# Winlink

Email via Radio

Ron Davis – W7RFD

April 2020

### **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



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





File	Tools	View	Winlink_Overview.docx [Compatibility Mode] - Word	1
	T	Winlink Express 1.5.26.0 - W7RFD	-	. 0
		W7RFD - Settings Message	Attachments Move To: Saved Items V Delete Open Session: Packet Winlink V Logs Help	
		〕 @ ╆ ∅   ♠ ♠   + 8 ≿   🛃   @	≫ I Ø	
		In Packet Winlink session.		
		System Folders	Date/Time v Message ID Size Source Sender Recipient Subject	
		Inbox (0 unread)	2019/09/16 19:55 T4IXG491GFI2 310 W8YHG W8YHG W7RFD ACK: Re: //WL2K hola	
		Outbox (1)	Image: Wight Control (1)         Image:	
		Sent Items (2)		
		Deleted Items (0)		
		Drafts (0) V		
		Personal Folders		
		Global Folders		
			Message ID: E648E1MUOYG4	
		Contacts	Date: 2019/09/16 19:48	
			From: W8YHG	
			Source: W8YHG	
			Downloaded-from: Telnet:cms.Winlink.org	
			Subject. //when note	
			testing monday	
			[Read receipt requested]	
			The Winlink Express user interface resembles a simple normal email	
			The Winnik Express user interface resembles a simple, normal entail	
			screen with folders for an Inbox Outbox Drafts Deleted Items etc	
			server with folders for an inbox, outbox, brands, beleted items, etc.	
			Winlink does not maintain a full-time connection to a node so the Out	hox
				SOA
			will typically populate with messages waiting to be transmitted	
			The Settings Message and Open Session many items will be addressed	1 in

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

14 new notifications

٥  $\times$ 

# 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.

Winlink Express Properties	×	
Call Signs My Callsign Callsign suffix (optional): (Used for country code) Show password 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	Contact Infomation (Optional)          Name:	
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	Recalculate HF path quality if SFI changes more than:         2         Keep logs for       2         .       Display list of pending incoming messages prior to download         .       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	

## 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



### 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.

🗐 🗐 🐻 – — – – + 151%

### Templates

### (2 views of the same screen.)

🖳 Temp	late Man	ager			<u> </u>		$\times$		
Select	Close	Add	Remove	Edit					
Stand	ard Templa	ates (ven	sion 1.0.114.(	))					
<b>⊕</b> • A	- User Info	mation							
ARC Forms									
ARRL Forms									
CA STATE Forms									
	ANADIAN	Forms							
E - FEMA Forms									
	ADE Earr	oms							
E U	CS Forme	ronns							
- IA	RU Forms								
	S USA For	ms							
	H STATE	Forms							
÷-0	RSTATE	Forms							
÷.0	THER ME	DICAL F	oms						
	ADIOGRA	M RRI F	oms						
	TERN Fo	ms							
⊕ SI	HARES Fo	ms							
	STATE F	oms							
	STATE F	orms							
⊕ W	A STATE	Forms							
⊕ W	EATHER	Forms							
₩	I STATE F	oms							
Global	Template	S							
W7RF	D Templat	tes							

🖳 Temp	late Man	ager		-	×	
Select	Close	Add	Remove	Edit		
	ard Templa	ates (vers	sion 1.0.114.(	))		^
⊕ A	- User Info	mation				
+ A	STATE	oms				
	C Forms					
	CTATE D					
	MADIAN	Forme				
	MA Forms	ronns				
EI EI	STATE F	oms				
E FN	ARE Forms	1				
H-GE	ENERAL	Forms				
	CS Forms					
	RU Forms					
E- IC	S USA For	ms				
	- ICS205-	10 Row.t	xt			
	- ICS205-	20 Row.t	xt			
	- ICS205A	.txt				
	ICS206.t	oxt				
	- ICS210.t	oxt				
	- ICS213.t	oxt				
	- ICS213F	RR.txt				
	ICS214.t	oxt				
	ICS214A	A.txt				
	ICS217A	A.txt				
	L CTATE	xt				
	STATE	Forme				
			me			
U			/////3			 *



### Templates - 2

Select       Close       Add       Remove       Edit         Standard Templates (version 1.0.114.0)       Image: Arrow of the second secon			~								
Standard Templates (version 1.0.114.0)  A - User Information  AK STATE Forms  ARC Forms  ARC Forms  CA STATE Forms  CANADIAN Forms  FEMA Forms  FEMA Forms			~								
A - User Information  A - User Information  A - A -											
ARC Forms  ARC Forms  ARRL Forms  CA STATE Forms  CANADIAN Forms  FEMA Forms											
ARRL Forms CA STATE Forms CANADIAN Forms FEMA Forms											
CA STATE Forms CANADIAN Forms FEMA Forms											
CANADIAN Forms											
FEMA Forms		. CANADIAN Forms									
		. FEMA Forms									
FL STATE Forms											
FMRE Forms											
⊕. GENERAL Forms											
HICS Forms											
WUARTERLY Test											
···· Oregon Activate Deactivate.txt											
···· Oregon Declaration Emergency.txt											
···· Oregon Public Event.txt											
···· Oregon SITREP.txt											
···· OR_State_RR.txt											
OTHER MEDICAL Forms											
VA STATE Forms			5								

File Tools View

### 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.

Page 7 of 12

**.** 

### **Template in Browser**

ILC2213 Initial	III 📼 🗉 🕼	9° = >>
What Matters Now - F We lecture 11: Augmenti A ARPC annance is optional 1. Incident Name: Incident name is optional 2. To (Name/Position): 4. Subject: 7. Message: Be Brief and Concise	PPEX ( NCSU	>
General Message (ICS 213)         Load ICS213 INITIAL Data       Form Instructions         1. Incident Name:       Incident name is optional       Incident Name:         2. To (Name/Position):		
Load ICS213 INITIAL Data       Form Instructions         1. Incident Name: Incident name is optional       Image: Incident name is optional         2. To (Name/Position):       Image: Im		
1. Incident Name: Incident name is optional       Image: Constraint of the second		
2. To (Name/Position):         3. From (Name/Position):         4. Subject:       5. Date:       2020-02-21         6. Time:       14:19         7. Message:       Be Brief and Concise		
3. From (Name/Position):		
4. Subject:       5. Date: 2020-02-21       6. Time: 14:19         7. Message:       Be Brief and Concise		
T. Message:		
Be Brief and Concise		
h.		
8. Approved by: Position / Title:		
Save //C212 INITIAL Data Qubmit Decet Form		

Enter a new message	- 🗆 X
Close Select Template Attac	hments Post to Outbox Spell Check Save in Drafts
From: W7RFD ~	Send as: Winlink Message V Request read receipt Set Defaults
<u>I</u> o: AA0AA@winlink.or	g
<u>C</u> c:	
Subject: 213-Training-Quest	tion - 2020-04-17 16:23
Attach: RMS_Express_For	rm_ICS213_Initial_Viewer.xml;
GENERAL MESSAGE (ICS 213)	)
<ol> <li>Incident Name: Training</li> <li>To (Name and Position): Johr</li> <li>From (Name and Position): Bo</li> <li>Subject: Question</li> <li>Date: 2020-04-17</li> <li>Time: 16:23</li> <li>Message:</li> </ol>	n Base/Leader ob Field/Follower
How does this work?	Sample text formatting of an ICS 213 form created in browser.
8. Approved by: Bob's Boss Position/Title: Field Superviso	This message can now be posted to the outbox.
Express Sending Station: W7RF Senders Express Version: 1.5.2 Senders Template Version: ICS	=D 7.1 ≥213 v.41.3

# 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.)

Winlink Express 1.5.26.0 - W7RFD  $\times$ \_ - Settings Message Attachments Move To: Saved Items Open Session: W7RFD Delete Packet Winlink  $\sim 1$ Packet Winlink Logs Help Pactor Winlink 🗋 🕼 🏠 🏠 👘 🕂 🗏 法 🛃 🥔 ≫ 🥝 Robust Packet Winlink Winmor Winlink No active session. Ardop Winlink System Folders Message ID Date/Time Size Source Sender Recipient Vara HF Winlink Inbox (0 unread) 🔥 2019/09/16 19:55 T4IXG491GFI2 Vara FM Winlink 310 W8YHG W8YHG W7RFD Iridium GO Winlink Read Items (0) ▲ 2019/09/16 19:48 E648E1MUQYG4 W8YHG W7RFD W8YHG \_\_\_\_\_ Outbox (1) Packet P2P Sent Items (2) Pactor P2P Saved Items (0) Robust Packet P2P Deleted Items (0) Winmor P2P Drafts (0) ¥ Ardop P2P Personal Folders Vara P2P Message ID: E648E1MUQYG4 Vara FM P2P Date: 2019/09/16 19:48 Telnet P2P From: W8YHG -----To: W7RFD Pactor Radio-only Source: W8YHG Winmor Radio-only Downloaded-from: Telnet:cms.Winlink.org Global Folders Subject: //WL2K hola testing monday [Read receipt requested] Contacts Page 12 of 12

#### Other Winlink Modes

Winlink\_Overview.docx [Compatibility Mode] - Word

Tools View

File

### 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.



### 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)

Packet INC Type:	Kantronics					~	
Packet TNC Model:	KPC-3+ V			Serial Port:		$\sim$	
Autoconnect time:	15 Minutes	~	Seria	Port Baud:	9600	$\sim$	
Packet sound moder (For KISS mode)	n: Automatica	ly launch pa	acket sou	ind modem		Browse	
TNC Parameters		○ 1200 F	laud	@ 9600 F	Raud		
TX Del	ay (Milliseconds):	400	~	300	~		
Maximur	n Packet Length:	128	$\sim$	255	$\sim$		
	Maximum Frames:	4	$\sim$	7	$\sim$		
	Frack:	2	$\sim$	2	$\sim$		
	Persistance:	160	$\sim$	224	$\sim$		
	Slot time:	30	$\sim$	20	$\sim$		
Jiashla Yast	Maximum Retries:	5	$\sim$	5	$\sim$		
	Transmit Level:	100	-	100	÷		

Packet Winlink/P	2P Setup					×		
TNC Connection								
Packet TNC Type:	Kantronics				$\sim$			
Packet TNC Model:	AEA/Timewave Kantronics							
Autoconnect time:	Kenwood TH-D7 Kenwood TH-D7 Kenwood TM-D7	/D72 A-Band /D72 B-Band 00 A-Band						
Packet sound mode (For KISS mode)	Kenwood TM-D/ Kenwood TM-D7 Kenwood TM-D7 Kenwood TS-200 KISS	00 B-Band 10 A-Band 10 B-Band 10	rowse					
TNC Parameters TX De Maximur	KISS Port 2 Open Tracker US PTC-II/PTC-Ilpro PTC-II/PTC-Ilpro Iz PTC-Ile/PTC-Ilex SCS Tracker TAPR TNC2 TinvTracker 4	B Port 1 Port 2 /PTC-Ilusb/PTC-	-7x00					
I	MTNC-X	-		_				
	Frack:	2 ~	2	~				
	Persistance:	160 ~	224	$\sim$				
	Slot time:	30 ~	20	$\sim$				
	Maximum Retries:	5 v	5	$\sim$				
Disable Xmt Level Adjust	Transmit Level:	100 🖨	100	<b></b>				
	Lladata		Canad					
	Opdate		Cancel					
								Ŧ
							+	151%

### Successful Configuration

Packet Winlink Session	_		×						
Exit       Settings       Switch to Peer-to-Peer Session       Channel Selection       9600 Baud       Start       Stop         Connection type:       Direct <ul> <li>K7CVO-10</li> <li>Via</li> <li>Connection script:</li> <li>Edit script</li> <li>Add script</li> <li>Remove script</li> </ul>									
Time to next Autoconnect = 14:45									
*** Starting WL2K packet session *** Initializing Kantronics; port COM5; 9600 baud *** Initialization complete *** Ready			^						
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):

- 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

		I
Exit       Settings       Switch to Peer-to-Peer Session       Channel Selection       9600 Baud       Start       Stop         Connection type:       Direct <ul> <li>K7CVO-10</li> <li>Via</li> <li>,</li> <li>Edit script</li> <li>Add script</li> <li>Remove script</li> </ul>		
lime to next Autoconnect = 14:45		
** Starting WL2K packet session ** Initializing Kantronics; port COM5; 9600 baud ** Initialization complete ** Ready		^

# HF Setup

Winmor Winlink Session - W7RFD -	_		×
Exit       Settings       Switch to Peer-to-Peer       Channel Selection       Forecast       Best chan.       Next chan.       Hide TNC       Start         K2RDX       Center Freq. (kHz):       7102.500       Dial Freq. (kHz):       7101.000       Bearing:       172       Quality:         Favorites:       W7BO @ 7085.000 <ul> <li>Select</li> <li>Add to favorites</li> <li>Remove from favorites</li> </ul>	Stop 51	Abor	Ł
Channel Busy In: 0/0 Out: 0/0 BPM: 0/0 Disconnected			
*** Using Yaesu FT-950, COM7, 9600 baud *** Ready			^
For HF operation, the Settings and Channel Selection menu it significant.	ems	are	
The Settings menu allows for interface TNC configuration and configuration.	for	radi	o
The Channel Selection item can be used to find appropriate n connection,	ode	s for	

### HF TNC Setup Screen

🗱 WINMOR Setup	×
Ident	ify with Morse Code 🗹
WINMOR Capture Device:	Microphone (2- USB Audio CODEC )-2b 🛛 🗸
WINMOR Playback Device:	Primary Sound Capture Driver-00 Microphone (2- USB Audio CODEC )-2b
Virtual TNC host address/name:	127.0.0.1
Virtual TNC Command Port:	8500 • Data Port: 8501
Inbound Session Bandwidth (Hz) :	1600 ∨ Drive Level: 90 ★
Update	Cancel

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)

Winmor Winlink Settings ×	🗱 Winmor Winlink Settings 🛛 🗙
Radio Selection       Yaesu FT-950       Antenna Selection       Default         Icom Address       00       Icom 7100       Icom 7200       Icom 7200         Codan login and c       Icom 7300       Icom 7410       Icom 7600	Radio Selection         Select Radio Model       Yaesu FT-950       Antenna Selection       Default         Icom Address       00       USB       USB Digital       FM       Use Internal Tuner         Codan login and optionl password:
Radio Control Port       Icom 9100         Icom IC-F8101       Icom IC-F8101         Serial Port to Use       C( Kenwood Amateur Kenwood TS-590S Kenwood TS-590SG Kenwood TS-890S       ✓       Enable RTS       ✓       Enable DTR       ✓       TTL         PTT Port (Optional)       Kenwood TS-890S       Kenwood TS-890S       Forable RTS       ✓       Forable RTS	Radio Control Port         Serial Port to Use       COM4         Baud       9600         PTT Port (Optional)
Micom 3F Ten-Tec Omni 7 & Jupiter Ten-Tec Orion & Eagle Yaesu FT-100 Yaesu FT-450 Yaesu FT-600 Yaesu FT-817	Serial Port to Use External V Baud 9600 Enable RTS Enable DTR Update Close

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

Winmor Winlink Session - W7RFD -	×
Exit Settings Switch to Peer-to-Peer Channel Selection Forecast Best chan. Next chan. Hide TNC Start Stop	Abort
N7LOB Center Freq. (kHz): 3591.000 Dial Freq. (kHz): 3589.500 Bearing: 350 Quality: 53	
Favorites: W7BO @ 7085.000 - Select Add to favorites Remove from favorites	
Channel Free In: 0/0 Out: 0/0 BPM: 0/0 Disconnected	
*** Using Yaesu FT-950, COM7, 9600 baud *** Ready	^
	~

# HF Channel Selector (2 Views of same screen)

🐞 HF Char	nel Selector									×	🗱 HF Ch	annel Selector								×
Exit Sele	ct Update T	able Via Internet	Update Tab	le Via Ra	dio Forecas	t SFI All	RMS		•	_	Exit Se	ect Update	Table Via Internet	Update Tab	le Via Ra	dio Forecas	st SFI All	RMS		
Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (km)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate	^	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		DB0ZAV	14110.500	1600	JO40JF	00-23	PUBLIC	8492	029	0	0
W7EES-2	3591.000	1600	CN85MM	02-23	PUBLIC	105	014	85	59		DB0ZAV	3597.500	1600	JO40JF	00-23	PUBLIC	8492	029	0	0
K7ENN	3597.000	1600	CN85RM	00-23	PUBLIC	118	030	85	59		AK4SK	14103.500	1600	EM60VL	13-22	PUBLIC	3583	103	0	0
W7EES-2	3587.000	1600	CN85MM	02-23	PUBLIC	105	014	85	59		AK4SK	14065.000	500	EM60VL	13-22	PUBLIC	3583	103	0	0
KF7RFI	3587.500	1600	CN95IC	00-23	PUBLIC	167	070	85	58		RT9K	7178.000	1600	MP84UV	00-23	PUBLIC	7696	351	0	0
KF7RFI	3597.000	1600	CN95IC	00-23	PUBLIC	167	070	85	58		VE7RBH	18107.500	1600	CO64JS	00-23	PUBLIC	1164	347	0	0
KG7AV	3586.500	1600	CN94IB	00-23	PUBLIC	170	110	85	58		AJ4FW	14098.700	1600	FM07BC	00-23	PUBLIC	3696	088	1	0
KF7RSF	3588.000	1600	CN73SC	00-23	PUBLIC	191	210	85	58		YN1SN	3585.000	1600	EK62UD	00-23	PUBLIC	5030	124	0	0
K7IF	3589.900	1600	CN87OA	00-23	PUBLIC	272	008	84	58		3B8DU	21080.000	1600	LG89UX	00-23	PUBLIC	17264	358	0	0
N7LOB	3591.000	1600	CN86BX	00-23	PUBLIC	268	350	84	58		<b>VK3DPW</b>	3579.500	1600	QF21MQ	00-23	PUBLIC	12980	242	0	0
K7HTZ	3589.000	1600	CN87OD	00-23	PUBLIC	286	008	84	57		3B8DU	10144.500	1600	LG89UX	00-23	PUBLIC	17264	358	0	0
K7RHT	3586.500	1600	CN97RD	00-23	PUBLIC	354	036	83	57		YS1YS	3587.000	1600	EK53JT	00-23	PUBLIC	4693	126	0	0
K7UNI	3595.000	1600	DN05WH	00-23	PUBLIC	413	077	82	56		LA7F	3598.000	500	JP77QG	00-23	PUBLIC	7091	017	0	0
KL7RI	3586.500	1600	DM09DL	00-23	PUBLIC	641	151	80	55		3B8DU	7052.500	1600	LG89UX	00-23	PUBLIC	17264	358	0	0
K5USF	3587.500	1600	CM98FN	00-23	PUBLIC	687	167	85	54		LZ3CB	10134.500	1600	KN32QL	00-23	PUBLIC	9894	021	2	0
VA7EDG	3595.500	1600	DO00JJ	00-23	PUBLIC	713	024	73	53		ZS5BG	3600.000	1600	KG50JE	00-23	PUBLIC	17195	063	0	0
KD7NHC-10	7104.500	1600	DM08HT	00-23	PUBLIC	720	152	72	52		ZS5BG	5431.500	1600	KG50JE	00-23	PUBLIC	17195	063	0	0
K6SDR	7103.700	1600	CM87RX	00-23	PUBLIC	738	175	79	52		ZS5BG	7051.000	1600	KG50JE	00-23	PUBLIC	17195	063	0	0
KL7RI	7102.000	1600	DM09DL	00-23	PUBLIC	641	151	71	51		ZS5BG	10140.000	1600	KG50JE	00-23	PUBLIC	17195	063	2	0
N7TMS	7104.000	1600	DN43CT	00-23	PUBLIC	919	091	73	51		ZS5BG	14085.000	1600	KG50JE	00-23	PUBLIC	17195	063	0	0
K6SDR	3589.000	1600	CM87RX	00-23	PUBLIC	738	175	82	51	~										

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.)