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Family EMCOMM: APRS

wgreene@ARRL.org

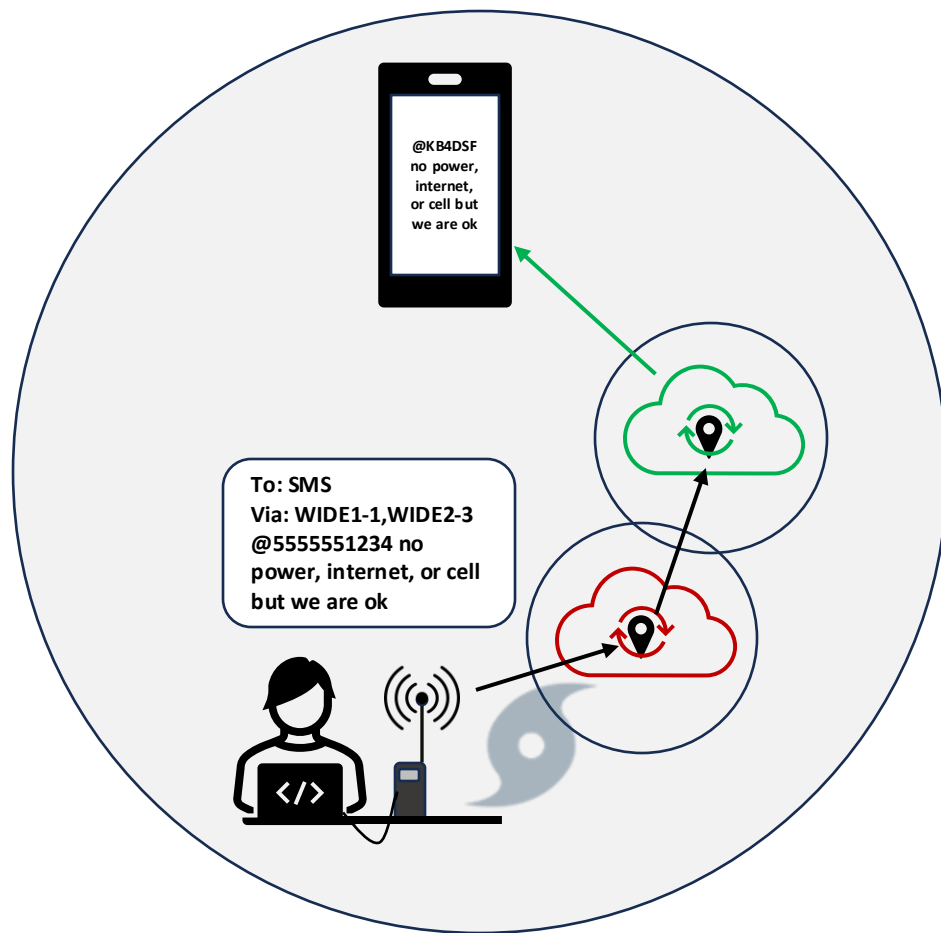


ARRL
The National Association for
Amateur Radio®



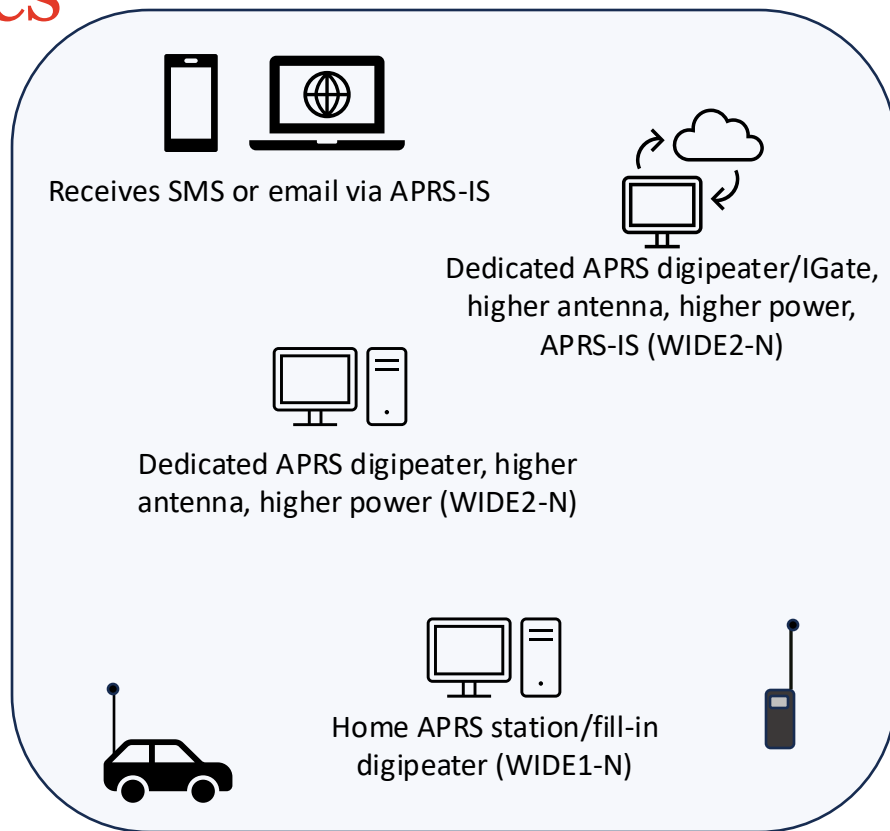
To Cover

- 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



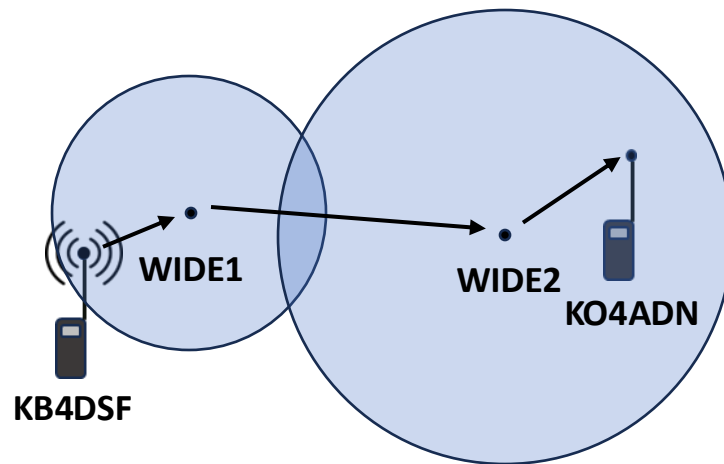
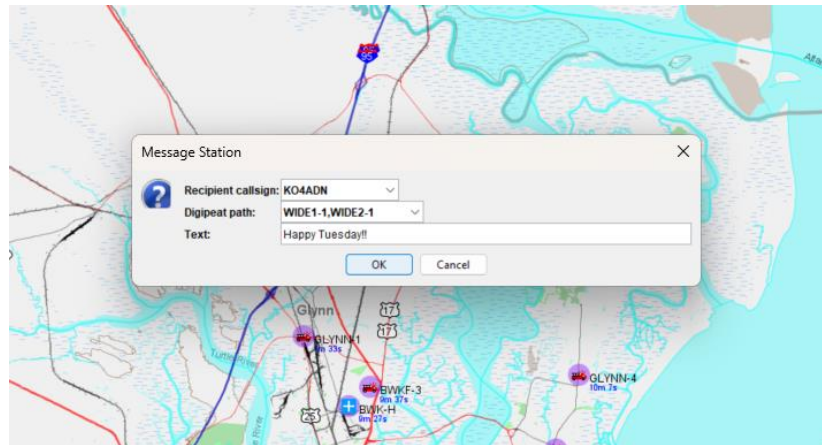
APRS Network Basics

- 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

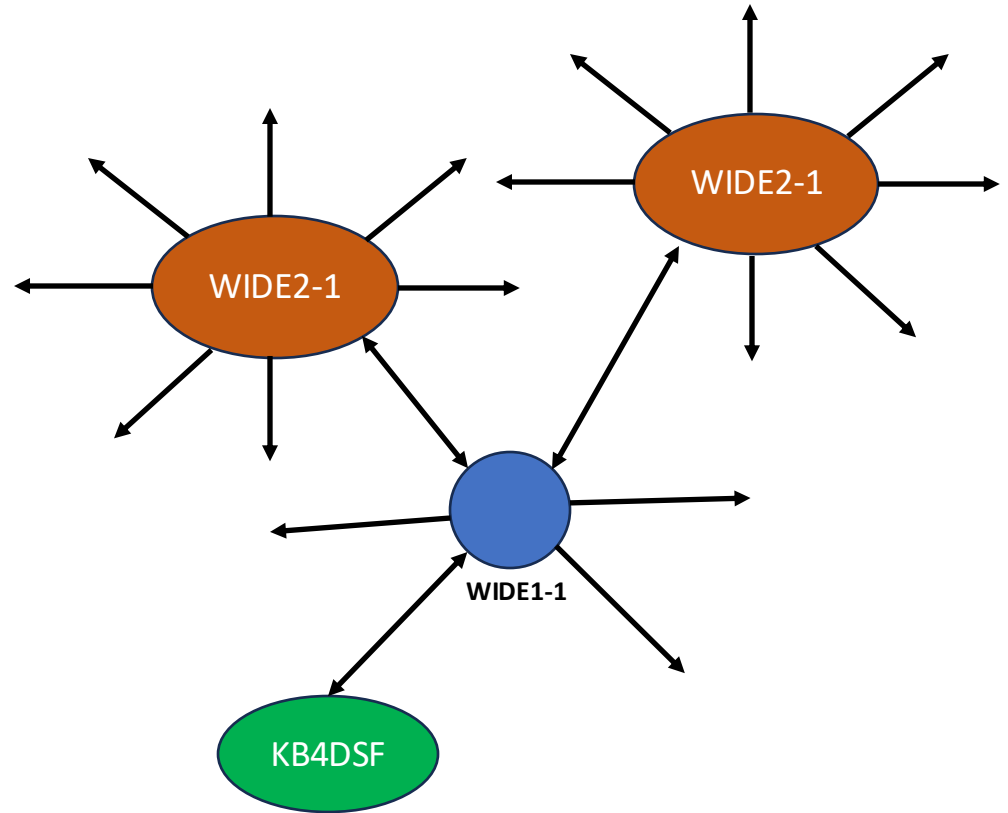
- Understanding how APRS paths work is key
- Normally use WIDE aliases
 - Typical is WIDE1-1,WIDE2-1
- WIDE1 digipeater, if available, can help repeat the APRS message to a WIDE2 digipeater
- WIDE2 digipeater will have greater range



APRS Paths

Undirected Path

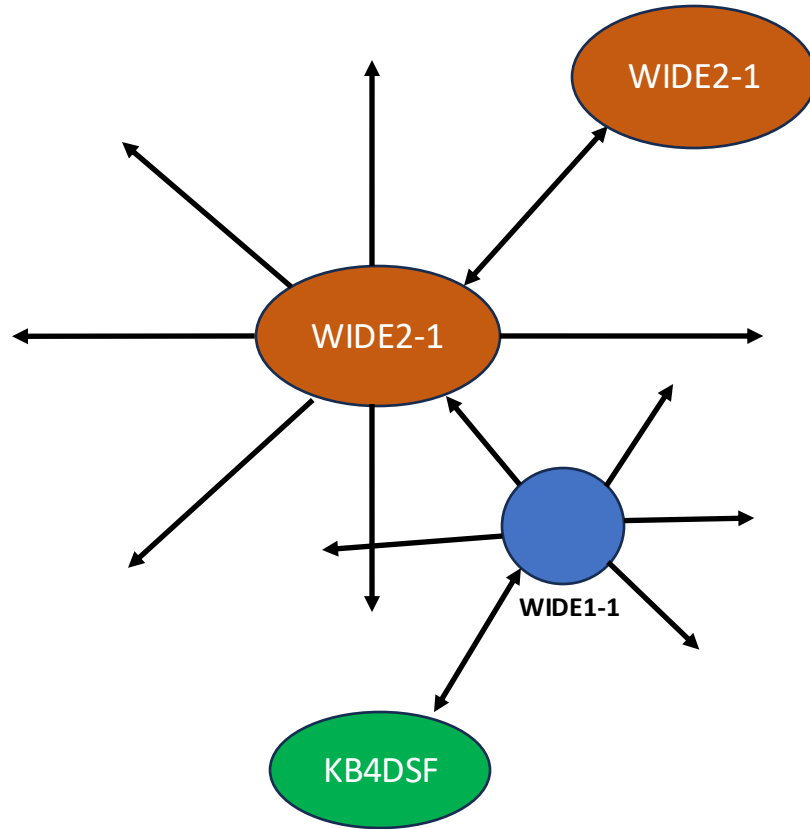
- Most common
- WIDEn-N format
 - n is type of digipeater: 1 is fill-in, 2 is wide area
 - N is the number of requested hops
- WIDE1-1, WIDE2-1 is most common



APRS Paths

Undirected Path

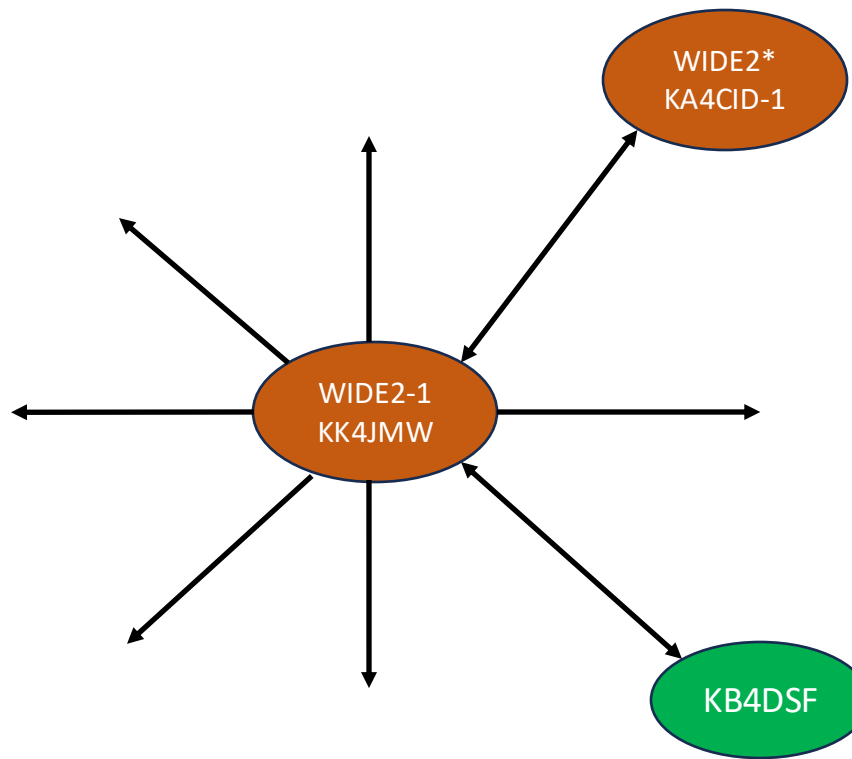
- Most common
- WIDEn-N format
 - n is type of digipeater: 1 is fill-in, 2 is wide area
 - N is the number of requested hops
- WIDE1-1, WIDE2-1 is most common



APRS Paths

Undirected Path

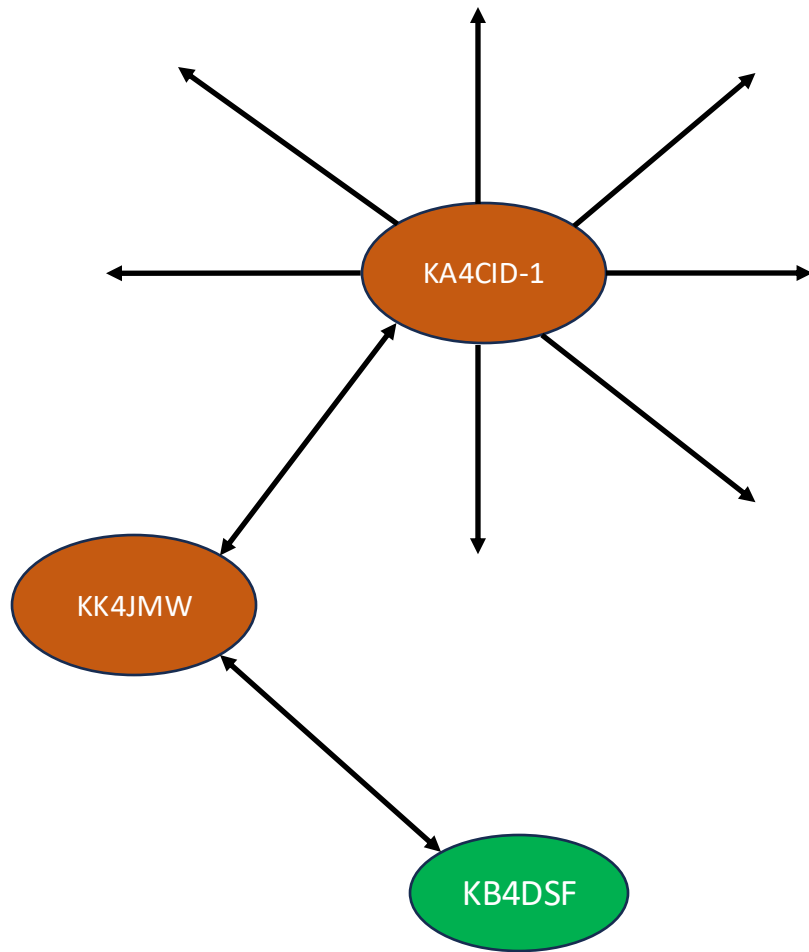
- Most common
- WIDEn-N format
 - n is type of digipeater: 1 is fill-in, 2 is wide area
 - N is the number of requested hops
- WIDE1-1, WIDE2-1 is most common

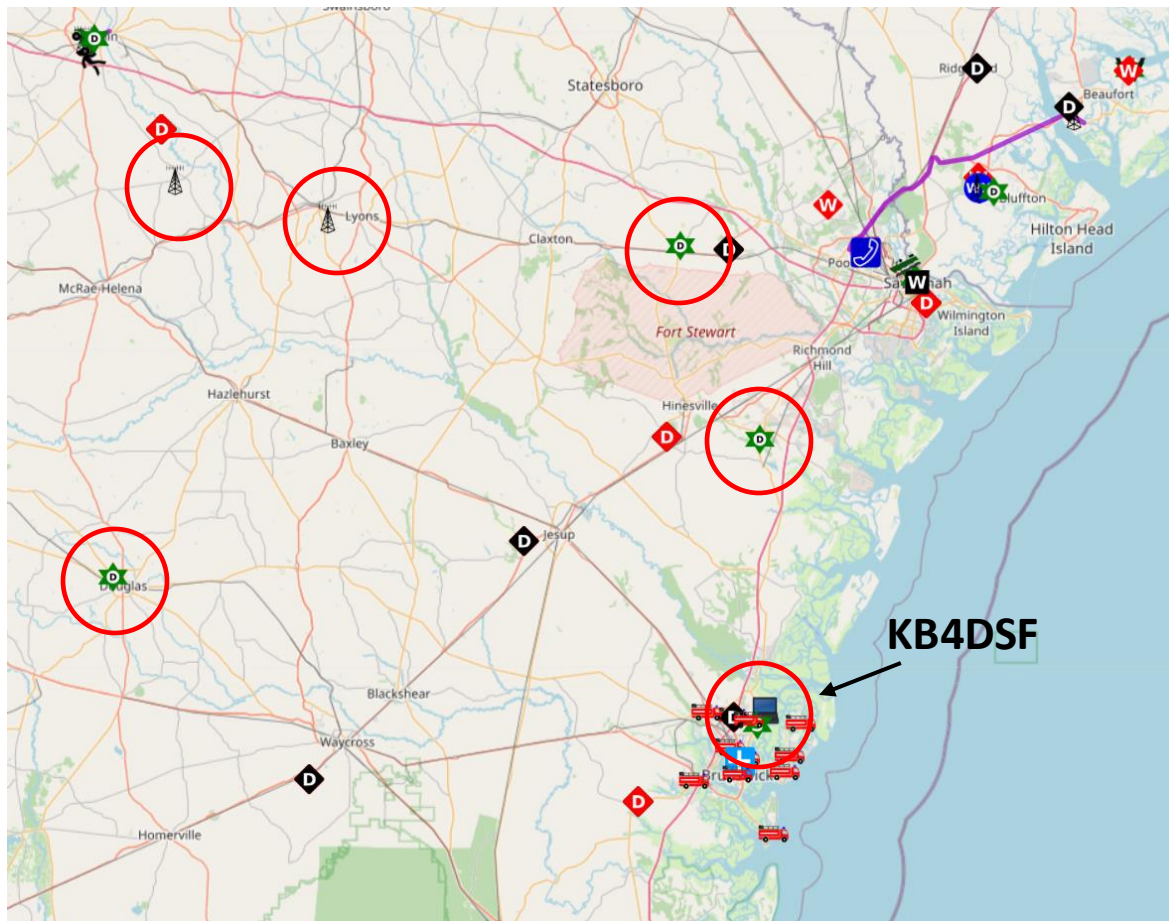


APRS Paths

Directed Path

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

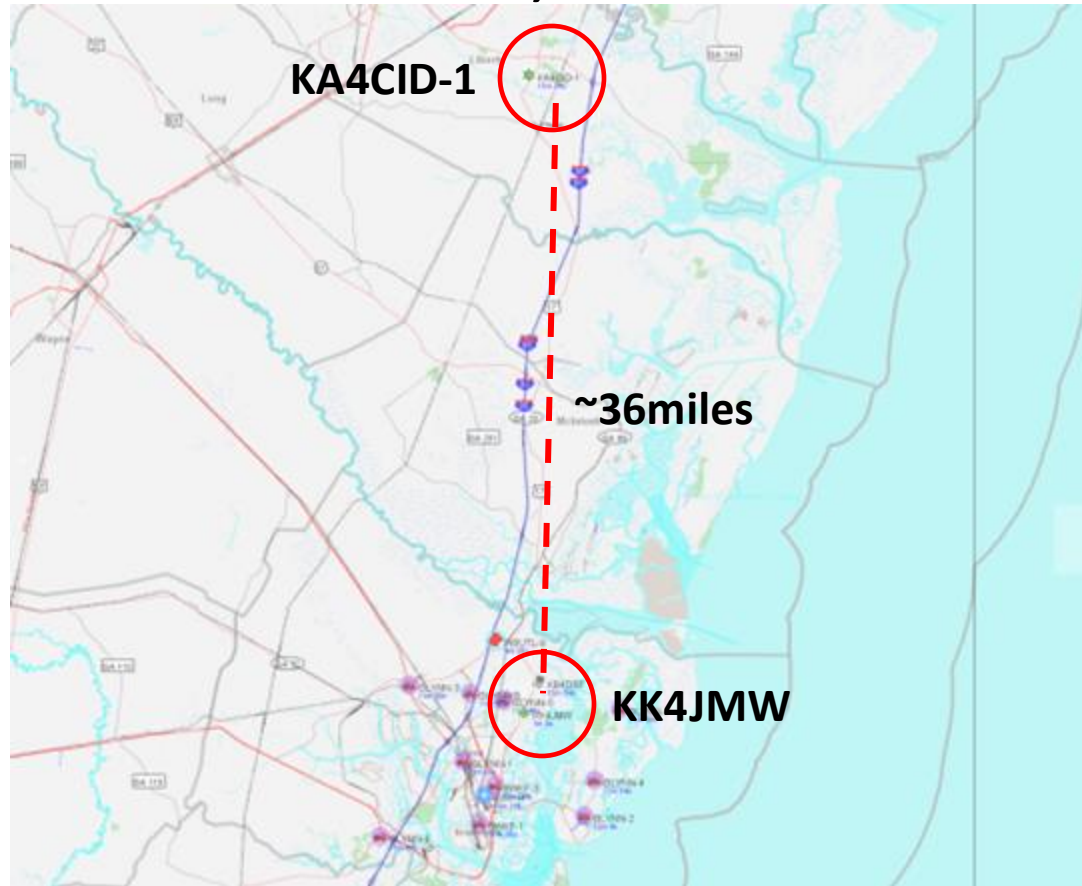




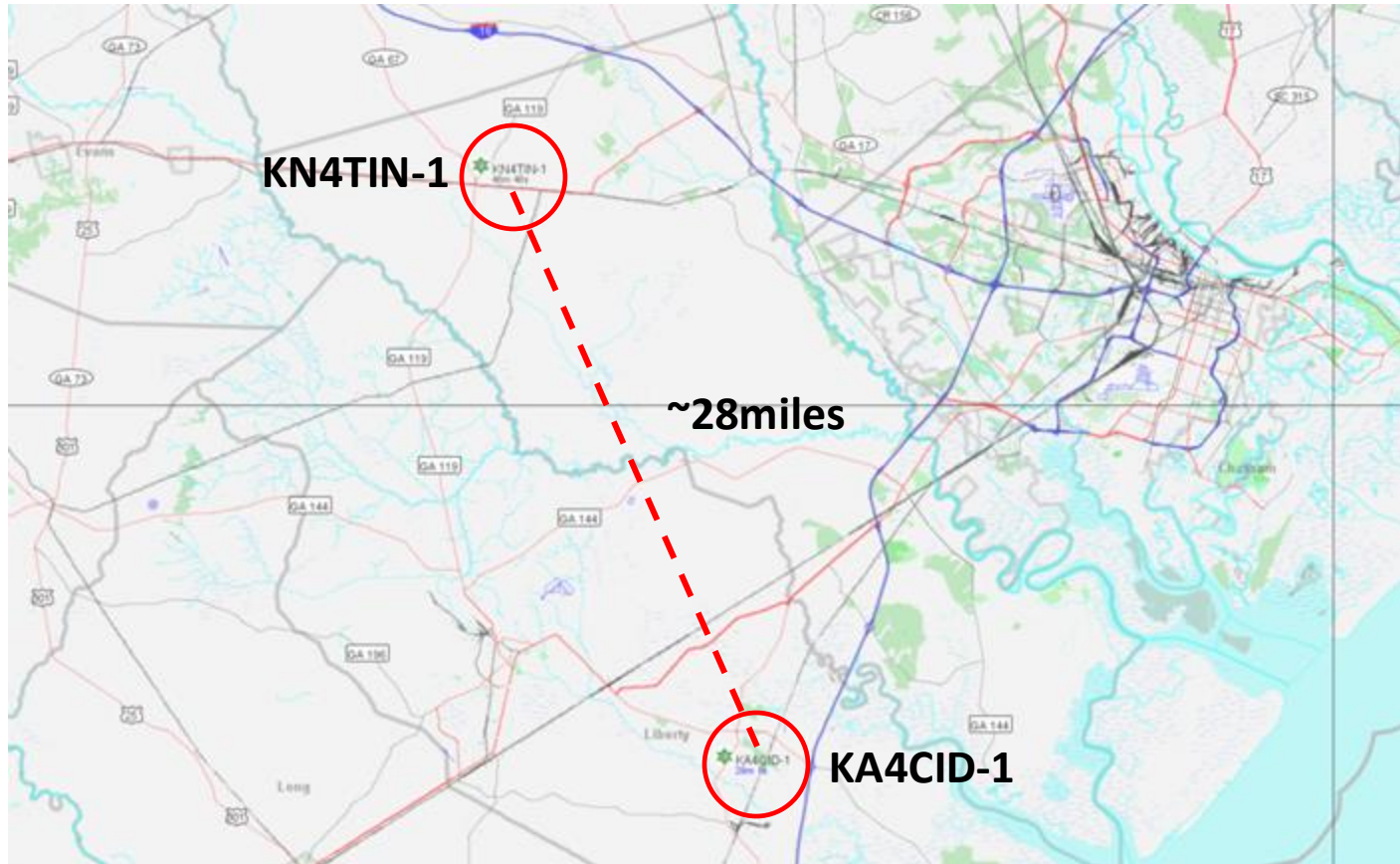
aprs-map.info



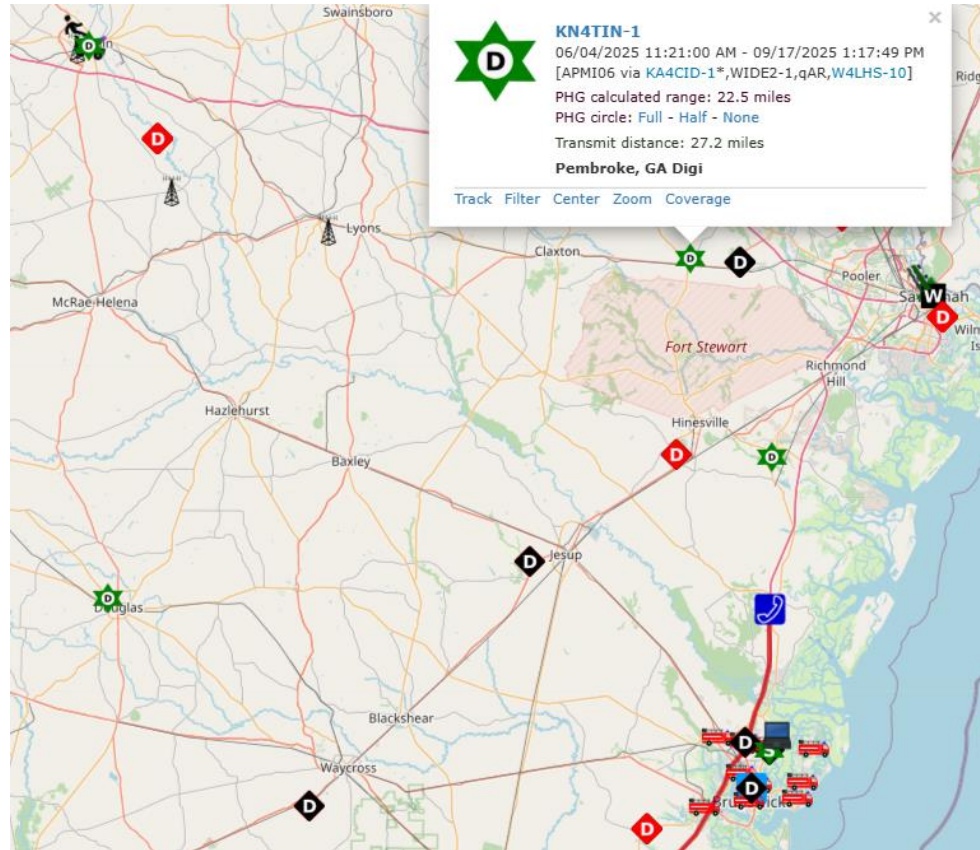
WIDE1-1,WIDE2-1



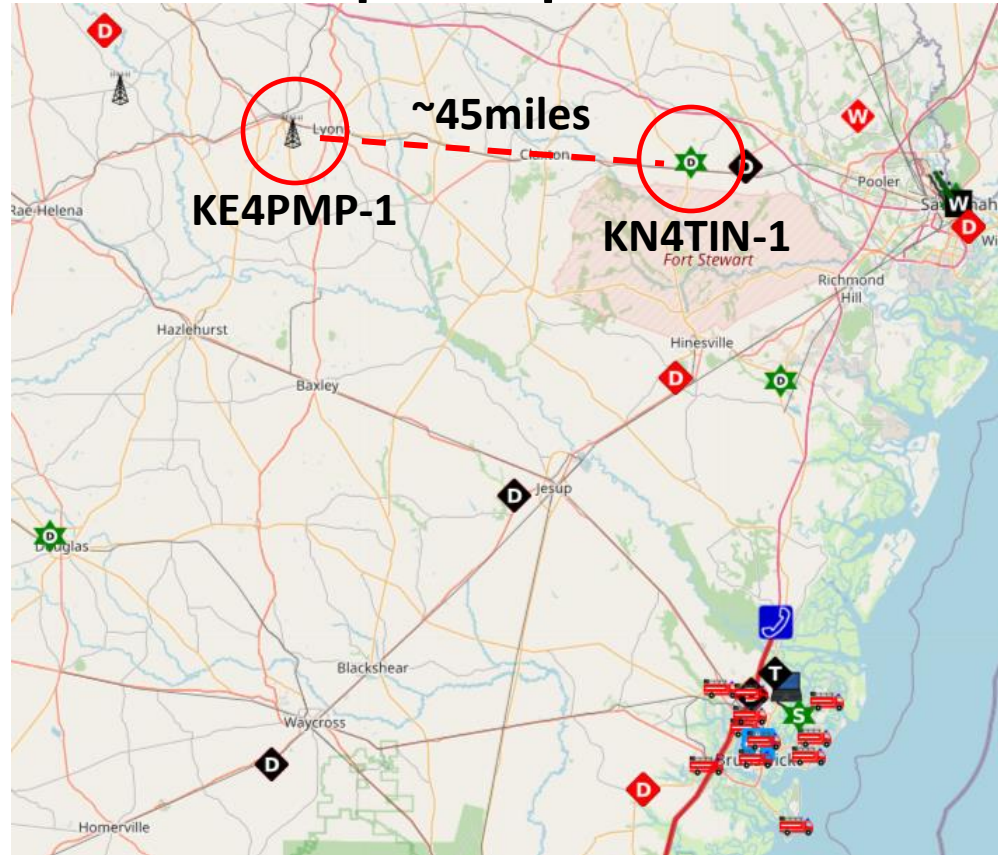
WIDE1-1,WIDE2-1



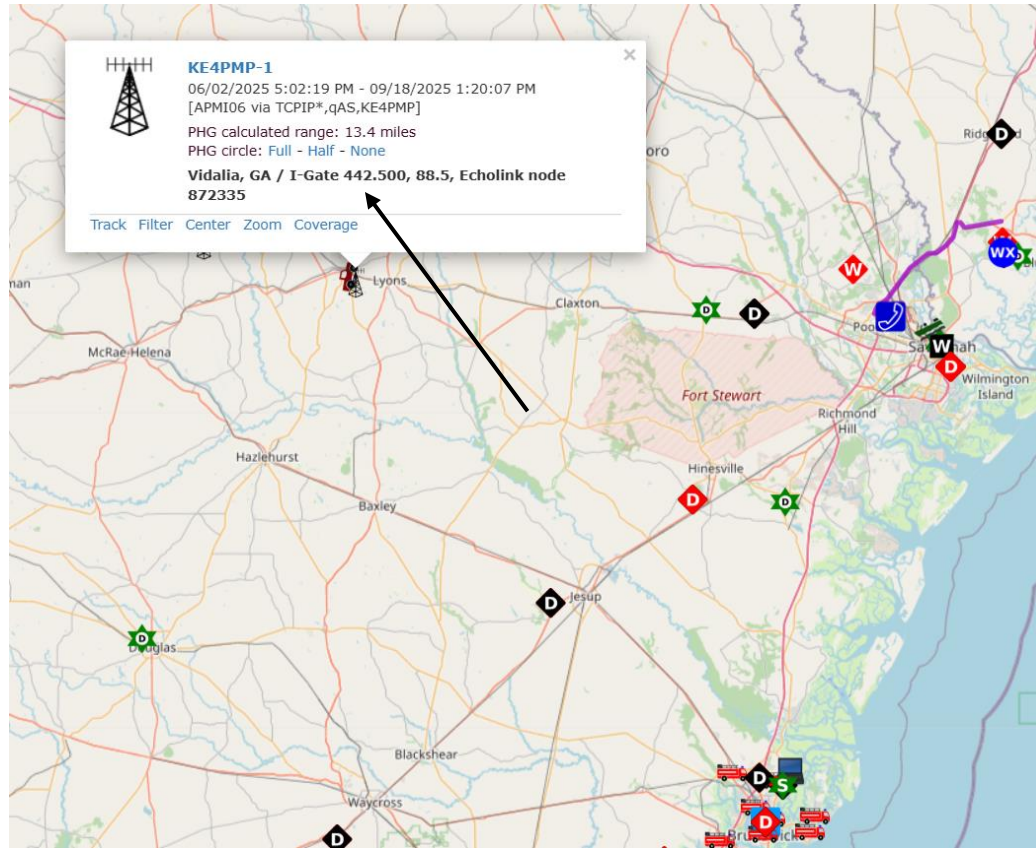
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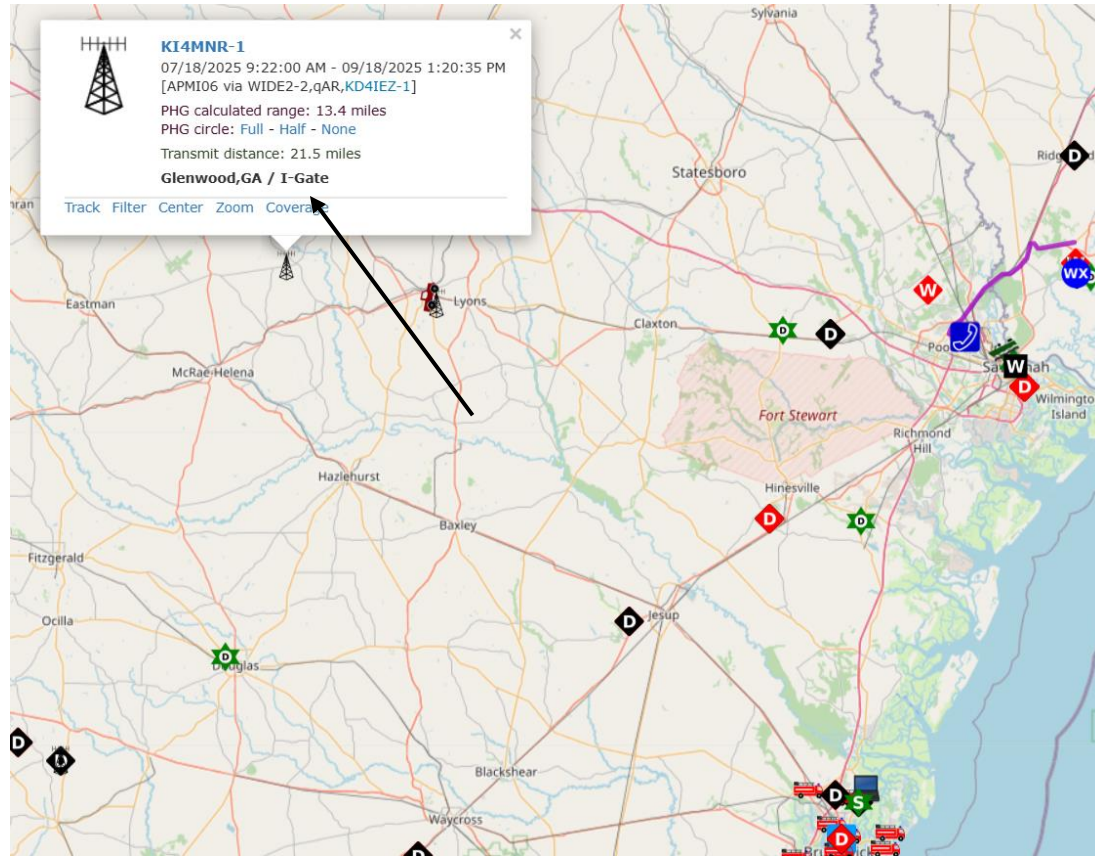
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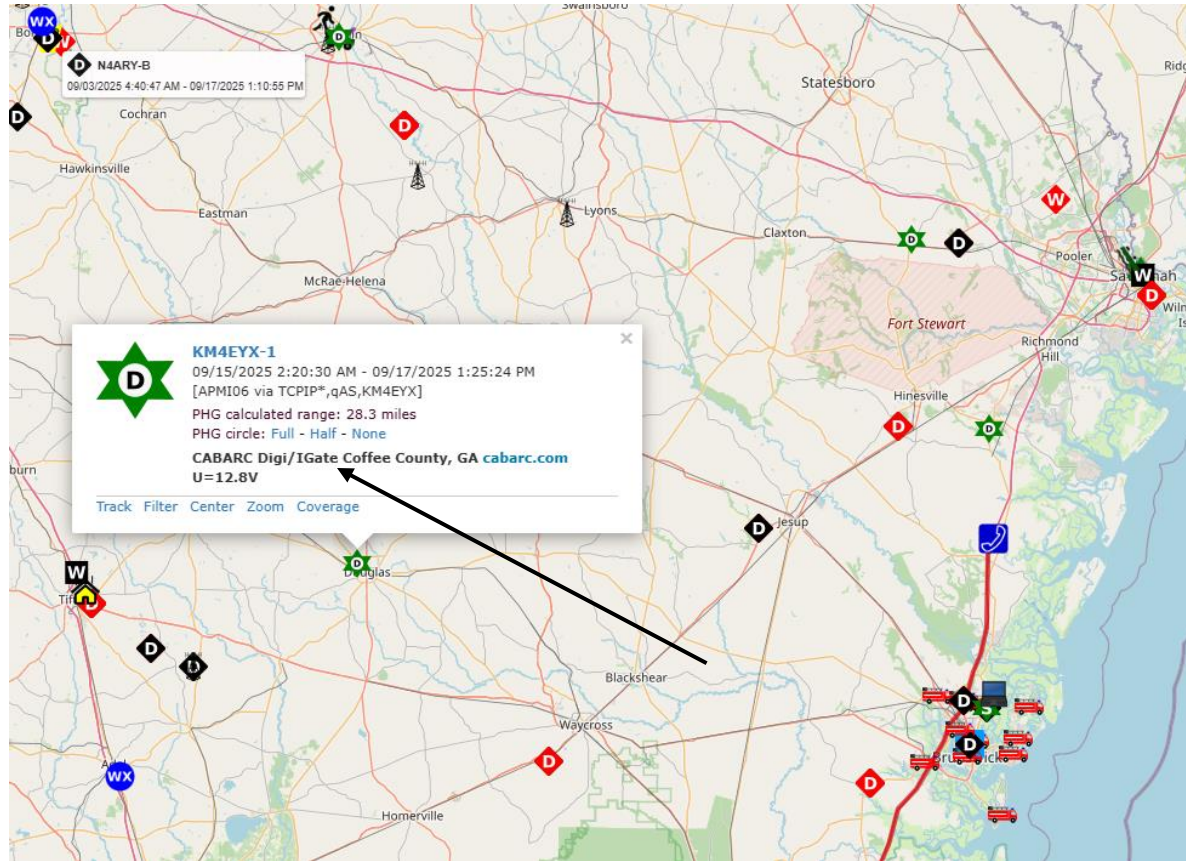
aprs-map.info



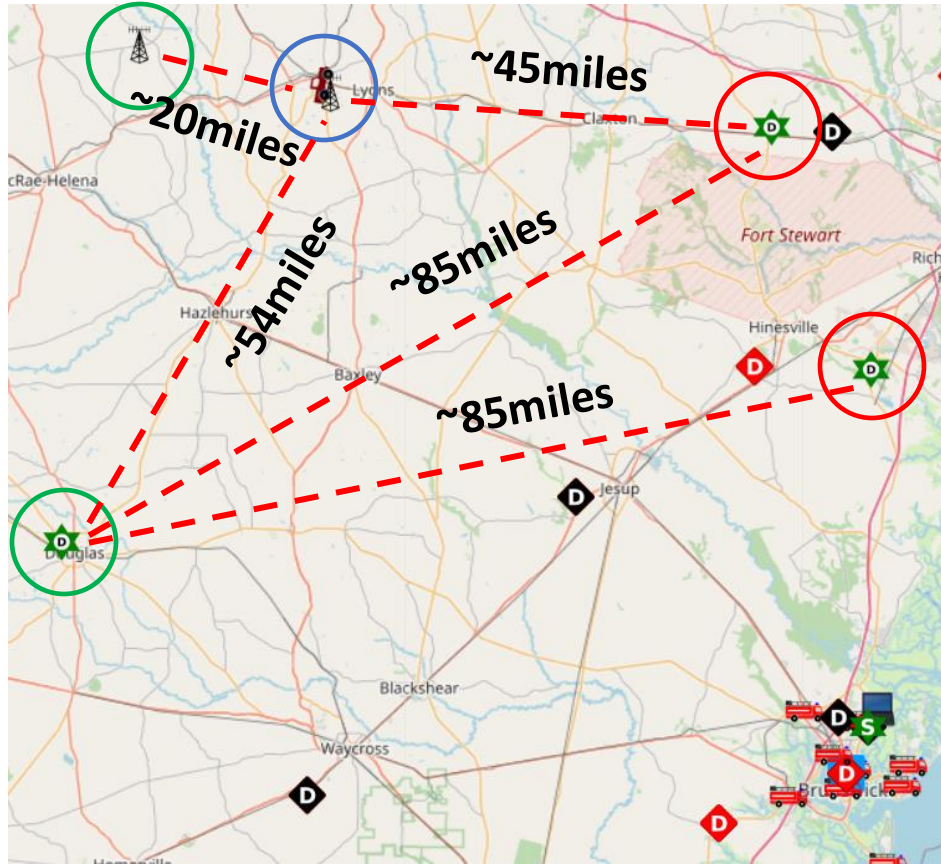
aprs-map.info



aprs-map.info



aprs-map.info



aprs-map.info



KA4CID-1 Overview

[Overview](#)[Statistics](#)[Trail Chart](#)[Weather](#)[Telemetry](#)[Raw packets](#)

Name:
Station ID:
Source:
Symbol:

KA4CID-1
22830
APRIS
D Digipeater

Latest Packet:
Receive Time:
Age:
Path:
Comment:

Position Packet
09/17/2025 1:15:35 PM-04:00
3 minutes ago
APOT40,WIDE2-2,qAR,W4LHS-10
Echolink on 443.300 PL 97.4


Latest Position:
Receive Time:

31.78383, -81.44117
(Received in latest packet)
[Show on map](#)


Packet frequency:

360s (Latest 10 packets)


Nearby stations/objects:

 KQ4BBQ C


12.1 miles

 KQ4BBQ-C


12.1 miles

 W8RD-5


24.11 miles

 WX4JDM-D


24.94 miles

 WX4JDM C


24.94 miles

 WX4JDM-C


24.94 miles

 WX4JDM-N


24.94 miles

 KN4TIN-1


27.15 miles

 AF4VH-10


31.71 miles

 KB4DSF


35.41 miles

 GLYNN-8

36.25 miles

 KQ4ZP-LB

36.36 miles



[Search for KA4CID at QRZ](#)
[Export KA4CID-1 data to KML](#)



Who has heard KA4CID-1?

KA4CID-1 Stats

Overview Statistics Trail Chart Weather Telemetry Raw packets

The communication statistics that we show here may differ from similar communication statistics on other websites, the reason is probably that this website is not collecting packets from the same APRS servers. Each APRS server performs duplicate filtering, and which packet that is considered to be a duplicate may differ depending on which APRS server you receive your data from.

Stations that heard KA4CID-1 directly during the latest 10 day(s).

Station	Number of packets	Latest heard	Longest distance
W4LHS-10	1225	09/17/2025 1:15:35 PM-04:00	29.14 miles
W4LHS-10	454	09/17/2025 11:06:30 AM-04:00	144.49 miles
KN4TIN-1	28	09/17/2025 10:57:36 AM-04:00	27.21 miles
KK4JMW	548	09/17/2025 10:45:35 AM-04:00	37.3 miles
KE4PMP-1	32	09/17/2025 10:27:35 AM-04:00	63.04 miles
NF4CA-5	20	09/17/2025 10:22:42 AM-04:00	134.44 miles
KI4MNR-1	9	09/17/2025 10:06:23 AM-04:00	83.06 miles
W4PVW-15	5	09/17/2025 9:54:18 AM-04:00	136.19 miles
W4VLD	22	09/17/2025 9:51:35 AM-04:00	128.58 miles
W4AUSN-5	126	09/17/2025 9:47:59 AM-04:00	113.56 miles
KM4EYX-1	26	09/17/2025 9:40:27 AM-04:00	86.2 miles
KF4TPM-10	1	09/17/2025 9:21:35 AM-04:00	147.39 miles
KD4IEZ-1	31	09/17/2025 9:09:35 AM-04:00	101.8 miles
KC4GYM-2	13	09/17/2025 9:00:38 AM-04:00	144.87 miles
W4AUSN-3	1	09/17/2025 8:34:46 AM-04:00	108.1 miles
W4DOD-1	2	09/17/2025 5:46:35 AM-04:00	44.22 miles
W4DEX	17	09/17/2025 5:15:36 AM-04:00	247.88 miles
NE4SC-12	22	09/17/2025 4:53:43 AM-04:00	202.2 miles
WC4PEM-9	19	09/17/2025 4:45:35 AM-04:00	248.99 miles
WC4PEM-12	1	09/17/2025 3:09:35 AM-04:00	278.65 miles
WC4PEM-6	10	09/17/2025 2:39:35 AM-04:00	259.69 miles
KG4UOY-1	7	09/16/2025 11:57:36 PM-04:00	67.82 miles

Who has KA4CID-1 heard?

KA4CID-1 Stats

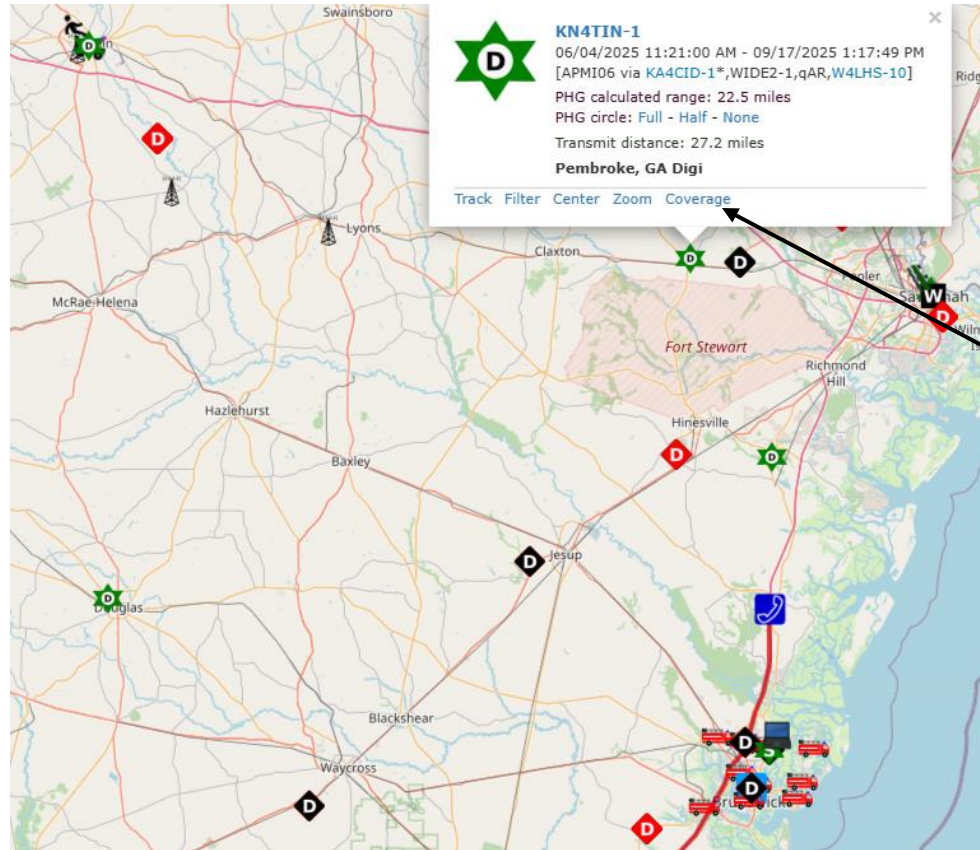
AB4KN-2 1 09/09/2025 4:12:16 PM-04:00 216.98 miles

Stations directly heard by KA4CID-1 during the latest 10 day(s).

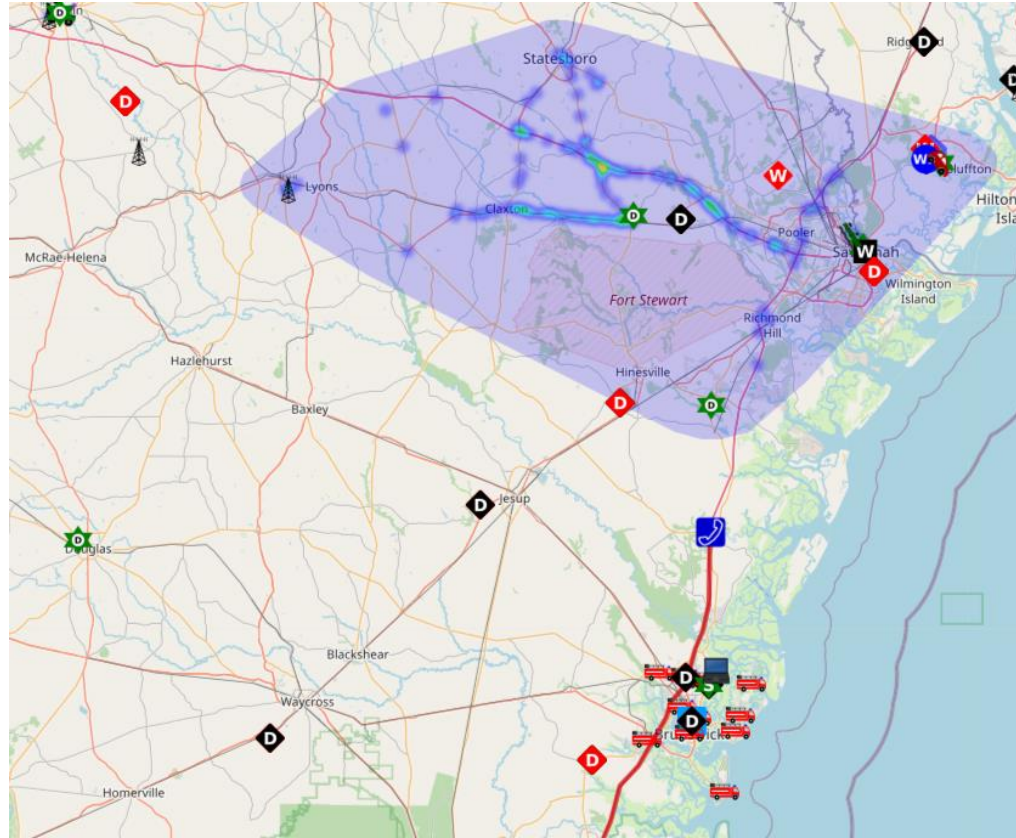
Station	Number of packets	Latest heard	Longest distance
KN4TIN-1	1525	09/17/2025 1:17:49 PM-04:00	27.23 miles
WB4JTL-9	5	09/17/2025 10:18:37 AM-04:00	5.81 miles
KE4PMP-1	10	09/17/2025 10:02:29 AM-04:00	63.04 miles
WK1F	73	09/17/2025 9:46:12 AM-04:00	77.6 miles
KK4JMW	178	09/17/2025 9:38:51 AM-04:00	37.3 miles
KE4PMP-9	3	09/17/2025 8:25:51 AM-04:00	33.95 miles
W4VLD	5	09/17/2025 7:42:51 AM-04:00	128.58 miles
KM4EYX-1	19	09/17/2025 7:32:26 AM-04:00	86.2 miles
W4PVW-15	4	09/17/2025 7:32:18 AM-04:00	136.19 miles
KG4UOY-1	8	09/17/2025 7:02:21 AM-04:00	67.82 miles
K4OZS-10	3	09/17/2025 6:56:40 AM-04:00	187.79 miles
WY2C-1	4	09/17/2025 6:32:52 AM-04:00	105.41 miles
W4DFU-3	3	09/17/2025 6:29:12 AM-04:00	157.75 miles
N4SVC-1	2	09/17/2025 5:35:20 AM-04:00	133.49 miles
KI4MNR-1	4	09/17/2025 5:17:10 AM-04:00	83.06 miles
N1RCW-5	11	09/17/2025 5:15:49 AM-04:00	43.26 miles
CHIEFL	1	09/17/2025 5:13:08 AM-04:00	185.57 miles
KN4TIN-8	1	09/17/2025 4:07:52 AM-04:00	29.34 miles
N5CBP-6	1	09/17/2025 4:04:34 AM-04:00	136.68 miles
K4DBN-1	1	09/17/2025 3:56:59 AM-04:00	127.31 miles
K4AMF-1	2	09/17/2025 3:52:45 AM-04:00	112.52 miles
N6EIV-1	3	09/17/2025 3:49:39 AM-04:00	107.98 miles
WC4PEM-6	1	09/17/2025 1:07:17 AM-04:00	259.69 miles
WC4PEM-10	2	09/17/2025 12:56:33 AM-04:00	270.94 miles



aprs-map.info

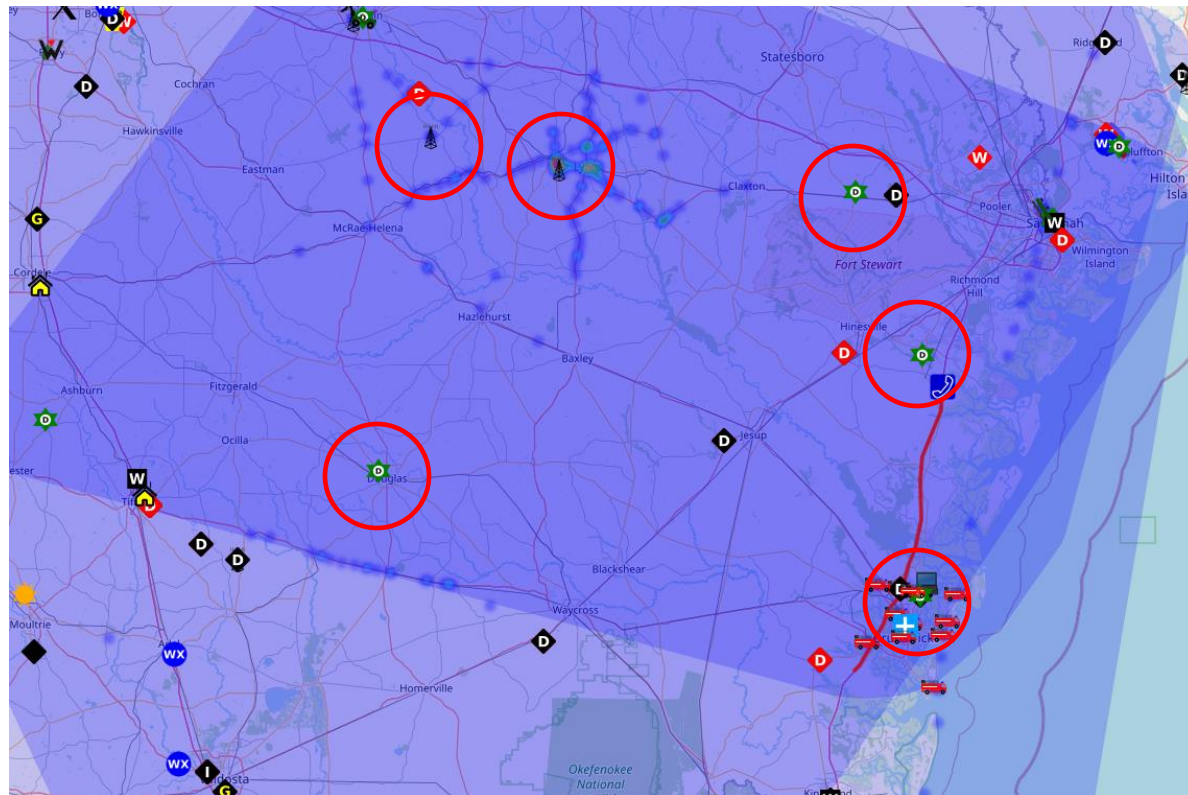


aprs-map.info



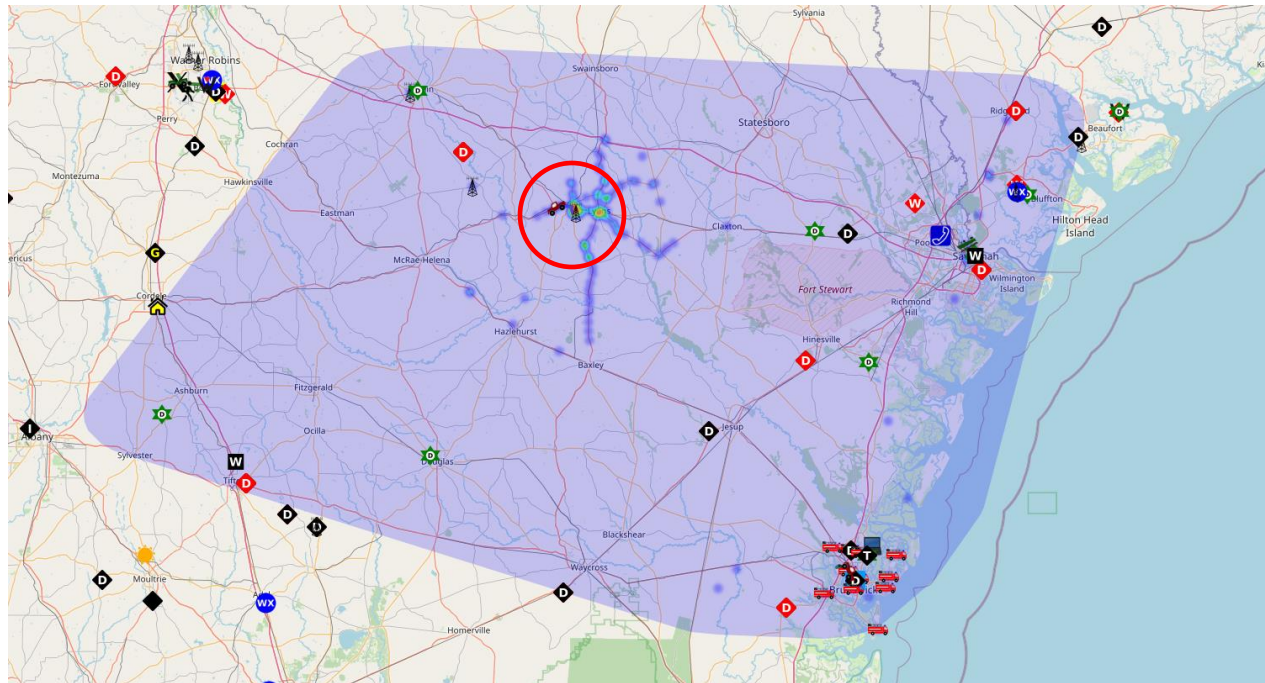
Coverage

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



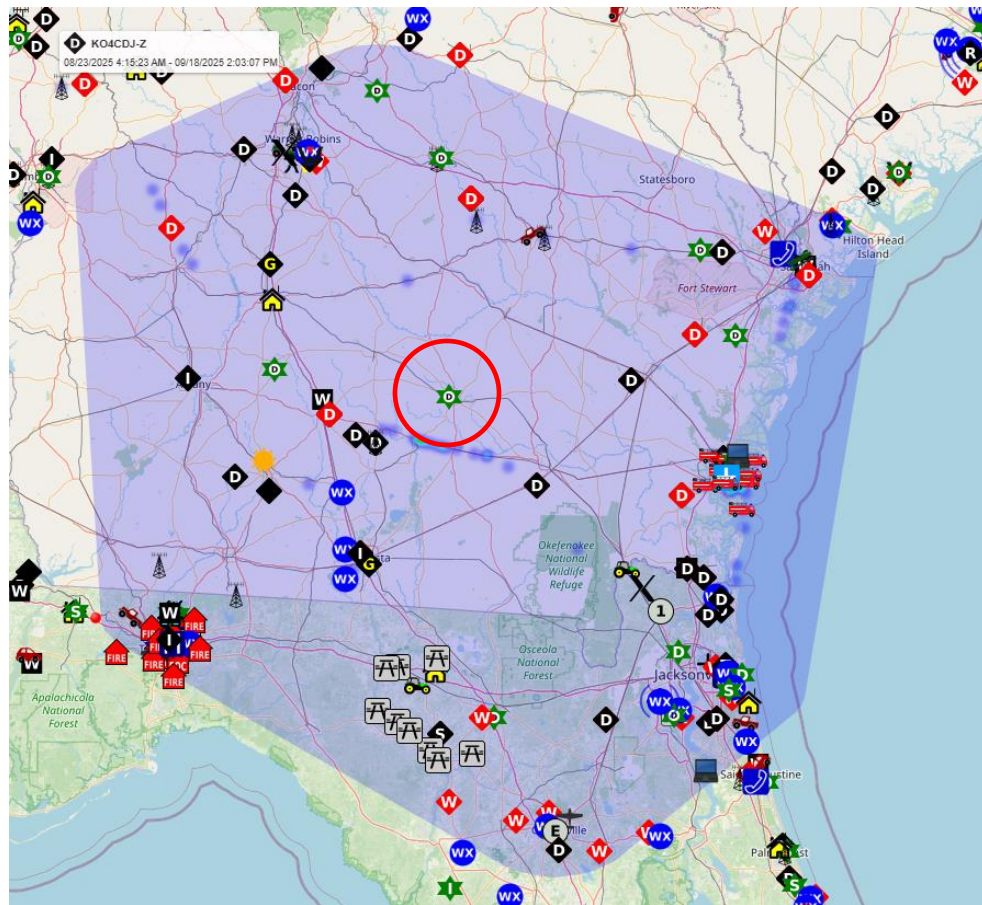
Coverage

- KE4PMP-1



Coverage

- KM4EYX-1

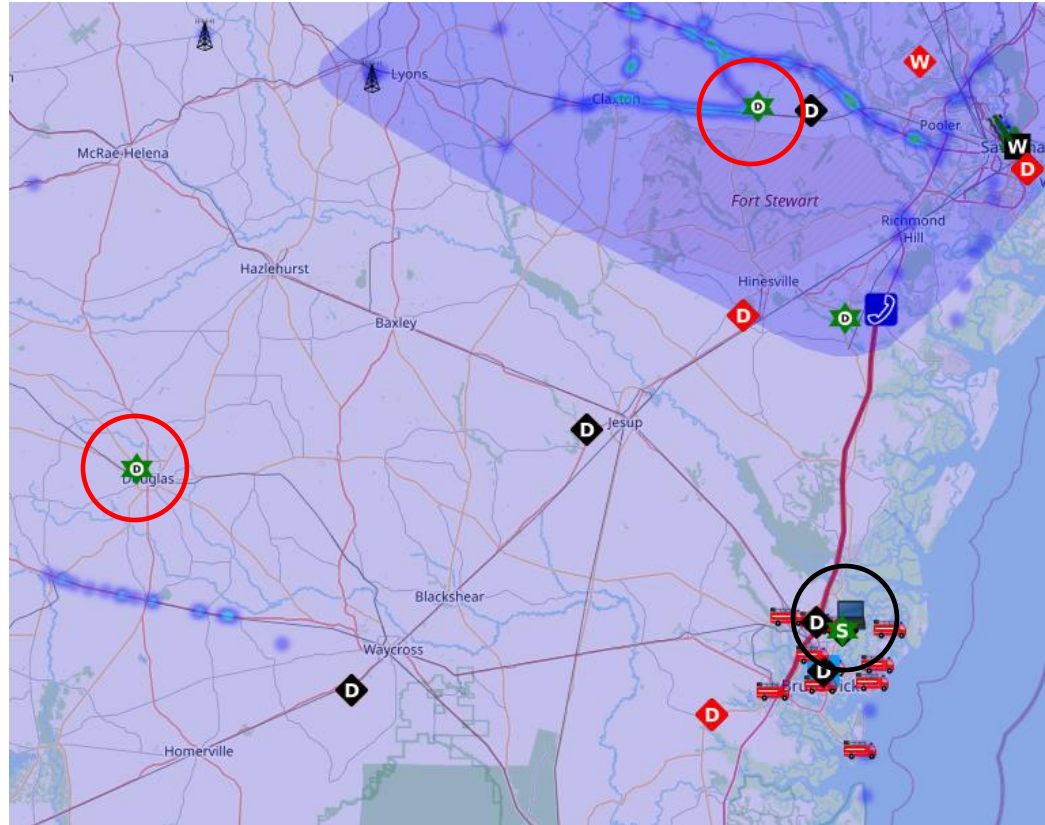


Coverage

TO: SMS

VIA: WIDE1-1,WIDE2-3

@5555551234 no power or cell but
we are all ok



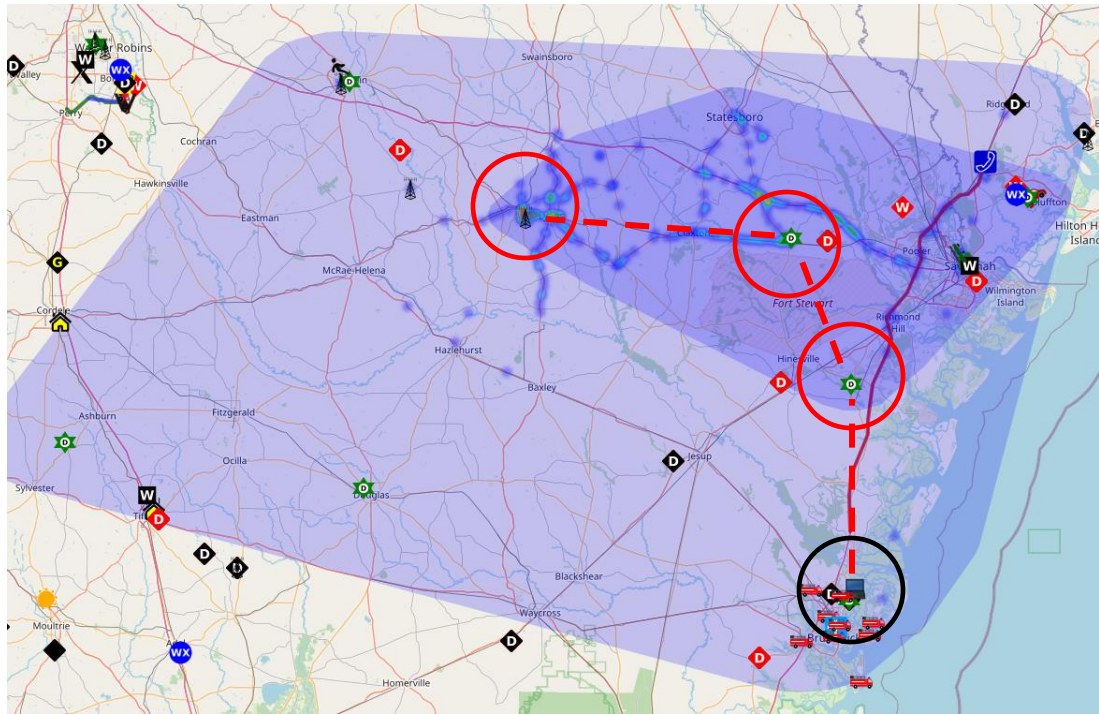
Coverage

- Directed path

TO: SMS

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

@5555551234 no power or cell but we are all ok

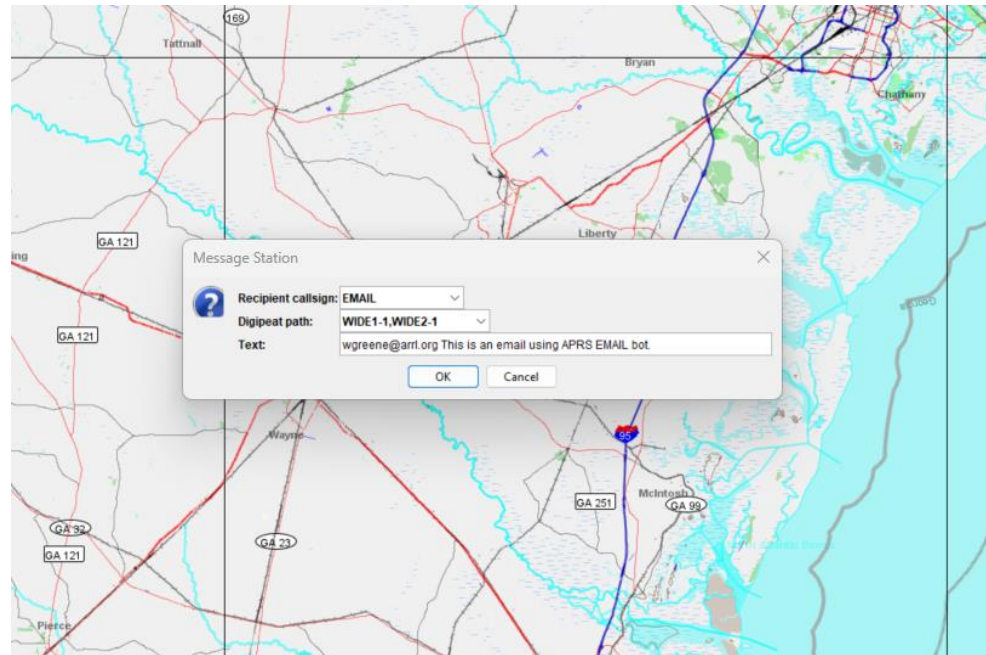


Email using EMAIL Bot

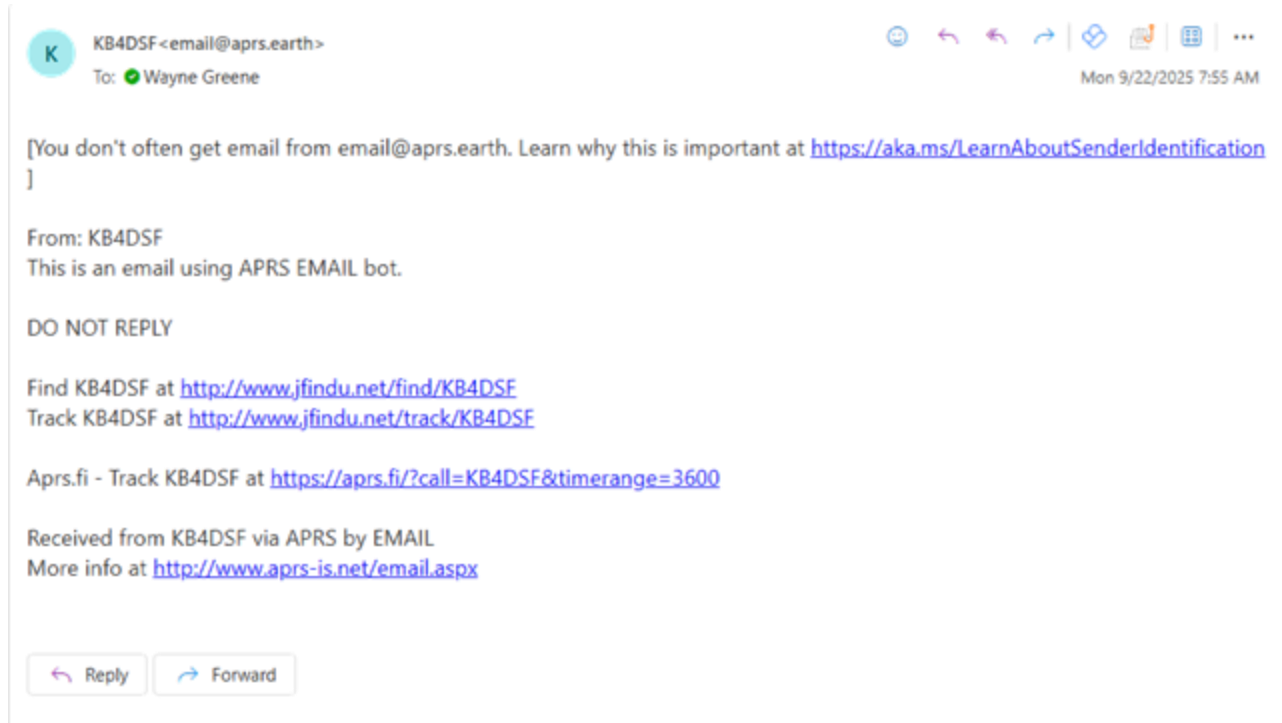
TO: EMAIL

VIA: WIDE1-1,WIDE2-1

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

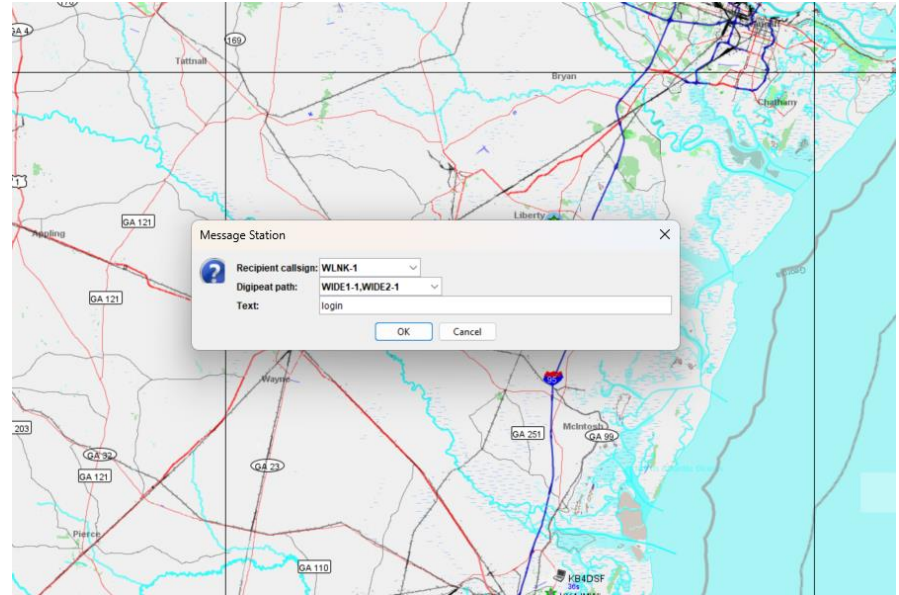


Email using EMAIL Bot



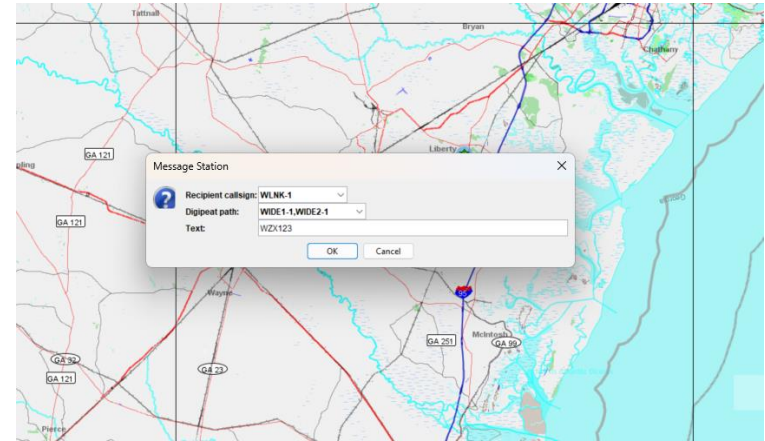
Email using APRSLink

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



Email using APRSLink

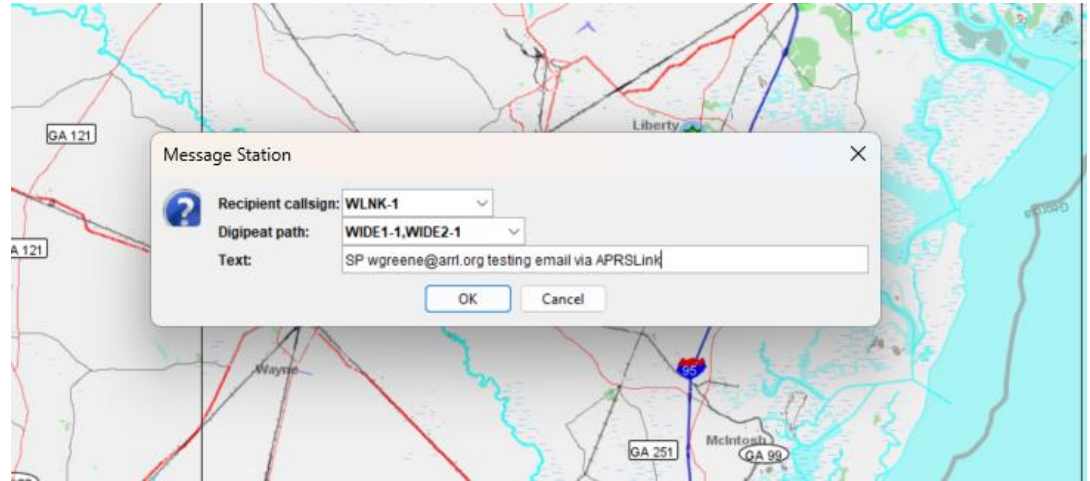
- APRSLink will send a challenge asking for specific characters of your Winlink password
- Enter the characters and include three random numbers
- Logged in for ~2 hours



<input checked="" type="checkbox"/> 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	<button>Clear</button>
19/Sep/2025 09:14:46	WLNK-1	KB4DSF	Hello KB4DSF. Login valid for ~2 hours	1293	<button>Clear</button>
19/Sep/2025 09:14:45	KB4DSF	WLNK-1	WZX123	M0002	<button>Clear</button>
19/Sep/2025 09:13:46	KB4DSF	WLNK-1	login	M0001	<button>Clear</button>
19/Sep/2025 09:13:43	WLNK-1	KB4DSF	Login [648]	1292	<button>Clear</button>
19/Sep/2025 09:13:42	KB4DSF	WLNK-1	login	M0001	<button>Clear</button>

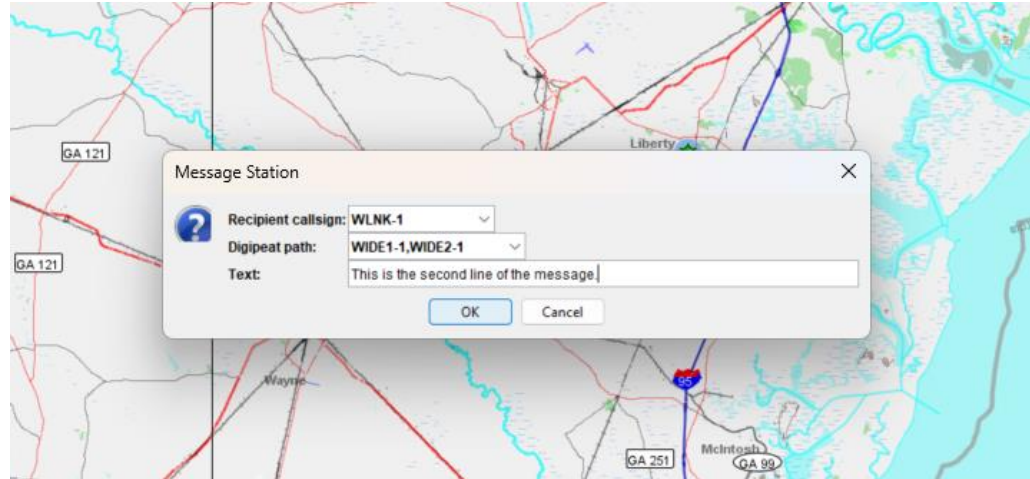
Email using APRSLink

- 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.



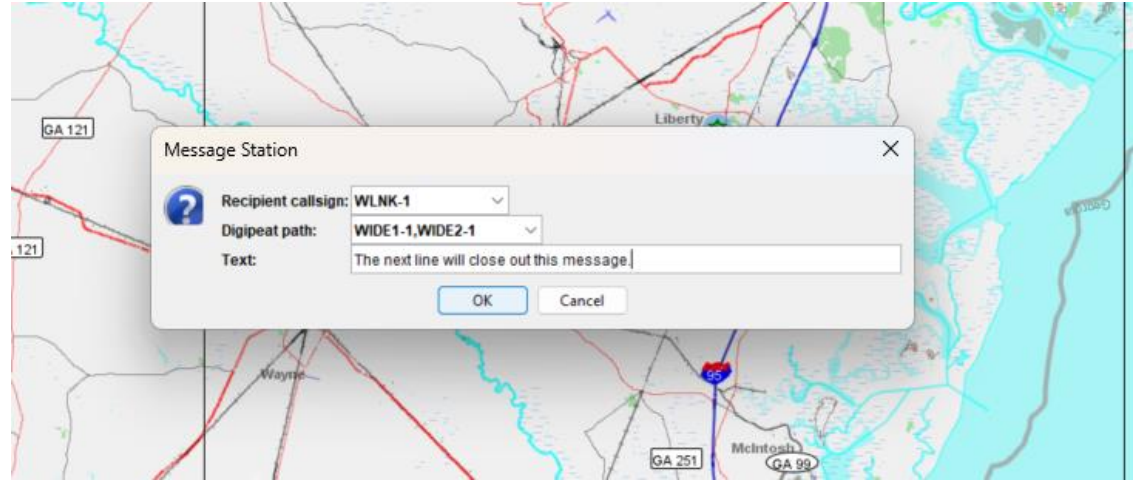
Email using APRSLink

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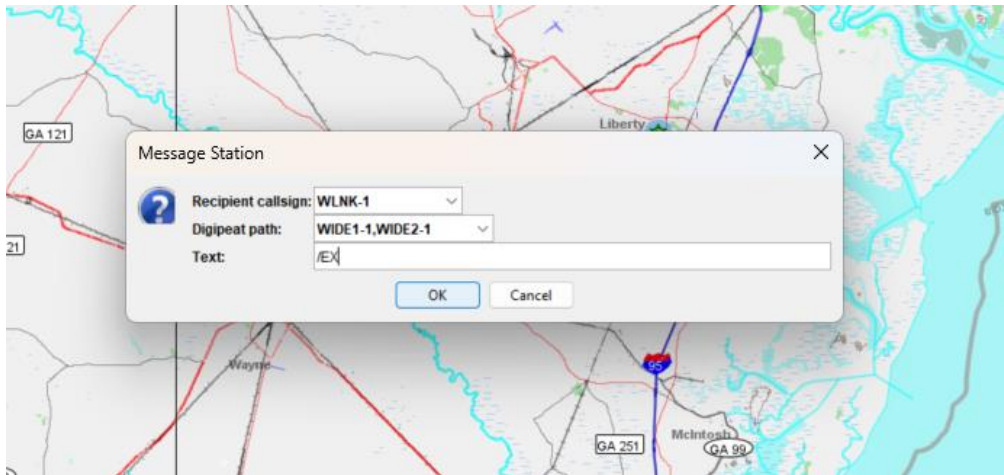
Email using APRSLink

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Email using APRSLink

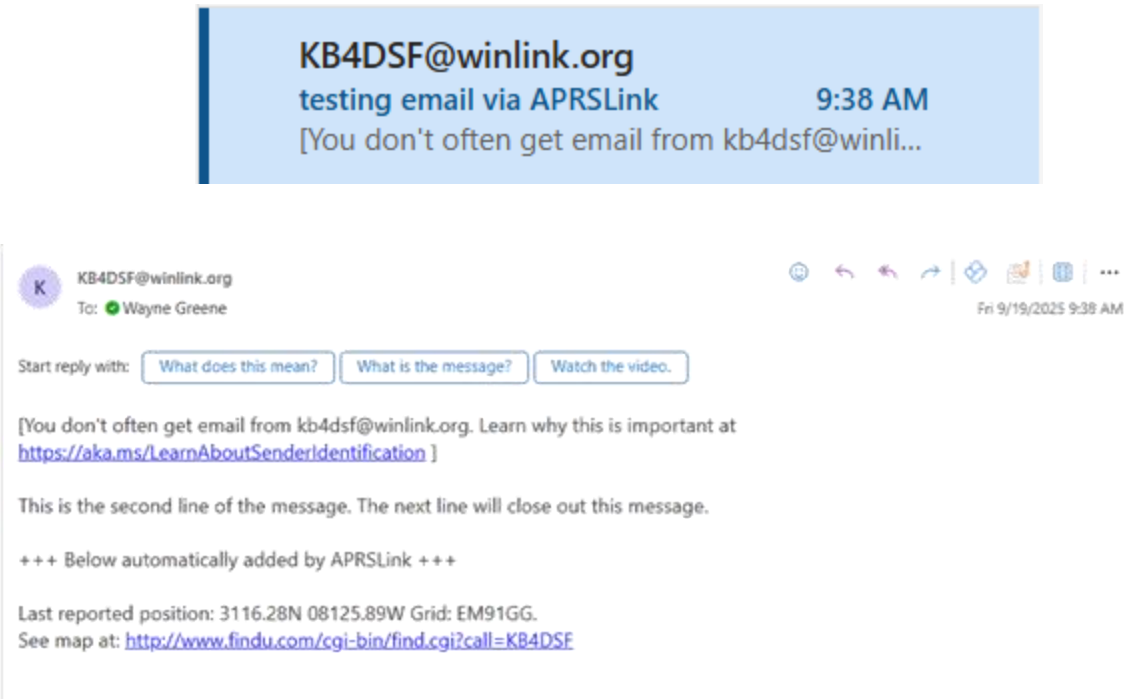
- Start the email with “SP” followed by the intended recipient’s email address, then immediately followed by the email title.
- Send the message line-by-line
- Last line is /EX, then message will be sent.



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

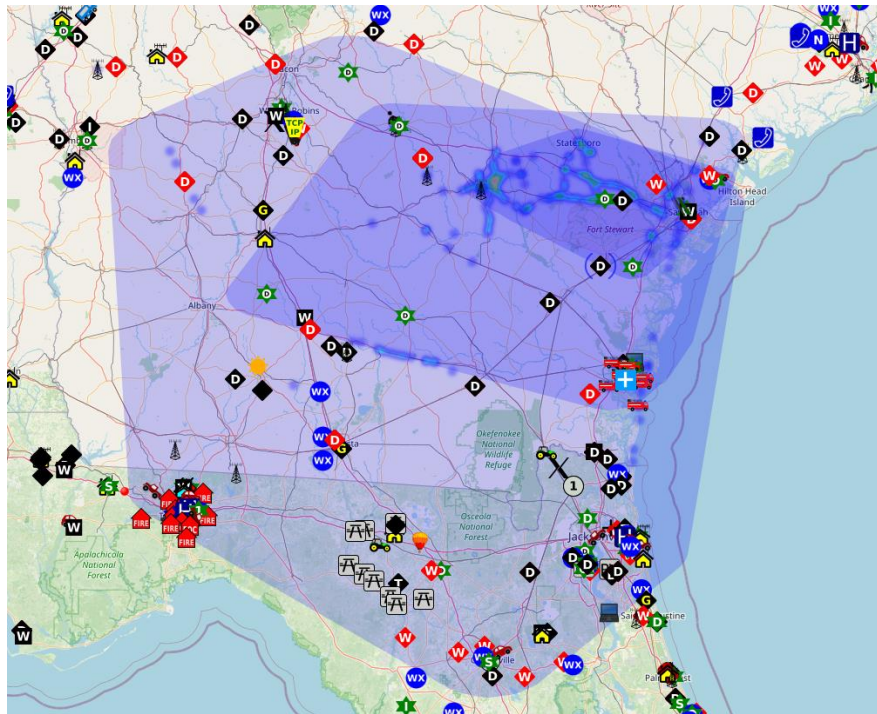
- For SMS
 - Opt in your phone number and all others who you wish to contact
 - <https://aprs.wiki/>
- For APRSLink
 - Must have a Winlink account
 - <https://winlink.org/>



The screenshot shows the APRS website's 'Opt-in / Opt-out' page. At the top, there's a navigation bar with links for SMS, Winlink (SMS), Winlink Weather (NWS), Other Bots, Tools, Terms of Service, and Privacy Policy. Below the navigation bar is a large image of a mountain landscape. The main heading is 'Opt-in / Opt-out'. Underneath, there's a section titled 'Winlink & APRS SMS Gateway' with a link to 'Support the service on Patreon!'. It also lists supported regions: 'APRS Support: USA, Puerto Rico, Canada, Australia & UK ONLY!' and 'Winlink Support: US & Canada ONLY!'. A red heading 'ATTENTION SMS USERS:' is followed by a warning to stop messages at any time, send \$70P. A paragraph states that all SMS users are required to opt-in due to carrier regulations. The 'Opt-In' section includes a form to enter a phone number to opt-in, with a note that US, PR, & CA require 10 digits, AU requires 11, and UK requires 12. There are 'Opt-in' and 'OPT-IN' buttons at the bottom.

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



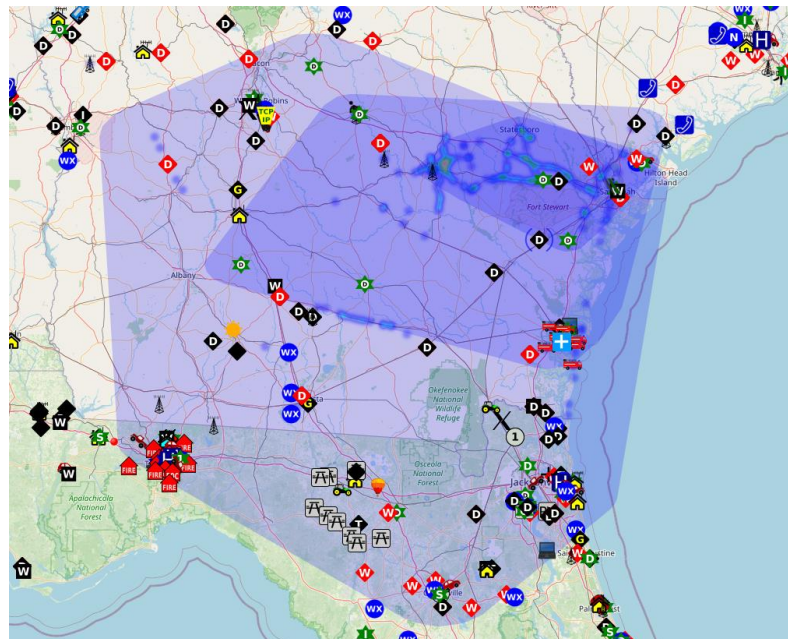
The Time to Learn is Now

- 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!



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The National Association for
Amateur Radio®

