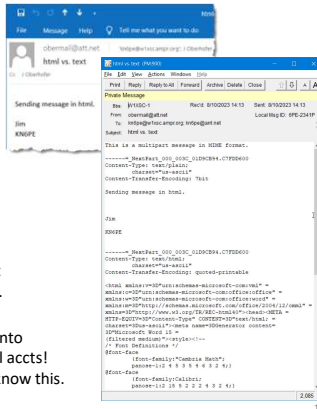
- Who supports what format?
Mail Client **Default** **Others**
- Outlook HTML plain, rich text
- Thunderbird HTML plain, rich text
- Gmail Rich Text plain, some HTML
- Yahoo Rich Text plain text
- iOS Mail emlx plain, rich text
- Others?

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Type III Part A Homework observations

Problems with messages from the Internet

- The cost of HTML Text email.
- A few class members saw firsthand how to turn a 40 character message...
- ... into a **2085-character message!**
 - More than a 50X size increase in the text to be transmitted!
 - Both plain text and HTML text are sent in the same message.
- Bottom Line:**
 - Be careful sending messages into the packet system from email accts!
 - Make sure non-packet users know this.



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PACKET FIELD DEPLOYMENT

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Packet 3A recap

- Packet Network Overview and Components
- Packet Station HW & SW
- Accessing the network
- Standard workflow
- Working with messages
- Customizing message handling
- Miscellaneous Outpost settings
- Localizing packet



How does this all fit together during a field deployment?

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Thinking in terms of a Packet Field Deployment

1. **First shift...** when assigned to start up a station
2. **Initial station setup...** equipment check-out
3. **Packet operations...** managing the message flow
4. **Incoming shift change...** if you are relieving someone else
5. **Outgoing shift change...** if you are being relieved
6. **Securing operations...** when directed to shut down

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1. First Shift
Packet Field Deployment Process

1. **First Shift:** Establishing a packet station
 - 1. Inform Resource Net Control that you have arrived. Check out of the Resource Net before you leave your car.
 - 2. Check into the assigned voice net before you leave your car. Start an ICS 309 Comm Log for the voice net.
 - 3. Make an ICS 214 Unit log entry.
 - 4. Sign in on the site's ICS 211 Check-in sheet.
 - 5. Find the supervisor and inform them of your arrival.
 - 6. Request a safety and assignment briefing; get details on any site- or event-specific conditions that exist. You need to know:
 - a. Supervisor's Name
 - b. Activation Number
 - c. Operational Period
 - d. ICS Location
 - e. Your Tactical Call and Message ID Prefix
 - f. BBS to use
 - g. Band and frequency
 - h. Primary and secondary packet addresses for any preferred destinations
 - 7. Find and establish the workspace to set up packet operations.

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2. Initial setup
 Packet Field Deployment Process

2. Initial setup: Equipment check-out

- 8. Find, assess, and setup the packet radio equipment (see Section 3, Packet Startup Procedure)
- 9. Confirm or set your User Identification (FCC Call Sign) and **Tactical Call for the assigned agency.**
- 10. Check settings before transmitting:
 - Correct BBS in Outpost
 - Correct Interface in Outpost
 - Correct radio frequency
- 11. Begin packet operations. Make ICS 214 Unit log entry.

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3. Packet Operations
 Packet Field Deployment Process

3. Packet Operations: Managing the message flow

- 12. Download all notices to ensure you have the latest; read them.
- 13. Set up a folder named "SCC Notices" (**Tools > General Settings, Startup** tab) and move all notices to this folder.
- 14. Send a test message to yourself to confirm you can create, send to, and receive from the assigned BBS.
- 15. Create a Check-In message to your assigned agency using your **Tactical Call** sign (see Section 9 Check-in, Check-out Message).
- 16. Send, receive, log and process packet messages. To only send a message as soon as it is created, use **Actions > Send Only**
- 17. Manually initiate an Outpost Send/Receive at least every 10 minutes.
- 18. If a message was not acknowledged:
 - a. Check the message address and BBS
 - b. Resend the message if needed
 - c. Let your supervisor know

... more

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3. Packet Operations (continued)
 Packet Field Deployment Process

3. Packet Operations: Managing the message flow

- 19. If new notices are retrieved, follow any new instructions.
- 20. Maintain voice radio contact on the designated voice net.
- 21. Make ICS 214 Unit log entries as appropriate.
- 22. Report any issues or problems to your supervisor in person or over the voice net (if remote).

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4. Incoming Shift Change
 Packet Field Deployment Process

4. Incoming Shift Change: If you are relieving someone else, do the following:

- 23. Inform Resource Net Control that you have arrived. Check out of the Resource Net before you leave your car.
- 24. Sign in on the local ICS 211 Check-in sheet.
- 25. Find the supervisor and inform them of your arrival.
- 26. Request a safety and assignment briefing; get details on any site- or event-specific conditions that exist.
- 27. Find the person you are relieving and receive a shift change briefing (see *Shift Change Information* below).
- 28. Make packet system updates – Station ID, Tactical Call, etc.
- 29. Make all relevant shift change entries in your ICS 214 Unit log.

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5. Outgoing Shift Change
 Packet Field Deployment Process

5. Outgoing Shift Change: If you are being relieved, do the following:

- 30. When contacted by your replacement, provide a shift change briefing (see *Shift Change Information* below).
- 31. Generate and sign a packet ICS 309 Comm Log for your shift.
- 32. Generate all event packet documentation for your shift and deliver as instructed (see *Section 11 Archiving Event Documentation*).
- 33. Turn over all assigned equipment to your replacement.
- 34. Find your supervisor and inform them of the shift change and your departure.
- 35. Make the appropriate shift change entries in your ICS 214 Unit log. Complete and sign the form.
- 36. Turn in all paperwork to your supervisor.
- 37. Sign out on the site's ICS 211 Check-in sheet.
- 38. Check into the Resource Net. Inform Net Control what you plan to do (go home, return to EOC, etc.).

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6. Securing Operations
 Packet Field Deployment Process

6. Securing Operations: when you are directed to shut down, do the following:

- 39. Get permission from your supervisor to shut down.
- 40. Create a Check-Out message to your assigned agency using your *Tactical Call* sign (see *Section 9 Check-in, Check-out Message*).
- 41. Generate and sign a packet ICS 309 Comm Log for your shift.
- 42. Generate all event packet documentation for your shift and deliver as instructed (see *Section 11 Archiving Event Documentation*).
- 43. Complete and sign your ICS 214 Unit log.
- 44. Shut down and pack up all assigned equipment.
- 45. Turn in all paperwork to your supervisor.
- 46. Sign out on the site's ICS 211 Check-in sheet.
- 47. Check out of the assigned voice Net and check in with the Resource Net. Inform Net Control what you plan to do (go home, return to EOC, etc.).

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Amateur Packet Radio Field Reference, Type III

What is it

- Provides a reminder (job aid) for how to perform tasks that need to occur during a packet field deployment.
- Helps ensure task consistency, completeness, and operational alignment with SCCo RACES policies and procedures.


What it is not

- the only source of information on which you should rely.
- an official SCCo RACES deliverable.

Amateur Packet Radio Field Reference, Type III

For SCCo RACES Responders


October 2023



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Initial Setup – Scenario

- Upon arrival at your assignment, your supervisor explains that someone from the local ham club tried to get the packet station working. They were unsuccessful and had to leave.
- He takes you over to the hardware:




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No Problem! ... Right?

- Assembling and configuring a packet station is simple
- And problems are rare, especially for regular users
- But at some point ...
 - ... especially when using someone else's gear,
 - ... you may face at least one of these problems
- Use a logical process to find and resolve problems

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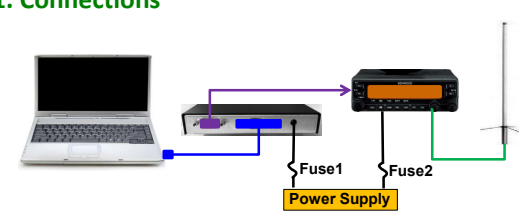
Verifying Packet Station Readiness



1. Connections
2. Initial power-up
3. Equipment settings
4. Application settings

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1. Connections

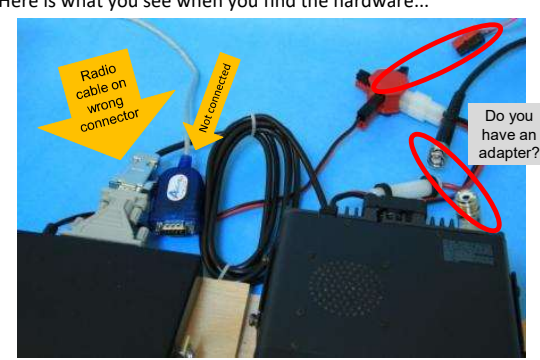


<p>PC/Laptop</p> <ul style="list-style-type: none"> • Comm Port, or • USB port and a USB-to-Serial adaptor • Windows USB Driver 	<p>TNC</p> <ul style="list-style-type: none"> • Serial (or USB) cable • Custom TNC/radio cable • Power cable, fused, to power supply or battery <ul style="list-style-type: none"> – Fuse1 = 1A (typical) 	<p>Radio</p> <ul style="list-style-type: none"> • Antenna coax connected • Power cable, fused, to power supply or battery <ul style="list-style-type: none"> – Fuse2 = 15-20A (typical)
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1. Connections – What You May See

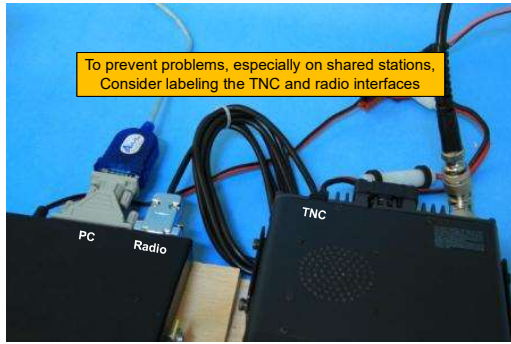
Here is what you see when you find the hardware...



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1. Connections – After Correct Assembly

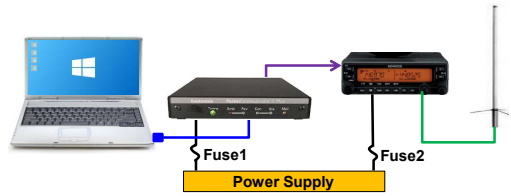
You've straightened out the hardware and cabling



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2. Initial Power-up



PC/Laptop

- Battery is charged, or a power adaptor is plugged in
- Laptop boots up

TNC

- Apply power
- Power LED lights up

Radio

- Apply power
- Radio turns on correctly

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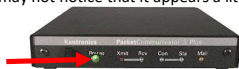
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2. Initial Power-up - TNC

- **IF:** TNC power cable is plugged directly into a RigRunner



- **AND:** TNC's power light is on
 - You may or may not notice that it appears a little dimmer than usual.



- **BUT:** No response from the TNC via a serial connection; it behaves like it's turned off.

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2. Initial Power-up - TNC

- **THEN:** It probably *IS* off!
- Check the RigRunner. Is there a red light on behind the fuse?
 - Replace the fuse
 - RigRunner lights an LED behind the fuse when the fuse is burned out
 - But the current needed to power the fuse LED is just barely enough to light the power light on the TNC (dimly)!
- Or, try another port on the RigRunner.
 - Your model may not have an LED light or it may not be working
- Or, try another power cord
- Avoid blowing a fuse:
 - ALWAYS plug the power cord into the TNC first, then into the power source.
 - This avoids the chance of the TNC power connector plug tip touching the TNC chassis, thereby shorting positive to ground, and blowing the fuse

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3. Equipment settings



PC/Laptop Settings

- Terminal Program:
 - Com Port Setting
 - Com Port #
 - 9600 baud
 - 8 data bits
 - No parity
 - 1 stop bit
 - RTS/CTS flow control

TNC Settings

- Comm Port Settings
 - 9600 baud
- Other KPC-3s default to 8-N-1
- Carrier Detect settings
 - INTFACE TERMINAL
 - CD SOFTWARE

Radio Settings

- Correct frequency
- No Tone
- No offset
- Squelch open
- High power
- Correct 'side' of radio is selected for packet

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3. Equipment settings – TNC

What could go wrong?

Meaning, what are the symptoms?

1. Can't find the Com Port for my USB-Serial adaptor
2. TNC is stuck in Autobaud routine
3. When I type something, I see *garbled* text
4. Can't communicate with the TNC at all
5. Wrong audio output level

If you are stuck here and cannot 'talk' to the TNC, do not even try to proceed to the next step!

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3. Equipment settings – TNC

3.1 USB-Serial adaptor problems/missing PC Com Port

Most TNCs use: 9600 baud, 8-N-1, RTS/CTS

3. Equipment settings – TNC

3.2 KPC-3's Autobaud Routine

- With everything properly connected and powered on, you might see this...

- This is the **KPC-3 Autobaud** routine that assures that the KPC-3 Plus baud is the same for the communication software you are using.
- AUTOBAUD sends and resends the message "PRESS (*) TO SET BAUD RATE" at one baud after another.
- When the KPC-3 baud matches that of your terminal program, you can read the text.
- When the two bauds do not match, the message appears garbled, if it appears at all.

3. Equipment settings – TNC

3.2 KPC-3's Autobaud Routine

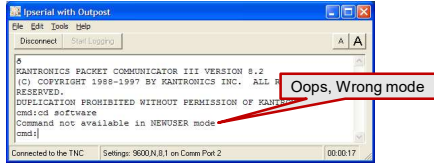
- WHEN** does this occur:
 - The first time your KPC-3 Plus is ever used (from the factory)
 - Dead TNC memory battery
 - User performs a hard reset with the RESTORE DEFAULT command
- HOW** to fix:
 - Get ready... when you clearly see the **PRESS (*) TO SET BAUD RATE** text, immediately press the "*" key.
 - Then, enter the following commands:
 - ENTER YOUR CALLSIGN=> **W6XRL4** (your call sign or tactical call)
 - cmd: **INTFACE TERMINAL** (enables the full TNC command set)
 - cmd: **CD SOFTWARE** (TNC Carrier Detect is performed in software; lets you keep the radio squelch open)

3. Equipment settings – TNC

3.2 Some more on the *Intface Terminal* command

Full Command Set

- After a hard reset, the Kantronics TNC puts you in **NEWUSER** mode.
- **NEWUSER** mode allows only the most basic commands. As a result, you might see this:



To fix, at the cmd: prompt, you type:

```
cmd: INTFACE TERMINAL      (allows all commands)
cmd: CD SOFTWARE
```

- Now, the RCV light only lights when the TNC hears packets

3. Equipment settings – TNC

3.2 More on the *TNC Carrier Detect* command

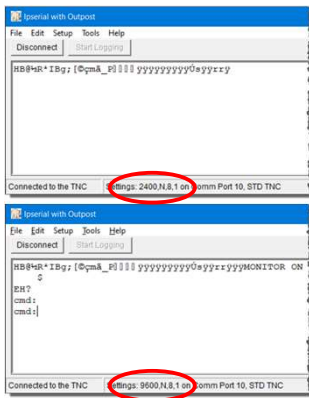
- We recommend operating the packet station with the squelch on the radio fully open (static/hiss all the time)
 - Allows the TNC to receive the weakest of signals
 - Unaffected by poorly chosen squelch level on the radio
- If squelch is open and the TNC’s “Receive” light is on all the time, then the TNC’s carrier detect mode is incorrectly set
- After setting **CD SOFTWARE**, the TNC’s “Receive” light is only on when packets are heard
- To do that for a Kantronics TNC, at the TNC Prompt, enter:
 - cmd: **CD SOFTWARE**
 - Carrier Detect performed by the TNC software, not squelch-dependent
 - Other TNCs default to this option (Timewave) or have a different command for this option; check your TNC manual

3. Equipment settings – TNC

3.3 Garbled text

Back at Ispserial.exe...

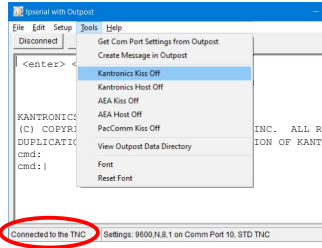
- **What you see:**
 - Press a key, see garbled text.
- **WHEN** does this occur:
 - TNC previously worked great!
 - But someone changed the program’s baud rate
- **HOW** to fix:
 1. TNC baud is likely 9600
 2. Change the program baud **Setup > Com Port Settings**, change baud to 9600...
 3. **Disconnect, Reconnect, press** any key.
 4. Try other baud rates if this does not fix it.



3. Equipment settings – TNC

3.4 Can't communicate with the TNC (#1)

- What you see:**
 - TNC previously worked great!
 - The cable, USB drivers, and power are good, and no blown fuse
 - But Press any key and I get no reply
- WHEN might this occur:**
 - Someone or some program put the TNC in **KISS mode**
- HOW to fix:**
 - Start Iserial
 - Verify the TNC Com Port and baud rate
 - Verify Com Port Connect, then
 - Tools > Kantronics Kiss Off**
 - TNC is restored to **TERMINAL mode**




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3. Equipment settings – TNC

3.4 Can't communicate with the TNC (#2)

If you have a **USB-Serial Adaptor**, it is likely to be a problem with the **USB-Serial Adaptor Driver**. Windows Device Manager is next.

- Device Manager is a Microsoft Windows O/S tool.
- It allows users to view and control the hardware attached to the computer.
- When a piece of hardware is not working, the offending hardware is highlighted for the user to deal with.
- To run Device Manager...
 - Press **Windows** key + **R** key together to open a Run box.
 - Type **devmgmt.msc**, press **OK**. Device Manager opens.
 - Or, enter **device manager** in the Windows Search field on the task bar... Device Manager opens.

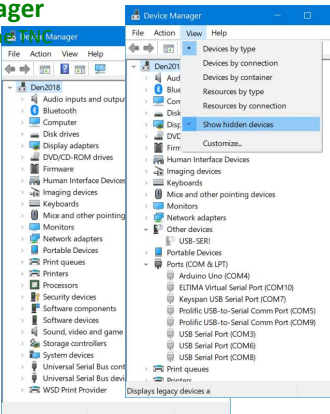


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Windows Device Manager

3.4 Can't communicate with the TNC


- Find and expand the **Ports (COM & LPT)** dialog.
- Don't see it? Then check:
 - USB-Serial connector is attached to the PC
 - For KPC3+ USB, make sure KPC3 is powered on
- Also, try
 - View > Show hidden devices**



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Windows Device Manager

3.4 Can't communicate with the TNC



1. Find and expand **Ports (COM & LPT)** dialog.
2. You should see something like this...
 - Portable Devices
 - Ports (COM & LPT)
 - Keyspan USB Serial Port (COM7)
 - USB Serial Port (COM3)
 - Print queues
3. You do not want to see anything like this...
 - Other devices
 - USB-SER!
 - Portable Devices
 - PL2303HXA PHASED OUT SINCE 2012
 - Print queues

!!! These are not all the problems you might see.

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Yes, you have a problem... now what?

3.4 Can't communicate with the TNC



- Troubleshooting USB-Serial driver problems is a class by itself... we do not have time to cover it here.
- However, here are 5 (not all) things you can do:
 1. Review the SCCo RACES USB-to-Serial Adapter page... [Data Networking > AX.25 over VHF > Equipment and Software > USB-to-Serial Adapter](#)
 2. Post your problem or questions to the packet email list. It is likely there is an SCC RACES packet op who has encountered and solved this problem before.
 3. If you know the USB-Serial adaptor chipset, try searching, downloading, and installing its Windows driver.
 4. Buy yourself a new USB-Serial Adaptor, then label it, practice with it, get comfortable with it, put it in your packet kit, and deploy with it.
 5. Lastly, if you have a bunch of old, unknown, or confirmed non-working USB-Serial Adaptors in your junk box, then throw them out NOW and save yourself from future headaches.

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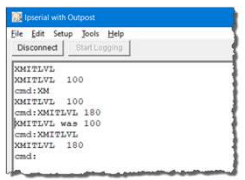
3. Equipment settings – TNC

3.5 Wrong audio output level

- The TNC sets the audio output level (transmit drive audio) for your radio.
- The transmit drive level can be set from the command line, but it implies you know to what value it should be set.
- While calibrating the drive level is beyond the scope of this course, being able to view and set a previously determined value is in scope.
- To view the currently set transmit drive level:


```
cmd: XMITLVL (XM for short command)
XMITLVL 100 (displays the value. Default=100, range is 0 to 502)
```
- To set the transmit drive level:


```
cmd: XMITLVL 180 (example)
XMITLVL was 100
```
- Most packet station owners will have the XMITLVL written down. If you cannot find it, ask your Shift Supervisor.



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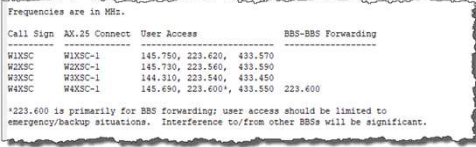
3. Equipment settings – Radio Frequency

- Use the correct frequency for your primary or secondary BBS

Call Sign	AX.25	User Access	BBS-BBS	Location
W1XSC	W1XSC-1	145.750, 223.620, 433.570		Santa Clara Co Office Bldg (San Jose)
W2XSC	W2XSC-1	145.730, 223.560, 433.590		Crystal Peak (South County)
W3XSC	W3XSC-1	144.310, 223.540, 433.450		Palo Alto
W4XSC	W4XSC-1	145.690, 223.600*, 433.550	223.600	Frazier Peak (above Milpitas)

<http://www.scc-ares-races.org/freqs/packet-freqs.html>

- The same information is available as a packet notice

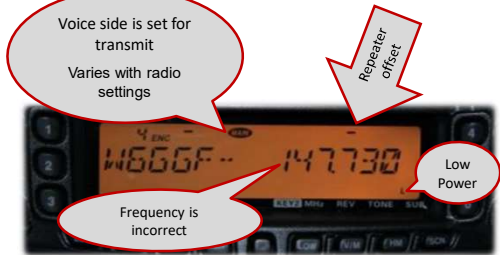


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3. Equipment settings – Radio Settings

What you see... and (not) hear:

- Everything is now on. You are supposed to use the W2XSC BBS. But no packets are heard.



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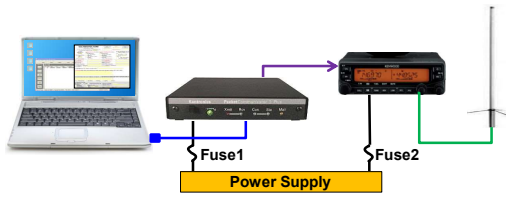
3. Equipment settings – Radio Settings

- You change the radio settings
 - High Power
 - Correct Frequency
 - Squelch is open (BUSY)
 - Correct side is set for packet (dual rcv/xmt radios, only)
 - Some radios "force" packet to a particular side



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4. Application settings



Application Settings

- Station ID
- Tactical Call
- PC Time
- BBS
- TNC
- Other Outpost configurations

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Starting Outpost > Station ID

- You get to the Outpost Station ID screen....

Have you been assigned a tactical call sign?

Is this your call sign, name, initials?

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Outpost PC Time Check

Is the date and time correct?

Correct date and time is important! It will be used in a variety of places. Verify each time you start up.

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Checking the BBS and TNC settings

... but you were assigned to W2XSC

... and you have a KPC-3+ TNC

- After setting the BBS and TNC, we are ready to go.

Best Test? – Press Send/Receive

You are talking to the TNC!
TNC prompt = cmd:

You are talking to the BBS!
JNOS BBS prompt = '>'

```

CPACTIVE WAS OFF
cmd:STREAMV OFF
STREAMV WAS OFF
cmd:STREAMW $00
STREAMW WAS $7C (1)
cmd:
cmd:connect W2XSC-1
cmd:*** CONNECTED TO W2XSC-1
[MODE=2,0K,1,XSC:1-DM5]
You have 0 messages.
(RO) >
OK 0
(RO) >
A XSCPERM
Retrieving Message List...
    
```

Where should I connect?

SELECTING A BBS TO USE

Selecting a BBS

- Santa Clara County ARES/RACES operates six BBSs
 - FCC Call Signs: W1XSC, W2XSC, W3XSC, W4XSC, W5XSC, W6XSC
- All six are identical in function but operate independently to maximize survivability during disasters
- All six have appropriate addresses for AX.25 packet radio, the Internet, AMPRnet, BBS Network and NetROM

Call Sign	AX.25	Internet/AMPRnet	BBS Network	NETROM Alias
W1XSC	W1XSC-1	w1xsc.ampr.org	w1xsc.#nca.ca.usa.noam	XSCBB1
W2XSC	W2XSC-1	w2xsc.ampr.org	w2xsc.#nca.ca.usa.noam	XSCBB2
W3XSC	W3XSC-1	w3xsc.ampr.org	w3xsc.#nca.ca.usa.noam	XSCBB3
W4XSC	W4XSC-1	w4xsc.ampr.org	w4xsc.#nca.ca.usa.noam	XSCBB4
W5XSC	W5XSC-1	w5xsc.ampr.org	w5xsc.#nca.ca.usa.noam	XSCBB5
W6XSC	W6XSC-1	w6xsc.ampr.org	w6xsc.#nca.ca.usa.noam	XSCBB6

This information is also available as a packet notice in the xscperm area

<https://www.scc-ares-races.org/freqs/packet-freqs.html>

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Selecting a BBS

- Each city/agency has a "primary" and "secondary" BBS
 - Minimizes hidden nodes
 - Distributes load on our radio channels
 - Eliminates BBS-to-BBS forwarding for messages within a single agency
 - Makes it easy to know where to send messages

#	Agency	Prefix	Primary BBS	Secondary BBS
Santa Clara County Cities and Agencies				
1	American Red Cross	ARC	W1XSC	W4XSC
2	CAL FIRE VIPs - Santa Clara Unit	SCU	W2XSC	W1XSC
3	Campbell, City of	CBL	W1XSC	W4XSC
4	Cupertino, City of	CUP	W1XSC	W4XSC
5	Gilroy, City of	GIL	W2XSC	W1XSC
6	Hospitals (all SCCo) & MHJOC	HOS	W2XSC	W1XSC
7	Loma Prieta Region	LMP	W2XSC	W1XSC
8	Los Altos, City of	LOS	W3XSC	W1XSC

This information is also available as a packet notice in the xscperm area

<https://www.scc-ares-races.org/freqs/packet-freqs.html>

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Selecting a BBS

- Connect to the primary BBS whenever possible
- Otherwise, connect to your secondary BBS
 - Otherwise, connect to whatever BBS you can reach
- Access frequencies
 - EOCs should use 1.25m (220) whenever possible, because ...
 - Most individual users will be on 2m or 440
- Action Items
 - Print out and keep a copy of the Packet Frequencies and BBS Listing page in your go kit (maps cities to Tactical Calls to BBSs)
 - Keep a copy of the equivalent packet notices in an Outpost folder
 - Know your own primary and secondary BBS call signs!

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BBS Connect Names for AX.25 Packet Radio

Call Sign	AX.25	User Access	BBS-BBS	Location
W1XSC	W1XSC-1	145.750, 223.620, 433.570		Santa Clara Co Office Bldg (San Jose)
W2XSC	W2XSC-1	145.730, 223.560, 433.590		Crystal Peak (South County)
W3XSC	W3XSC-1	144.310, 223.540, 433.450		Palo Alto
W4XSC	W4XSC-1	145.690, 223.600*, 433.550	223.600	Frazier Peak (above Milpitas)
W5XSC	W5XSC-1	varies	varies	Training, events, backup
W6XSC	W6XSC-1	varies	varies	Testing, backup

<https://www.sco-ares-races.org/freqs/packet-freqs.html>

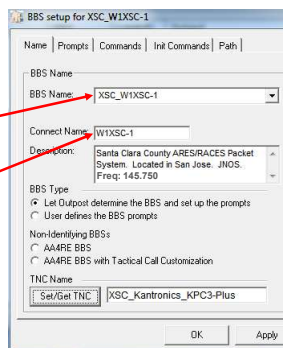
- The AX.25 protocol uses an SSID (Secondary Station Identifier):
 - The "-1" following the call sign... W1XSC-1
 - Allows more than one device, or more than one service on a device, to use the same FCC call sign on the same frequency
- The BBS mailbox function on all SCCo BBSs uses an SSID of 1
- To connect to your mailbox on an SCCo BBS using AX.25 packet radio, you connect to:
 - W1XSC-1, W2XSC-1, W3XSC-1, W4XSC-1, W5XSC-1 or W6XSC-1

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Selecting a BBS in Outpost

- Setup > BBS ...
- The SCCo Installer includes setups for all SCCo BBSs
- All SCCo-supplied setup names start with "XSC_"
- For the W1XSC BBS, you will connect to W1XSC-1
- Then tune your radio to the proper frequency from your BBS frequency list



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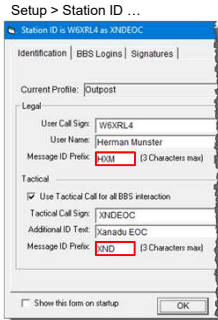
CONNECTING TO YOUR MAILBOX

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Call Sign Determines your "Login" and Mailbox

- BBS "logins" are based on the call sign used by the connecting station
 - Defined by the TNC's "mycall" setting
 - Outpost sets this automatically based on information in Setup > Station ID...
- The call sign can be either an FCC or tactical call sign
 - FCC call sign: W6XRL4 (Herman Munster)
 - ✓ Tactical call sign: XNDEOC (Xanadu EOC)
 - ✓ Additional ID Text: where you are located
 - ✓ Message ID Prefix: unique identifier



NOW REQUIRED!

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Tactical Call Signs

- Tactical call signs are *pre-defined* before use
 - Your City/Agency EC/AEC can request tactical call signs as needed <https://www.scc-ares-races.org> > Packet BBS > How to Request Tactical Calls
- You can connect to any SCCo BBS using any valid tactical call sign, but:
 - You should only do so when assigned by your city/agency
 - You should use the primary BBS for your agency
 - You should only use another BBS if authorized by your city/agency

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CHECK-IN/OUT MESSAGES

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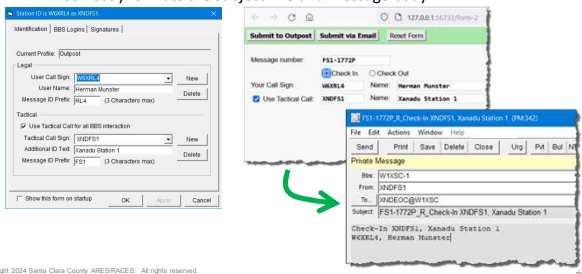
Check-In/Out Messages

- Properly formatted Check-In/Out messages are important
 - Recipient can easily find them among other messages in the In Tray
 - This informs the EOC which stations are ready
 - They are part of DSW supervision
- General rules during field assignments
 - Check in and out using your assigned Tactical Call, not your FCC call
 - Check-in as soon as your station is ready
 - Check-out using your Tactical Call before shutting down the station
 - Always sent as a plain text message; use PackItForms makes it easy.
 - Always uses [HandlingOrder] = “_R_”
 - Handling Order = R (Routine)
 - Always follows the standard subject line format
 - With specific check-in/out details for subject and message body

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Check-In/Out: PackItForms

- PackItForms includes a Check-In/Out message form
 - Option for both check-in and check-out messages
 - Handles FCC call signs and Tactical Calls
 - Correctly formats the subject line and message body



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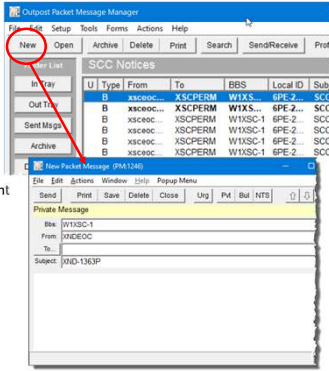


CREATING A MESSAGE

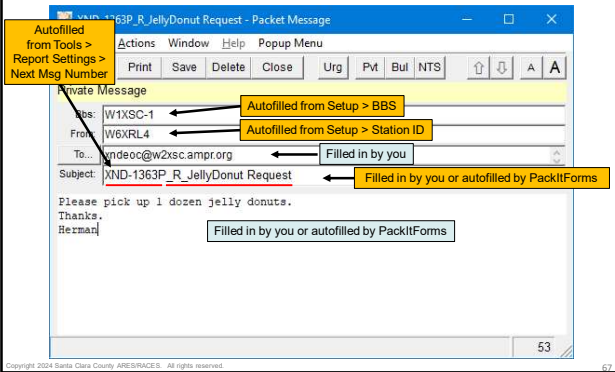
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Creating Messages with Outpost

- Start a new message:
 - Press **New**
 - Fill in all remaining fields
- Multiple source options
 - Free-form plain text
 - Supports TAB characters, reducing the character count
 - Cut and Paste from other apps, like Word, Excel
 - **File > Open a File**, then choose a .csv file
 - Import text files directly into the message form
- Press **Send**
 - Message goes to Out Tray



Outpost Message Window Details



Message Prioritization

- Prioritize according to handling order, then date/time
 - Handling order: Immediate, Priority, Routine
 - Use Date/Time to prioritize between same handling order
 - Ultimately, the served agency decides the order



Standard Packet Subject Line

[OriginatorMsg#]_[HandlingOrder]_[Subject]

Example: XND-200P_R_Packet 3B Class Exercise Instructions

[OriginatorMsg#]

- 3-character message prefix for the originator, a hyphen, followed by a message number.
- Generated by Outpost with a P suffix

[HandlingOrder]

- 1-letter indicator as follows:
 - I = Immediate
 - P = Priority
 - R = Routine
- Autofilled by PacktForm or entered by you.

[Subject]

- Short description of the contents of the message
- Autofilled by PacktForms or entered by you

NOTE on Immediate messages:

Immediate messages are usually sent by voice. But, if an Immediate is sent be packet, then send it immediately and then contact the TO: party by a voice net (1st... command net, 2nd... message net) to let them know an Immediate message is coming their way by packet.

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Why The Subject Line Matters

- The receiving station must process messages according to handling order, then date/time
 - Must be able to easily scan the subject lines
- Which is most important? What is handling order?

Subject
PTS-834P Urgent: Need bulldozer
PTS-835P Water distribution
PTS-836P Barricades

- How about now?

Subject
PTS-834 P Urgent: Need bulldozer
PTS-835 P Water distribution
PTS-836 I Barricades

Even a large In Tray is easily scanned

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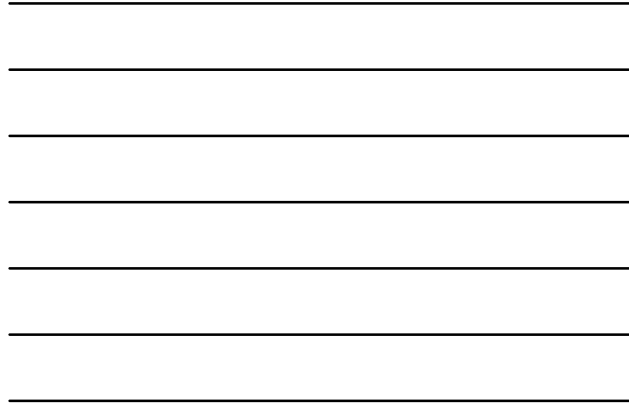
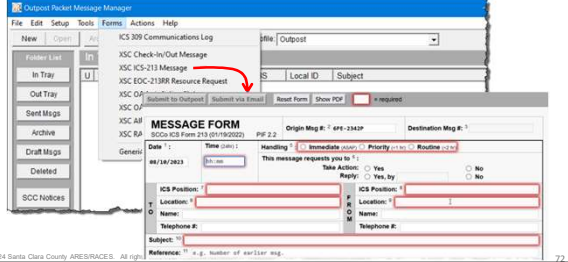
PacktForms

The screenshot displays a complex web interface for PacktForms. It features a sidebar with navigation options and a main content area with multiple overlapping form windows. The forms include fields for message numbers, dates, locations, and various status indicators. One prominent form is titled 'Santa Clara County EOC Resource Request Form 213RR' with a date of 8/23/2023. Another form is 'Santa Clara OA Shelter Status' and a third is 'Allied Health Status Report Short Form (AHC06)'. The interface is designed for efficient data entry and management of emergency response forms.

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Creating a PackItForms

- Select the form on Outpost’s **Forms** drop down menu
 - Default web browser will start
 - Form will be displayed with fields to be completed
 - Note the items highlighted in RED... these are all **required fields**.



Address it to whom?

- SCCo ARES/RACES Recommended Form Routing Cheat Sheet
- PackItForms now auto-fills most forms with the
 - Handling Order
 - To Location
 - To ICS Position

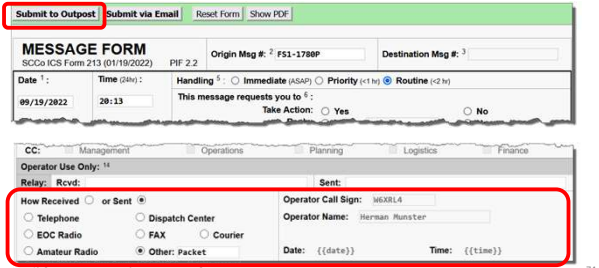
Form Type	Handling	To Location **	To ICS Position **
General EOC			
ICS-213 Message Form	Author defined	Author defined	Author defined
EOC-213RR Resource Request	If "Priority" (field 11) is:	Then "Handling" is:	County EOC Planning Section
	Low (0-4 hrs)	Immediate (ASAP)	
	Medium (5-12 hrs)	Priority (<1 hr)	
	High (13-24 hrs)	Routine (<2 hrs)	
OA Jurisdiction Status	Immediate (ASAP)	County EOC	Situation Analysis Unit Else: Planning Section
OA Shelter Status	Priority (<1 hr)	For city-managed: City EOC For county-managed: County EOC	Mass Care and Shelter Unit Else: Care and Shelter Branch Else: Operations Section

<https://www.scco-ares-races.org/> > Forms & Signs > Go Kit Forms



Submit the PackItForm to Outpost

- Operator info is filled in automatically
 - Operator call sign and name
 - "Sent" by "Packet"
 - Date and Time (when Submit button is pressed)
- Click the Submit button to send to Outpost



Submission Successful

- Form is transferred to Outpost; OK to close this form

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Message Progression

Did you see what happened?

- Incomplete Message;** controls are grayed out, required fields in Red, gray banner
- Complete Message;** controls are enabled, ready to send, green banner.
- Submitted Message;** controls are removed; displayed success status, purple banner.

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Error During Submission

But then, you see this...

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Correcting Submission Errors

- Is Opdirect running?
 - Opdirect interfaces PacketForms to Outpost

Windows Taskbar

Opdirect EMS

Outpost Packet Manager

- If you do not see Opdirect listed in the taskbar...
 - In Outpost: **Tools > Message Settings, Adv Tab**;
 - Automatically Start Opdirect...
 - Press OK, and Restart Outpost. Verify Opdirect is running
 - Press "Back" on web browser
 - Click "Submit" button again

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Enter the "To" Address

- An Outpost message window appears, containing a condensed and formatted message
- Subject line is correctly formatted
- Enter the "To:" address
 - More on this in a bit!
- Click "Send"

FS1-1780P_R_IC5213_Replacement Generator (RM354)

Send | Post | Save | Delete | Close | Urg | Pst | NTE | A | A

Private Message

Re: W1XSC-1

From: XNDF51

To: XNDEOC@W1XSC.SCC.ARES-RACES.ORG

Subject: FS1-1780P_R_IC5213_Replacement Generator

```

||SCOPFPO:
#?: form-icm213.html
#: 3.9-2.2
MsgNo: [FS1-1780P]
dt.: [09/19/2022]
lt.: [20:13]
S.: [ROUTINE]
T.: [CopiesLine]
S.: [Radio Operator]
Ra.: [Kanadu EOC]
Rp.: [Kanadu Station 1]
IO.: [Replacement Generator]
II.: [Generator has failed. Need a replacement of at least 5
KW as soon as possible.]
Re-Sent: [sender]
OpCall: [W0RDL]
OpName: [Herman Munster]
Method: [Obsee]
OpUser: [RACES]
OpDate: [09/19/2022]
OpTime: [20:17]
!/ADDDO!
    
```

Subject line and message text fields are locked. 463

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Press Send/Receive

- Message is in the Out Tray
- Press "Send/Receive"
- Messages will be sent if...
 - message is from the currently configured user (Setup > Station ID), and
 - message is being sent to the currently configured BBS (Setup > BBS), and
 - message is not a DRAFT message (meaning, you pressed Send on the message form)

Outpost Packet Message Manager


File | Edit | Setup | Tools | Actions | Help

New | Open | Archive | Delete | Post | Search | Send/Receive | Profile | Outpost

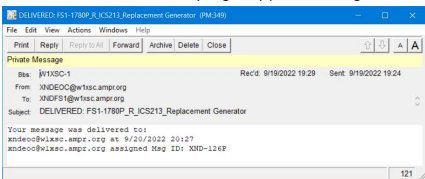
Folder List	Out Tray
In Tray	U Type From To BBS Local ID Subject Date/Time Size
Out Tray	W1XSC-1 XNDF51 xndec@ W1XSC-1 FS1-243P_R_IC5213_Replaceme None 300

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Delivery Receipts



- Message Recipient
 - When you receive a message, Outpost generates a delivery receipt
 - Receipts are sent during the same Send/Receive session that retrieved the message
- Message Originator
 - Receives receipt with Subject line: "DELIVERED: <original subject>"
 - Message contents: the date and time downloaded by **Outpost** by recipient
 - Eliminates the need to ask "Did you get my packet message?"




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ADDRESSING RECAP

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Top 5 Addressing Take-aways

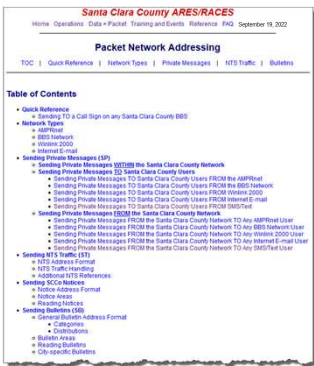


- Addresses within the SCCo packet network use the standard Internet-style username@domain address format : usercall@bbcall.scc-ares-races.org
examples: W6XRL4@w2xsc.scc-ares-races.org
XNDEOC@w4xsc.scc-ares-races.org
- Three different addressing formats for sending messages:
To: W6XRL4@w2xsc.scc-ares-races.org ... Full address always works!
To: W6XRL4@w2xsc ... **At least** always add the **bbcall** sign
To: W6XRL4 ... **NEVER** use this shortcut
- Always send to the user's **Primary BBS**, unless
 - that BBS is down (then, use their **Secondary BBS**), or
 - that user cannot reach his/her primary BBS (bad location), or
 - you are told to use a different BBS
- When sending from email to a packet address, send as a plain text e-mail
- Read and understand the **Packet Network Addressing Guide!**
<http://www.scc-ares-races.org/data/packet/packet-addressing.html>

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Complete Addressing Guide Available Online

- Quick Reference
- Network Types
- Sending Private Messages
 - Within our network
 - To other networks
 - From other networks
- Sending NTS Traffic
- Sending Notices
- Sending Bulletins



<https://www.scc-ares-races.org/data/packet/packet-addressing.html>

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Distributing network-wide messages

NOTICES AND BULLETINS

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Notices and Bulletins: Overview



- Bulletins are messages intended for a broad audience
 - They are a great way to get information out to everyone
 - Better than a mailing list; no need to know all the desired addresses
 - When configured, Outpost will take care of retrieving them for you
- The SCCo BBSs support two types of bulletins
 - **SCC Notices** are a special type of bulletin specific to Santa Clara County BBSs
 - Only distributed to SCCo BBSs (W*XSC)
 - Simple to address
 - SCCo uses 3 special **Notice** categories
 - General bulletins are used for wider (local to worldwide) distribution
 - Organized by general **categories** (e.g.: "quake", "ARES"), and
 - **Distribution** ID defining how widely it is distributed (e.g.: "XSC", "BAY", "NCA", etc.).
 - Outside the scope of this class (will cover in the Packet Type 2 Class!)
- Regardless of the bulletin type, when configured in Outpost, they will automatically be downloaded

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SCCo Notice Areas NOTICE

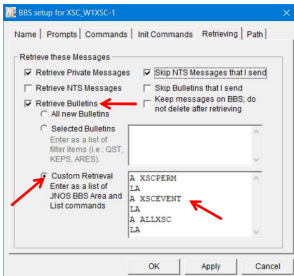
- SCCo ARES/RACES has four special notice categories:
 - xscperm
 - Used for notices that do not expire
 - examples: standard county procedures
 - xscevent
 - Notices posted here automatically expire after 8 days
 - examples: Drills, public service events, incidents, other activations
 - xsctest
 - allxsc
 - Where you can write city and jurisdiction notes
 - Notices posted here automatically expire after 8 days
- Advantages
 - Limits on-air time required to check bulletins
 - Focuses readership so important information is not missed
 - Outpost only downloads a notice once

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Outpost is Pre-Configured for SCCo Notices

- The SCCo Packet Installer pre-configures Outpost to download SCCo notices
 - XSCPERM
 - XSCEVENT
 - ALLXSC
- In Outpost:
 - Setup > BBS, Retrieving Tab
 - Check "Retrieve Bulletins"
 - Check "Custom Retrieval"
 - Custom Retrieval:

A	XSCPERM	(Area)
LA		(List All)
A	XSCEVENT	(Area)
LA		(List All)
A	ALLXSC	(Area)
LA		(List All)



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Using City Bulletins

Setup

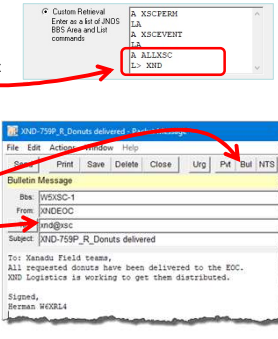
- Setup > BBS > Retrieving
- Change to your city's three char prefix (ex: "XND", "SJC", "MTV", etc.)

NOTE: only one City entry is allowed.


Create, send a city bulletin

- Start a new message
- Click the "Bul" button
- Address it to "xnd@xsc"
- Enter your message and click Send
- Addressing it to @xsc distributes to all XSC (Santa Clara County) BBSs.

See the details here...
<https://www.scc-ares-races.org/data/packet/packet-addressing.html#bull-city>




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EVENT DOCUMENTATION

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Accuracy and Completeness
Updated for the 2017 report



Excerpts from the FEMA|Office of Inspector General report titled "**Summary of Key Findings of Fiscal Year 2017 FEMA Disaster Grant and Audits**"

- "In FY 2017, we identified \$2.08 billion in questioned costs, which represents 96 percent of the \$2.16 billion audited."
- "... questioned costs that included Ineligible Work and Costs and Unsupported Costs, which we recommended FEMA disallow."

In cases where FEMA payments were made and claims later disallowed, recipients were required to repay these payments, with audits sometimes taking place years later.

Because our documentation could be a used as part of the City's justification for either an expense reimbursement or cost recovery request, ensuring the accuracy and completeness of what we submit is critical.

Ref: <https://www.oig.dhs.gov/sites/default/files/assets/2018-09/OIG-18-75-Sep18.pdf>

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Archiving event documentation
Introduction

- The job is not done until the paperwork is complete... and submitted.
 - Every scrap of paper used during an activation is part of the event or incident and goes to the Documentation Unit (or your Supervisor)
 - It must be legible (print)
 - Use one side only
 - These are legal documents that may be needed to defend decisions
 - Most of this documentation is 'discoverable'
 - If it is not in the documentation, then it did not happen
 - Some documentation is specifically created after the event or incident, such as the After-Action Report
- And, all this applies to our packet operations

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Archiving event documentation

Introduction

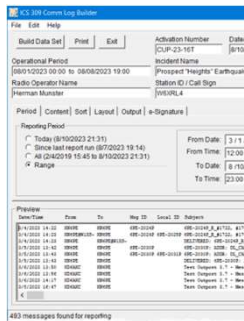
- During a Packet Deployment, you will produce the following:
 - ICS 214-SCCo Unit Activity Log
 - ICS 309-SCCo Communications Log (if participating on a voice net)
 - ICS 309 Communications Log (packet)
 - All third party sent & received PacketForms and plain text messages
 - All sent and received operator to operator packet messages
 - Any *Form 1* / hand-scribbled / sticky notes, documentation.
- Whether it be an exercise or a real activation, when your shift is over, your supervisor will provide instructions on wrap-up tasks that need to be done. These can include:
 - Submitting all documentation (to whom and how)
 - Preparing the packet station for the next use, including archiving your shift or the event

Archiving event documentation

ICS 309 Communications Log (packet)

1. Create the ICS 309 Comm Log

- From Outpost, **Tools > Report Settings**, 3rd tab, "ICS309." Enter all fields.
- Select **Forms > ICS 309 Comm Log**.
- Enter the **Operational Period** (manual).
- Select **Period** Tab. Select **Range**, set the **From:** and **To:** to the date/time range for when *your shift* (or event) occurred.
- Select **Content** Tab. Do not exclude anything!
- Select **Output** Tab. Check output options.
NOTE: If you do not have a printer, then try the default **Microsoft Print to PDF** printer.
- Select the Signature Tab.
- Press **Build Data Set**, then press **Print**.
- Sign any paper-printed ICS 309 form that are not e-signed.
- Deliver this report to your supervisor.**

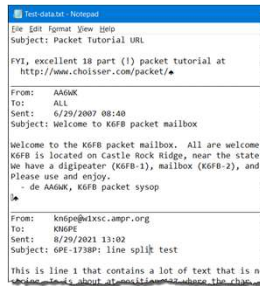


Archiving event documentation

Printable Message Listing

2. Create a printable message listing

- From Outpost, **File > Save All**.
- This will create an Ascii-formatted file of all messages in the current folder with a **Page Break** between each message. Use meaningful file names.
- Repeat this step for any other folder where event messages were stored.
- Later, this file could be printed to generate one message per page. Or, because the messages are in a .txt file, any message could be copied and pasted into another note pad, and printed for reference.
- Deliver this file to your supervisor.**

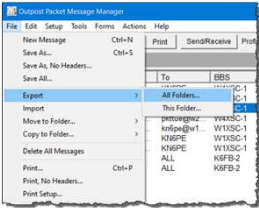


Archiving event documentation

Message Archive

3. Create a Message Archive

- From Outpost, **File > Export**, then select **"All Folders"** (for your entire system).
- Use meaningful file names.
- The Export process will create an Outpost Archive File (.oaf).
- This file later can be imported back into Outpost to restore the archived messages to their original folders.
- Deliver this file to your supervisor (email or USB).**



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Archiving event documentation

Reset Outpost for the next event

4. Reset Outpost for the next event (delete all messages)

STOP! Do not proceed until you have created a **Message Archive>All Folders** first.

STOP! Do not proceed until you have permission from your supervisor.

- If not already done, set up the SCC Notices message folder
 - Tools > General Settings, Start** tab.
 - Set the name of one of the folders to **SCC Notices**.
 - Move or drag all SCC Notices into this folder.
- Export (backup) the SCC Notices folder:
 - click on this folder. Then **File > Export**, select **This Folder**
 - Give it a name, like "SCC_Notices-yymmdd". Press **OK**.
 - Verify that all messages (6 today) were exported.
 - FYI... your file is in the **C:\SCC Packet\archive** directory

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Archiving event documentation

Reset Outpost for the next event

4. Reset Outpost for the next event (continued)

- Delete all Outpost messages:
 - Go to **File > Delete All Messages**, answer **Yes** at the prompt. All your files are deleted.
- Restore the SCC Notices:
 - File > Import**, select the file, press **OK**
- You now have a clean system for the next event or incident.
- Inform your supervisor that this task is complete.

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Resend option

You did what?!?

- You just sent a message, but ...
 - it was addressed incorrectly, or
 - it was sent to the wrong BBS, or
 - you forgot to include all recipients, or
 - it was incomplete, or
 - it was the wrong message, or
 - any number of other problems!

And, you don't want to type it all back in! What now?

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Resend option – Text Messages

Outpost's **Resend** option lets you resend a message previously sent. For **Text Messages...**

- From the **Sent** folder, open the message
- Click on **Actions > Resend...** choose either option
- The message then opens in edit mode.
- Make whatever changes you need to make, then
- Press **Send**, then **Send/Receive** as usual.

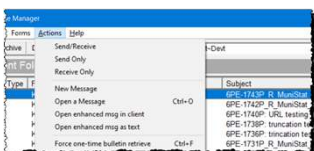
NOTE! If you select **Resend, Same Msg ID**, then manually change the Message ID -###P to -###R for **Resend**. This ensures no duplicate message confusion.

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Resend option – PackItForm Messages

Resending **PackItForm Messages** depends on your option.
For **Same Message ID...**

- From the Sent folder, **single-click** on the message to highlight it (not open it)
- Select **Actions > Open enhanced msg as text**
- Once the text version of the form opens, click on **Actions > Resend...** choose **Same Message ID**
- The PackItForm will open as a new copy of the message in the Browser, just as if it was a new message for editing.
- Make other changes and continue as usual.

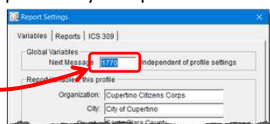


NOTE! If you select **Resend, Same Msg ID**, then manually change the Message ID -###P to -###R for **Resend**. This ensures no duplicate message confusion.

Resend option – PackItForm Messages

Resending **PackItForm Messages** depends on your option.
For **New Message ID...**

- First get the Next Message Number
 - In Outpost, **Tools > Report Settings**
 - Note the **Next Message** value. This is the number to use. **Do not change it!**
- Then, from the Sent folder, **single-click** on the message to highlight it (not open it)
- Select **Actions > Open enhanced msg as text**
- Once the text version of the form opens, click on **Actions > Resend...** choose **New Message ID**
- The PackItForm will open in the Browser.
- Manually replace the PackItForm **Origin Message Number** with the number you noted above.
- Make other changes and continue as usual.





FIELD PACKET DEPLOYMENT

Putting it all together

1. **First Shift...** when assigned to establish a station
2. **Initial station setup...** equipment check-out, and check-in
3. **Packet Operations...** managing the message flow
4. **Incoming Shift Change...** if you are relieving someone else
5. **Outgoing Shift Change...** if you are being relieved
6. **Securing Operations...** when directed to shut down

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Field Reference

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- 2 INTRODUCTION.....
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 - 2.2 HOW TO USE THIS HANDBOOK.....
- 3 PACKET OPERATOR CHECKLIST.....
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- 5 CLIENT SOFTWARE.....
- 6 PACKET MESSAGING.....
 - 6.1 PACKET MESSAGING BASICS.....
 - 6.2 FREE FORM (PLAIN TEXT) MESSAGE.....
 - 6.3 SENDING A SPREADSHEET .CSV FILE.....
- 7 MESSAGE ADDRESSING.....
- 8 STANDARD SUBJECT LINE FORMAT.....
- 9 CHECK-IN, CHECK-OUT MESSAGE.....
- 10 RECOMMENDED FORM ROUTING CHEAT SHEET.....
- 11 ARCHIVING EVENT DOCUMENTATION.....
 - 11.1 CREATE THE ICS 309 COMMUNICATION LOG.....
 - 11.2 CREATE A PRINTABLE LIST OF YOUR MESSAGES.....
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 - 11.4 RESET (CLEANUP) OUTPOST FOR THE NEXT EVENT.....

Amateur Packet Radio Field Reference, Type III

For SCCo RACES Responders

October 2023



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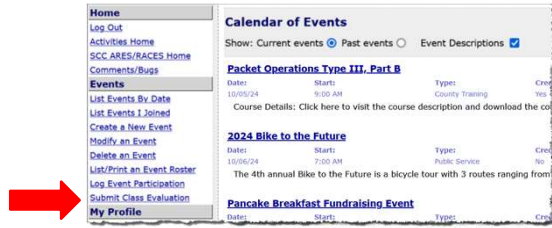
WRAP UP

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Final Assignment

- Online Class Evaluation
 - Log into <https://www.scc-ares-races.org/activities/events.php>
 - Click "Submit Class Evaluation" in Events



- Submit your evaluation as soon as possible... after 1 week, the form will no longer be available for this class!

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Homework

- Please sign up for the **Monthly Packet Message Passing Exercise** planned for Wednesday 16-Oct-2024.
- These exercises simulate participating in a real event as an experienced county packet operator who has been assigned for mutual aid support for Xanadu County and City.
- You will be asked to pass at least two 3rd party messages in each direction (PacketItForm) and at least two operator-to-operator messages in each direction.
- The exercise lasts for one week, starts at 09:00 on Wednesday 16-Oct-2024 and ends a week later on 23-Oct-2024 at 17:00. A zoom debrief follows.
- Please register for this event here: <https://www.scc-ares-races.org/activities/eventdetail.php?id=1491>



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Thank You!

Please complete the Course Evaluation **on or before** next **Saturday 12-October!**

Please complete the Assignment **by** **Wednesday 23-October!**

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

Make sure you're signed up for the next part: Packet Type II

Questions, comments, suggestions? kn6pe@arrl.net

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