



Presentation to LARG



Steve

N4RAF

20 May 23

What is Winlink?

- Winlink Global Radio Email® ...
- ...is a network of amateur radio and authorized government stations that provide worldwide radio email using radio pathways where the internet is not present.
- ...is an all-volunteer project of the [Amateur Radio Safety Foundation, Inc. \(ARSFI\)](#), a non-profit public benefit corporation with no beneficial owners.
- Aka Winlink 2000 Network
- <https://www.winlink.org/>



What is Winlink?

- Origins with sailing community in 1990s
- Worldwide radio email service that uses RF
 - HF
 - VHF/UHF
- Supports attachments, position reporting, weather and information
- Used for emergency and disaster relief comms
 - Some level of 'protection' since it isn't voice
 - Higher quality vs. voice
- No internet required
 - Using smart-network radio relays



Winlink Was There...

- Lives and property saved, damage mitigated and training, training, training: Why Winlink volunteers do what they do. Here is a sampling of events and incidents in which the system was significantly involved.
- [Winter 2021 Texas Freeze](#)
- [Fall 2020 Nationwide Red Cross Exercise](#)
- [Fall 2020 Ohio Military Reserve "Black Swan" Exercise IPAWS Demonstration](#)
- [2020 California Earthquakes](#)
- [2019 Citadel Rumble CA Exercise](#)
- [2019 Washington State EOC-EOC Exercise](#)
- [2019 Mexican wildfires,](#)
- <https://winlink.org/>

An [article](#) describing how radio amateurs can help fill the information "**donut hole**" by providing post-earthquake "did you feel it" ([DYFI](#)) reports via [Winlink](#) HF radio email appeared on February 22 in the American Geophysical Union (AGU) magazine *Eos*.



Users

- Amateur Radio Emergency Service® (ARES®)
- Radio Amateur Civil Emergency Services (RACES)
- American Red Cross
- Hospitals
- US Government – Dept of Homeland Security – FEMA
- MARS
- County Governments
- AT&T
- FedEx
- Us Hams



Terms and Definitions

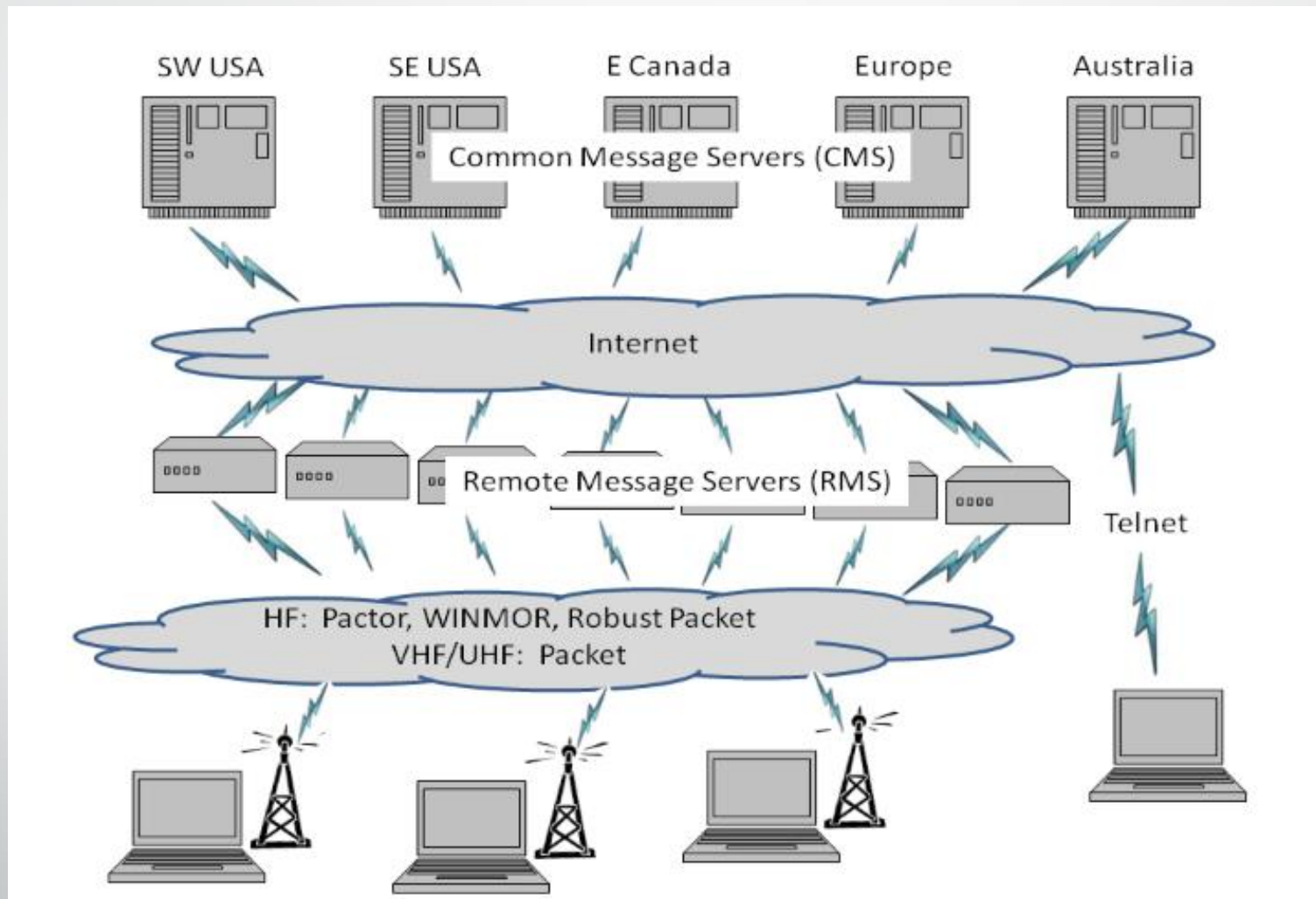
- Client stations (radio operators) connect by RF to an RMS.
- RMS: Radio Mail Server. An RMS Gateway is an RMS that is connected via the internet to the Common Message Server.
- CMS: Common Message Server. The CMS is the Winlink server that is situated in the 'internet'.
- Radio-Only Operation: This consists of RMS stations that can auto-forward by RF, independent of internet availability.
- Peer-to-Peer: Direct contact between two client stations.
- MID: Message ID. This is a unique alpha-numeric code (e.g. YFYJDP7P2GFJ) that is assigned to each message.





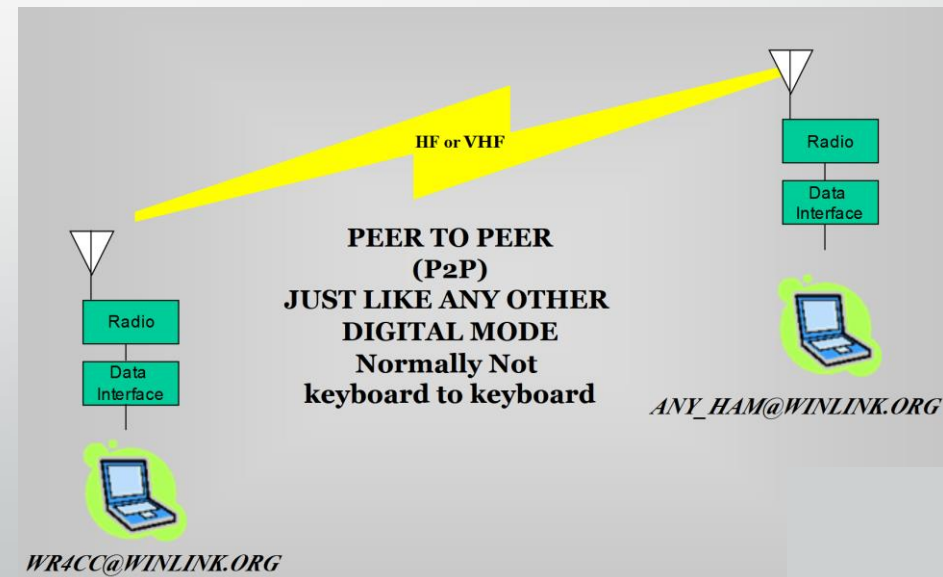
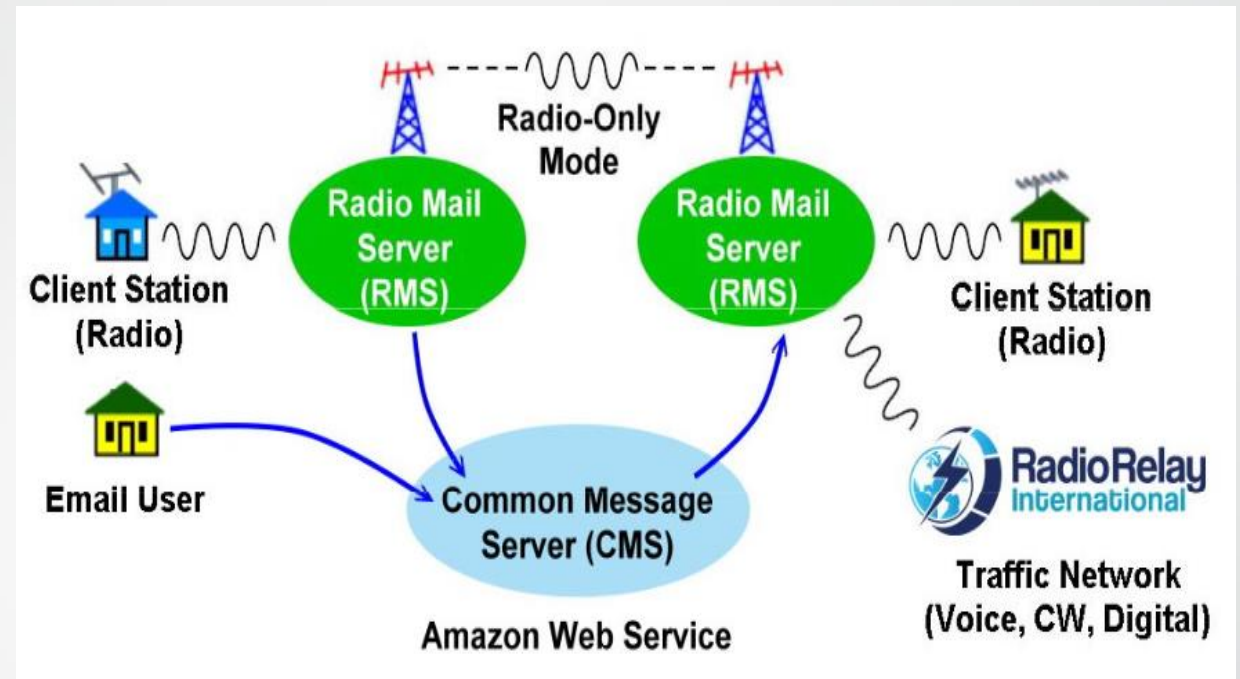
- CMS
- RMS
(gateway)
- Client
(you)

Architecture



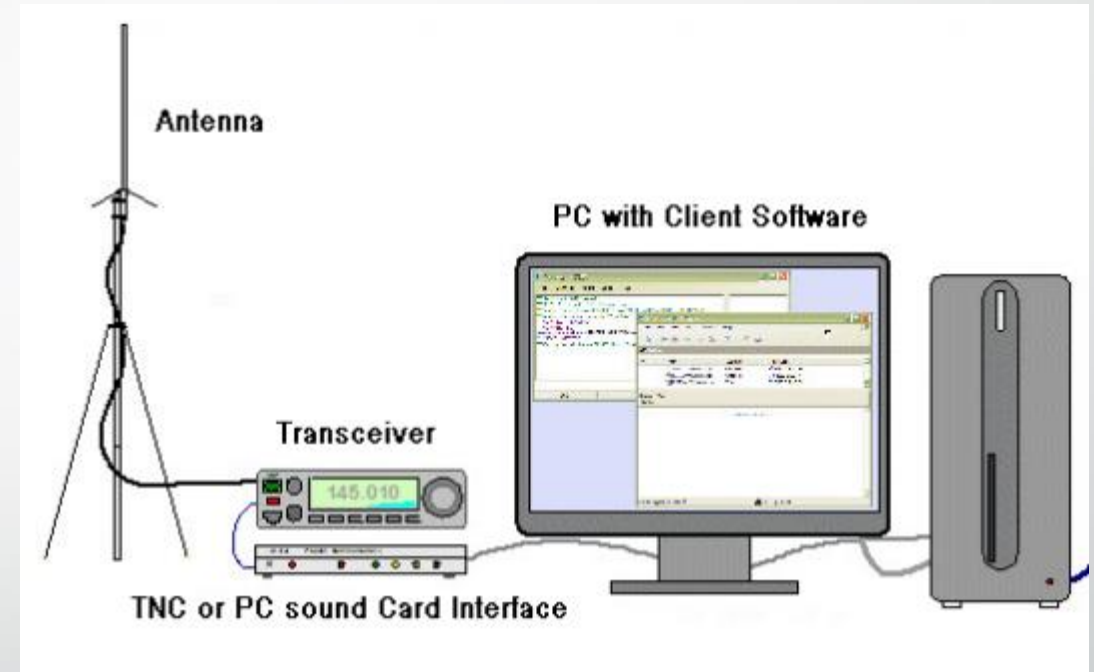
Paths

- CMS / RMS
 - Internet required
- Radio-Only Mode
 - No internet used
 - RMS to RMS
- Peer to Peer (P2P)
 - Direct user to user
- Mesh Networks
 - Wireless access points
 - Custom ham firmware
- Telnet
 - Direct to internet – skips radio



Shack Setup

- Radio / Antenna
- Audio Interface
 - TNC or PC sound card interface
- Computer
- Winlink software



Communications Protocols

- Telnet
- Packet
- Pactor
- Ardop
- VARA
- Iridium GO
- AX.25 (VHF/UHF)

Telnet Winlink
Packet Winlink
Pactor Winlink
Robust Packet Winlink
Ardop Winlink
Vara HF Winlink
Vara FM Winlink
Iridium GO Winlink

Packet P2P
Pactor P2P
Robust Packet P2P
Ardop P2P
Vara HF P2P
Vara FM P2P
Telnet P2P

Pactor Radio-only
Vara HF Radio-only
Vara FM Radio-only
Telnet Radio-only

Telnet Post Office



Winlink Tools – Traffic Activity

Live System Information

[RMS Map](#)
[RMS List](#)
[Cnx Map](#)
[Prop Map](#)
[CMS Status](#)
[Traffic](#)
[RMS Ver](#)

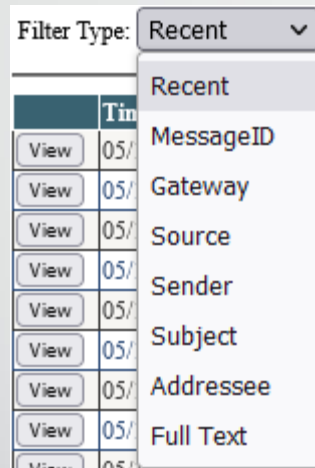
- Apr 2023 – 92,804 msgs
- Vara most popular
- Avg size: 6,652 Bytes

Winlink Message Activity (Worldwide)	Apr 2023	May 2023
HF Activity		
Pactor 1	11	0
Pactor 2	91	57
Pactor 3	1,404	670
Pactor 4	2,909	1,201
Robust Packet	8	2
ARDOP 200	0	0
ARDOP 500	138	97
ARDOP 1000	0	0
ARDOP 2000	47	82
VARA	7,899	4,581
VARA 500	3,278	1,516
VARA 2750	3,418	2,059
Total Connections	19,203	10,265
Total Messages Received	28,596	13,576
Total Messages Sent	33,296	16,126
Message Size Accumulation	411,678 KB	194,773 KB
Average Message Size	6,652 Bytes	6,558 Bytes
FM Activity		
ARDOP 2000 FM	0	0
VARA FM	9,020	4,160
VARA FM WIDE	25,130	10,294
Packet Activity		
Messages Received	9,043	4,270
Messages Sent	10,263	5,254
APRS Gateway Activity		
Messages Received	95	55
Messages Sent	81	42
WebMail Activity		
Messages Received	7,164	3,147
Messages Sent	4,266	1,309
Total Message Activity	92,804	43,779



Winlink Message Viewer

- Saved 21 days
- Searchable



- ...assist users with US FCC amateur radio rules compliance
- https://winlink.org/content/us_amateur_radio_message_viewer

Filter Type: Addressee Search for: n4raf Limit to: 100 records Search [100] Winlink Global Radio Email

	Timestamp	Callsign	Gateway	CMS	Source	Sender	Subject	Size	Attch	Frequency	Client
View	05/14/23 21:43	K3BRT	W7YAM	CMS-B	W7OWO	W7OWO	Call For Check-Ins - YCARES Winlink...	3676	0	144.920 MHz	Express
View	05/14/23 21:43	K3BRT	W7YAM	CMS-B	W7OWO	YCARES-NCS	Participant Roster - YCARES Winlink...	13372	0	144.920 MHz	Express
View	05/14/23 21:25	KY4G	KY4G	CMS-A	W7OWO	W7OWO	Call For Check-Ins - YCARES Winlink...	3676	0	145.090 MHz	Express
View	05/14/23 20:23	K8EAF	W1SCR	CMS-B	W7OWO	YCARES-NCS	Participant Roster - YCARES Winlink...	13372	0	144.950 MHz	Express
View	05/14/23 20:22	K8EAF	W1SCR	CMS-B	W7OWO	W7OWO	Call For Check-Ins - YCARES Winlink...	3676	0	144.950 MHz	Express
View	05/14/23 19:49	WV7S	W7PLC	CMS-B	W7OWO	W7OWO	Call For Check-Ins - YCARES Winlink...	3676	0	145.035 MHz	Express
View	05/14/23 17:32	AC6DF	N7LOB	CMS-A	W7OWO	W7OWO	Call For Check-Ins - YCARES Winlink...	3676	0	7.102 MHz	Express
View	05/14/23 17:25	HB9HJU	HB9AK	CMS-B	W7OWO	W7OWO	Call For Check-Ins - YCARES Winlink...	3676	0	438.075 MHz	Express
View	05/14/23 16:44	KD2LQA	VE3WLR	CMS-B	WV8MT	WV8MT	WV Winlink Net Roster 5/11/23 ****...	4374	0	10.134 MHz	Express
View	05/14/23 16:29	AE7TM	W7BVT	CMS-B	W7OWO	W7OWO	Call For Check-Ins - YCARES Winlink...	3676	0	145.020 MHz	Express
View	05/14/23 15:51	W4PPC	N4HSV	CMS-A	W7OWO	W7OWO	Call For Check-Ins - YCARES Winlink...	3676	0	145.090 MHz	Express

Selected Message: Call For Check-Ins - YCARES Winlink Net - May 14, 2023 - Session 259 ☐ Show Message Header

Attn: YCARES Winlink Net Group;

Good Morning Everyone, Happy Mothers Day!

This is Sunday, May 14, 2023 and the Session 259 of the YCARES Winlink Net call for check-ins.

* * * *

No special Check-In text or format is expected this week. The standard one line check-in in a plain text message or Winlink Check In Form is acceptable.

* * * *

You have through end of day Friday, May 19, 2023, to provide a response to be considered as a check-in within the Weekly Roster, though I will attempt to add late check-ins onto the map. As always, all forms of check-in will be accepted and training tasks are optional, but please provide the details requested for your chosen Winlink Session mode. You can follow as an example, my check-in, displayed as the last line of this email.



Software Options

Programs	Outpost	AirMail	WoAD	Pat	RadioMail	Paclink-Unix	Paclink	Winlink Express
Supported OS, CPU	Any	Win95 & up	Android 4.1 & up	Linux, Mac OSX, Android Win64/32	iOS	Linux, FreeBSD, x86, x86_64, MIPS, ARM	Windows 8 & up	Windows 8 & up
Recommended uses	Single-user,	Single-user,	Single-user, Routine, EmComm	Single-user,	Single-user	Casual single-user,	Single-user,	Single-user,
	EmComm on packet networks	Routine,		Limited EmComm		Limited EmComm	Multi-user,	Multi-user/multi-account,
		Maritime					Routine,	Routine,
							EmComm	Maritime,
								EmComm
Tactical address support	Yes	No	Yes	Yes	Yes	No	Yes	Yes
TELNET	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AX.25 PACKET	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ARDOP	No	No	Yes	Yes	No	No	No	Yes
VARA HF and VARA FM	No	No	Yes, limited	Yes, limited	Yes, limited	No	No	Yes.
Peer-to-peer contacts	Yes	Yes	Yes	Yes	Yes, outbound	No	No	Yes



How Does It Work?

- Just like any email client you use
 - But a few extra steps
- Attachments
 - Size should be limited
 - At 300 baud (typical HF rate) or 1200 baud on VHF can take a while
 - 89kb
 - VHF - 1 minute
 - HF - 9+ minutes
 - f(signal quality)
- HTML forms



Winlink Account

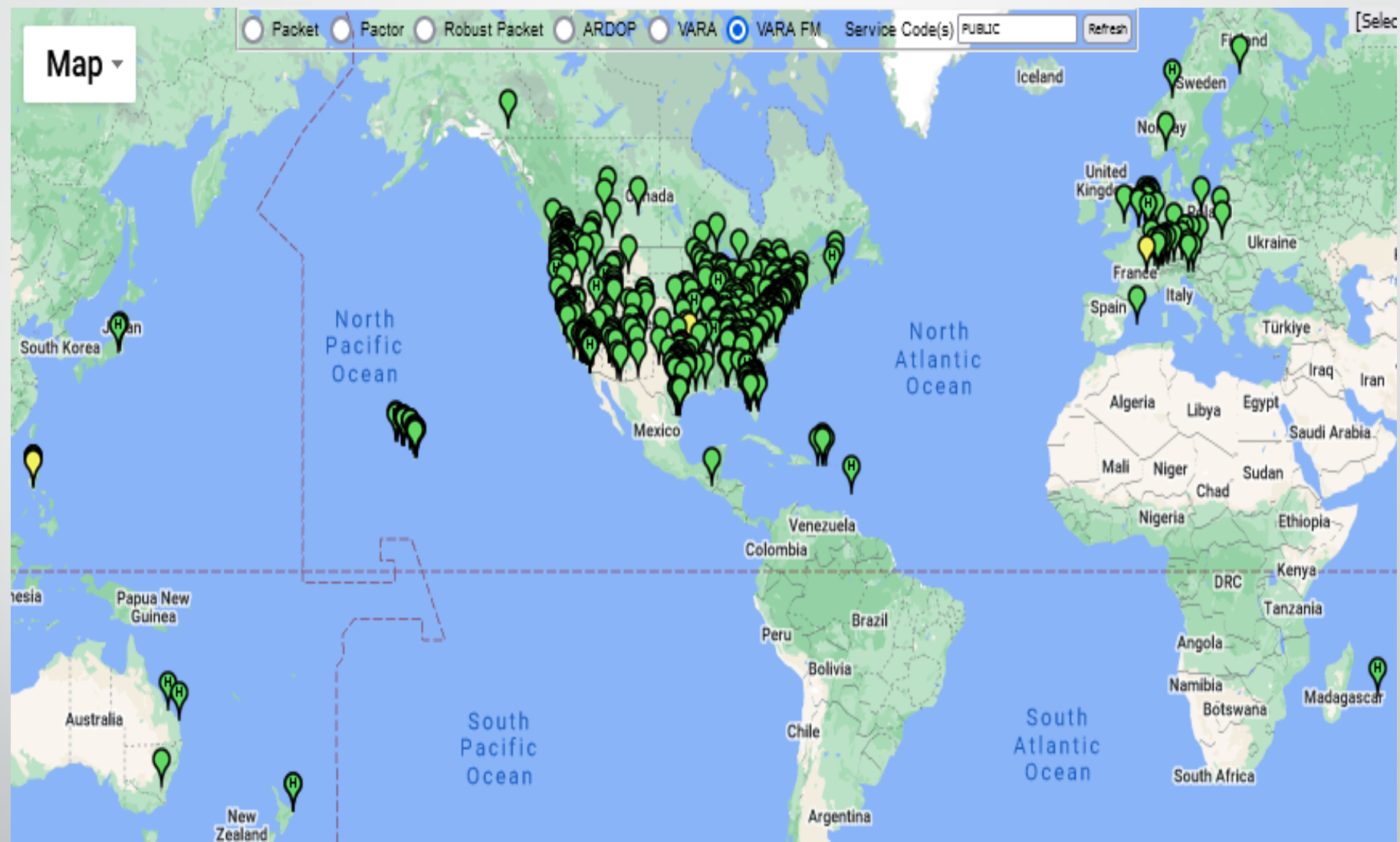
- Download and install Client software
- Winlink Express
 - Normally when starting for the 1st time
- Others follow their instructions
- Email account: callsign@winlink.org
- <https://winlink.org/user>



RMS – VARA Map

- VARA displayed
- Others selected from menu at top of map

• <https://winlink.org/RMSChannels>



RMS – Vara Map – Local

- HF RMS nodes
- 'H' markers - Winlink Hybrid Network participants. They offer RF message forwarding if local internet links are not available.



Gateway Channel Information

Hybrid network participant — forwards traffic automatically via RF

Callsign: N2LEE

Frequency: 3595.000 KHz

Gridsquare: FM18HX

Antenna: Omni

Operating Mode: VARA / VARA

Operating Hours: 00-23

Last Status Received: 2023-05-14 18:09 -04:00

Comments:



Costs

- Winlink Express maintained by the Amateur Radio Safety Foundation:
 - Free
 - \$24 to support but not required
 - Donate to support
- All others: Free
- Vara:
 - Free – limited data rate
 - \$69 – Unlimited data rate



Encryption

- Yes per your radio service in the your country
- MARS and SHARES – yes
- US 'amateur' radio – no
- However, since it's beeps and squeaks, a bit more sophistication is needed to listen in
 - Hence why American Red Cross in MD likes to use it as it affords a bit more privacy



RMS Express Forms







- HTML Form and Template Set
- A full form set has three components:
 - A template that displays the form and generates the text message to be sent.
 - An input form that solicits input from the user.
 - A display form that formats and displays the information on the recipient's computer.
- Input from a form is encapsulated in a compact XML file attached to the message.
- The actual form HTML is not transmitted.
- Input and display forms may be large, but the actual data transmitted is very compact.
- Receiving station must have the display form installed.



- ▼ Standard Templates
 - AK_STATE_Forms
 - AMERICAN_RED_CROSS
 - ARRL_Forms
 - > CA_STATE_Forms
 - CANADIAN_Forms
 - FEMA_Forms
 - FL_STATE_Forms
 - FMRE_Forms
 - GENERAL_Forms
 - HI_STATE_Forms
 - HICS_Forms
 - IARU_Forms
 - ICS_USA_Forms
 - IHS_Forms
 - NY_STATE_Forms
 - OH_STATE_Forms
 - OR_STATE_Forms
 - RADIOGRAM_RRI_Forms
 - SATERN_Forms
 - SHARES_Forms
 - SIMPLE_QUICK_Forms
 - TX_STATE_Forms
 - VA_STATE_Forms
 - WA_STATE_Forms
 - WEATHER_Forms

WINLINK RMS Express Forms

Files common to all Forms

-  SATERN_ICS213_Initial.html
-  SATERN_ICS213_Initial.txt
-  SATERN_ICS213_Initial_Viewer.html
-  SATERN_ICS213_SendReply.0
-  SATERN_ICS213_SendReply.html
-  SATERN_ICS213_SendReply_viewer.html

Precedence Routine	Org Station	Org Location	Time 17:47 Z	Date 2018-09-21 Z
Salvation Army Team Emergency Radio Network				
SATERN General Message ICS213				
1. Incident Name: <input type="text"/>				
2. To: <input type="text"/>				
Phone: <input type="text"/> Email: <input type="text"/> Town, State, Country: <input type="text"/>				
3. From: <input type="text"/>				
Phone: <input type="text"/> Email: <input type="text"/> Town, State, Country: <input type="text"/>				
4. Subject: <input type="text"/> 5. & 6. Date/Time: <input type="text"/> <small>(Click for UTC Date/Time)</small>				
7. Message: <input type="text"/>				
8. Sent By: <input type="text"/> <small>Call sign</small> Operator Name: <input type="text"/>				
<input type="button" value="Submit"/> <input type="button" value="Reset Form"/> Version 1 WASEEZ				

American Red Cross - GENERAL MESSAGE		Vers 16
DR # <input type="text"/>	Msg # <input type="text"/> <small>(Call sign)-(SeqNum)</small>	Incident Name <input type="text"/>
To (Name/Position) <input type="text"/>		
From (Name/Position) <input type="text"/>		
Subject <input type="text"/>		Date/Time <input type="text"/> <small>(Click to Add Date/Time)</small>
Message <input type="text"/>		
Approved By <input type="text"/>		Position/Title <input type="text"/>
<input type="button" value="Submit"/> <input type="button" value="Reset Form"/>		

ARRL - the National Association for Amateur Radio RADIOGRAM NTS - RRI Text Creator Vers 29 Has been replaced, read below.
The form has a new file name: Amateur Radio RADIOGRAM Text Creator
It is located in its own folder: RADIOGRAM_RRI_Forms
Go to that folder and click on: Radiogram_Initial.txt If you had the previous form set as a "favorite" you will need to change it.
Many updates and changes to allow the form to be acceptable for NTS or RRI entry. Contact Steve KB1TCE@winlink.org with comments and questions.
7/9/18 Form Writer KG6SJT 5/19/2023

Solar-Terrestrial Data
 18 May 2023 0027 GMT
 SFI: 138 SN: 106
 A-Index: 5
 K-Index: 1
 X-Ray: C1.2
 304A: 140.1 @ SEM
 Calculated Conditions

Band	Day	Night
80m-40m:	Fair	Good
30m-20m:	Good	Good
17m-15m:	Good	Good
12m-10m:	Fair	Poor
Signal Noise:	S0-S1	

 Click to Install Solar
 Data on your Web Site
<http://www.k0qgh.com>
 Copyright Paul L. Herrman 2023

Home of the Original



QRZ call sign lookup:
 Search

Winlink Wednesday
 Current P2P dial frequency:

VARA HF P2P
KN4LQN 3582 kHz
KN4LQN 14087 kHz
KE4KEW 3565 kHz
KM4DC 3593 kHz
W4RJG 7111 kHz

[Winlink Wednesday Change Notices](#)
 (updated 10/01/2021)

Current Week's
[Net Reminder](#)
 (updated for 05/17/2023)

Winlink Wednesday:

Winlink Wednesday Current Week's Participant Map (by KW4SHP - updated through 05/10/2023)	Winlink Wednesday Current Week's Net Report and Roster (PDF) (by KN4LQN - updated through 05/10/2023)	All About Winlink Wednesday (PDF) (updated 10/27/2021) ICS-213 Check-in Instructions (PDF) Third Wednesdays (updated 01/22/2023)
Winlink Wednesday Historical Stats Map (by KW4SHP - updated through 05/10/2023)	Winlink Wednesday Check-In History (Century Club tracking) (by KN4LQN - updated through 05/10/2023)	Winlink Wednesday Growth Chart (updated through 05/10/2023)
Winlink Wednesday Century Club Roster (updated through 05/10/2023)	Training Videos (updated 05/10/2021)	KW6GB's Winlink Blog (updated 11/17/2021)
EA5HVK Weak Signals Software Home of VARA software	Virginia EmComm Facebook Group	Winlink Wednesday mailing list Googlegroups

Radio Aids:

Amateur Radio Band Chart	Winlink RMS Channels	FCC Part 97 Rules
Wallops Island Dynasonde	VOACAP HF Propagation Predictor	Wallops Island Digisonde Historic Plots
FCC License Search	Grid Square Locator (levine - by address, call sign, grid)	Ham Band Characteristics
Available Vanity Call Signs	Grid Square Locator (karhukoti - point and click, other methods)	Introduction to Winlink YouTube Video
Amateur Radio License Map (find others near you)	RepeaterBook	RF Line-of-Sight Map
National Interoperability Field Operations Guide (NIFOG)		

<https://winlinkwednesday.net/>

5/19/2023

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What is Winlink Wed

- Weekly amateur radio digital net where check-ins are via Winlink
- Purpose – practice using Winlink
- Supports Virginia EmComm activities
- HF and VHF/UHF
- Formats
 - Standard --- N4RAF, Steve, Leesburg, Loudoun, VA (HF P2P)
 - Weather report --- above plus 'rock is wet and swinging'
 - ICS-213
- Peer-to-Peer



Peer-to-Peer

Morning session:

0730 - 0930 ET, ARDOP P2P, 3582 kHz (dial).

Evening session:

1900 - 2130 ET, VARA P2P, 3582 kHz (dial).

**Winlink Wednesday
Current P2P dial frequency:**

ARDOP P2P
KN4LQN 3582 kHz
KN4LQN 10143 kHz

**Winlink Wednesday
Current P2P dial frequency:**

VARA HF P2P
KN4LQN 3582 kHz
KN4LQN 14087 kHz
KE4KEW 3565 kHz
KM4DC 3593 kHz
W4RJG 7111 kHz



Worldwide

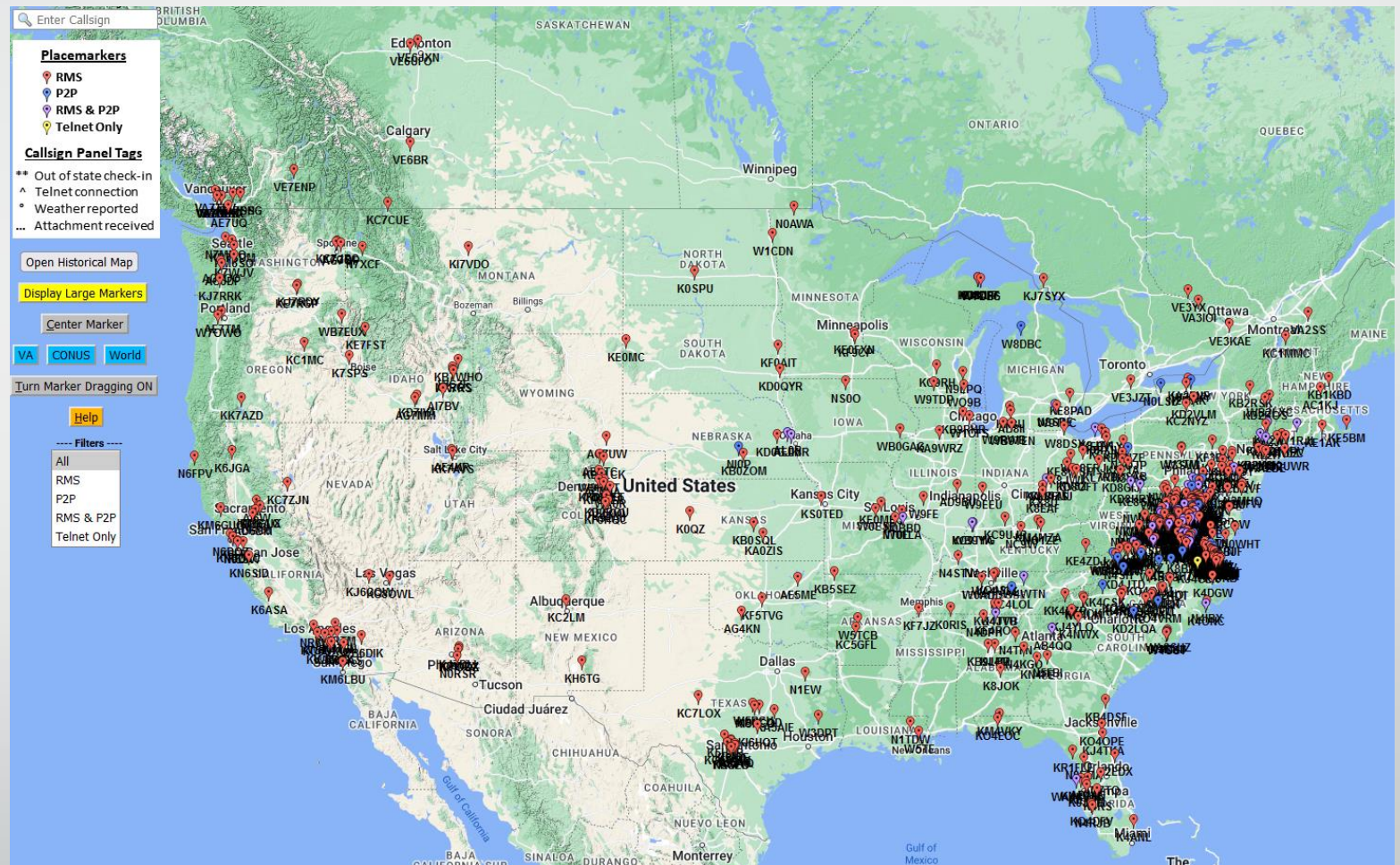


Winlink Wed Results

WW World Stats

#348 -- 05/10/2023

Type	Total
RMS or P2P:	550
Plotted:	550
All RMS:	512
RMS only:	456
All P2P:	92
P2P only:	36
Both RMS & P2P:	56
Telnet:	3
Weather:	0
Attachments:	0





WinLink Express

Winlink Express Landing Window

Winlink Express 1.7.6.0 - N4RAF

N4RAF

Settings Message Attachments Move To: Saved Items Delete Open Session: Vara HF Winlink Logs Help

No active session...

System Folders

Inbox (18 unread)

Read Items (0)

Outbox (0)

Sent Items (123)

Saved Items (61)

Deleted Items (0)

Drafts (0)

Personal Folders

MD WinLink Challenge (16)

WinLink Wed (1)

Global Folders

Contacts

AB3E

AC3EW

BLACK08UFO@GMAIL.COM

EADC@MAIL.COM

K0RVW

K3STE

KB3FIO

KB3SPH@ARRL.NET

KC3MBE

KC3PRI

KC3TAM

KC3UMN

KC3VAF

KE4KEW

KI5QXJ

KKUENY@YAHOO.COM

KM4DC

KN3U

KN4LQN

KO4OZJ_CHRIS

KQ4EPK_KEN

MDCWINLINK-1

MIKE_K3MMM

N3HU

N3HU-9

N3LSB

N3XL

N9EBJ

NCGCR-RAY

QTH

QUERY@SAILDOCS.COM

SANDY_KB3EOF

WA4KBM_KEVIN

W13J

WV8MT

YCARES-NCS

ZOLTAN.HORVATH@MAXAR.COM

	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
	2023/05/16 2...	QKZQYQIMV...	85289	SMTP	SMTP:black0...	N4RAF	HF Test Image
	2023/05/16 23:28	ZU6KMFJ89IYD	85294	SMTP	SMTP:black08f...	N4RAF	VHF Test Image
	2023/05/16 2...	6Q4B2KP8D4Y1	5215	N3XL	N3XL	AA3WS...	MDC Section Winlink/VarAC Challenge, 8-12 June 2023
	2023/05/16 12:50	PZ04CAZMNO2	2777	KN4LQN	KN4LQN	SMTP:kn4lqn@a...	Winlink Wednesday Reminder (#349)
	2023/05/14 0...	Y7D614XIOX6U	1454	W7OWO	W7OWO	AC6DF...	Call For Check-Ins - YCARES Winlink Net - May 14, 2023 - Session 259
	2023/05/13 1...	PVPZFHYOU...	4456	W7OWO	YCARES-NCS	AC6DF...	Participant Roster - YCARES Winlink Net - May 07, 2023 - Session 258
	2023/05/13 0...	3T9J7WKJO...	1866	WV8MT	WV8MT	AE0NR...	WV Winlink Net Roster 5/11/23 *****NO NET NEXT WEEK*****
	2023/05/11 0...	6IH9E59IQ32M	1108	WV8MT	WV8MT	AE0NR...	WV Winlink Net Reminder 5/11/23
	2023/05/10 1...	LAFASGDB0E...	701	N3XL	N3XL	AA3WS...	MAP: MDC Check-in Exercise, 9 May 2023
	2023/05/10 1...	OPGK1W7ZM...	1361	N3XL	N3XL	AA3WS...	Report: MDC Section Winlink Check-in May 2023
	2023/05/10 1...	3P74S72U74P4	11511	N3XL	N3XL	AA3WS...	REPORT: MDC Section Winlink/VarAC Challenge, 4-9 May 2023
	2023/05/09 1...	MUXTGP1WZ...	2608	KN4LQN	KN4LQN	SMTP:kn4lqn...	Winlink Wednesday Reminder (#348)
	2023/05/08 0...	CIOVCA32G9ZC	1419	N3XL	N3XL	AA3WS...	REMINDER: MDC Section Winlink Check-in Exercise, Tues, 9 MAY 2023
	2023/05/08 0...	RC5YDLTRF...	13152	N3XL	N3XL	AA3WS...	MDC Winlink/VarAC Challenge Daily Breakout Spreadsheet - Correction
	2023/05/07 21:08	RG0922RZGLG1	2982	KB3EOF	KB3EOF	N3LSB...	ICS 205 - Frederick County EC Radio Plan - 2022-12-17 09:12
	2023/05/07 0...	L1551MQ07INL	1420	W7OWO	YCARES-NCS	AC6DF...	Call For Check-Ins - YCARES Winlink Net - May 07, 2023 - Session 265
	2023/05/06 1...	YEE546T7LD...	4834	W7OWO	YCARES-NCS	AC6DF...	Participant Roster - YCARES Winlink Net - Apr 30, 2023 - Session 257
	2023/05/06 09:43	CAZ8BT9TL10E	1699	WV8MT	WV8MT	AE0NR...	WV Winlink Net Roster 5/4/23

Message ID: 33KFXVW5Q137

Date: 2023/03/30 00:09

From: K3MMM

To: N4RAF

Source: K3MMM

Downloaded-from: RMS:KF3AK-10

Location: 39.729167N, 77.375000W (GRID SQUARE)

Subject: Re:Access to W8IS

It may not be you - I can't get to either of my normal VHF stations this evening, neither W8IS nor KF3AK. You could try N3HYM-10 via N3YM-11 on 145.09 - the -11 is on Braddock and is digipeat only. Or maybe Rockville WM3M-10 direct, also on 145.09. Of course, HF exists - slower, yet many many more choices out there.

Cheers!
Mike

----- Message from N4RAF sent 2023/03/29 10:49 -----

Message ID: ARL34W8OWRH5

Date: 2023/03/29 10:49

From: N4RAF

To: K3MMM

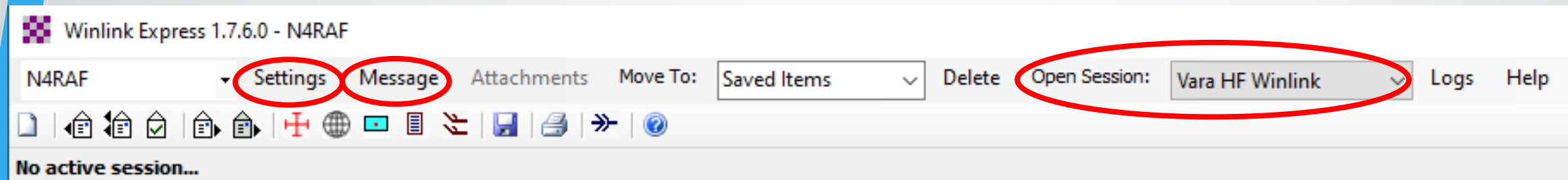
Source: N4RAF

Location: 39.187500N, 77.541667W (GRID SQUARE)

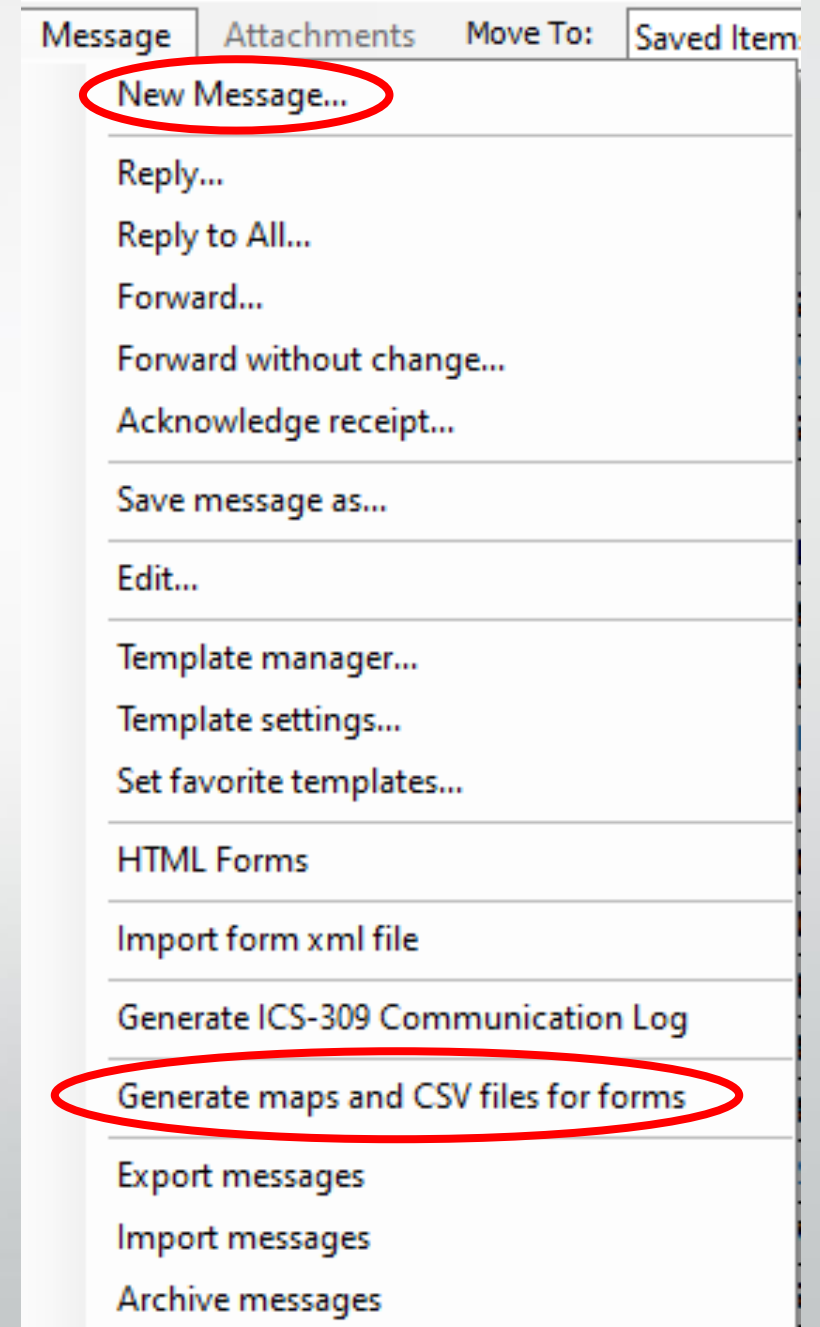
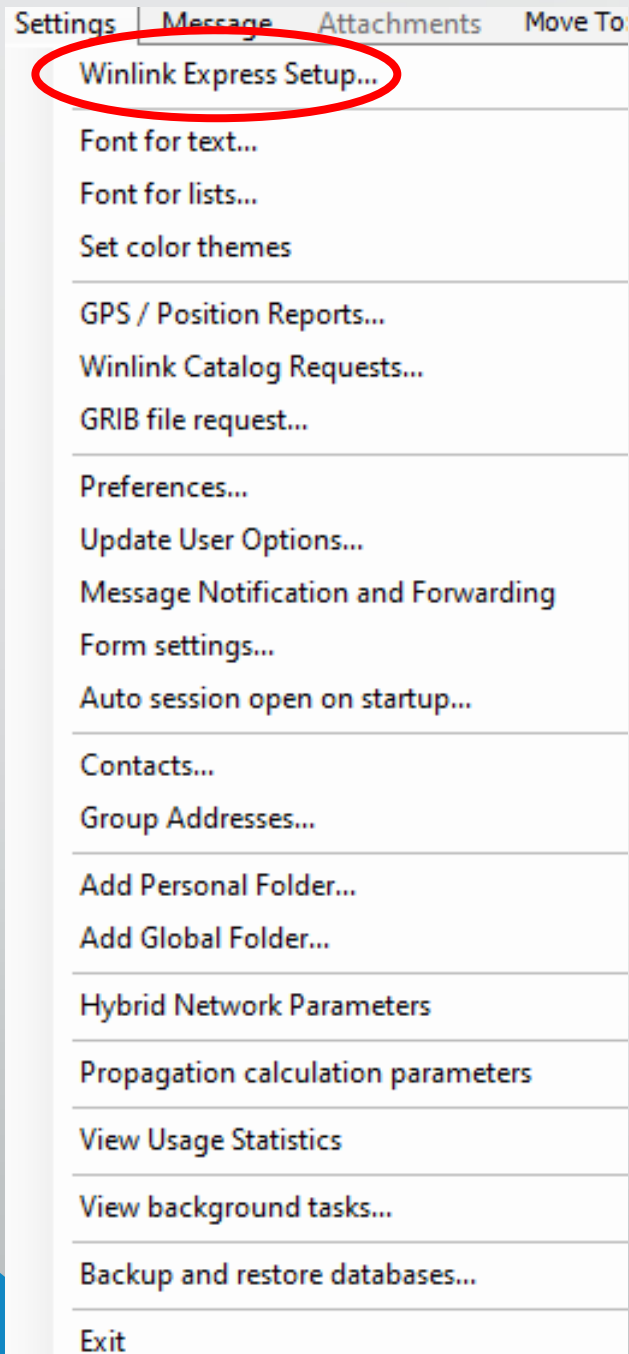
Subject: Access to W8IS

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Top Tool Bar



Settings & Message




Generate Maps

 Maps and CSV/KML Files for Forms

Select form:

Number of stored reports: 88

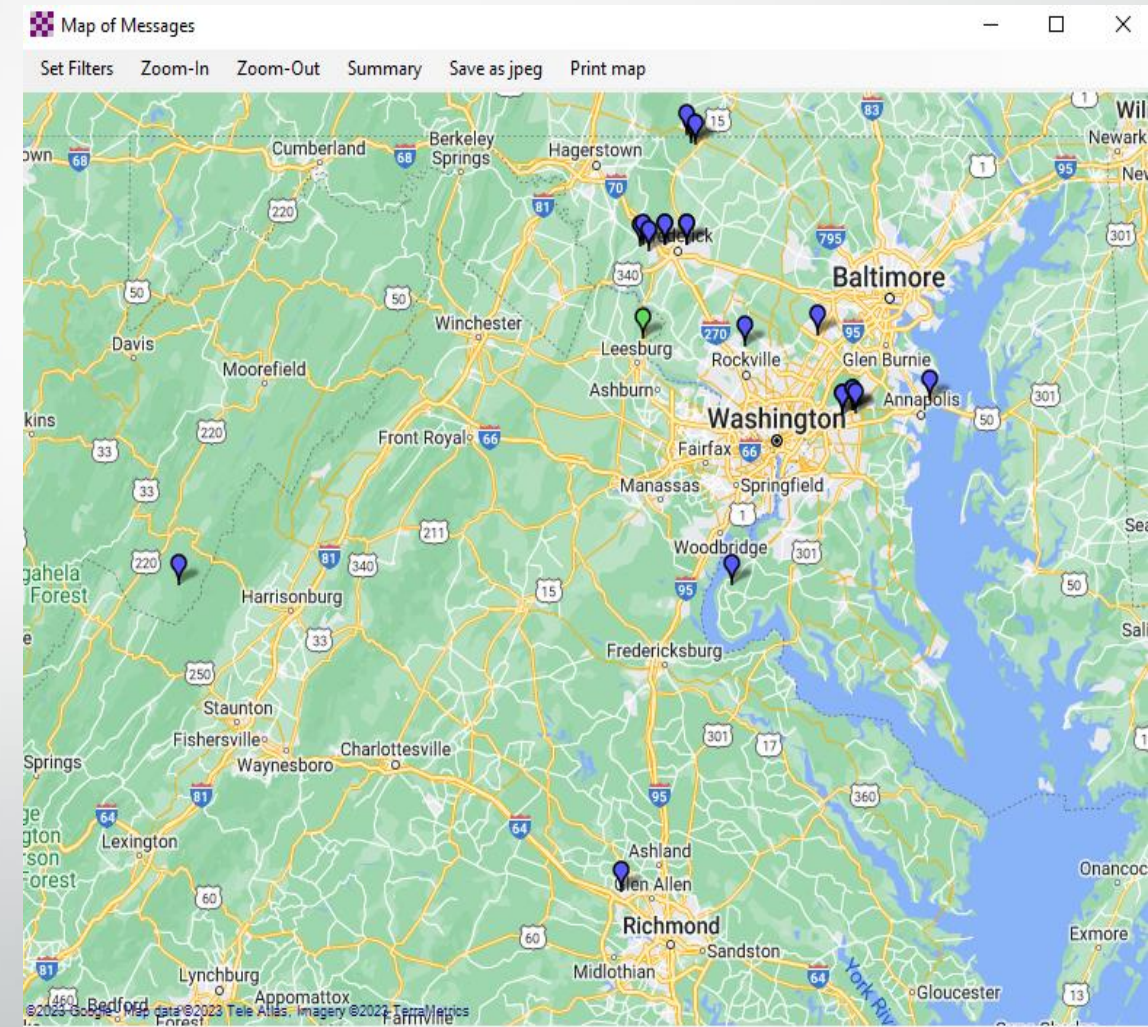
Map provider:



Form Report Management

Delete reports older than this many days:

Export and Import Form Data



Winlink Express Setup



Download and Install

- Winlink Express

- <https://downloads.winlink.org/User%20Programs/>

5/21/2018	6:55 PM	626	Latest VARA Modem download site.rtf
7/19/2018	6:23 AM	1846835	Paclink install 4-3-11-0.zip
5/21/2018	6:55 PM	1132	README Software Install Instructions.txt
11/20/2020	9:22 AM	847697	RMS Link Test install 2-0-24-0.zip
5/21/2018	6:55 PM	12176	SCS PTC-IIIusb and end of PTC-IIusb IIpro IIex.pdf
4/14/2023	6:45 AM	39941650	Winlink Express install 1-7-6-0.zip

- VARA HF and VARA VHF


- <https://rosmodem.wordpress.com/>

EA5HVK software

10 January, 2011

 [VARA HF v4.7.6 \(High Performance HF Modem\)](#)

 [VARA FM v4.2.9 \(VARA for FM transceivers\)](#)

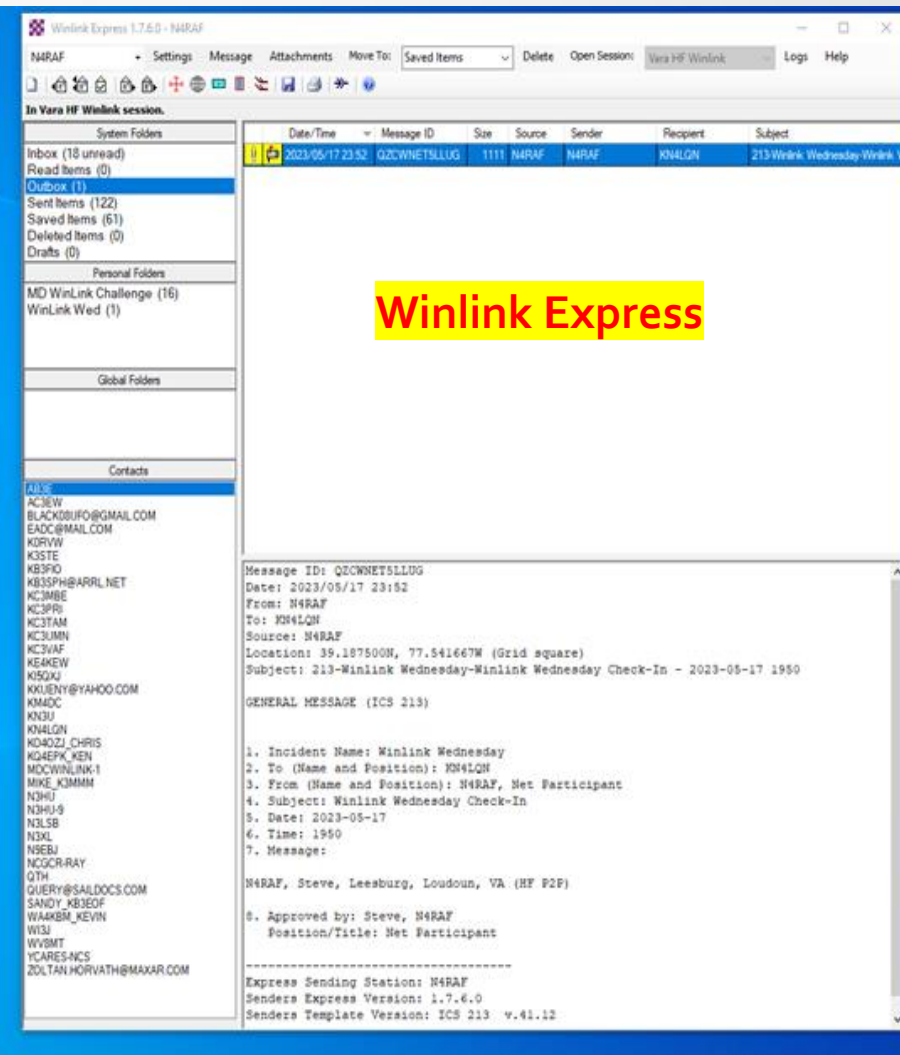
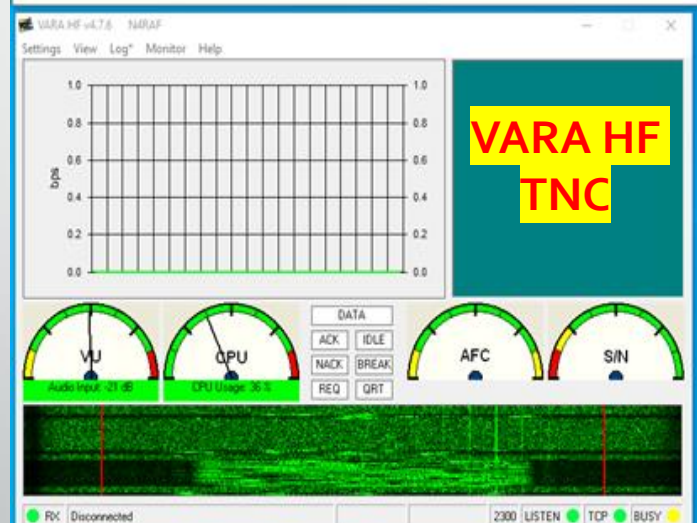
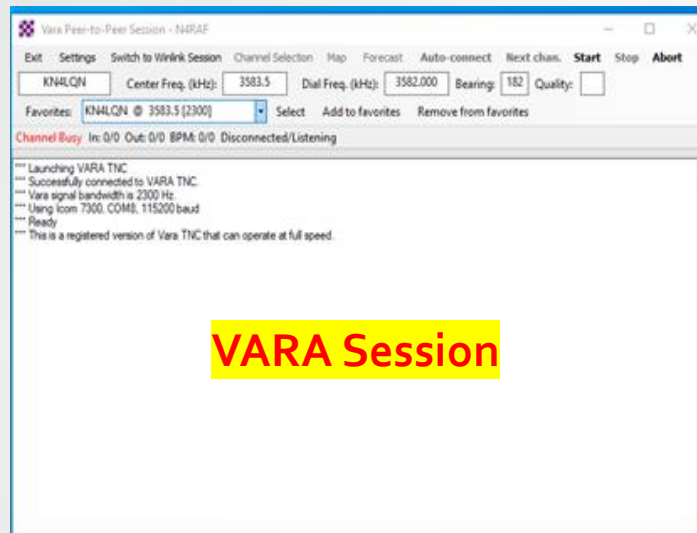
 [VARA SAT v4.3.6 \(VARA for QO-100 geostationary SAT\)](#)

 [VARA Chat v1.3.4 \(Easy Text and File transfer chat\)](#)



Winlink Express Initial Setup

- 3 Main Windows
 - WinLink Express
 - Vara HF Winlink Session (click open session)
 - Vara
- Setting in Winlink Express
 - Basic User Info
- Setting in Session
 - Vara TNC Setup
 - Radio Setup
- Settings in VARA HF
 - VARA Setup
 - Sound Card

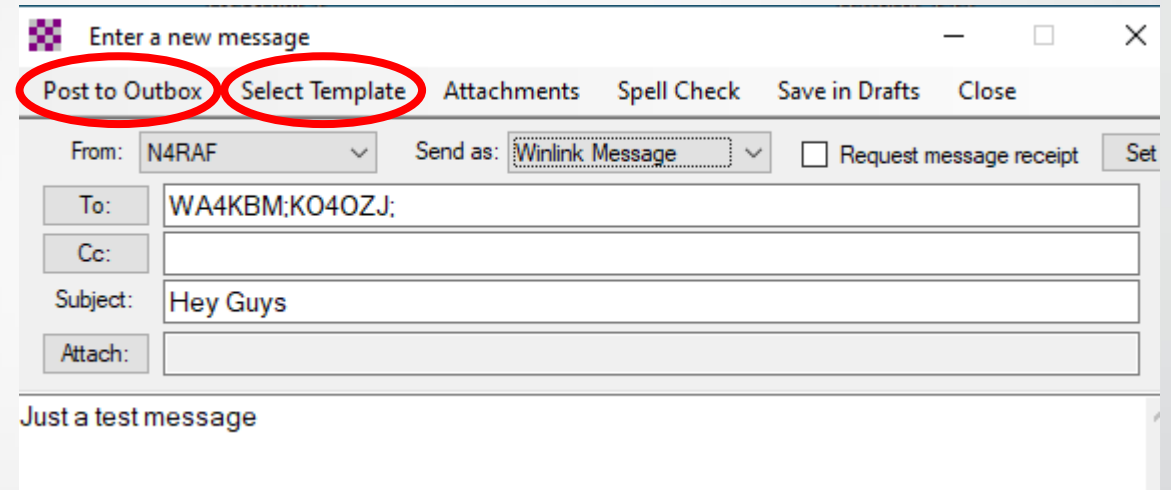


Winlink Express Operations



Composing Messages

- In the main window select Message > New Message
- TO: just the call sign or full email address
- Subject
- Free text in window
- Just like a real email
- Click post to outbox
- Then open session for VARA HF Winlink or preferred session



Enter a new message

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

From: N4RAF Send as: Winlink Message ☐ Request message receipt Set

To: WA4KBM;KO4OZJ;

Cc:

Subject: Hey Guys

Attach:

Just a test message

No active session.

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox (0 unread)	2023/01/21 01:54	PL04C9XM1YNL	210	N4RAF	N4RAF	WA4KBM...	Hey Guys
Read Items (0)							
Outbox (1)							
Sent Items (5)							
Saved Items (4)							
Deleted Items (2)							
Drafts (0)							





Template Manager

Select Close Add Remove Edit

- [-] Standard Templates (version 1.0.231.0)
 - [+] ARC Forms
 - [+] CA STATE Forms
 - [+] CANADIAN Forms
 - [+] FEMA Forms
 - [+] FMRE Forms
 - [+] GENERAL Forms
 - [+] GENERAL MEDICAL Forms
 - [+] HI STATE forms
 - [+] HICS Forms
 - [+] IARU Forms
 - [-] ICS USA Forms
 - ICS201 Incident Briefing.txt
 - ICS202 Incident Objectives.txt
 - ICS203 Organizational Assignment.txt
 - ICS204 Assignment List.txt
 - ICS205 Radio Plan.txt
 - ICS205A Communications List.txt
 - ICS206 Medical Plan.txt
 - ICS208 Safety Message Plan.txt
 - ICS210 Resource Status Change.txt
 - ICS213 General Message.txt
 - ICS213RR Resource Request Message.txt
 - ICS214 Activity Log.txt
 - ICS214A Individual Activity Log.txt
 - ICS215A Incident Safety Analysis.txt
 - ICS217A Communications Worksheet.txt
 - ICS309 Communications Log.txt
 - [+] MAPPING-GIS FORMS
 - [+] OR STATE Forms
 - [+] RADIOGRAM & RRI Forms
 - [+] SC STATE Forms

ICS-213 General Message

HTML Form in browser

General Message (ICS 213)		
Load ICS213 INITIAL Data		Form Instructions
1. Incident Name: Winlink Wednesday		
2. To (Name/Position): KN4LQN		
3. From (Name/Position): N4RAF, Net Participant		
4. Subject: Winlink Wednesday Check-In	5. Date: 2023-05-17	6. Time: 1950
7. Message: N4RAF, Steve, Leesburg, Loudoun, VA (HF P2P)		
8. Approved by: Steve, N4RAF		
Position / Title: Net Participant		
Save ICS213 INITIAL Data	Submit	Reset Form

Ver 41.12

5/19/2023

38





Enter a new message



Post to Outbox

Select Template

Attachments

Spell Check

Save in Drafts

Close

From: N4RAF



Send as: Winlink Message



☐ Request message receipt

Set Defaults

To:

Cc:

Subject:

213-Winlink Wednesday-Winlink Wednesday Check-In - 2023-05-17 1950

Attach:

RMS_Express_Form_ICS213_Initial_Viewer.xml;

GENERAL MESSAGE (ICS 213)

1. Incident Name: Winlink Wednesday
2. To (Name and Position): KN4LQN
3. From (Name and Position): N4RAF, Net Participant
4. Subject: Winlink Wednesday Check-In
5. Date: 2023-05-17
6. Time: 1950
7. Message:

N4RAF, Steve, Leesburg, Loudoun, VA (HF P2P)

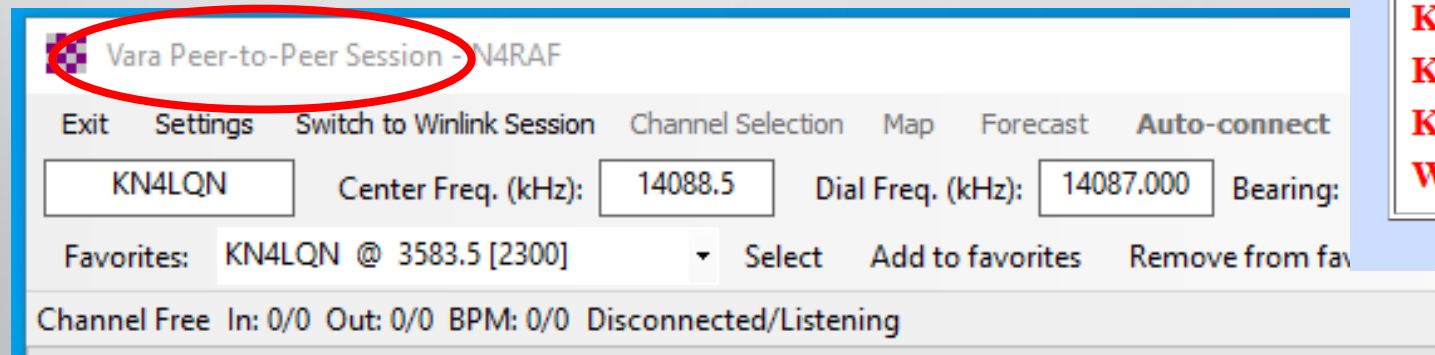
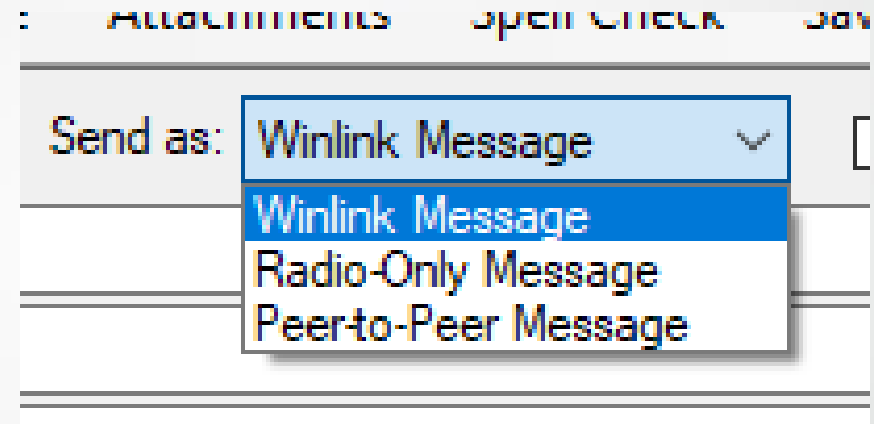
8. Approved by: Steve, N4RAF
Position/Title: Net Participant

Express Sending Station: N4RAF
Senders Express Version: 1.7.6.0
Senders Template Version: ICS 213 v.41.12



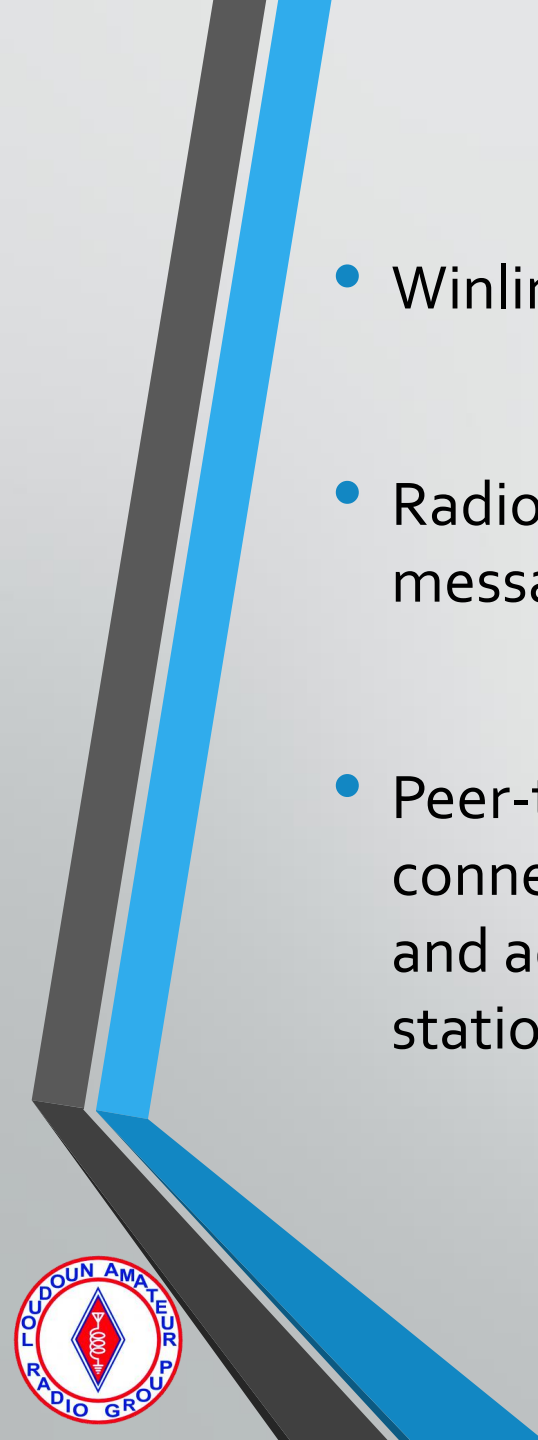
Send As

- Winlink message default
- Radio-only – all RF (Winlink message)
- Peer-to-Peer only sends if connected to the receiving station and addressed to that receiving station



Winlink Wednesday
Current P2P dial frequency:

VARA HF P2P	
KN4LQN	3582 kHz
KN4LQN	14087 kHz
KE4KEW	3565 kHz
KM4DC	3593 kHz
W4RJG	7111 kHz



Open Session

Open Session: Vara HF Winlink

- Select session mode
- Click "Open Session:"
- Opens connection to radio

Vara HF Winlink

Telnet Winlink

Packet Winlink

Pactor Winlink

Robust Packet Winlink

Ardop Winlink

Vara HF Winlink

Vara FM Winlink

Iridium GO Winlink

Packet P2P

Pactor P2P

Robust Packet P2P

Ardop P2P

Vara HF P2P

Vara FM P2P

Telnet P2P

Pactor Radio-only

Vara HF Radio-only

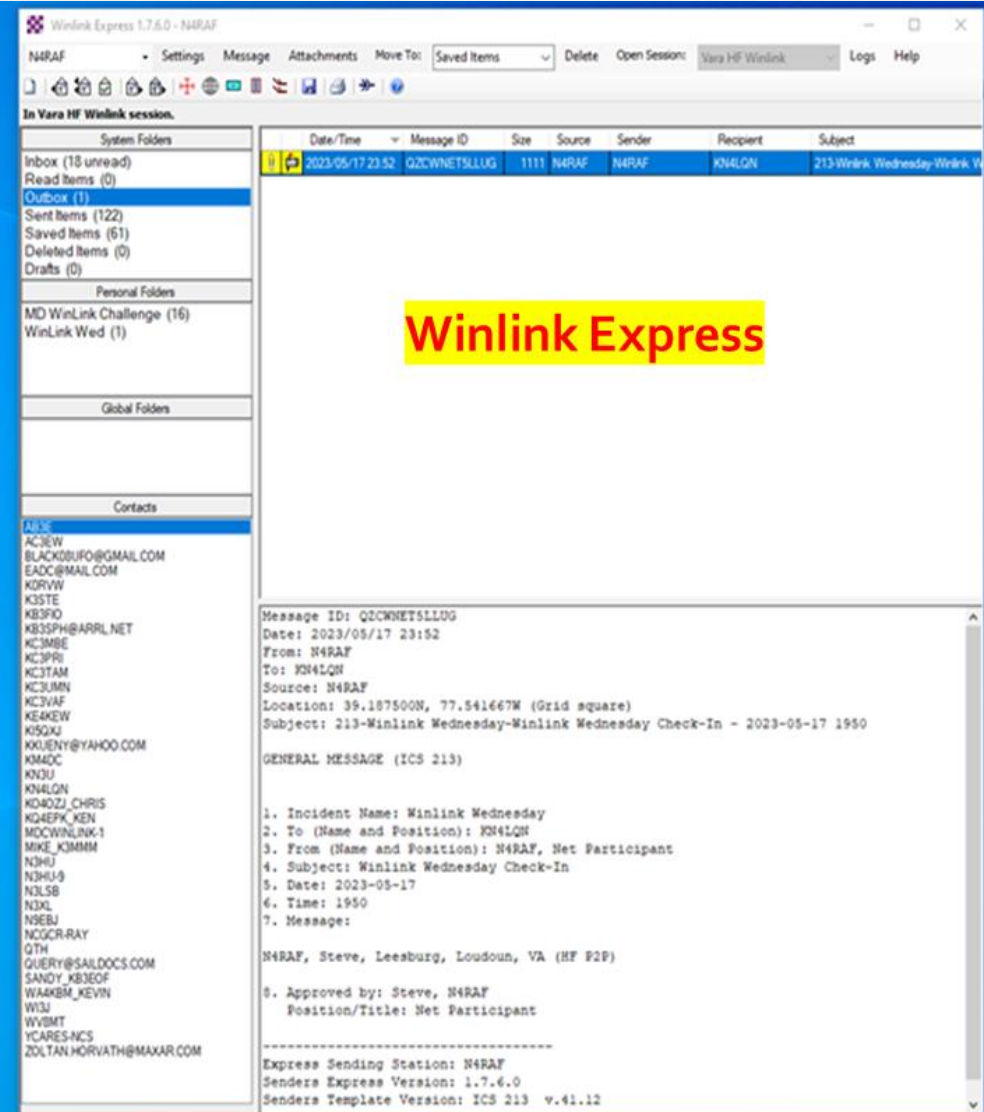
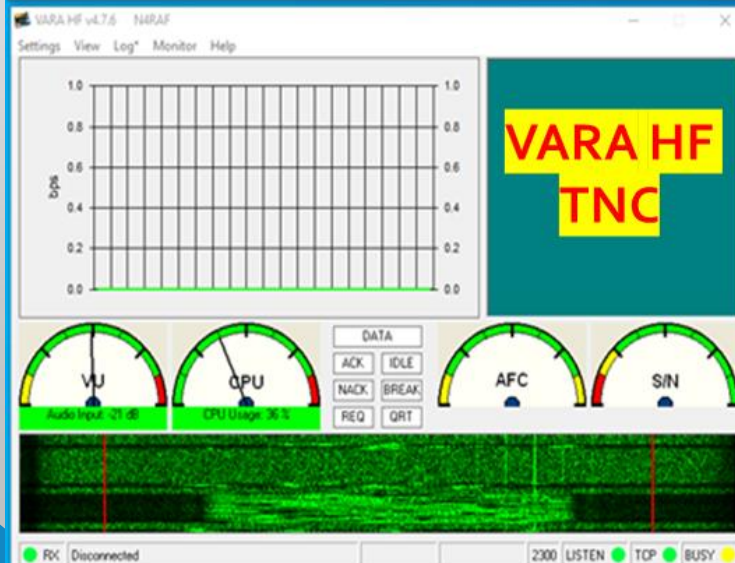
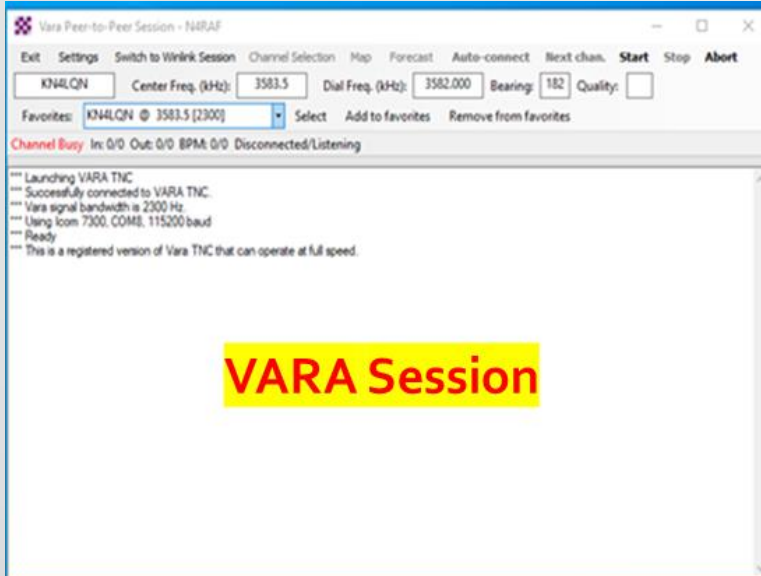
Vara FM Radio-only

Telnet Radio-only

Telnet Post Office

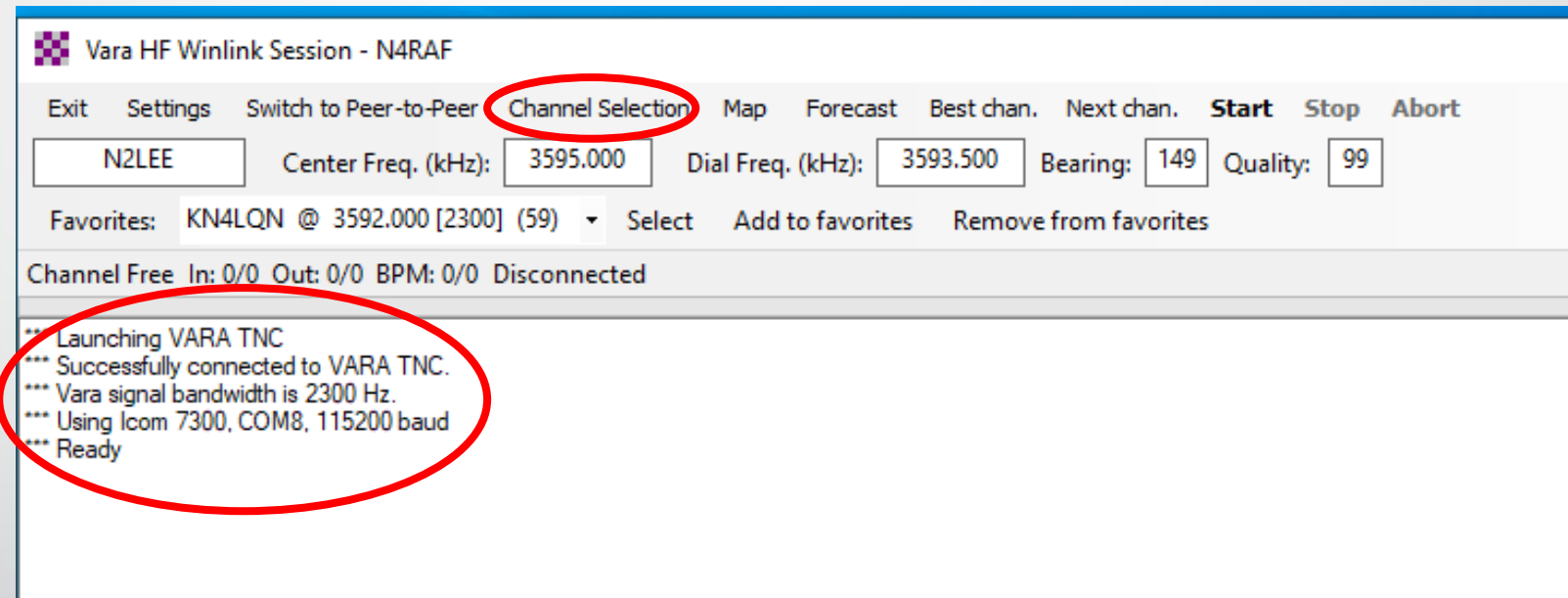
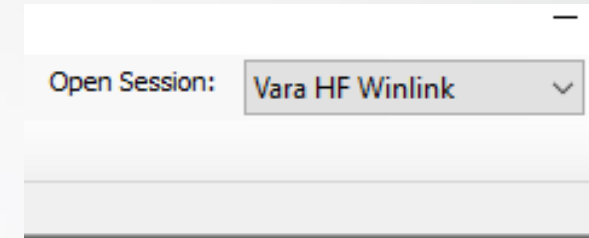


Open Session



Vara HF Session

- Indicates you've successfully connected to radio
- Channel Selection



Find RMS (Gateway) To Send Message To

- Click 'Channel Selection'
- Will take a while to populate
 - I do via internet
- Highlight and select
- Will populate into VARA HF Winlink Session
 - Can save as a favorite
 - Will tune radio to right freq when you click 'start'

HF Channel Selector									
Exit	Select	Update Via Internet	Update Via Radio	Map	Forecast	SFI	All RMS		
Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (mi)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
N2LEE	3595.000	V2300	FM18HX	00-23	PUBLIC	17	149	99	99
WA3MEZ	3587.500	V2300	FM19OJ	00-23	PUBLIC	43	070	99	99
WA3MEZ	7101.200	V2300	FM19OJ	00-23	PUBLIC	43	070	96	96
N2LEE	7103.500	V2300	FM18HX	00-23	PUBLIC	17	149	96	96
WB3KAS	7090.000	V500	FM18NR	00-23	PUBLIC	48	132	95	61
KE8BII	7102.800	V2300	FM29CQ	01-09	PUBLIC	99	069	95	61
KB3PCY	7107.250	V500	FM29EV	00-23	PUBLIC	113	064	95	61
W2GSA	7090.500	V500	FN20WG	00-23	PUBLIC	196	067	96	61
N3EP-14	7106.500	V500	FN21AN	00-23	PUBLIC	183	026	96	61
W2MMD	7101.500	V2300	FM29JR	00-23	PUBLIC	130	073	95	61
W2CP	7108.000	V500	FN20UQ	00-23	PUBLIC	201	058	96	61
W2CP	7103.500	V2300	FN20UQ	00-23	PUBLIC	201	058	96	61
WB3KAS	3590.000	V2300	FM18NR	00-23	PUBLIC	48	132	96	60
N3MEL-11	3596.000	V500	FM29DX	00-23	PUBLIC	112	060	96	59
KE4KEW	3586.600	V2300	FM08LF	00-23	PUBLIC	104	231	96	59



- “Start” to connect

Vara FM Winlink Session - N4RAF

Exit Settings Switch to Peer-to-Peer Channel Selection **Start** Stop Abort

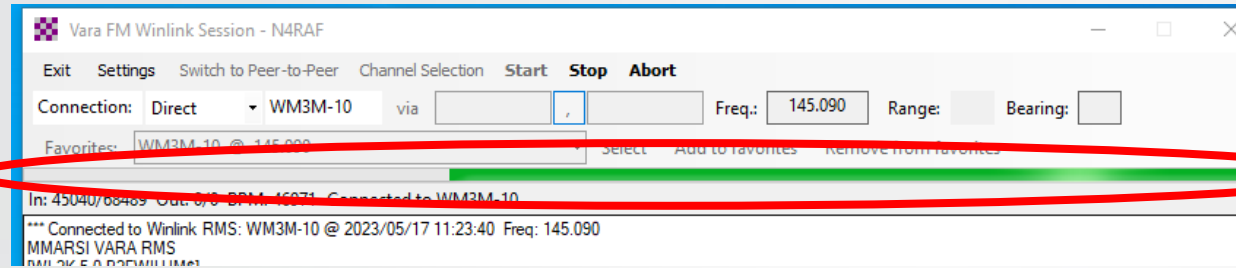
Connection: Direct ▼ WM3M-10 via , Freq.: 145.090

Favorites: WM3M-10 @ 145.090 ▼ Select Add to favorites Rem

In: 64821/68489 Out: 0/0 BPM: 45428 Disconnected Time to next Autoconnect = Disabled

CMS via WM3M >
 ;FW: N4RAF
 [RMS Express-1.7.6.0-B2FHM\$]
 ;PR: 17035312
 ; WM3M-10 DE N4RAF (FM19FE)
 FC EM H289ZEF5FC1N 2343 1016 0
 F> 67
 ;PM: N4RAF QKZQYQIMVA9K 84989 black08ufo@gmail.com HF Test Image
 FS Y
 *** Sending H289ZEF5FC1N.
 FC EM QKZQYQIMVA9K 84897 84989 0
 *** Completed send of message H289ZEF5FC1N
 *** Sent 1 message. Bytes: 1100, Time: 00:12, bytes/minute: 5199
 F> 3C
 FS !16500
 *** Receiving QKZQYQIMVA9K
 *** QKZQYQIMVA9K - 84443/84591 bytes received
 *** Bytes: 69069, Time: 01:25, bytes/minute: 48267
 FF
 FQ
 *** --- End of session with WM3M-10 at 2023/05/17 11:25:47 ---
 *** Messages sent: 1. Total bytes sent: 1100, Time: 02:06, bytes/minute: 520
 *** Messages Received: 1. Total bytes received: 69069, Total session time: 02:06, bytes/minute: 32671
 *** Disconnected from Winlink RMS: WM3M-10 @ 2023/05/17 11:25:47
 *** Session: 2.1 min; Avg Throughput: 31080 Bytes/min; 1 Min Peak Throughput: 31080 Bytes/min

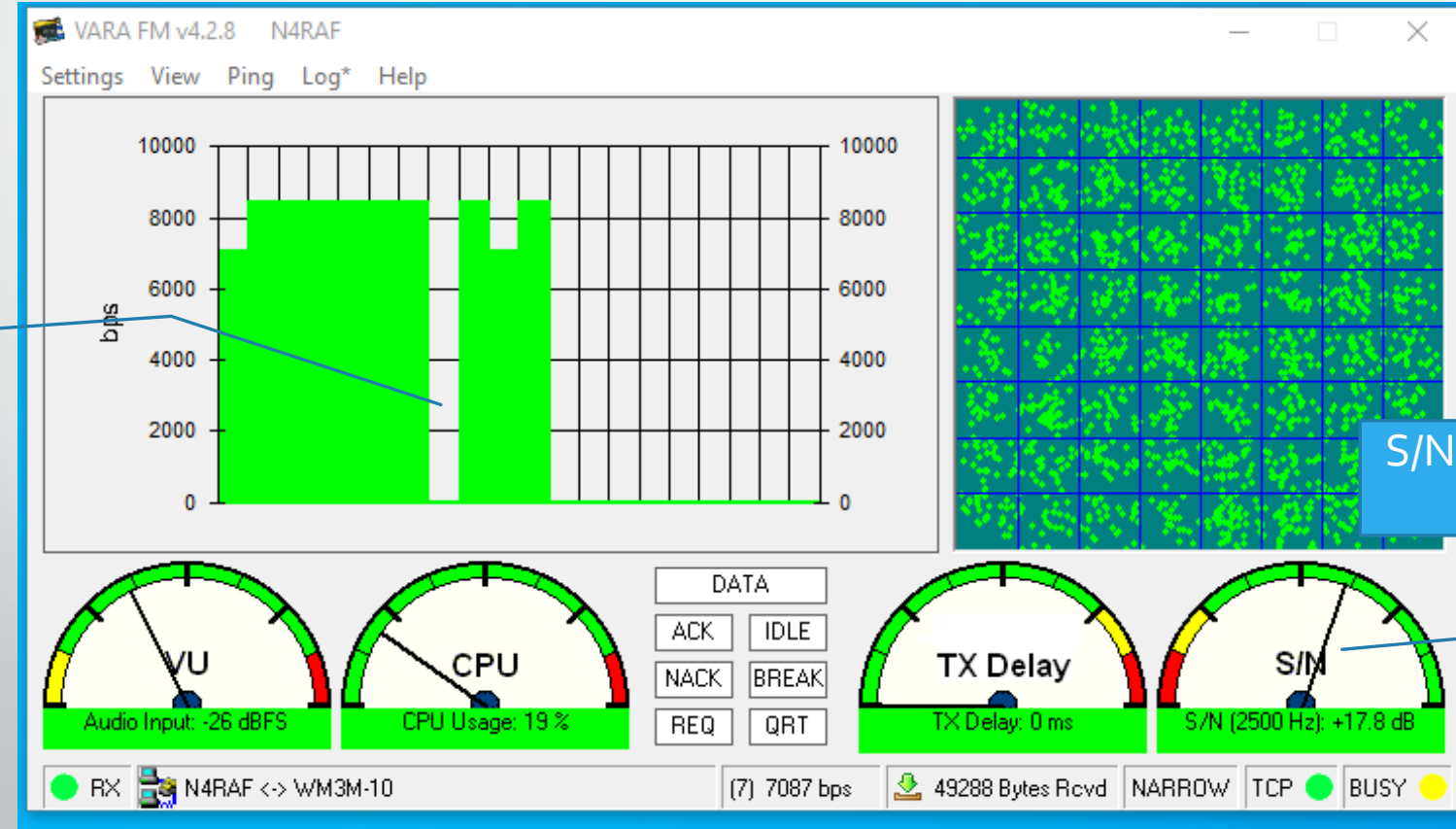




Progress Bar

- L to R = TX
- R to L = RX

Gap means no data
Note: 8000 bps
this is FM
HF normal for me is
about 200bps



S/N in green during
RX = good



Closing Thoughts

- Fun to play with
- Can impress non-Ham friends with emails
- If you use other digital modes – easier to setup
- Questions / Thoughts / Need Help Setting Up
 - Email: N4RAF@winlink.org

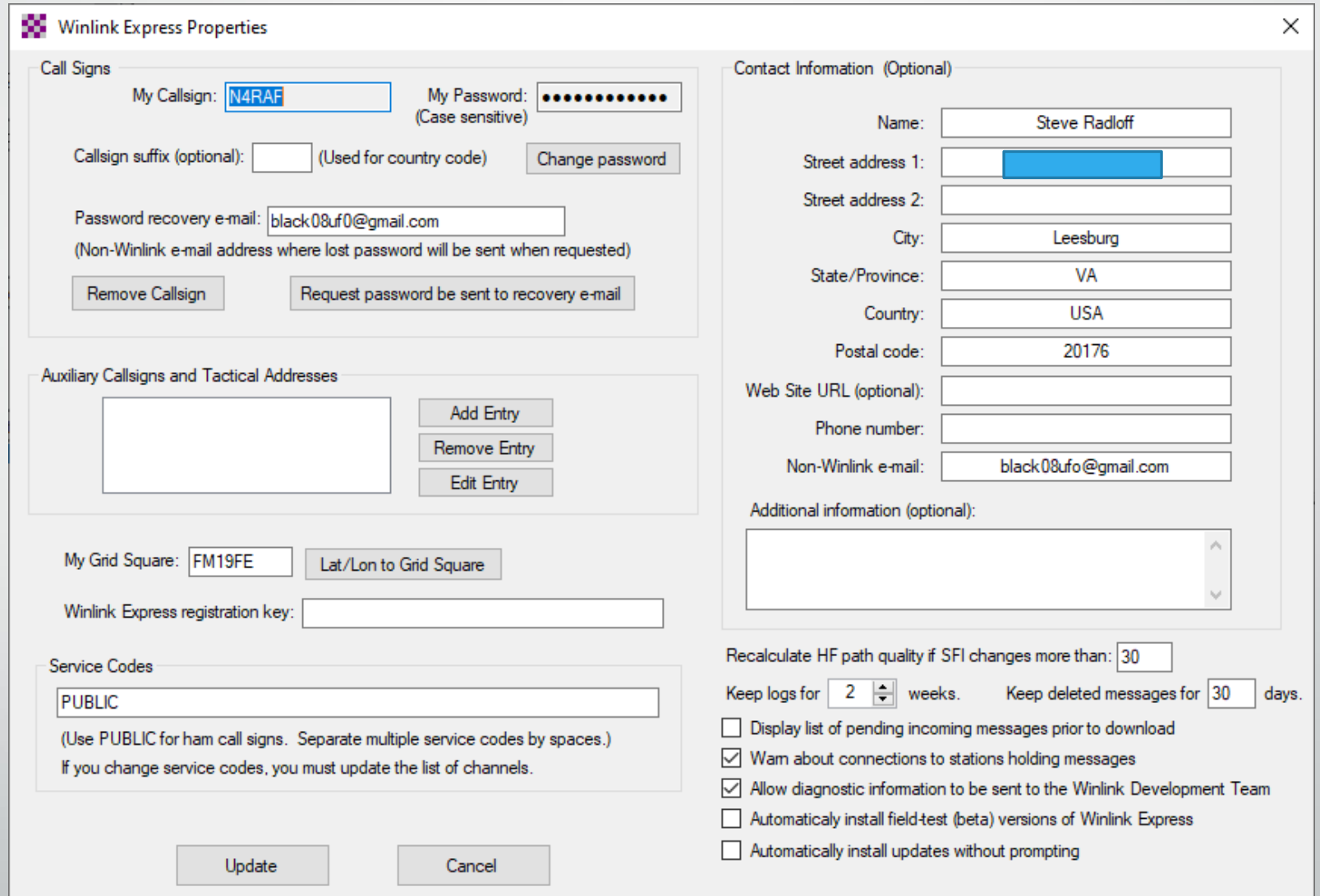


Backups and Imported



Settings – Winlink Express

- Enter your data
- Call sign
- Grid Square
- Contact info



The image shows the 'Winlink Express Properties' dialog box. It is divided into several sections: 'Call Signs', 'Auxiliary Callsigns and Tactical Addresses', 'Service Codes', 'Contact Information (Optional)', and a bottom section with checkboxes. The 'Call Signs' section contains fields for 'My Callsign' (N4RAF), 'My Password' (masked), 'Callsign suffix (optional)', 'Password recovery e-mail' (black08uf0@gmail.com), and buttons for 'Remove Callsign' and 'Request password be sent to recovery e-mail'. The 'Auxiliary Callsigns and Tactical Addresses' section has a list box and buttons for 'Add Entry', 'Remove Entry', and 'Edit Entry'. The 'Service Codes' section has a text box with 'PUBLIC' and instructions. The 'Contact Information (Optional)' section has fields for 'Name' (Steve Radloff), 'Street address 1', 'Street address 2', 'City' (Leesburg), 'State/Province' (VA), 'Country' (USA), 'Postal code' (20176), 'Web Site URL (optional)', 'Phone number', and 'Non-Winlink e-mail' (black08uf0@gmail.com). The bottom section has checkboxes for 'Recalculate HF path quality if SFI changes more than: 30', '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', 'Automatically install field-test (beta) versions of Winlink Express', and 'Automatically install updates without prompting'. At the bottom are 'Update' and 'Cancel' buttons.

Winlink Express Properties

Call Signs

My Callsign: My Password:

Callsign 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.

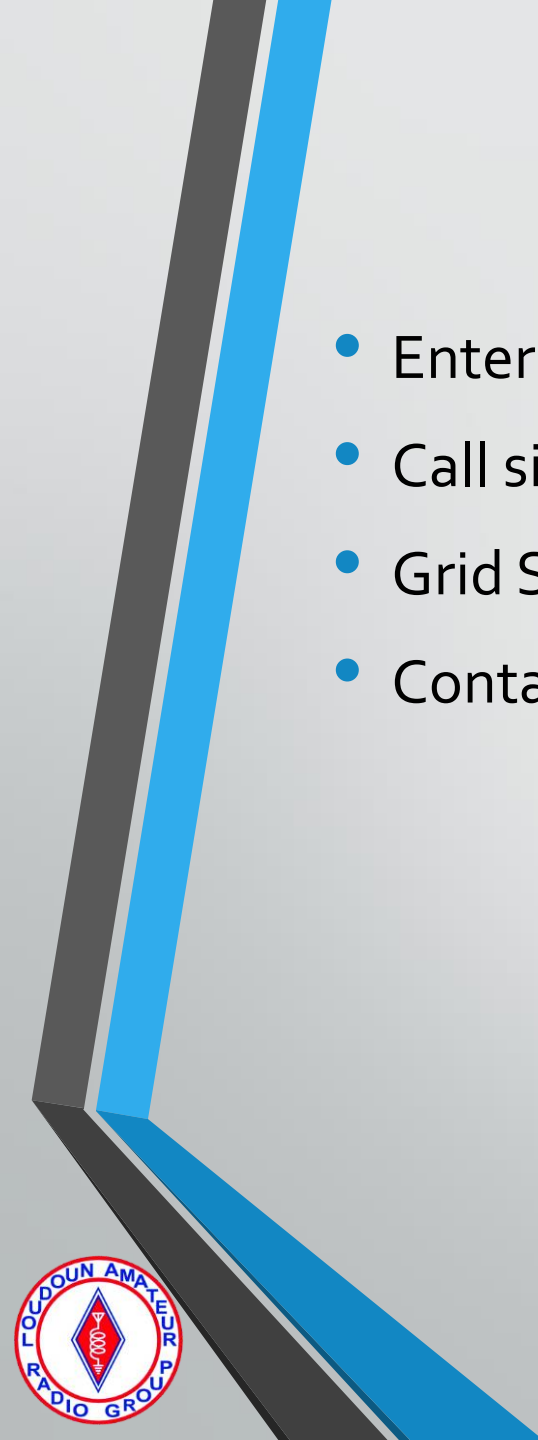
☐ Display list of pending incoming messages prior to download

☒ Warn about connections to stations holding messages

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

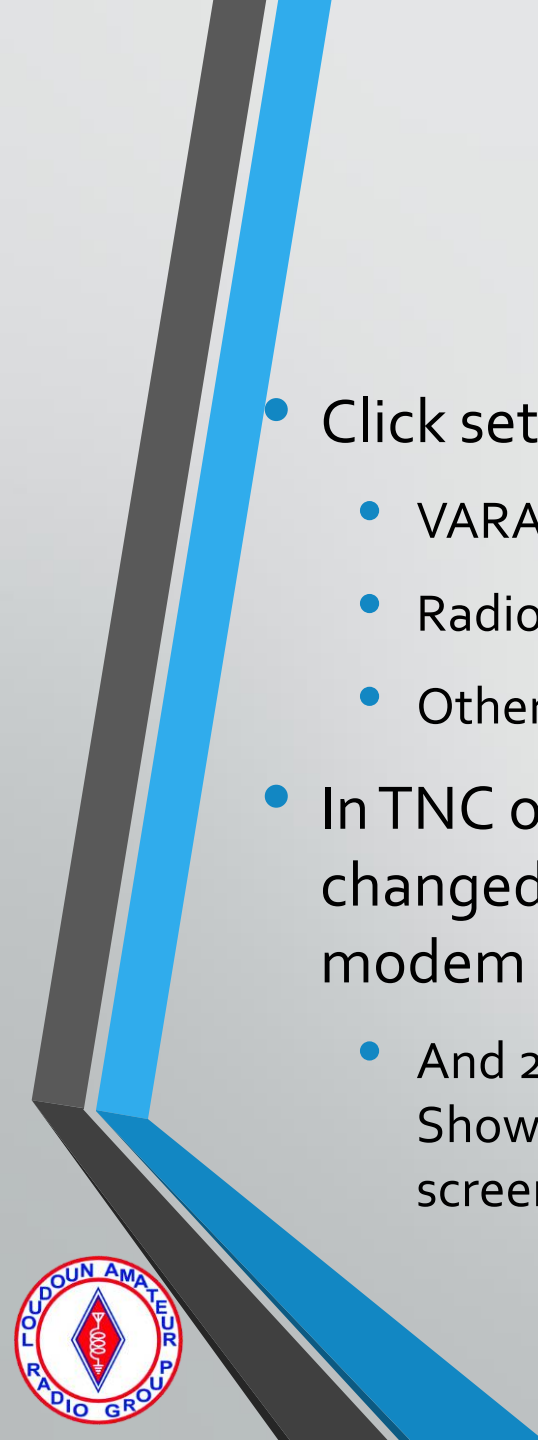
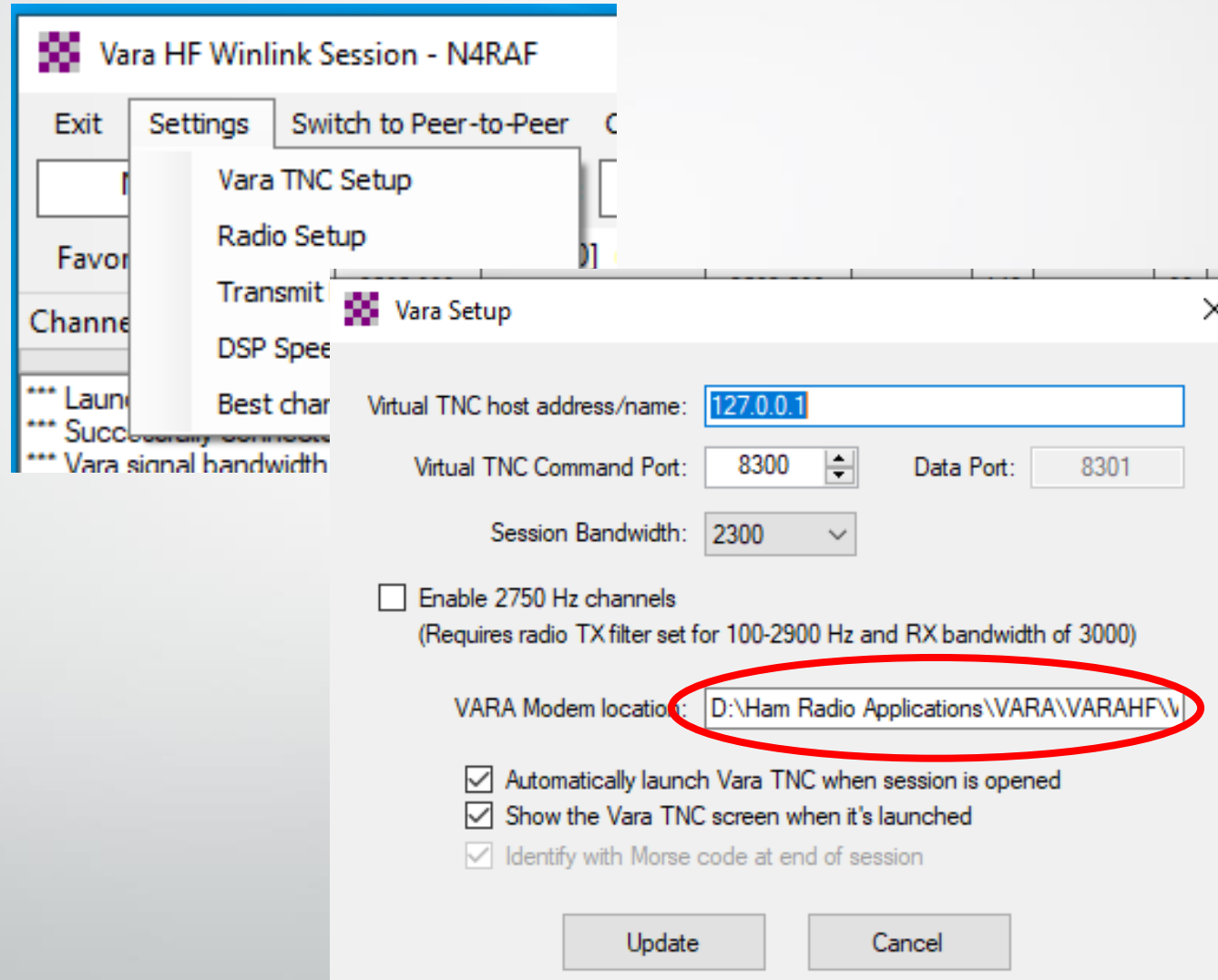
☐ Automatically install field-test (beta) versions of Winlink Express

☐ Automatically install updates without prompting




Settings – Vara HF Setup Radio Setup

- Click settings
 - VARA TNC Setup 1st
 - Radio Setup 2nd
 - Others not needed
- In TNC only thing I changed was the modem location
 - And 2nd check box – Show VARA TNC screen



Settings – VARA HF Radio

 Vara HF Winlink Settings ✕

Radio Selection

Select Radio Model Icom 7300 Antenna Selection Default

Icom Address 94 USB ☐ USB Digital ☒ FM ☐ Use Internal Tuner ☐

☐ Codan login and optional password:

Radio Control Port

Serial Port to Use COM8 Baud 115200 Enable RTS ☒ Enable DTR ☒ TTL ☐

PTT Port (Optional)

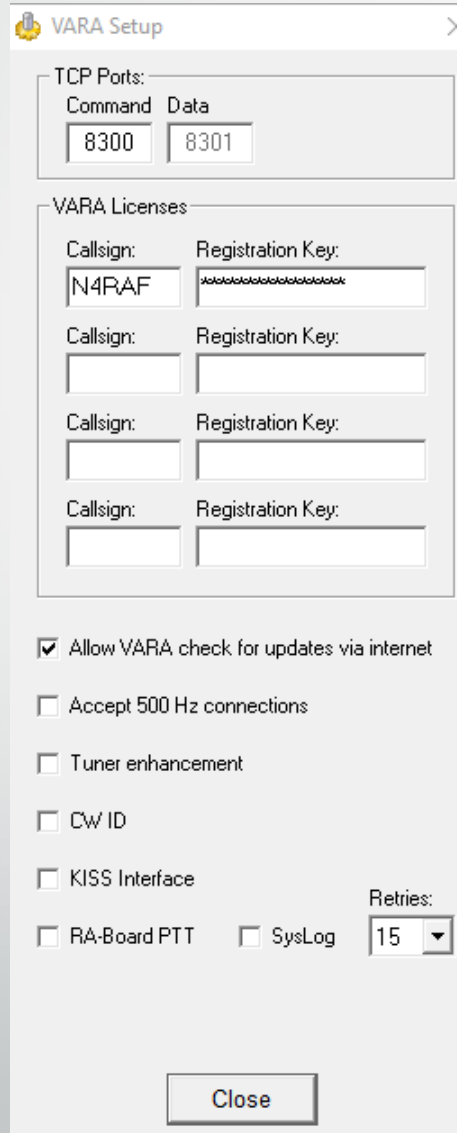
Serial Port to Use Icom 7300 Baud 9600 Enable RTS ☒ Enable DTR ☒

Update Close



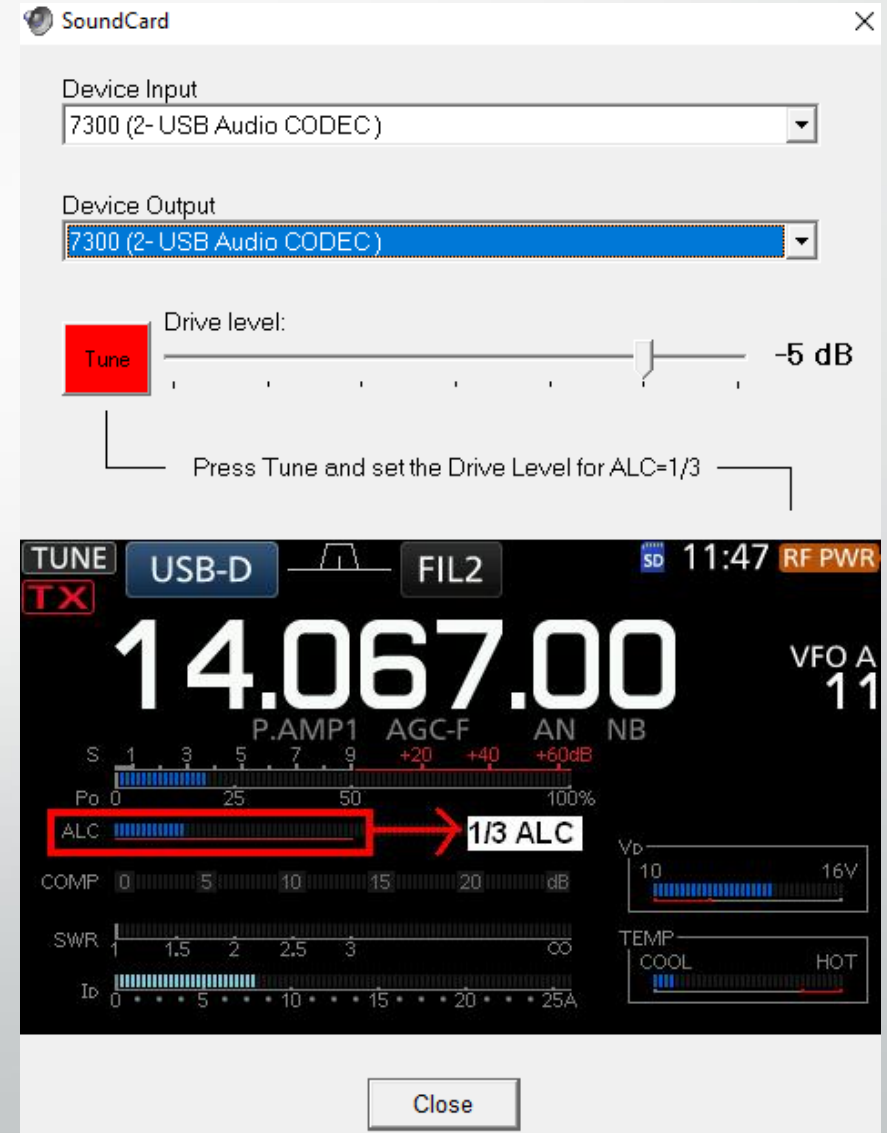
Settings – VARA HF TNC

- VARA Setup
- Sound Card



The VARA Setup window contains the following sections:

- TCP Ports:** Command (8300) and Data (8301).
- VARA Licenses:** Four sets of Callsign and Registration Key fields. The first set has Callsign "N4PAF" and a masked Registration Key.
- Options:**
 - ☒ Allow VARA check for updates via internet
 - ☐ Accept 500 Hz connections
 - ☐ Tuner enhancement
 - ☐ CW ID
 - ☐ KISS Interface
 - ☐ RA-Board PTT
 - ☐ SysLog
- Retries:** A dropdown menu set to 15.
- Close** button.



The SoundCard window contains the following sections:

- Device Input:** 7300 (2- USB Audio CODEC)
- Device Output:** 7300 (2- USB Audio CODEC)
- Drive level:** A slider set to -5 dB. A red "Tune" button is to the left. A callout box says: "Press Tune and set the Drive Level for ALC=1/3".
- Bottom Panel (Main Display):**
 - Buttons: TUNE, USB-D, FIL2, SD, 11:47, RF PWR.
 - Frequency: 14.067.00 (VFO A 11).
 - Meters: P.AMP1, AGC-F, AN, NB, S, Po, ALC (highlighted with a red box and an arrow pointing to "1/3 ALC"), COMP, SWR, Id.
 - Other meters: Vd (0-16V), TEMP (COOL-HOT).
- Close** button.



Clients

- Winlink Express - <https://winlink.org/WinlinkExpress>
- Outpost - <https://www.outpostpm.org/index.php>
- AirMail - <http://www.siriuscyber.net/ham/>
- Pat - <https://getpat.io/> (cross platform, written in Go)
- WoAD - <https://woad.sumusltd.com/> (Android)
- Paclink - <https://winlink.org/Paclink> (gateway to normal e-mail clients)
- Winlink FAQs:
https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi37ee5mYDAhUfFlkFHRB4D38QFnoECBIQAw&url=https%3A%2F%2Fwinlink.org%2Fsites%2Fdefault%2Ffiles%2Fdownload%2Fwl2k_faq_20230311.pdf&usg=AOvVaw3uO-QgLPwRUD0h5pCQ2uQ-



What Winlink Offers for EmComm

- Flexibility:
 - Internet-only (Telnet) direct connections to Winlink.
 - Radio link bridge to Internet e-mail
 - Radio-only store and forward messaging
 - Peer-to-peer connections between radio end-users
 - Various levels of security including message encryption
- Interoperability: Connect different types of systems
 - Bridge different radio capabilities (VHF/UHF/HF)
 - Bridge protocols: Pactor, Winmor, Packet
 - Seamless integration with Internet e-mail
- Geographical dispersion and redundancy for reliability



What Winlink Offers for EmComm

- Standard e-mail format with many features
 - Binary file attachments (pictures, pdf, spreadsheets)
 - Automatic message compression/decompression
- Time independence (except for peer-to-peer)
- Good operation at most power levels
- Not limited by station-to-station propagation
- Message logging, and ICS report generation
- Wide adoption by EmComm related agencies



Other Winlink Events

- Maryland
 - Bill, N3XL, MDCWINLINK-1
 - Monthly challenge
- West VA
 - WV8MT, MIKE, SUAR GROVE, PENDLETON, WV, NCS
- Oregon
 - YCARES (Yamhill County ARES)
 - YCARES-NCS

