Winlink

Email via Radio

Ron Davis – W7RFD

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Preliminary Note

The information in this presentation is designed to provide enough information to get you successfully started using Winlink Express for both VHF/UHF and HF operations. It is not intended as a comprehensive guide to all the features and functionality of the program.

Because the Winlink client software has matured over the years, Winlink Express is both relatively easy to set up and also forgiving of errors. Once you have the program successfully operating, feel free to try out and experiment with other features of the program.

In the last couple of years, most of the problems I have seen with Winlink operation have been "system level" rather than Winlink Express configuration problems. If Winlink Express is not working for you, make sure the radio and TNC are turned on and correctly cabled, and that the radio is showing the correct frequency and mode (normally upper side band for HF but possibly a digital mode for some radios) before experimenting with changes to the Winlink Express default settings. For HF soundcard operation, make sure the soundcard is properly specified in the setup (a very common source of problems!).

Why eMail?

- Clarity – better with email than voice
  - Emergency ops are high stress
  - Avoids requiring/learning a new communications mode
- Widespread familiarity with the email format

What is Winlink?

- Per Winlink history
  - Interest in radio transmission since email originated
  - Winlink 2000 effort began in 1998

- 20 years of development and use – only on Windows, not for Linux or Mac

- Mature software – now relatively easy to setup and operate

- Winlink client software has progressed: Airmail -> RMS Express -> Winlink Express
  - Original Airmail required sometimes tedious setup efforts while current Winlink Express usually operates with default configuration settings

- Free – always an asset for volunteer groups (although Winlink does ask for money to fund them)

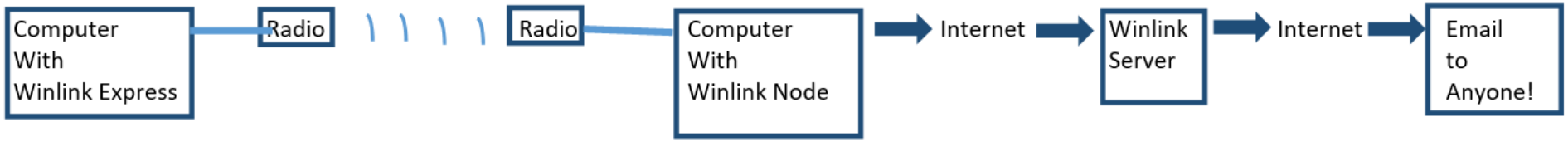
How Does It Work?

- Need: radio connection to internet
- Winlink provides a suite of programs to do that
- Our focus, email client program: Winlink Express
  - For radio, this is a replacement for Microsoft Outlook or other email programs

Limitations

- Slow (very slow!), compared to internet email
- Keep messages short
- Minimize attachment data
  - Use plain text (.txt) rather than Excel or Word files
  - Use minimal image resolution/file size

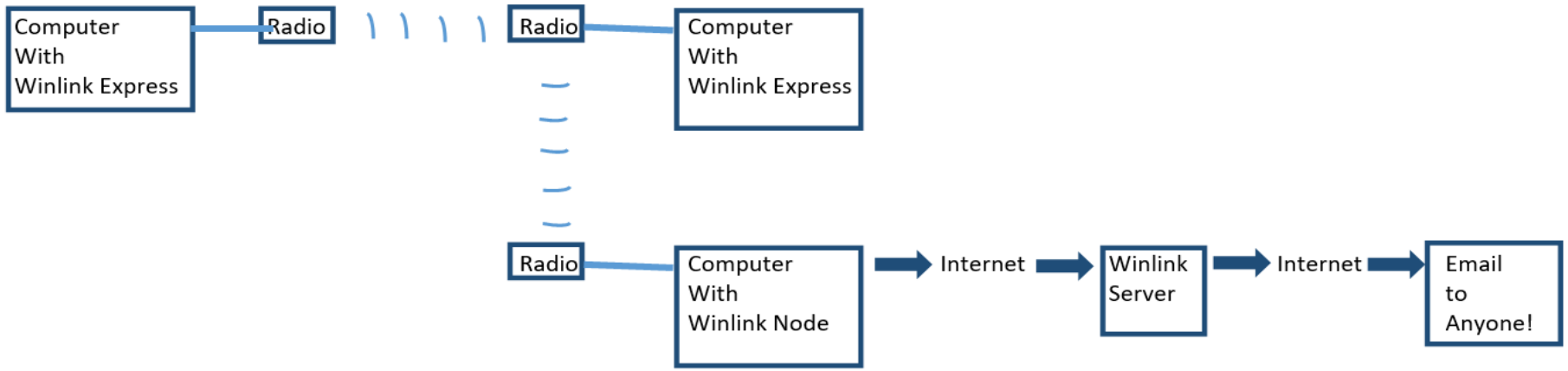
Basic Winlink Structure



Note that the Winlink organization provides a suite of programs to do a number of message handling functions. The focus of this presentation is on the user client program, Winlink Express, so details of the interface with Winlink and other supplementary programs that provide for storing and relaying messages are not covered.

While the diagram indicates outgoing messages, incoming email just traverses the reverse path.

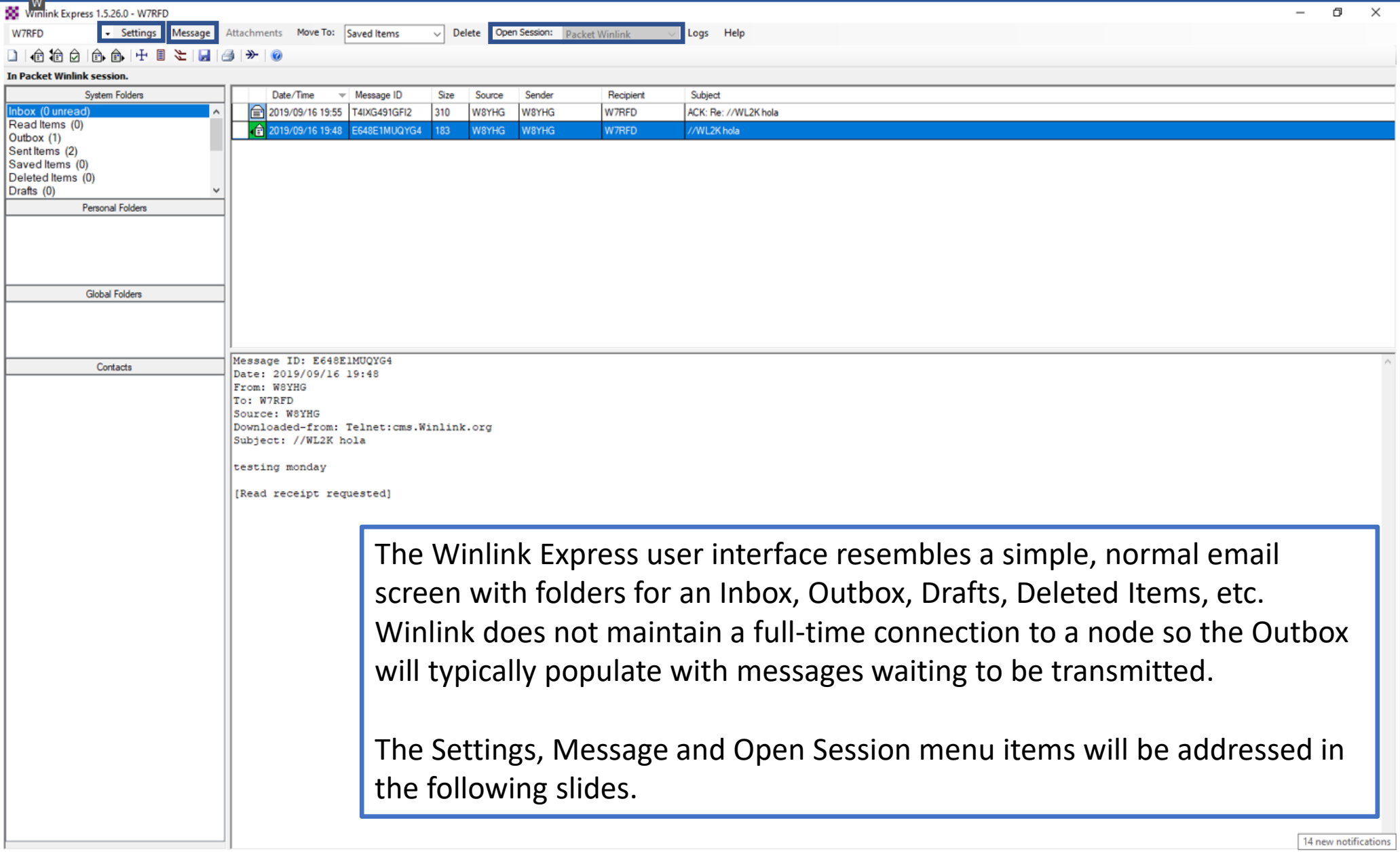
Winlink Hops



If no Winlink node is directly available, a message can be relayed by another Winlink Express.

Winlink Peer-to-Peer

A peer-to-peer capability is available to transmit messages directly to another Winlink Express client without going through the Winlink system.



The Winlink Express user interface resembles a simple, normal email screen with folders for an Inbox, Outbox, Drafts, Deleted Items, etc. Winlink does not maintain a full-time connection to a node so the Outbox will typically populate with messages waiting to be transmitted.

The Settings, Message and Open Session menu items will be addressed in the following slides.

Inbox, Read Items, Outbox, Sent Items **Settings, Message, Open Session**

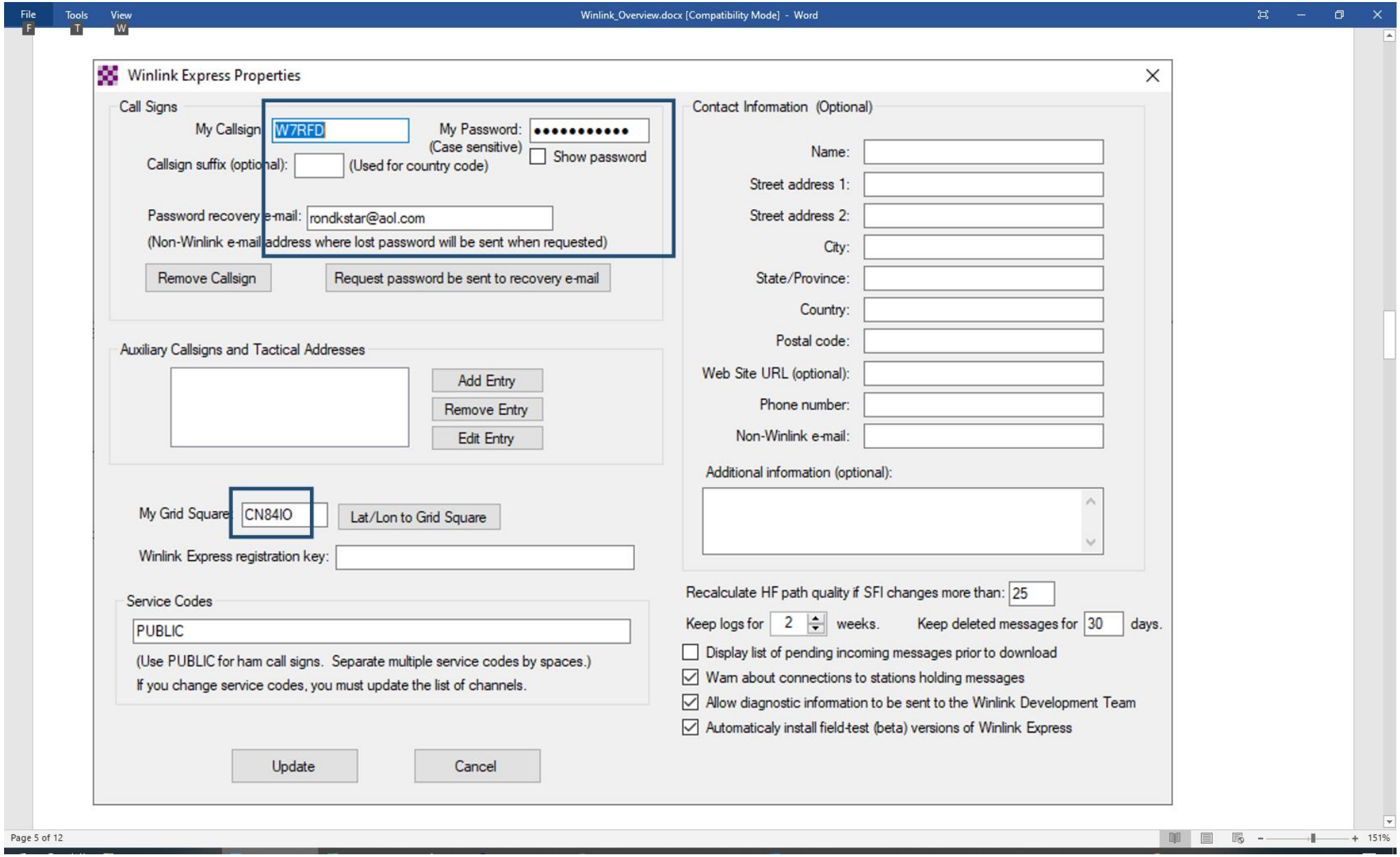
Winlink Setup

- For first-time use of Winlink Express, use the Settings menu in the top bar to select Winlink Express Setup which brings up the Winlink Express Properties window shown in the next slide.

- For minimum setup, enter callsign, password (see below), recovery email address and location gridsquare as indicated on the following slide. Additional entries are optional.

- If you have not used the Winlink system before and don’t have a password, you can either enter one of your own choosing or the system will send its own random selection back when you first connect.

- Click Update when finished and close the window.


File
Tools
View
Winlink_Overview.docx [Compatibility Mode] - Word
Winlink Express Properties
Call Signs
My Callsign
W7RFD
My Password:
(Case sensitive)
Show password
Callsign suffix (optional):
(Used for country code)
Password recovery e-mail:
rondkstar@aol.com
(Non-Winlink e-mail address where lost password will be sent when requested)
Remove Callsign
Request password be sent to recovery e-mail
Auxiliary Callsigns and Tactical Addresses
Add Entry
Remove Entry
Edit Entry
My Grid Square
CN84IO
Lat/Lon to Grid Square
Winlink Express registration key:
Service Codes
PUBLIC
(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)
If you change service codes, you must update the list of channels.
Update
Cancel
Contact Information (Optional)
Name:
Street address 1:
Street address 2:
City:
State/Province:
Country:
Postal code:
Web Site URL (optional):
Phone number:
Non-Winlink e-mail:
Additional information (optional):
Recalculate HF path quality if SFI changes more than:
25
Keep logs for
2
weeks.
Keep deleted messages for
30
days.
Display list of pending incoming messages prior to download
Warn about connections to stations holding messages
Allow diagnostic information to be sent to the Winlink Development Team
Automaticaly install field-test (beta) versions of Winlink Express
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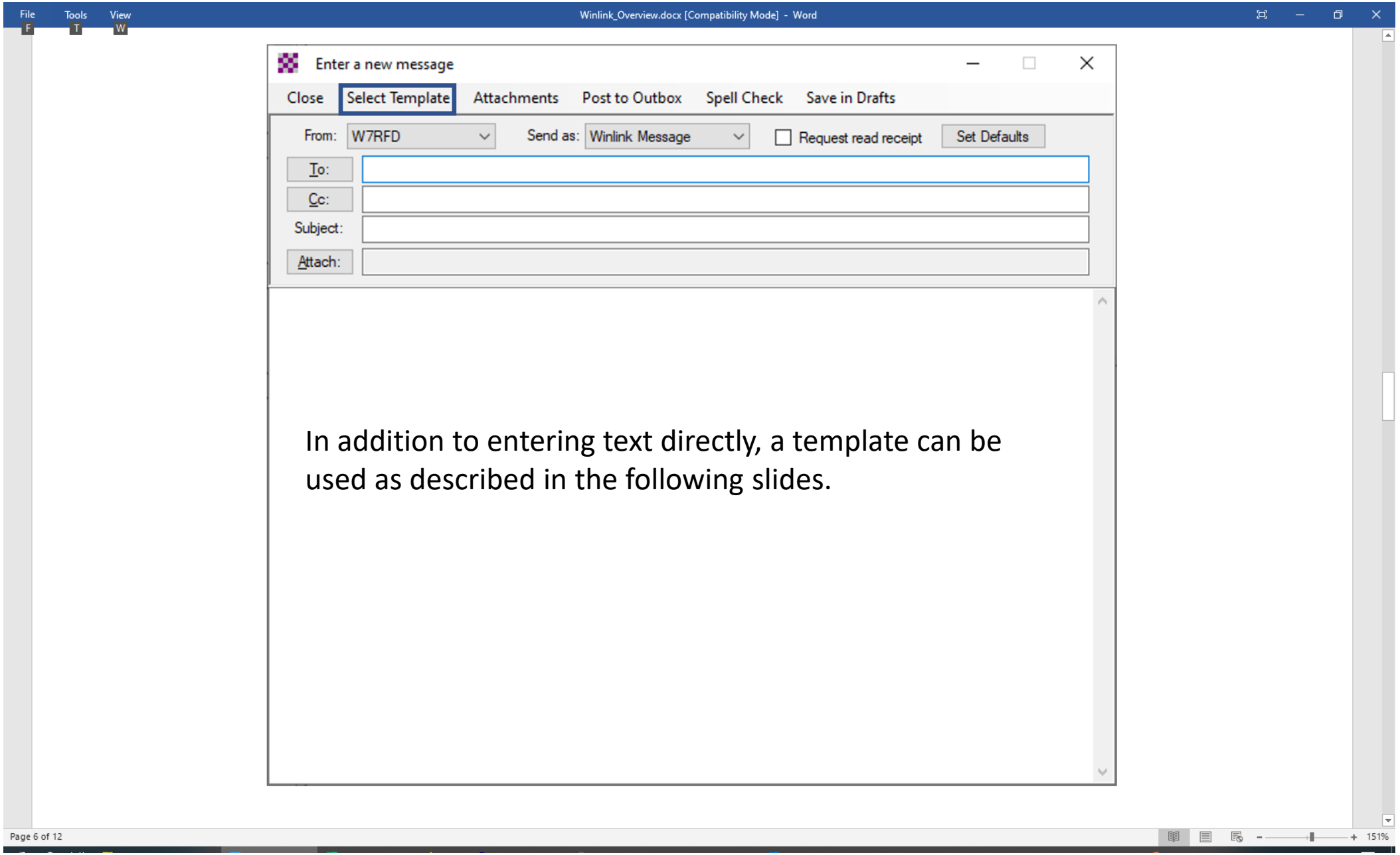
That’s it! Basic Setup Is Complete!

- Although there is still a radio interface setup to be done, creation of messages will be covered next.
- New messages are created from the Message menu by selecting New Message (the leftmost icon in the toolbar also can be used).
- The new message window is shown in the following slide and is in a normal email form with entries for recipient(s), copied recipients, Subject, Attachments and a text area.
- When ready to be sent, select Post to Outbox


File
Tools
View
Winlink_Overview.docx [Compatibility Mode] - Word
Enter a new message
Close
Select Template
Attachments
Post to Outbox
Spell Check
Save in Drafts
From:
W7RFD
Send as:
Winlink Message
Request read receipt
Set Defaults
To:
Cc:
Subject:
Attach:
In addition to entering text directly, a template can be used as described in the following slides.
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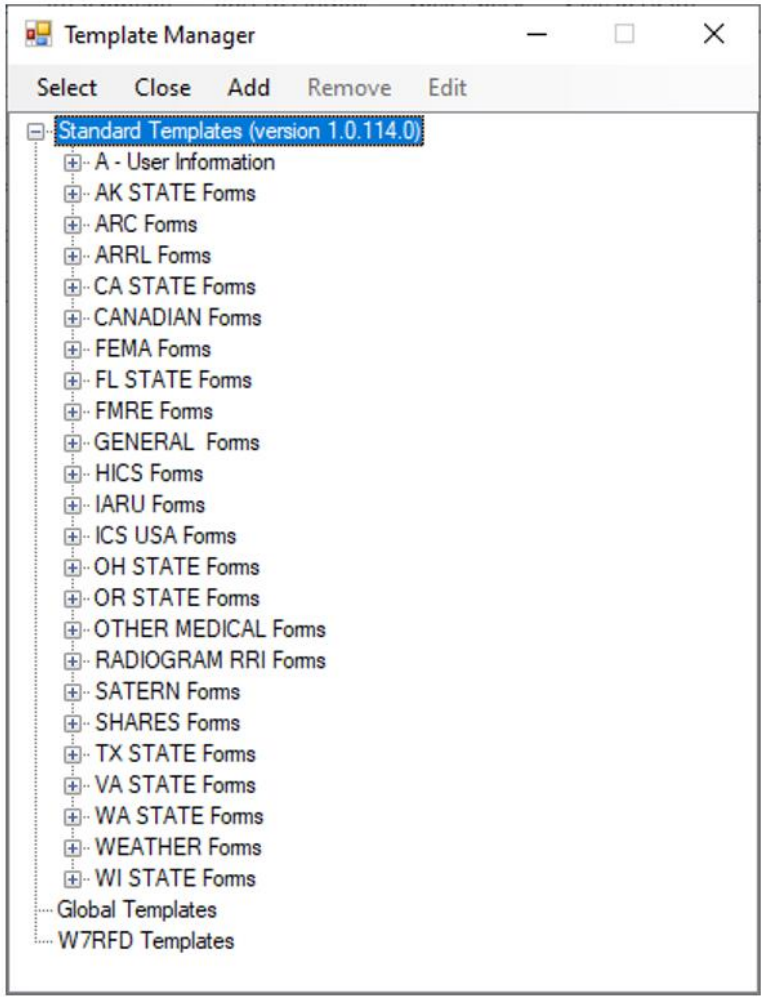
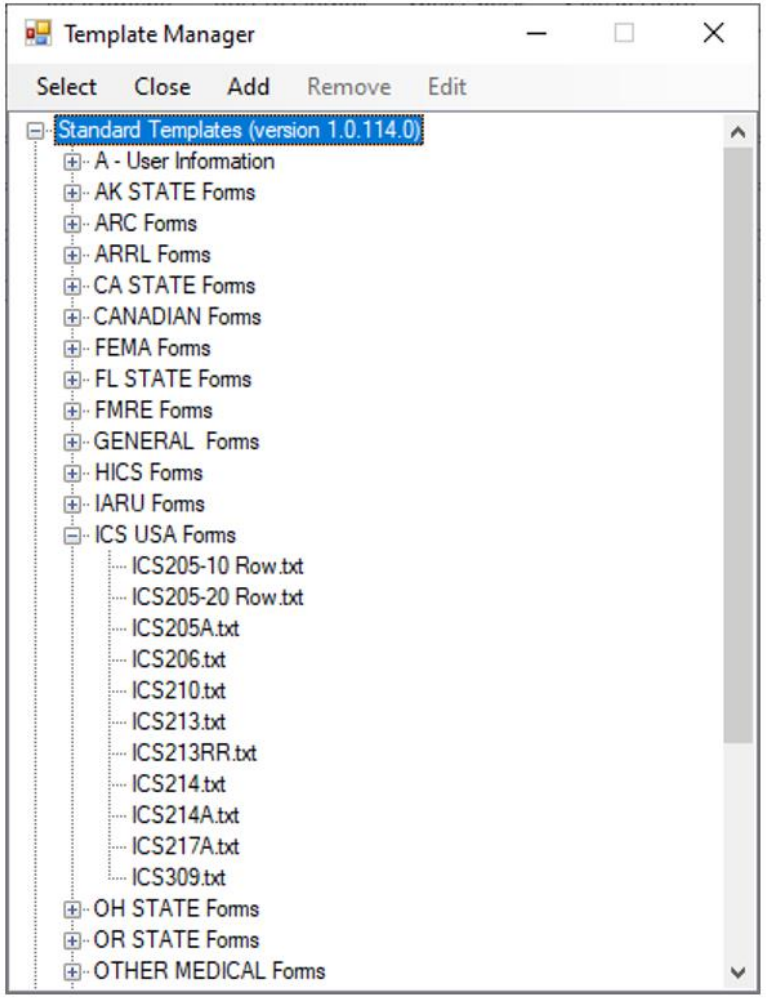
Templates

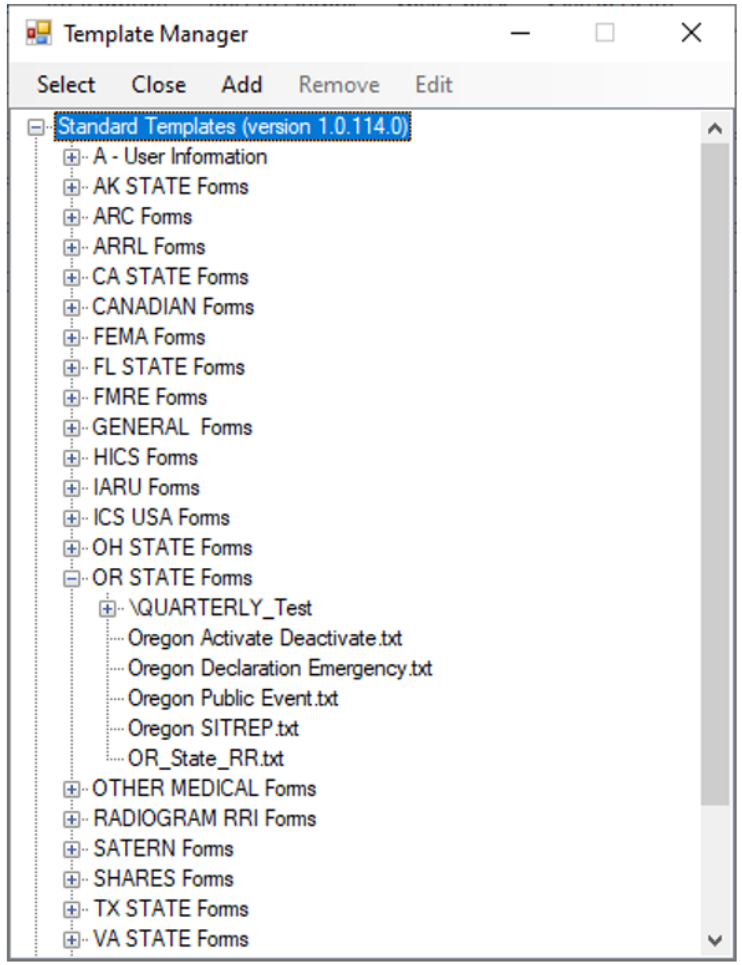
- Messages can also be created using templates. As the next several slides show, a variety of templates are available including ICS forms and state-specific forms.

Templates (2 views of the same screen.)





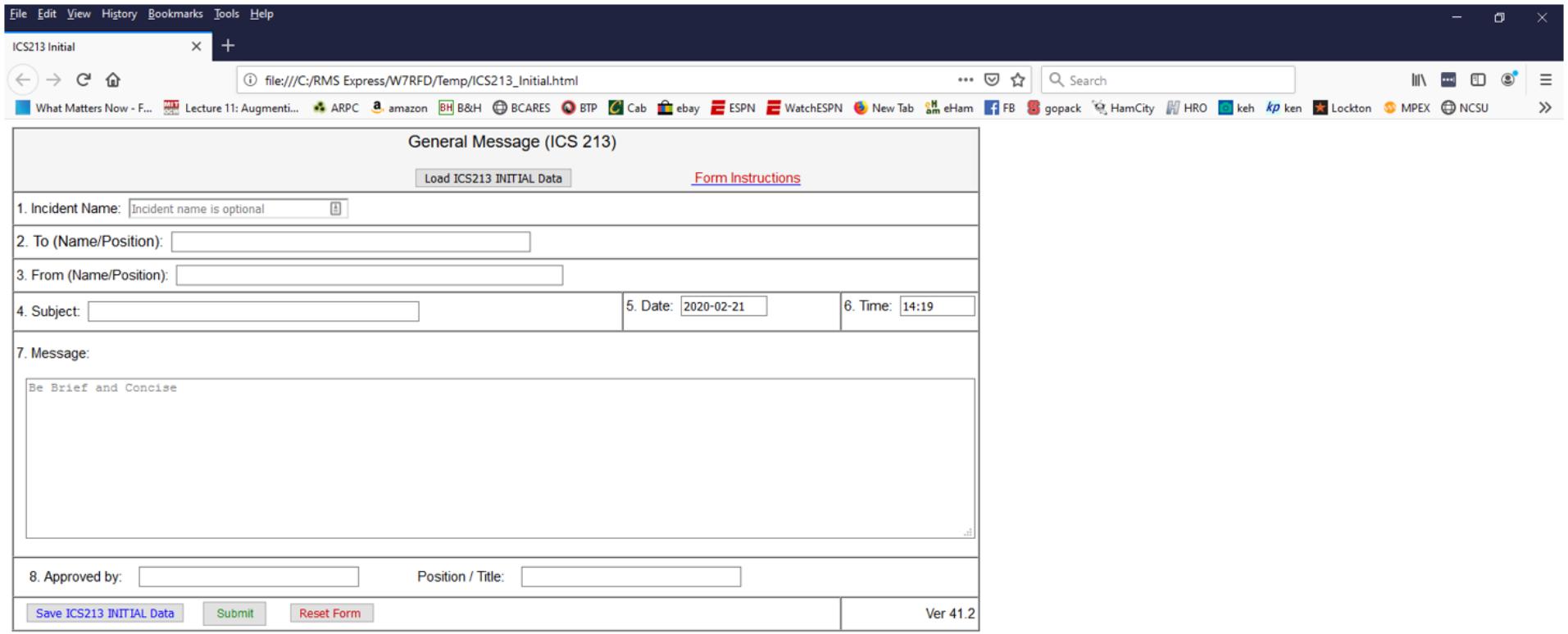
Templates - 2

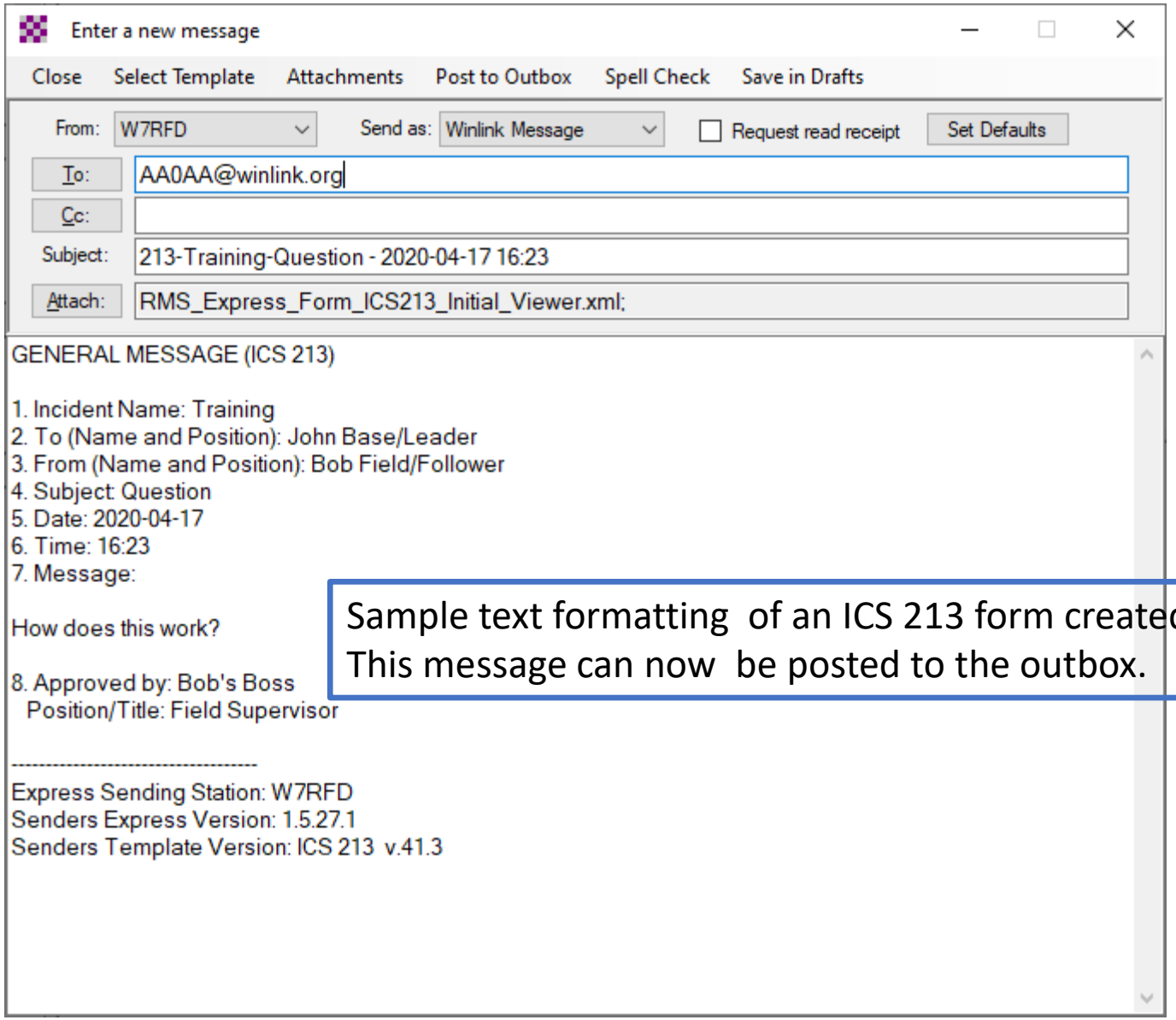

Template Manager
Select
Close
Add
Remove
Edit
Standard Templates (version 1.0.114.0)
A - User Information
AK STATE Forms
ARC Forms
ARRL Forms
CA STATE Forms
CANADIAN Forms
FEMA Forms
FL STATE Forms
FMRE Forms
GENERAL Forms
HICS Forms
IARU Forms
ICS USA Forms
OH STATE Forms
OR STATE Forms
\QUARTERLY_Test
Oregon Activate Deactivate.txt
Oregon Declaration Emergency.txt
Oregon Public Event.txt
Oregon SITREP.txt
OR_State_RR.txt
OTHER MEDICAL Forms
RADIOGRAM RRI Forms
SATERN Forms
SHARES Forms
TX STATE Forms
VA STATE Forms

Template Usage

- Selection of a template will bring up a browser window for entry.
- Once the browser form is populated and “submitted,” a text version of the form is created on the new message.
- Although the text format is simplified, all of the information required by the chosen form is provided.
- View the next two slides to see how this works.

Template in Browser





Sample text formatting of an ICS 213 form created in browser. This message can now be posted to the outbox.

Radio Interface Setup and Connection

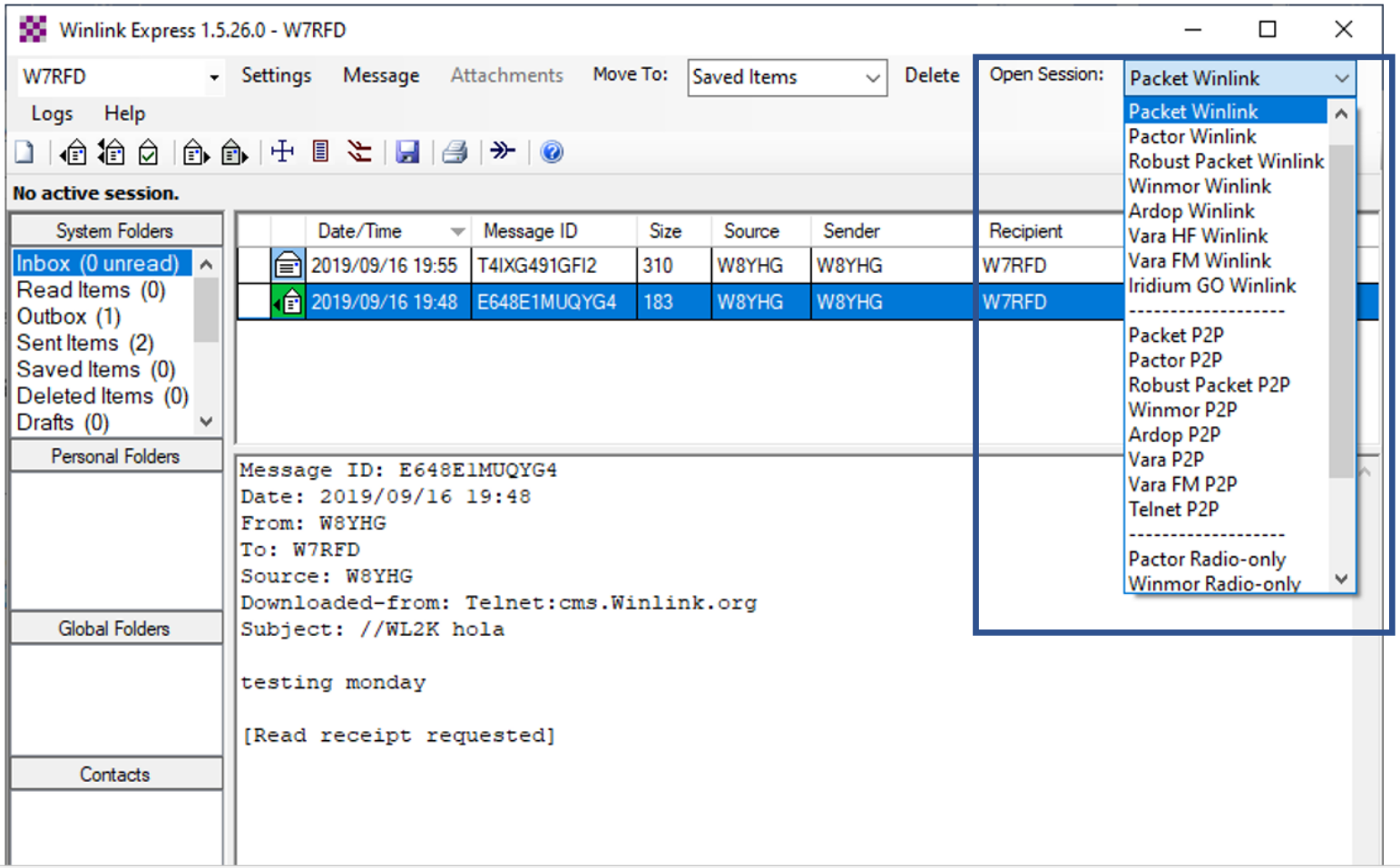
- Winlink node connections can be made via VHF/UHF or HF. Since, in general, different radio interfaces are used for the different types of connections, the Winlink radio interface setup is done via the Open Session menu item which allows specifying the type of connection.

- As shown in the next slide, a variety of connection types are available. Typical selections for our usage are:

- Packet Winlink or Packet P2P (P2P for peer-to-peer) for VHF.

- Winmor or Ardop (or their P2P options) for HF. (Ardop is supposed to be an improved replacement for Winmor but is still considered under development as of early 2020. Winmor itself is a soundcard alternative to the use of proprietary Pactor hardware.)

Other Winlink Modes



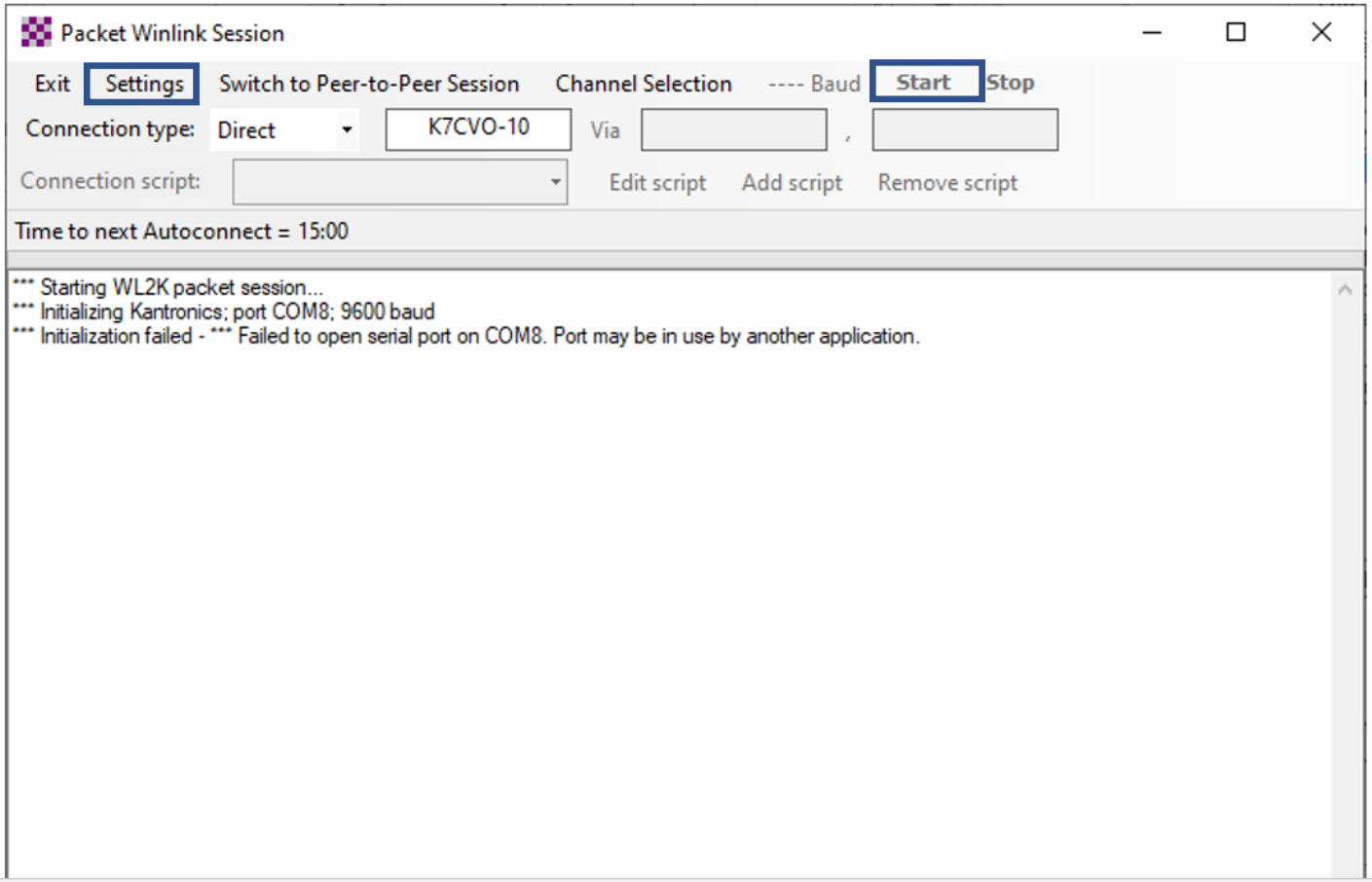
VHF Setup

- As noted, radio interface setup is via the Open Session menu item for the selected connection type.

- For VHF, with Packet Winlink selected, the Open Session window brings up the Packet Winlink Session screen of the following slide.

- Select the Settings menu item to set up the radio interface.

Packet Winlink Session

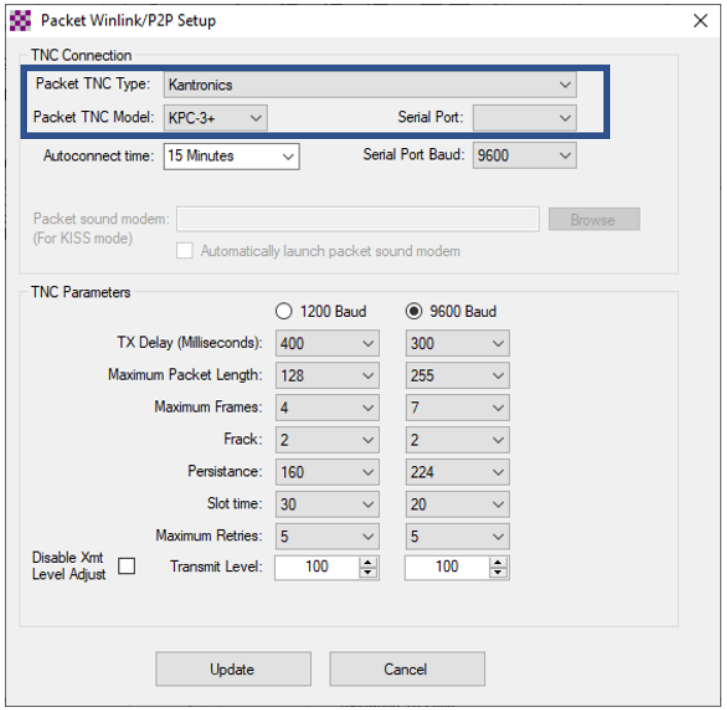


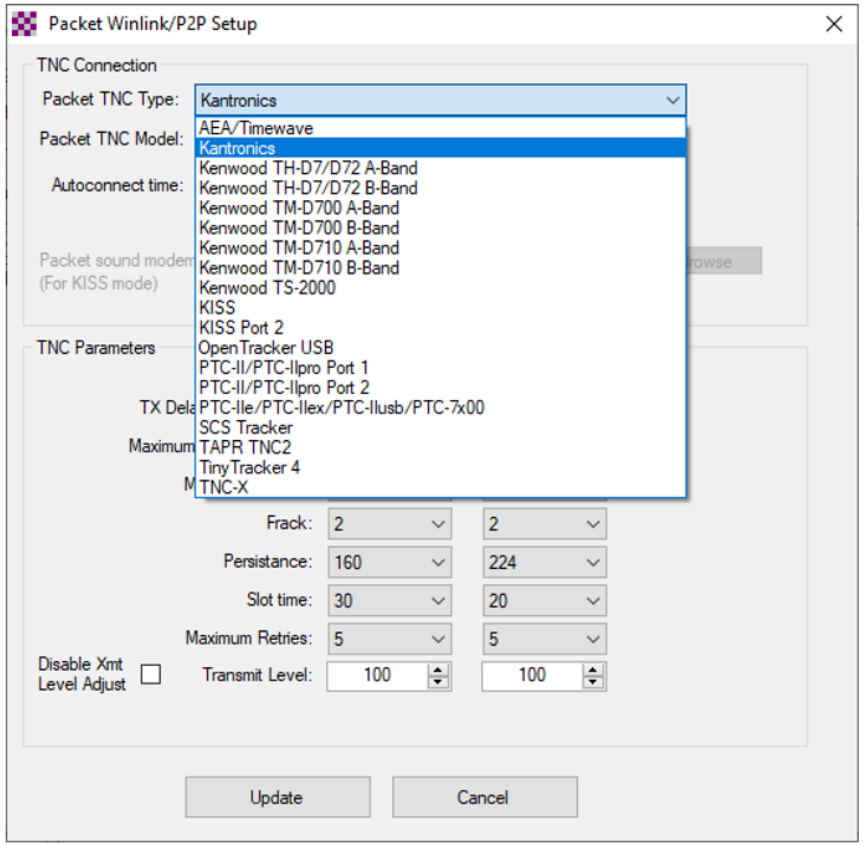
VHF Setup - 2

- Selecting Settings on the Packet Winlink Session screen brings up the following setup window.
- The top line of this setup window allows selection of the interface TNC (terminal node controller, for VHF) and provides a list of supported models, including KISS for generic interfaces.
- Additionally, the Serial Port needs to be specified. Selection is from a drop-down list that displays available serial ports.
- Normally, that completes the setup! The default entries for the selected TNC are usually acceptable in the other fields.
- After clicking update (assuming the TNC is connected, turned on and the correct serial port was selected), the Packet Winlink Session screen should show a successful initialization.

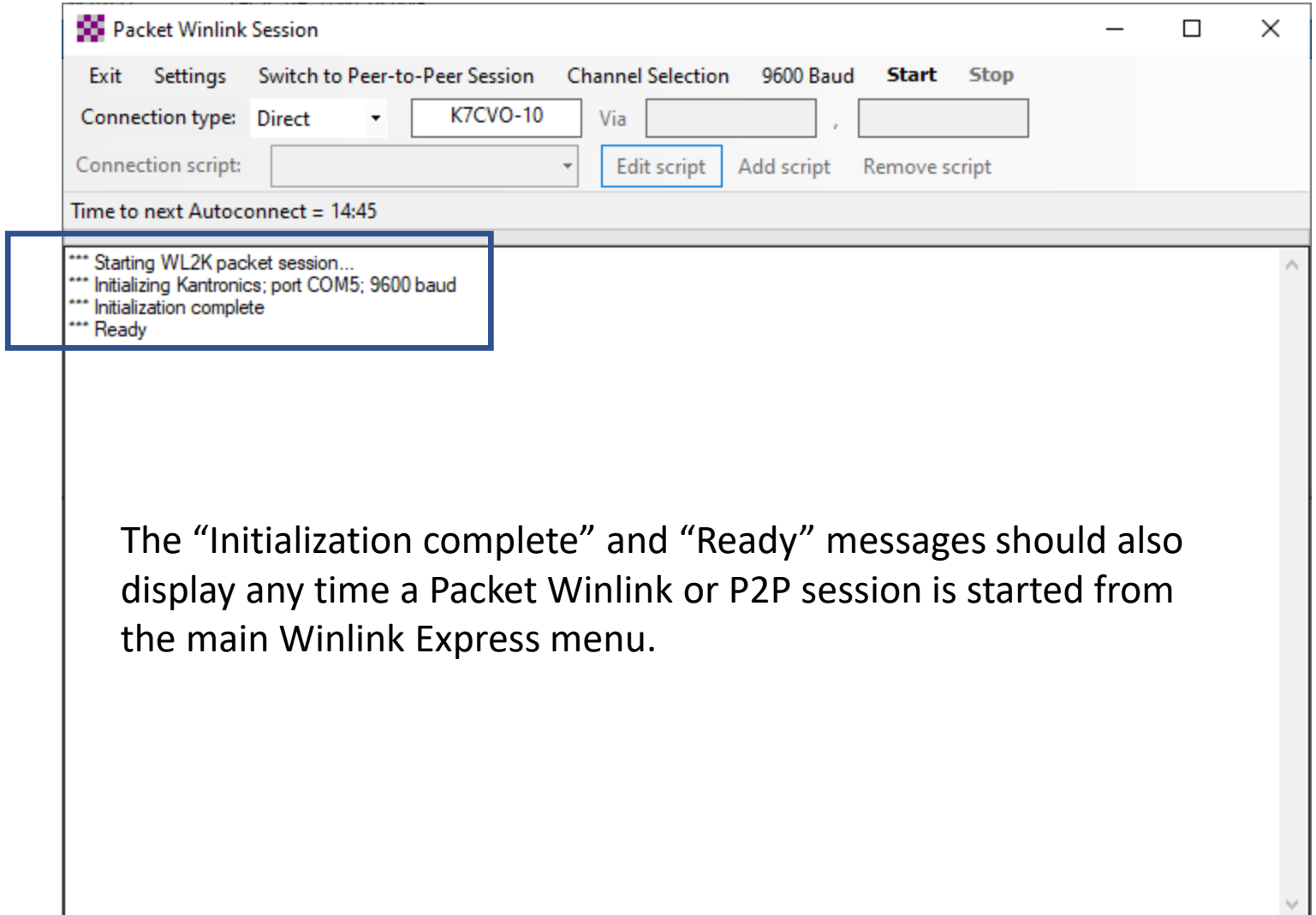
Session Setup

(Two views of the same screen)





Successful Configuration



The “Initialization complete” and “Ready” messages should also display any time a Packet Winlink or P2P session is started from the main Winlink Express menu.

VHF Operation

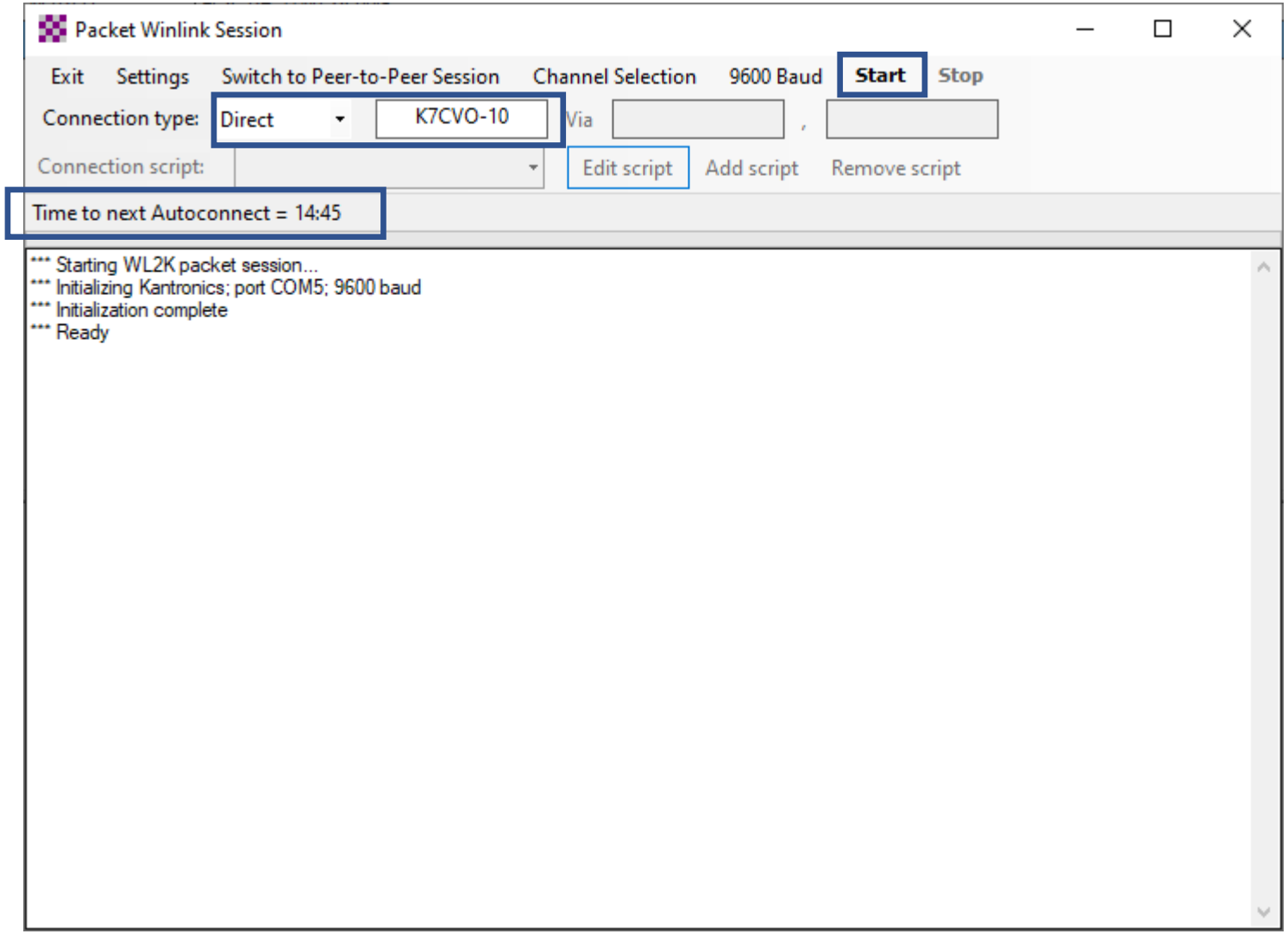
Once the setup is completed (including the radio on):

1. Enter the call sign designator for the remote node to be used for the Winlink connection (in this case, K7CVO-10; nodes normally are a callsign plus an appended designator, often -10; in peer-to-peer operation just the callsign would be entered).

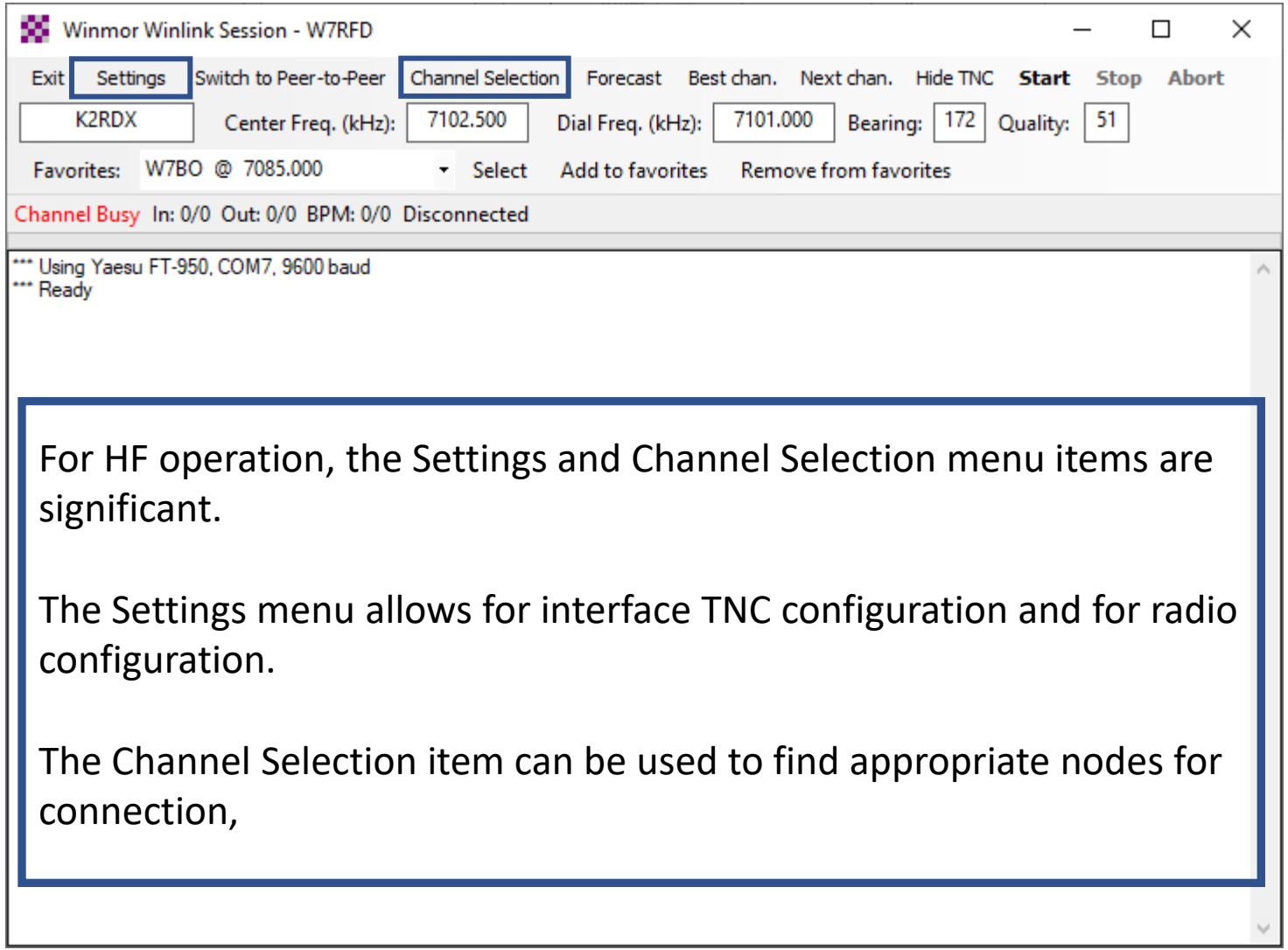
2. Set the radio to the correct frequency to match the node.

3. Either press the Start menu item or allow the Autoconnect timer to make the connection.

VHF Operation - 2



HF Setup

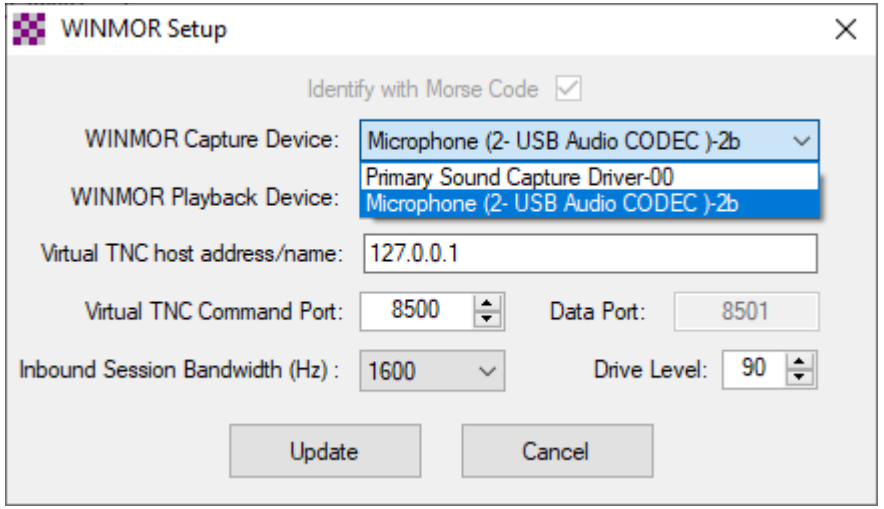


For HF operation, the Settings and Channel Selection menu items are significant.

The Settings menu allows for interface TNC configuration and for radio configuration.

The Channel Selection item can be used to find appropriate nodes for connection,

HF TNC Setup Screen

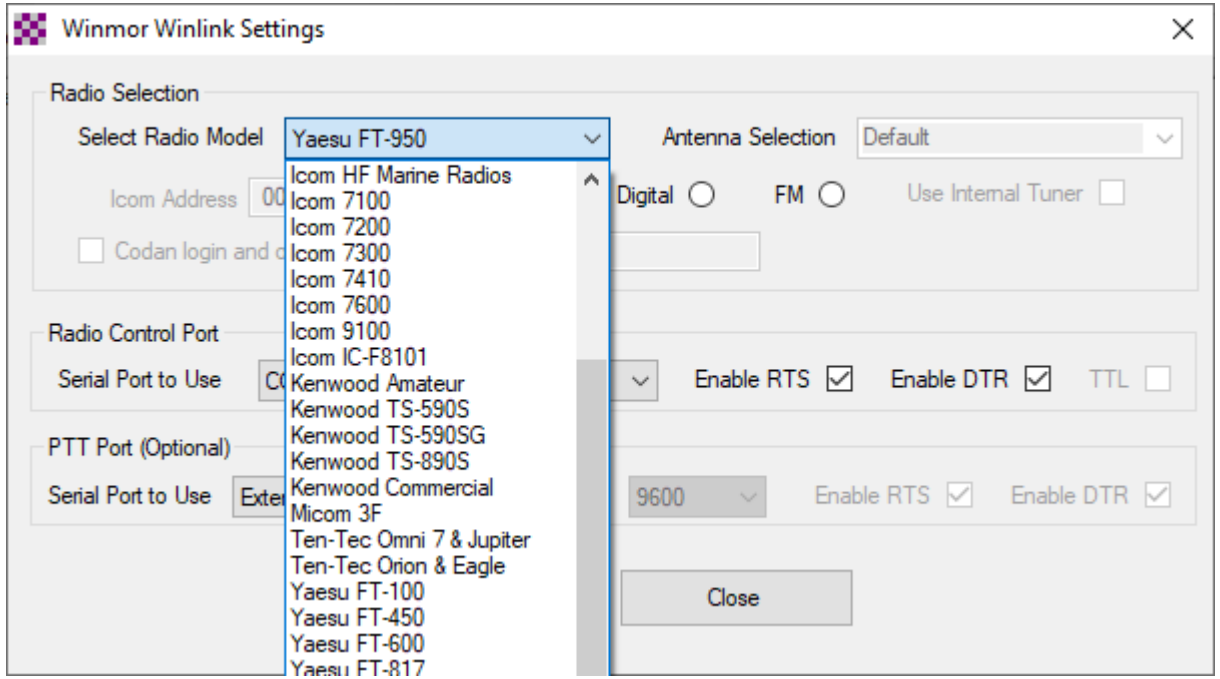


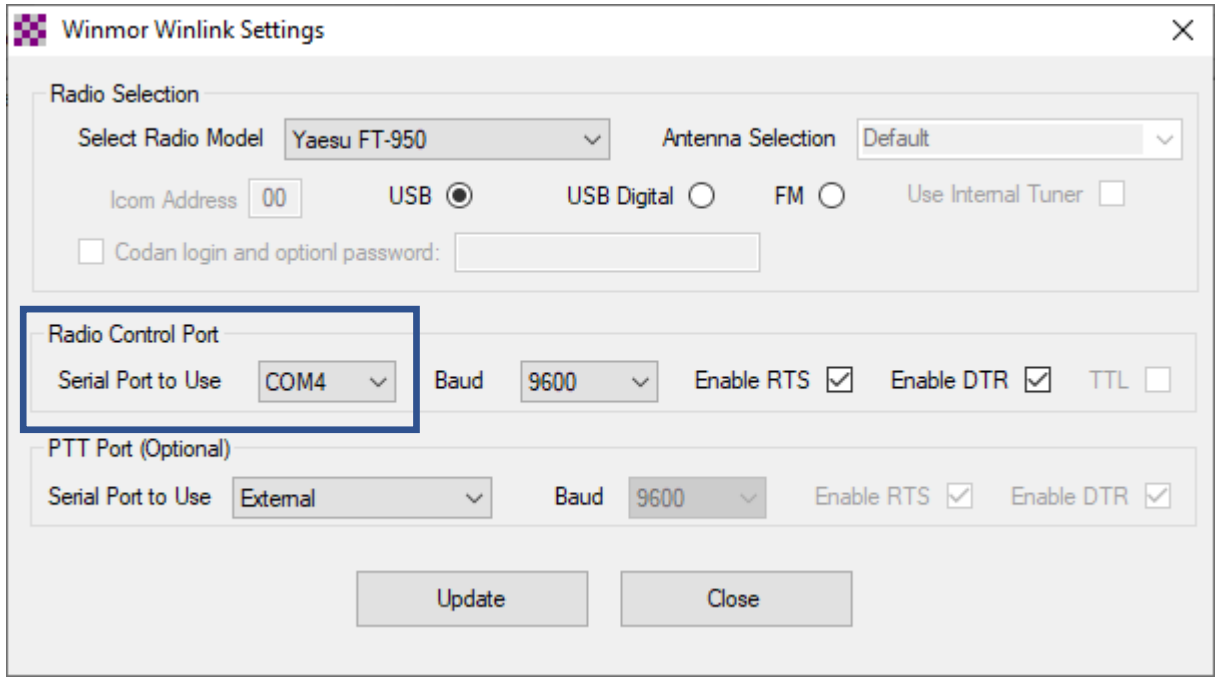
HF connections are designed to work with a soundcard. The Winmor connection menu item for settings provides for WINMOR TNC Setup and Radio Setup. The Winmor TNC screen, shown here, includes dropdown lists for capture and playback devices that show available devices (in this sample, a SignaLink interface shows up as a USB Audio CODEC). Improperly specified capture and playback devices are a common source of problems.

Other than specifying the devices, the other settings on this screen can normally be left at their defaults.

HF Setup - Radio

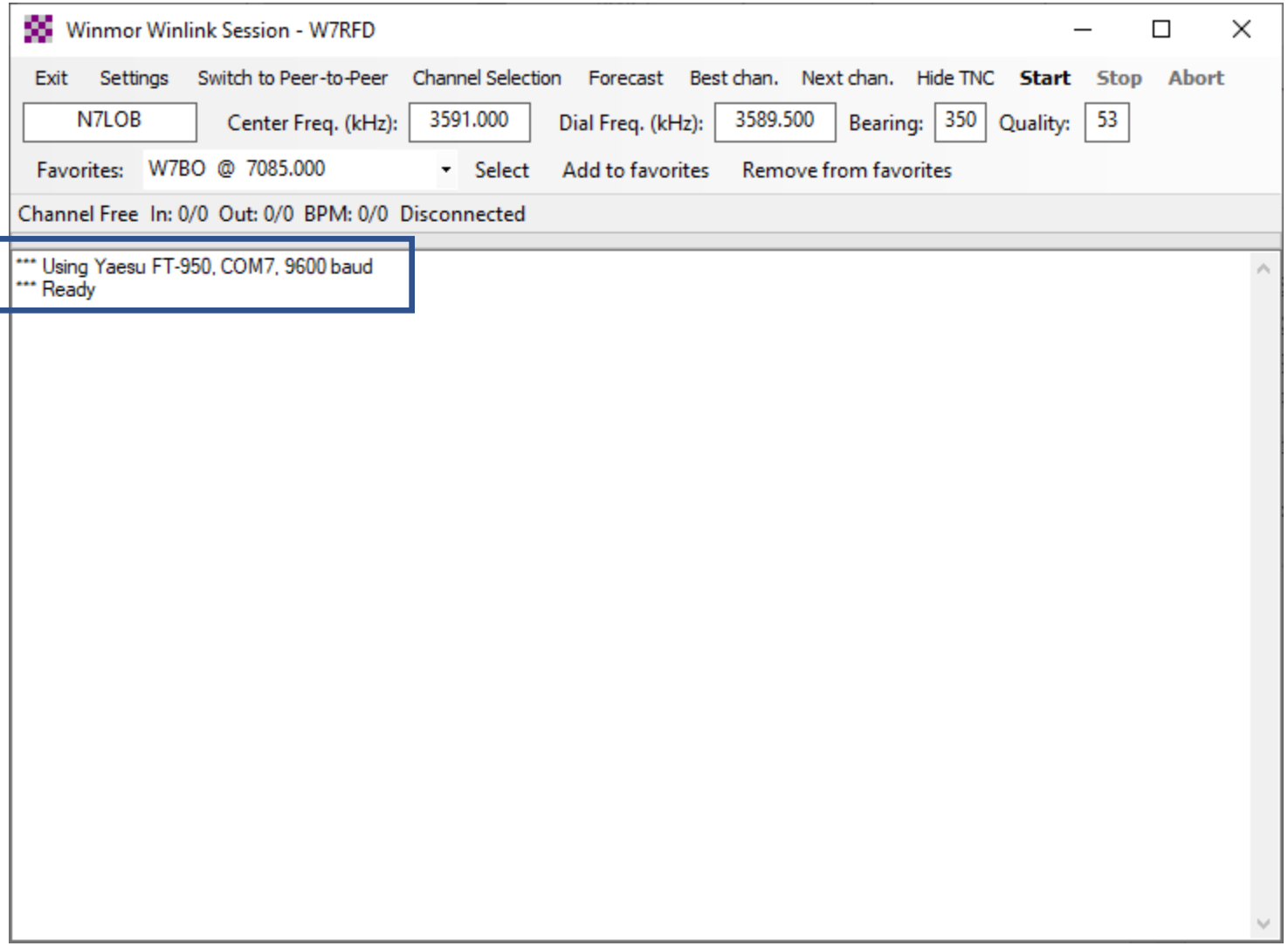
(2 views of the same screen)



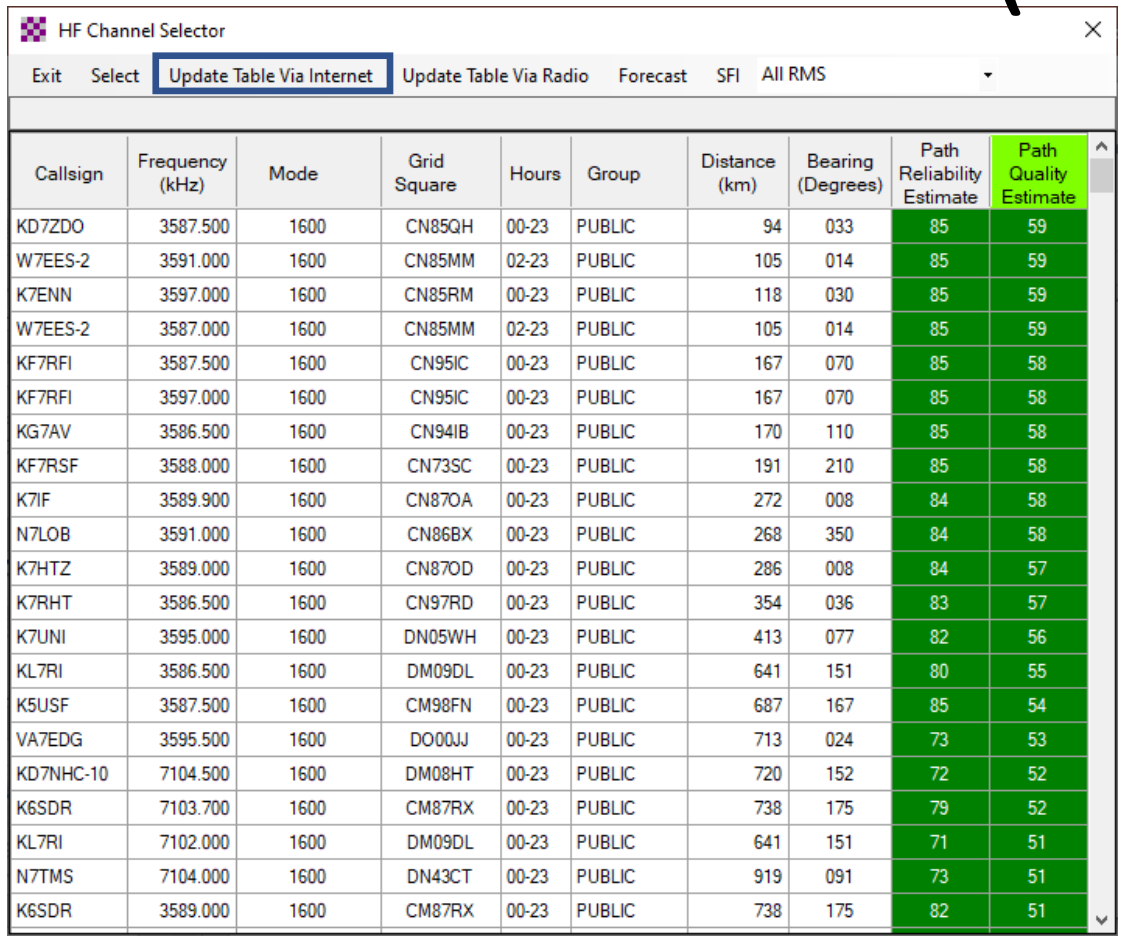


The Radio Setup screen provides for selection of the radio type (including manual control), allowing Winlink Express to control the radio for transmissions. In addition to specifying radio model, the serial port for radio control also needs to be set. Again, other settings can normally be left at their defaults.

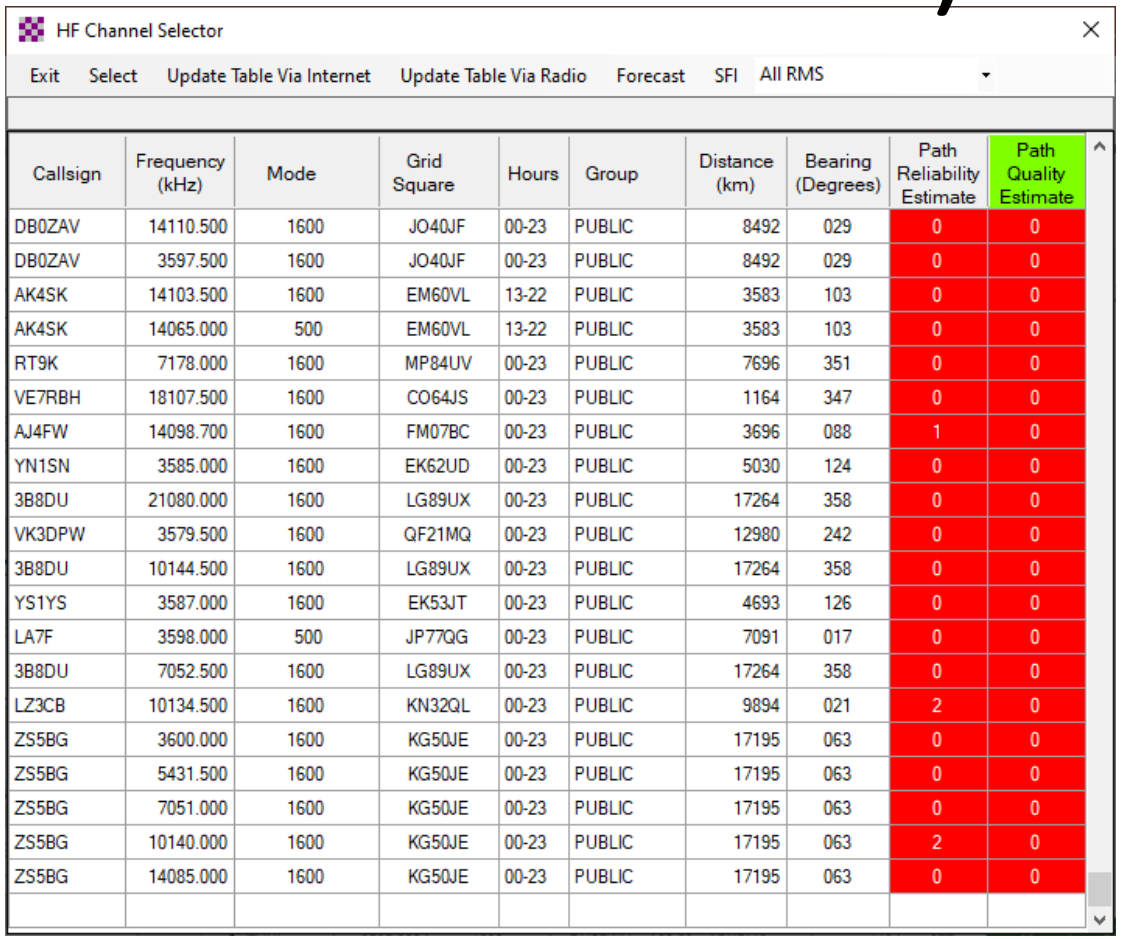
HF Setup Completed



HF Channel Selector (2 Views of same screen)



Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (km)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
KD7ZDO	3587.500	1600	CN85QH	00-23	PUBLIC	94	033	85	59
W7EES-2	3591.000	1600	CN85MM	02-23	PUBLIC	105	014	85	59
K7ENN	3597.000	1600	CN85RM	00-23	PUBLIC	118	030	85	59
W7EES-2	3587.000	1600	CN85MM	02-23	PUBLIC	105	014	85	59
KF7RFI	3587.500	1600	CN95IC	00-23	PUBLIC	167	070	85	58
KF7RFI	3597.000	1600	CN95IC	00-23	PUBLIC	167	070	85	58
KG7AV	3586.500	1600	CN94IB	00-23	PUBLIC	170	110	85	58
KF7RSF	3588.000	1600	CN73SC	00-23	PUBLIC	191	210	85	58
K7IF	3589.900	1600	CN87OA	00-23	PUBLIC	272	008	84	58
N7LOB	3591.000	1600	CN86BX	00-23	PUBLIC	268	350	84	58
K7HTZ	3589.000	1600	CN87OD	00-23	PUBLIC	286	008	84	57
K7RHT	3586.500	1600	CN97RD	00-23	PUBLIC	354	036	83	57
K7UNI	3595.000	1600	DN05WH	00-23	PUBLIC	413	077	82	56
KL7RI	3586.500	1600	DM09DL	00-23	PUBLIC	641	151	80	55
K5USF	3587.500	1600	CM98FN	00-23	PUBLIC	687	167	85	54
VA7EDG	3595.500	1600	DO00JJ	00-23	PUBLIC	713	024	73	53
KD7NHC-10	7104.500	1600	DM08HT	00-23	PUBLIC	720	152	72	52
K6SDR	7103.700	1600	CM87RX	00-23	PUBLIC	738	175	79	52
KL7RI	7102.000	1600	DM09DL	00-23	PUBLIC	641	151	71	51
N7TMS	7104.000	1600	DN43CT	00-23	PUBLIC	919	091	73	51
K6SDR	3589.000	1600	CM87RX	00-23	PUBLIC	738	175	82	51



Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (km)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
DB0ZAV	14110.500	1600	JO40JF	00-23	PUBLIC	8492	029	0	0
DB0ZAV	3597.500	1600	JO40JF	00-23	PUBLIC	8492	029	0	0
AK4SK	14103.500	1600	EM60VL	13-22	PUBLIC	3583	103	0	0
AK4SK	14065.000	500	EM60VL	13-22	PUBLIC	3583	103	0	0
RT9K	7178.000	1600	MP84UV	00-23	PUBLIC	7696	351	0	0
VE7RBH	18107.500	1600	CO64JS	00-23	PUBLIC	1164	347	0	0
AJ4FW	14098.700	1600	FM07BC	00-23	PUBLIC	3696	088	1	0
YN1SN	3585.000	1600	EK62UD	00-23	PUBLIC	5030	124	0	0
3B8DU	21080.000	1600	LG89UX	00-23	PUBLIC	17264	358	0	0
VK3DPW	3579.500	1600	QF21MQ	00-23	PUBLIC	12980	242	0	0
3B8DU	10144.500	1600	LG89UX	00-23	PUBLIC	17264	358	0	0
YS1YS	3587.000	1600	EK53JT	00-23	PUBLIC	4693	126	0	0
LA7F	3598.000	500	JP77QG	00-23	PUBLIC	7091	017	0	0
3B8DU	7052.500	1600	LG89UX	00-23	PUBLIC	17264	358	0	0
LZ3CB	10134.500	1600	KN32QL	00-23	PUBLIC	9894	021	2	0
ZS5BG	3600.000	1600	KG50JE	00-23	PUBLIC	17195	063	0	0
ZS5BG	5431.500	1600	KG50JE	00-23	PUBLIC	17195	063	0	0
ZS5BG	7051.000	1600	KG50JE	00-23	PUBLIC	17195	063	0	0
ZS5BG	10140.000	1600	KG50JE	00-23	PUBLIC	17195	063	2	0
ZS5BG	14085.000	1600	KG50JE	00-23	PUBLIC	17195	063	0	0

The Channel Selector can provide a list of available nodes for connection. The Winlink system uses its listing of operational nodes, along with time-of-day expected propagation at the configured location, to create this list of nodes arranged in order of likelihood of good connection.

Note that the table is best updated via the internet, which is normally not available during emergency operations. Thus, it is best to update the table at home (or where the internet is available) and use the table as a reference of possible nodes rather than most likely.

HF Operation

Once the setup is completed (including the radio and TNC on):

Double clicking on an entry in the Channel Selector table will set the callsign and list the Dial Frequency for the transmission. Set the radio to the correct dial frequency and then just select the Start menu item or allow the Autoconnect timer to make the connection.

(Since Winmor is a digital mode, transmit power is typically set to about 30% of maximum for the transceiver. With a SignaLink soundcard interface, the power can be controlled via the Rx knob on the SignaLink.)