



Getting Started with Winlink

**Presented to the
Peoria Area Amateur Radio Club
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Scope of this Presentation

- What's In
 - Winlink for the typical amateur radio operator
 - How to create your Account in Winlink Express
 - The basics to send and receive messages
- What's Out
 - Settings for particular radios and interfaces
 - How to include a Signature block in your emails
 - WoAD & RadioMail apps, BPQ, & other alternatives
 - Many fine-points, tips, and tricks for using Winlink Express
 - Sending Peer-to-Peer Messaging (P2P)
 - Use of Digipeaters/Nodes
 - How operate an RMS Gateway



Winlink Global Radio Email®

- The Winlink system is a worldwide radio email service that uses radio pathways where the internet is not present, and is capable of operating completely without the internet--automatically--using smart-network radio relays
- The Winlink system uses the Internet (when available) to send messages between users. Multiple servers worldwide provide the backbone
- Winlink provides users email messaging with attachments, position reporting, weather and information bulletins, and is well-known for its role in emergency and disaster relief communications
- Winlink can send messages to & from regular Internet Email Addresses
- Winlink can also send messages direct between users (Peer-to-Peer)
- User software was formerly called RMS Express, now Winlink Express



Winlink Background Info

- Does not replace your normal Internet email account
- Regulations prohibit business/commercial content over the air
- All messages passing through licensed US amateur radio stations by radio are freely readable by other licensed amateurs – no encryption
- Messages sent via Radio transmit slower than most home internet or cell phone connections
- Max size of email and attachments=120,000 bytes
- Earliest version was in use in 1990. Has been developed since that time into full-featured software now.
- Regular updates are made, including fixes and new features.
- Winlink messages are NOT encrypted, are NOT private, and can be easily read by Gateway SYSOPS and licensed amateurs.



Why Use Winlink?

- Regional Internet outages can occur during natural and man-made disasters
- Detailed, accurate messages can be transmitted via ham radio with Winlink
- Send messages out of a disaster-affected region
 - Quickly alert distant family members of your status
- Support emergency services within effected region
 - Served agencies are familiar with email messages



Multiple Modes in One Program

- Winlink Express includes multiple modes in one program - Packet, VARA-FM, Pactor, ARDOP, VARA-HF, and directly between two user's systems (known as Peer-to-Peer)
- VHF/UHF & HF & Telnet (Internet)
- I recommend using Winlink Express – a full-featured email client, which is free (The parent non-profit accepts donations – ARSFI, American Radio Safety Foundation)
- More Mode info can be found at www.winlink.org or in the Winlink Express program, and in this document
- VARA add-in software can also be downloaded from www.winlink.org



Winlink Express Uses & Users

- Popular with ARES & EmComm folks
- Used during at least 20 recent hurricanes
- 2023 Tropical Storm Calvin - Hawaii
- 2021 Texas Winter Freeze
- 2020 California Earthquakes
- 2019 Mexico City Wildfires
- Other high profile disasters
- Lives and property were saved, damage mitigated
- Sailors stay connected at sea, over marine radio



Statewide Winlink Growth

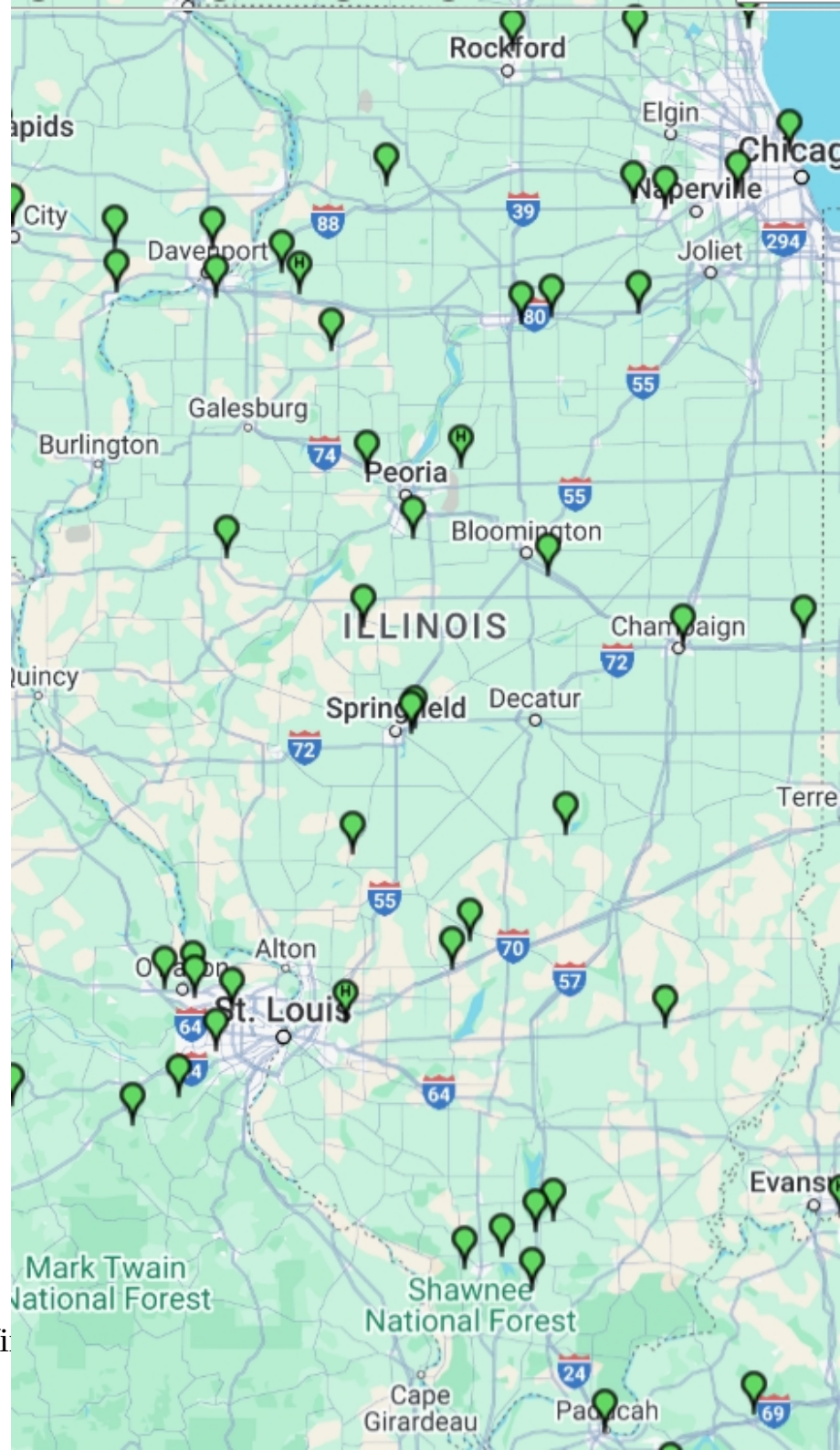
- Over 40 VHF Packet Gateways are online in Illinois, many are operating on VHF frequency 145.610 MHz
- Former IL State Police Radios have been repurposed and are used in some of these gateways
- Some VHF Gateways operate on alternate frequencies

County	Gateway Call Sign	Near	Frequency MHz
Woodford	K9WRA-11	Metamora	145.610
Woodford	K9WRA-10	Roanoke	144.970 (Vara-FM)
Tazewell	W9TAZ-10	Tremont	145.610
Peoria	KD9ANU-10	Kickapoo	145.610
Mason	W9PFD-10	Teheran	145.610



Illinois VHF RMS Gateways

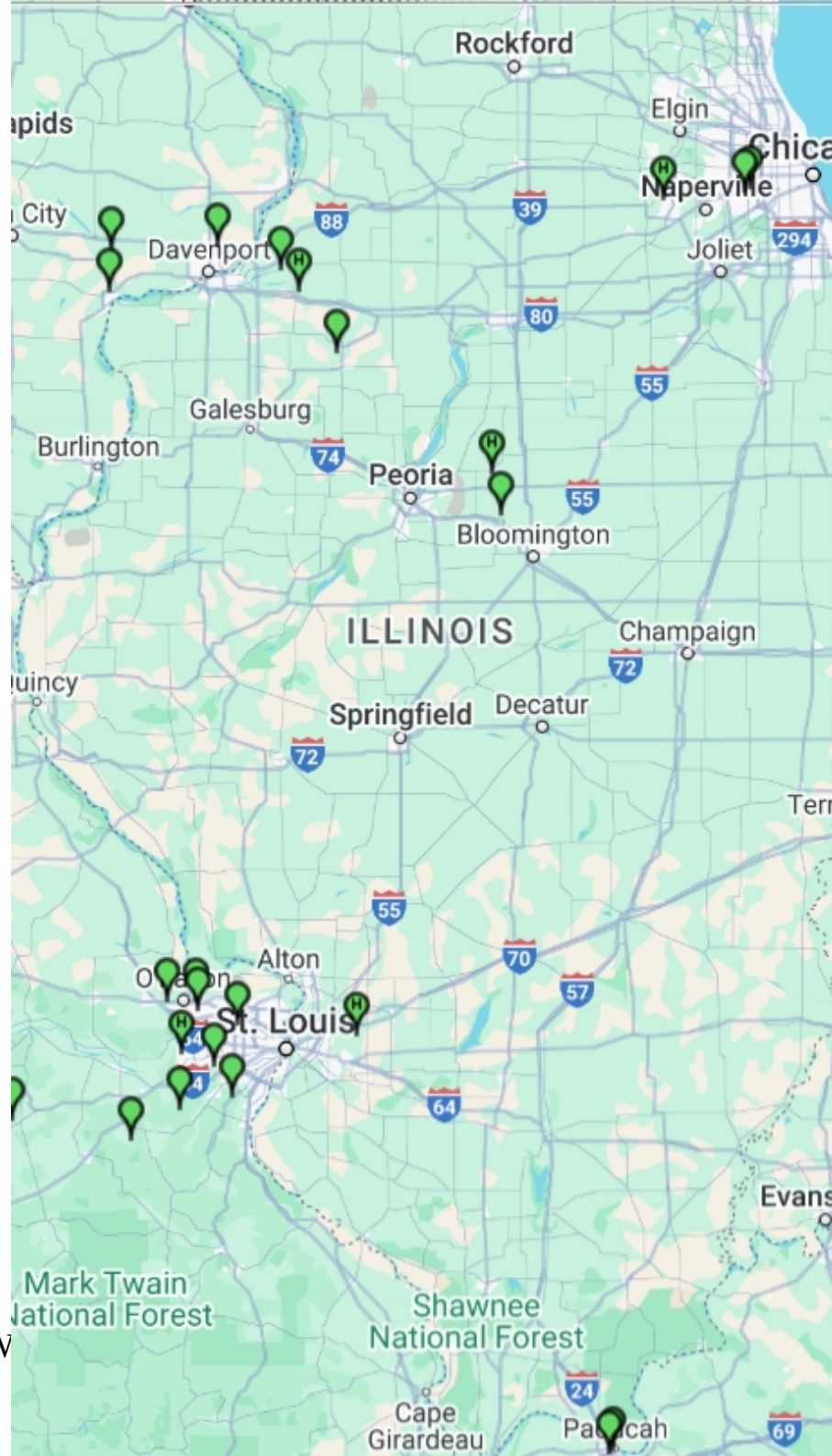
- Go to winlink.org
- Select >Tools
- On the RMS Map, choose the radio button "PACKET"
- Zoom in to the region of interest





Illinois VARA-FM RMS Gateways

- Go to winlink.org
- Select >Tools
- On the RMS Map, choose the radio button "VARA FM"
- Zoom in to the region of interest





RMS Stations – ARDOP HF



- Go to winlink.org
- Select >Tools
- On the RMS Map, choose the radio button “ARDOP”
- Zoom in to the region of interest



RMS Stations – VARA HF



- Go to winlink.org
- Select >Tools
- On the RMS Map, choose the radio button “VARA”
- Zoom in to the region of interest



Getting Going with Winlink

- Practice using Winlink software without radio
 - Using only an Internet Connection (Telnet mode)
 - All the non-radio software features are available
- Start sending messages with radio at later time
 - Ensure the software is installed and working
 - When you become comfortable with the software, make the leap to sending/receiving messages over the air



Software & Equipment Needs

- Winlink Express client software runs only on Windows (8 and up)
- Microsoft .NET Framework 3.5 must be enabled (it's typically loaded)
- Create your own Winlink account using Winlink Express software
- VHF radio uses Packet or VARA-FM modes
- HF radio uses Pactor, ARDOP, or VARA-HF modes
- You may need an Interface (TNC or external sound card) and Cable
- Some radios have built-in TNC (Kenwood D700 & D710)
- Some radios w/built-in sound card (IC-7100/7300/7410/7600/9100/9700)
- Radio 101 applies – higher Antenna, SWR, Propagation, Power Level
- RFI can cause issues – remote antenna mount, ferrites on cable ends
- Handi-Talkies and rubber duck antennas will likely disappoint users

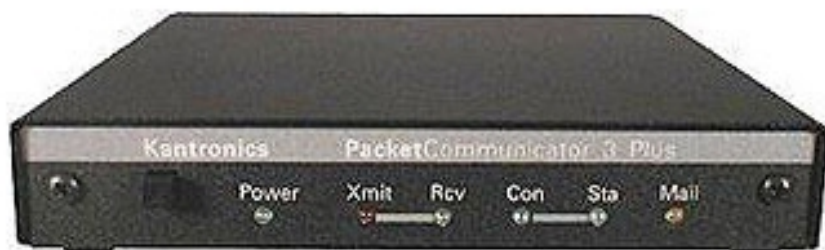


Interface Box Examples

- If not built into your radio, there are several options
- TNC (Terminal Node Controller) for VHF Packet only
 - Kantronics KPC-3+ USB (\$239) (not recommended)
- Sound Cards (with SoundModem or Direwolf - free software that forms Virtual TNC) for VHF and HF
 - Signalink USB (\$135, cable adds \$22) Recommended
 - Masters Communication Radio Adapters (\$65 kit to \$175 built)
 - West Mountain RigBlaster line (\$125 to \$320)
 - Digirig (\$50 plus cables \$20 to \$30)
- High End Modem for PACTOR I thru PACTOR IV (HF)
 - Spezielle Communications Systeme GmbH & Co. KG
 - P4dragon DR-7400 (\$1629) (not recommended)



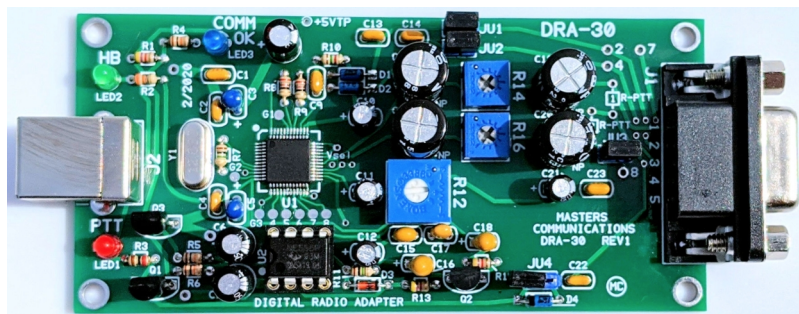
Some External Interface Options



Kantronics KPC-3 Plus TNC



Signalink USB Sound Card



Masters Communication DRA-30



Digirig Mobile



Winlink Modes

- Internet Only
 - **Telnet** – Uses only an Internet connection to the Winlink web servers.
- VHF/UHF Radio
 - **Packet** – (TNC or Sound Card) Uses the AX.25 (Amateur X.25) data link layer protocol, adapted for amateur radio use in the 1970's. Many stations.
 - **VARA-FM** – (Sound Card) Number of such IL Gateways is small, Check www.Winlink.org/RMSChannels to locate VARA-FM Gateways. We are lucky to have one nearby in Woodford County.
- HF Radio
 - **PACTOR I-IV** (SCS Modem) - Utilizes a combination of simple FSK modulation, and the ARQ protocol for robust error detection and data throughput. \$\$\$
 - **ARDOP** – (Sound Card) HF software modem offering high-throughput and adaptive multi-bandwidth operation.
 - **VARA-HF** - (Sound Card) HF sound-card software modem offering high-throughput, fixed 2.5 KHz wide-bandwidth operation. (Free & paid versions). This is the Hot NEW Mode – Many ARDOP users are moving to VARA-HF.



How to Install Winlink Express

- Visit the Winlink Download page to obtain Winlink Express software, at <https://downloads.winlink.org/>
- In the directory list, click on “User Programs”
- Click on “Winlink_Express_install_1-7-23-0.zip” to download
- Find the downloaded zip file
- Double-click on the file “Winlink_Express_install_1-7-23-0.zip”
- Double-click on the “Winlink Express install.exe”
- Select “More info” then “Run anyway” in the protection window
- After the installation finishes, find and click on the “RMS Express” Program Icon. Might need to look in c:\RMS Express for RMS Express.exe.



← Winlink Express
Program Icon



Create a Winlink Account (1 of 2)

- Must have a valid Ham Radio License
- When run the first time, the program opens the “Properties Tab” (Settings, Windows Express Setup)
- Fill the blanks as much as you can
- Don’t change or delete any default values that may be provided
- Be sure to include your email in the fields labeled Password recovery email and also non-Winlink e-mail (2 places)
- You DO NOT need a Winlink Express registration key, leave that blank. (The key can be purchased to avoid the “Nag” screen that slows the program starting.)
- When finished, click on the “Update” button



Create a Winlink Account (2 of 2)

- Connect with the Winlink system to create your account (use the Telnet mode Internet connection)
- Do not use a password on your first connection
- A message containing your password will be sent to your account. (Can change the password later.)
- Retrieve password with a second Telnet connection
- Enter password in “Settings”, “Winlink Express Setup”
- Your email address will be CALLSIGN@winlink.org



Winlink Express Setup

Winlink Express Properties

Call Signs

My Callsign: My Password:
(Case sensitive) ☐ Show password

~~Call sign suffix (optional): (Used for country code)~~

Password recovery e-mail:
(Non-Winlink e-mail address where lost password will be sent when requested)

~~Auxiliary Callsigns and Tactical Addresses~~

My Grid Square:

Winlink Express registration key:

~~Service Codes~~

(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)
If you change service codes, you must update the list of channels.

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:

Keep logs for weeks. Keep deleted messages for days.

☒ Display list of pending incoming messages prior to download

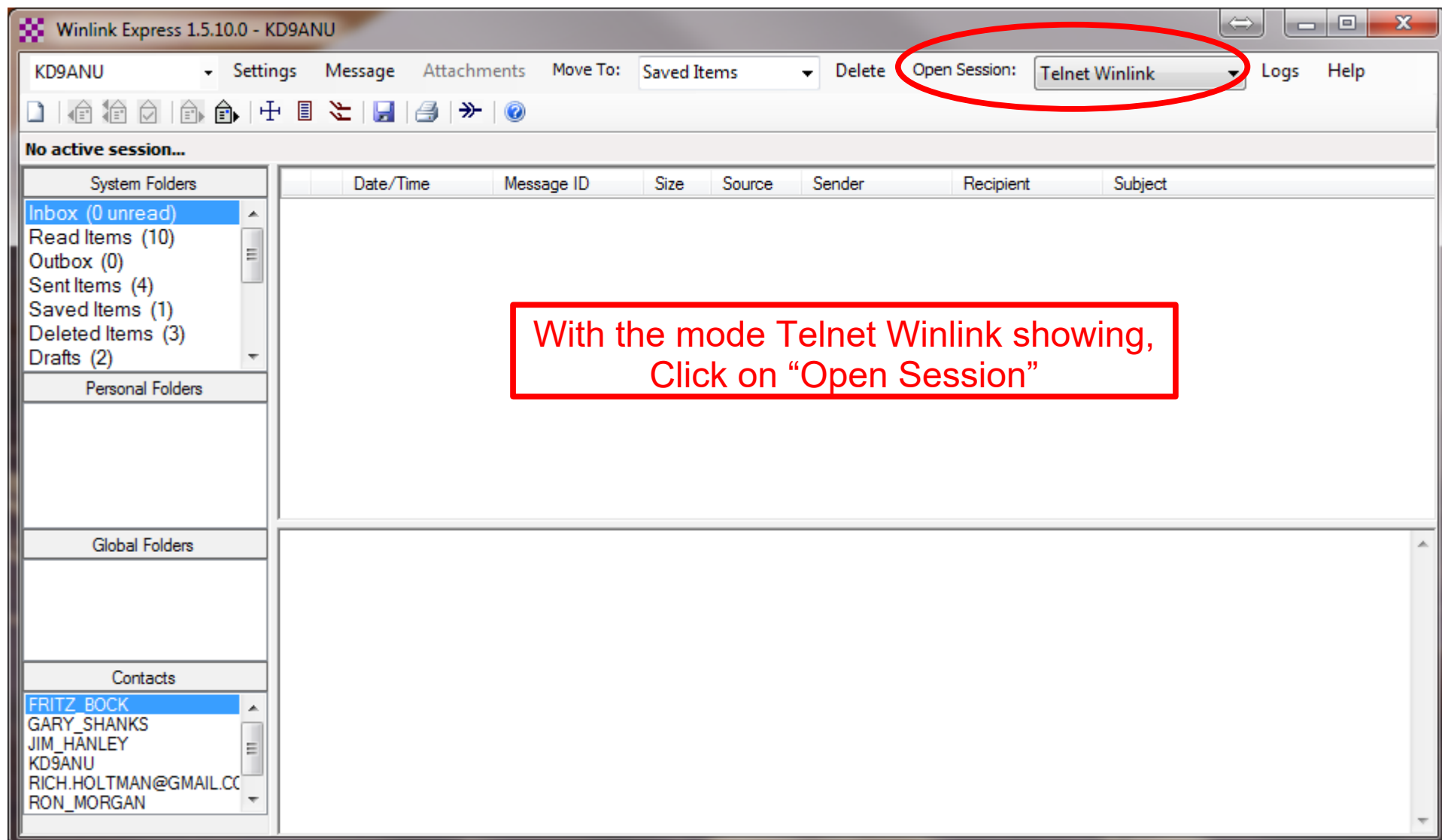
☒ Warn about connections to stations holding messages

☒ Allow diagnostic information to be sent to the Winlink Development Team

☐ Automatically install field-test (beta) versions of Winlink Express

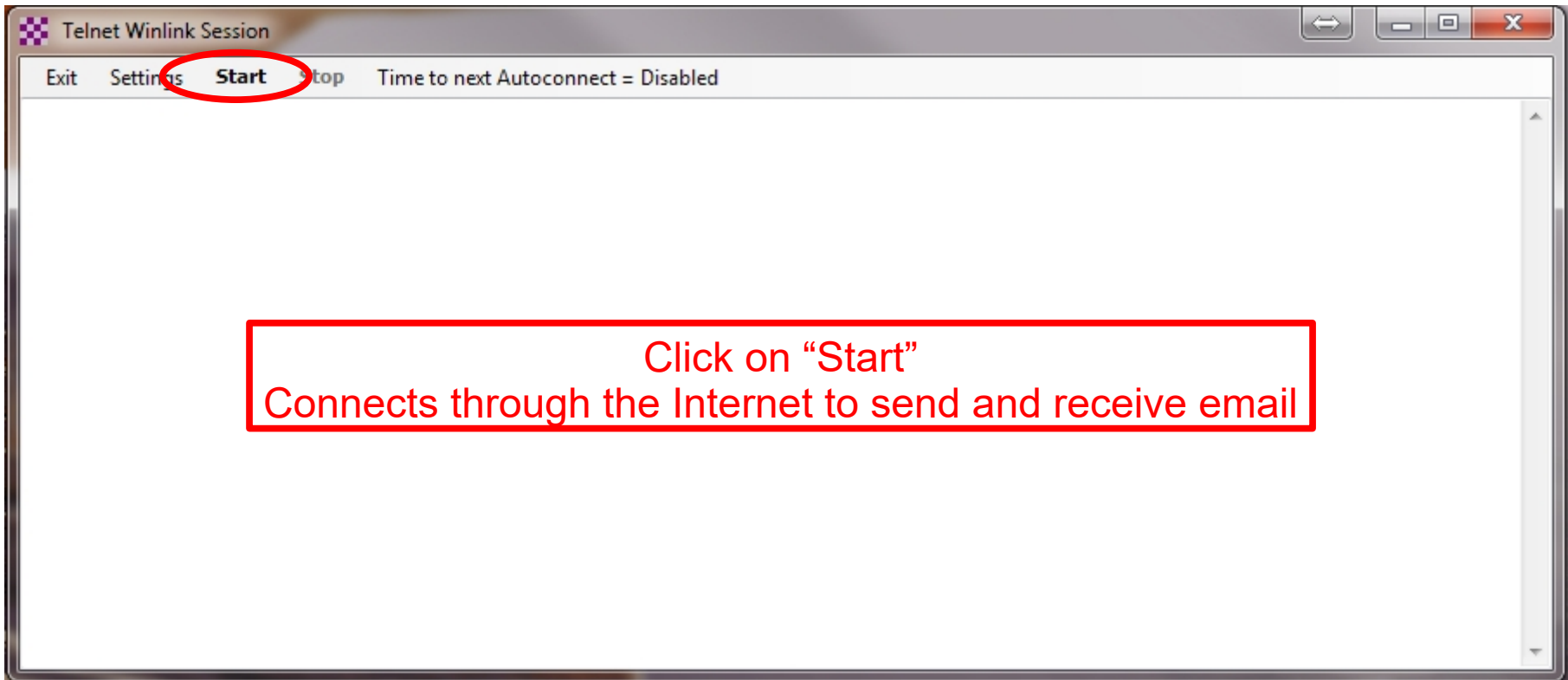


Connect to the System (1 of 3)



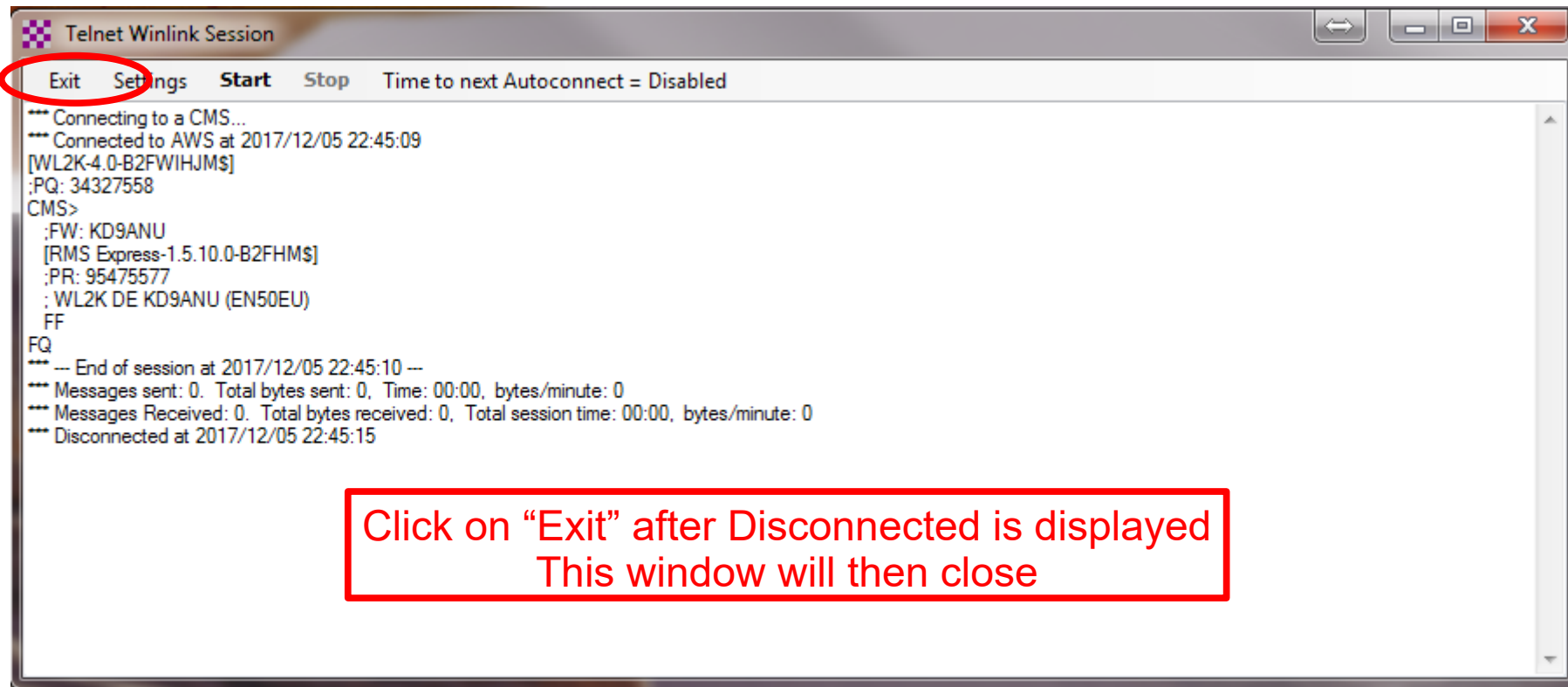


Connect to the System (2 of 3)





Connect to the System (3 of 3)



Click on "Exit" after Disconnected is displayed
This window will then close



Create a New Message

Winlink Express 1.5.18.0 - KD9ANU

KD9ANU Settings Message Attachments Move To: Weekly Winlink Ex Delete Open Session: Packet Winlink Logs Help

In Packet Winlink session.

*** Received and processed RMS VHF Channels update message ***

	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
	2019/01/23 20:41	125_W9KJ	283	W9KJ	W9KJ	KD9ANU	Weekly Winlink Exercise #4-2019
	2019/01/23 18:18	GD4FMCTZKKEP	1413	WD9FMB	WD9FMB	KD9ANU	//WL2K ICS214A-Weekly Winlink Exercise
	2019/01/23 17:53	A3P8LFM051XC	236	N9JWI	N9JWI	KD9ANU	//WL2K Weekly Winlink Exercise #4-2019
	2019/01/22 02:55	6KHNFVIFV8D5	2334	KC9RAV	KC9RAV	KD9ANU	//WL2K Re: ICS 213: Weekly Winlink Ex
	2019/01/20 20:18	118_W9KJ	3630	W9KJ	W9KJ	KD9ANU	Re: ICS 213: Weekly Winlink Exercise #3
	2019/01/20 02:40	101_W9KJ	3282	W9KJ	W9KJ	KD9ANU	Re: ICS 213: Weekly Winlink Exercise #3

Message ID: A3P8LFM051XC
Date: 2019/01/23 17:53
From: N9JWI
To: KD9ANU
Source: N9JWI
Downloaded-from: RMS:KD9ANU-10
Subject: //WL2K Weekly Winlink Exercise #4-2019

N9JWI, Frank, Amboy, Packet, 145.610.N9JWI-10 gateway

System Folders

- Inbox (10 unread)
- Read Items (40)
- Outbox (0)
- Sent Items (403)
- Saved Items (5)
- Deleted Items (138)
- Drafts (7)

Personal Folders

- FIELD DAY 2018 (0)
- Hourly & Daily (1735)
- NORCAL (177)
- Weekly Winlink Exercise (256)

Global Folders

Contacts

- GARTH_KENNEDY
- GARY_KANTNER
- GARY_SHANKS
- JIM_HANLEY
- JIM_HUDSON
- JIM_POLSON



Sending the New Message

Enter a new message

Close Select Template ICS213 HW NORCAL Attachments **Post to Outbox** Spell Check Save in Drafts

From: KD9ANU Send as: Winlink Message ☐ Request read receipt Set Defaults

To:

Cc:

Subject:

Attach:

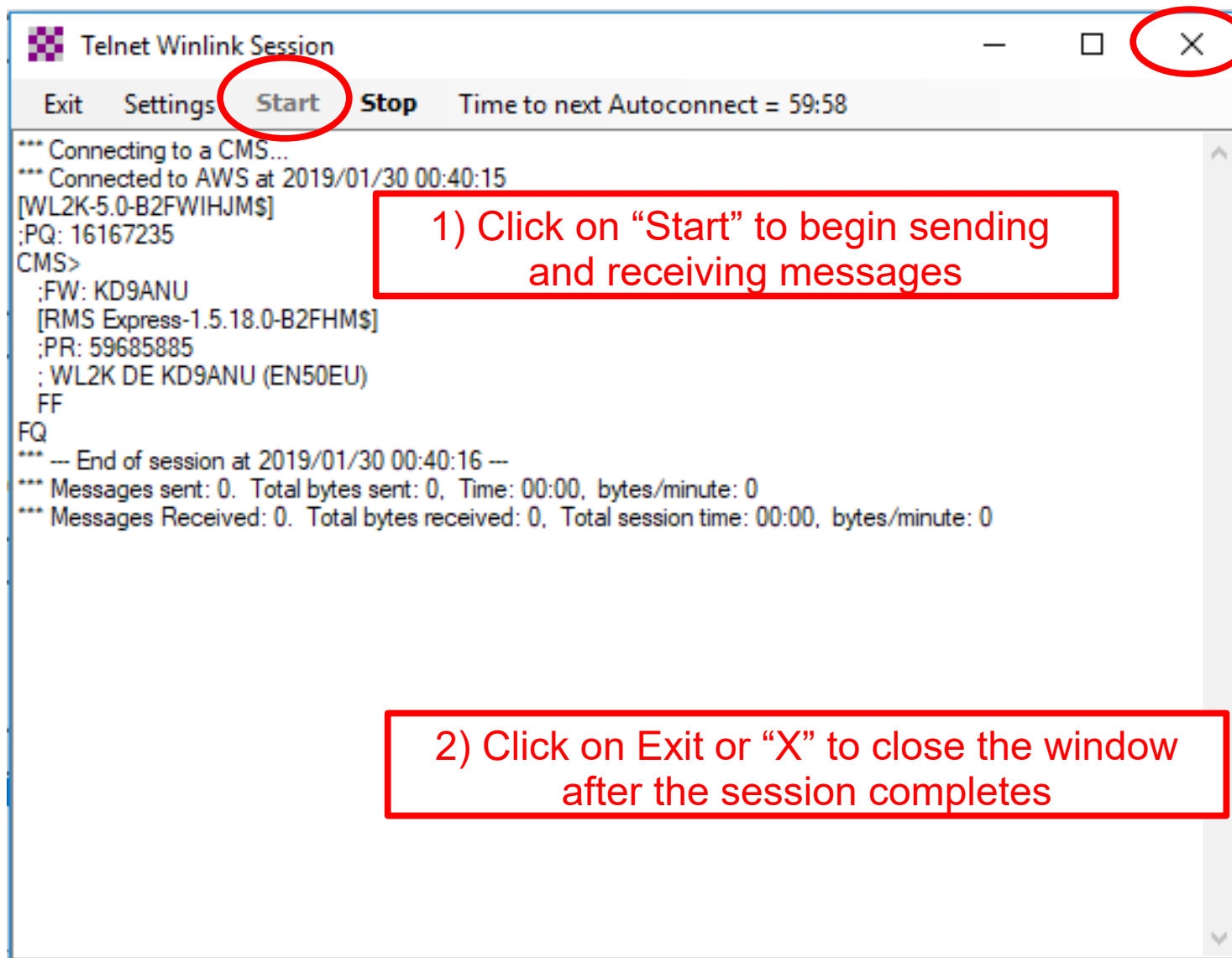
73|

Rich Holtman - KD9ANU
Assistant Emergency Coordinator
Peoria County ARES
Home QTH - Illinois - en50eu
cell 309-256-4272 - text me!
W9UVI - Peoria Area Amateur Radio Club (Illinois)

1) Enter Target Call Sign in the To: field
2) Enter a Subject
3) Enter your Message
4) Hit "Post to Outbox"



Telnet Session Screen - Internet





Packet Session Screen - VHF

Packet Winlink Session

Exit **Settings** Switch to Peer-to-Peer Session **Channel Selection** 1200 Baud **Start** **Stop**

Connection type: Direct Via
Connection script: **Edit script** Add script Remove script

Received: 125 Sent: 1537 Time to next Autoconnect = 24:46

:PQ: 97249711
CMS via KD9ANU >
:FW: KD9ANU
[RMS Express-1.5.18.0-B2FHM\$]
:PR: 55107271
: KD9ANU-10 DE KD9ANU (EN50EU)
FC EM 477DG5SBRN9V 3787 1348 0
F> 39
FS Y
*** Sending 477DG5SBRN9V.
FF
*** Completed send of message 477DG5SBRN9V
*** Sent 1 message. Bytes: 1410, Time: 00:24, bytes/minute: 3490
FQ
*** --- End of session at 2019/01/30 00:33:30 ---
*** Messages sent: 1. Total bytes sent: 1410, Time: 00:47, bytes/minute: 1770
*** Messages Received: 0. Total bytes received: 0, Total session time: 00:47, bytes/minute: 0
*** Disconnecting
*** Disconnected at 2019/01/30 00:33:39
*** Disconnect reported.

Settings need to be adjusted
for your radio & interface



VHF Packet Channel Selection

Packet Channel Selector

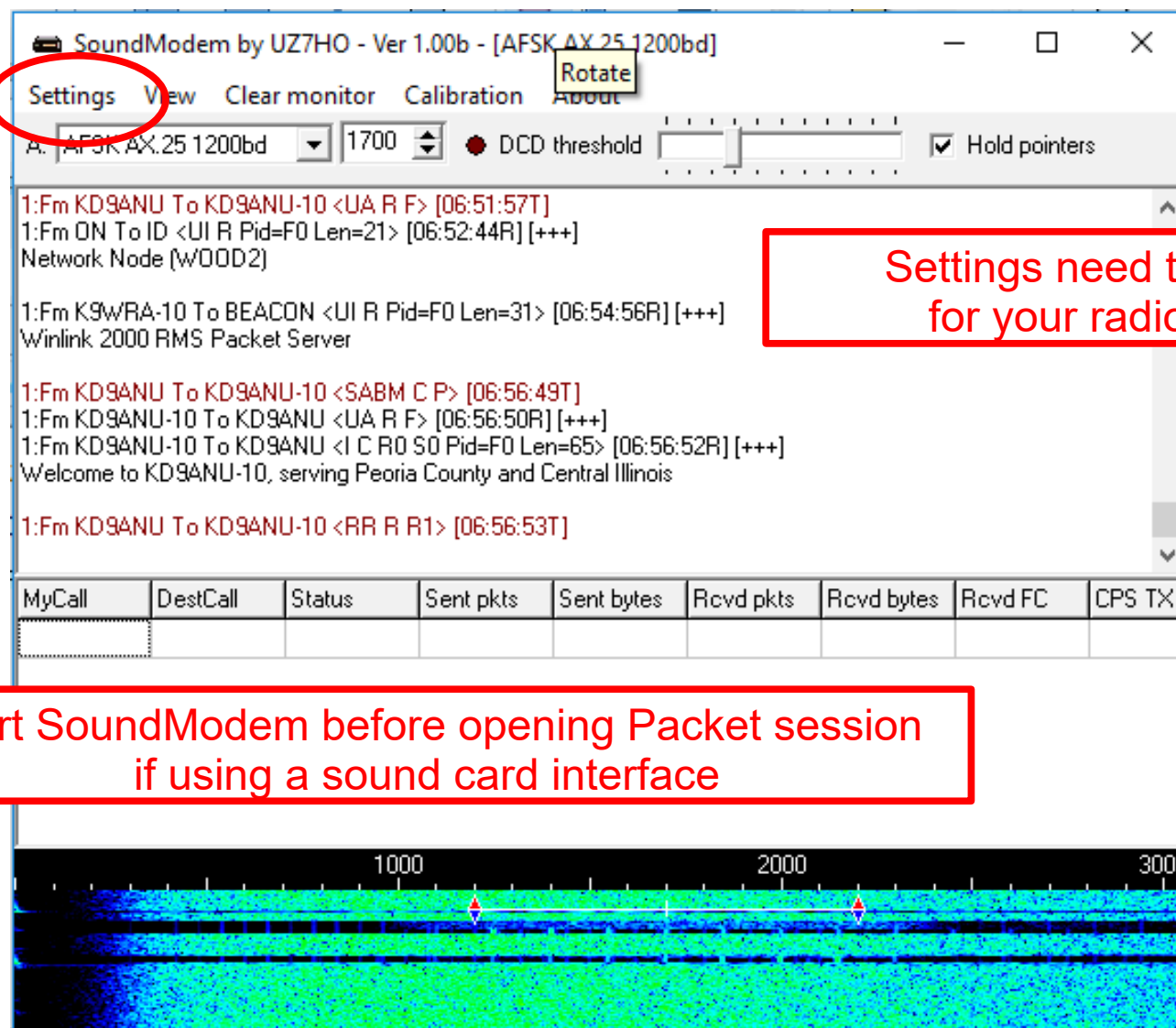
Exit Select Channel **Update Table Via Internet** Update Table Via Radio

Stations found within 160 kilometers of your grid square.

Callsign	Frequency (MHz)	Baud	Grid Square	Group	Distance (mi)	Bearing (Degrees)
KD9ANU-10	145.610	1200	EN50CS	PUBLIC	010	237
WD9FMB-10	145.610	1200	EN50EQ	PUBLIC	011	180
K9WRA-10	145.610	1200	EN50HS	PUBLIC	014	113
KD9JFF-10	145.610	1200	EN50ML	PUBLIC	043	126
KB9YFW-10	145.610	1200	EN51LH	PUBLIC	044	044
NS0A-10	145.610	1200	EN41WK	PUBLIC	048	328
N9JWI-10	145.610	1200	EN51IR	PUBLIC	063	016
KB9APW-10	145.610	1200	EN51DU	PUBLIC	069	357
KD9FSG-10	145.610	1200	EN51JU	PUBLIC	072	017
N9PUZ-10	145.610	1200	EM59FT	PUBLIC	072	176
KD9BNQ-10	145.610	1200	EM59FS	PUBLIC	075	176
W9DUA-10	145.610	1200	EM59DS	PUBLIC	075	183
N9EF-10	145.610	1200	EN51QP	PUBLIC	076	043
KD9KDQ-10	145.610	1200	EN50UE	PUBLIC	084	123
K9KRO-10	145.610	1200	EN51SS	PUBLIC	088	043
K9MLT-10	145.610	1200	EN50UB	PUBLIC	089	127
NG9R-10	145.610	1200	EN40LA	PUBLIC	094	233
N9MM-10	145.610	1200	EN51VS	PUBLIC	097	040



SoundModem (Virtual TNC)

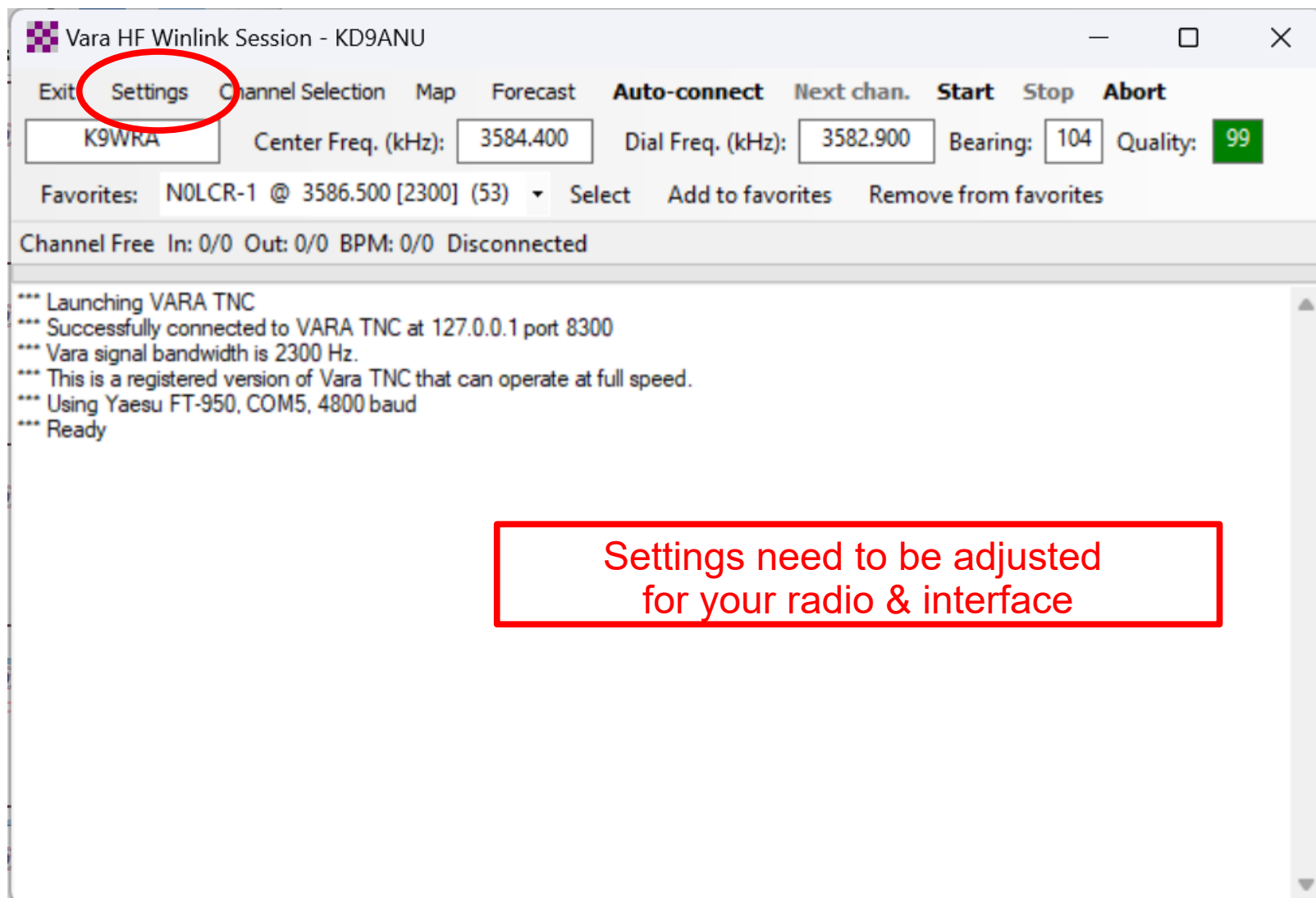


Settings need to be adjusted
for your radio & interface

Start SoundModem before opening Packet session
if using a sound card interface



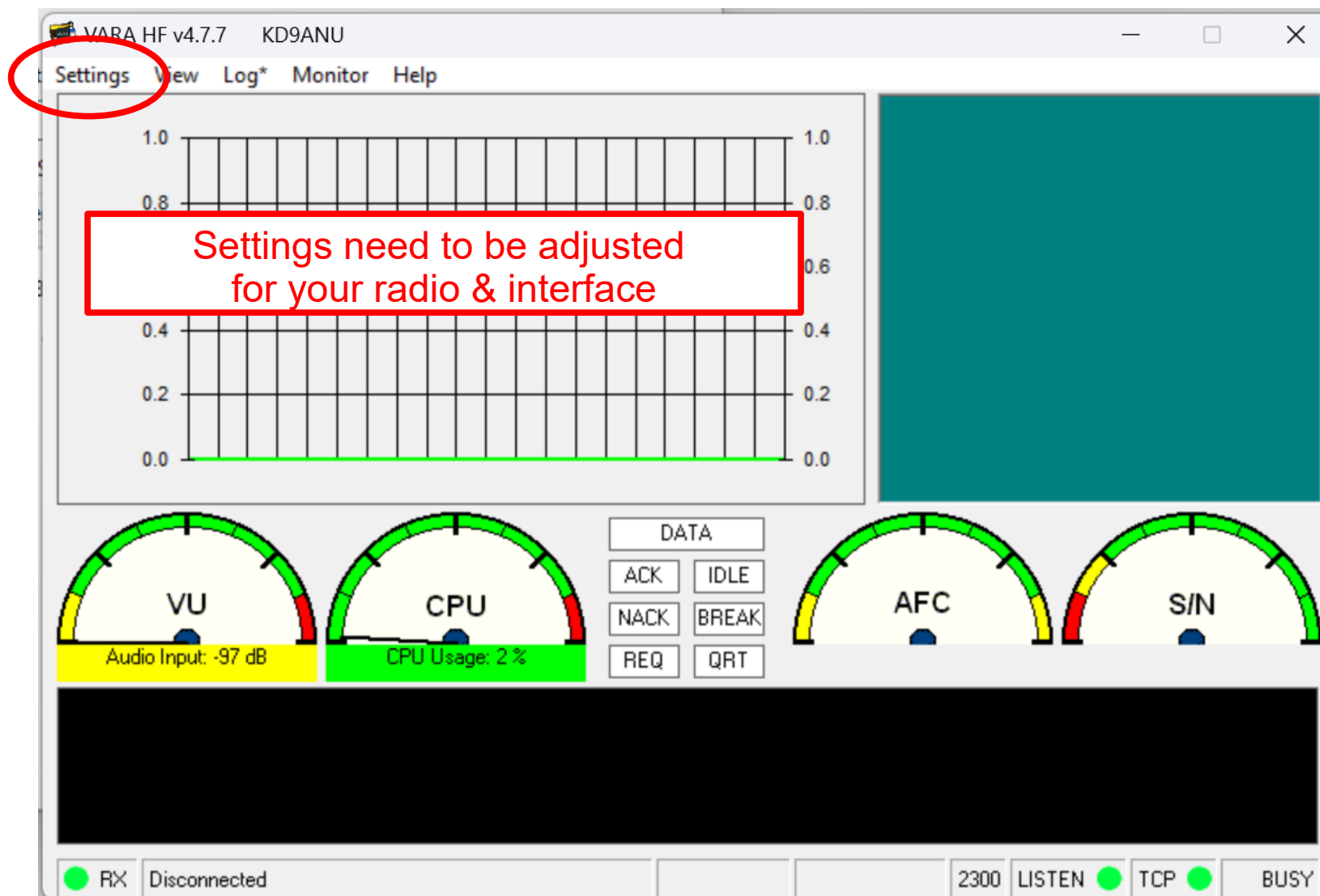
VARA HF Session Screen



Settings need to be adjusted
for your radio & interface



VARA HF TNC Screen





VARA-HF Channel Selection Tool

HF Channel Selector

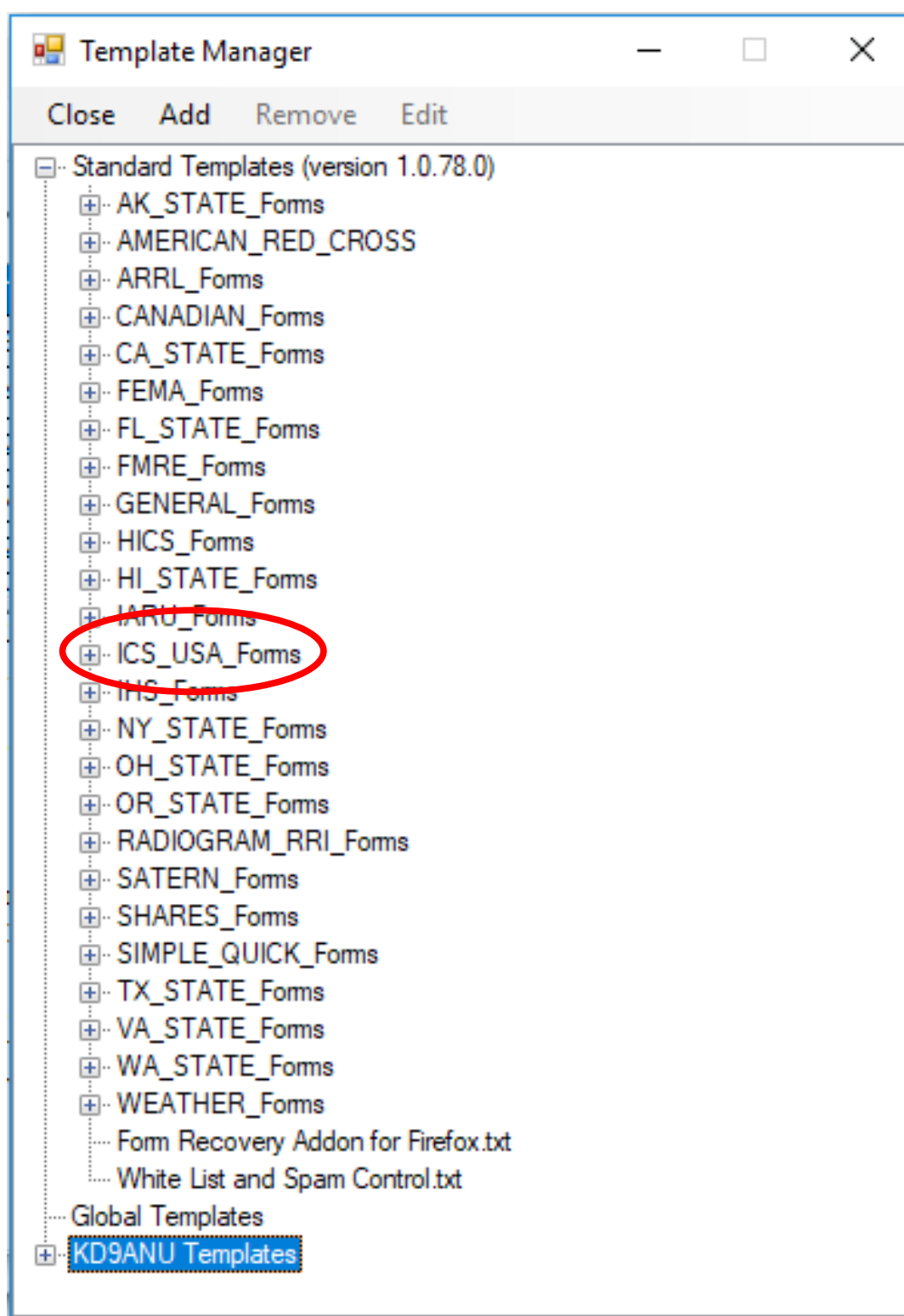
Select Channel **Update Via Internet** Update Via Radio Map Forecast SFI Exit All RMS

Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (mi)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
K9WRA	3586.800	V2300	EN50JS	00-23	PUBLIC	23	105	99	99
K9WRA	7103.800	V2300	EN50JS	00-23	PUBLIC	23	105	96	96
K9WRA	10146.300	V2300	EN50JS	00-23	PUBLIC	23	105	94	94
K9WRA	14096.400	V2300	EN50JS	00-23	PUBLIC	23	105	92	92
WW2MI	7103.600	V2750	EN82KR	00-23	PUBLIC	359	067	76	52
KN4MKB-10	7104.200	V2300	EM77VS	00-23	PUBLIC	359	125	77	52
KX8U-10	7106.500	V500	EM79TK	00-23	PUBLIC	294	108	73	51
AC8NP	7101.500	V2300	EN81JC	00-23	PUBLIC	335	085	75	51
W8GXR	7103.500	V2300	EM79TD	00-23	PUBLIC	302	111	74	51
N2GWK	7106.500	V500	EM77GU	00-23	PUBLIC	304	132	74	51
KB8AY	7101.500	V2750	EN82CI	00-23	PUBLIC	318	069	74	51
K4MSU	7102.500	V2300	EM56UO	00-23	PUBLIC	302	166	74	51
W6IDS	7061.500	V500	EM79NV	00-23	PUBLIC	258	103	71	50
AL0R	7102.000	V2300	EN11TH	00-23	PUBLIC	353	277	73	50
KB0WZI	7101.500	V2300	EM36JQ	00-23	PUBLIC	346	215	74	50
KB0WZI	7105.300	V500	EM36JQ	00-23	PUBLIC	346	215	74	50
KB0WZI	7102.500	V2300	EM36JQ	00-23	PUBLIC	346	215	74	50



Forms or Templates

(words used
interchangeably)





ICS213 Template (in Browser)

General Message (ICS 213)			
<input type="checkbox"/> THIS IS AN EXERCISE		Load ICS213 INITIAL Data	Form Instructions
1. Incident Name: <input type="text" value="Incident name is optional"/>			
2. To (Name/Position): <input type="text"/>			
3. From (Name/Position): <input type="text"/>			
4. Subject: <input type="text"/>		5. Date: <input type="text"/>	6. Time: <input type="text"/>
7. Message: <div>Be Brief and Concise</div> <div><div></div></div>			
8. Approved by: <input type="text"/>		8b. Position / Title: <input type="text"/>	
Optional Location Coordinates			
Latitude <input type="text" value="40.854167"/>	Longitude <input type="text" value="-89.625000"/>	MGRS <input type="text" value="Ex:11SNR0184195204"/>	Grid <input type="text" value="EN50EU"/>
<small>LAT/LON and MGRS default to the center of the grid square listed in Express Settings, unless a GPS is used or Lat/LON or MGRS are entered manually. For Winlink mapping and CSV export you must enter a latitude and longitude.</small>			
<input type="button" value="Submit"/> <input type="button" value="Save ICS213 INITIAL Data"/> <input type="button" value="Reset Form"/>			Ver 43.48



Winlink Support

- Good indexed Help within the Winlink Express program. TRY THIS!
- Winlink Book of Knowledge
https://winlink.org/content/winlink_book_knowledge
- Winlink Forum on Google Groups (text-searchable)
 - Named 'Winlink Programs Group'
 - <https://groups.google.com/g/winlink-programs-group>
- The San Diego ARES group has a series of short videos. Search for "San Diego Winlink Series youtube"
- Detailed Internet searches - may be a good way to find help for a specific radio and interface, if you include enough specifics in the search string.
- Ask other Winlink users



Reminders

- Log in and use regularly – after 400 inactive days your account is turned off – Contact an Admin to fix
- Winlink Express software updates automatically while open or when opened, also auto updates the Templates/Forms
- If your software becomes too far out-of-date, a full re-install is necessary
- You cannot send a Winlink message to your own Winlink address – such is rejected as a duplicate. Send messages to your personal Internet address for testing.



Take Aways

- Download Winlink Express Software onto your PC
- Create your Winlink Express Account
- Debug and practice using Telnet Mode (Internet)
- Later move to Winlink via Radio – VHF and/or HF
- Practice! Send messages to yourself & others
- Plenty of practice sessions exist – Talk to KD9ANU – Weekly Winlink Exercise – every Tuesday
- Use Help in Winlink Express, Book of Knowledge, & Google forum - Winlink Programs Group
- Post issues in the Google forum if you need help



Questions?



In Memory of Fritz Bock

WD9FMB-SK