The following presentation and all materials provided are the intellectual property of
The American Radio Relay League, Inc. (“ARRL”).
No part of this presentation may be copied, recorded, reproduced, or distributed in any manner without express written permission from an authorized representative of the ARRL specifically referencing this presentation and material.

Copyright 2024 ARRL
All Rights Reserved

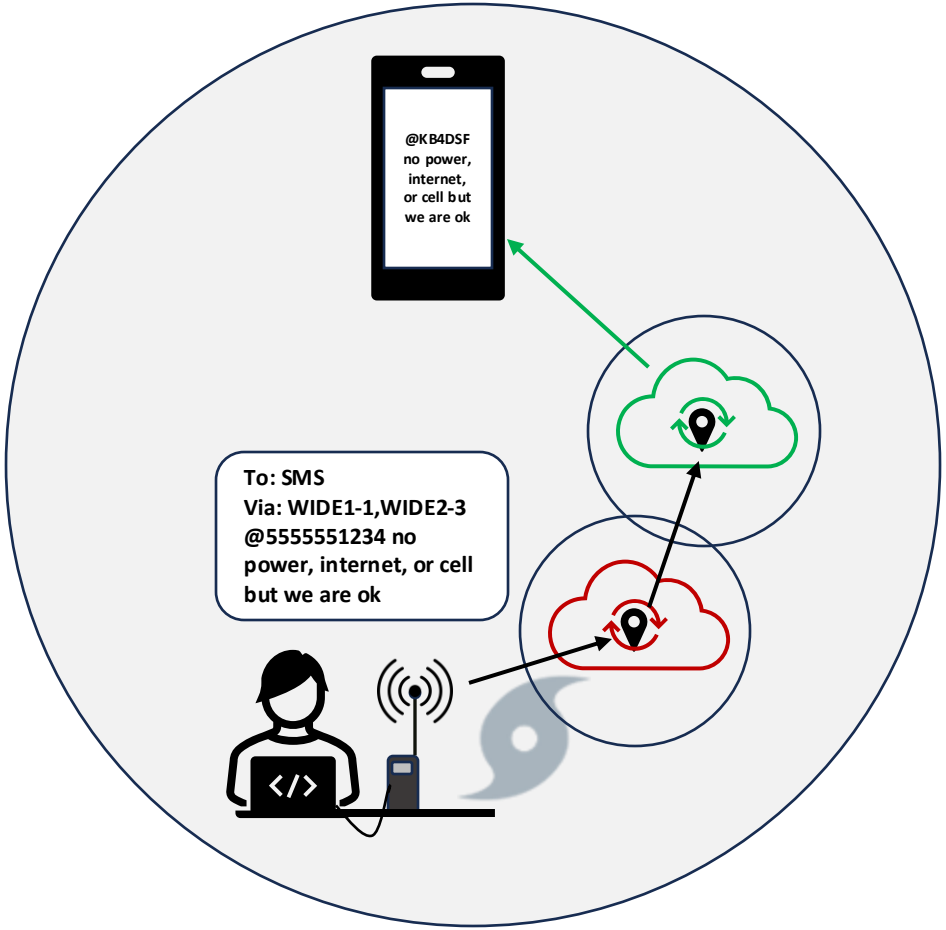
Family EMCOMM: APRS

wgreene@ARRL.org

ARRL
The National Association for Amateur Radio®

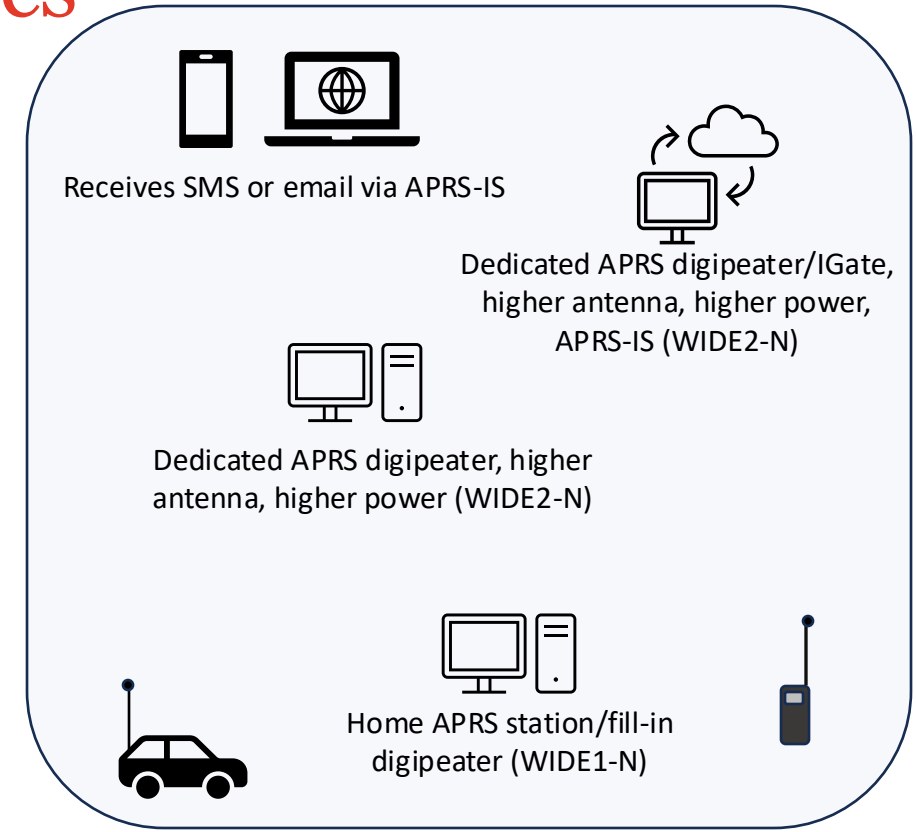
To Cover

- APRS Network Basics
- APRS Digipeaters
- APRS Paths
  - Undirected
  - Directed
- Resources to determine potential digipeater paths
- APRS to SMS
- APRS EMAIL bot
- APRS to email via APRSLink



APRS Network Basics

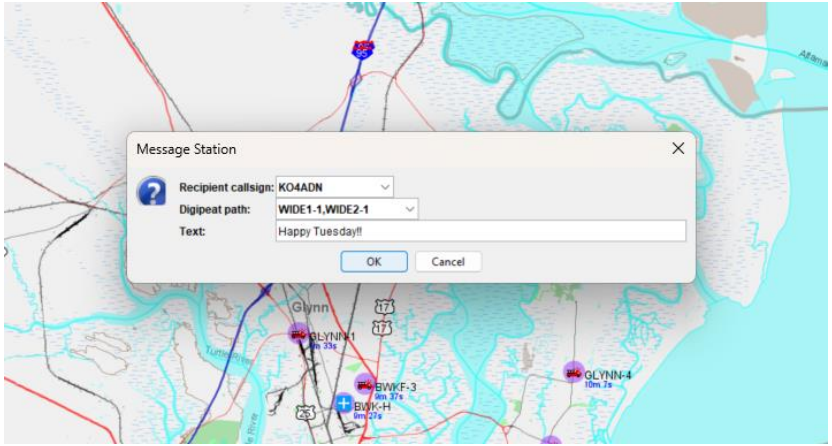
- A sort-of mesh network
- All devices operate on 144.39 MHz
- AX.25 digital protocol
- Network devices:
  - User devices (HTs, mobiles, etc)
  - Fill-in digipeater, alias WIDE1-N
  - Wide area digipeater, alias WIDE2-N
- APRS-IS
  - Internet capabilities

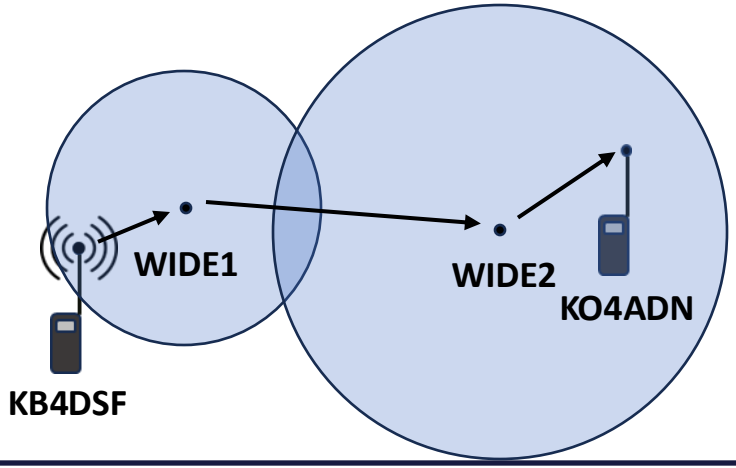


APRS Paths

- Understanding how APRS paths work is key

- Normally use WIDE aliases
  - Typical is WIDE1-1,WIDE2-1
- WIDE1 digipeater, if available, can help repeat the APRS message to a WIDE2 digipeater
- WIDE2 digipeater will have greater range

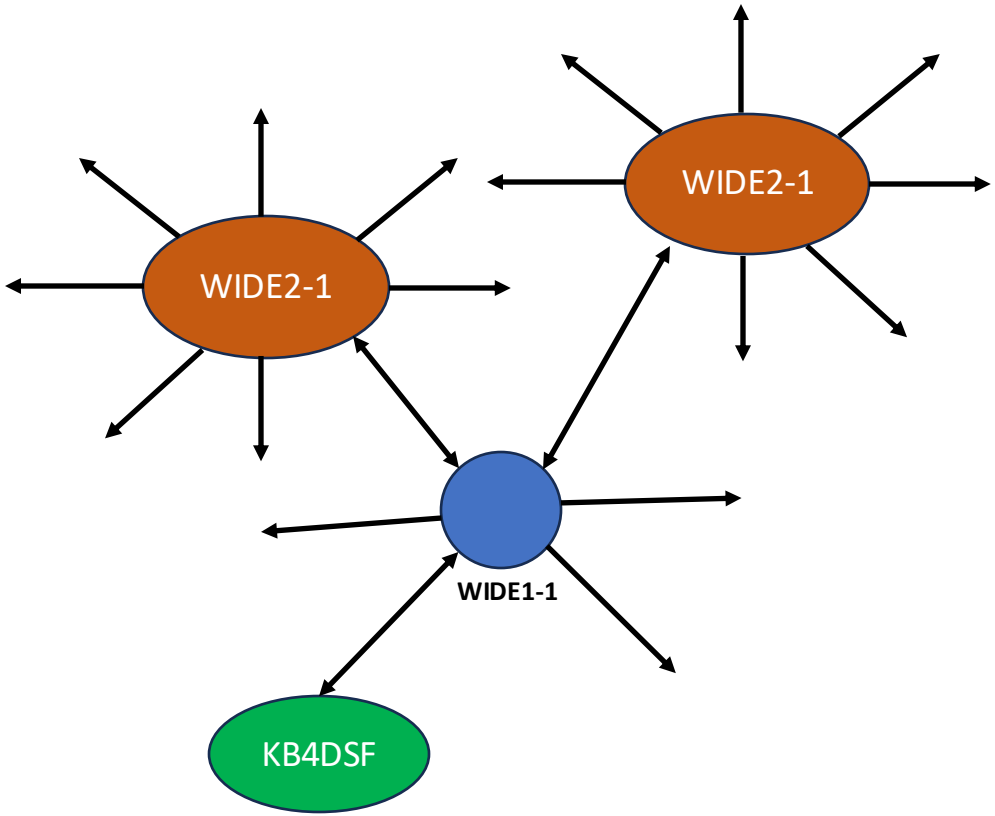




APRS Paths

Undirected Path

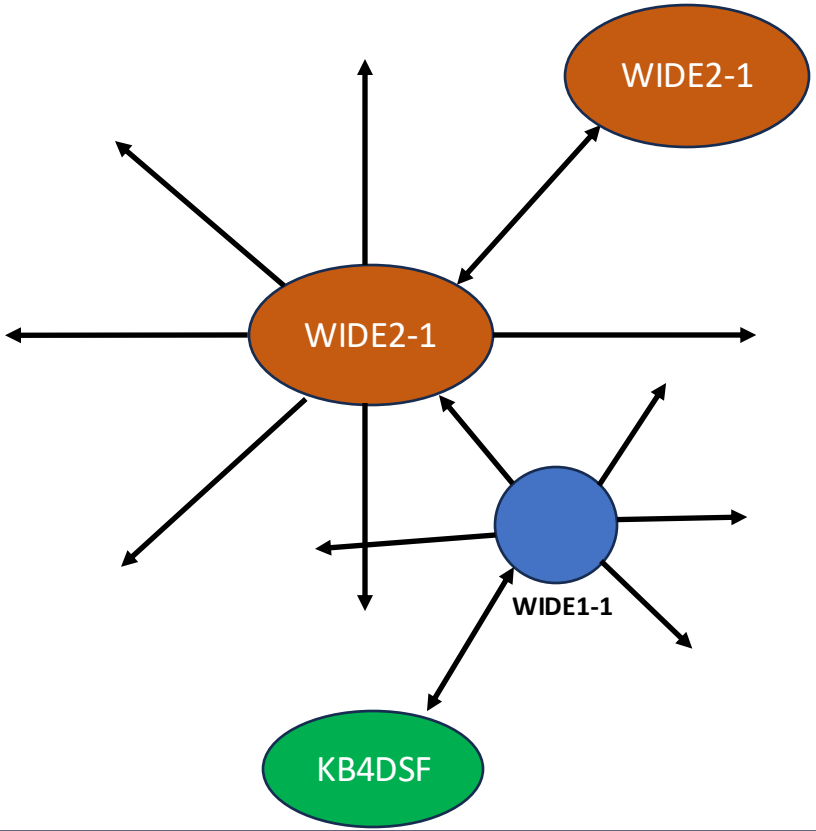
- Most common
- WIDEn-N format
  - n is type of digipeater: 1 is fill-in, 2 is wide area
  - N is the number of requested hops
- WIDE1-1,WIDE2-1 is most common



APRS Paths

Undirected Path

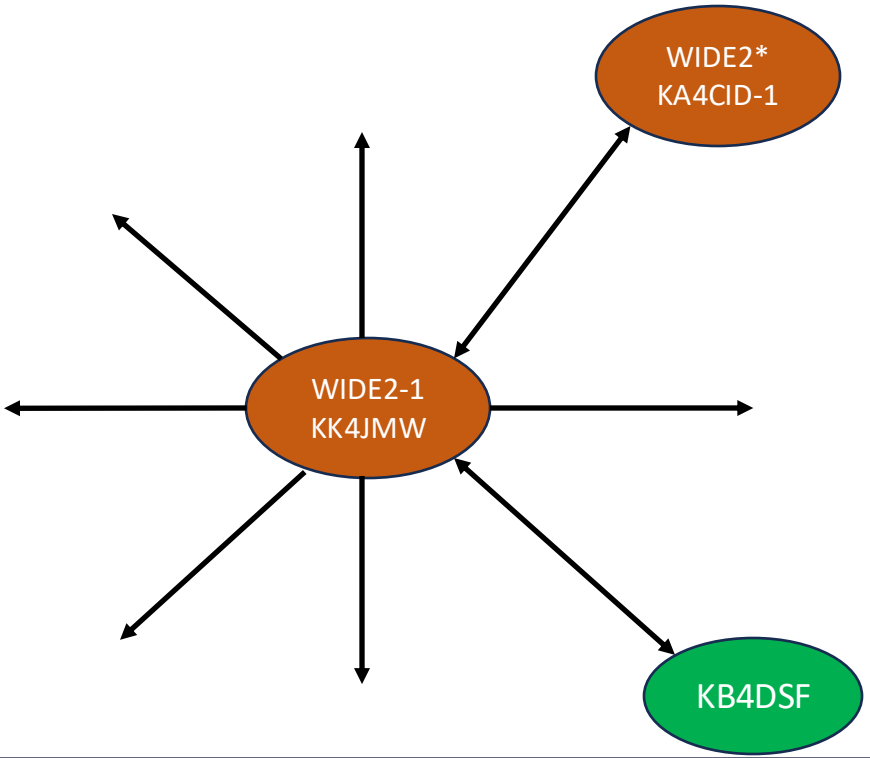
- Most common
- WIDEn-N format
  - n is type of digipeater: 1 is fill-in, 2 is wide area
  - N is the number of requested hops
- WIDE1-1,WIDE2-1 is most common



APRS Paths

Undirected Path

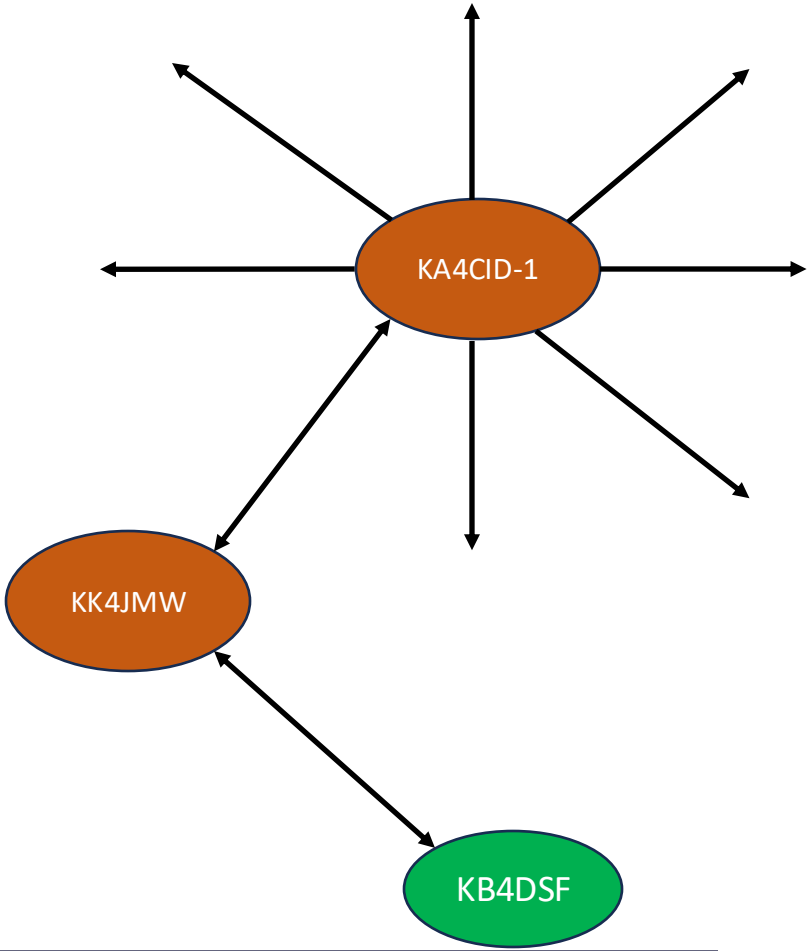
- Most common
- WIDEn-N format
  - n is type of digipeater: 1 is fill-in, 2 is wide area
  - N is the number of requested hops
- WIDE1-1,WIDE2-1 is most common

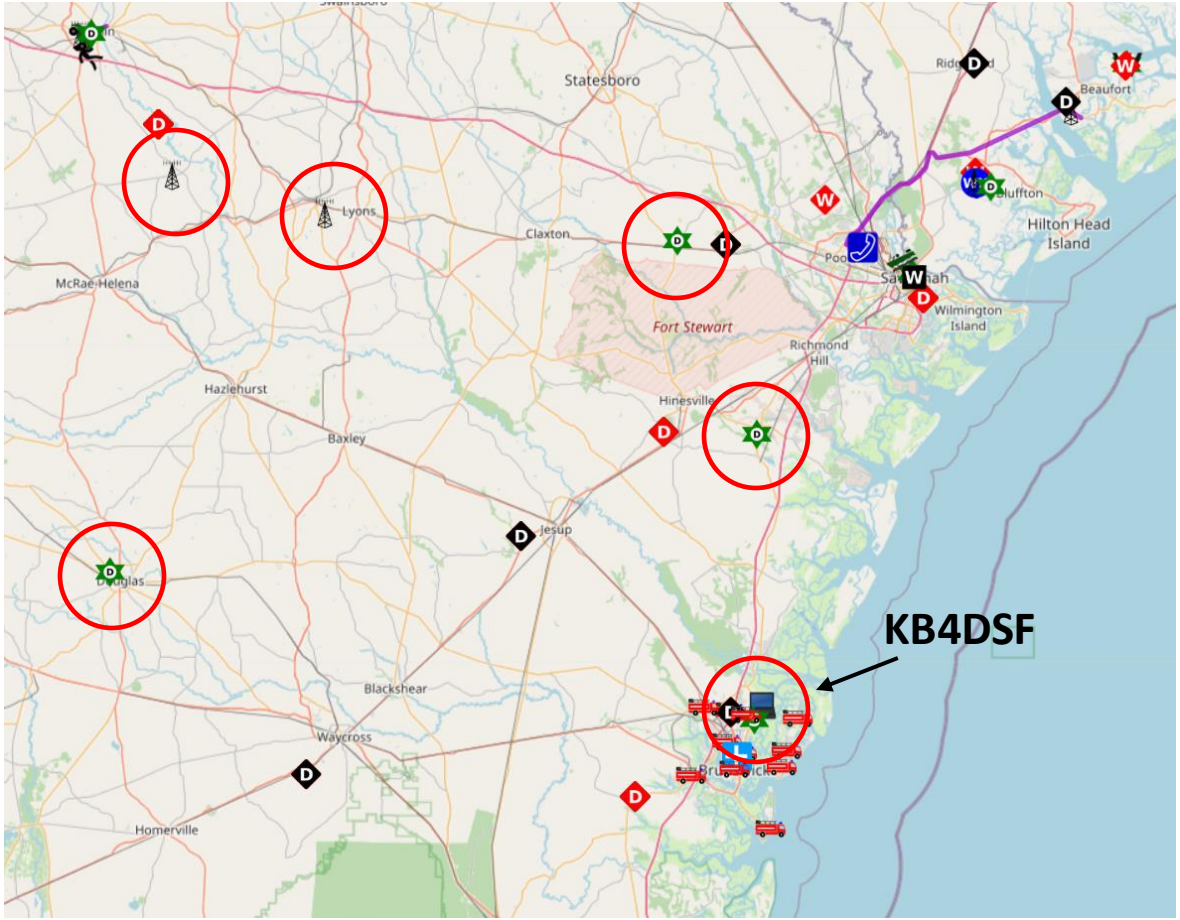


APRS Paths

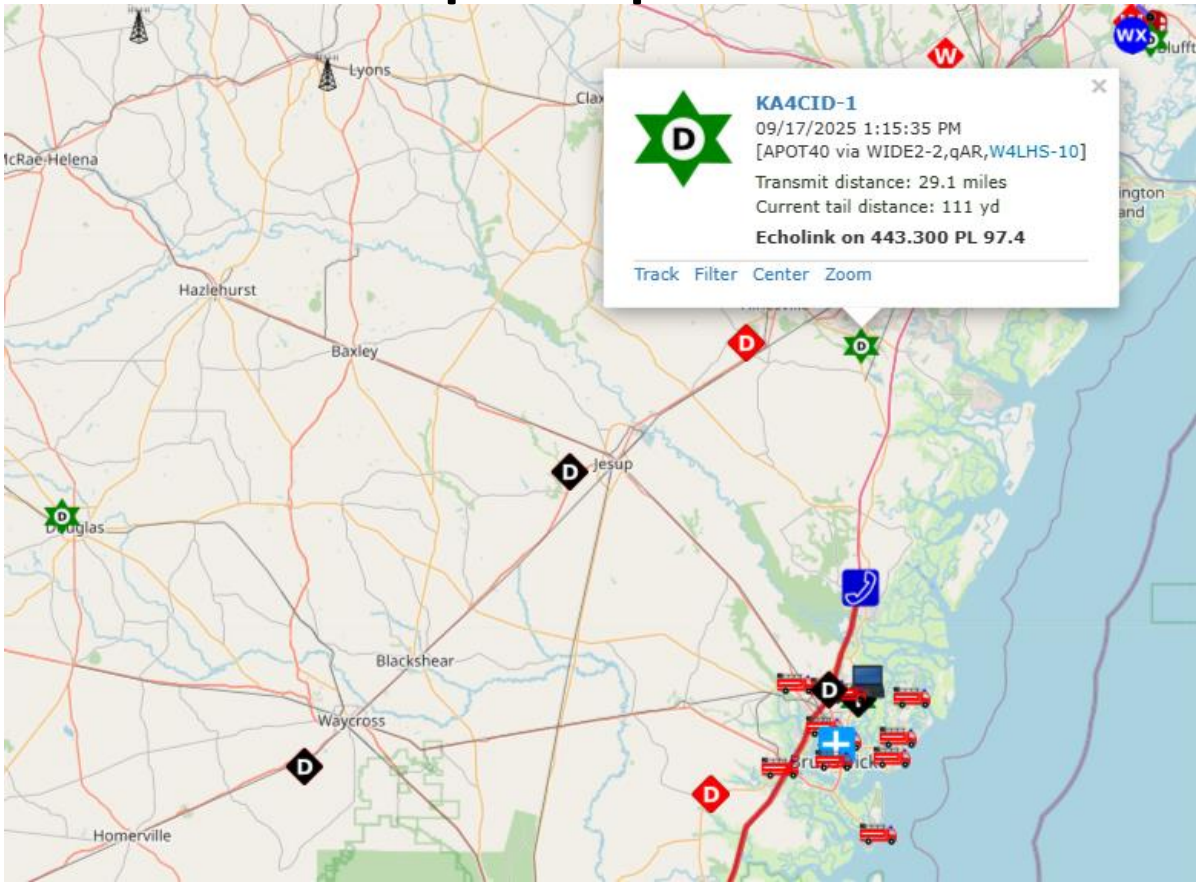
Directed Path

- State which digipeaters you want in the path
- Pros and cons depending on your needs

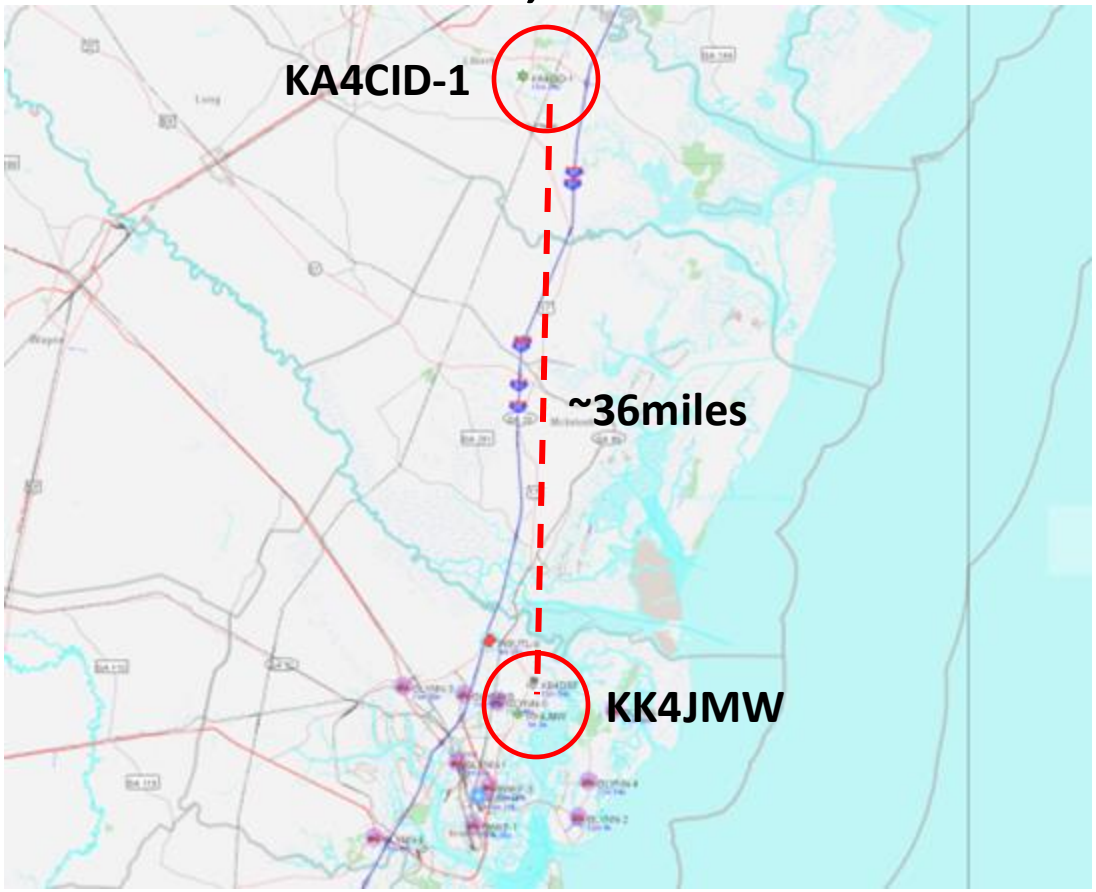



Statesboro
Lyons
Claxton
McRae-Helena
Fort Stewart
Richmond Hill
Hazlehurst
Baxley
Jesup
Blackshear
Waycross
Homerville
Hilton Head Island
Wilmington Island
Beaufort
KB4DSF

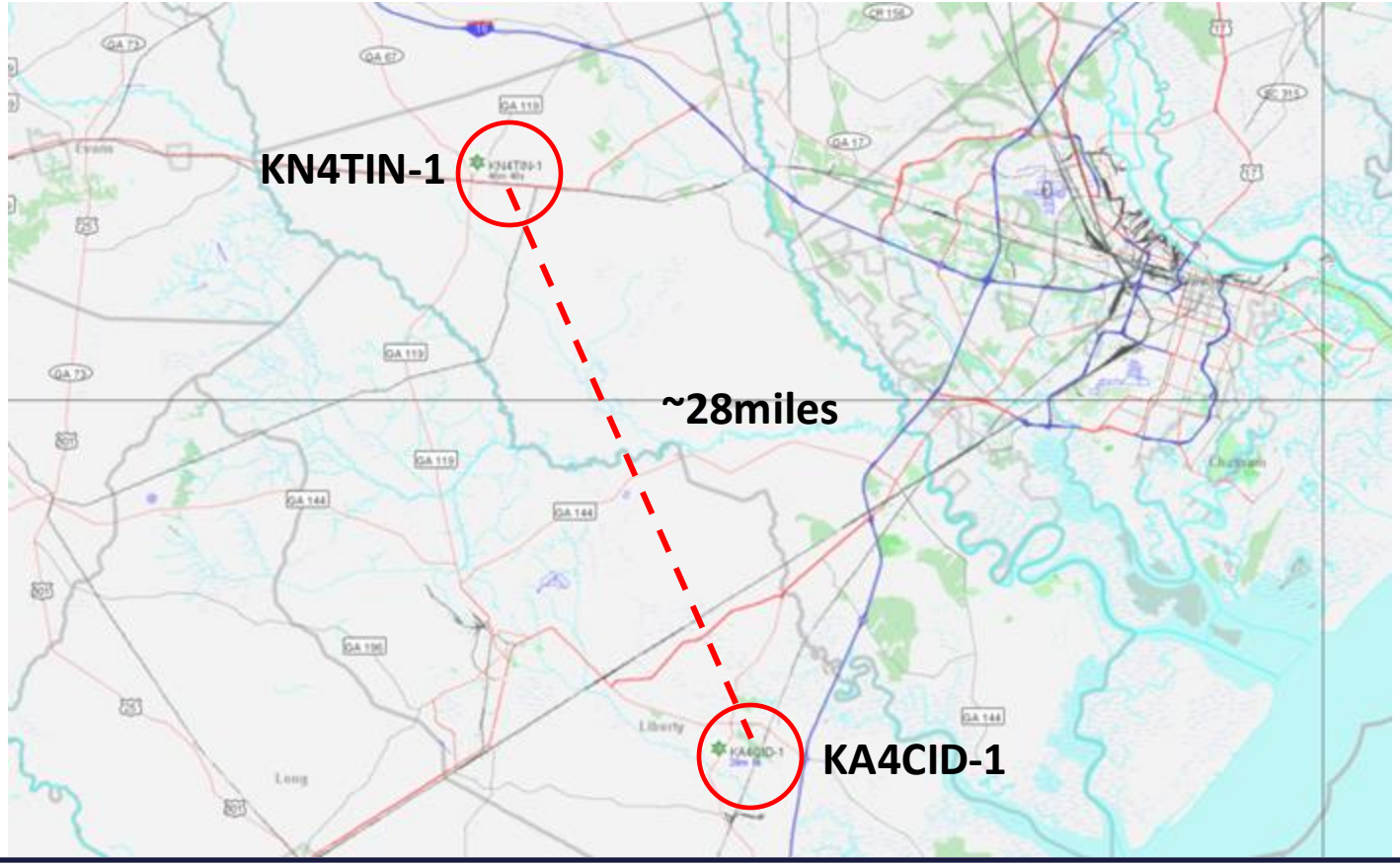
aprs-map.info



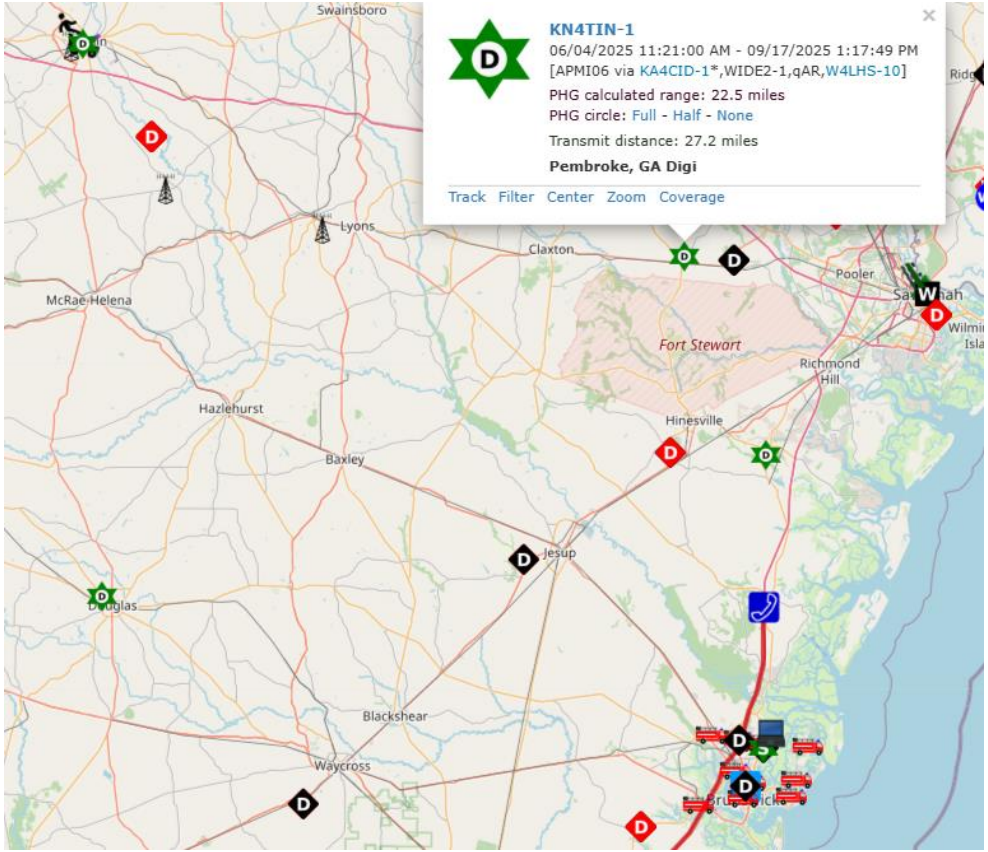
WIDE1-1,WIDE2-1



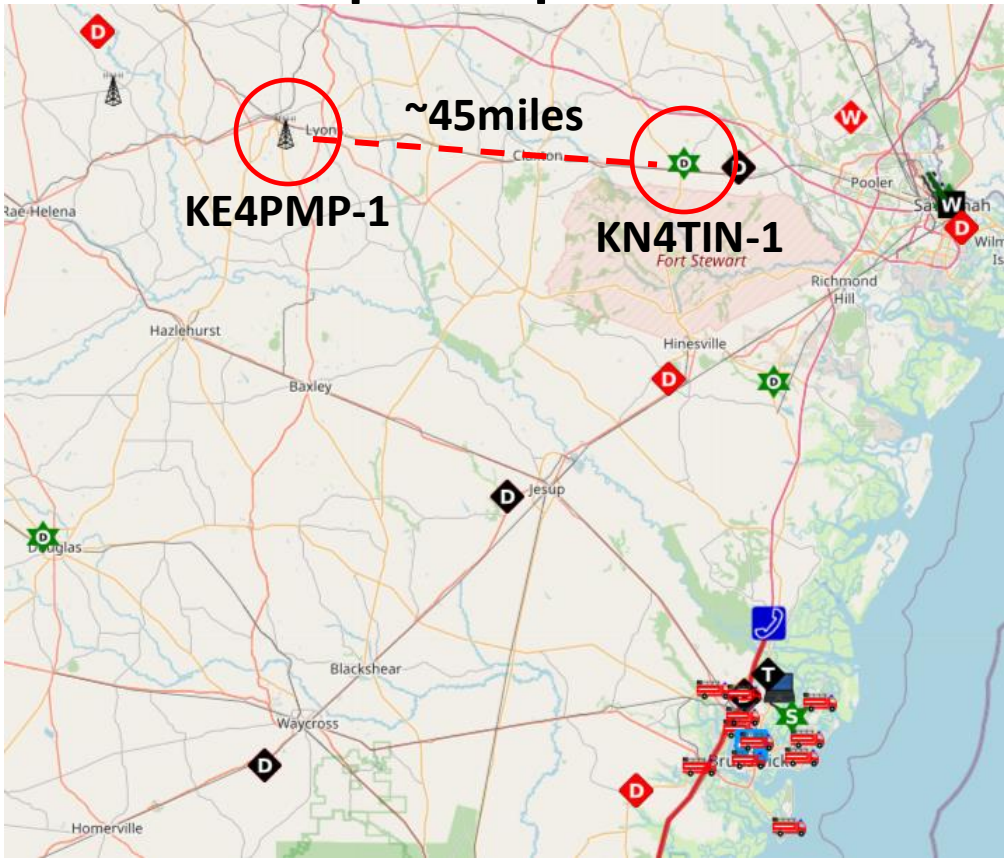
WIDE1-1,WIDE2-1



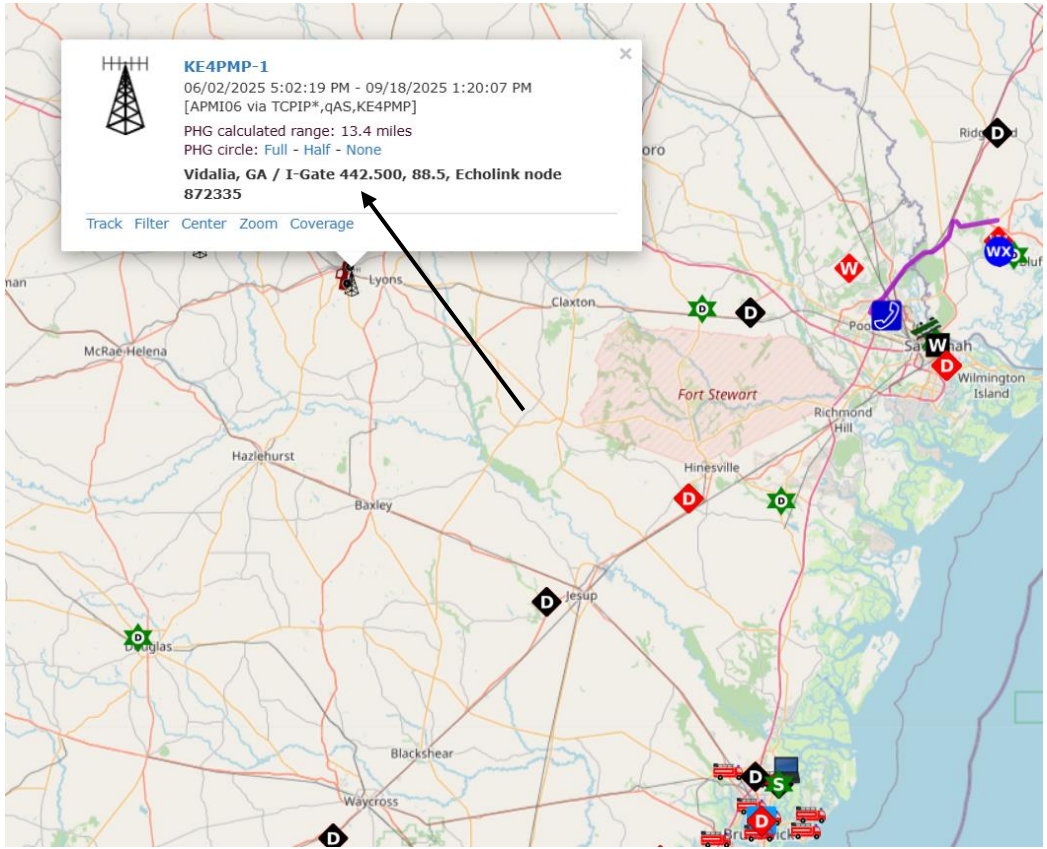
aprs-map.info



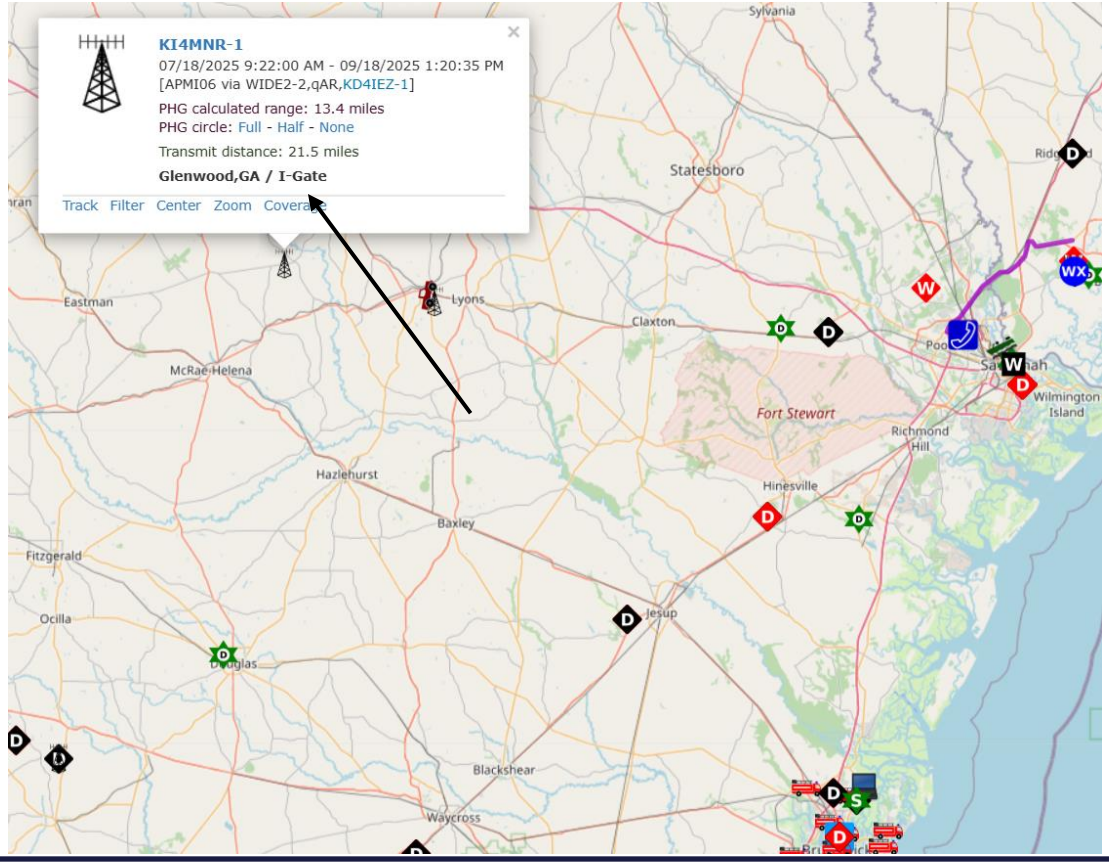
aprs-map.info



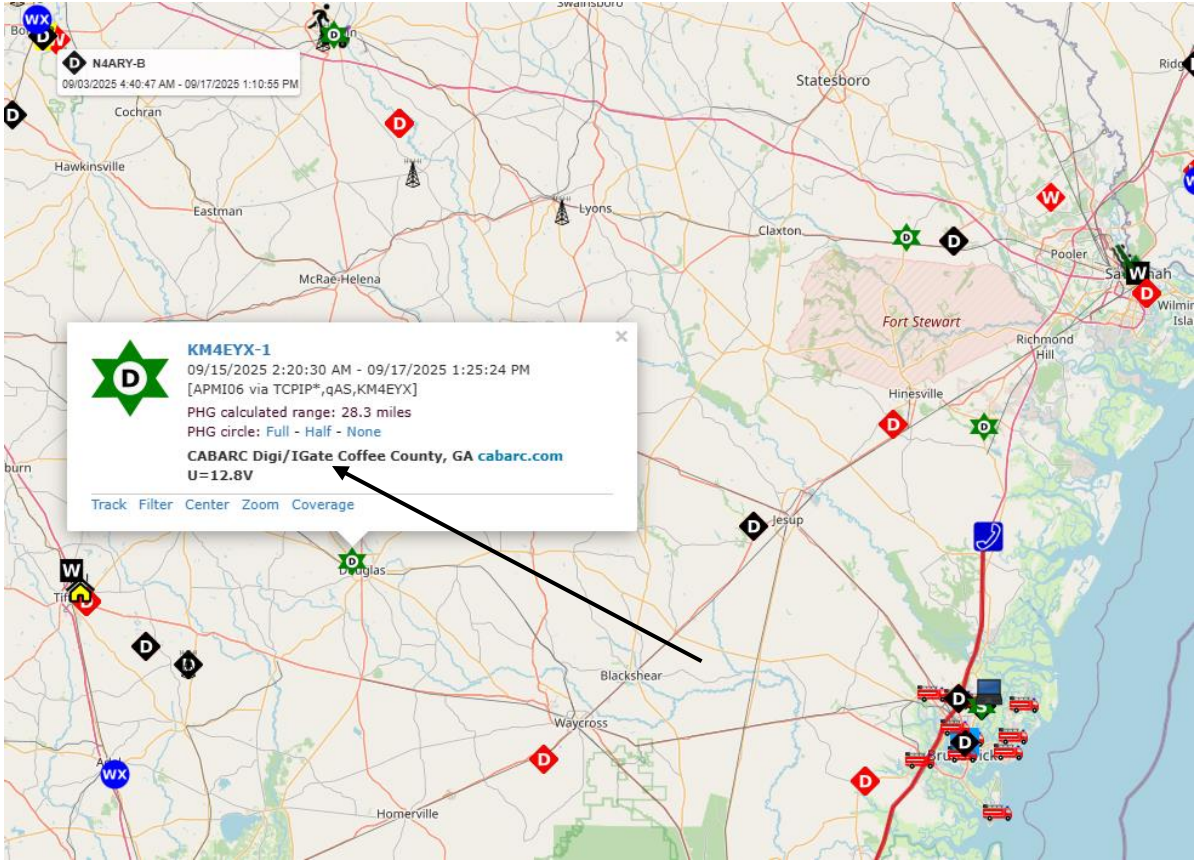
aprs-map.info



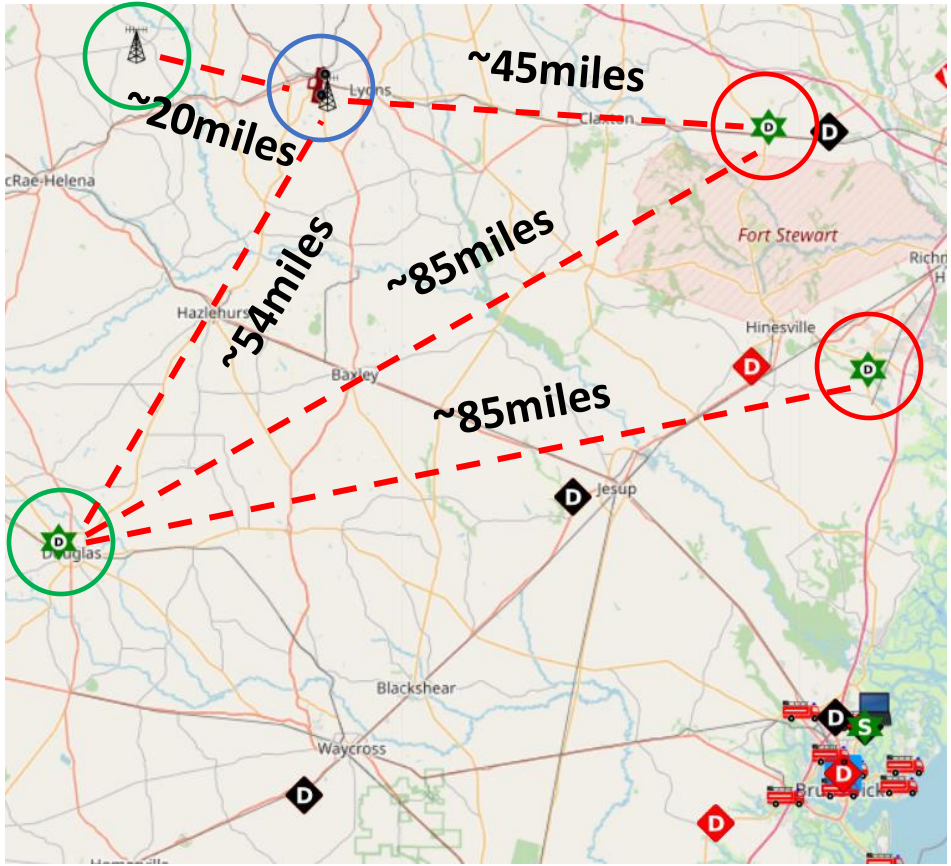
aprs-map.info



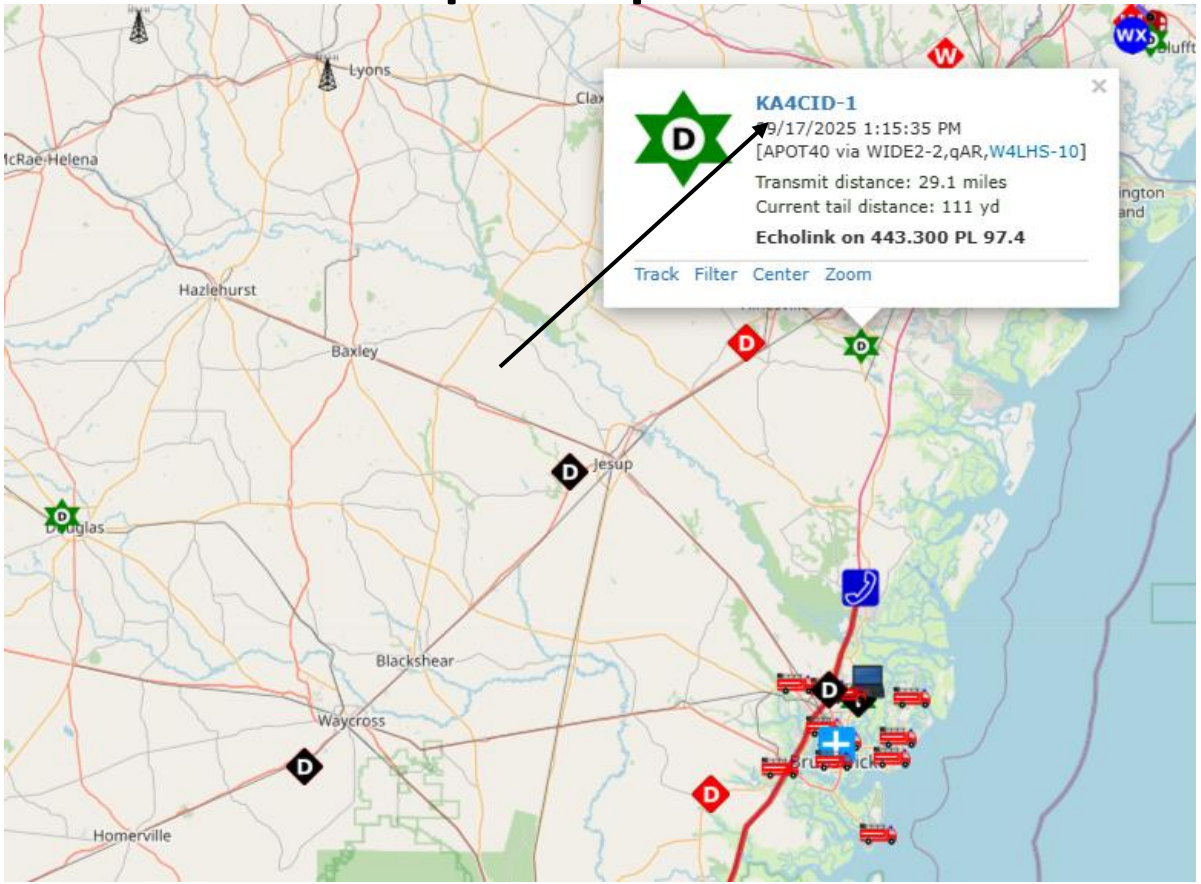
aprs-map.info



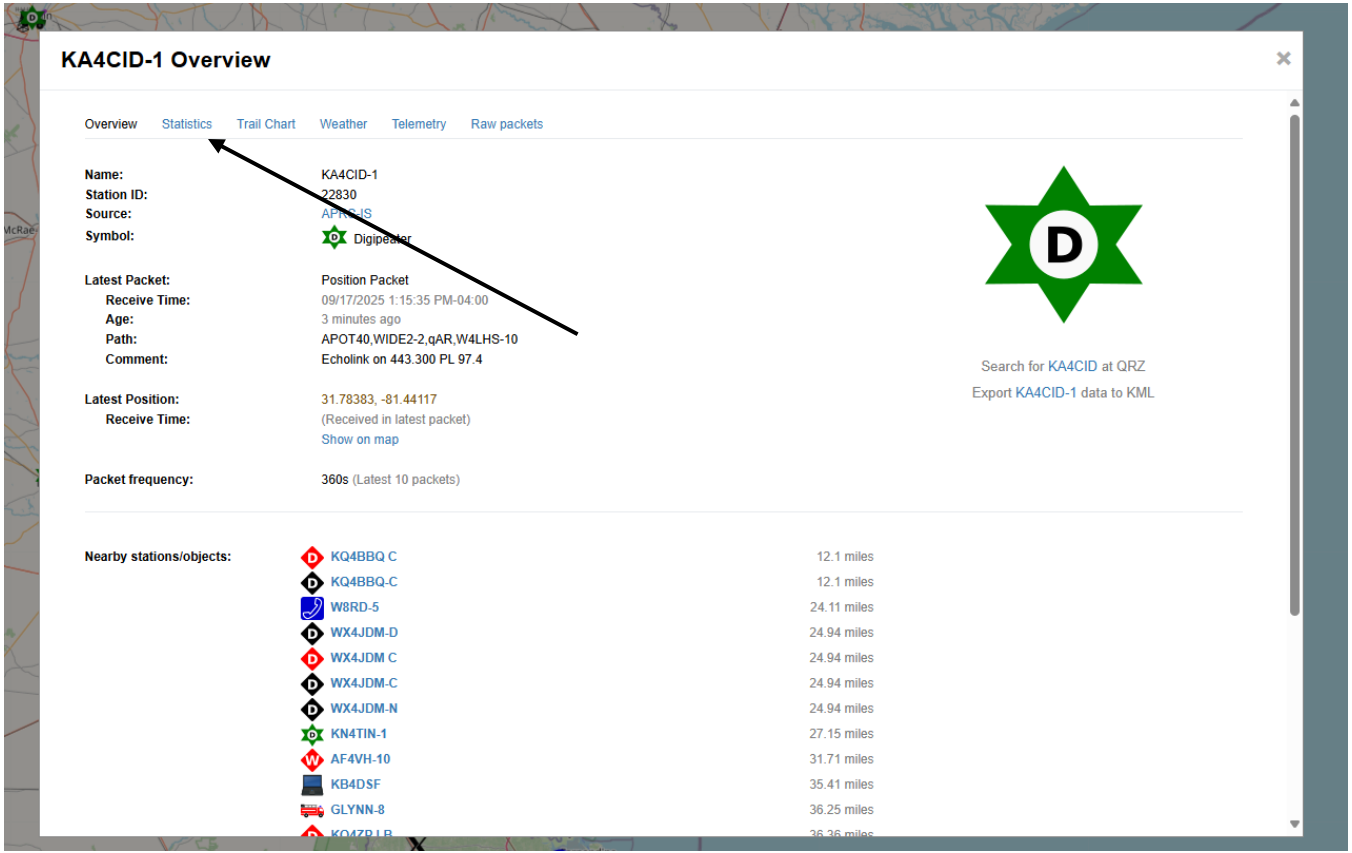
aprs-map.info



aprs-map.info

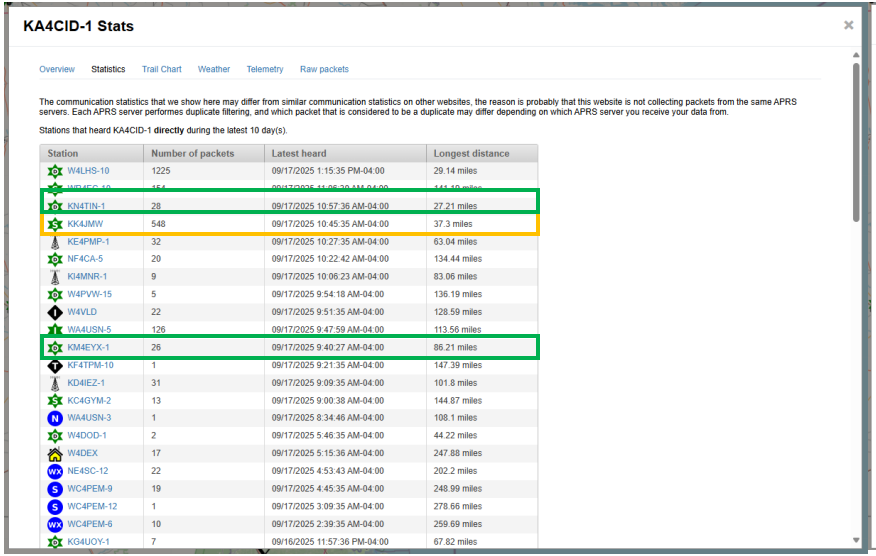


aprs-map.info

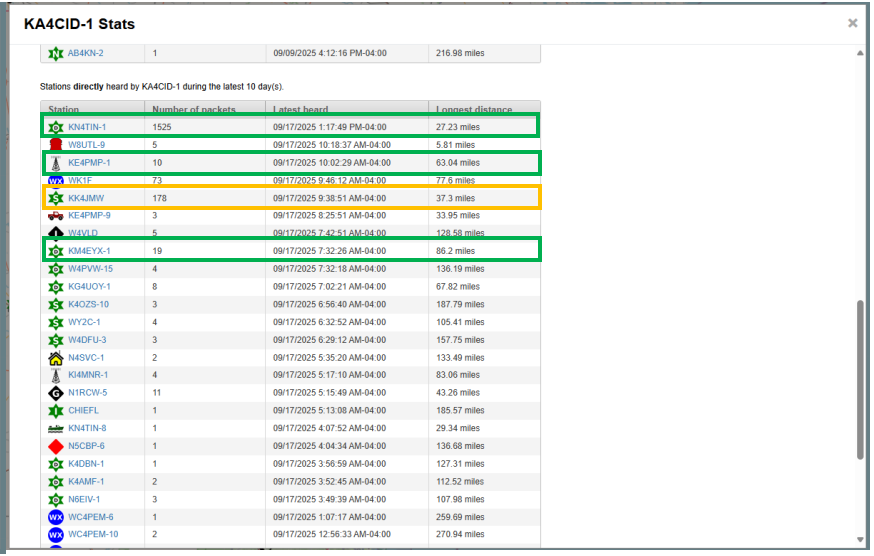


aprs-map.info

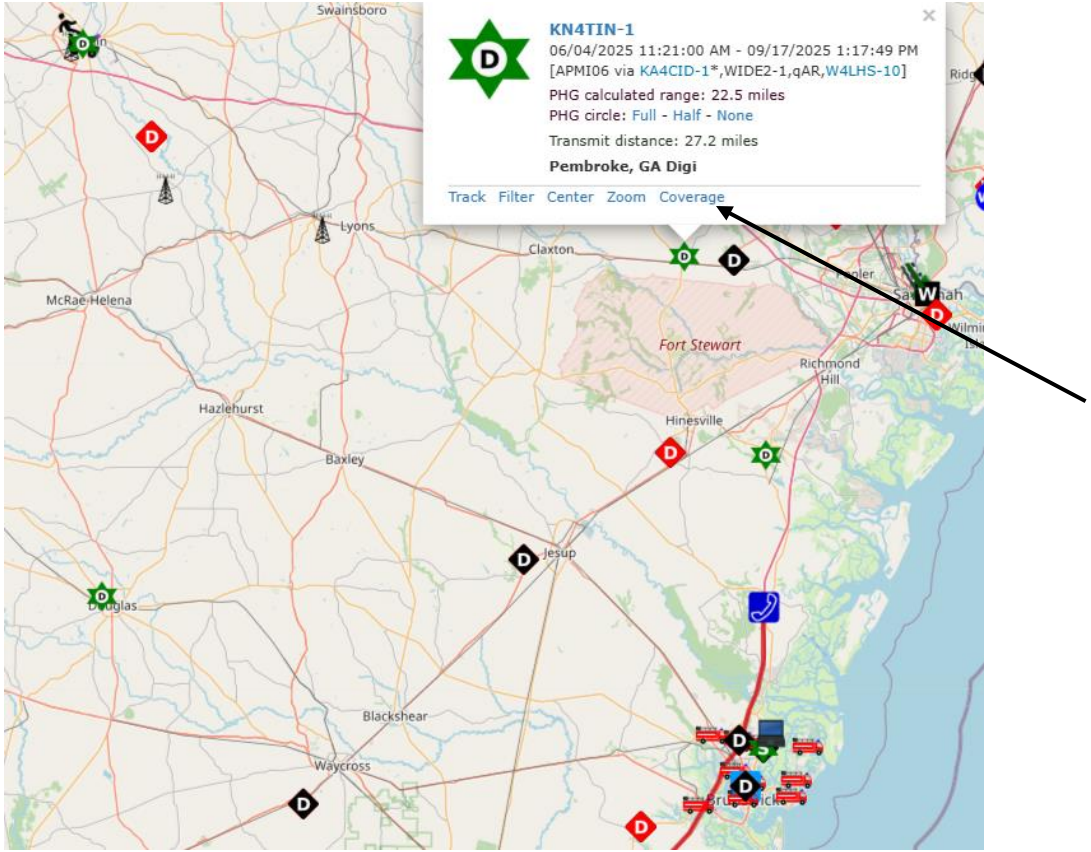
Who has heard KA4CID-1?



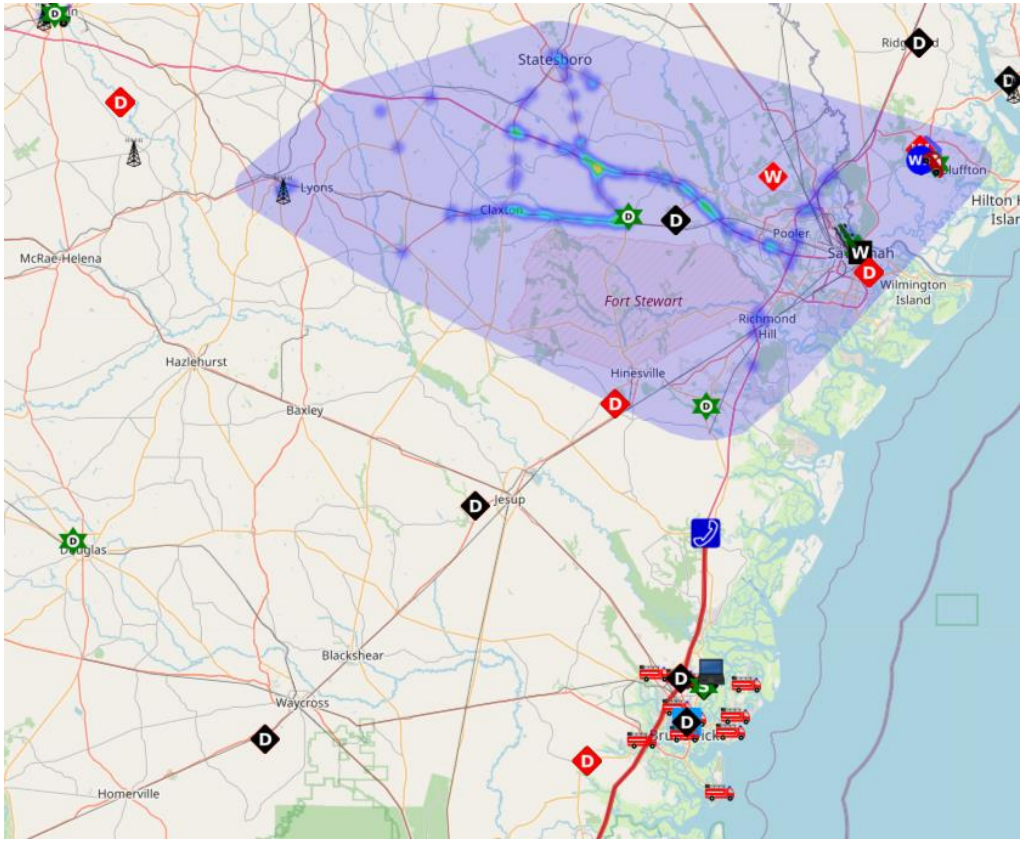
Who has KA4CID-1 heard?



aprs-map.info

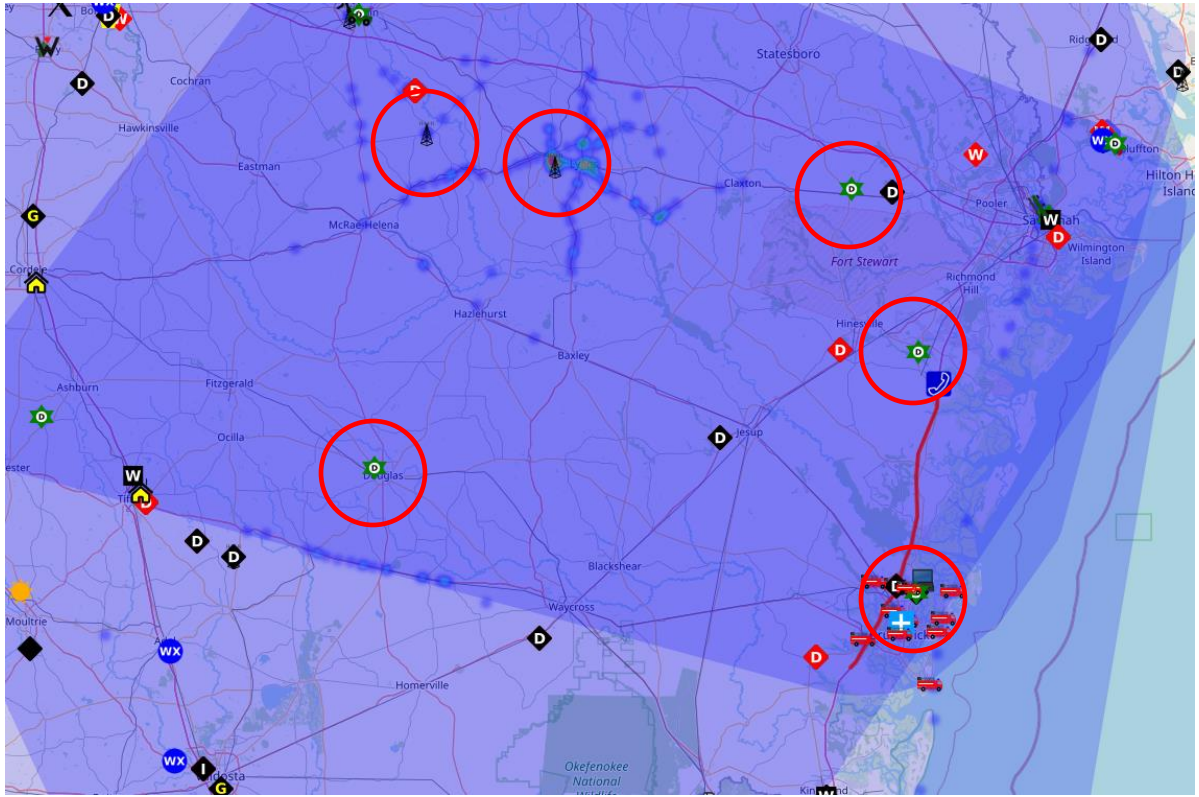


aprs-map.info



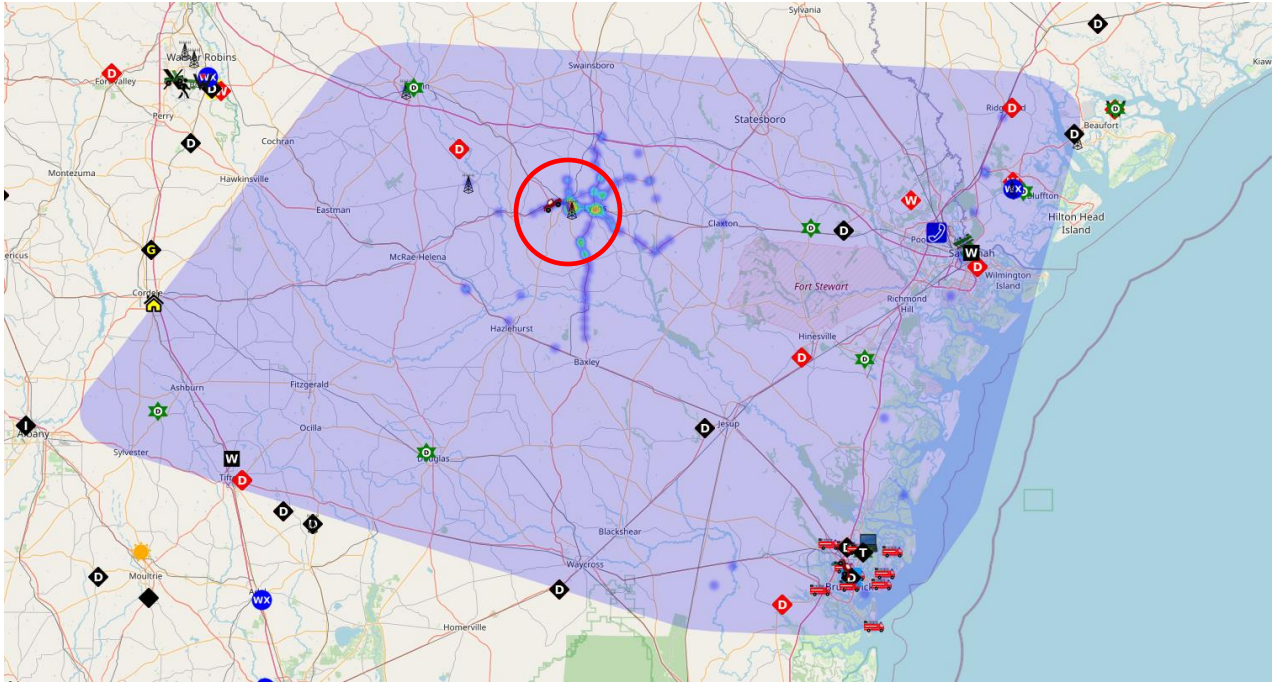
Coverage

- KK4JMW
- KA4CID-1
- KN4TIN-1
- KE4PMP-1
- KI4MNR-1*
- KM4EYX-1*



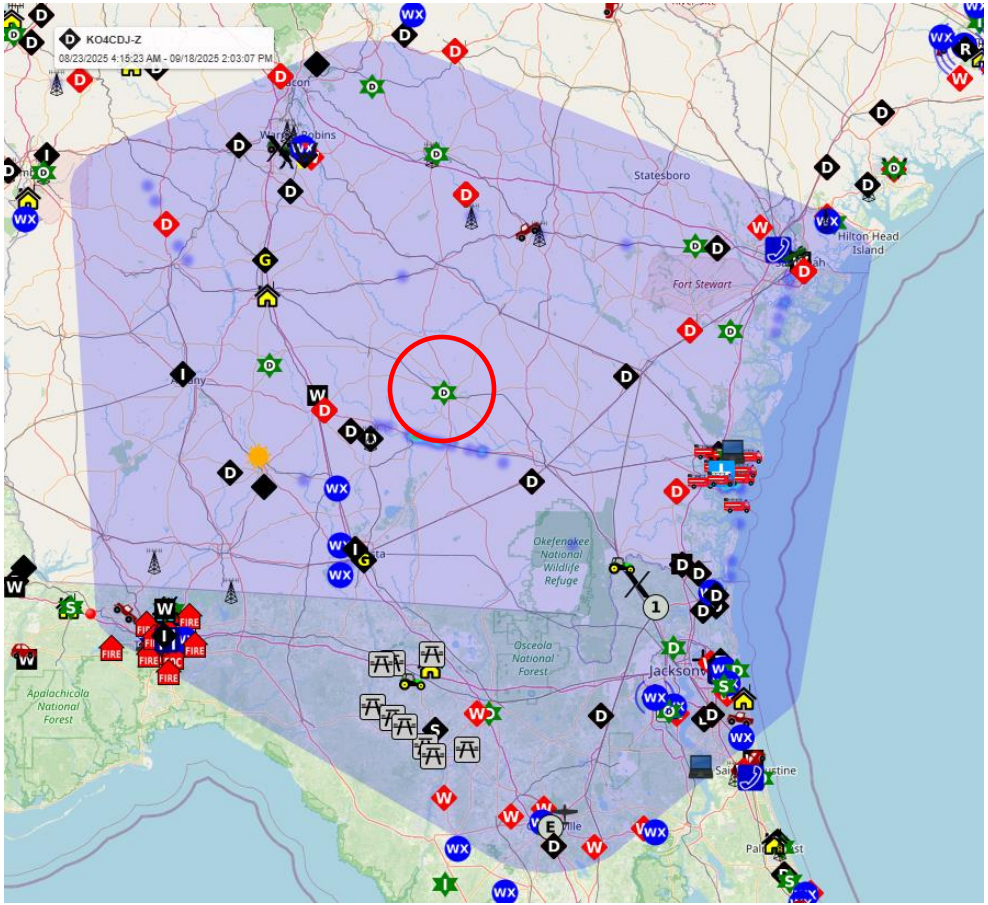
Coverage

- KE4PMP-1



Coverage

- KM4EYX-1

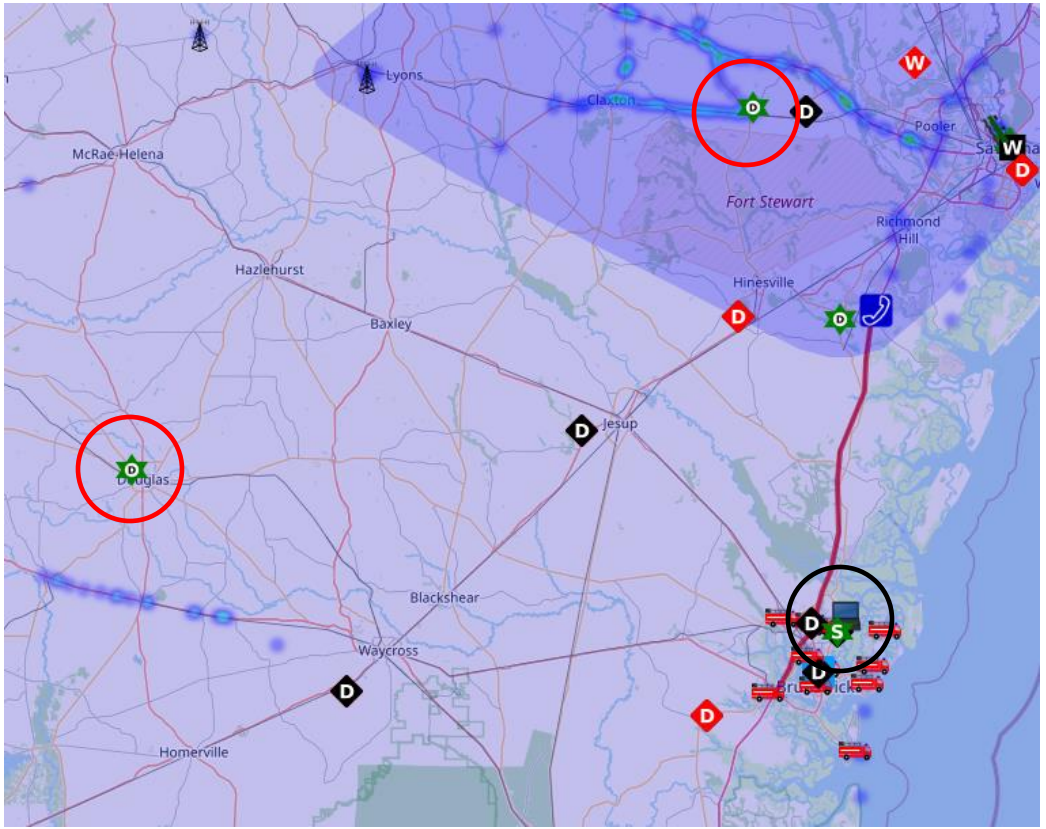


Coverage

TO: SMS

VIA: WIDE1-1,WIDE2-3

@5555551234 no power or cell but we are all ok



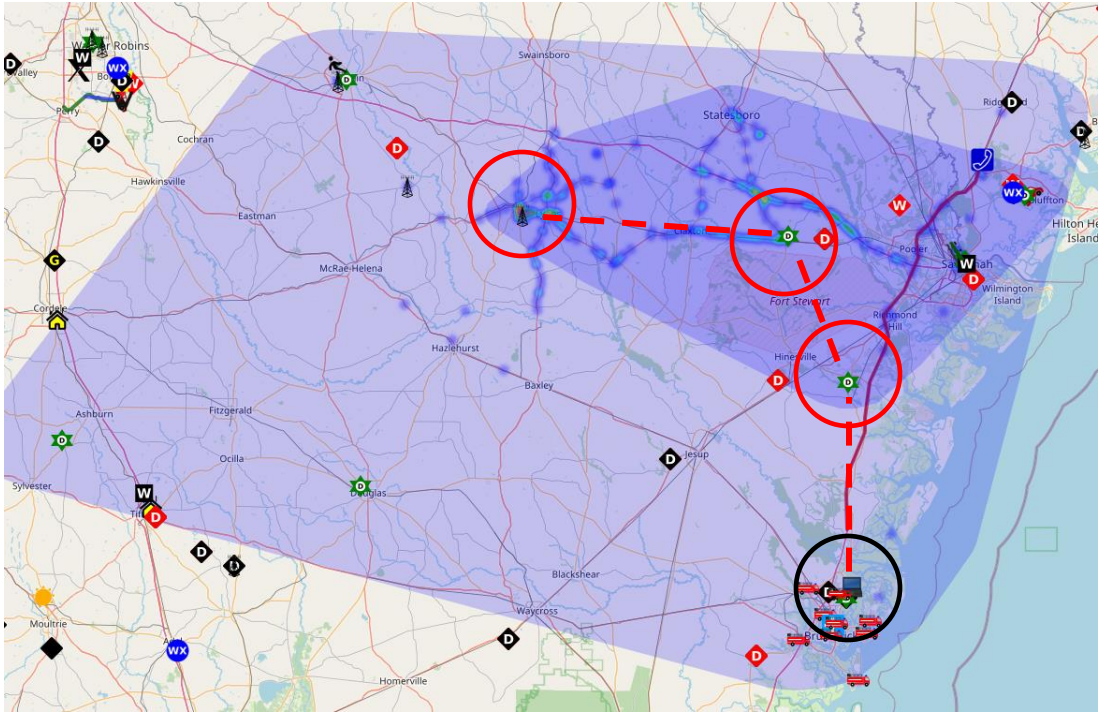
Coverage

- Directed path

TO: SMS

VIA: KK4JMW,KA4CID-1,KN4TIN-1,KE4PMP-1

@5555551234 no power or cell but we are all ok

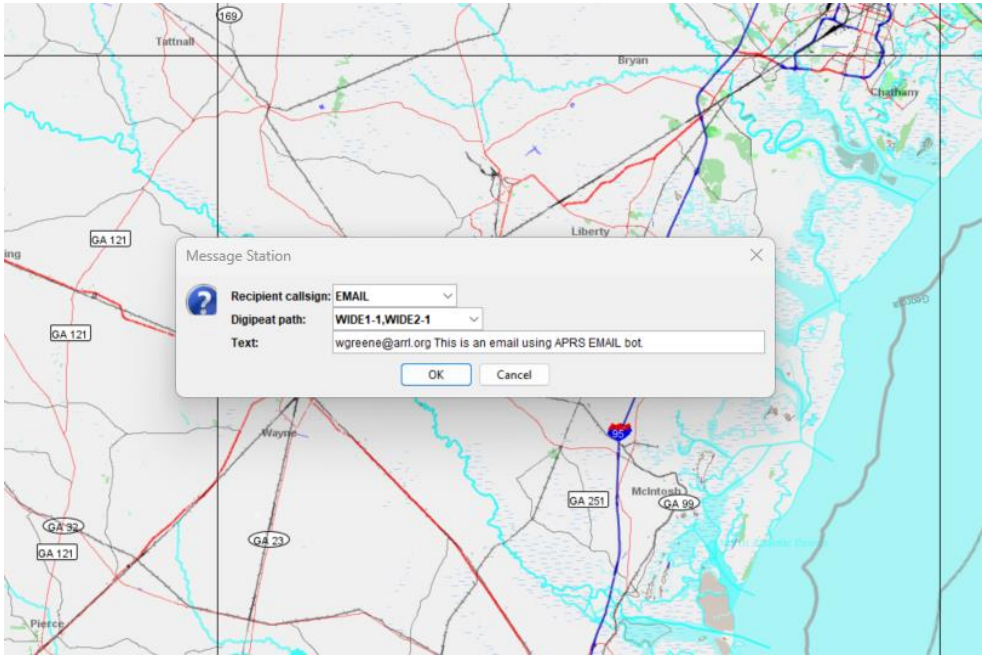


Email using EMAIL Bot

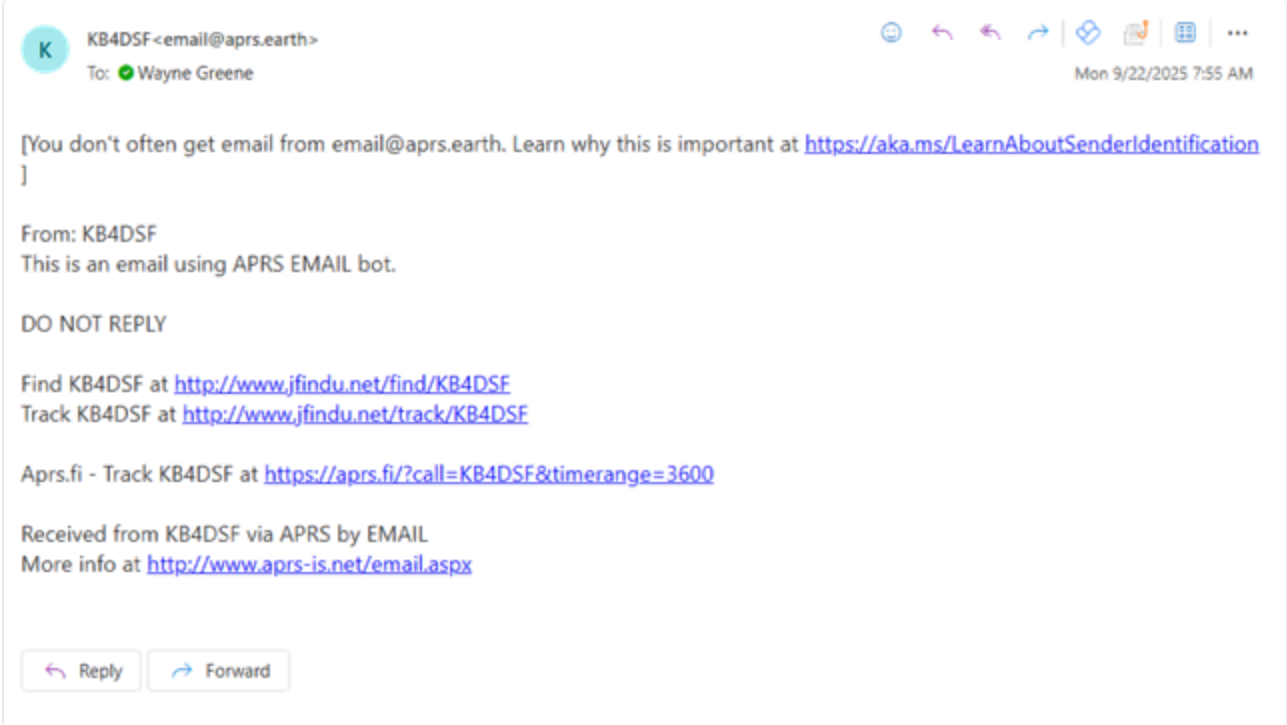
TO: EMAIL

VIA: WIDE1-1,WIDE2-1

wgreene@arrl.org This is an email using APRS EMAIL bot.



Email using EMAIL Bot



K KB4DSF<email@aprs.earth>

To: Wayne Greene

Mon 9/22/2025 7:55 AM

[You don't often get email from email@aprs.earth. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

From: KB4DSF
This is an email using APRS EMAIL bot.

DO NOT REPLY

Find KB4DSF at http://www.jfindu.net/find/KB4DSF
Track KB4DSF at http://www.jfindu.net/track/KB4DSF

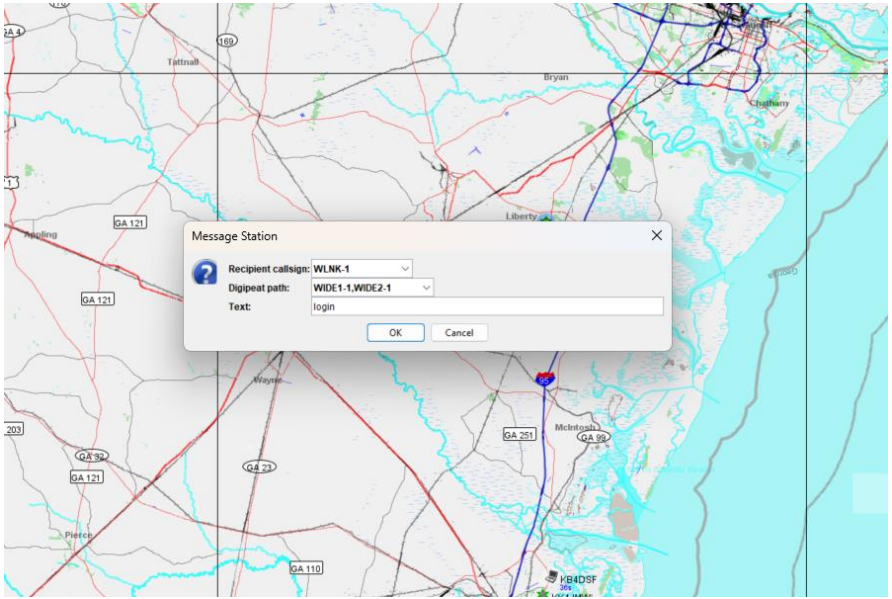
Aprs.fi - Track KB4DSF at https://aprs.fi/?call=KB4DSF&timerange=3600

Received from KB4DSF via APRS by EMAIL
More info at http://www.aprs-is.net/email.aspx

Reply Forward

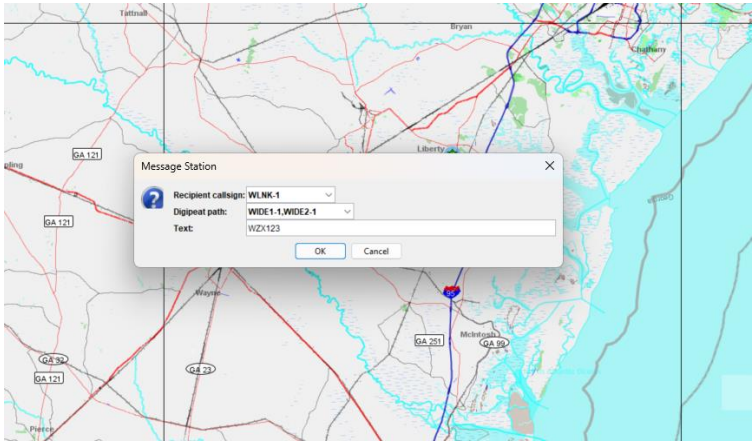
Email using APRSLink

- Send a message to WLNK-1 to login
- Anything will work, but I simply just send “login”



Email using APRSLink

- APRSLink will send a challenge asking for specific characters of your Winlink password
- Enter the characters and include three random numbers
- Logged in for ~2 hours

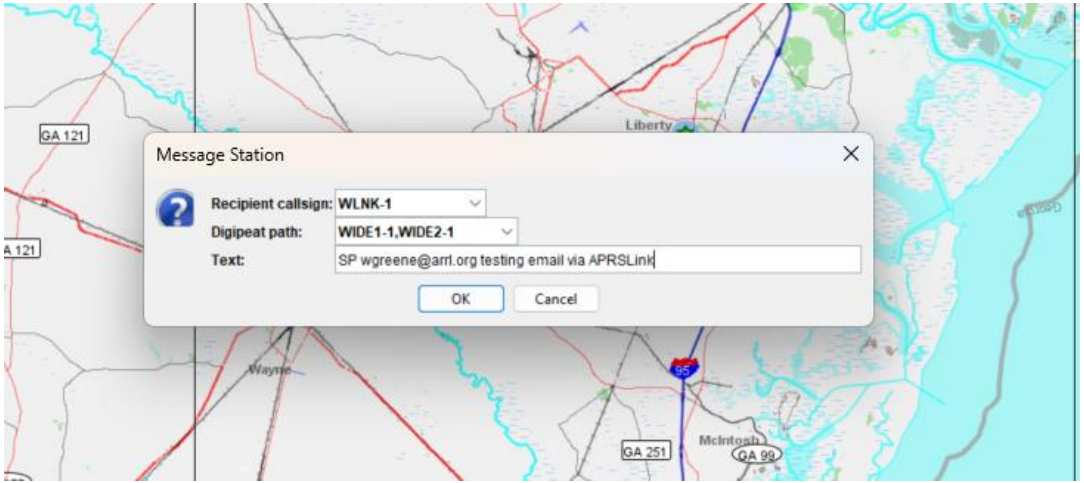


Show every message (not just addressed to this

Date/Time	Sender	Addressee	Text	Seq#	Clear
19/Sep/2025 09:14:49	KB4DSF	WLNK-1	WZX123	M0002	Clear
19/Sep/2025 09:14:46	WLNK-1	KB4DSF	Hello KB4DSF. Login valid for ~2 hours	1293	Clear
19/Sep/2025 09:14:45	KB4DSF	WLNK-1	WZX123	M0002	Clear
19/Sep/2025 09:13:46	KB4DSF	WLNK-1	login	M0001	Clear
19/Sep/2025 09:13:43	WLNK-1	KB4DSF	Login [648]:	1292	Clear
19/Sep/2025 09:13:42	KB4DSF	WLNK-1	login	M0001	Clear

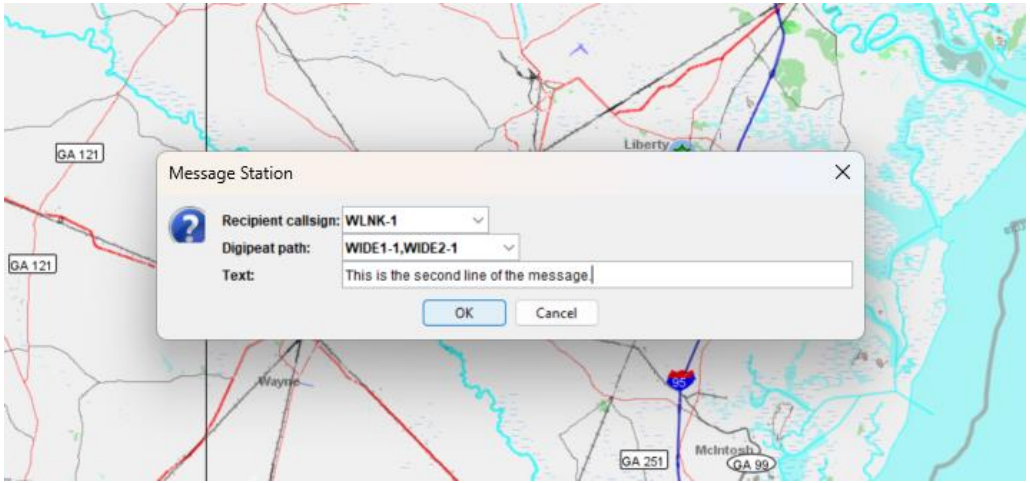
Email using APRSLink

- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.



Email using APRSLink

- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.

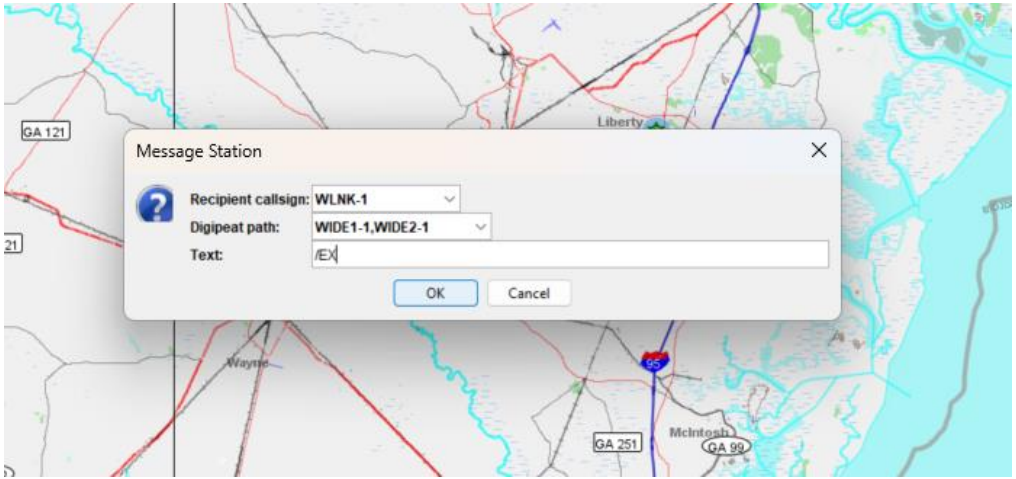


Email using APRSLink

- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.

Email using APRSLink

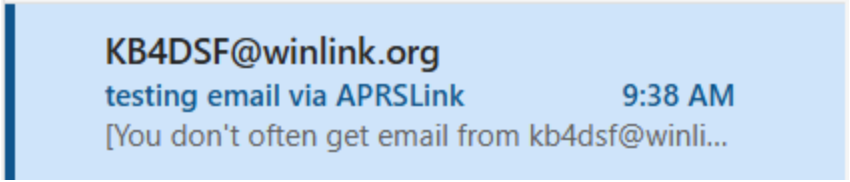
- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.

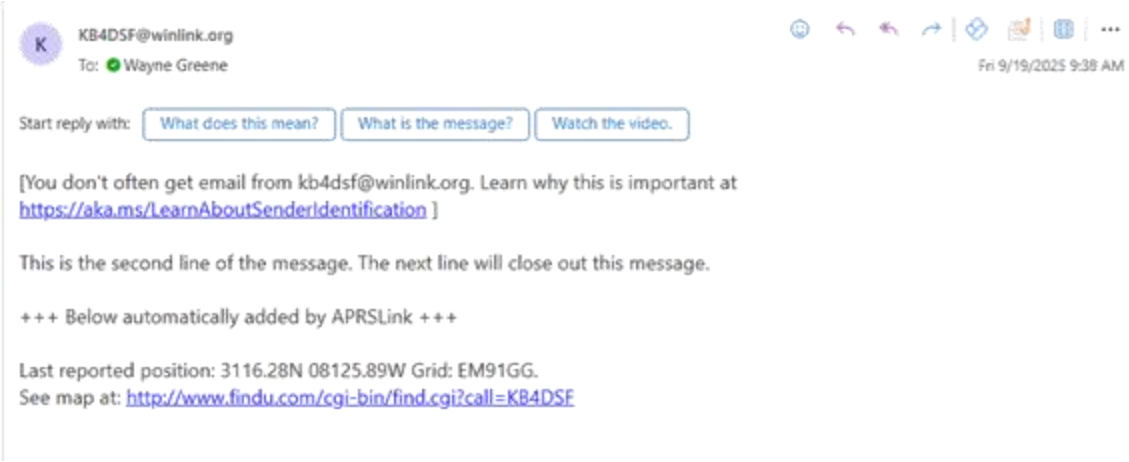


Date/Time	Sender	Addressee	Text	Seq#	Clear
19/Sep/2025 09:37:55	WLNK-1	KB4DSF	Message sent to: wgreene@arrl.org	1304	
19/Sep/2025 09:37:54	KB4DSF	WLNK-1	/EX	M000g	
19/Sep/2025 09:37:37	KB4DSF	WLNK-1	The next line will close out this message.	M000f	
19/Sep/2025 09:37:33	KB4DSF	WLNK-1	The next line will close out this message.	M000f	
19/Sep/2025 09:37:06	KB4DSF	WLNK-1	This is the second line of the message.	M000e	
19/Sep/2025 09:37:02	KB4DSF	WLNK-1	This is the second line of the message.	M000e	
19/Sep/2025 09:36:28	KB4DSF	WLNK-1	SP wgreene@arrl.org testing email via APRSLink	M000d	
19/Sep/2025 09:36:24	WLNK-1	KB4DSF	New message to: wgreene@arrl.org. Send /EX when complete.	1303	
19/Sep/2025 09:36:23	KB4DSF	WLNK-1	SP wgreene@arrl.org testing email via APRSLink	M000d	

Email using APRSLink

- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.

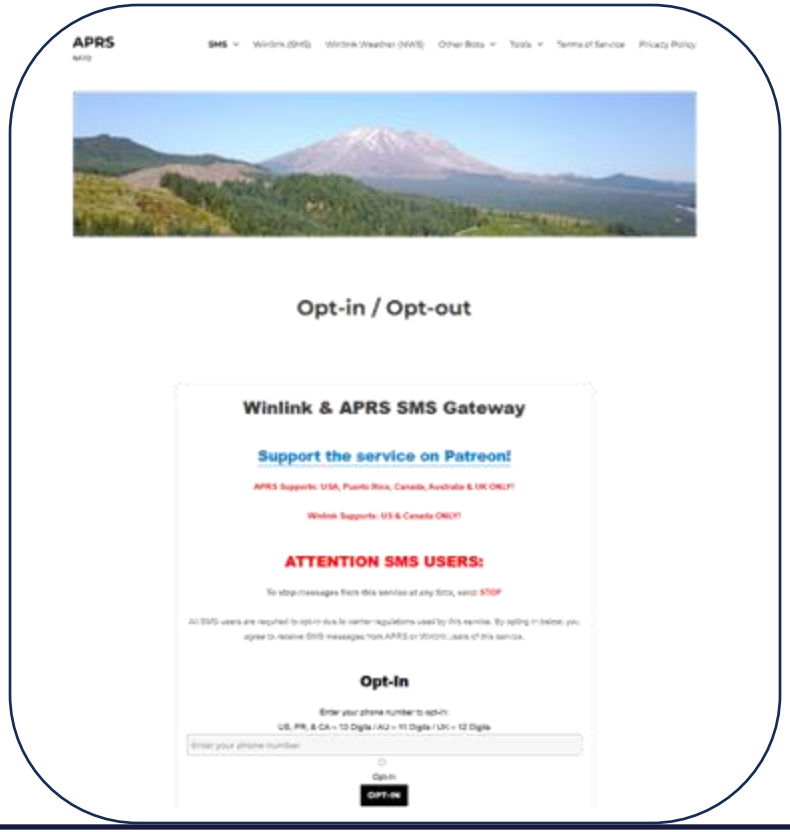




The Time to Learn is Now

- For SMS
  - Opt in your phone number and all others who you wish to contact
  - https://aprs.wiki/

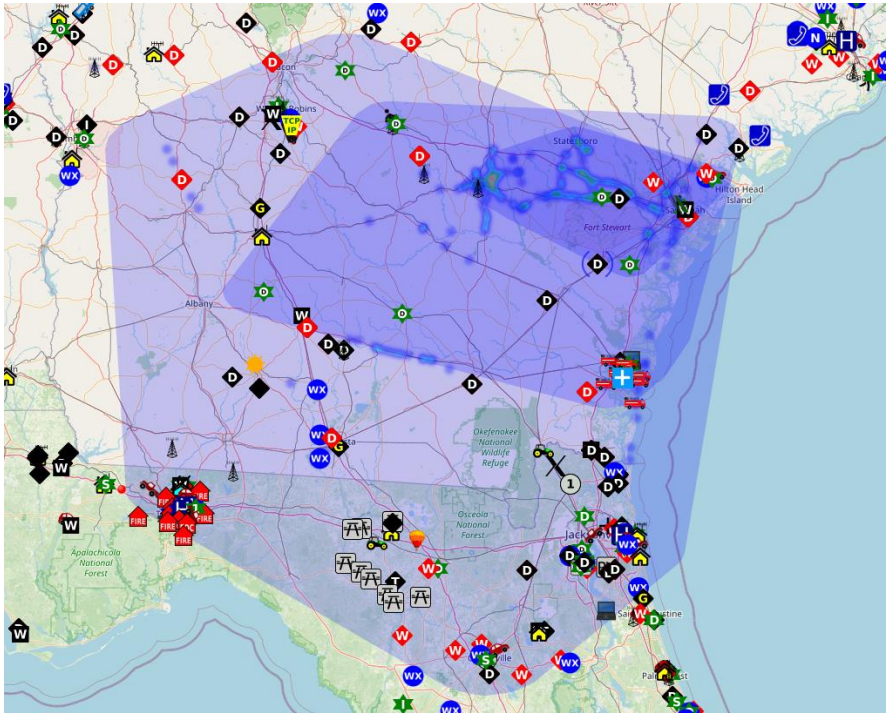
- For APRSLink
  - Must have a Winlink account
  - https://winlink.org/



The Time to Learn is Now

- Software:
  - YAAC (cross platform)
  - PinPoint APRS (Windows)
  - APRSdroid (Android)
  - PulseModem (IOS)
  - Direwolf (Software TNC)
  - Soundmodem (Software TNC)

- Hardware
  - APRS enabled HT
  - Digirig Mobile or Digirig Lite
  - Mobilinkd TNC
  - SignaLink USB

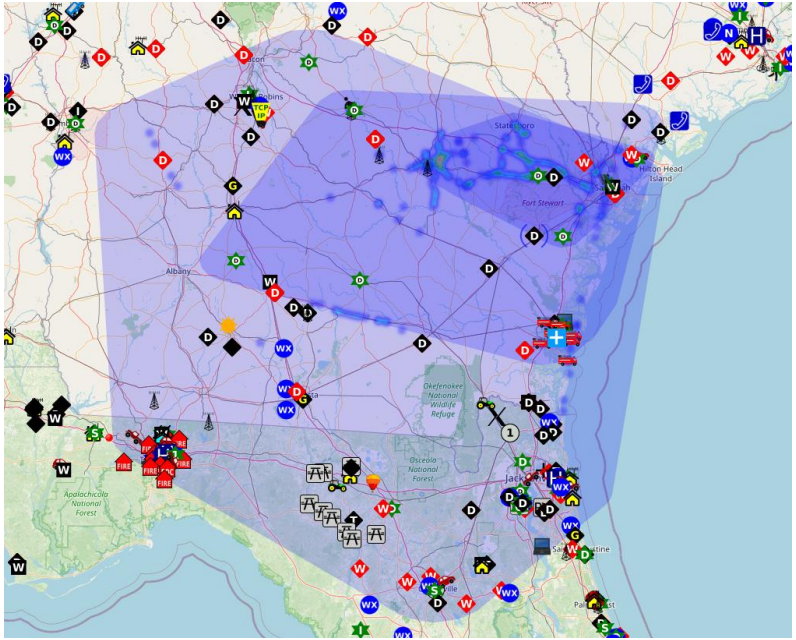


The Time to Learn is Now

- APRS on the Web
  - https://github.com/wb2osz/aprsspec/tree/main
  - aprs-map.info
  - aprs.fi
  - APRS-IS Passcode: n5dux.com/ham/aprs-passcode/

- Test
  - Find nearby digipeaters
  - Determine IGate locations
  - Test to determine if you can reach them via RF only
  - Have someone outside of your area help you test

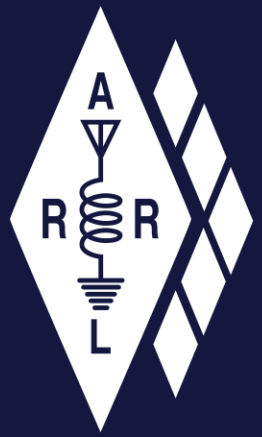
TO: KB4DSF
VIA: KK4JMW,KA4CID-1,KK4JMW,RFONLY,NOGATE
Testing RFONLY and NOGATE



Next Month On the Air Live
October 28 @8pm Eastern

Family EMCOMM: VarAC

Thank You!



ARRL
The National Association for
Amateur Radio®