Winlink Basics

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wg1v.org

Slides and documents available at https://wg1v.org/

What we'll cover

- Why Winlink?
- The Winlink workflow model
- How to perform basic Winlink functions

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Why Winlink?

- Like it or not, it's a standard for Emergency Communications in the ham radio community
- It uses radio and internet links in intelligent ways
- It handles standardized messages in ways that efficiently use radio bandwidth

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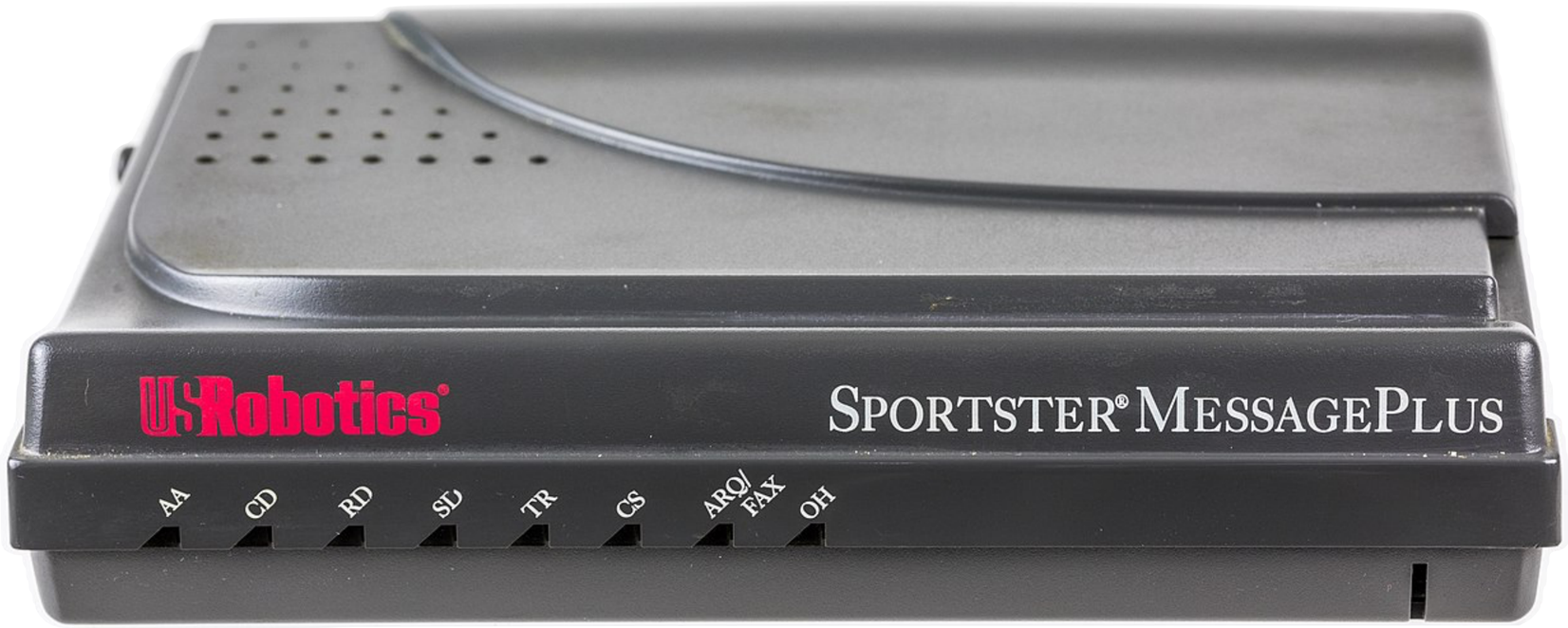
Anyone remember these?



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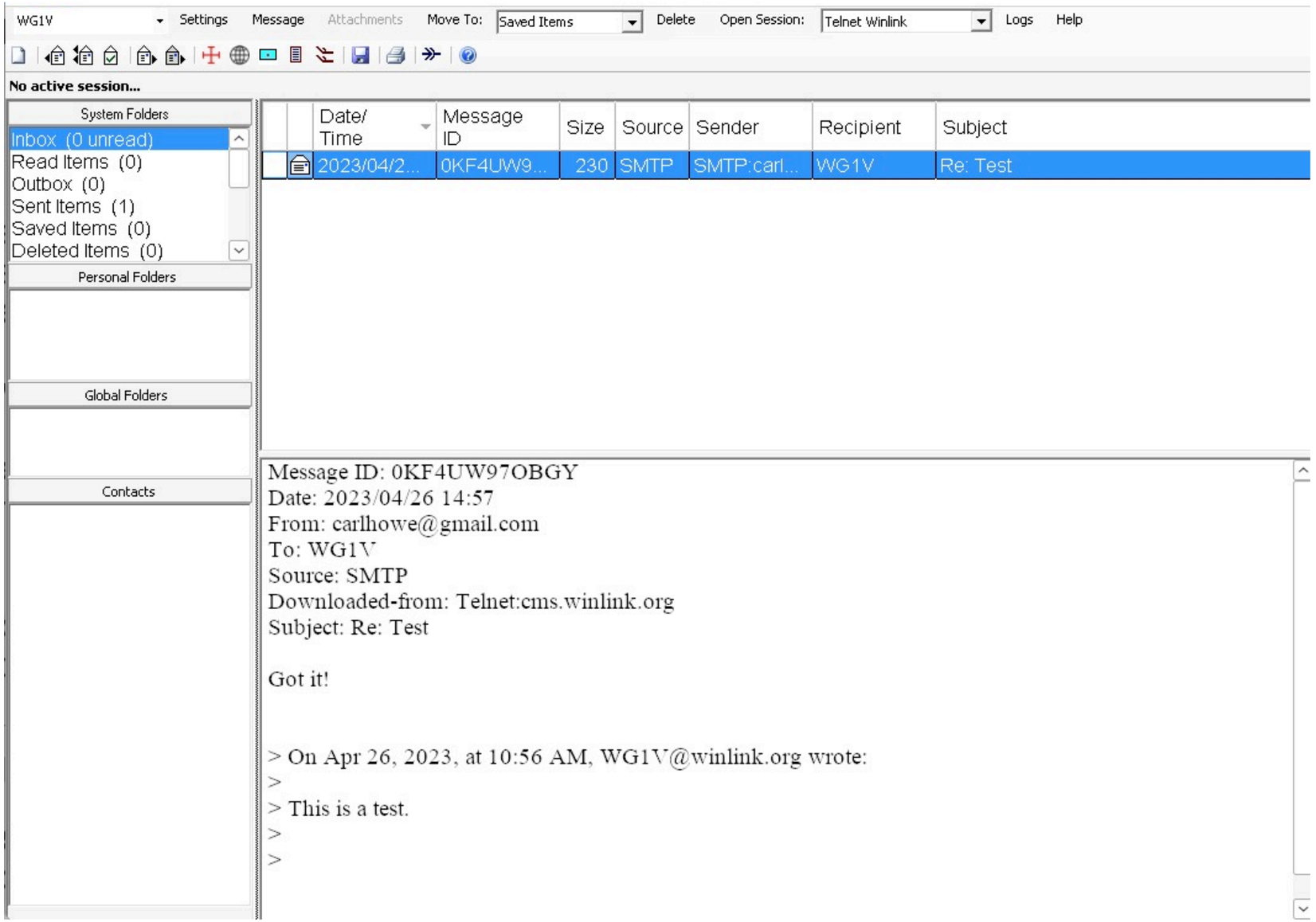
The workflow

1. Create emails offline
2. Connect to a server to send and receive emails
3. Read emails offline
4. Servers redistribute messages

Winlink is just a simple, internet-based email system augmented with radio links



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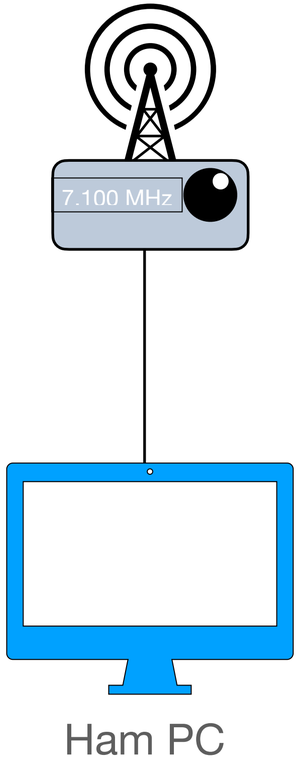
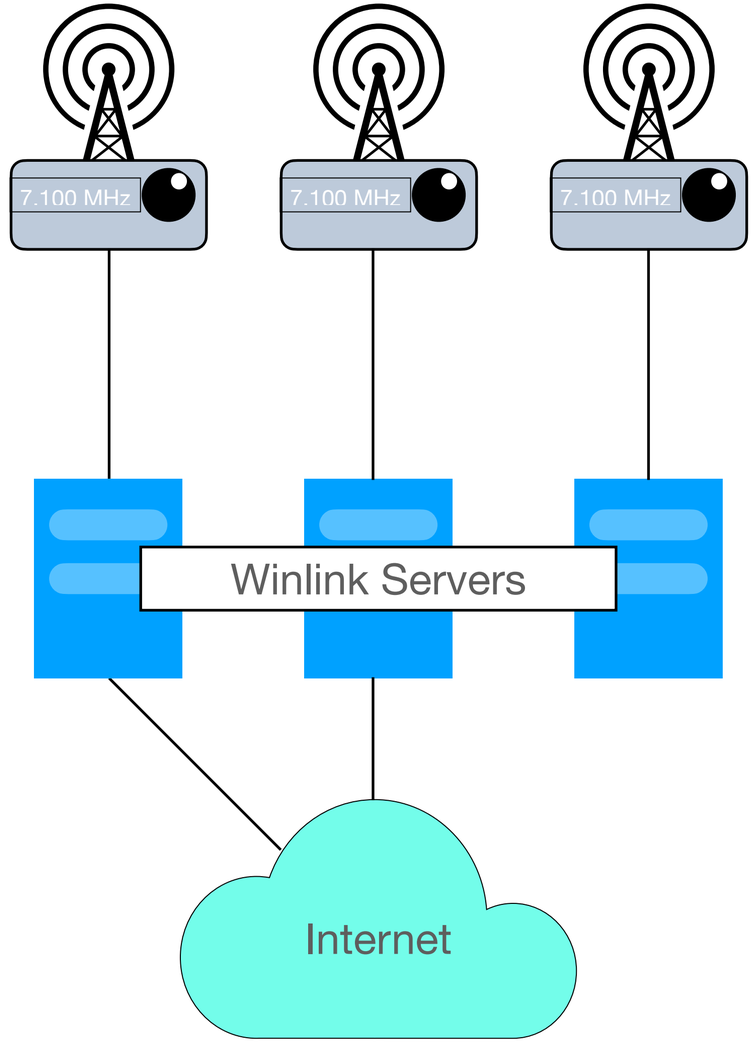
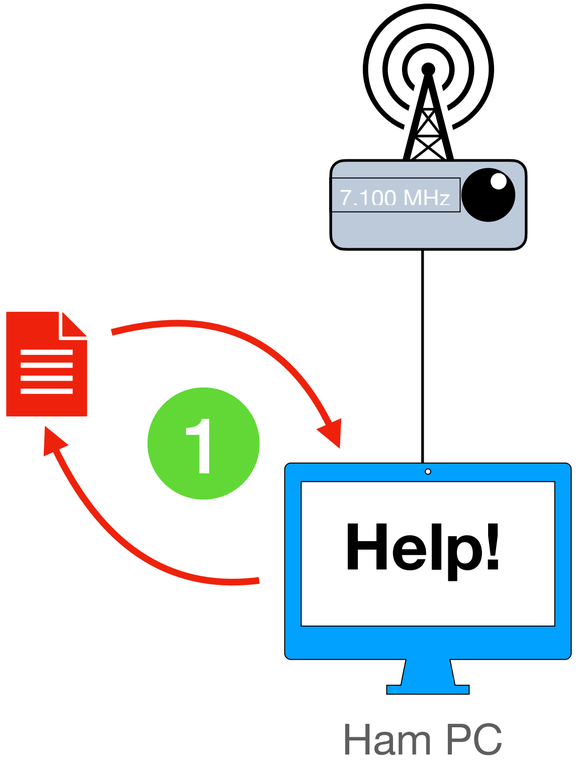
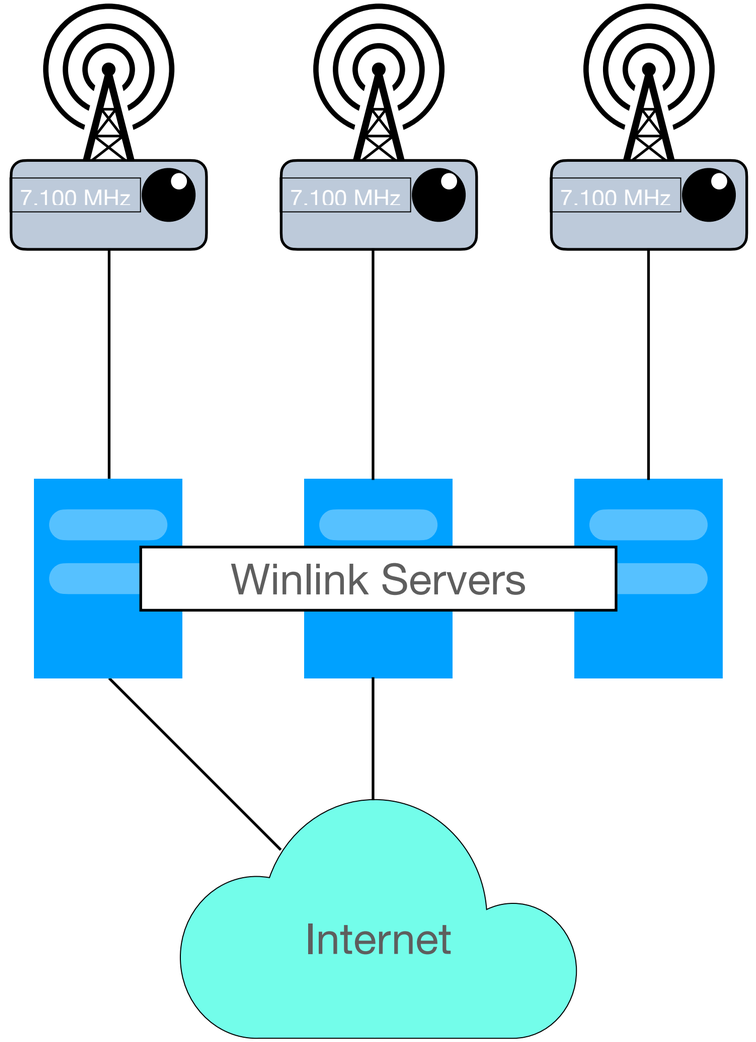
The Winlink workflow



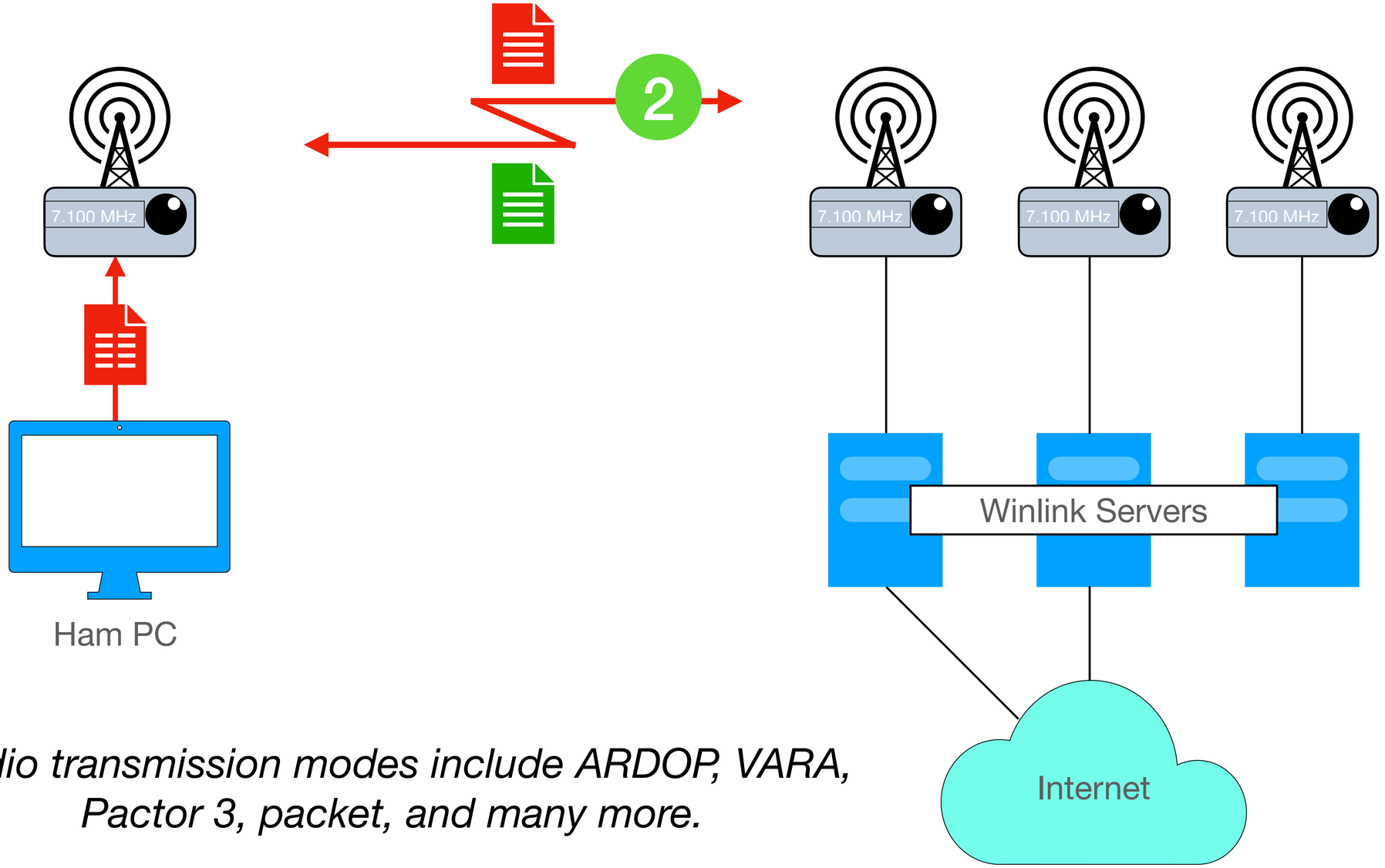


1. Create emails offline



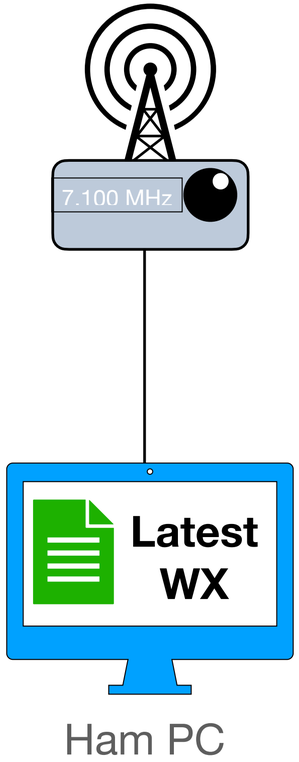


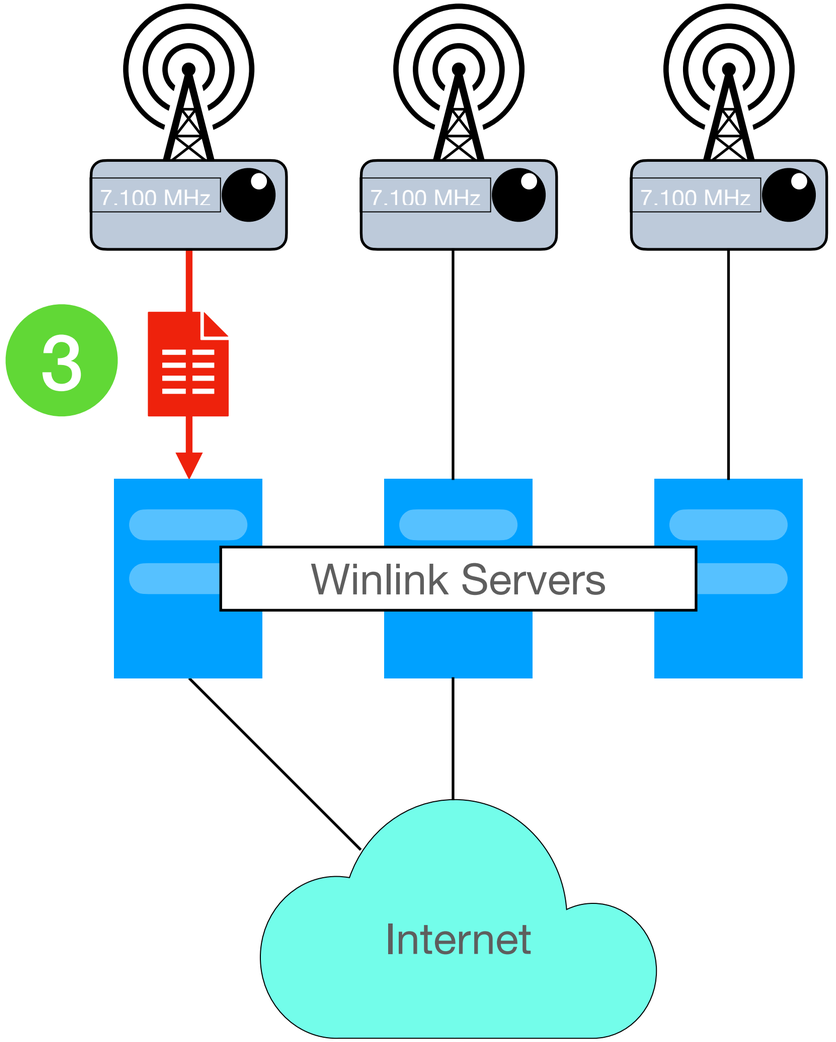
2. Connect to a server to send and receive emails



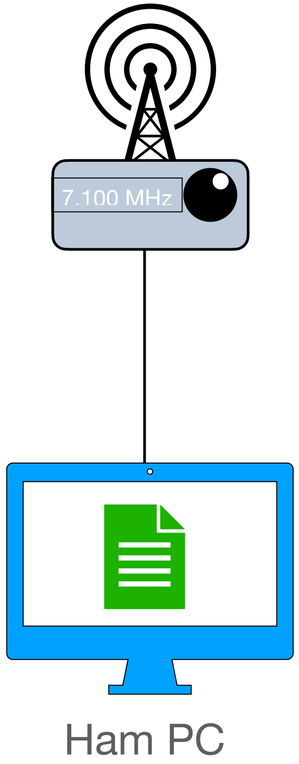
Radio transmission modes include ARDOP, VARA, Pactor 3, packet, and many more.

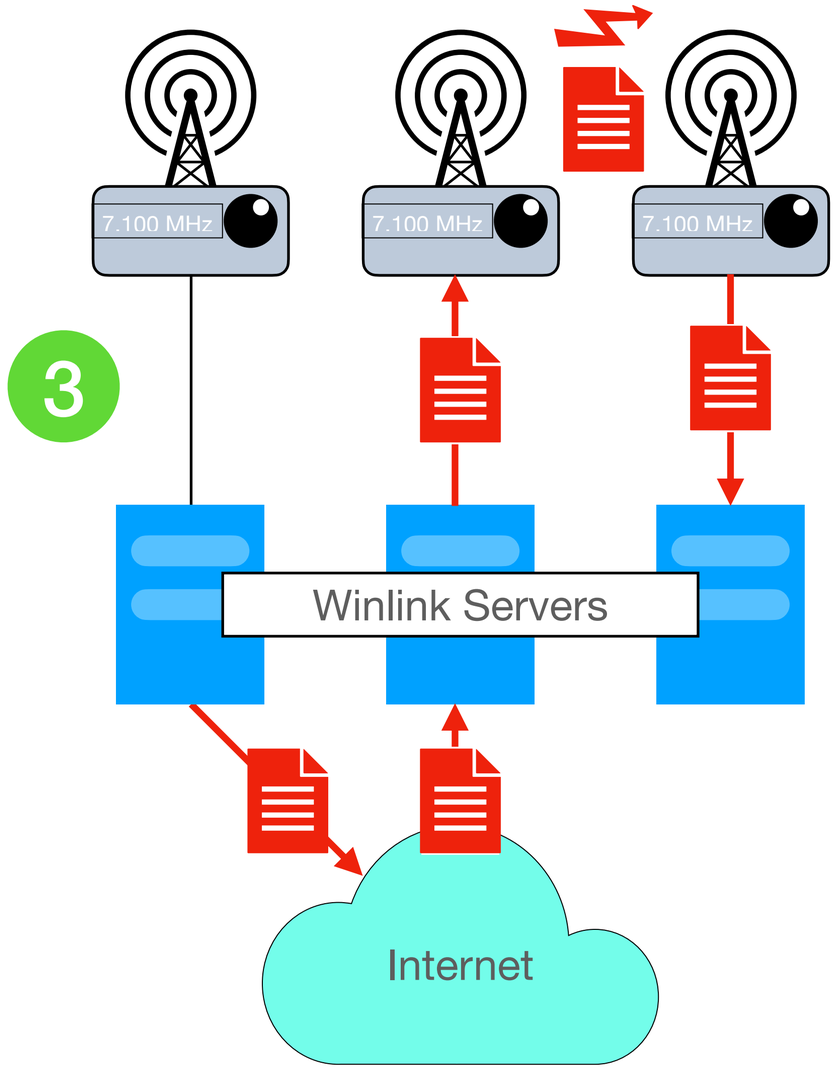
3. Read emails offline





4. Servers redistribute messages





Requirements for running Winlink

- Download the Winlink CMS Software from winlink.org
- Register your callsign and password with winlink.org
- Whitelist any internet addresses you wish to receive traffic from

Stow and Marlborough ARES setups already have their callsigns and passwords registered

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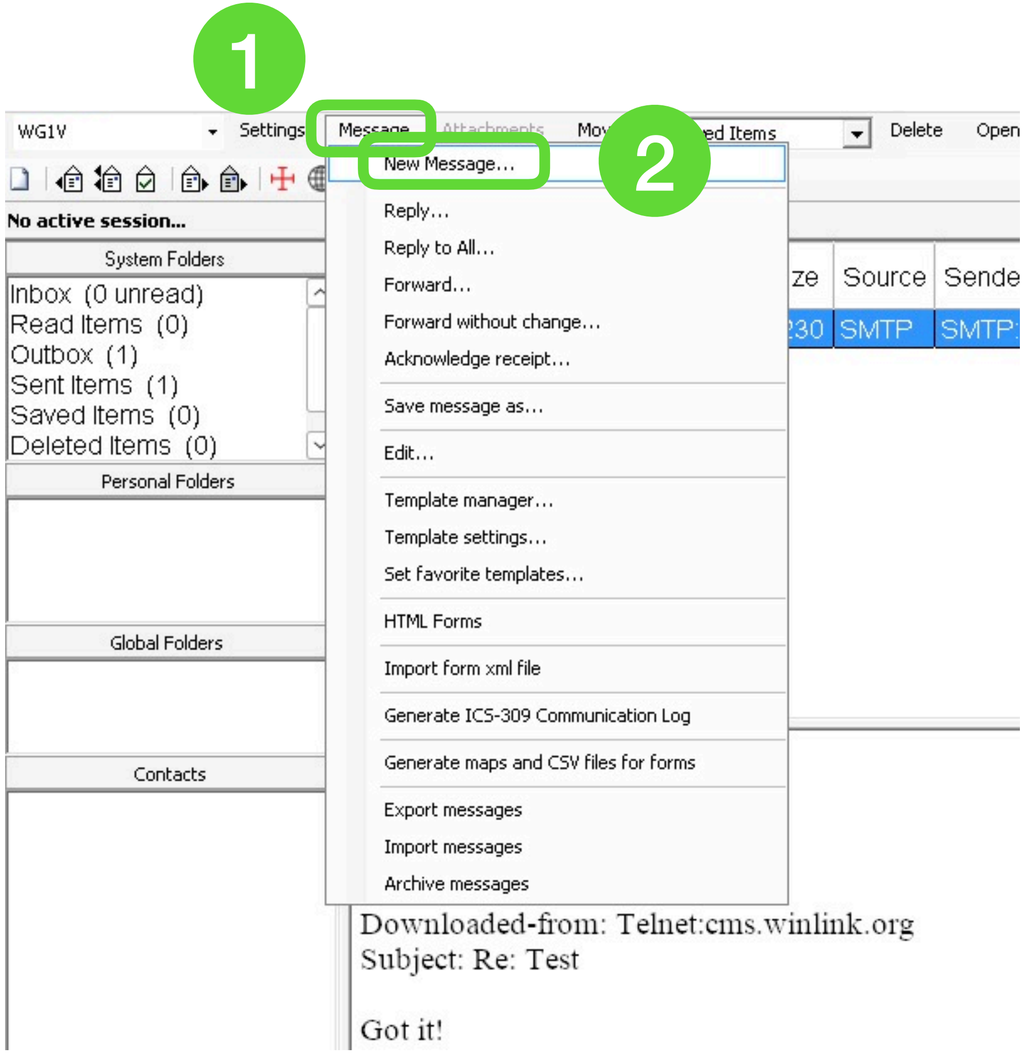
1. Create and Post a Text Email

1. Click *on the Message* menu on the Winlink home screen
2. Select *New Message* from the *Message* pull-down window
3. Address your message to callsigns and/or internet addresses
4. Fill in the message contents
5. Click *Post to Outbox* to queue your message for sending.



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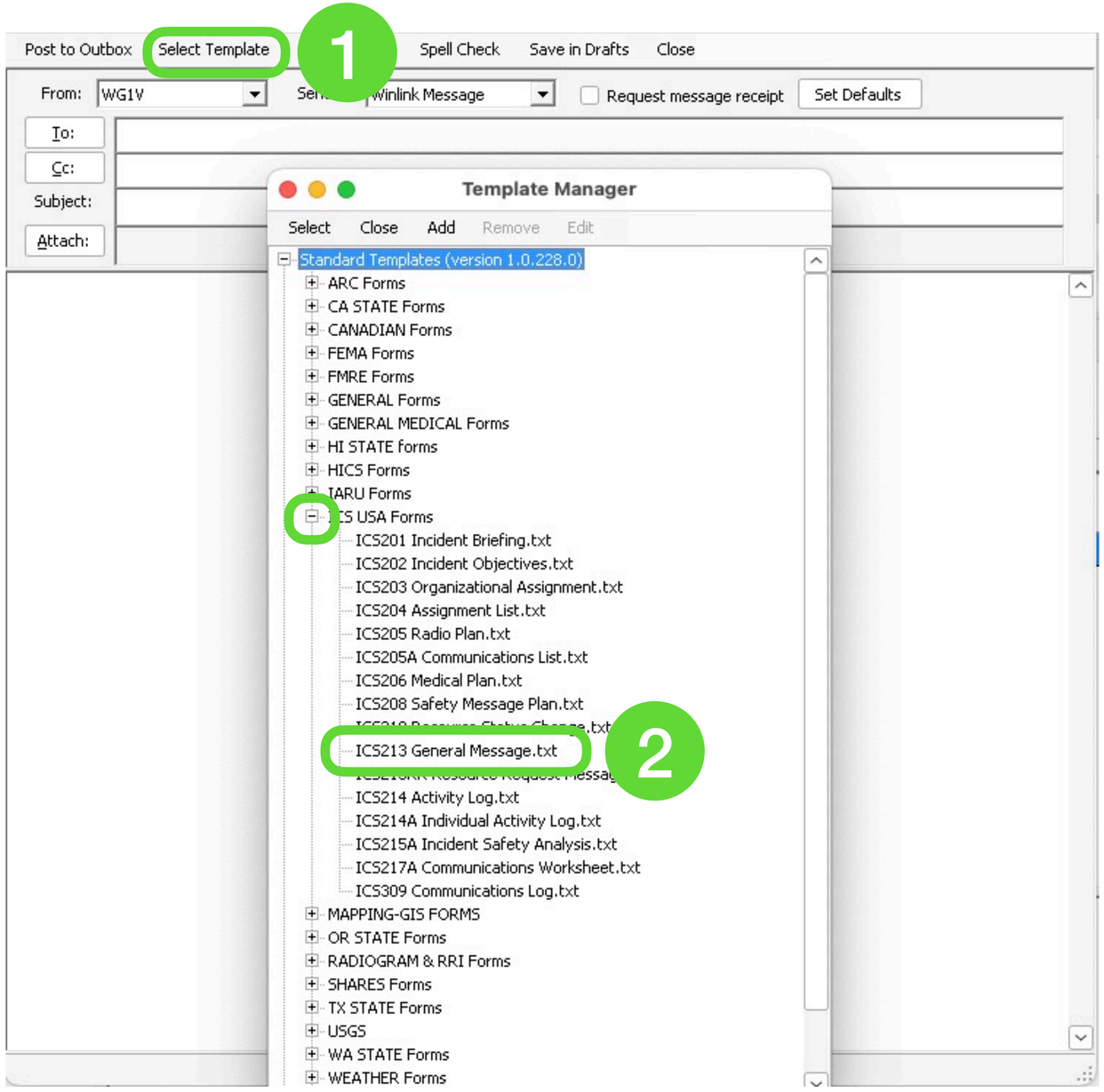
1.1 Create and Post an ICS-213 Form

1. From the *New Message* window, click on *Select Template* from the menu bar

2. Select ICS213 General Message.txt from the list of ICS USA Forms (you may have to click the plus sign to next to ICS USA Forms).

3. The ICS213 form will open in your web browser. Fill out all the fields and click *Submit* at the bottom.

4. With the ICS213 data now in the messaging window, click *Post to Outbox*



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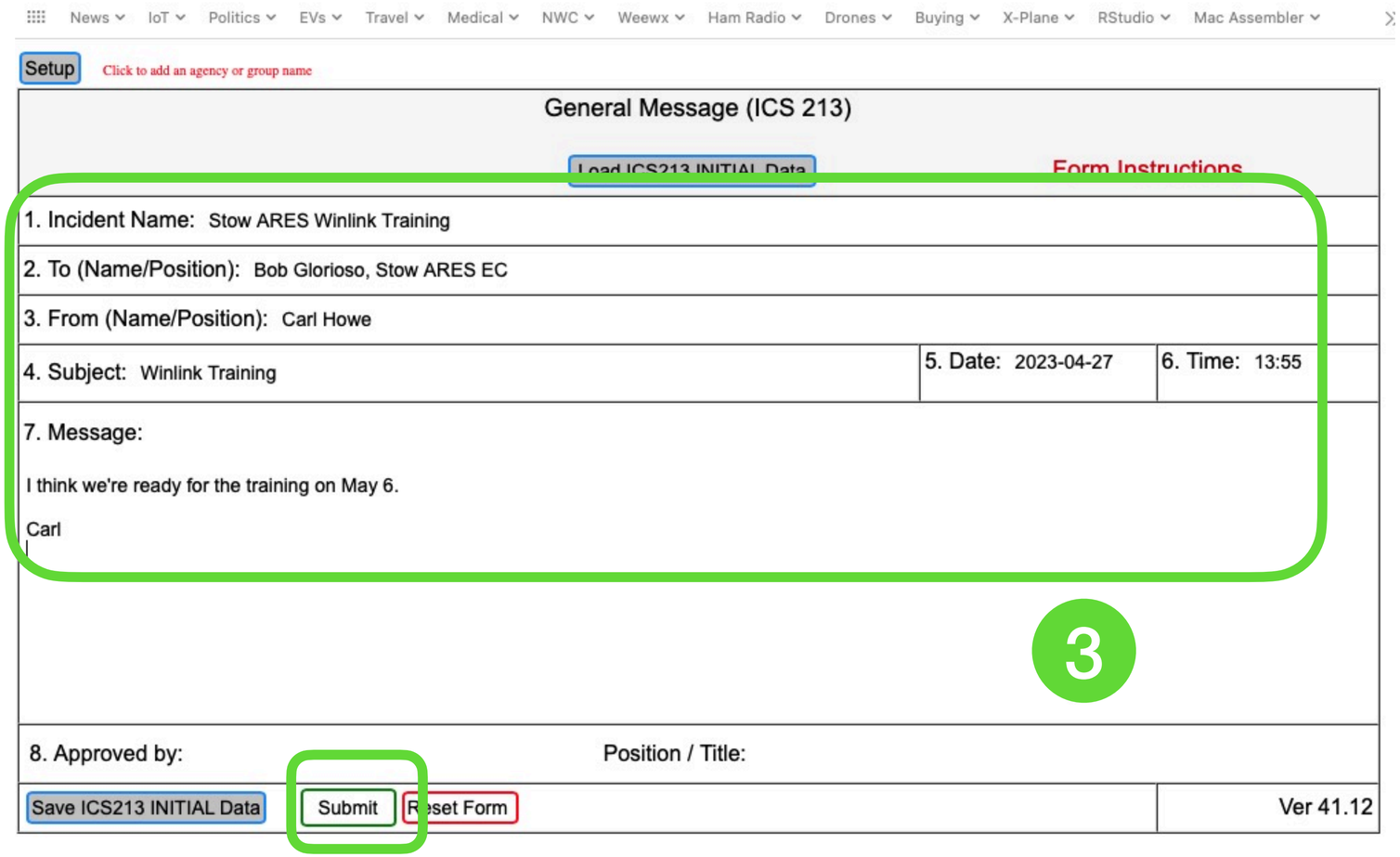

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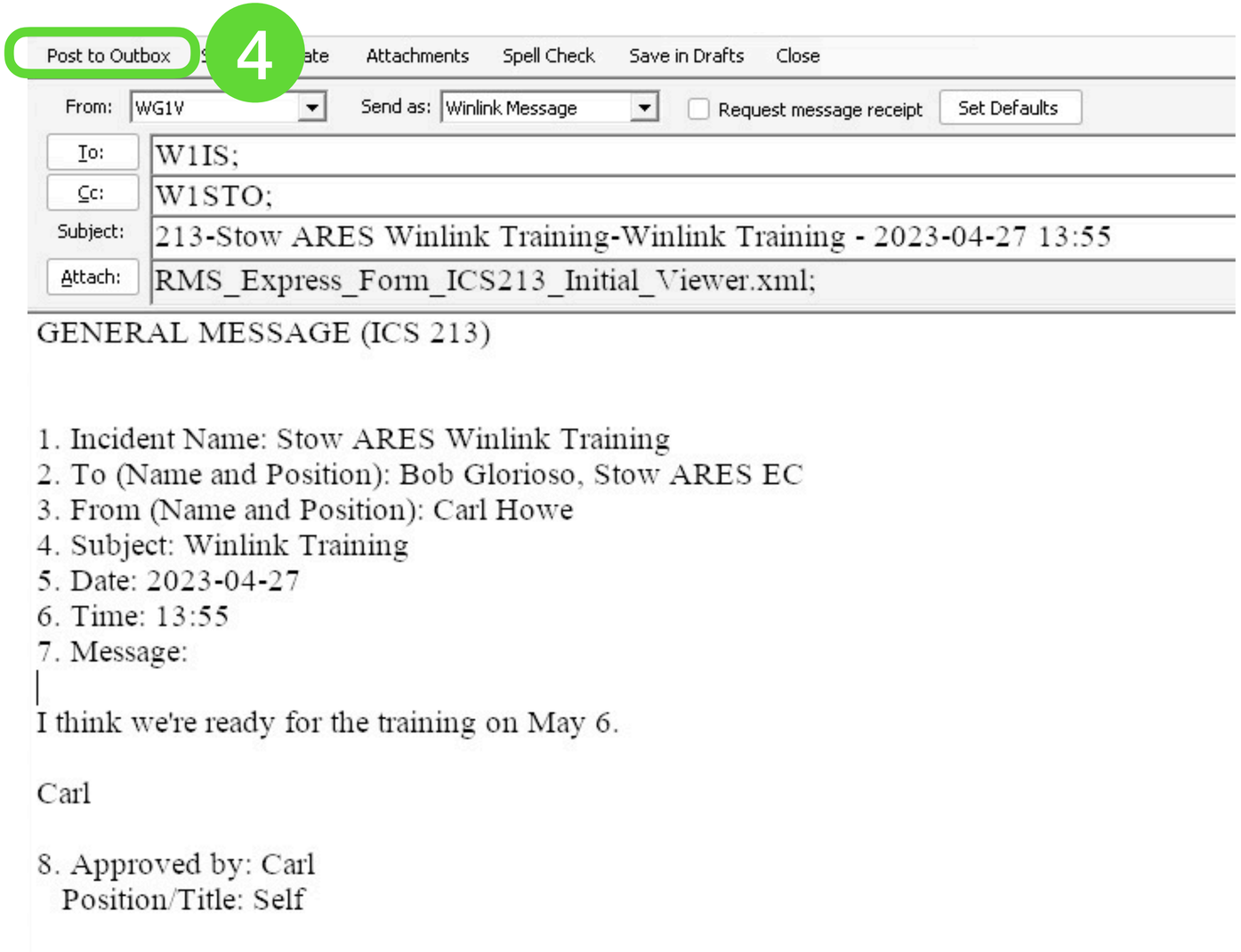

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Connecting to a Server

2. Connect to a Server

Connecting to a server requires two separate steps:

1. Selecting a communications protocol and modem. Possibilities include:

    - Telnet over the internet
    - VARA modem over HF radio
    - ARDOP modem over HF radio
    - Packet over VHF radio
    - More

2. Selecting a server that uses that protocol and modem

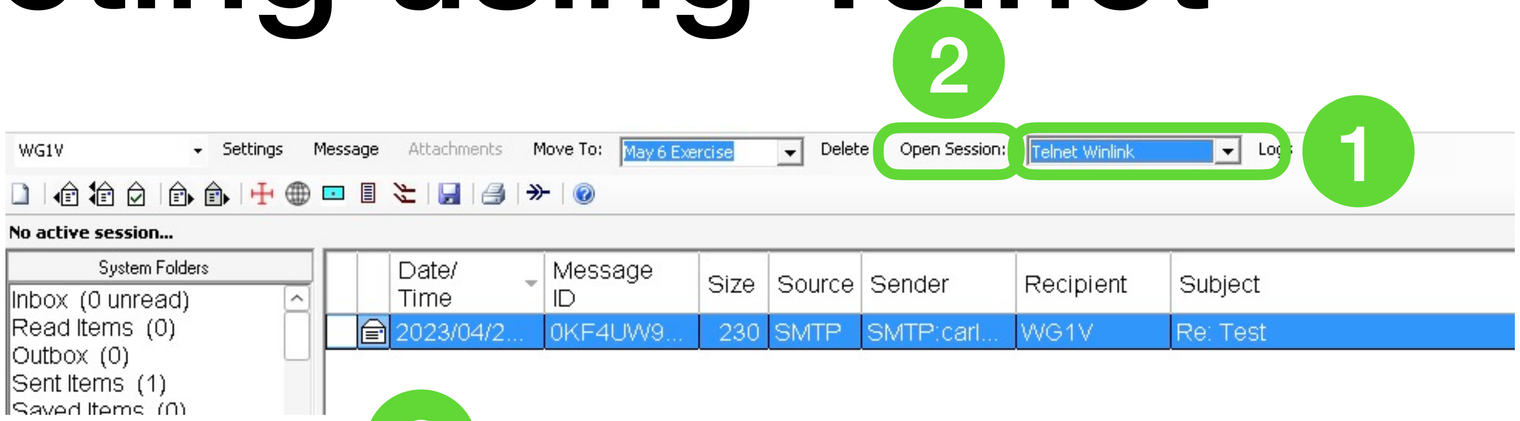
2.1 Connecting using Telnet

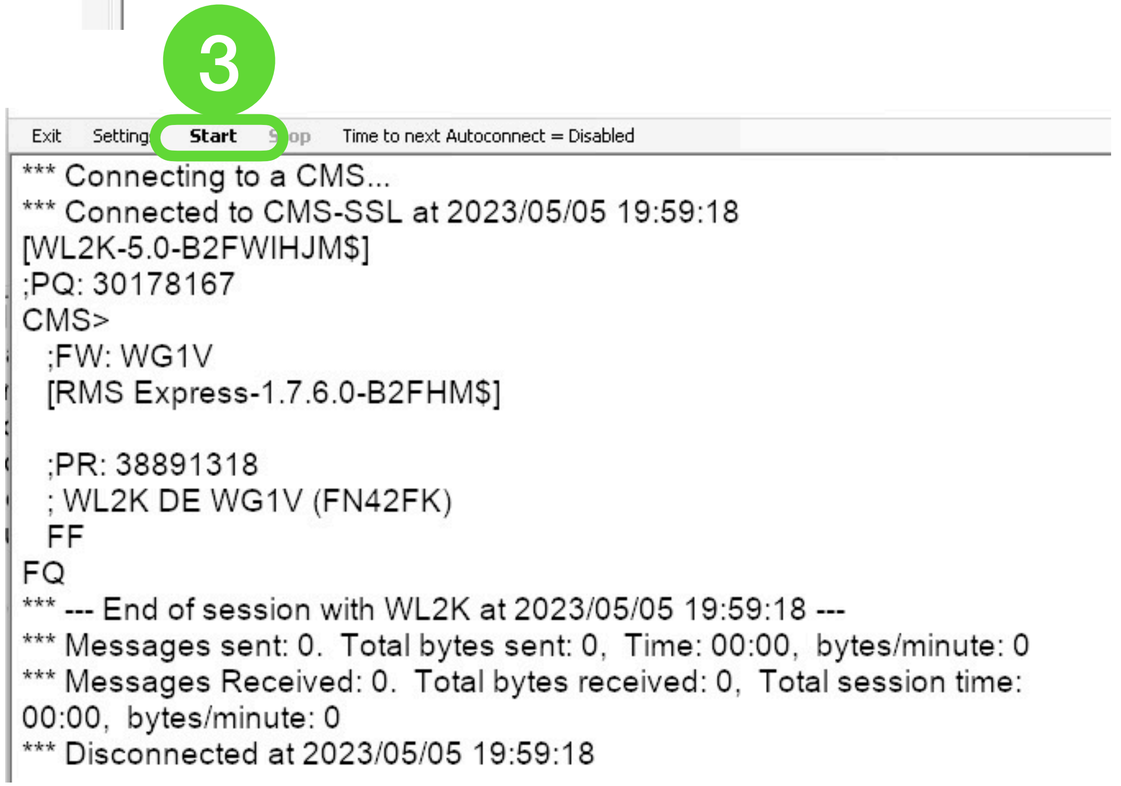
1. Choose *Telnet Winlink* from the *Open Session* pull down menu

2. Click *Open Session*

3. Click *Start* in the new session window

   The great thing about telnet is that you only need an internet connection to use it.





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2.2 Using Radio Modems

Requires 2 connections

1. A connection to the audio ports on your radio

2. A control port to control transmission, push-to-talk, frequency, and mode

Modern rigs such as the Icom IC-7300 combine these two connections into a single USB port.

These connections are already configured at both the Stow and Marlborough fire stations; you should configure them for your specific station according to what you have

3 Steps to a Modem Connection

1. Launching the session
2. Choosing a server
3. Starting the transmission itself

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Common Radio Modems

Common modem types:

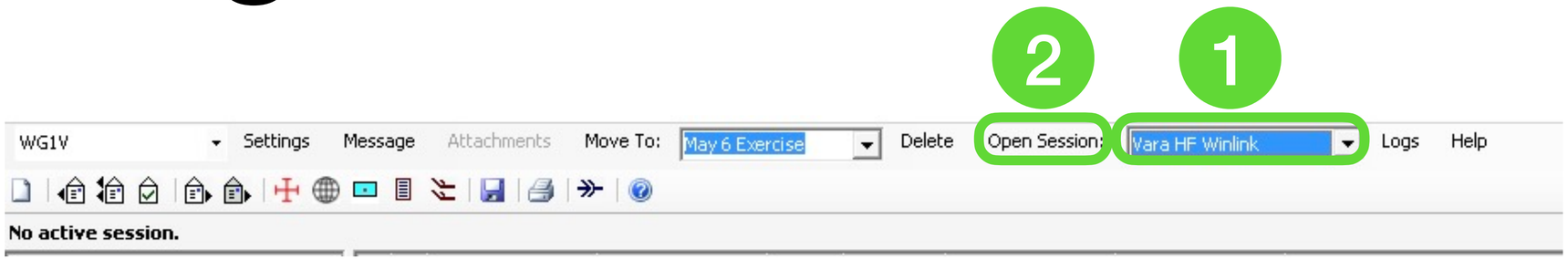
- VARA: a commercial, high-performance, weak-signal modem made by EA5HVK. Versions are available for both HF and VHF. A free version works at reduced speed.

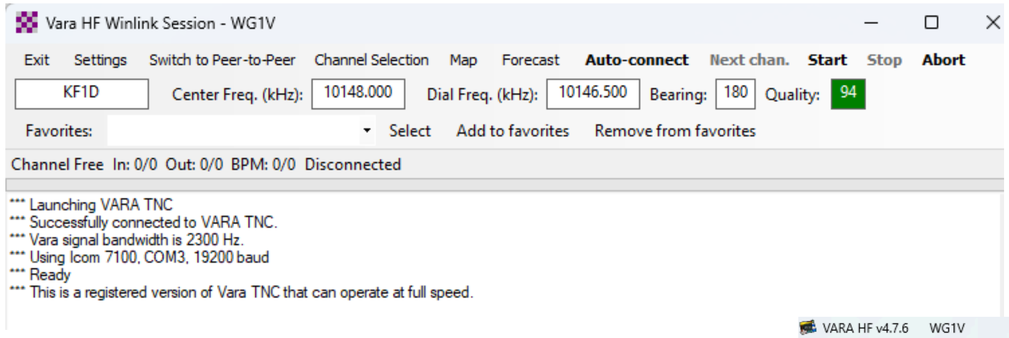
- ARDOP: a free and open source HF modem.

Many content management servers support both modem types as well as PACTOR 3, AX.25, and a few others.

2.3.1 Starting a VARA Session

1. Choose *Vara HF Winlink* from the *Open Session* pull down menu
2. Click *Open Session*
3. The VARA session and UI windows open





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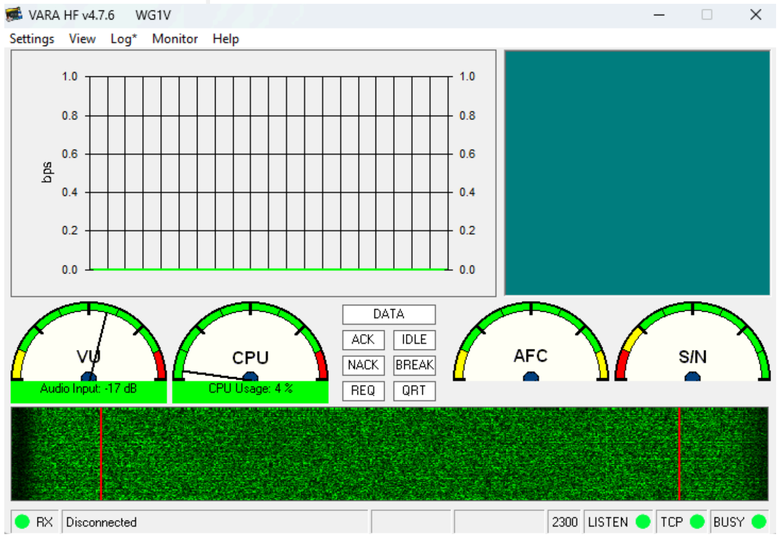

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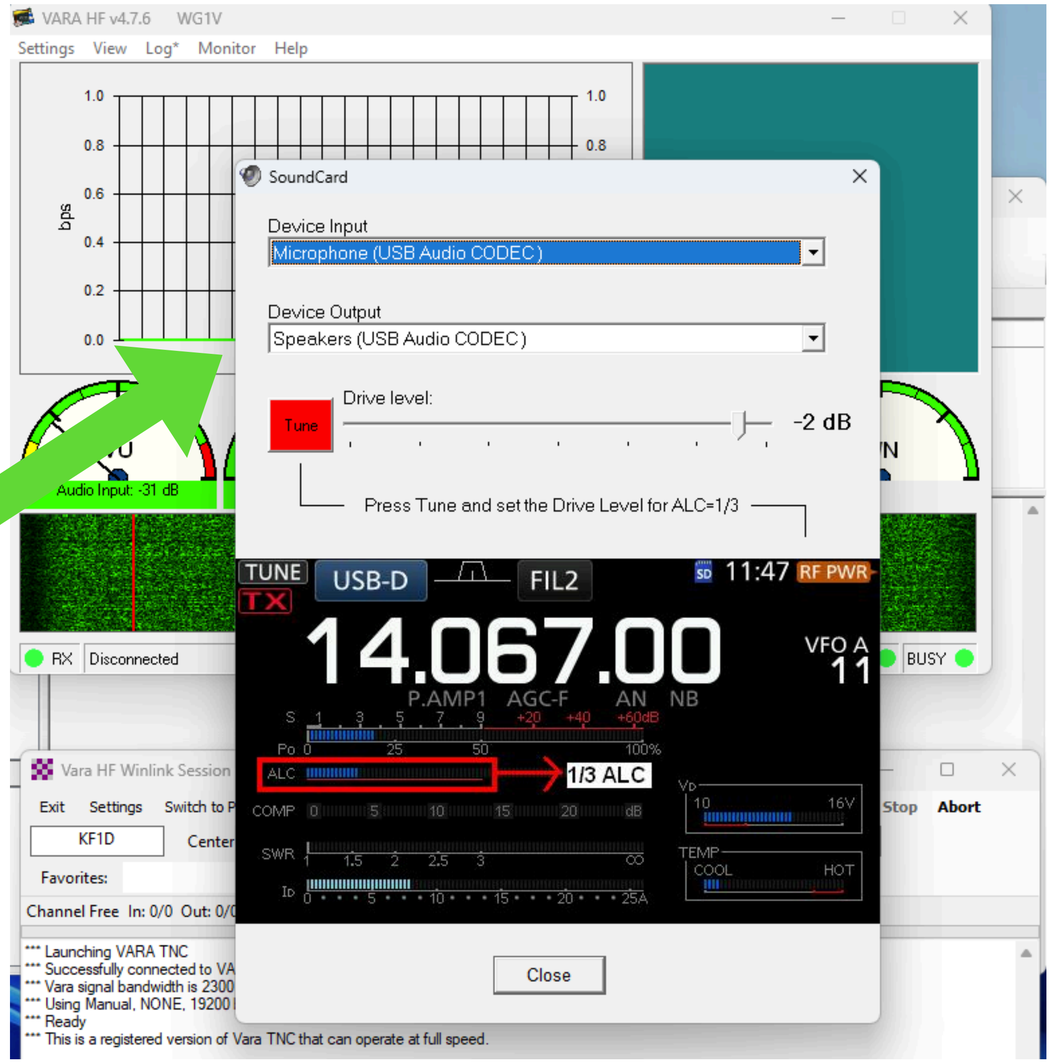
2.3.1 Starting a VARA Session (cont.)

Troubleshooting:

If you don't see the VARA UI window, you may need to click on the VARA icon in the Windows application tray.

If the waterfall shows no signal, you may need to click *Settings* > *Soundcard* and select the USB ports for input and output



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2.3.2 Ways to Select A Server

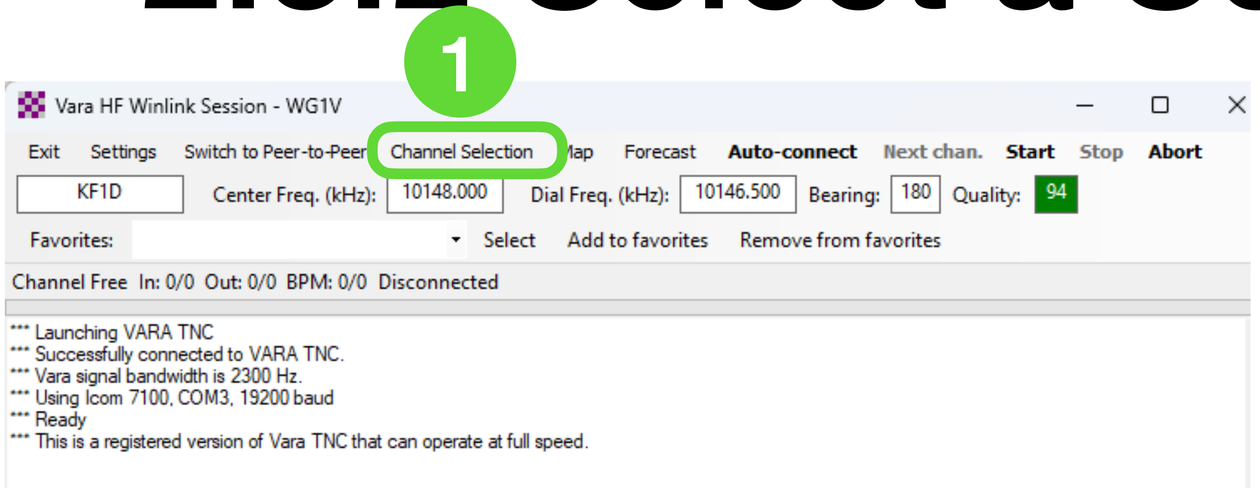
1. Type in the callsign and frequencies into the VARA session window (not recommended, but it can be done)

2. Select your server from a list of servers provided by VARA

3. Select your server from a map

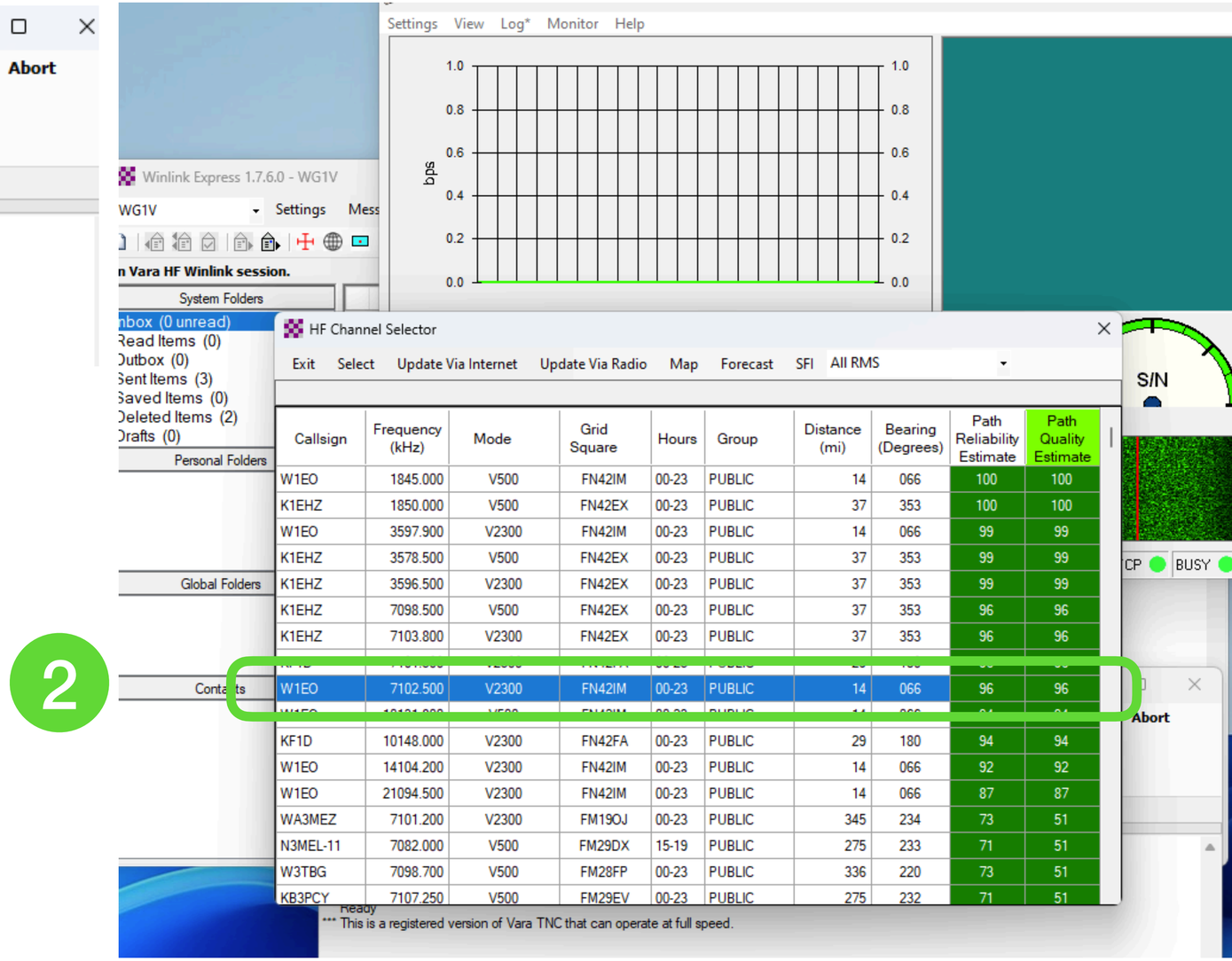
PLEASE NOTE: In the process of displaying this window, Winlink may ask if you wish to refresh the server list and path quality estimates. If you are in the middle of an emergency or exercise, YOU DO NOT WANT TO DO THIS. Updating these figures will both require a significant amount of time and internet bandwidth, and you will be unable to do anything until it completes.

2.3.2 Select a Server from a List



1. Click *Channel Selection* in the VARA session window

2. Double-click on the server you want to connect to



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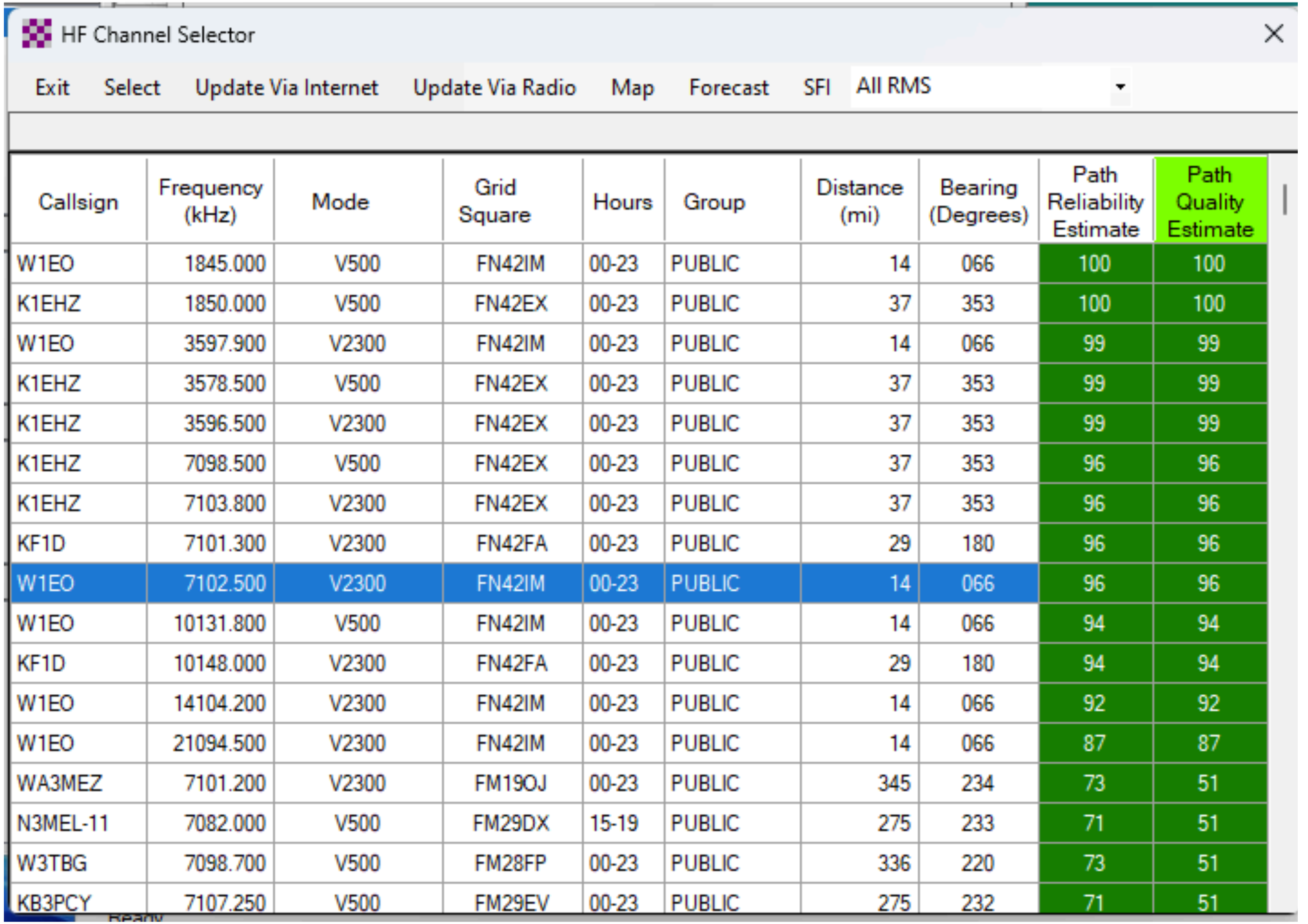
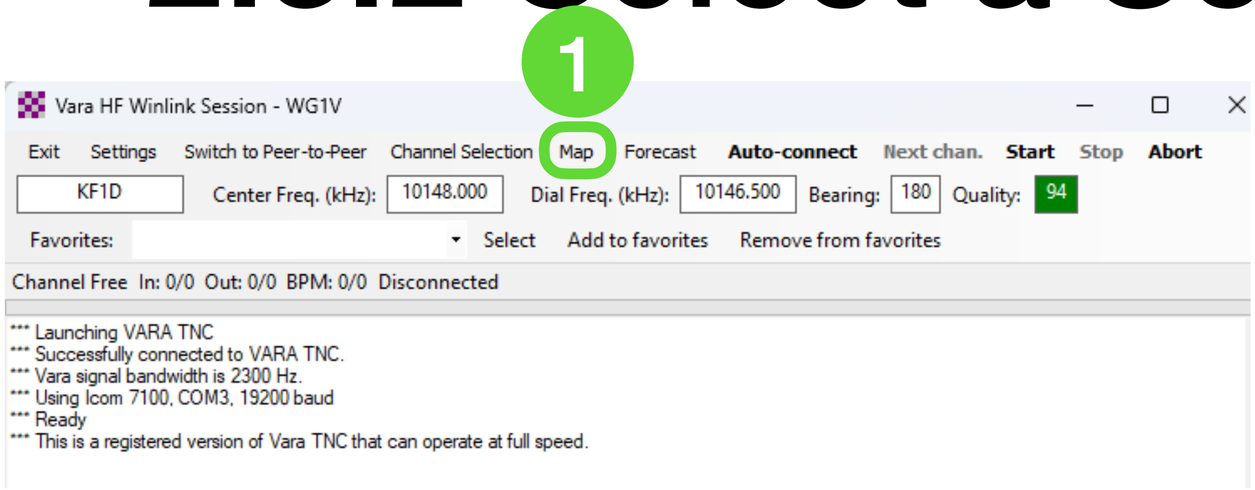
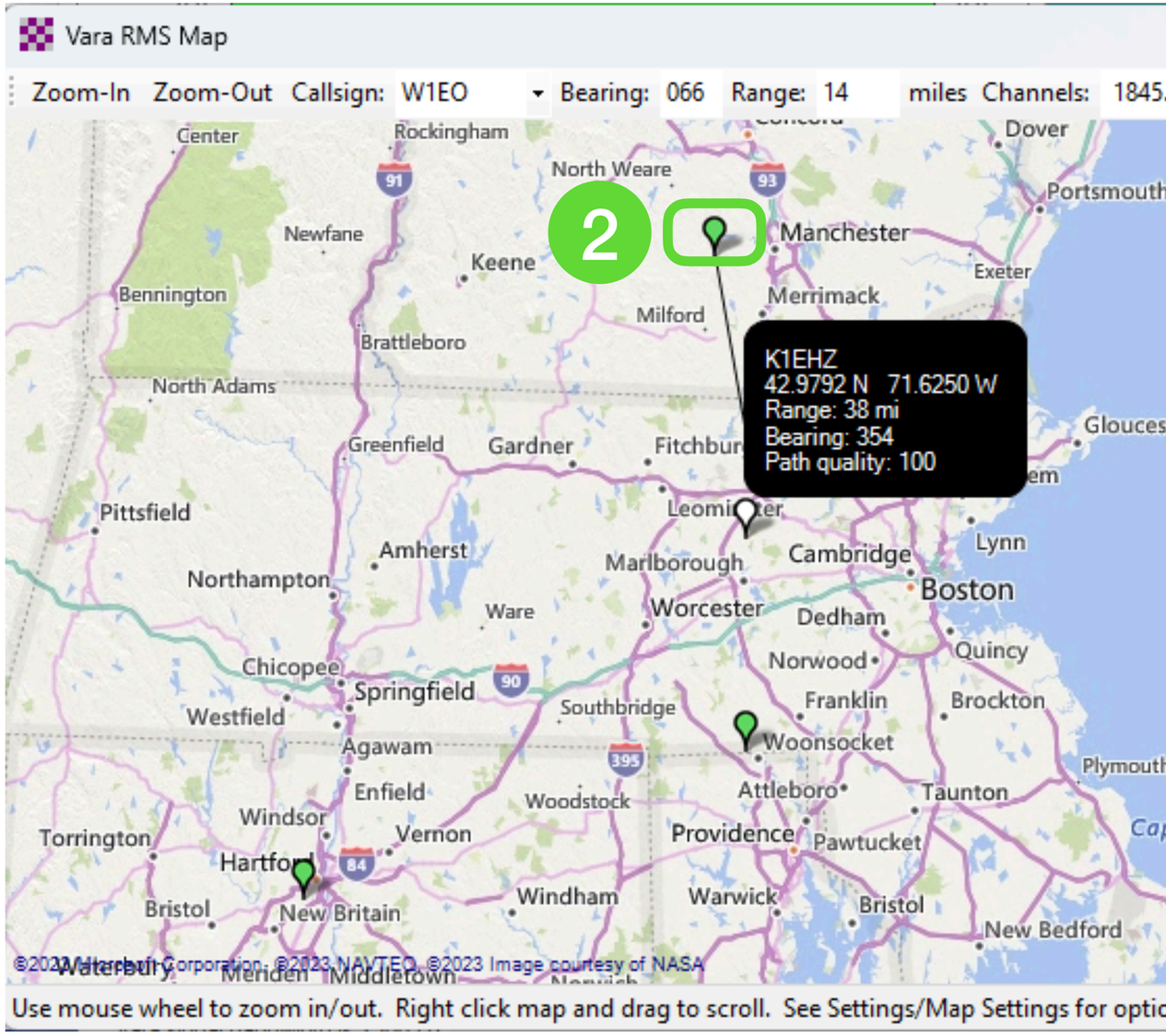


Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (mi)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
W1EO	1845.000	V500	FN42IM	00-23	PUBLIC	14	066	100	100
K1EHZ	1850.000	V500	FN42EX	00-23	PUBLIC	37	353	100	100
W1EO	3597.900	V2300	FN42IM	00-23	PUBLIC	14	066	99	99
K1EHZ	3578.500	V500	FN42EX	00-23	PUBLIC	37	353	99	99
K1EHZ	3596.500	V2300	FN42EX	00-23	PUBLIC	37	353	99	99
K1EHZ	7098.500	V500	FN42EX	00-23	PUBLIC	37	353	96	96
K1EHZ	7103.800	V2300	FN42EX	00-23	PUBLIC	37	353	96	96
KF1D	7101.300	V2300	FN42FA	00-23	PUBLIC	29	180	96	96
W1EO	7102.500	V2300	FN42IM	00-23	PUBLIC	14	066	96	96
W1EO	10131.800	V500	FN42IM	00-23	PUBLIC	14	066	94	94
KF1D	10148.000	V2300	FN42FA	00-23	PUBLIC	29	180	94	94
W1EO	14104.200	V2300	FN42IM	00-23	PUBLIC	14	066	92	92
W1EO	21094.500	V2300	FN42IM	00-23	PUBLIC	14	066	87	87
WA3MEZ	7101.200	V2300	FM19OJ	00-23	PUBLIC	345	234	73	51
N3MEL-11	7082.000	V500	FM29DX	15-19	PUBLIC	275	233	71	51
W3TBG	7098.700	V500	FM28FP	00-23	PUBLIC	336	220	73	51
KB3PCY	7107.250	V500	FM29EV	00-23	PUBLIC	275	232	71	51

2.3.2 Select a Server from a Map





1. Click *Map* in the VARA session window

2. Double-click on the green server marker you want to connect to

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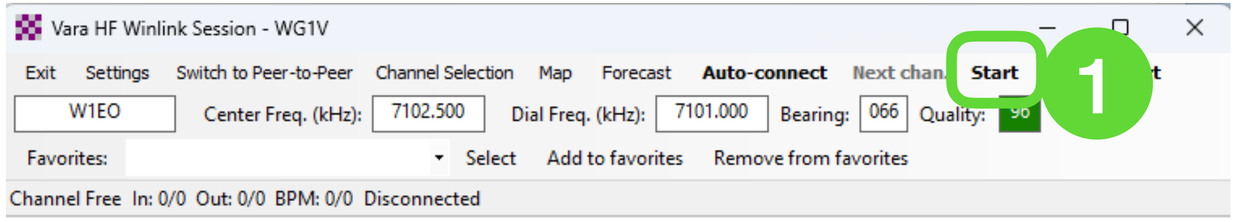
But What Server Should I Choose?

Choose whatever server you believe will provide the best connection based on current conditions and equipment!

However, In case of an actual emergency where the internet is not available locally, you should choose a server that is outside the area of internet disruption. This is one of the situations where having long-distance HF links can be very important.

2.3.3 Starting VARA transmission

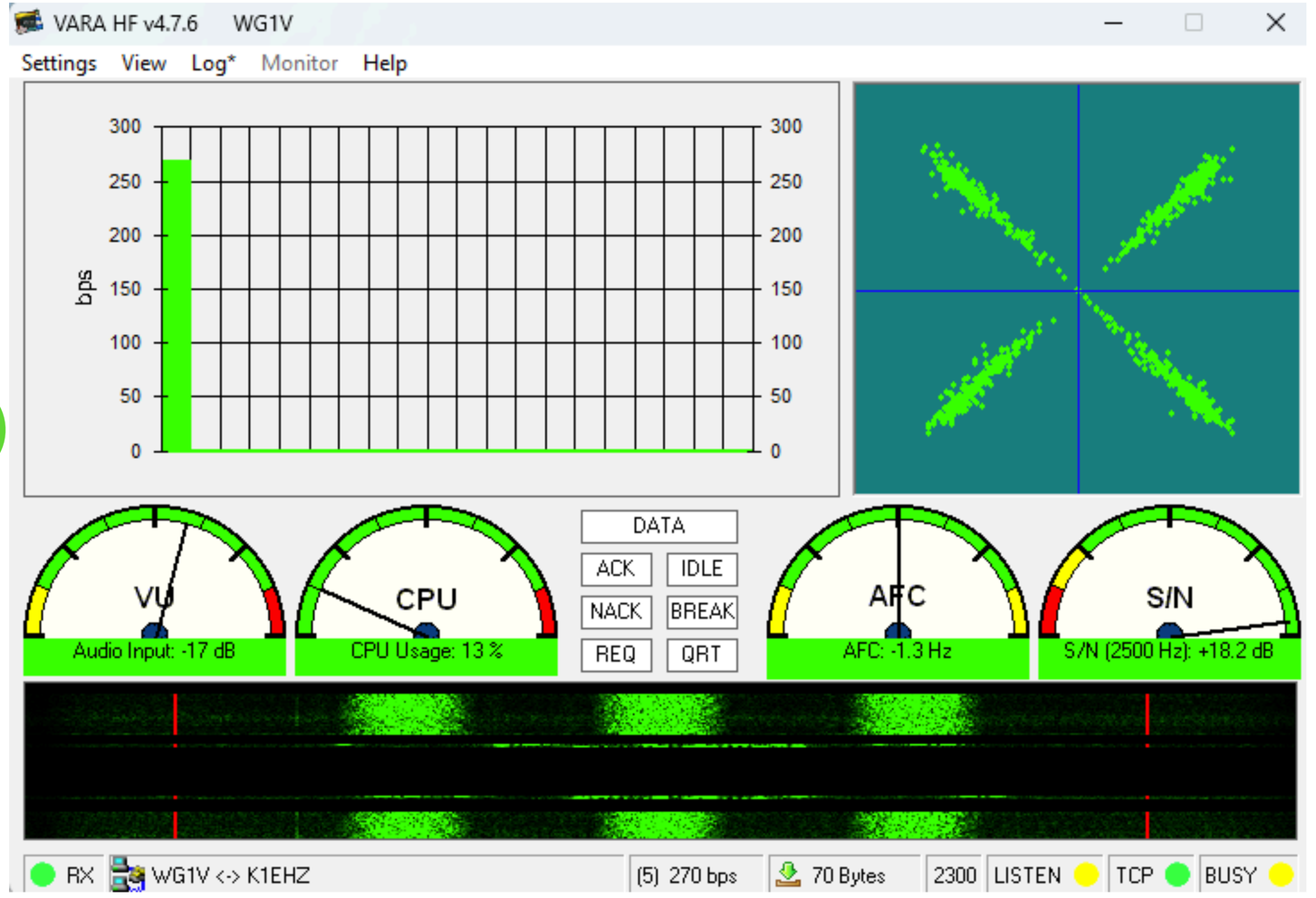


1. Click *Start* in the VARA session window.

2. VARA should begin keying the transmitter with connection requests to the server

3. The VARA UI screen displays performance metrics once a connection gets made.

4. The session will eventually time out or complete.



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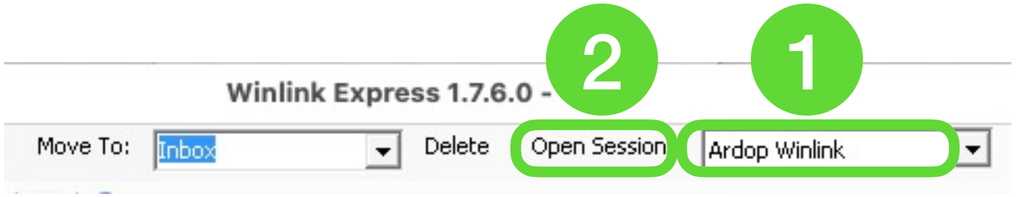
2.3.4 Connecting Using an ARDOP Session



It's the same sequence as VARA:

1. Choose *ARDOP Winlink* from the *Open Session* pull down menu
2. Click *Open Session*
3. The ARDOP session and UI windows open
4. Select a server just as we did with VARA
5. Click *Start* in the ARDOP session window

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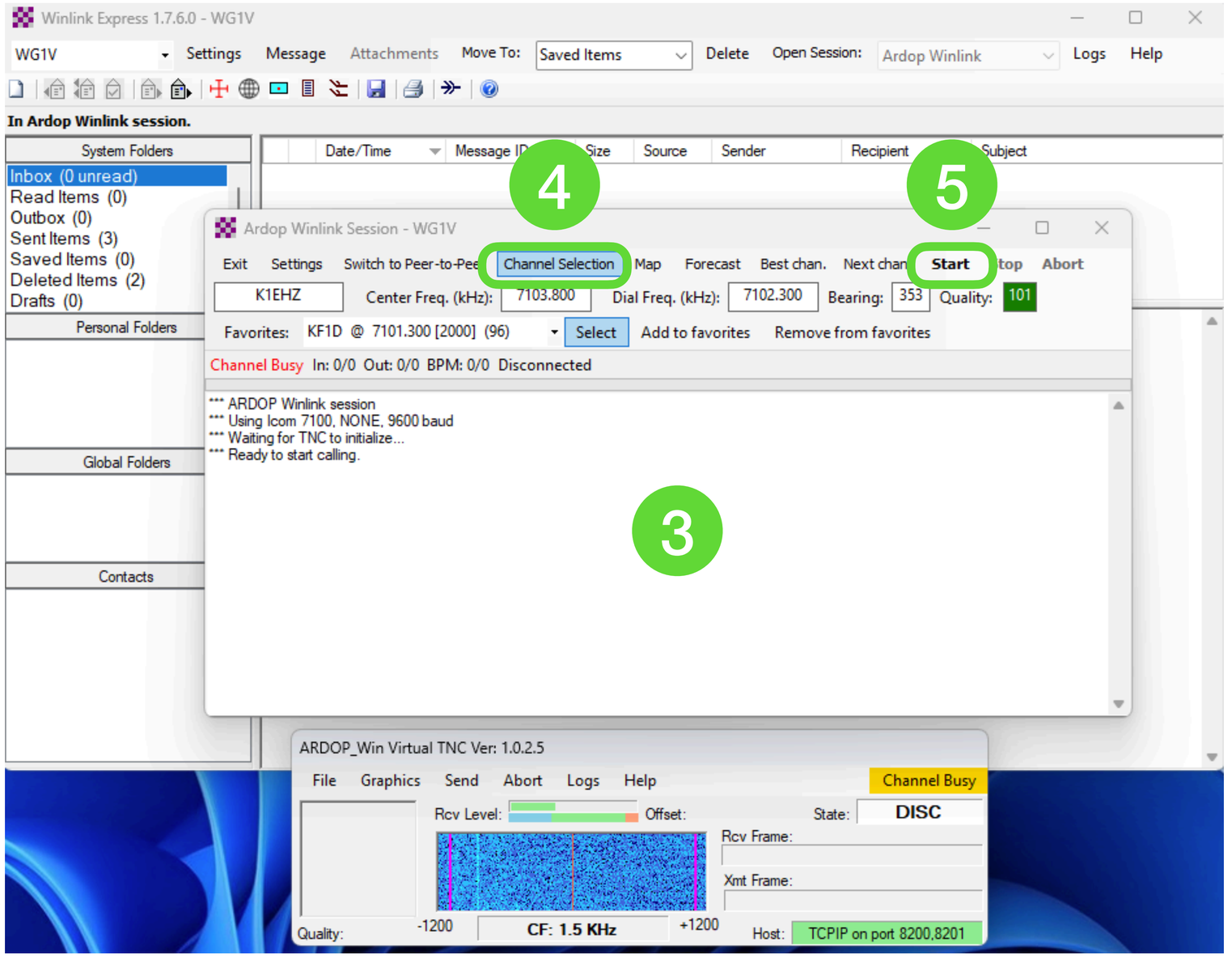
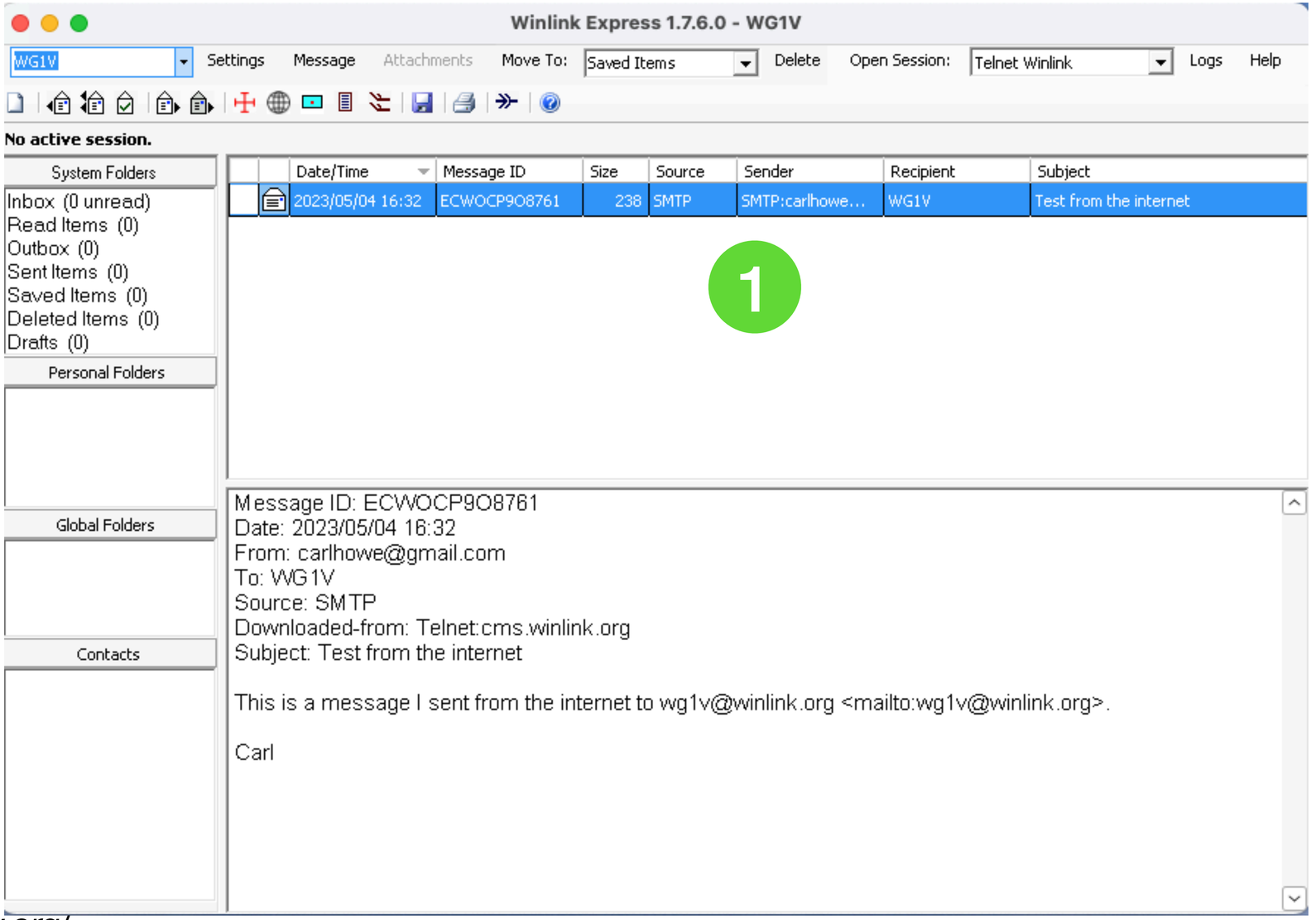


Reading Emails

3. Reading Messages

Reading emails works like most common email clients.

1. New messages appear in your inbox and can be read in the preview pane.
2. Double-click on a message to show it in a new window.
3. Opening a formatted message will display it in your browser



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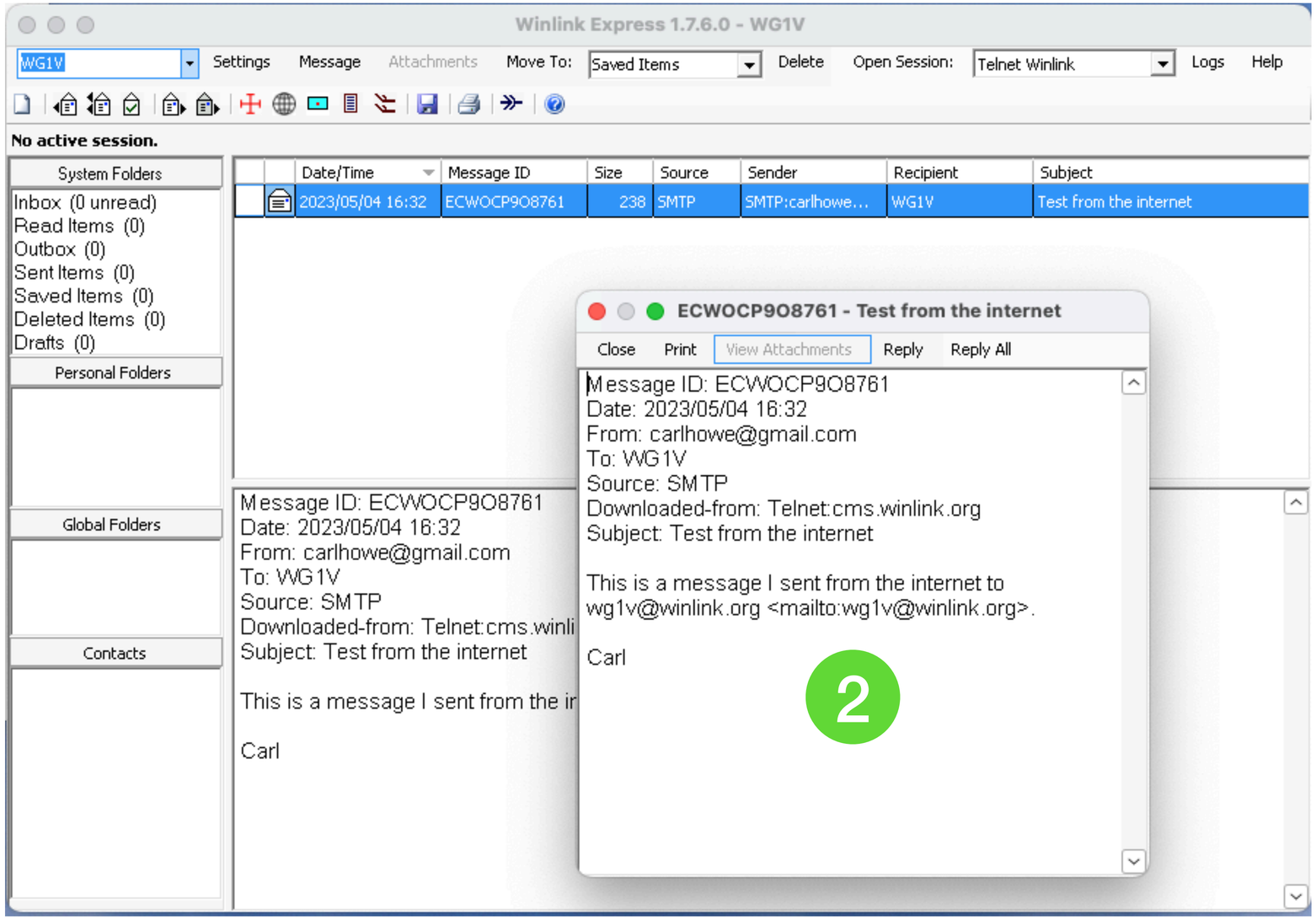

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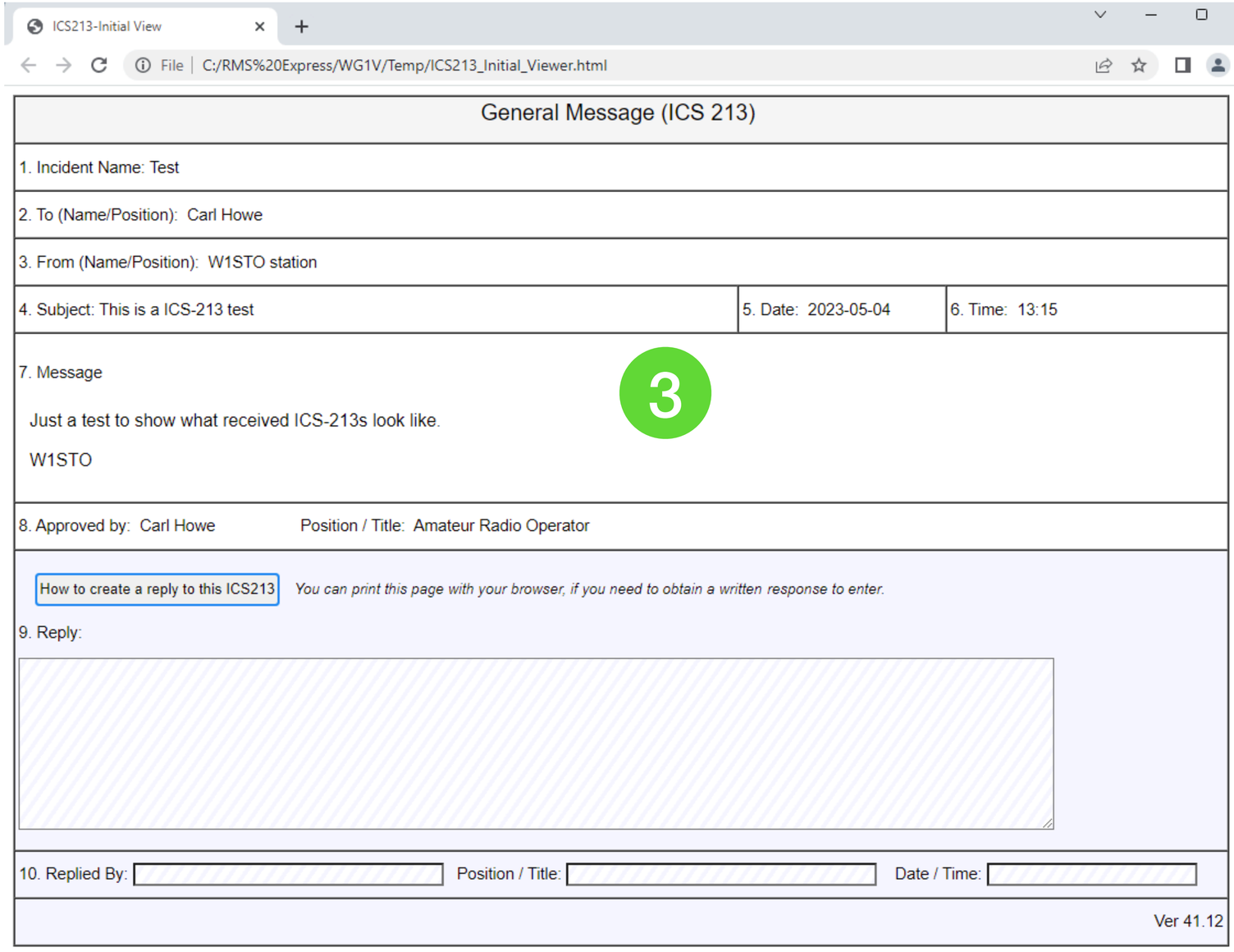

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But Don't Delete ICS-213s!

Typically ICS-213 messages are used for formal communications with public service and governmental personnel

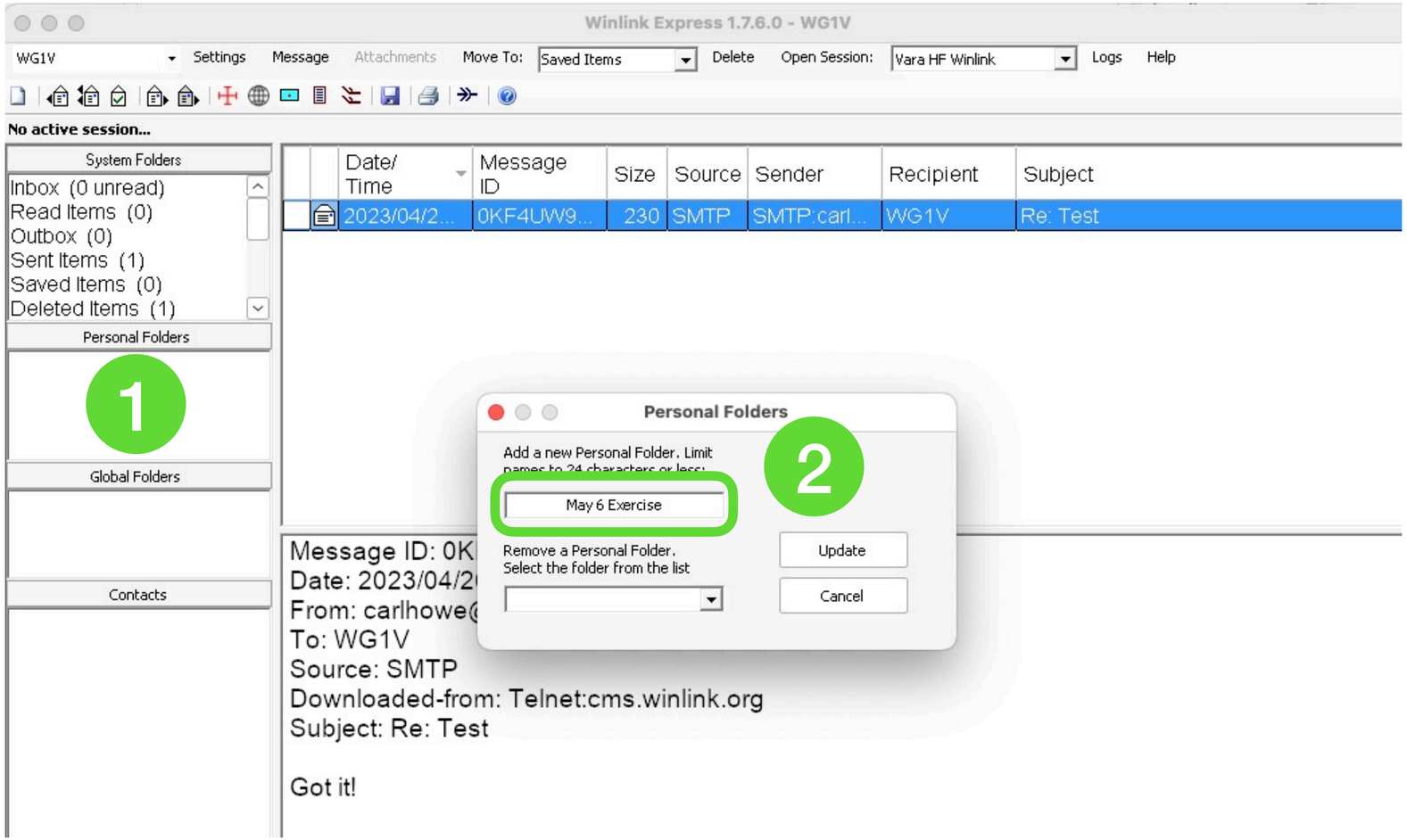
As such, they should be preserved and not deleted

Best practice is to store them in a folder until they can be archived

Creating a Folder

1. Right click in the *Personal Folders* pane of the main Winlink Express window

2. Type in the name of the folder you'd like to create and click *Update.*



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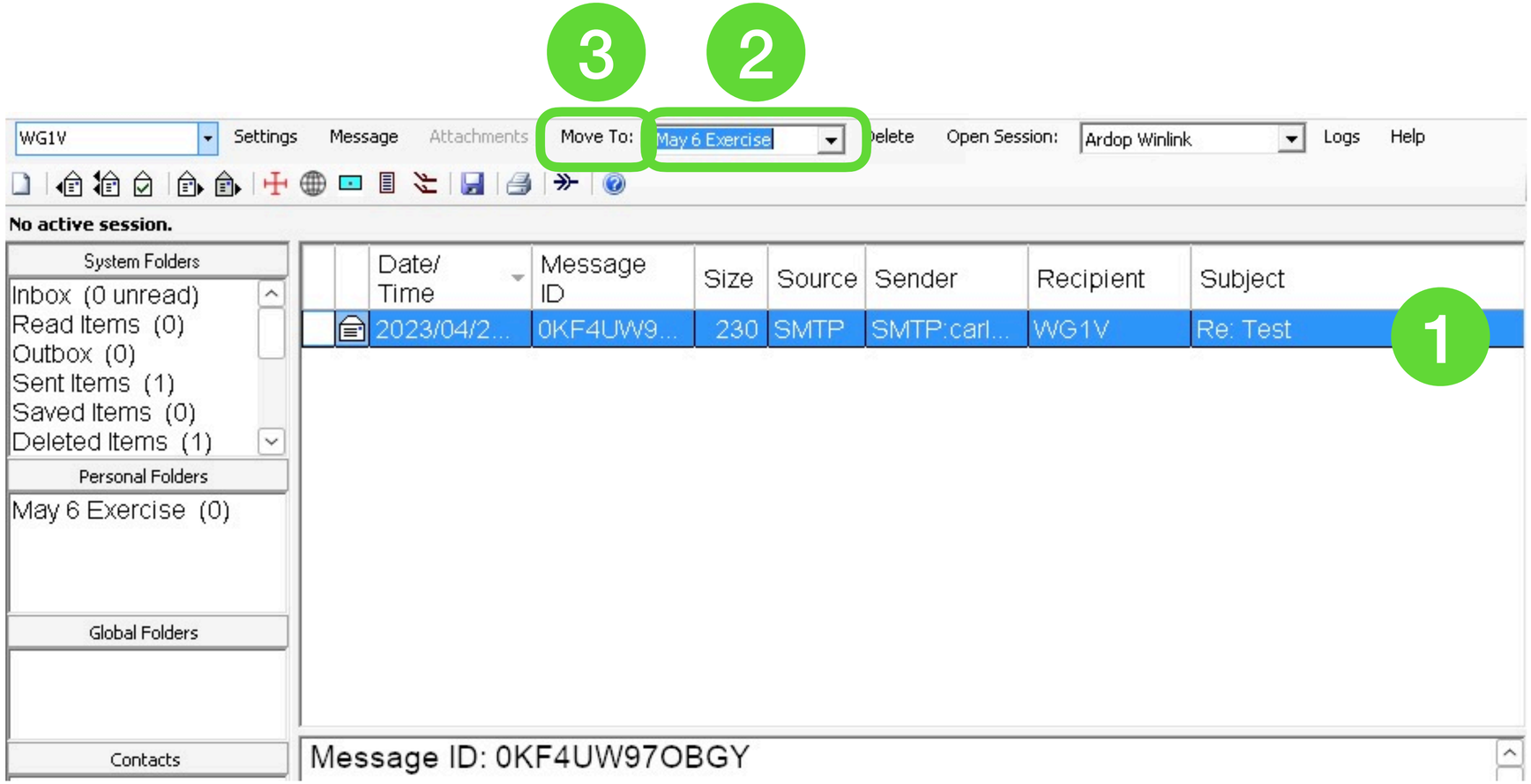
Moving a Message to a Folder

1. Highlight the message or messages you wish to move

2. Select the folder you'd like to move them to.

3. Click *Move To.*



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Winlink Express alternative for Mac users

Slides and documents available at http://wg1v.org/

Why I Don't Use Winlink Express

- Winlink Express is:
  - Windows PC-only and I run my shack with a Mac mini m1
  - Has a monolithic architecture
  - Doesn't play well with others
  - Predominantly uses a commercial Windows-only modem

The Winlink organization is doing a rewrite that supports Windows, Linux, and Mac, but it isn't expected to be available any time soon

Slides and documents available at http://wg1v.org/

What I Use on My Mac instead of Winlink Express

- *Pat* for reading and sending emails (runs native on the Mac)
- *rigctld* for a rig control server
- ARDOP and/or VARA running under Crossover (a Windows-emulation layer)
- fldigi, WSJT-X and Rumlog for other digital modes, logging, and contesting
- All these programs run simultaneously and can share my radio as needed

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Summary

At the end of the day, Winlink is just an offline email client that talks to internet servers using radio. We use it by:

- Creating emails offline and posting them to an Outbox
- Explicitly connecting to servers to send or receive emails
- Reading our emails offline once transmission is complete
- Limiting our messages to the essentials

Slides and documents available at http://wg1v.org/

Thank you

This presentation and the narrative paper behind it are available online and in PDF form at http://wg1v.org