

Winlink Training E-Mail Over Radio Operations

Objectives

Basic e-mail over radio operations will be covered using packet radio and Winlink Express.

Packet Radio Operations

Many Emergency Communications teams make use of the Winlink radio e-mail system to provide a backup, radio based, e-mail system. Winlink can exchange messages to and from other amateur radio stations (call signs) and also with regular Internet e-mail addresses. A U/VHF radio, along with an attached TNC or soundcard interface, computer, and the Winlink Express client software (additional software is required for sound card interface operation), provide us with access to the amateur radio “last mile” connection to a Winlink Radio Message Server (RMS) gateway station. The Winlink system is normally a client/server system, similar to a regular Internet POP/SMTP e-mail system. Winlink RMS gateway stations connect to a Common Message Server (CMS) via the Internet to exchange messages with users. If the Internet fails at the RMS gateway station, the connection to the CMS can be rerouted via HF radio, or messages may be stored locally until the Internet connection is restored (this local storage function is not available on all RMS gateway stations). The state and county EOC’s and most city EOC’s have access to the Winlink system. Winlink Express is also capable of peer-to-peer connections with other local users for message transfer when an RMS Gateway station is not available.

Since the connection to the RMS gateway station is established over RF, the operator must select the correct call sign for the RMS gateway station, and the correct operating frequency. This is different than a typical Internet e-mail system where the server connection is always the same. There are several RMS gateway stations in the Puget Sound, using different call signs, and on different frequencies. This provides redundancy during a disaster. If no RMS gateway station is available, a direct peer-to-peer connection can be used. This type of connection should be coordinated on a voice channel to ensure the connection settings are correct and the receiving station is ready.

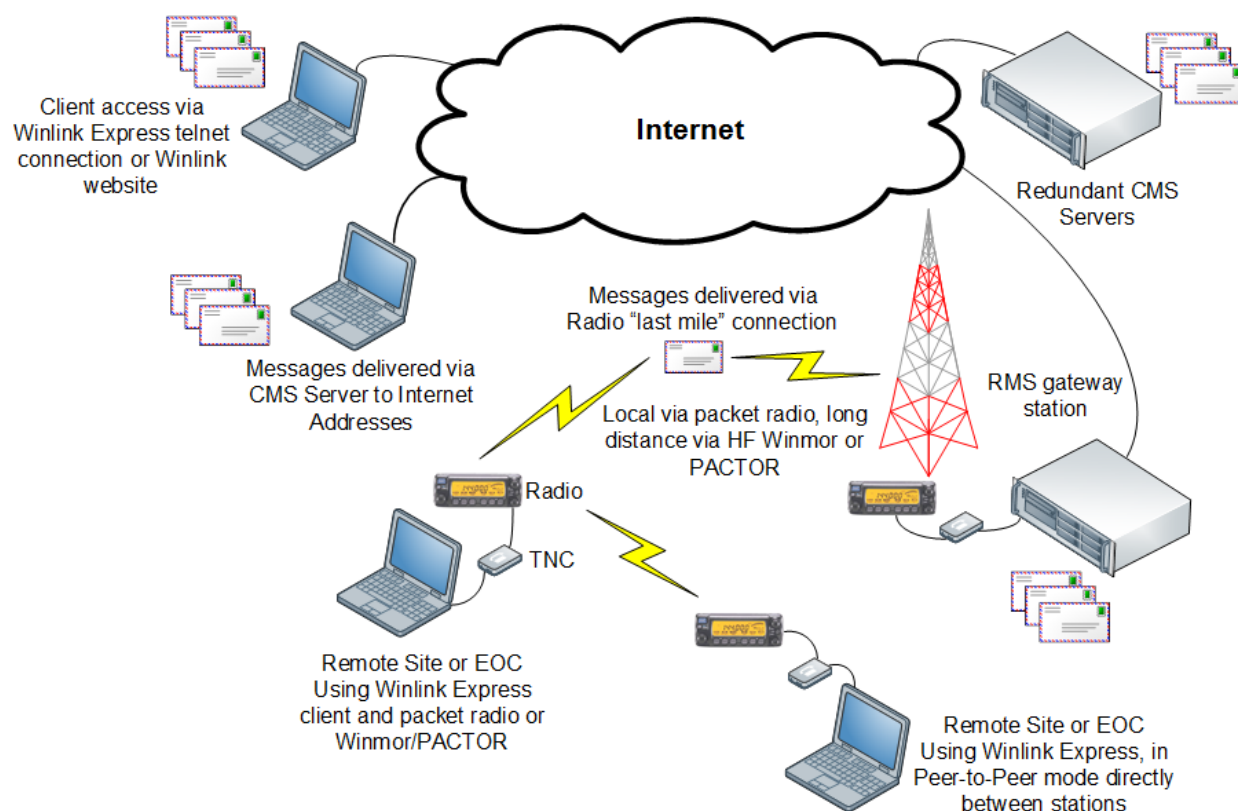
Winlink Express can be installed on a personal computer, configured for your call sign, and configured to use an Internet connection (telnet) to transfer messages. There is no cost for the software (though donations are encouraged), which can be downloaded from the links below. EMCOMM members are encouraged to do this to gain more experience with these programs. EMCOMM members are also encouraged to obtain the necessary equipment to augment their personal Winlink stations to include radio capability.

Winlink Express also supports message templates to format message content, and also HTML (Web) forms which allows the use of detailed standardized forms that can be completed and attached to a message for delivery. These forms can then be displayed and printed at the receiving end.

Software links

Winlink Express: <http://www.winlink.org/ClientSoftware>

The diagram below gives an overview of the Winlink system



Winlink System Diagram

A local station will use Winlink Express as the radio e-mail client application. There are other packet applications available, but this training focuses on Winlink Express.

It is important to remember that a radio link transfers data very slowly compared to a modern Internet connection (think early dial-up speeds), so message content should be kept to a minimum, and any attachments included must be very small or the transfer could take a long time to complete and will tie up the frequency and RMS gateway station, preventing other stations from using these shared resources. The maximum message size that the Winlink system will allow is 120K including any attachments. Messages that exceed this limit will be rejected by the Winlink system.

Essential Skills

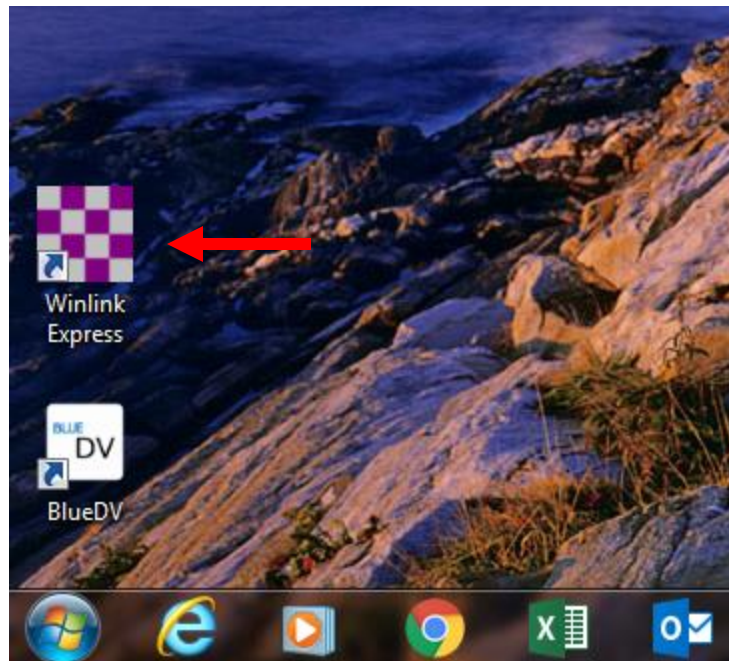
- Identify the components and software of the packet station
- Transfer messages using Winlink Express and an Internet Telnet session
- Determine the correct settings to connect with a local RMS gateway station
- Transfer messages using Winlink Express and an RMS gateway station
- Transfer messages peer-to-peer between stations with Winlink Express

Advanced Skills

- Send and receive messages using HTML forms
- Send and receive messages using Signalink type soundcard interface over HF Winmor and backup radios
- Send and receive messages using tactical call signs

Step 1, Locations

- ☐ Locate the following components of a packet station:
- ☐ U/VHF Transceiver
- ☐ Packet radio TNC
- ☐ Ham station computer
- ☐ Packet folder on the computer desktop (if setup this way)
- ☐ Packet programs in that folder (Winlink Express)
- ☐ There may also be a shortcut to launch Winlink Express on the desktop

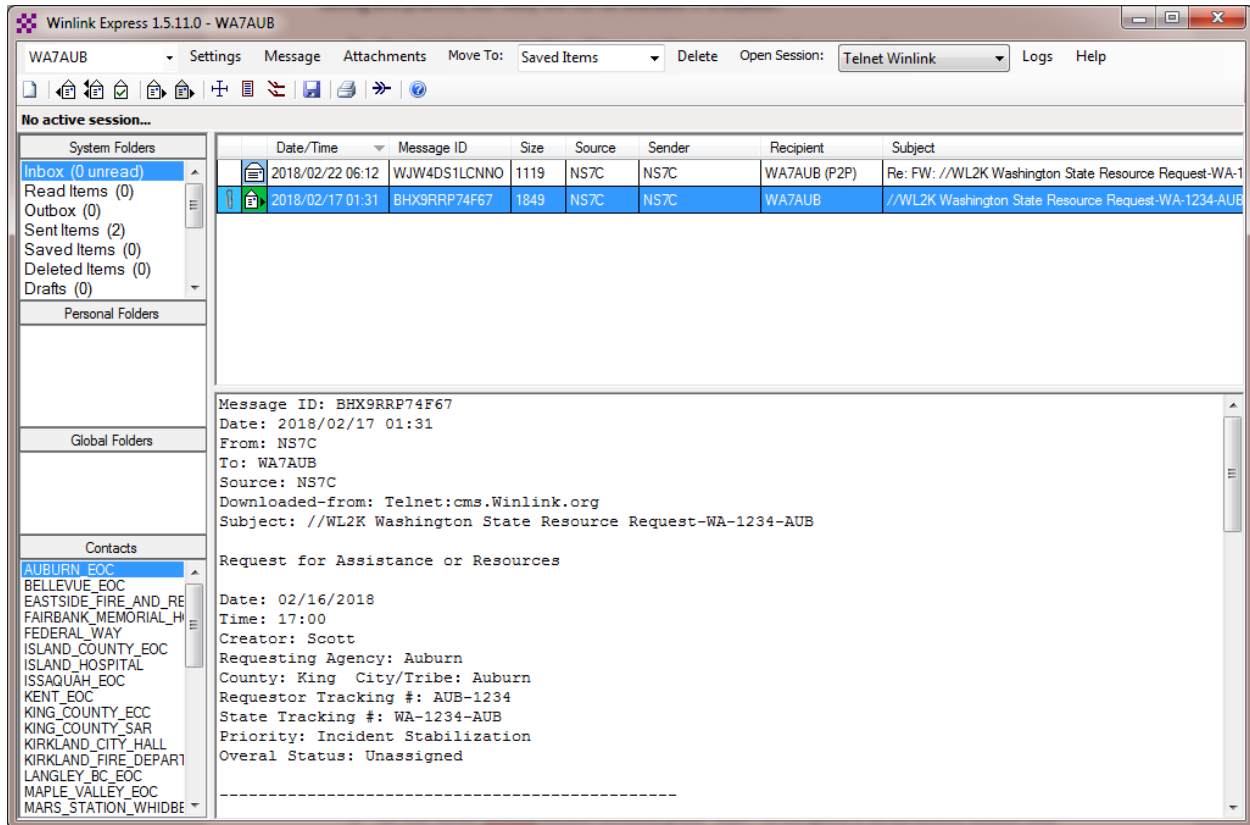


- ☐ This completes this step.

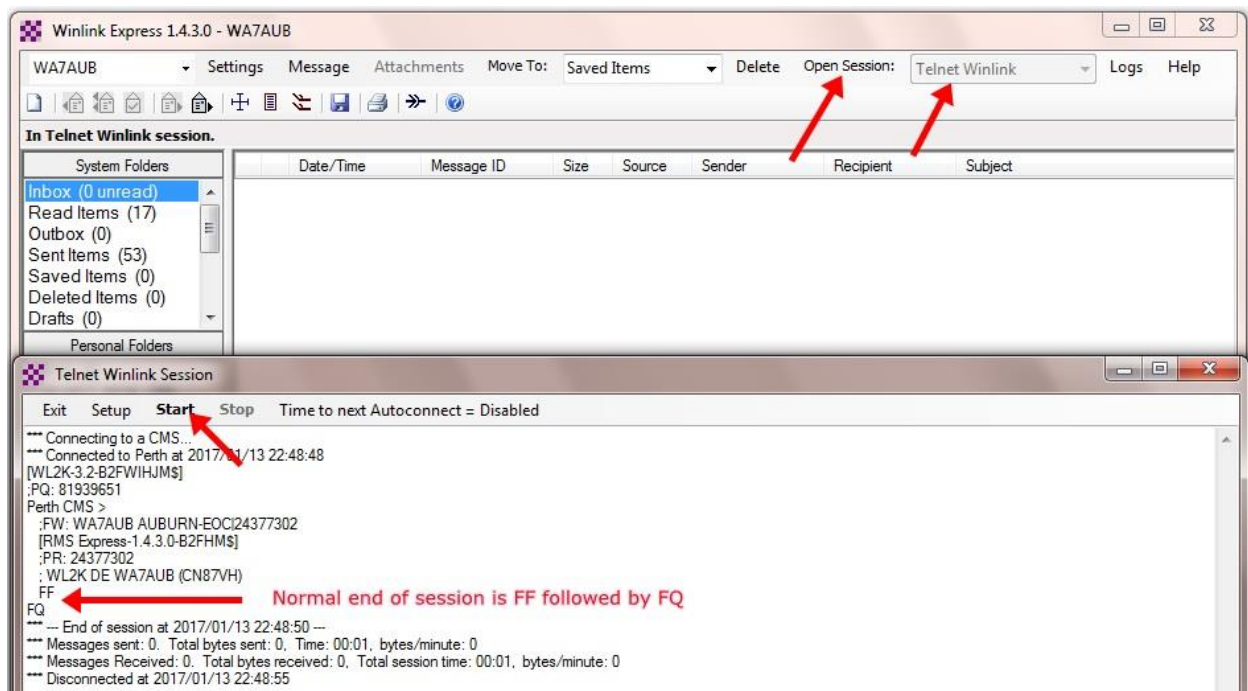
Step 2A, Message transfer using Winlink Express and Telnet

Winlink Express can transfer messages using Packet, Pactor, Robust Packet, Winmor, ARDOP, VARA, and Telnet protocols. This section will focus on telnet and packet operations, however, the advanced section will cover additional options. Telnet uses an Internet connection to transfer messages. This is good for testing and practice, but the Internet will not likely be available in a disaster.

- ☐ Start Winlink Express, this will bring up the main Winlink Express window



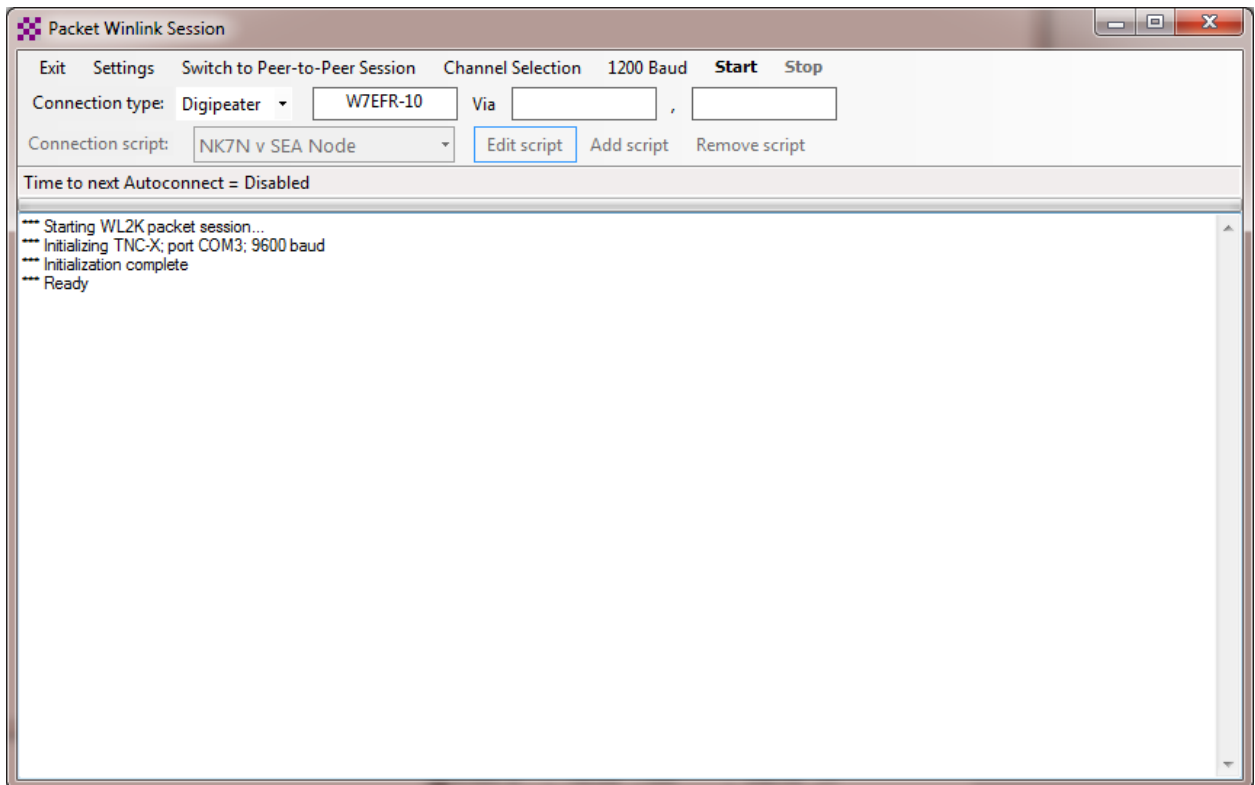
- ☐ Identify the following items on the Winlink Express main screen:
 - ☐ Station ID in the upper left corner (pull down to change or add call signs)
 - ☐ System folders on the left side
 - ☐ Contacts/address book on the left side
 - ☐ Message header area and message preview windows in the center
 - ☐ Toolbar icons
- ☐ Using the pull down menu in the call sign field, select the station call sign that will be used
 - ☐ Several call signs can be configured within Winlink Express
- ☐ In the "Open Session" pull down, select Telnet Winlink, then click on the words "Open Session"
- ☐ On the Telnet Winlink Session window, press "Start" to complete a Send/Receive session over the Internet. Close the session window when it completes (disconnects).



- ☐ Continue with step 2B.

Step 2B, Send/Receive Using Packet Radio

- ☐ On the main Winlink Express window, use the “Open Session” pull down, select Packet Winlink, then click on the words “Open Session.”
- ☐ The Packet Winlink Session window will open



- ☐ Click on Settings, this will bring up the Packet settings window. These settings will apply to both Winlink and P2P sessions

Packet Winlink/P2P Setup

TNC Connection

Packet TNC Type: **TNC-X**

Packet TNC Model:

Serial Port: **COM3**

Serial Port Baud: **9600**

AutoConnect Time: **Disabled**

☐ If Auto Connect is enabled, open session when Winlink Express is started

TNC Parameters

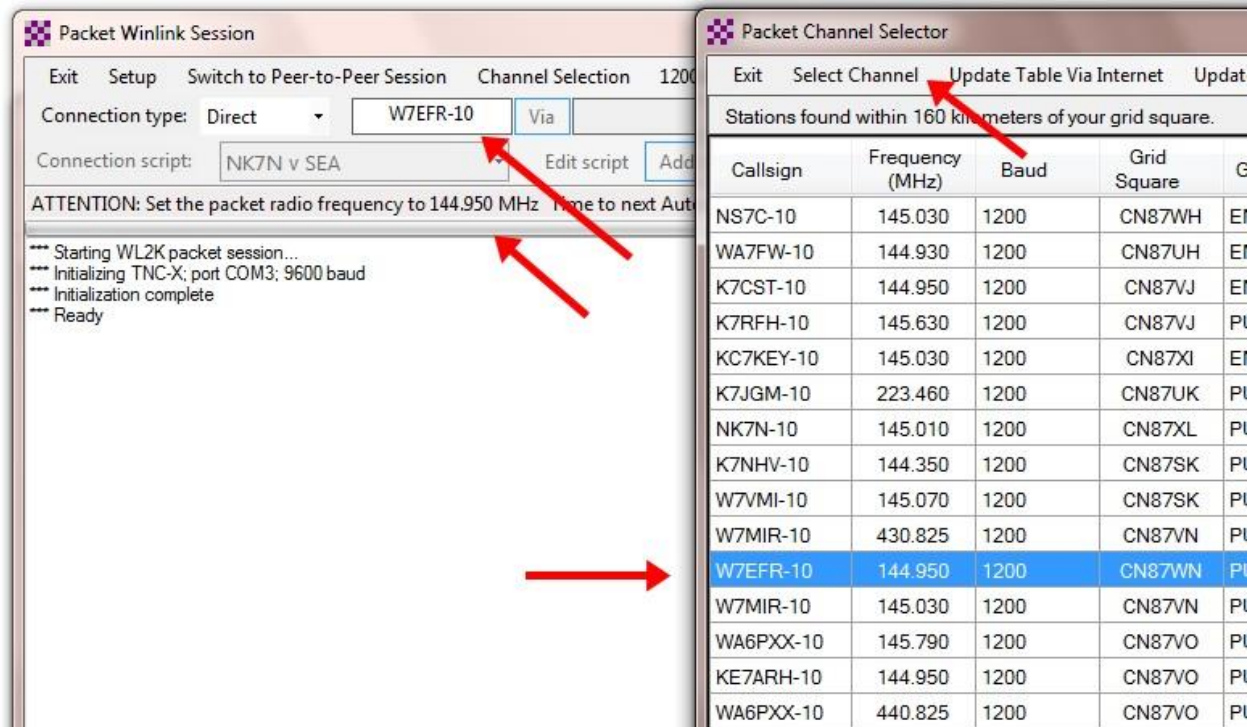
	<input checked="" type="radio"/> 1200 Baud	<input type="radio"/> 9600 Baud
TX Delay (Milliseconds):	200	200
Maximum Packet Length:	255	255
Maximum Frames:	4	4
Frack:	2	2
Persistence:	160	224
Slot time:	30	20
Maximum Retries:	5	5

Disable Xmt Level Adjust ☐ Transmit Level: **100**

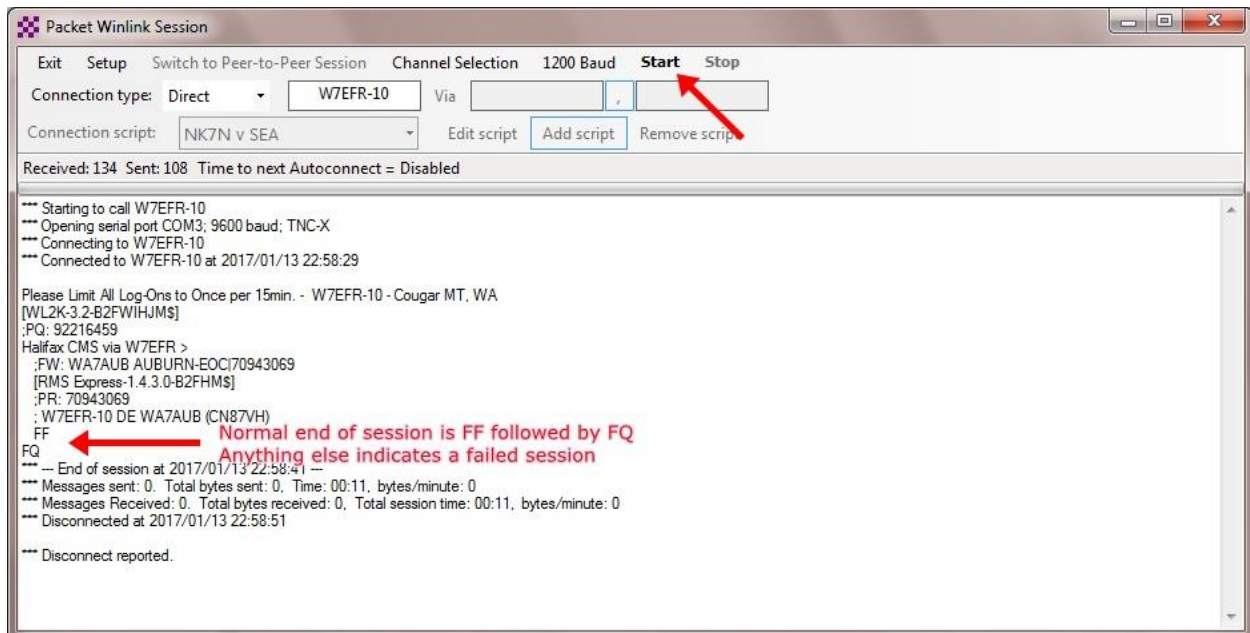
Update **Cancel**

- ☐ For this example, we are using a “TNC-X” model TNC, which is connected to COM port 3, and the communications speed over the serial port between the computer and the TNC is 9600 Baud (this is not the same as the RF data speed)
- ☐ TNC-X is only capable of 1200 baud RF data rate, so the 1200 Baud TNC Parameters are selected. The default parameters should be close enough to operate a TNC-X. Some adjustment might need to be made to improve performance. Click on Update to save the settings and close the window.
- ☐ Click on Channel Selection, this will open the Packet Channel Selector.
- ☐ Locate a nearby RMS gateway station (for example, W7EFR-10) in the list and either double click on this entry or select it and then click on “Select Channel.” Some stations may be close according to the list, but may have significant terrain in the way of a line-of-sight contact, so a more distant station might actually work better.
- ☐ Note that the selected station is now in the station ID window. The Connection Type should be “Direct” unless the station selected is beyond the simplex range, and a relay will be required. You can also enter the RMS gateway call sign directly in the station field if you know it, and

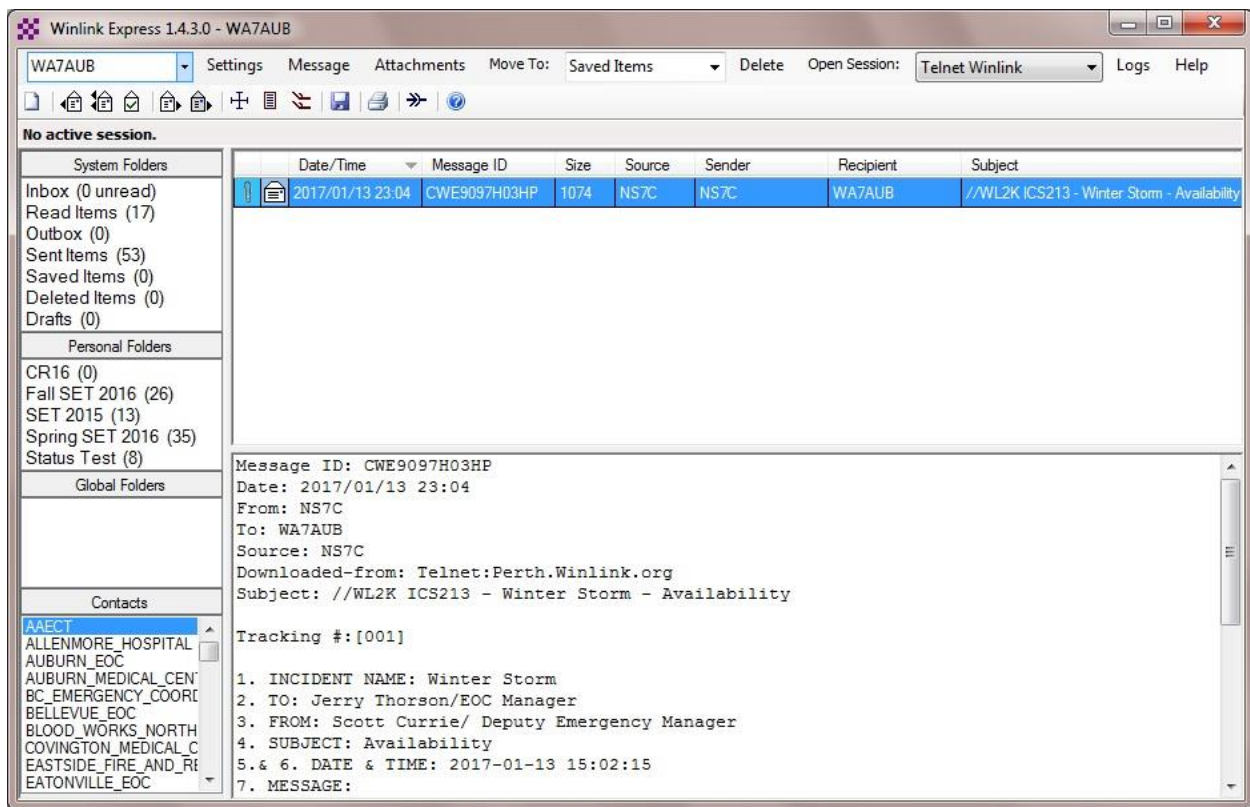
bypass the channel selection process. Notice the “ATTENTION” message, reminding you to change frequencies on the radio.



- Press “Start” to initiate a send/receive session with the RMS Gateway. Note the progress messages in the window. RMS uses a special transfer protocol, which will not be defined here.



- You can leave the session window open, and return to the main Winlink Express window.
- Any received messages will now be in the Inbox, and the message preview will be displayed.



- ☐ Note that the toolbar icons for forward, reply, etc. are now active. You can also right-click on the message header to select these functions.
- ☐ Create a new message by clicking on the new message icon, or pull down "Message" and select "New Message."
- ☐ In the new message window you will notice there are several additional functions available. The "To" field can have multiple addresses separated by semicolons. These can be station call signs and/or regular Internet e-mail addresses. Click on the "To" button to select the address book. Winlink Express also has a spell checker, and supports templates and attachments. Be sure to select the "Winlink Message" button.

Enter a new message

Close Select Template Attachments Post to Outbox Spell Check Save in Drafts

From: WA7AUB

To: NS7C

Cc:

Subject: Winter Storm

Attach:

☒ Winlink Message ☐ Peer-to-Peer Message ☐ Request read receipt

Please send a status report from your location as soon as possible.

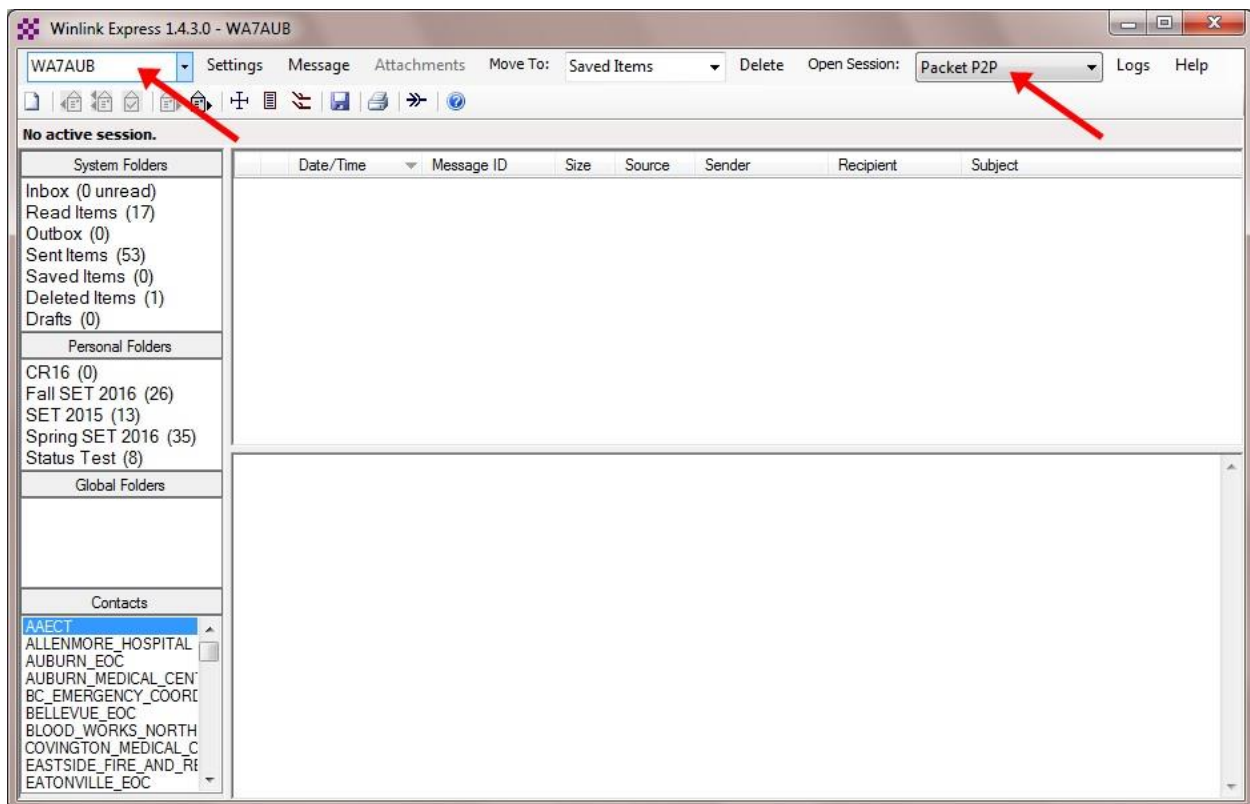
-Jerry Thorson, EM|

- ☐ Send your test message to another station (arrange this ahead of time), add some information in the body of the message, and then click on "Post to Outbox". Winlink Express will not start a send/receive session when you post a message to the Outbox, you must switch to the Packet Session window and click on "Start" to start the transfer (Winlink Express can be set to periodically check for messages).
- ☐ When complete, close the Packet Winlink Session window. This completes this step.

Step 3, Peer-To-Peer Connections

The previous steps made use of the Winlink System, and an RMS gateway station with a working Internet connection. During a disaster, there may not be a working RMS station in range of your station. In this case, peer-to-peer (P2P) connections with other local stations may become necessary. Winlink Express supports P2P radio connections with other Winlink Express stations using packet, robust packet, pactor, Winmor, ARDOP and VARA protocols. The following steps highlight the differences between Winlink and P2P connections, however, a P2P partner is required to actually transfer messages.

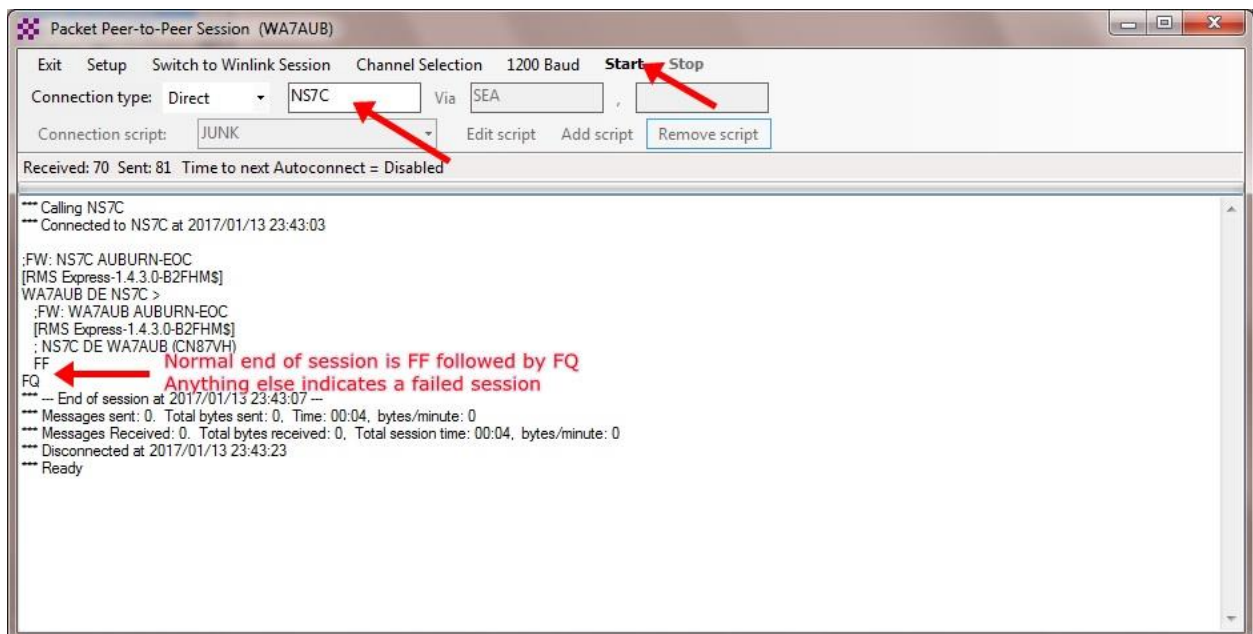
In order to establish a Packet P2P connection with another station (outbound), or to respond to connection requests from another station (inbound), the Packet Peer-to-Peer Session must be open (at both stations). The station ID on the main Winlink Express window is the call sign the requesting station must use to request an inbound connection. You will need to know the call sign in use at a remote station to establish an outbound connection. On the main Winlink Express window, check that the desired station ID is set, then select "Packet P2P" and open the session.



- ☐ Winlink Express is now ready to accept inbound connections from other stations (any station can connect, it is not necessary to set the call sign for inbound connections). In the example above, stations would need to connect to WA7AUB using the frequency the packet radio is currently set to. Any P2P messages addressed to WA7AUB would be transferred. Also, any P2P messages in the outbox that are addressed to the connecting station will be transferred. As long as this session stays open, Winlink Express will accept inbound connections from any station.



- ❑ In this example, the packet radio is set to 145.010 simplex. Stations wishing to connect to WA7AUB will also need to be on 145.010. If this channel is very busy, choose a different packet frequency.
- ❑ For outbound connections, on the Packet Peer-to-Peer Session window, enter the call sign of the remote station you have P2P messages for, and then click on “Start” to establish a connection and transfer messages. Connection progress messages appear in the window.



- ❑ In order for a message to be sent via P2P, when the message is created, select “Peer-to-Peer Message” and the “To:” field must be the destination call sign. CC addresses are not allowed in P2P. Messages received P2P will be in the Inbox along with any other messages.

Enter a new message

Close Select Template Attachments Post to Outbox Spell Check Save in Drafts

From: WA7AUB

☐ Wjnlk Message ☒ Peerto-Peer Message ☐ Request read receipt

To: NS7C;

Cc:

Subject: P2P testing

Attach:

This is a test message to make sure we can connect via peer-to-peer.

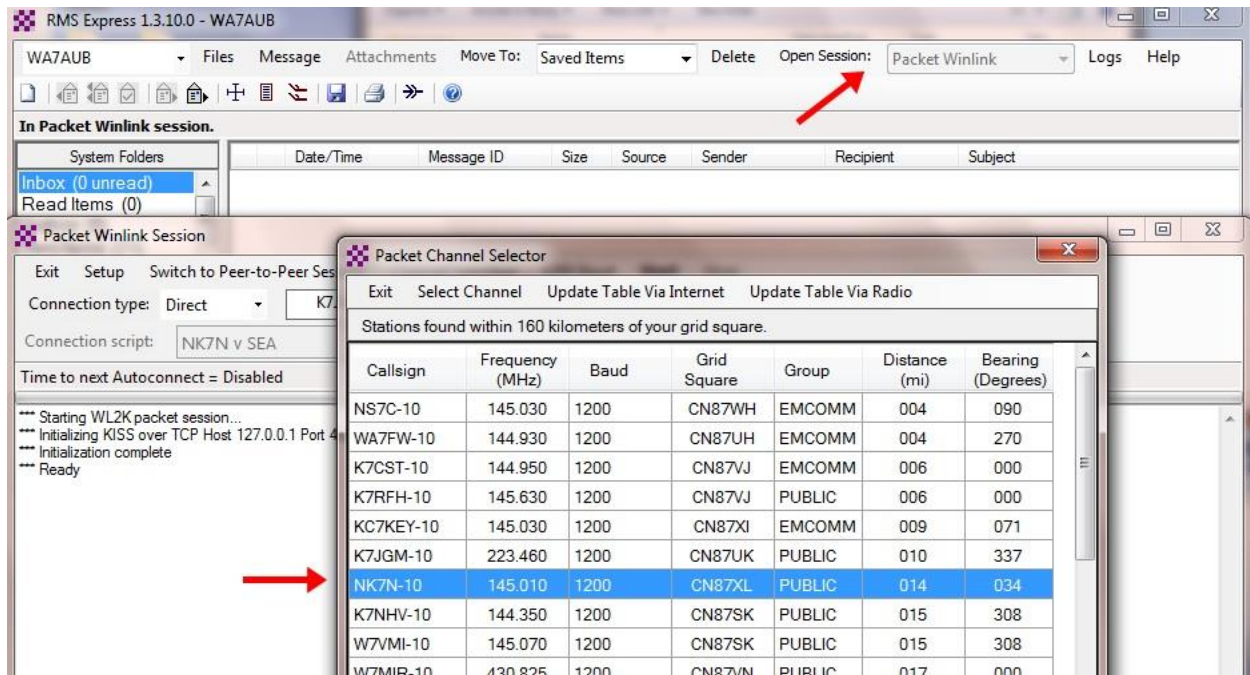
-WA7AUB|

- ☐ Close the P2P session. This completes this step.

Step 4, Packet Digital Repeaters

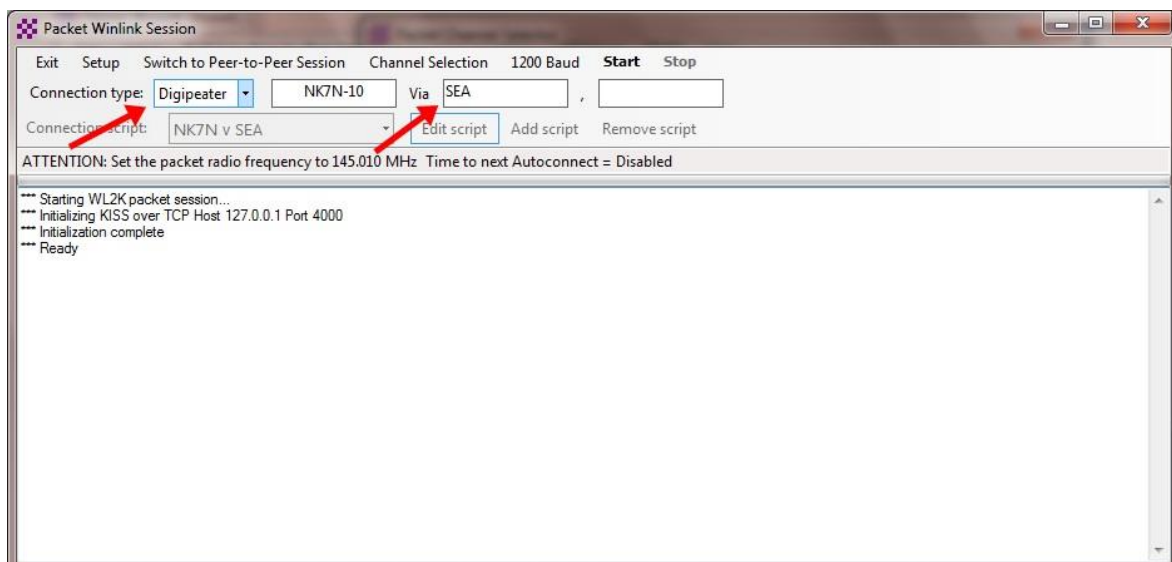
If a direct, line-of-sight radio path to a Gateway or P2P station is not available, Winlink Express can make use of digital repeaters (digipeaters) and forwarding nodes during packet radio operations. Knowledge of the local packet radio network is required to use these resources, but the basics will be covered in this step.

- ☐ If not already open, launch Winlink Express and open a Packet Winlink session.
- ☐ Use the Channel Selection option to find and select the gateway station (eg: NK7N-10.)



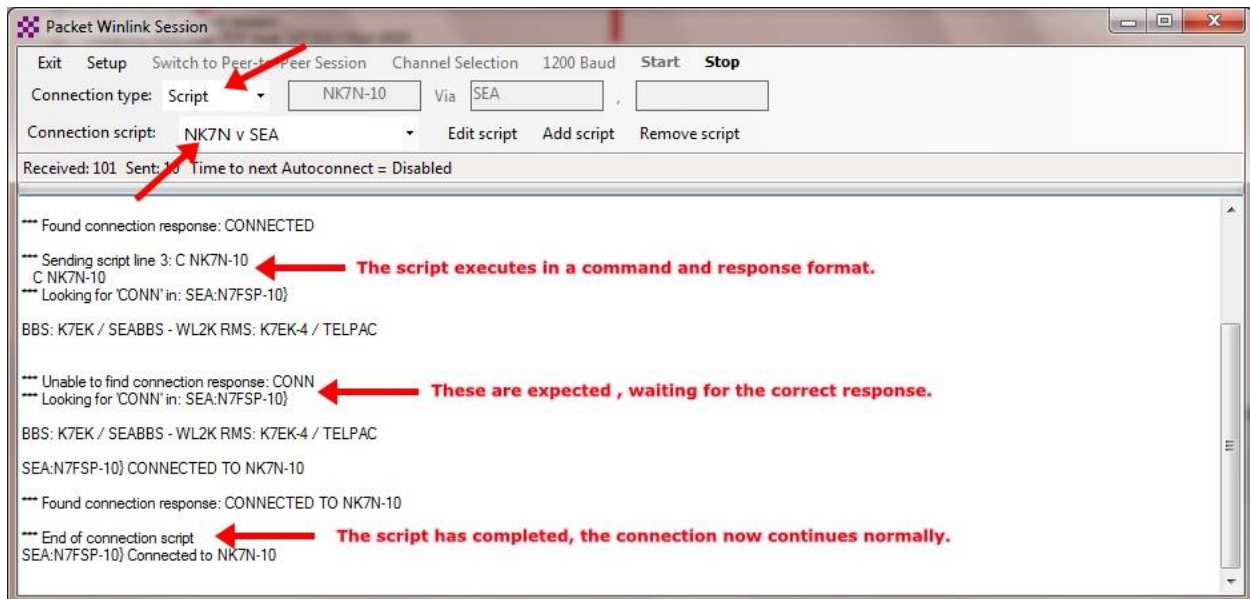
If NK7N-10 is not within a direct line-of-sight path, a digital repeater called "SEA" is available on Baldi Mountain, east of Enumclaw. We will use this digital repeater to connect to NK7N-10.

- ☐ On the Packet Winlink Session window, change the connection type to "Digipeater" and add SEA as the first "Via" station. Note that SEA is an alias, we could also use the real call sign here (N7FSP-10). Press "Start" to start the Send/Receive session.



Complex connections using multiple relays can also be used. This involves writing a session connection script that issues the commands necessary to complete the connection. When executed, the script issues a command, then waits for the correct response. Creating a script requires detailed knowledge of the local packet network, and the commands and responses necessary to navigate around the network. This is beyond the scope of this training.

- ☐ To run a script, change the connection type to “Script”, then use the pull down menu to select the desired script. The script includes all the call signs needed to make the connection, so these fields are grayed out on the session window. There are also options to Edit, Add and Remove scripts in the software.



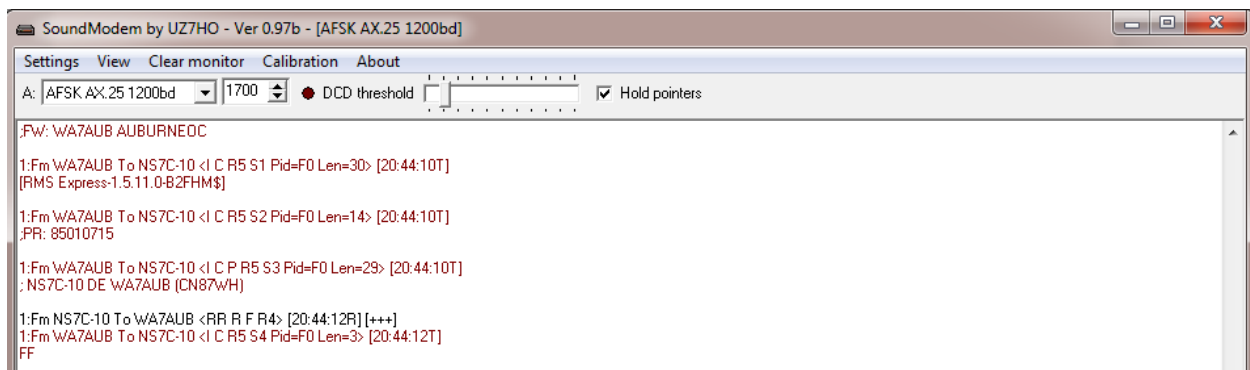
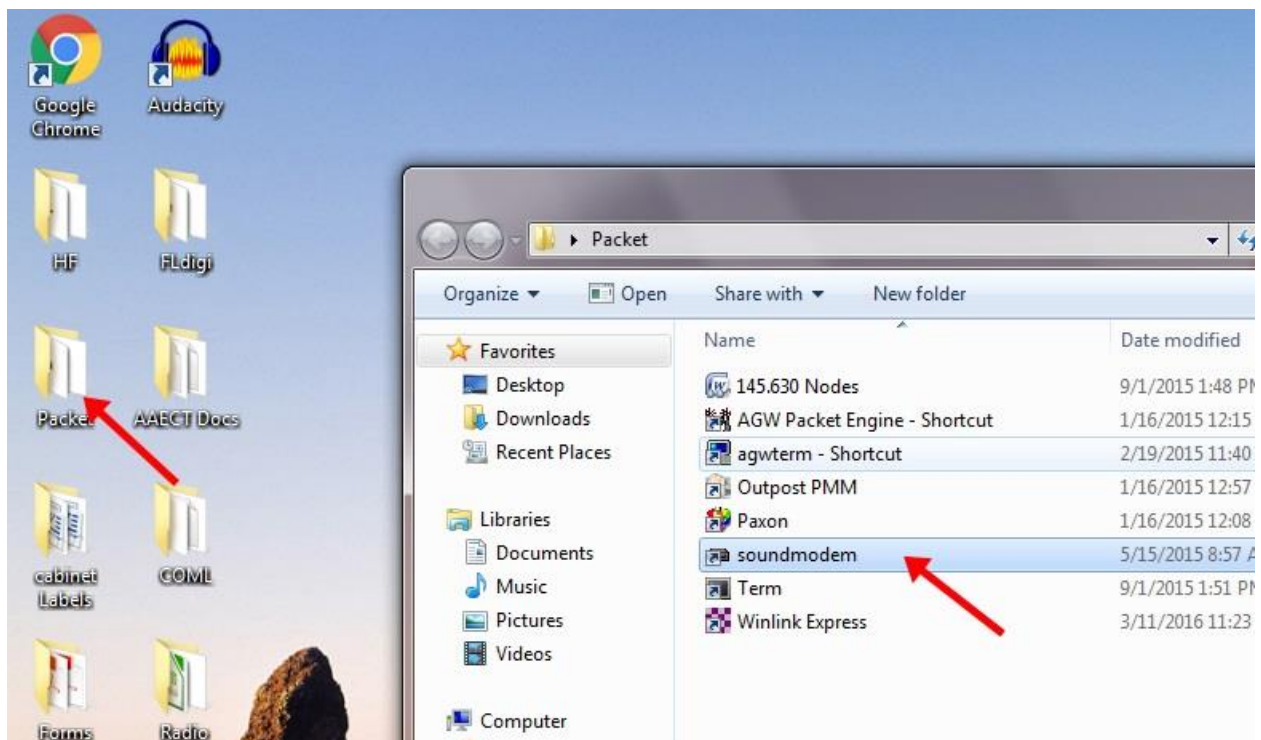
- ☐ Close the Packet Winlink session. This completes this step.

Advanced Digital Messaging

Step 5, Using Radios connected to sound card interfaces (Signalink)

It is possible to use a sound card interface instead of a TNC for Packet Radio. In this case, we will use a Signalink instead of the TNC-X for packet connections. The Signalink is simply a “sound card” modem with the appropriate interface to connect to a radio. By itself, the Signalink does not have a processor to decode and encode the AX.25 data packets used on packet radio. To use the Signalink on packet, an additional software application must be running on the computer to provide this “TNC” function. A popular application for this is called “soundmodem”, written by UZ7HO (you may also use Direwolf). The configuration settings on Winlink Express must be changed to use the “soundmodem” software TNC.

- ☐ On the computer desktop, open the folder where soundmodem has been saved, and then launch soundmodem. This application must be set up to connect with the Signalink, and the applications like Winlink Express that will use its services.



- ☐ Click on Settings, then select Devices, the device settings window will open

Settings

Sound Card

Output device: Speakers (3- USB Audio CODEC)

Input device: Microphone (3- USB Audio CODEC)

☐ Dual channel TX SampleRate: 11025

☐ TX rotation TX corr. PPM: 0

☒ Single channel output RX SampleRate: 11025

☒ Color waterfall RX corr. PPM: 0

☐ Stop waterfall on minimize Priority: Highest

Server setup

AGWPE Server Port: 8000 ☒ Enabled

KISS Server Port: 8100 ☒ Enabled

PTT Port

Select PTT port: NONE ☐ Dual PTT

☐ Swap COM pins for PTT

OK Cancel

- Select the input and output devices, for Signalink, these will be listed as a USB CODEC. Signalink has only one channel, so select Single Channel Output. Select color waterfall for a better display, and enable both TCP servers, the default ports should work. Finally, since Signalink provides PTT via its internal VOX circuit, select NONE for PTT. Other options should be left unchecked. The TX and RX adjustments (Samples and PPM) can be left at the defaults. Click OK to save the settings.
- Click Settings again, and this time select Modems. The settings on the picture below should provide a good starting point for 1200 baud operation. Since Signalink is a single channel device, only the Ch A settings apply. Select AFSK AX.25 1200bd for the mode, this is standard mode for V/UHF packet operations. Click OK to save the settings.

Modem settings

Modem filters ch: A	Modem filters ch: B
BPF Width <input type="text" value="1400"/> <input type="button" value="Show"/>	BPF Width <input type="text" value="500"/> <input type="button" value="Show"/>
TXBPF Width <input type="text" value="1600"/> <input type="button" value="Show"/>	TXBPF Width <input type="text" value="500"/> <input type="button" value="Show"/>
LPF Width <input type="text" value="650"/> <input type="button" value="Show"/>	LPF Width <input type="text" value="155"/> <input type="button" value="Show"/>
BPF Taps <input type="text" value="256"/>	BPF Taps <input type="text" value="256"/>
LPF Taps <input type="text" value="128"/>	LPF Taps <input type="text" value="128"/>
<input checked="" type="checkbox"/> Default settings	<input checked="" type="checkbox"/> Default settings
PreEmphasis filter <input type="text" value="None"/> <input checked="" type="checkbox"/> All	PreEmphasis filter <input type="text" value="None"/> <input checked="" type="checkbox"/> All
<input checked="" type="checkbox"/> KISS Optimization	<input type="checkbox"/> KISS Optimization
<input checked="" type="checkbox"/> non-AX25 filter	<input checked="" type="checkbox"/> non-AX25 filter

Modem type ch: A	Modem type ch: B
Mode <input type="text" value="AFSK AX.25 1200bd"/>	Mode <input type="text" value="AFSK AX.25 300bd"/>
TXDelay <input type="text" value="200"/> msec	TXDelay <input type="text" value="250"/> msec
TXTail <input type="text" value="50"/> msec	TXTail <input type="text" value="50"/> msec
Add. RX <input type="text" value="2"/> pairs	Add. RX <input type="text" value="0"/> pairs
Add. RX shift <input type="text" value="30"/> Hz	Add. RX shift <input type="text" value="30"/> Hz
Bits Recovery <input type="text" value="SINGLE"/>	Bits Recovery <input type="text" value="NONE"/>

SoundModem by UZ7HO - Ver 0.97b - [AFSK AX.25 1200bd]

Settings View Clear monitor Calibration About

A: ☒ Hold pointers

1:Fm NS7C-1 To APWL2K Via (null) <UI C Pid=F0 Len=46> [20:08:17R] [+++]
 !4718.88Nw12206.98WaPHG6160 RMS Gateway Auburn

- ☐ On the main soundmodem window, be sure the filter is centered on 1700 Hz, and check the Hold Pointers option to prevent accidental adjustment of the filter with the mouse.
- ☐ Start Winlink Express, then open a Packet Winlink session and click on "Setup." Change the settings indicated below for TNC Type, Serial Port, and TCP Host/Port. All other settings should be left at the defaults. Be sure the TCP port number (8100) matches the setting from soundmodem. When complete, press "Update."

Packet Winlink/P2P Setup

TNC Connection

Packet TNC Type: **KISS**

Packet TNC Model: **NORMAL**

Serial Port: **TCP** AutoConnect Time: **Disabled**

TCP Host/Port: **127.0.0.1** **8100**

☐ If Auto Connect is enabled, open session when Winlink Express is started

TNC Parameters

☒ 1200 Baud ☐ 9600 Baud

TX Delay (Milliseconds):	200	200
Maximum Packet Length:	255	255
Maximum Frames:	4	4
Frack:	2	2
Persistence:	160	224
Slot time:	30	20
Maximum Retries:	5	5

Disable Xmt Level Adjust ☐ Transmit Level: **100** **100**

Enable IPoll ☒ ☒

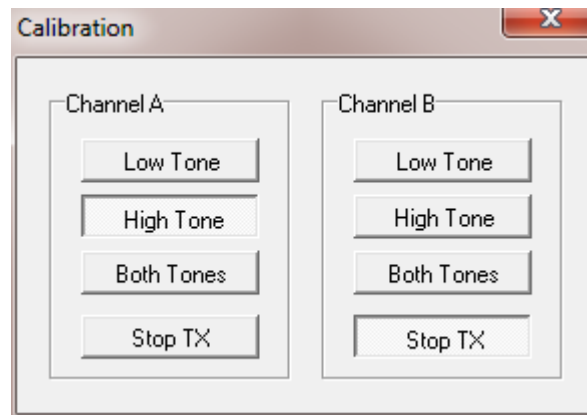
Update **Cancel**

- ☐ Set the level controls on the front of the Signalink as indicated below.



- ☐ These settings for TX and RX are just starting points and will likely need to be adjusted (probably lower). The DLY setting must always be all the way down (counter clockwise). We do not want any delay returning to receive from transmit when using Packet. To adjust the RX level, open the squelch on the radio (it should be left this way) and adjust the RX control for a blueish-green waterfall. Received packets should be yellow-red. This adjustment is not too critical, soundmodem can handle a wide range.

- To adjust TX, you will need another radio tuned to the same frequency to monitor your transmissions. On the soundmodem window, click on the Calibration button, then select the Channel A High Tone button. The radio should go into transmit, and you will hear a 2200 Hz tone on the monitor receiver. Turn the TX level down until you hear a noticeable drop in the level, then increase the level slowly until you reach the point where increasing it further does not change the audio level on the monitor receiver. This is the point where the transmitter limiter has activated and should hold the level between 4 and 5 kHz of deviation (increasing the TX level higher will distort the signal). Now adjust the TX control down just a bit from this level. You should be very close to the ideal setting of 3.5 kHz deviation. Press the Stop TX button and close the Calibration window. Remember these settings. These settings will apply to both Winlink and P2P packet radio sessions.



- Packet connections can now be attempted using the Signalink. Be sure to set the frequencies correctly.
- Close the Packet Winlink session. This completes this step.

Step 6, Using HF Winmor/ADROP and Signalink

In addition to Packet radio on V/UHF line-of-sight connections, it is also possible to use an HF radio to enable long distance connections via HF skywave propagation. The Signalink can be used on HF as well. The Signalink is simply a “sound card” CODEC with the appropriate interface to connect to a radio. By itself, the Signalink does not have a processor to decode, encode and transfer the data, this functionality is provided by HF “TNC” software (Winmor and ARDOP) included with Winlink Express. The software TNC also provides “rig control” to automatically set an HF rig to the correct frequency and mode when a gateway station is selected (a CI-V interface cable is required for this). These steps use the Winmor TNC, ADROP operation is nearly identical.

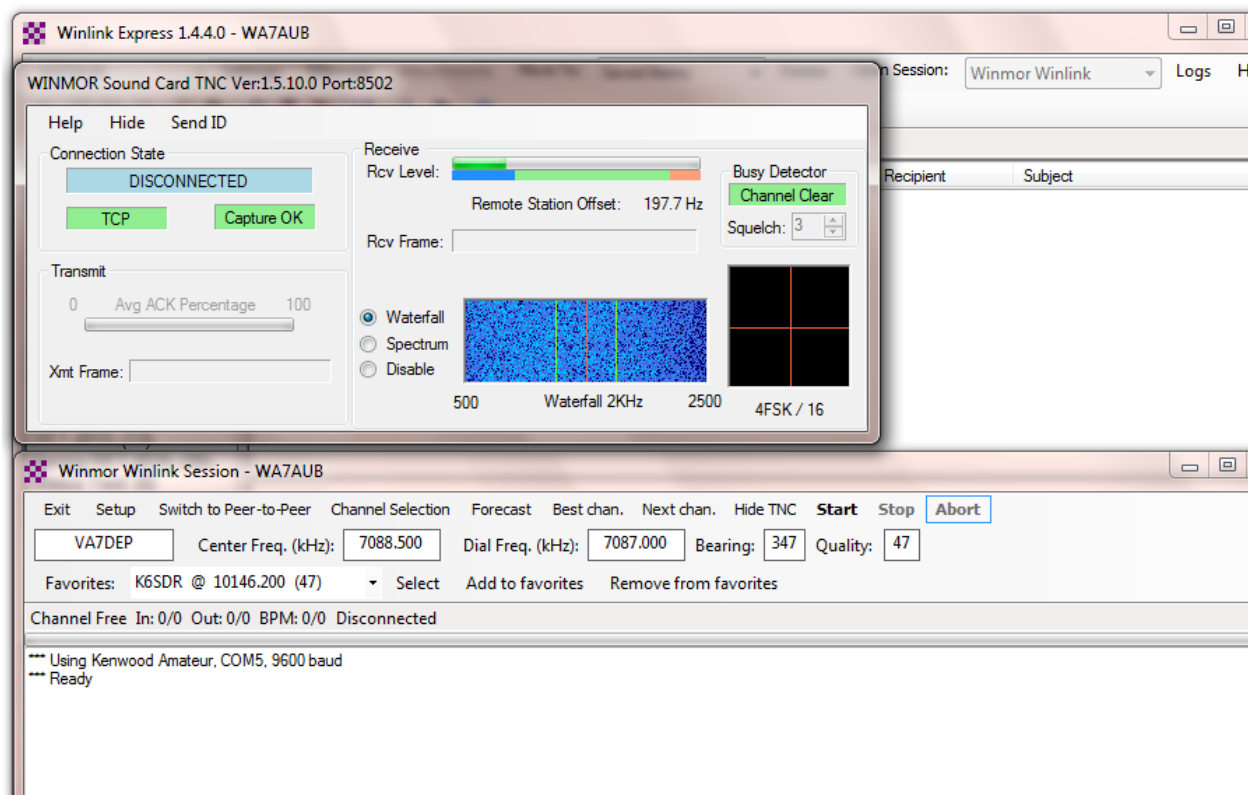
- Ensure that the Signalink is connected to the HF rig using the appropriate accessory cable. It may also be possible to connect a CI-V cable to rig for rig control (automatic frequency and mode settings).
- Set the level controls on the front of the Signalink as indicated below. These are approximate settings, minor adjustments may be needed for good performance.



- Turn on the HF rig and set the controls for typical digital operation (varies with rig model):
 - VFO mode
 - DSP Slope, set both knobs to the 12:00 position
 - RF Gain fully clockwise
 - AF gain (volume control) can be set to minimum if desired, or you can listen to the session to determine signal and noise levels



- Start Winlink Express and select “Winmor Winlink” for the session type and open the session. This will open the Winmor session, and the Winmor TNC.



- HF operations are very different than V/UHF operations. There is much more noise on HF frequencies, and signals will fade in and out. Skywave propagation is unpredictable, stations may be strong one minute and non-existent the next. Often selecting a station further away will result in a better connection than a station closer by. To help choosing an appropriate gateway station, propagation prediction software from NTIA/ITS can be installed with Winlink Express

(the first time HF modes are run), which will update the channel selection table with green, yellow and red indications for the various stations. Yellow and red stations are the least likely to be successful, but even green stations may not work. The propagation table needs to be updated for the current conditions. This can be done via the Internet if access is available, however, during a disaster this is not likely. The propagation table can also be updated via radio, but you must find a working station to request the update from. This “catch 22” presents a problem during disasters. To help with this problem, several “favorite” stations should be stored in the Winmor session from previous testing. It is likely that one of these stations will be available from your location during a disaster and will then allow updating of the propagation table. For this training, we will allow the propagation table to update over the Internet. You may be prompted for this the first time the channel selector table is opened, click OK to let the software update. Once the table is updated, you may select a gateway station from the “green” list. If the connection is not successful, try another station. Gateway stations typically scan different frequencies and bands, so it is possible the gateway may be on another frequency (possibly even working with another station) when attempting a connection. It may be necessary to retry stations a few times to get a connection.

HF Channel Selector

Exit Select Update Table Via Internet Update Table Via Radio Forecast SFI All RMS

Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (mi)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
N7JJ	3585.000	1600	CN87TR	00-23	PUBLIC	30	345	100	100
KC7COL	3596.500	1600	CN85OU	00-23	PUBLIC	104	195	94	57
KF7RSF	7101.500	1600	CN73TD	00-23	PUBLIC	306	201	88	57
KG7AV	3586.500	1600	CN94IC	00-23	PUBLIC	226	168	92	56
N7MO	3597.000	1600	DN06LJ	00-23	PUBLIC	162	112	91	56
AF7JX	7106.500	500	DN18QC	00-23	PUBLIC	265	076	77	55
AF7JX	3594.500	500	DN18QC	00-23	PUBLIC	265	076	89	55
KG7AV	7104.000	1600	CN94IC	00-23	PUBLIC	226	168	75	54
KG7AV	7082.000	500	CN94IC	00-23	PUBLIC	226	168	75	54
VE7RBH	7064.500	1600	CO64JT	00-23	PUBLIC	561	339	90	54
KF7RSF	3585.500	1600	CN73TD	00-23	PUBLIC	306	201	87	52
N7MO	3597.000	500	DN06LJ	00-23	PUBLIC	162	112	69	50
K6ETA	10144.000	1600	CM88QF	14-02	PUBLIC	627	182	77	47
K7GJT	7103.500	1600	CN85RP	00-23	EMCOMM	116	188	63	47
WA6TVD	7103.500	1600	DM09DJ	00-23	PUBLIC	560	166	80	47
K6SDR	10146.200	1600	CM87RX	00-23	PUBLIC	644	182	76	47
W7BO	7085.000	500	CN85PV	00-23	PUBLIC	100	194	62	46

Winmor Winlink Session - WA7AUB

Exit Setup Switch to Peer-to-Peer Channel Selection Forecast Best chan. Next chan. Hide TNC Start Stop Abort

KF7RSF Center Freq. (kHz): 7101.500 Dial Freq. (kHz): 7100.000 Bearing: 201 Quality: 57

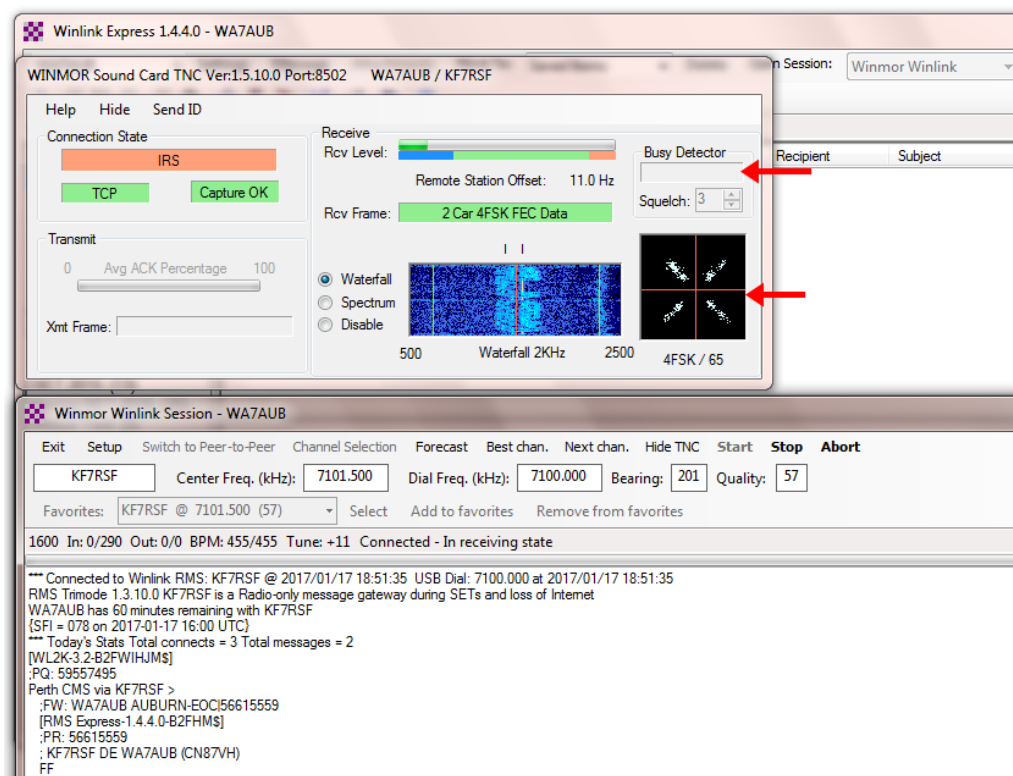
Favorites: KF7RSF @ 7101.500 (57) Select Add to favorites Remove from favorites

1600 In: 0/290 Out: 0/0 BPM: 455/455 Tune: +11 Connected - In receiving state

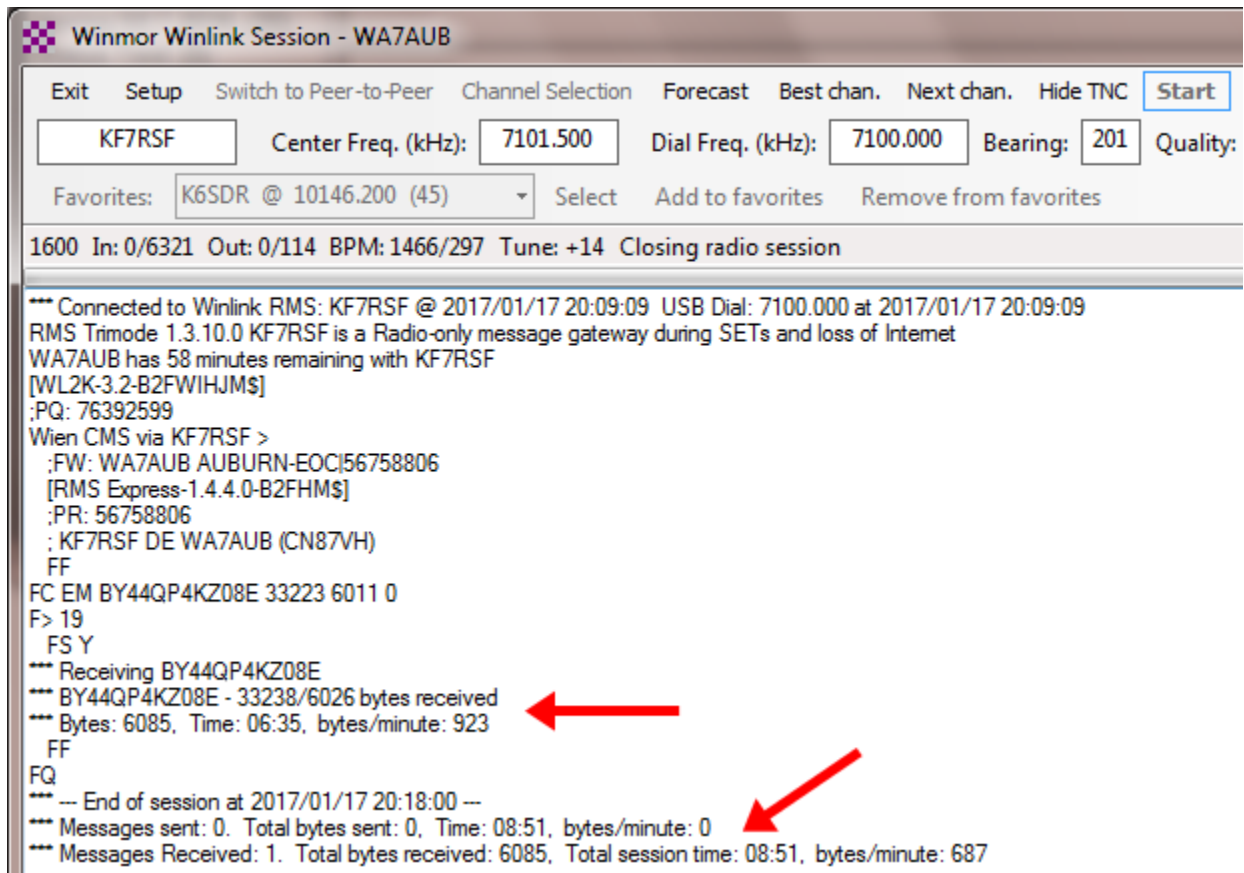
- Once a gateway station selection is made, if you have CI-V connections, the rig will automatically switch to the correct dial frequency and mode. If this option is not available, you will need to make these changes manually.
- You must monitor the HF frequency before a connect attempt is made to ensure that the frequency is not already in use. The Winmor TNC provides a “Busy Detector” to indicate clear or busy channels. If the channel is busy, you must wait until it is clear, or choose a different channel. If the channel is clear, press Start to begin the session.
- When you start the session, check the ALC meter on the rig during transmission. There should be little or no ALC indicated. Too much ALC will distort the signal and make connections difficult or impossible. If there is any ALC action indicated on the meter (bars in the example), adjust the TX control on the Signalink down until the ALC action is at a minimum during transmit. This can be tricky since the radio will be switching between transmit and receive often.



- During a session, the Winmor TNC will display various connection states, and there is also a “constellation” display that gives an indication of the received signal quality. The pattern will change depending on the type of modulation currently in use (selected automatically by the software), but generally, a tight well defined pattern is desired. A fuzzy pattern indicates weak reception, and many retries may occur.



- Winmor sessions take much longer to complete due to the slower transfer speeds involved. Message size must be kept to a minimum for HF sessions.

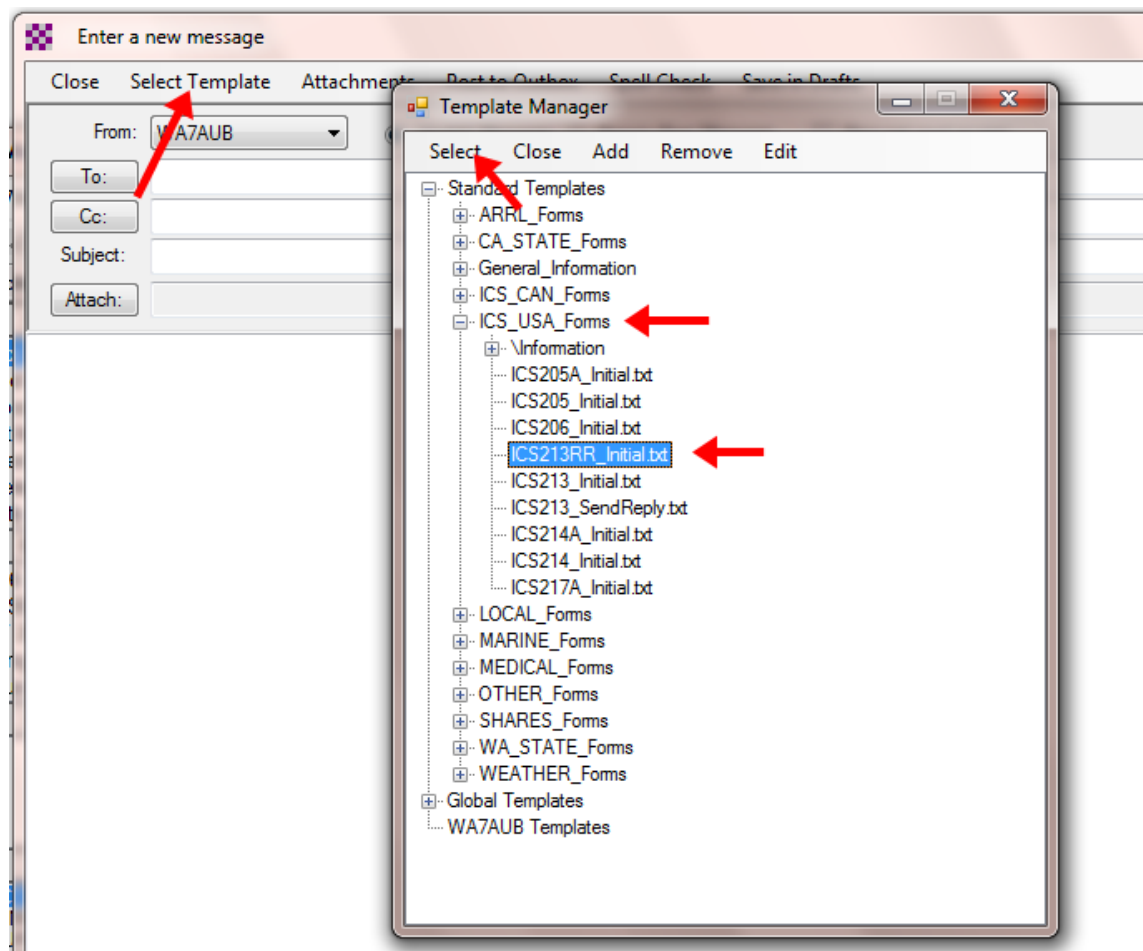


- Try connecting again using the ARDOP TNC using the instructions above, only select the ARDOP Winlink session instead of Winmor.
- To use VARA, you must download and install the VARA modem separately. Once installed, Winlink Express can start a VARA session, and operation is similar to Winmor and ARDOP. To make high speed connections with VARA, you must purchase a registration key from the author.
- Close the Winmor/ARDOP session. This completes this step.

Step 7, Sending Messages using HTML Forms

Winlink Express includes a powerful forms processor that uses Hyper Text Markup Language (HTML) and a web browser to display and capture information from forms that can be created to look like printed forms. A library of standard ICS, sitrep and other forms are included with Winlink Express. These forms are updated automatically anytime the Winlink Express software is started. When these forms are transmitted, only the data on the forms is sent, not the entire form. This keeps message size to a minimum and allows for faster transfer. On the receiving end, a display form is used to recreate the original form with the data inserted. In addition to the standard forms included with Winlink Express, users can create their own forms for use in their agency. User created forms must be manually installed and updated. This involves copying the form files to the correct folder on the hard drive (typically C:\RMS Express\Global Folders\Templates).

- ☐ If not already open, start Winlink Express, then click on “Message” and select “New Message” or use the new message icon.
- ☐ On the new message window, click on “Select Template”, which will open the Template Manager. The Template Manager is a directory tree of all the message forms installed. Expand the various items to see what forms are available. The forms under “Standard Templates” are included with and updated by Winlink Express. The Global templates are where locally developed forms are stored. These must be added and maintained manually.
- ☐ Select the ICS_USA_Forms section, and select one of the forms (for example ICS213_initial)



- ☐ When a form is selected, a browser window will open with the selected form displayed. Complete the required fields in the form, and then click on “Submit”

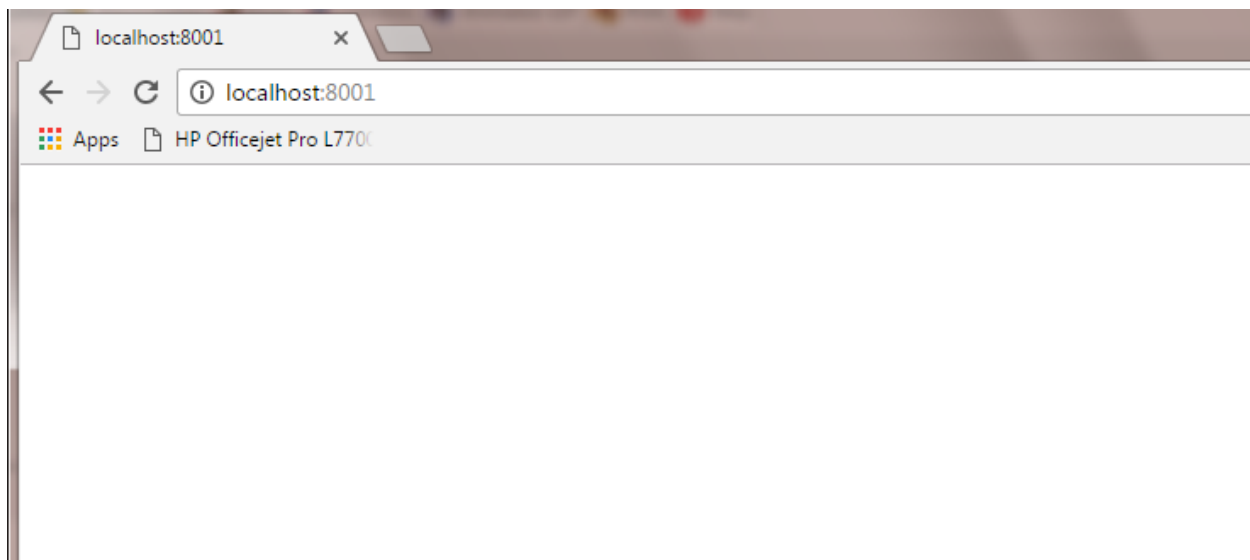
ICS213 General Message x

file:///C:/RMS%20Express/WA7AUB/Temp/ICS213_Initial.html

Apps HP Officejet Pro L770

Tracking # 001		GENERAL MESSAGE		ICS213 Vers 2.8	
1. Incident Name (& Inc # optional): Big Flood					
2. To (Name / Position): Joe Smith/Logistics ARC					
3. From (Name / Position): Scott Currie/ Deputy Emergency Manager					
4. Subject: Shelter operations				5./6. Date & Time: 2017-01-17 12:54:07	
7. Message: Joe, Looks like we will need to expand our shelter operations to include another 100 people. Can ARC staff handle this, or will we need CERT volunteers? -Scott					
8. Approved by: Scott Currie				Position / Title: Deputy EM	
<input type="button" value="Submit"/>		<input type="button" value="Reset Form"/>		Are you attaching a File or Photo to this form? <input type="button" value="NO"/> <input type="button" value="YES"/> If YES, then add file or photo prior to posting.	

- Due to the way the internal web server in Winlink Express works, submitting the form will leave the browser open on a blank page (localhost). Close this page and return to the Winlink Express new message.



Enter a new message

Close Select Template Attachments Post to Outbox Spell Check Save in Drafts

From: WA7AUB ☒ Winlink Message ☐ Peerto-Peer Message ☐ Request read receipt

To:

Cc:

Subject: ICS213 - Big Flood - Shelter operations

Attach: RMS_Express_Form_ICS213_Initial_Viewer.xml;

Tracking #:[001]

1. INCIDENT NAME: Big Flood
 2. TO: Joe Smith/Logistics ARC
 3. FROM: Scott Currie/ Deputy Emergency Manager
 4. SUBJECT: Shelter operations
 5./6. DATE & TIME: 2017-01-17 12:54:07
 7. MESSAGE:

Joe,
 Looks like we will need to expand our shelter operations to include another 100 people. Can ARC staff handle this, or volunteers?
 -Scott

8. APPROVED BY: Scott Currie
 POSITION & TITLE: Deputy EM

- ☐ The new message window will now be filled with the form information in plain text, and will include a XML file attachment of the form fields. Complete the message by filling in the "To:" field and posting the message to the outbox. The message can now be sent using one of the transfer session previously discussed.
- ☐ When a message is received that contains a HTML, clicking on the message in the in-box will open the web browser with the filled in form. The form can now be printed from the web browser. If the web browser window is closed, it can be reopened with the form by clicking on the attachment icon in the message listing in the in-box.

Winlink Express 1.4.4.0 - NS7C

NS7C Settings Message Attachments Move To: Saved Items Delete Open Session:

In Telnet Winlink session.

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient
Inbox (0 unread)	2017/01/17 21:03	UG0PE72E6BWY	1119	WA7AUB	WA7AUB	NS7C
Read Items (0)						
Outbox (0)						
Sent Items (17)						
Saved Items (0)						
Deleted Items (1)						
Drafts (0)						
Personal Folders						

- ☐ Close the Winlink Express application. This completes this training.