February 5th, 2026

APRS:

THE P DOESN'T STAND FOR POSITION

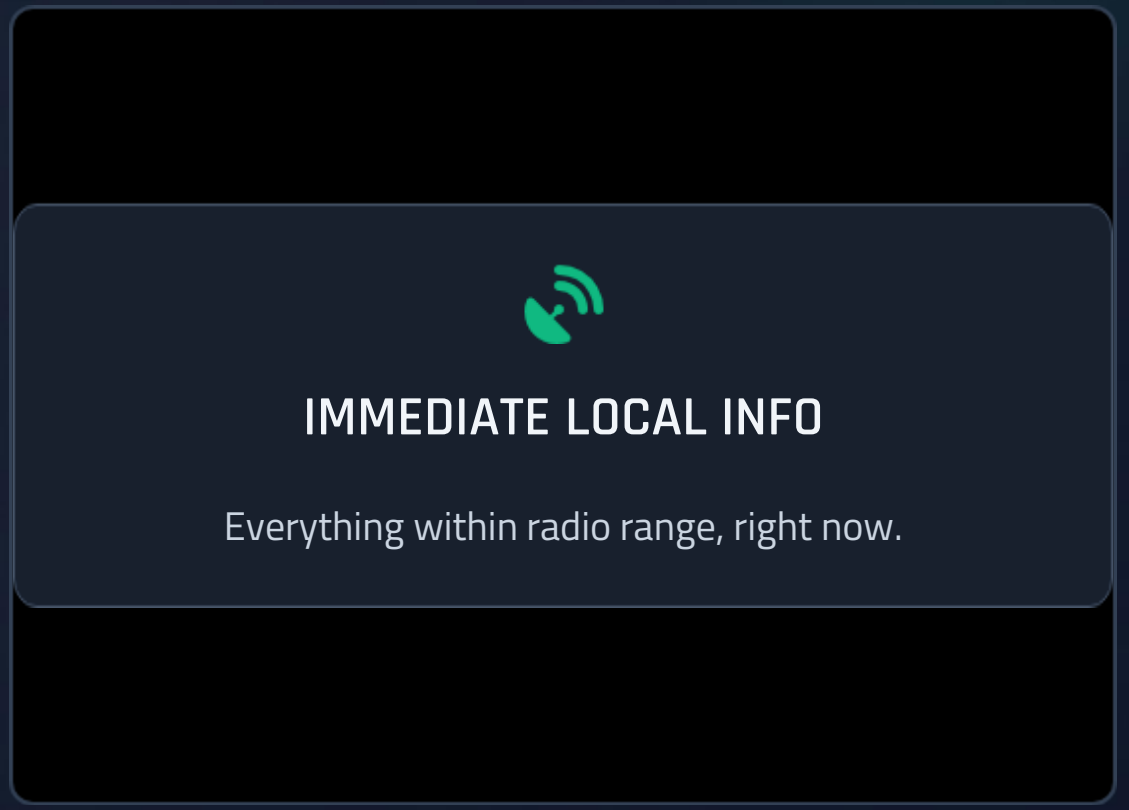
Tactical Real-Time Digital Communications

Clint Miller, KØGR, President

Story County Amateur Radio Club

WHAT IS APRS?
Automatic Packet Reporting System

- **Not just GPS Tracking:** That's a common misconception.
- **Tactical Information:** Real-time exchange of digital data.
- **Local Validity:** Focuses on immediate updates for local users.
- **Universal:** Works on RF (Radio Frequency) and IS (Internet Service).



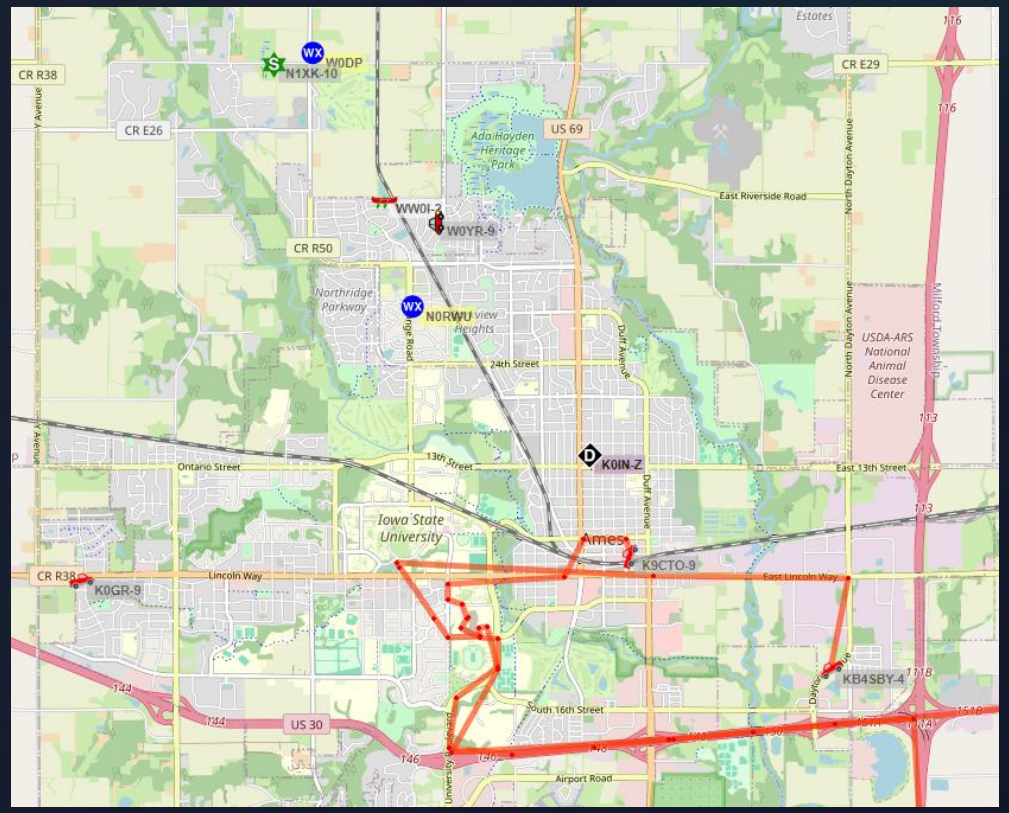
HISTORY OF APRS

- **Creator:** Bob Bruninga, WB4APR (Silent Key).
- **Origins:** Late 1980s on the Apple II.
- **Evolution:** Moved from simple map plotting to a global standard.
- **Legacy:** Bob's vision was always about "User-to-User" communication, not just "User-to-Map."

“APRS is not a vehicle tracking system. It is a two-way tactical real-time digital communications system between all assets in a network sharing information about everything going on in the local area. On ham radio, this means if something is happening now, or there is information that could be valuable to you, then it should show up on your APRS radio in your mobile.” - Bob Bruninga, WB4APR (SK)

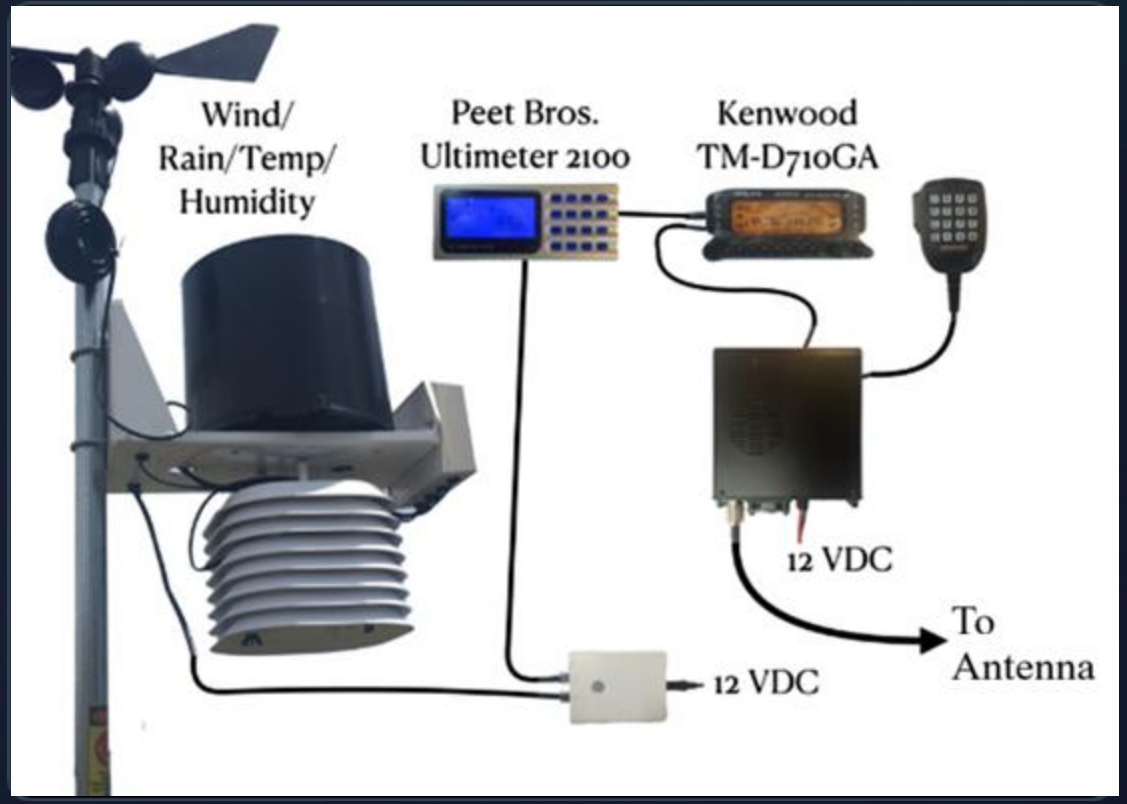
COMMON USES: TRACKING

- **Mobiles:** Vehicles, Bikes, Balloons.
- **Portables:** Hikers, SOTA activators, Event staff.
- **Visual:** Speed, Heading, Altitude, Symbol.
- **Utility:** Finding the lead runner in a marathon or the sag wagon.



COMMON USES: WEATHER

- **WX Stations:** Home weather stations connected to APRS.
- **Data:** Temp, Wind, Rain, Humidity, Pressure.
- **NWS Integration:** The National Weather Service ingests this data via CWOP.
- **Symbol:** Displayed as a blue circle with letters 'WX'.



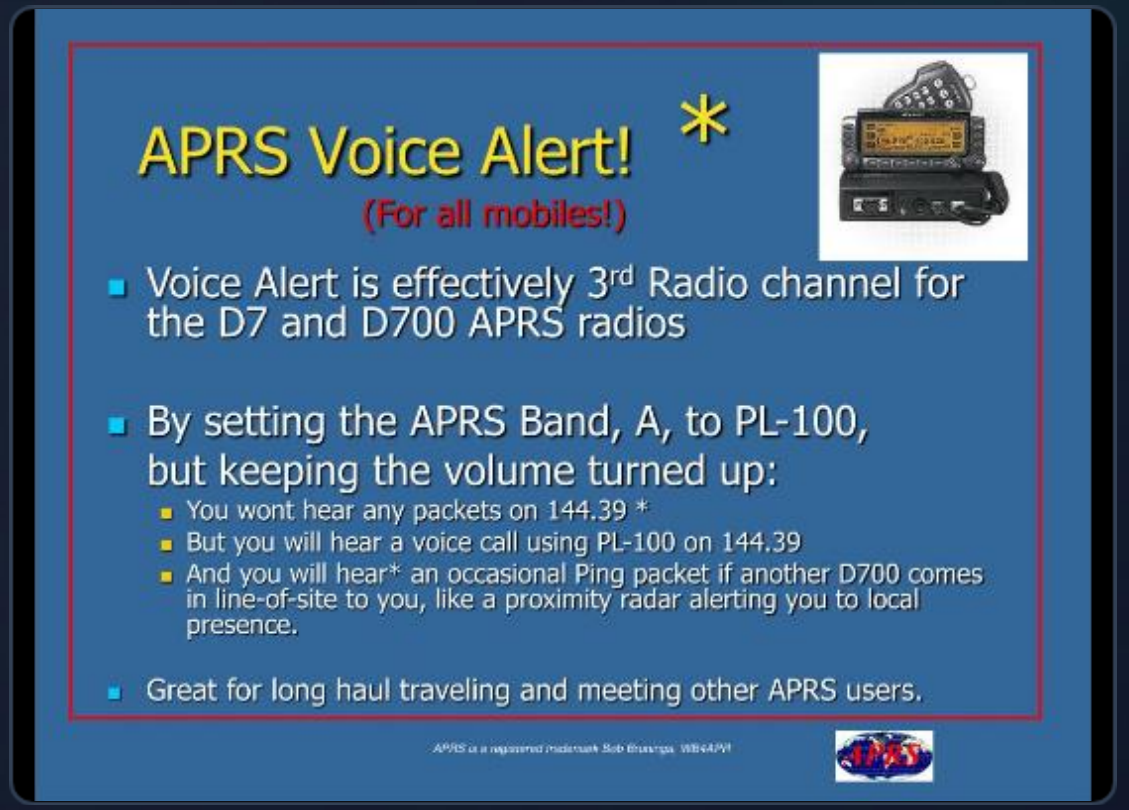
COMMON USES: VOICE ALERT

THE MOBILE SETUP

- **Frequency:** 144.390 MHz
- **CTCSS (PL Tone):** 100.0 Hz
- **Volume:** Turned UP.

Result: You only hear packets from stations within simplex range who also have Voice Alert active. It acts as a "proximity radar."

*** Fixed sites do not send 100.0 Hz ***

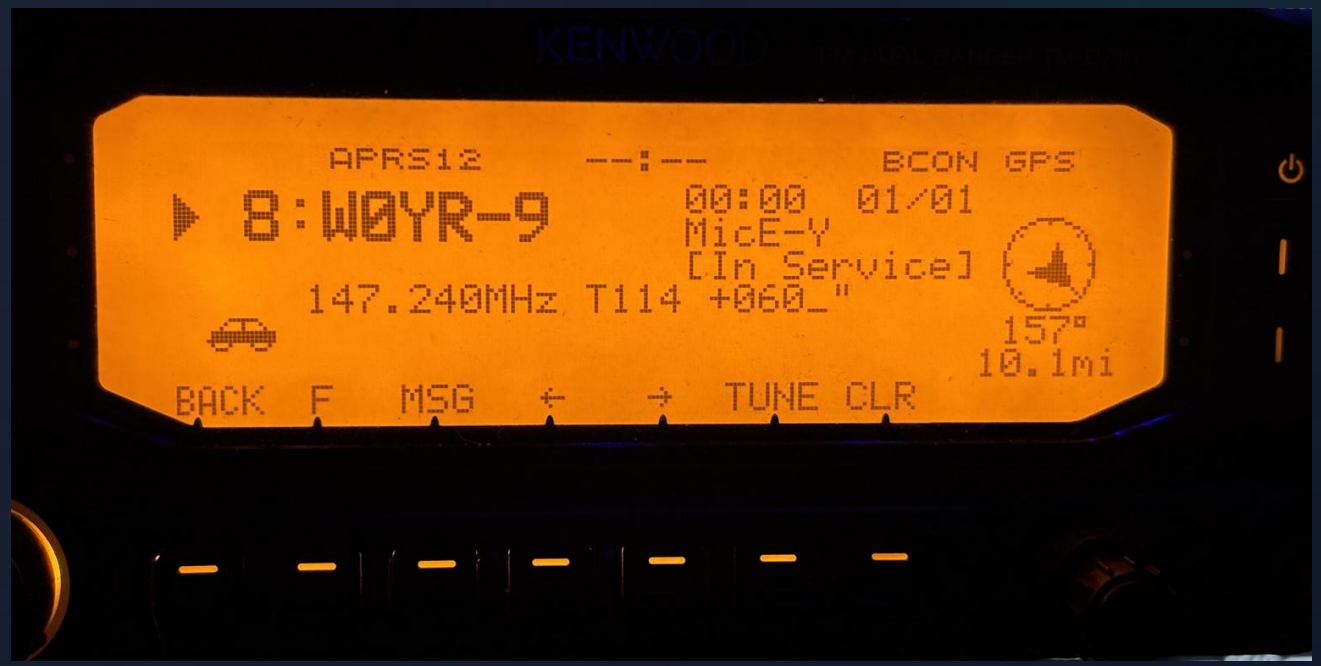



KENWOOD
FM DUAL BANDER TM-D710
CALL
APRS12
dP K0RPG-15
BCON GPS
PTT
CTRL
T
+
FM
VA
FM
VFO
H
AMES1
1
H D APRS
47
D
PM
147.240
144.390
MR
TNC
KEY
F
TONE
REV
LOW
PF1
PF2

COMMON USES: FREQUENCY IN THE STATUS TEXT

WØYR-9 Listening on:

- **147.240 MHz**
- **114.8 Hz**
- **+.600 MHz offset**
- **Notice the TUNE button**




--:--
STATUS TEXT
608
*5 TEXT : [Freq MHz] & V-Alert
TX RATE : 1/1
ESC BACK
USE

COMMON USES: MESSAGING

STATION TO STATION

Send text messages directly to other hams on their radio screens.

GROUP BULLETINS

Broadcast announcements to everyone in the local area (BLN#).

EMAIL & SMS

Send emails and texts to non-hams via gateways.

COMMON USES: RF MESSAGING

> TO: KCØUJC-15 MSG: Hello Nic!

- **Addressee:** Callsign + SSID (must be exact).
- **Ack:** The system automatically retries until an acknowledgement ({ack) is received.
- **Store & Forward:** Some APRS-IS servers can hold messages for later delivery.

NETWORK INFRASTRUCTURE

- **The RF Cloud:** Users, Digipeaters, and Igates operating on 144.390 MHz (in USA).
- **Simplex Nature:** Everyone hears everyone (Aloha network).
- **Digipeater:** Re-transmits RF packets to reach further.
- **IGates:** Receive RF packets and inject them into the Internet.
- **APRS-IS:** The global internet backbone connecting everything.

THE DIGIPEATER

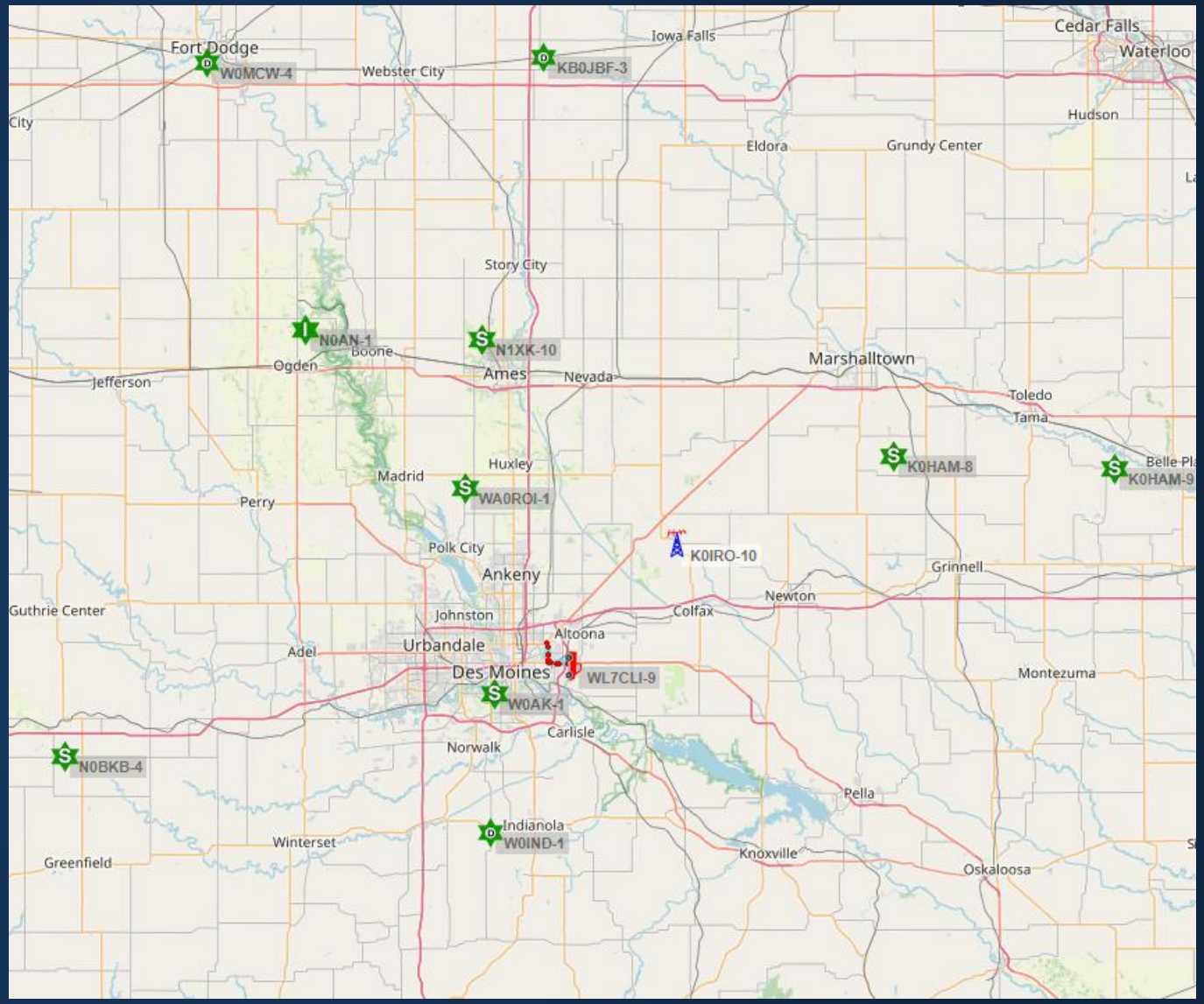
STORE & FORWARD

Receives a packet, checks the path, and re-transmits it loudly to reach further.

HIGH PROFILE

Usually located on towers, hills, or tall buildings to maximize horizon.

DIGIS IN CENTRAL IOWA



PATH SELECTION: THE NEW-N PARADIGM

Since 2004, we use the WIDEn-N standard.

```
PATH: WIDE1-1, WIDE2-1
```

- **WIDE1-1:** Requests the first "Fill-in" digi (or home station) to repeat.
- **WIDE2-1:** Requests a high-level, wide-area digi to repeat.
- **Total Hops:** This path gives you 2 hops total. Usually enough to hit an Igate.

LEGACY PATHS: DO NOT USE

- **RELAY:** Old term for fill-in digis. Obsolete.
- **TRACE:** Requested callsign tracing. Causes duplicate packets.
- **WIDE3-3 or higher:** "spamming" the network.

Using these paths today marks you as having an improperly configured station.

A STANDARD POSITION PACKET LOOKS LIKE THIS:

```
K0GR-9>APRS,WIDE1-1,qAR,N0AN:!4050.25N/09338.42W]146.520MHz & V-Alert=
```

Component	Raw Data	Interpreted Information
Source Station	KØGR-9	Originator: Station callsign of the sender. The -9 SSID typically a mobile vehicle.
Destination	APRS	Generic Destination: In standard ASCII, this is often a generic identifier for the software or hardware, unlike Mic-E which hides data here.
Routing Path	WIDE1-1	Network Request: Requests a one-hop relay from a local "fill-in" digipeater.
I-Gate Status	qAR, NØAN	Internet Gate: qAR indicates the packet was received directly and uploaded to the internet by the verified I-Gate station NØAN.
Data Type	!	Position Report: “!” indicates a real-time position report without a timestamp.
Latitude	4050.25N	Coordinate: Decodes to 40° 50.25' North.
Table ID	/	Symbol Table: The forward slash selects the Primary Symbol Table.
Longitude	09338.42W	Coordinate: Decodes to 093° 38.42' West.
Symbol Icon	]	Station Icon: Represents a Kenwood Radio or a "Mailbox/Post Office" icon
Frequency	146.520MHz	Voice Monitoring: Advertises the frequency the operator is listening
Status/Model	& V-Alert=	Kenwood Feature: Using a Kenwood TM-D710 with "Voice Alert"

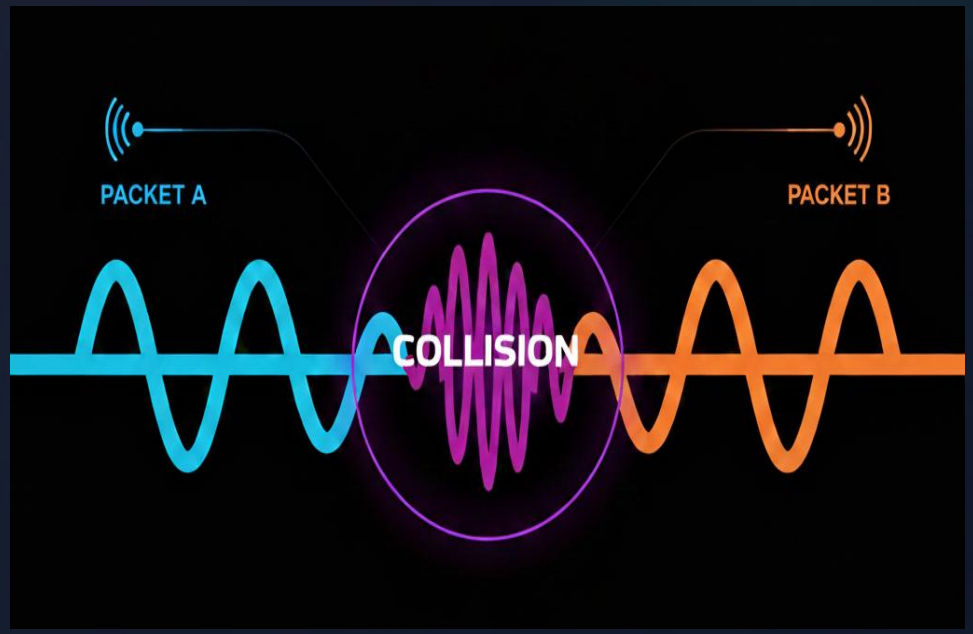
A Mic-E POSITION PACKET LOOKS LIKE THIS:

```
2026-01-29 18:41:14 CST: K0GR-9>4RPP7Z,WIDE1-1,qAR,N0AN:`yDcl <0x1c>k/]146.520MHz & V-Alert=
```

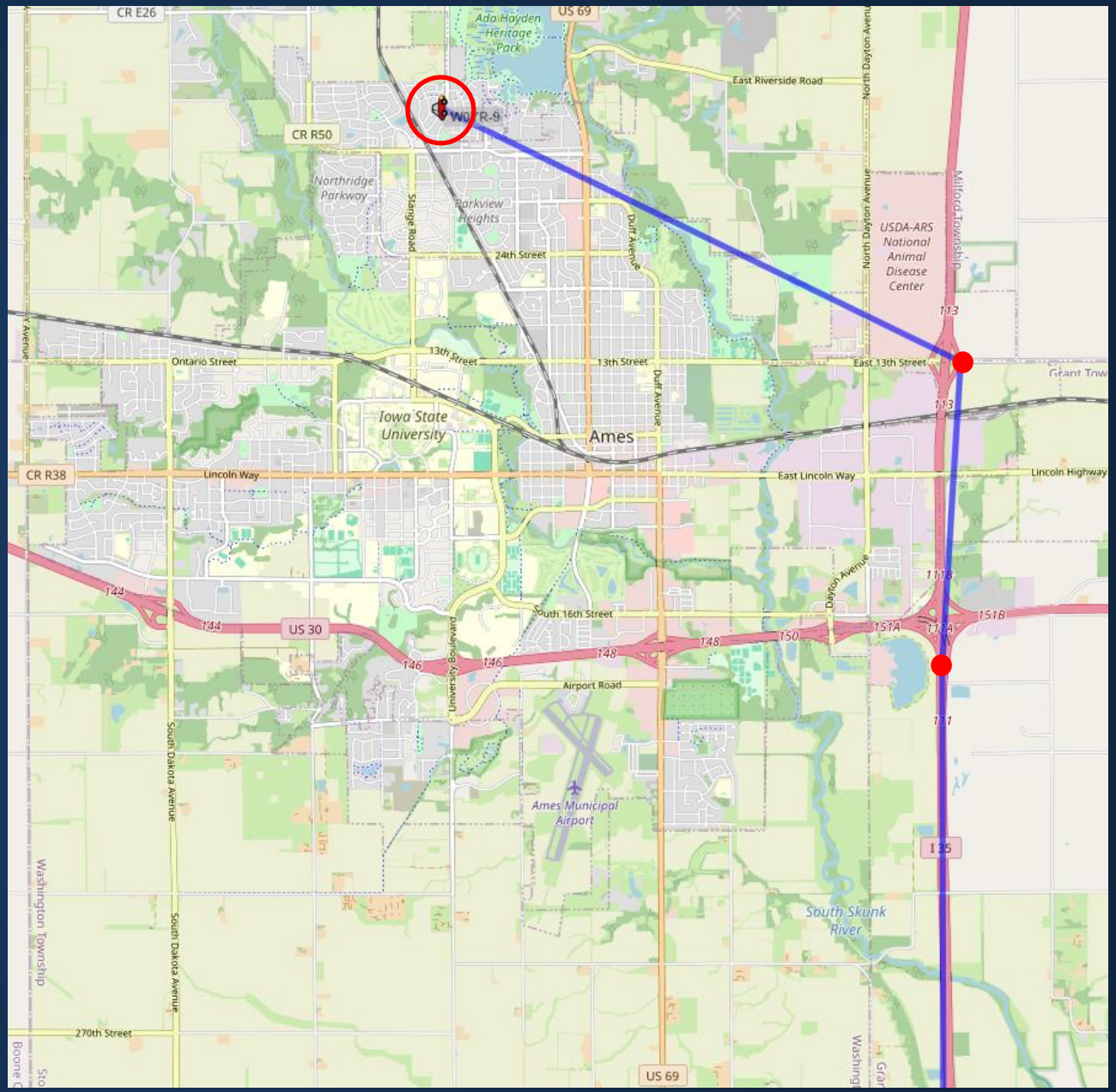
Component	Raw Data	Interpreted Information
Timestamp	2026-01-29 18:41:14 CST	Date and Time
Source Station	KØGR-9	Mobile Station: The -9 SSID signifies a vehicle.
Compressed Lat.	4RPP7Z	Latitude Data & Status: Encodes numerical latitude and a message status (e.g., "En Route").
Routing Path	WIDE1-1	New Packet: Requested one hop via a "Fill-in" digipeater.
Internet Gate	qAR, NØAN	Uploaded to APRS-IS: Processed by the iGate station NØAN.
Data Type	`	Mic-E GPS: Signifies a current, valid GPS position fix.
Compressed Long.	yDcl	Longitude Data: Encodes the numerical longitude position.
Speed & Course	<0x1c>k	Movement Data: Encodes the station's current velocity and heading.
Symbol/Icon	/]	Station Icon: Represents a Kenwood radio or similar vehicle icon.
Frequency	146.520MHz	Voice Frequency: Operator is monitoring this frequency.
Voice Alert	& V-Alert=	Proximity Feature: Radio is using CTCSS (typically 100 Hz) to alert when other APRS stations are in direct simplex range.

NETWORK DESIGN & CONGESTION

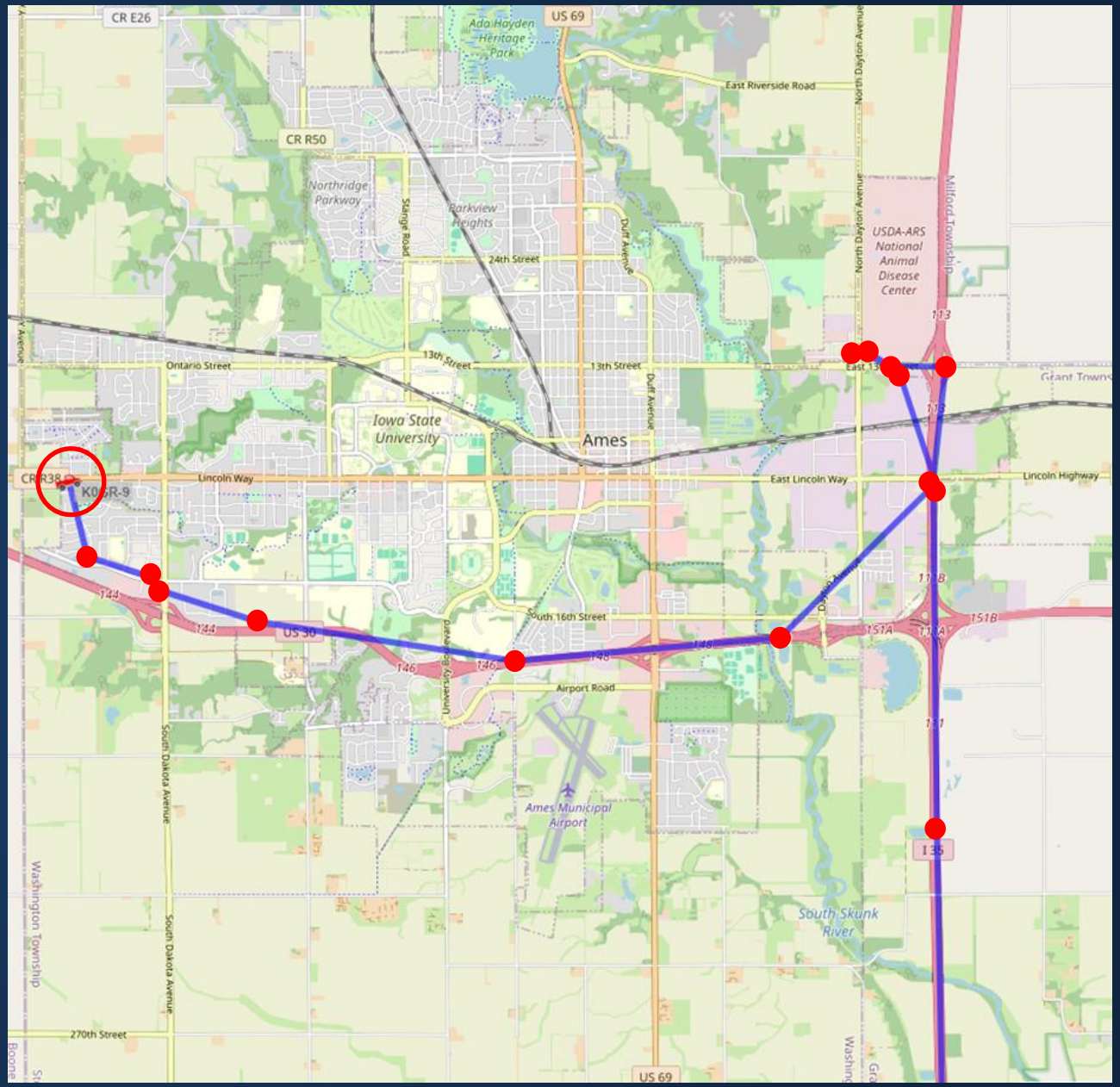
- **The Aloha Concept:** Transmit when clear. If collision, wait random time, retry.
- **The Problem:** On a shared channel, if everyone transmits often, collisions rise exponentially.
- **SmartBeaconing:** Only beacon when you turn or move significantly.
- **Decay:** Don't beacon every minute if you are parked!



EXAMPLE:
WØYR-9
TIMED BEACONING



EXAMPLE: KØGR-9 SMARTBEACONING

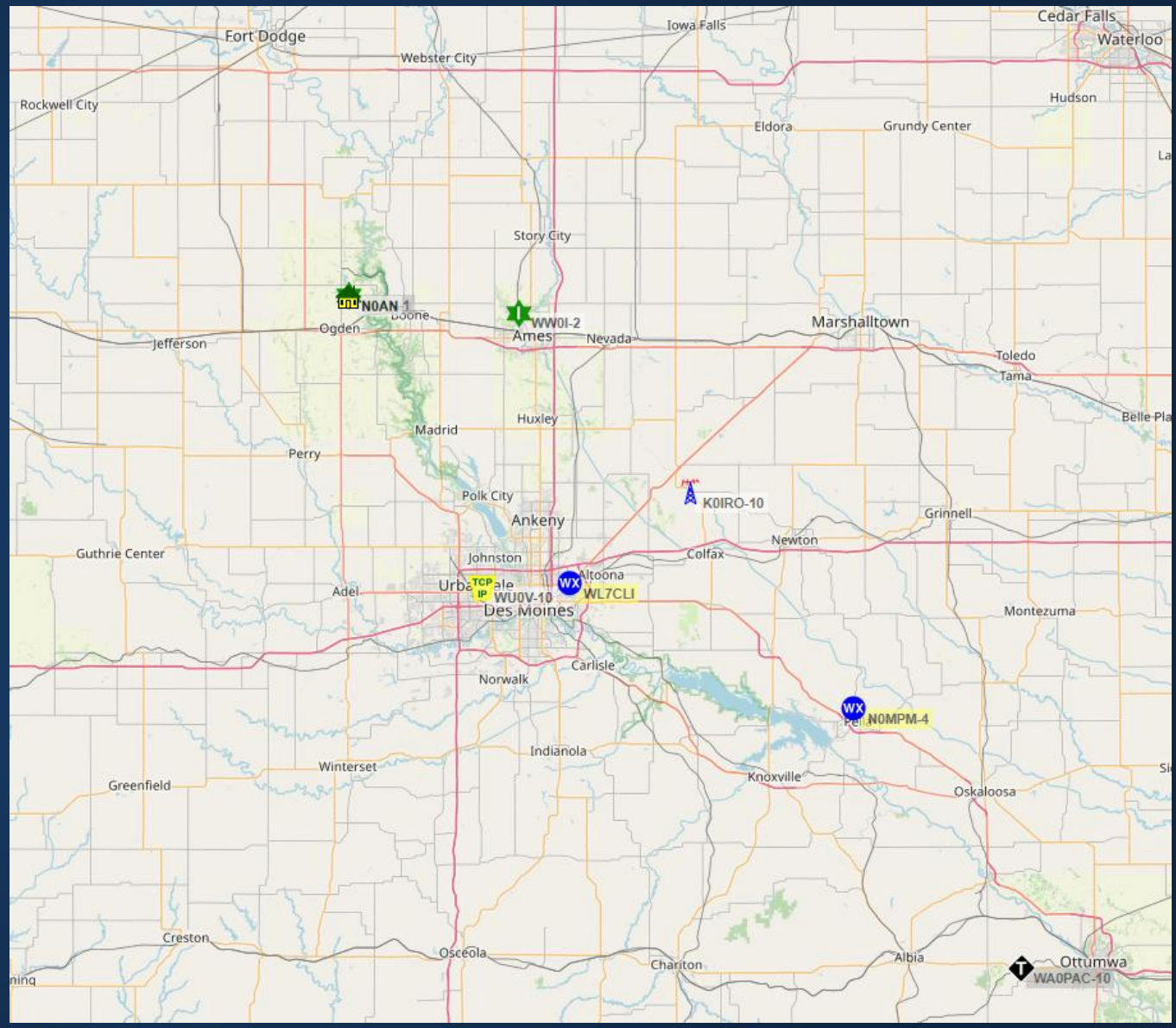


WHAT IS AN IGATE?

RF TO INTERNET

An IGate listens to local radio traffic (144.390) and uploads valid packets to the APRS-IS servers. This allows local traffic to be seen on maps like aprs.fi.

IGATES IN CENTRAL IOWA



RX-ONLY VS. TX/RX IGATES

RX-ONLY

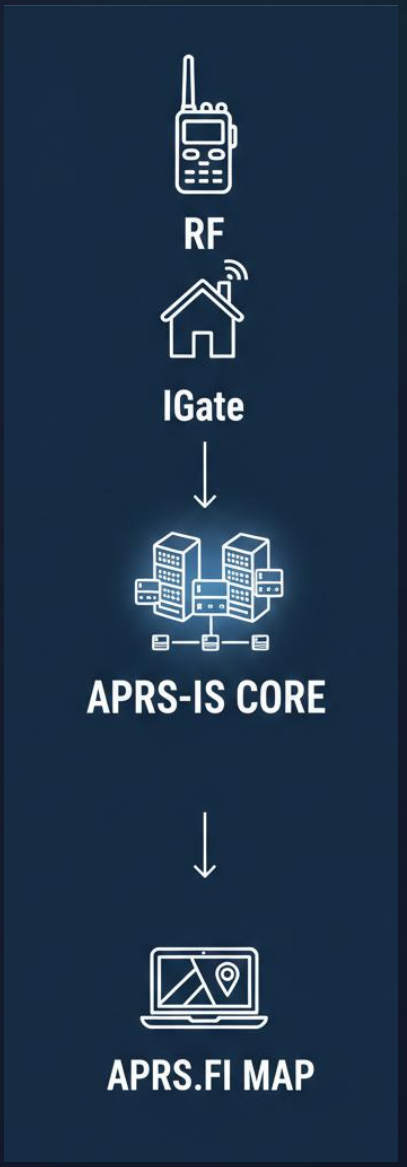
Safe and easy. Just listens and uploads. Can use a $20 RTL-SDR dongle. Great for filling in coverage gaps on the map.

TX / RX (TWO-WAY)

Can take messages from the internet and transmit them out RF. **CRITICAL:** Requires careful configuration to avoid looping packets or transmitting on top of local users.

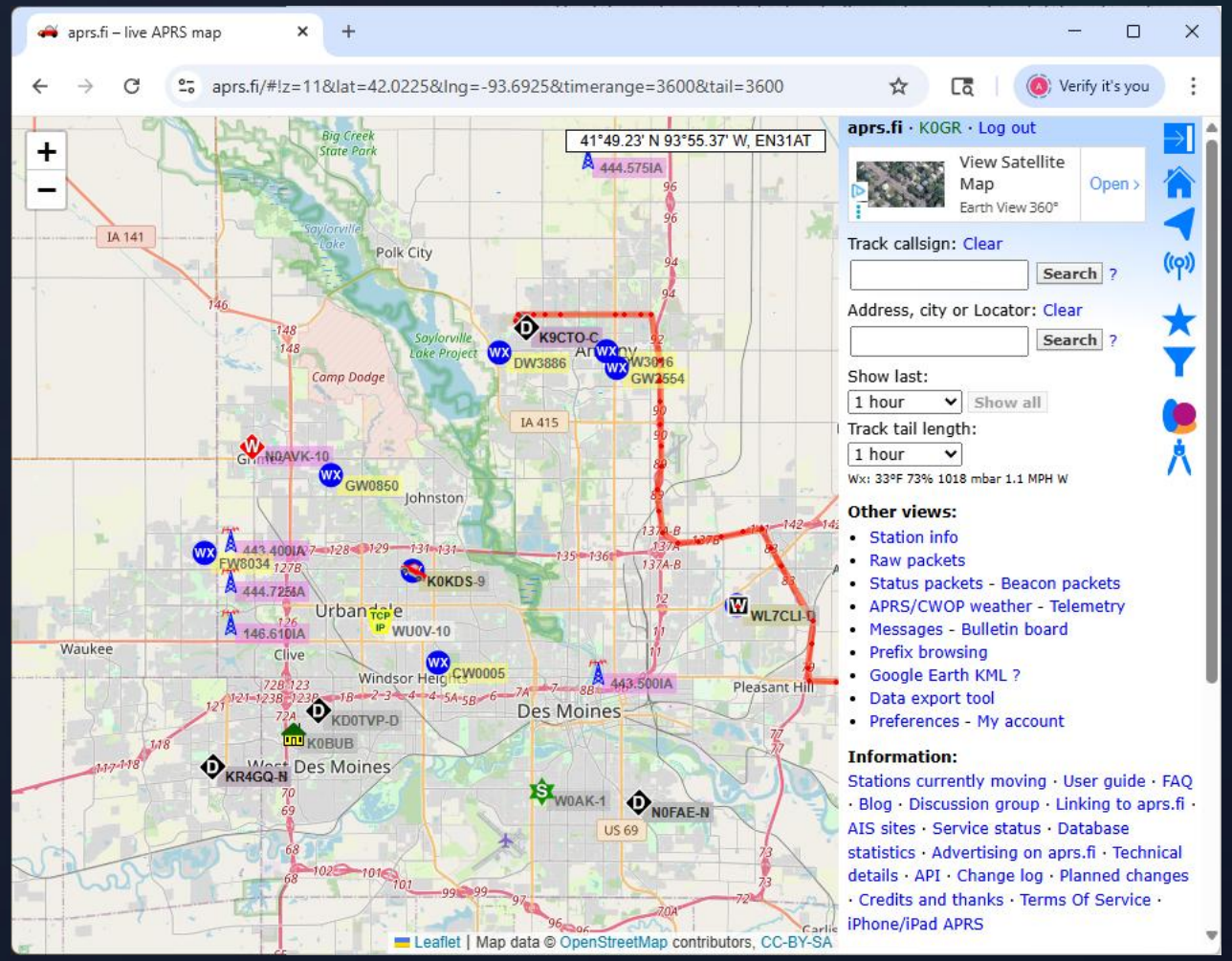
APRS.IS

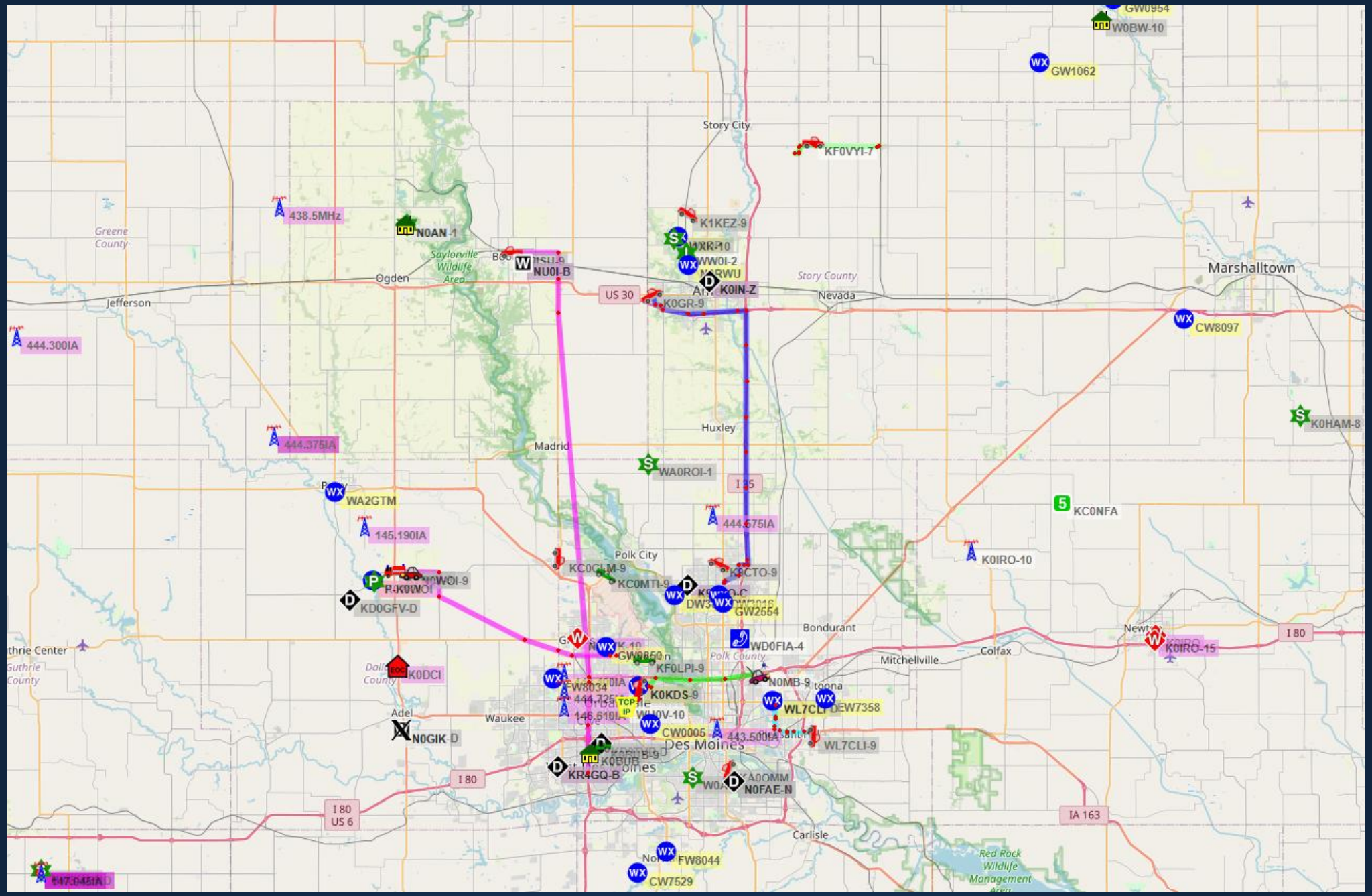
- **APRS.IS:** Automatic Packet Reporting System-Internet Service
- **Global Connectivity :** Internet-based backbone that interconnects APRS networks worldwide.
- **Internet Bridge:** While standard APRS operates via RF, APRS-IS allows data to be shared globally.
- **Data Aggregation:** Collects real-time information from Internet Gateways (IGates) and feeds it into popular live tracking websites like aprs.fi.
- **Accessibility:** Licensed operators can connect directly to APRS-IS using software like APRSDroid or Dire Wolf to participate without a traditional radio.
- **Volunteers:** Maintained and operated by volunteer Amateur Radio operators.



APRS.FI

- **Trending:** World's most popular web-based visualization tool
- **Live Tracking:** Shows the real-time location, speed, and heading of vehicles, hikers, and weather balloons
- **Data Visualization:** Beyond location, it displays weather data, telemetry, and messages.
- **Source:** Pulls data from APRS.FI
- **FindU.com:** Another popular site but it has fallen into disrepair




GW0954
W0BW-10
GW1062
Story City
KF0VYI-7
438.5MHz
N0AN-1
Greene County
Saylorville Wildlife Area
Ogden
Jefferson
NU0I-B
K1KEZ-9
WW0I-2
K0IN-Z
US 30
K0GR-9
Nevada
Story County
Marshalltown
CW8097
444.300IA
K0HAM-8
Huxley
Madrid
444.375IA
WA0ROI-1
I 35
WA2GTM
145.190IA
KC0NFA
444.675IA
Polk City
KC0CLM-9
K0IRO-10
KD0GFV-D
GW2554
Bondurant
WD0FIA-4
Newton
K0IRO-15
I 80
Mitchellville
Colfax
Guthrie Center
Guthrie County
Dallas County
K0DCI
KF0LPI-9
N0MB-9
K0KDS-9
WL7CLI-9
EW7358
Adel
Waukee
146.610IA
CW0005
443.500IA
N0GIK-D
Des Moines
WL7CLI-9
K0BUB
KR4GQ-B
N0FAE-N
I 80
US 6
IA 163
Carlisle
FW8044
CW7529
Red Rock Wildlife Management Area

EQUIPMENT OVERVIEW

NATIVE RADIOS

Radios with built-in TNC and GPS

Premium: Kenwood, Yaesu, Icom

Budget: AnyTone, TYT, QYT, VGC, Radioddity

TRACKERS

Small boxes connected to any radio (Byonics, Microsat).

DIY / SOFTWARE

Soundcard modems, Raspberry Pis, Smartphone apps.

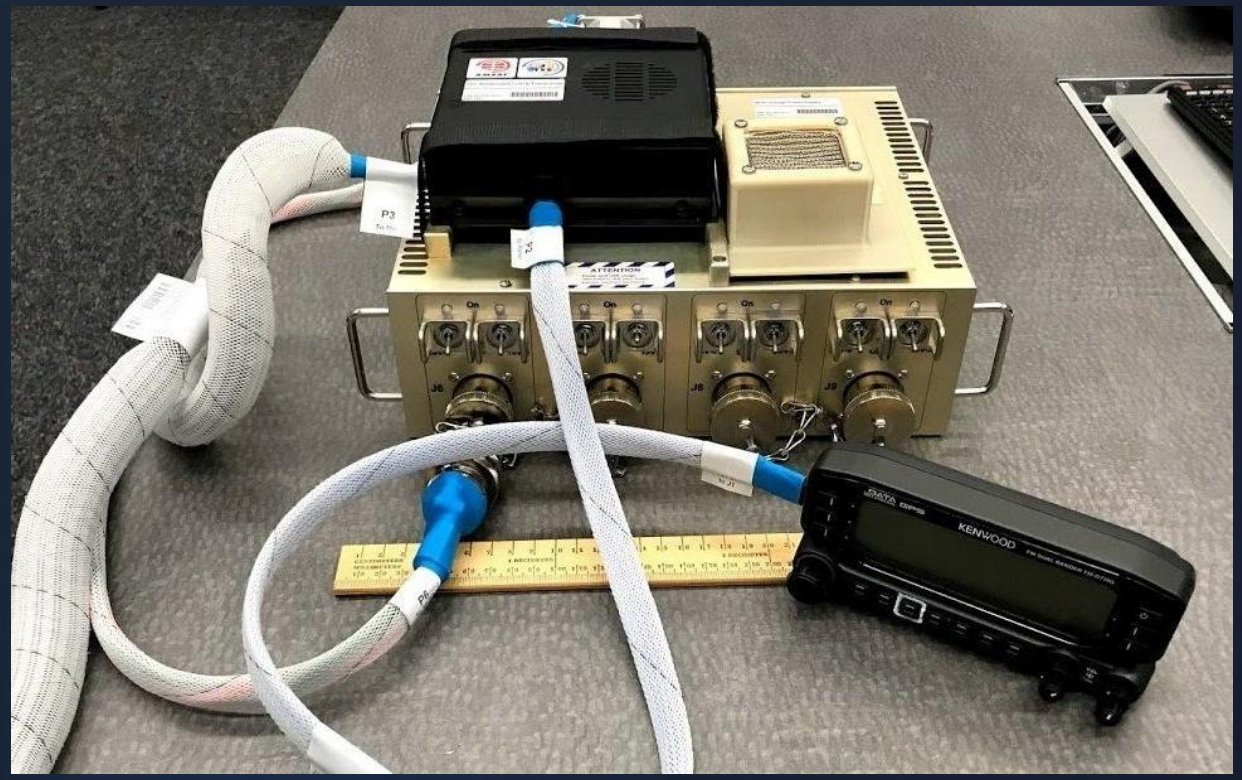
KENWOOD TH-D72 (HANDHELD)

- **Status:** Discontinued but legendary.
- **Key Feature:** Full Duplex. Can receive while transmitting (great for satellites).
- **TNC:** Access to internal TNC via USB.
- **Use Case:** The gold standard for working AMSAT/ISS APRS.
- **Predecessor:** TH-D7A(G)
- **Successor:** TH-D74A, now TH-D75A

KENWOOD TM-D710 (MOBILE)

- **Status:** Recently Discontinued.
- **Features:** Built-in GPS in the head unit (G version). Full TNC access.
- **Digipeating:** Can act as a standalone temporary digipeater.
- **Reputation:** Widely considered the best mobile APRS radio ever made.
- **Predecessor:** TM-D700A
- **Successor:** TM-D750A (coming soon)

APRS ON THE ISS



- **Frequency:** 145.825 MHz (World Wide).
- **Path:** ARISS
- **Equipment:** Kenwood D710GA in the Columbus Module.
- **Goal:** Send a packet up, have the ISS digipeat it down to another station.

YAESU FT-5DR (HANDHELD)

- **Status:** Current Model.
- **Modem:** 1200/9600 baud APRS modem.
- **Display:** Touchscreen color display for maps and lists.
- **Note:** TNC is not fully accessible externally (cannot easily use with PC software).

YAESU FTM-400 / 500 (MOBILE)

- **FTM-400:** Color touch screen, separate band APRS.
- **FTM-500:** Newest model, "slide-out" unit design.
- **SmartBeaconing:** Fully supported.
- **Voice Alert:** Easy to setup with dual receive.

D-PRS AND “DIGITAL APRS”

- **Difference:** D-PRS & Digital APRS uses digital radio protocols, primarily D-STAR or DMR (Digital Mobile Radio).
- **Translation:** Must be heard by a D-STAR or DMR gateway or personal hot spot to be converted to APRS-IS.
- **No Analog:** Cannot hear a standard analog APRS packets directly.
- **No Interoperability:** Traditional APRS users cannot hear D-PRS or Digital APRS
- **Limited Use:** Location information is only displayed online.

BYONICS: THE TRACKER STANDARD

- **TinyTrak4:** The swiss army knife. Decodes, Digipeats, Tracks.
- **TinyTrak3:** Basic tracker.
- **MicroTrak:** All-in-one transmitters (mostly for balloons/vehicles).
- **Availability:** Still in production and available.
- **Connection:** Plugs into almost any radio's mic/speaker jack.

EXAMPLE TRACKER

- **TinyTrak3**
- **Motorola SM-50**
- **Serial GPS puck**
- **Quick Deploy:** Connect power, mount antenna and GPS
- **Power:** Radio > TinyTrak3 > GPS

PORTABLE DIGIPEATERS

- **Use Case:** Search & Rescue, Marathons, Festivals in valleys.
- **Setup:** Radio + TNC (or D710) + Battery + Mast.
- **Configuration:** Set to respond to WIDE1-1 ("Fill-in").
- **Goal:** Get packets out of a hole and to a wide-area digi.

DIY: RASPBERRY PI & DIREWOLF

- **Software TNC:** "Direwolf" is a software modem that decodes packets better than hardware!
- **Hardware:** Raspberry Pi + USB Sound Card + Radio Interface cable.
- **Cost:** Very low.
- **Flexibility:** Can run an Igate, Digi, and Tracker simultaneously.

SOFTWARE: WINDOWS

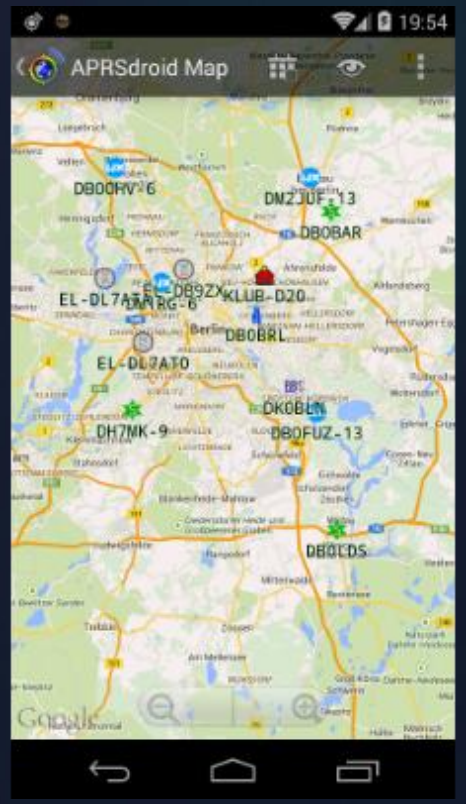
Software	Software Type	Mapping	Typical Use
APRSISCE/32	Full APRS Client	Built-in OpenStreetMap (OSM), supports pre-loading	Can connect directly to a TNC or via SoundModem; full specification implementation
PinPoint APRS	Full APRS Client	Built-in (Google, Bing, OSM, etc.), caches for offline use	Paired with a TNC/modem like SoundModem for a modern Windows setup
UZ7HO SoundModem	Software TNC/Modem	None	Used as a "backend" TNC for clients like PinPoint, APRSISCE/32, or other terminal programs
UI-View32	Full APRS Client	Uses static bitmap images or external software - MapPoint	Stable for older hardware but limited features compared to modern alternatives *No active development*

SOFTWARE: LINUX / RASPBERRY PI

Software	Primary Role	Best For
Direwolf	Software TNC / Modem / Digi / IGate	High-performance modem, versatile, low-power nodes
Xastir	Mapping Client / GUI	Interactive station, map visualization, GUI tracking
YAAC	Modern Mapping Client	Modern, active development, multi-platform, feature-rich
APRX	Digipeater / IGate	Stable, lightweight RF/Internet gateway
APRSC	APRS-IS Server	High-volume Tier 2 Server for infrastructure

SOFTWARE: APRSDROID FOR ANDROID

- **Live Map Tracking:** View positions, movement history, and telemetry of amateur radio stations and weather sensors worldwide.
- **Messaging:** Real-time text-based exchange with other operators.
- **Offline Maps:** Support for OpenStreetMap (OSM) allows you to view station locations without an active internet connection.
- **Smart Beaconing:** Automatically adjusts your position reporting frequency based on your speed and direction.
- **AFSK (Audio):** Connect your phone to a radio (e.g., via a Digirig Lite or standard audio cable) to transmit and receive packets over RF.
- **Bluetooth/USB TNC:** Use an external Hardware TNC like a Mobilinkd via Bluetooth or a USB-serial connection to handle packet processing.
- **Base App:** $4.95



SOFTWARE: APRS.FI APP FOR iOS

- **Live Map Tracking:** View positions, movement history, and telemetry of amateur radio stations and weather sensors worldwide.
- **Beaconing:** Transmit your position to the APRS-IS network (requires subscription).
- **Messaging:** Send and receive APRS text messages directly within the app.
- **Hardware Support:** Connect to external radios using Bluetooth Low Energy (BLE) **TNCs** (e.g., Mobilinkd TNC3/TNC4) or through the built-in software DSP modem for direct audio connections.
- **Base App:** $6.99
- **Extra Features Subscription:** Unlocks advanced functions like messaging and beaconing via APRS-IS for approximately $8.49/year or $2.49/monthly.

BOTS & SERVICES

APRS has an "App Store" of server-side bots that provide utilities.

SMS

SMS Gateway

EMAIL-2

Email Gateway

FIND

ON-AIR-SEARCH

WXBOT

Weather Reports

REPEATER

Closest Repeaters

MPAD

MANY Options

WHO-IS

Station Lookup

APSPOT

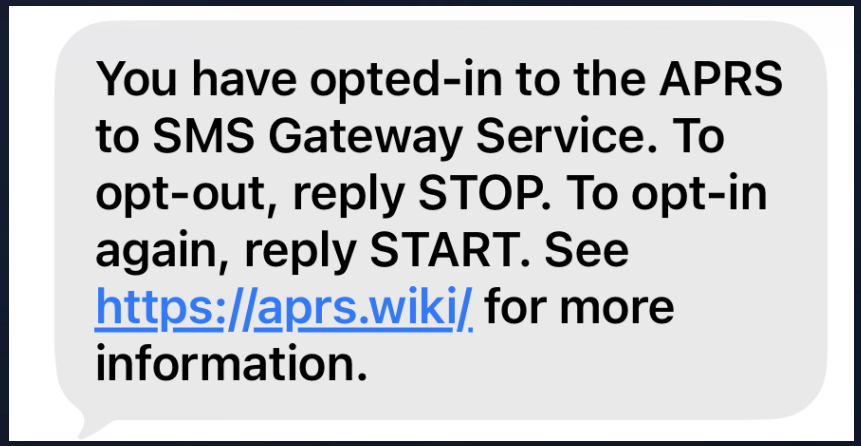
SOTA/POTA Spotting

NYQP

QSP PARTY SPOTTER

SMS: TEXTING PHONES

- **What is it?** A specialized service that allows Amateur Radio operators to communicate with the "outside world" via SMS (texting) and Email using standard APRS equipment.
- **Host:** APRS.WIKI by NA7Q
- **Key Benefit:** No internet connection or cellular service is required on the radio end—only access to an APRS Digipeater or I-Gate.
- **Carrier Regulations:** Due to anti-spam laws, mobile phone users must opt-in before they can receive messages from an APRS station.
- How to Opt-In:
  - Go to **aprs.wiki**
  - Enter your phone number in the "Opt-In" section.
  - Follow the prompts to confirm your consent.



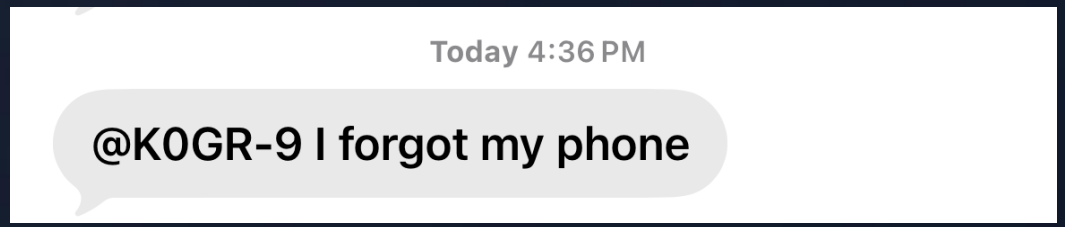
SMS: SENDING AN SMS FROM YOUR RADIO

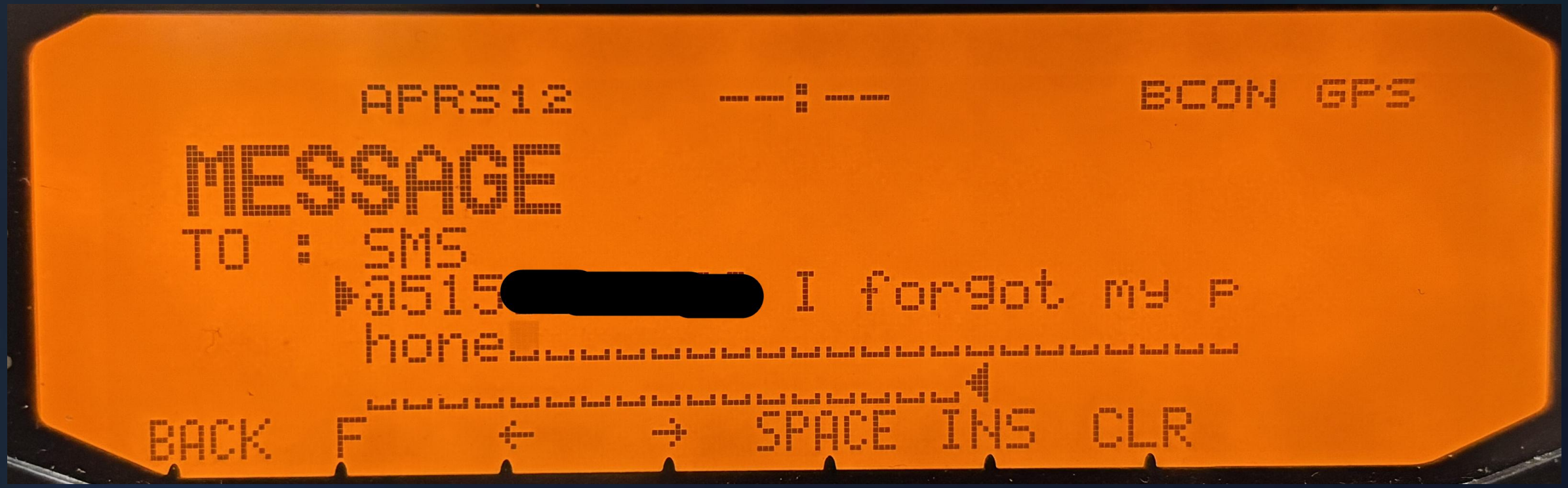
SYNTAX

> TO: SMS MSG: @515####### I forgot my phone

- **The Destination:** Address your APRS message to the callsign: **SMS**
- **The Format:** @<number> <message>

  - Note: Do not use a '1' prefix for US/CA numbers
- **TO:** SMS
- **Message:** @515######## I forgot my phone
- **They receive:**



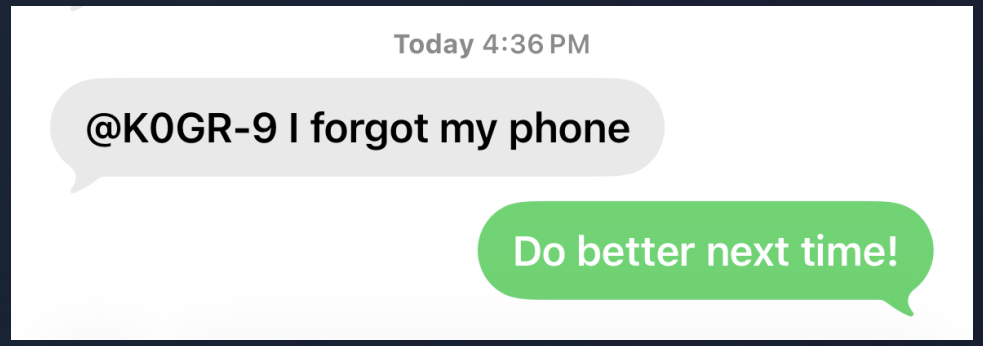

APRS12 --:-- BCON GPS
MESSAGE
TO : SMS
▶3515[redacted] I forgot my P
hone
BACK F ← → SPACE INS CLR

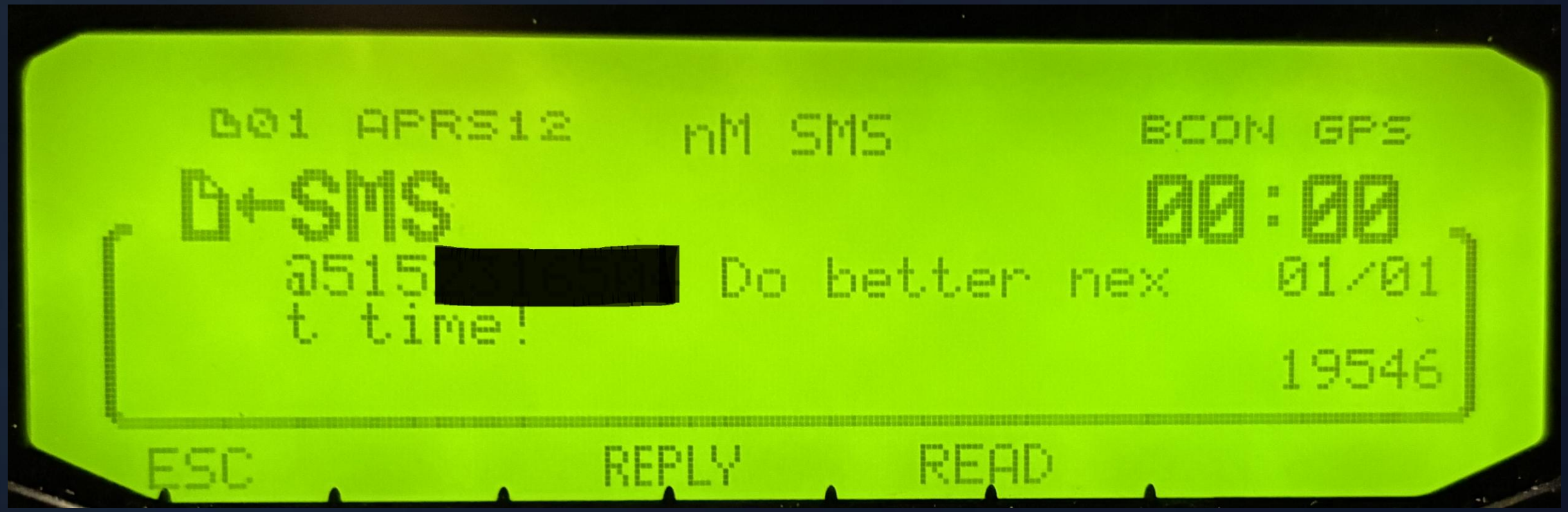
SMS: SENDING OR REPLYING FROM SMS TO APRS

SYNTAX

> TO: 8663524096 MSG: @KØGR-9 Do better next time

- **The Destination:** The phone number for the SMS Gateway: **8663524096**
- **The Format:** @<callsign> <message>
- **TO:** 8663524096
- **Message:** @KØGR-9 Do better next time
- **They receive on their APRS radio:**
  @515######## Do better next time!
- **Replies** can leave off the **@<callsign>**
- It is encouraged that SMS users preface the message with the destination user in case the “last call” log is erased.


Today 4:36 PM
@K0GR-9 I forgot my phone
Do better next time!


001 APRS12 nM SMS BCON GPS
D+SMS 00:00
@515 [redacted] Do better nex 01/01
t time!
19546
ESC REPLY READ

SMS: ALIAS MANAGEMENT

SYNTAX

> TO: SMS MSG: #alias #add me 515########

> TO: SMS MSG: #alias #remove me 515########

> TO: SMS MSG: @Paul Happy Birthday!

- **The Destination:** SMS
- **The Format:** #alias #add <shortcut> <number>
- **Also:** #alias #remove <shortcut> <number>
- **Shortens the message:** Saves from having to enter phone numbers every time
- **Protects privacy:** Does not expose the telephone number every time a message is sent


APRS12 --:-- BCON GPS
MESSAGE
TO : SMS
▶#alias #add me 513[redacted]
BACK F ← → SPACE INS CLR

EMAIL-2: SENDING EMAILS

SYNTAX

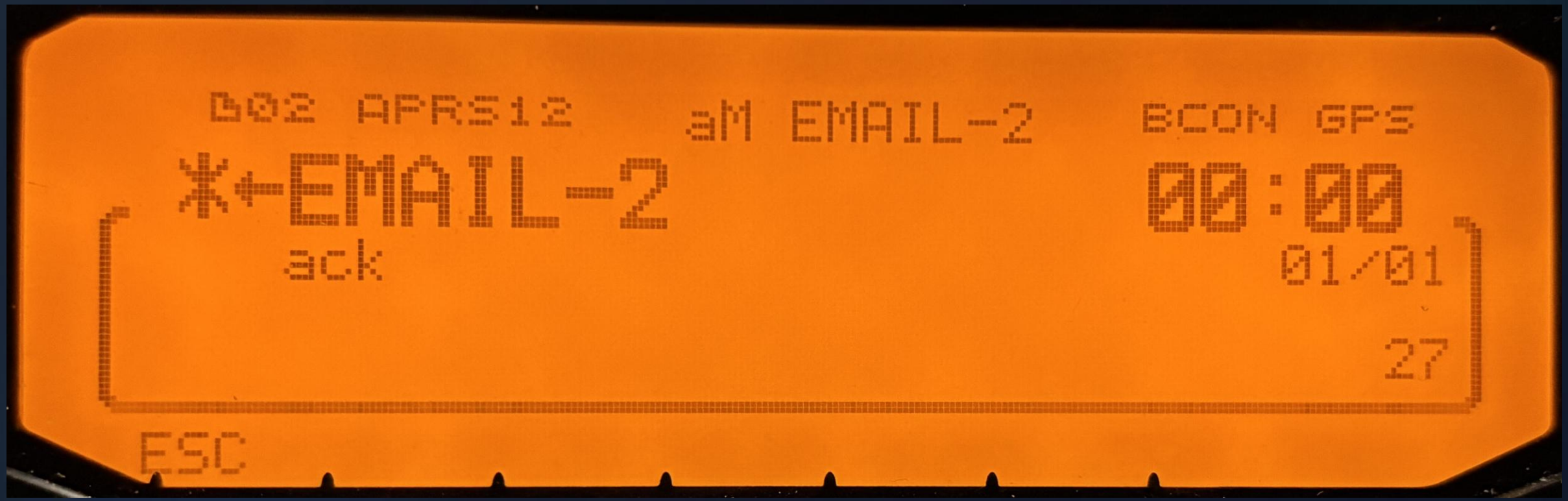
```
TO: EMAIL-2  MSG: kØgr@arrl.net Test message
```

- **Address:** EMAIL-2 (now includes shortcuts and caching)
- **Limitations:** Short messages only (APRS packet limit is ~67 characters for safe delivery).
- **No Attachments:** Pure text.
- **TO:** EMAIL-2
- **The Format:** <email address> <message>
- **Message:** wØyl@arrl.net Test Message
- **Received:** In the body of their email:

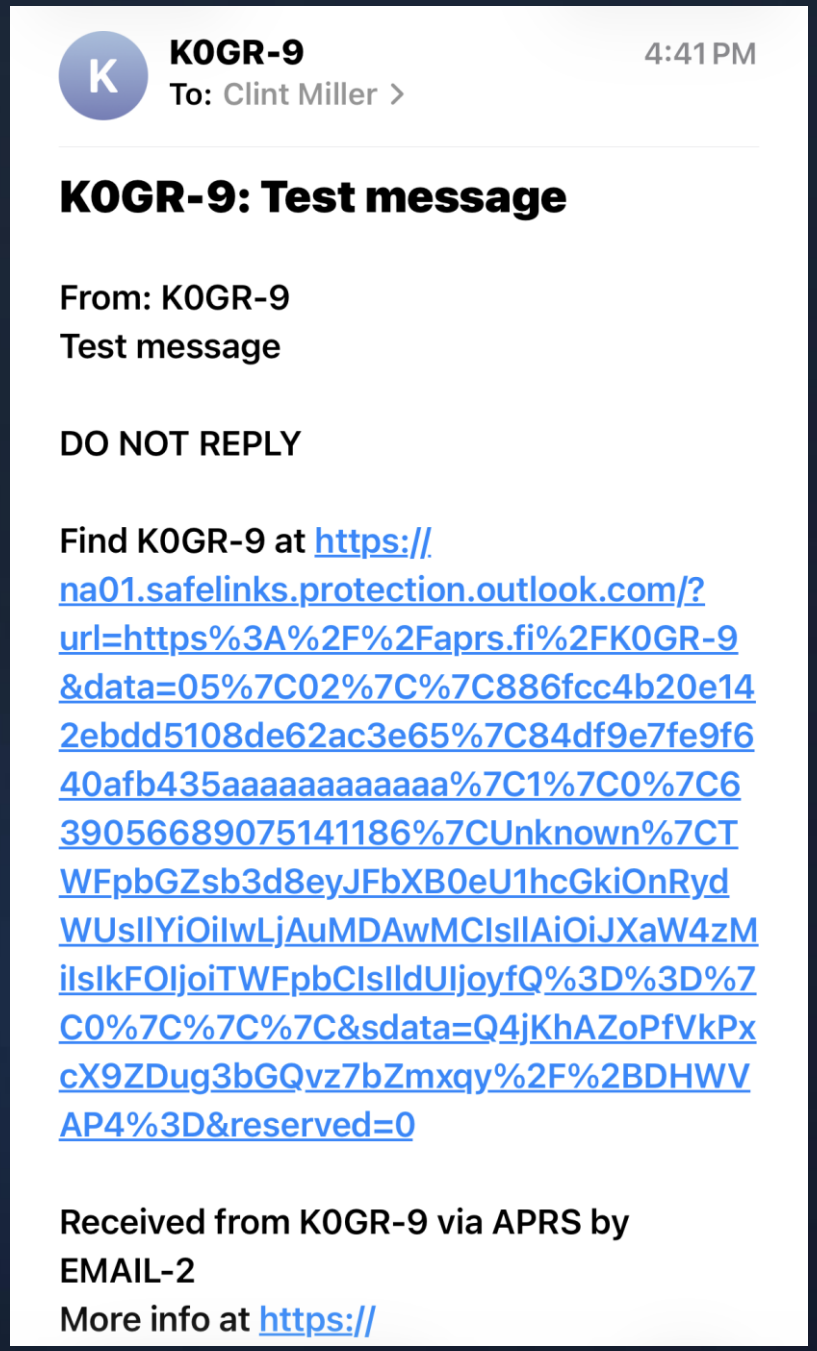
  From: KØGR-9

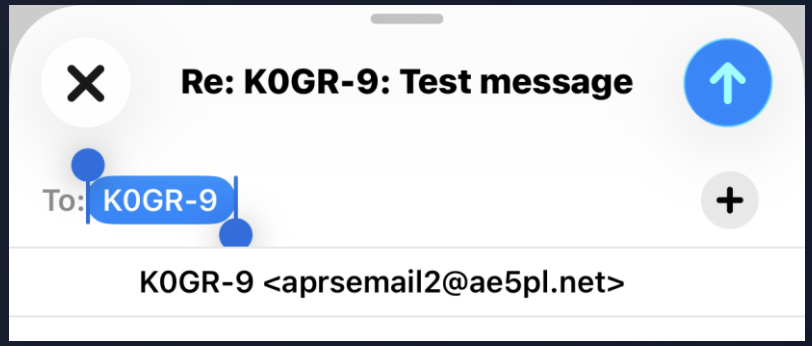
  Test Message

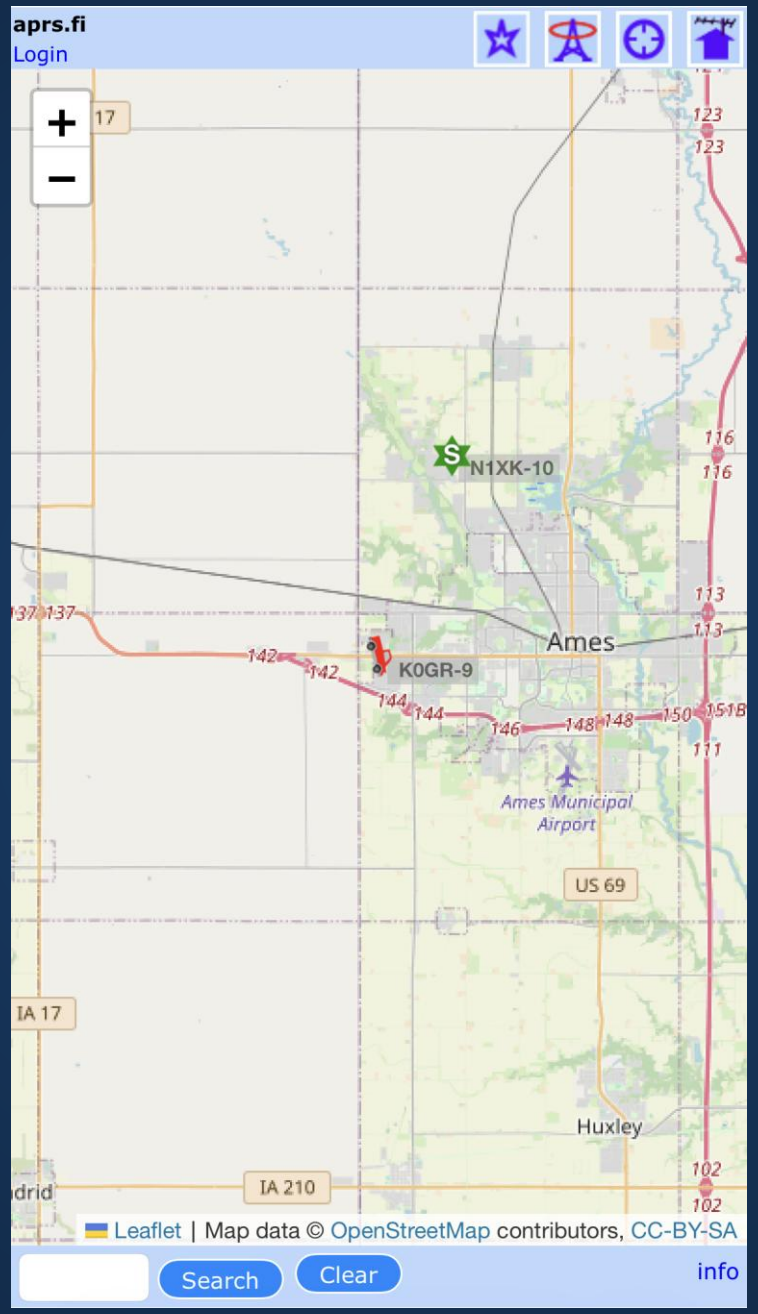

APRS12 --:-- BCON GPS
MESSAGE
TO : EMAIL-2
[redacted]@hotmail.com T
est message
BACK F ← → SPACE INS CLR


B02 APRS12
aM EMAIL-2
BCON GPS
*-EMAIL-2
00:00
ack
01/01
27
ESC


B02 APRS12 mM EMAIL-2 BCON GPS
D-EMAIL-2
00:00
Email sent to
@hotmail.com
01/01
75
ESC
REPLY
READ


K0GR-9
4:41 PM
To: Clint Miller >
K0GR-9: Test message
From: K0GR-9
Test message
DO NOT REPLY
Find K0GR-9 at https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Faprs.fi%2FK0GR-9&data=05%7C02%7C%7C886fcc4b20e142ebdd5108de62ac3e65%7C84df9e7fe9f640afb435aaaaaaaaaaaa%7C1%7C0%7C639056689075141186%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIlAiOiJXaW4zMiIsIkFOIjoiTWFpbCIsIldUIjoyfQ%3D%3D%7C0%7C%7C%7C&sdata=Q4jKhAZoPfVkPxcX9ZDug3bGQvz7bZmxqy%2F%2BDHWVAP4%3D&reserved=0
Received from K0GR-9 via APRS by EMAIL-2
More info at https://


Re: K0GR-9: Test message
To: K0GR-9
K0GR-9 <aprsemail2@ae5pl.net>

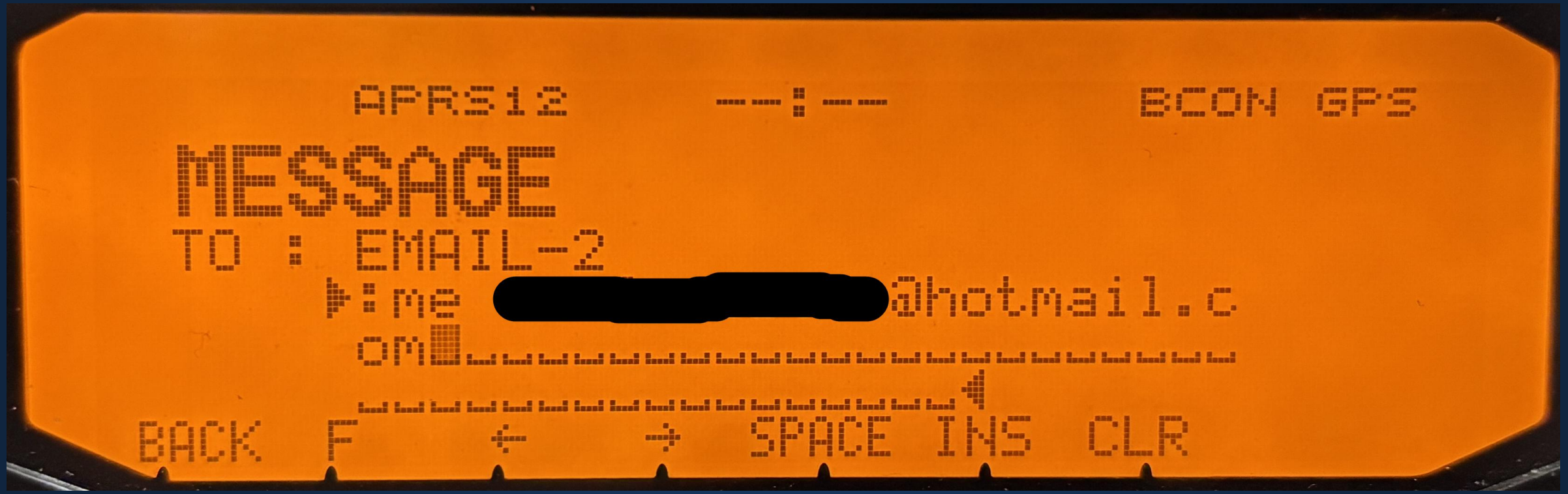

aprs.fi
Login
17
123
123
N1XK-10
116
116
113
113
137 137
142
142
144
144
146
148
148
150
151B
111
Ames
K0GR-9
Ames Municipal Airport
US 69
IA 17
Huxley
102
102
IA 210
drid
Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA
Search
Clear
info

EMAIL-2: USING SHORTCUTS

SYNTAX

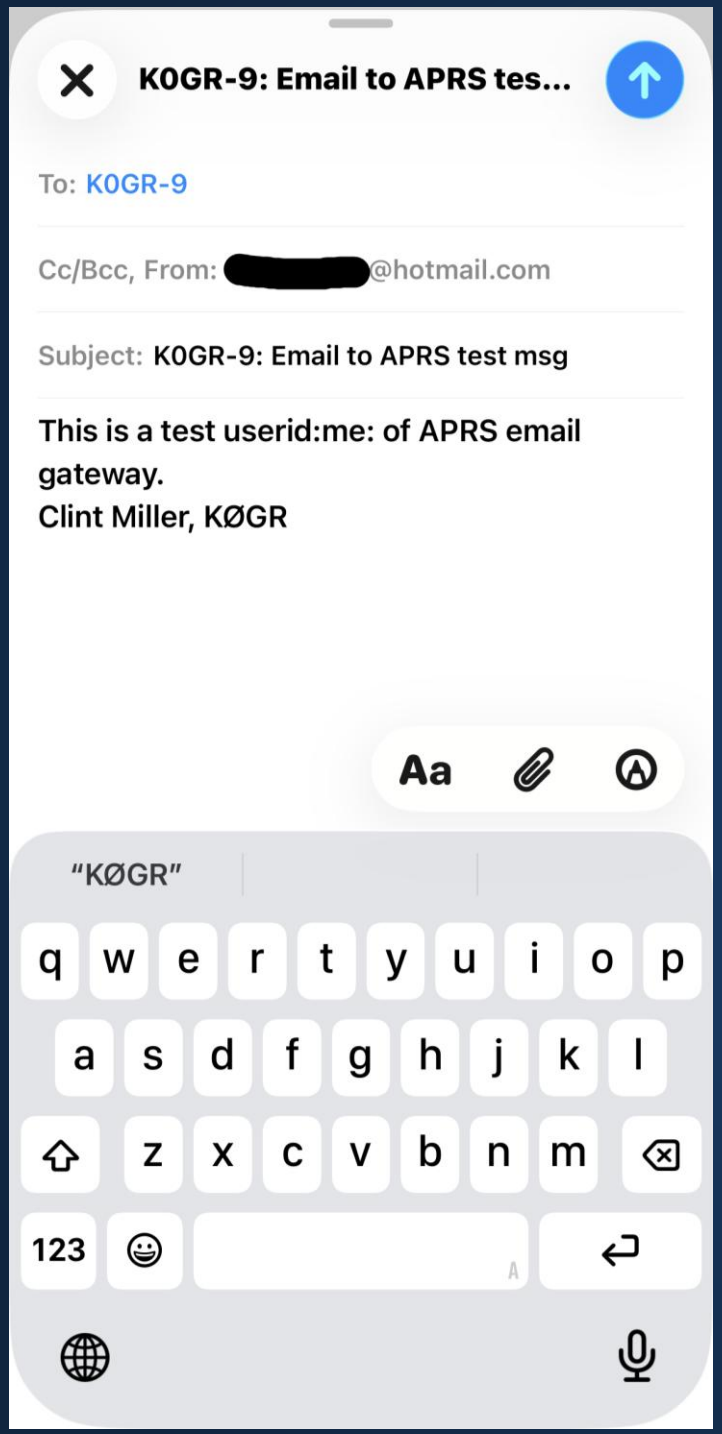
```
TO: EMAIL-2  MSG: me kØgr@arrl.net
```

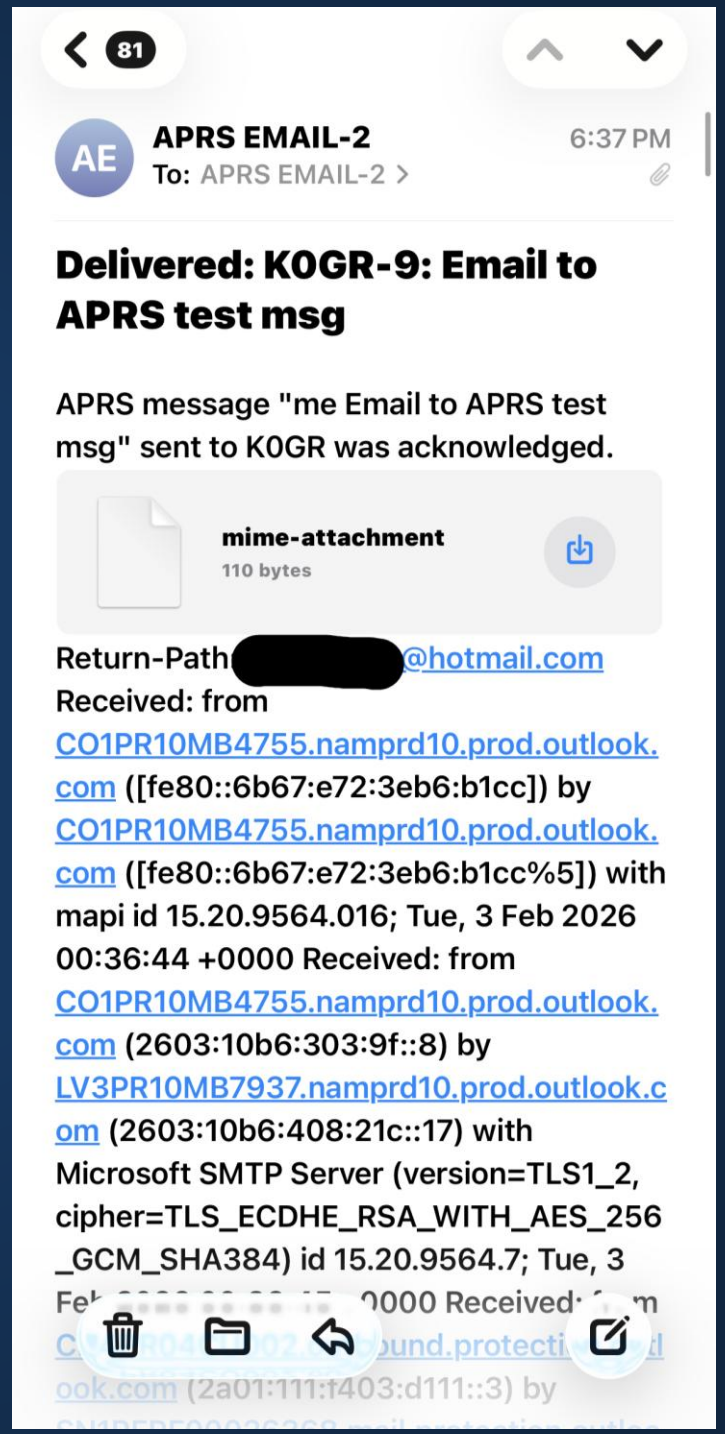
- EMAIL-2 shortcuts and commands are case-insensitive; all callsign-SSIDs must be upper case.
- **Why use them?** Typing long email addresses on a radio keypad is difficult. Shortcuts let you use a 2-3 letter alias instead.
- **How to Create a Shortcut:** Send a message to EMAIL-2.
  - **Format:** shortcut <alias> <email address>
  - **Example:** shortcut XYL wife@example.com
- **How to Use it:**
  - To: EMAIL-2
  - Message: XYL Arriving in 20 minutes.
- **Manage Shortcuts:** Send **L** to get a list of your aliases, or **R <alias>** to remove one.


APRS12 --:-- BCON GPS
MESSAGE
TO : EMAIL-2
:me [redacted]@hotmail.c
om
BACK F ← → SPACE INS CLR

RECEIVING EMAIL ON YOUR RADIO

- **How it Works:** Once you define a shortcut for someone, they can email you back.
- **Requirements for the Sender:**
  - They must send from the exact email address defined in your shortcut.
  - Subject Line: Must be your CALLSIGN-SSID followed by a colon (e.g., KØGR-9: Hello!).
  - Body of Email: Must contain userid:<shortcut>: two colins are required! (userid:XYL:).
- **Security:** This ensures only people you have "authorized" via shortcuts can send messages.
- **What if you're offline?** If someone sends you an email and your radio is off, the server will cache it for up to 24 hours.
- **The "Get" Command:** To check for missed emails, send a message to EMAIL-2.
  - **Message:** get
- **Result:** The gateway will transmit any pending messages to you, spaced 10 seconds apart to avoid flooding your radio's buffer.


K0GR-9: Email to APRS tes...
To: K0GR-9
Cc/Bcc, From: [redacted]@hotmail.com
Subject: K0GR-9: Email to APRS test msg
This is a test userid:me: of APRS email gateway.
Clint Miller, KØGR
Aa
"KØGR"


81
APRS EMAIL-2
6:37 PM
To: APRS EMAIL-2 >
Delivered: K0GR-9: Email to APRS test msg
APRS message "me Email to APRS test msg" sent to K0GR was acknowledged.
mime-attachment
110 bytes
Return-Path [redacted]@hotmail.com
Received: from CO1PR10MB4755.namprd10.prod.outlook.com ([fe80::6b67:e72:3eb6:b1cc]) by CO1PR10MB4755.namprd10.prod.outlook.com ([fe80::6b67:e72:3eb6:b1cc%5]) with mapi id 15.20.9564.016; Tue, 3 Feb 2026 00:36:44 +0000 Received: from CO1PR10MB4755.namprd10.prod.outlook.com (2603:10b6:303:9f::8) by LV3PR10MB7937.namprd10.prod.outlook.com (2603:10b6:408:21c::17) with Microsoft SMTP Server (version=TLS1_2, cipher=TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384) id 15.20.9564.7; Tue, 3 Fe


Bo2 APRS12 mM EMAIL-2 BCON GPS
B-EMAIL-2 00:00
me Email to APRS test msg 01/01
84
ESC REPLY READ

FIND: ON-AIR-SEARCH

SYNTAX

```
TO: FIND MSG: W0YR-9
```

- **Purpose:** Returns the last known position, timestamp, distance, and heading of any station.
- **How:** Send a standard APRS message to the callsign FIND with the target station as the text.
  - To: FIND
  - Message: WØYR-9
  - Response: “WØYR-9: 3.2mi NW (310°) 2h45m ago via IGate N1XK”
- **Beacon First:** The server needs your location to calculate the distance to the target.


B03 APRS12 ▶nM FIND BCON
D+FIND
21:19
W0YR-9: 1h34m ago Via BAS 02/03
HOR 222.1mi away EM28ov
2
ESC REPLY READ

WXBOT: LOCAL WEATHER

SYNTAX

```
TO: WXBOT MSG: AMES, IA
```

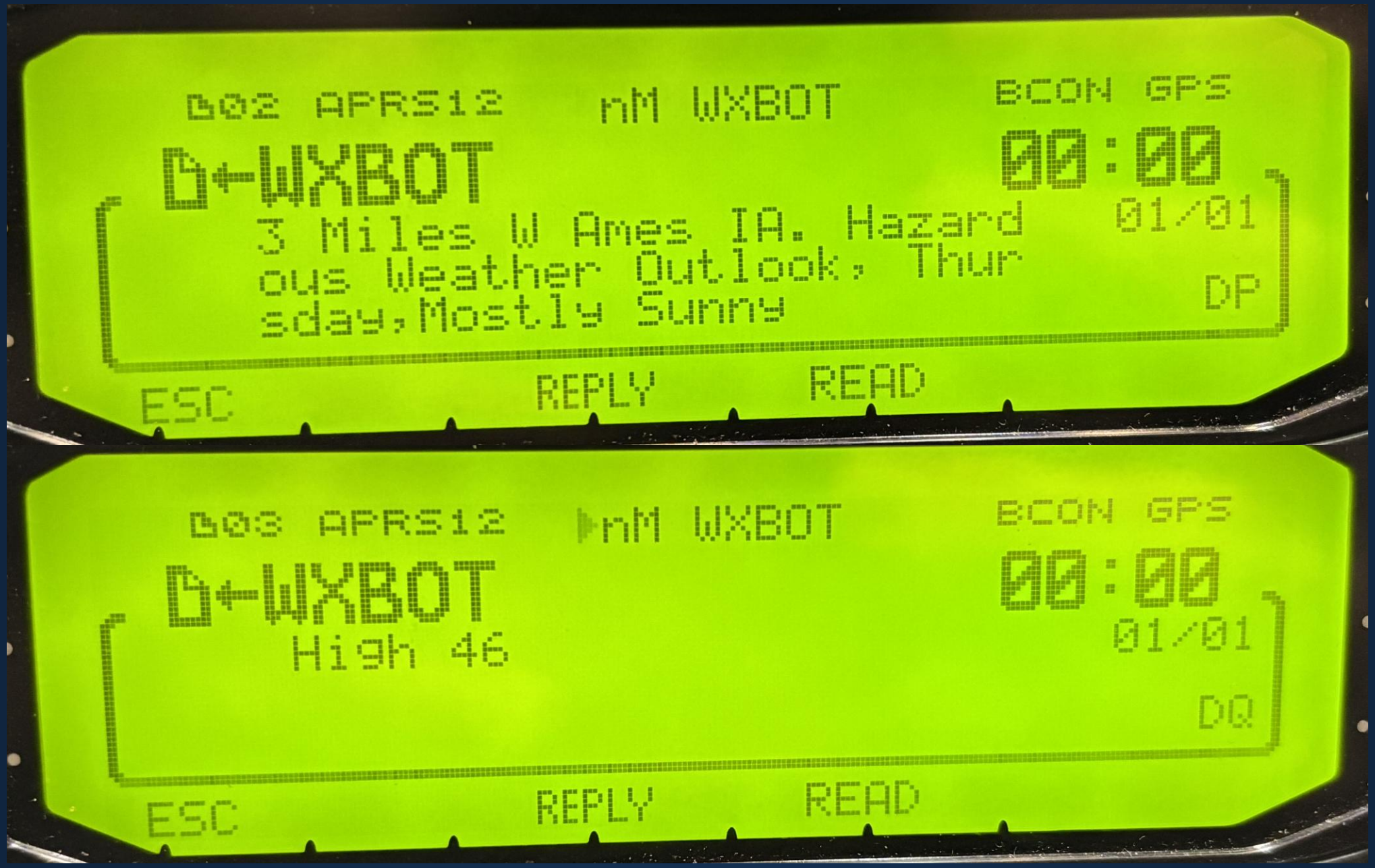
```
TO: WXBOT MSG: 50010
```

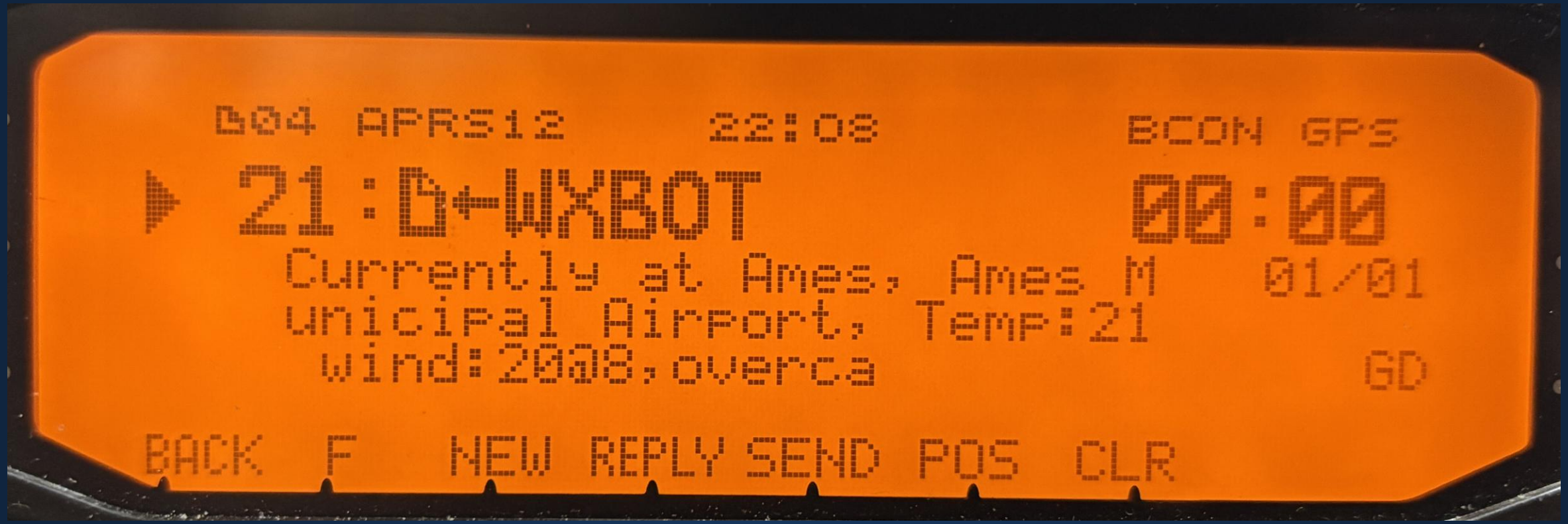
```
TO: WXBOT MSG: K0GR-9
```

Response:

```
WXBOT>K0GR: Ames, IA: Clear, 72F, Wind NW 5mph.
```

- Can also use "today", "tomorrow“, “Friday” for forecasts.
- Essential for camping or field day.


B02 APRS12 nM WXBOT BCON GPS
B-WXBOT
00:00
3 Miles W Ames IA. Hazard 01/01
ous Weather Outlook. Thur
sday.Mostly Sunny DP
ESC REPLY READ
B03 APRS12 nM WXBOT BCON GPS
B-WXBOT
00:00
High 46 01/01
DQ
ESC REPLY READ

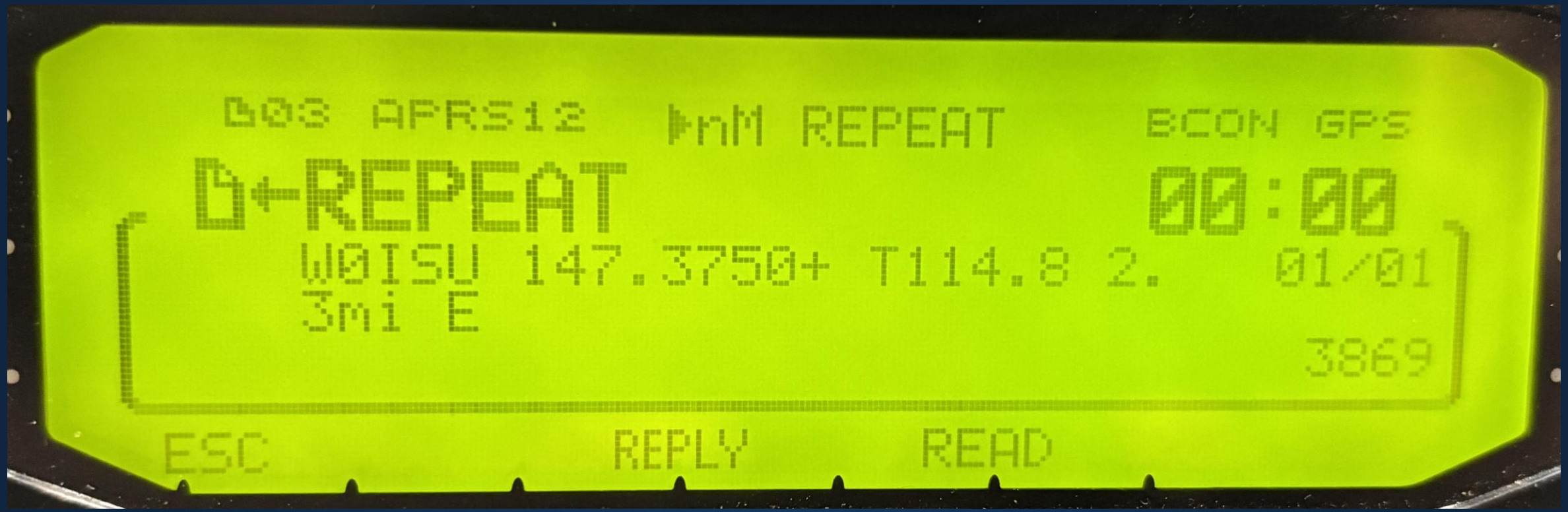

B04 APRS12 22:08 BCON GPS
21:B-WXBOT 00:00
Currently at Ames, Ames M 01/01
unicipal Airport, Temp:21
wind:2008,overca GD
BACK F NEW REPLY SEND POS CLR

REPEATER: A LOCATION AWARE DIRECTORY

SYNTAX

```
TO: REPEAT  MSG: 2m
```

- **Purpose:** Queries the global repeater database and returns the frequency, offset, and tone of the repeaters closest to your current beaconed position.
- **How:** Send a blank message for the closest match or specify a type.
  - To: REPEATER
  - Message: (Leave blank or type "2m", "440", or "DMR")
  - Response: “WØISU 147.375MHz -0.6 (114.8Hz) 2.3mi E”
- **LIST:** Returns a list of the 3 closest repeaters.
- **NEAREST 5:** Returns a list of the 5 closest repeaters.


B03 APRS12 ▶nM REPEAT BCON GPS
B+REPEAT 00:00
W0ISU 147.3750+ T114.8 2. 01/01
3mi E
3869
ESC REPLY READ

MPAD: MULTI-PURPOSE SWISS ARMY KNIFE

SYNTAX

```
TO: MPAD MSG: fuel top5
```

- **MPAD:** Multi-Purpose APRS Daemon
- **Purpose:** A centralized bot that queries live databases for weather (METAR/TAF), satellite passes, sunrise/sunset times, and geographical coordinates. It automatically detects your location and provides data in your local units (Metric or Imperial).
- **How:** Beacon first. Send a standard APRS message to the callsign MPAD with specific keywords to get the data you need.

  - OpenStreetMap Nearby Category Searches Ex: atm, fuel, hospital, laundry, supermarket
  - Radiosonde landing prediction
  - Satellite passes and frequencies
  - Send a detailed position report via email


B01 APRS12 --:-- BCON GPS
MESSAGE
TO : MPAD
▶fuel top5
BACK F ← → SPACE INS CLR


B02 APRS12
nM MPAD
BCON
B-MPAD
00:00
#1 Kum & Go South Dakota
Avenue Ames Dst 1 mi Brg
90 deg E #2
01/01
KP
ESC
REPLY
READ

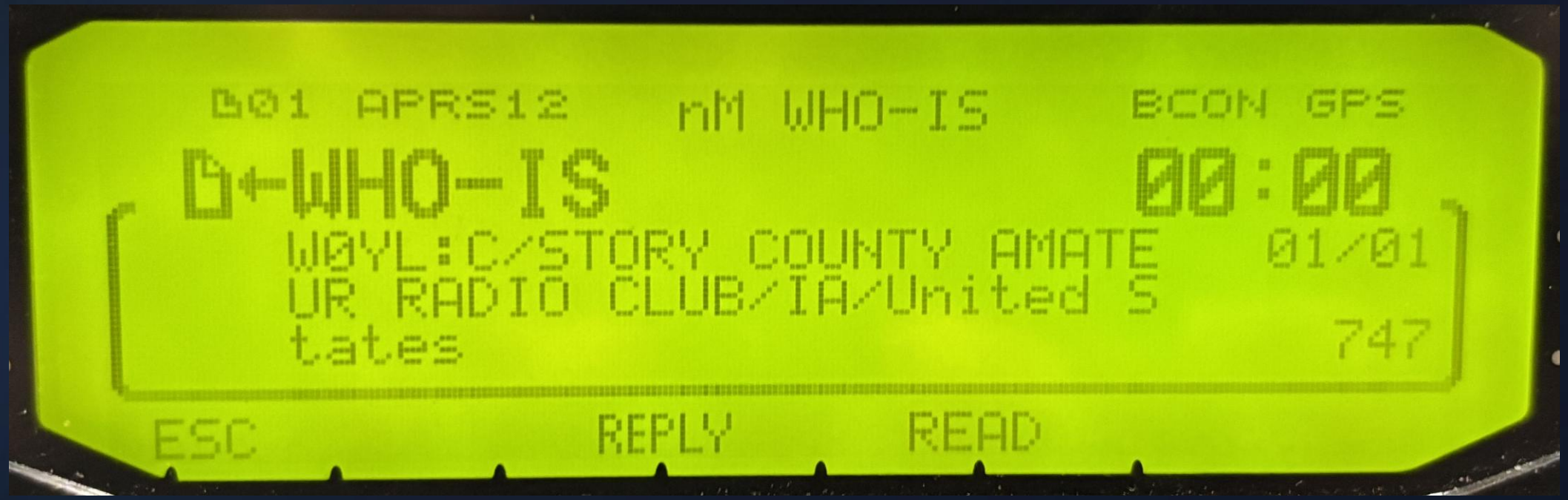

B04 APRS12 nM MPAD BCON
B+MPAD 00:00
Kum & Go Mortensen Road A 01/01
mes Dst 1 mi Brg 146 deg
SSE #3 Hy-Vee Gas KQ
ESC REPLY READ

WHO-IS: CALLSIGN LOOKUP

SYNTAX

```
TO: WHO-IS MSG: W0YL
```

- **WHO-IS:** Returns the Class, Name and location of the target station.

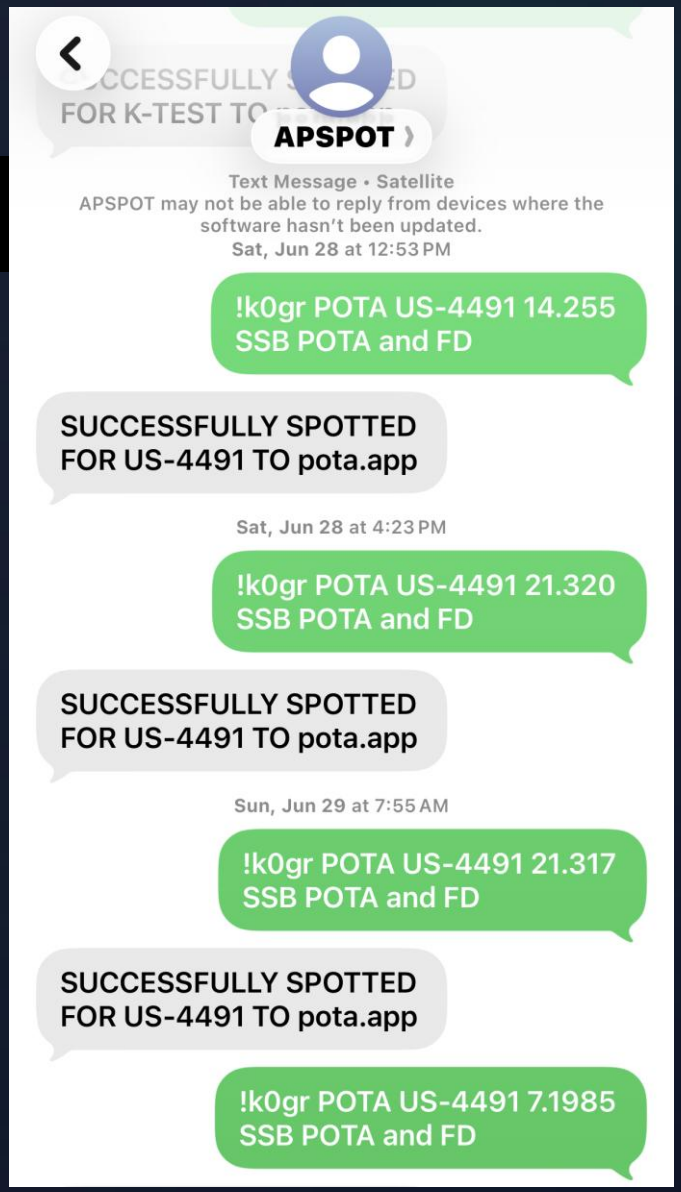


APSPOT: OFFLINE SPOTTER

TO: APSPOT MSG: ! POTA US-0028 14.233 SSB Hunt Me!

- **APSPOT:** The One Stop APRS/SMS/Winlink Spotting Tool
- Allows you to "Self-Spot" for SOTA (Summits on the Air) or POTA directly to the DX cluster or spotting sites.
- APRS format must be:

  "! <Target> <Ref> <Freq> <Mode> <Comment(Optional)>"
- APRS spotting with APSPOT does not require <Callsign> in the message body, SMS does

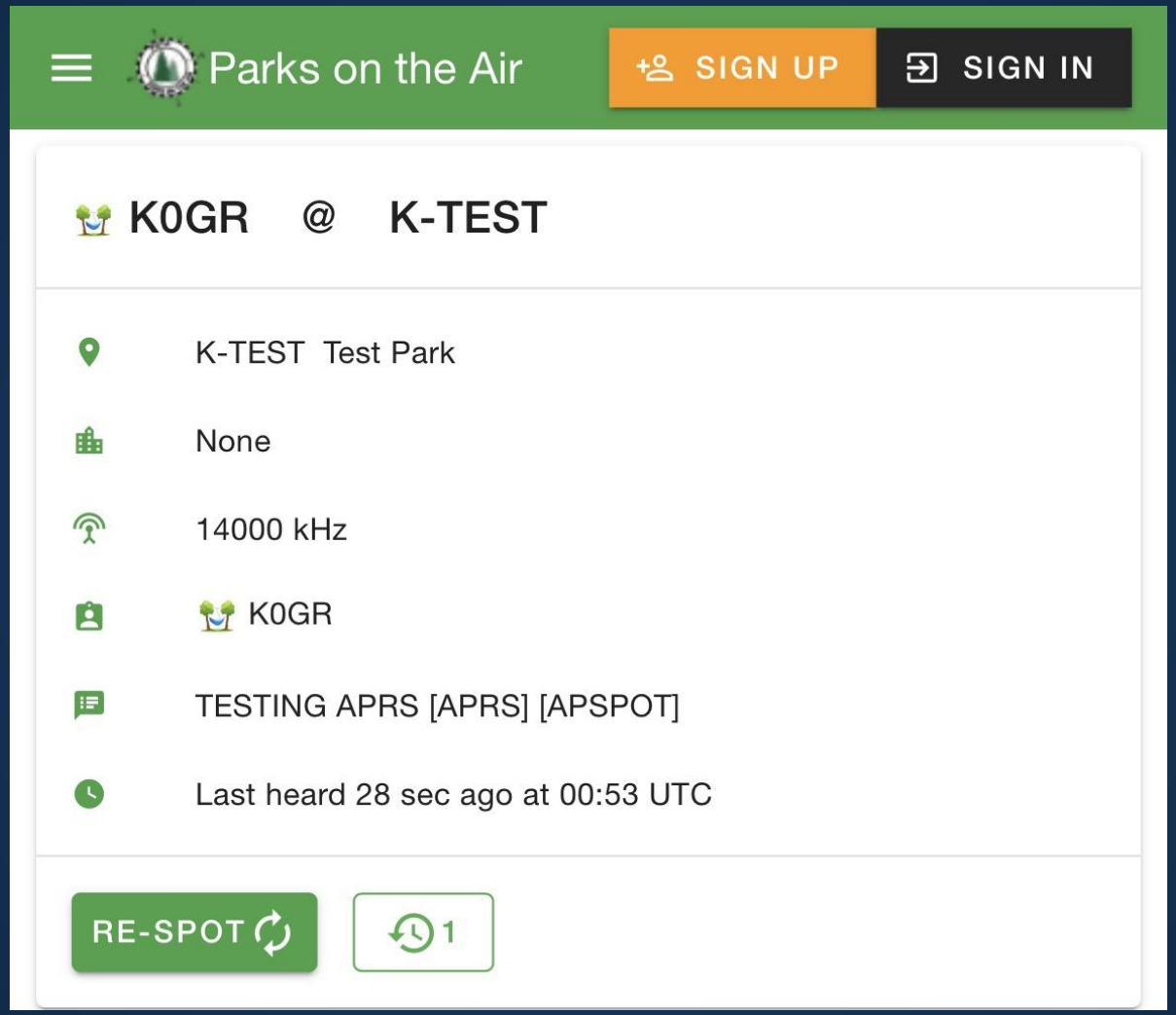



002 APRS12 nM APSPOT BCON GPS
D+APSPOT 00:00
ERROR: INVALID TARGET OR 01/01
TARGET MISSING
00105
ESC REPLY READ


003 APRS12 nM APSPOT BCON GPS
D+APSPOT 00:00
FORMAT: "! <Target> <Ref> 01/01
<Freq> <Mode> <Comment(O
ptional)>"
00106
ESC REPLY READ


02 APRS12 --:-- BCON GPS
MESSAGE
TO : APSPOT
! POTA k-test 14.0 ssb Te
sting APRS
BACK F ← → SPACE INS CLR


05 APRS12 nM APSPOT BCON GPS
-APSPOT 00:00
SUCCESSFULLY SPOTTED FOR 01/01
K-TEST TO pota.app
00123
ESC REPLY READ

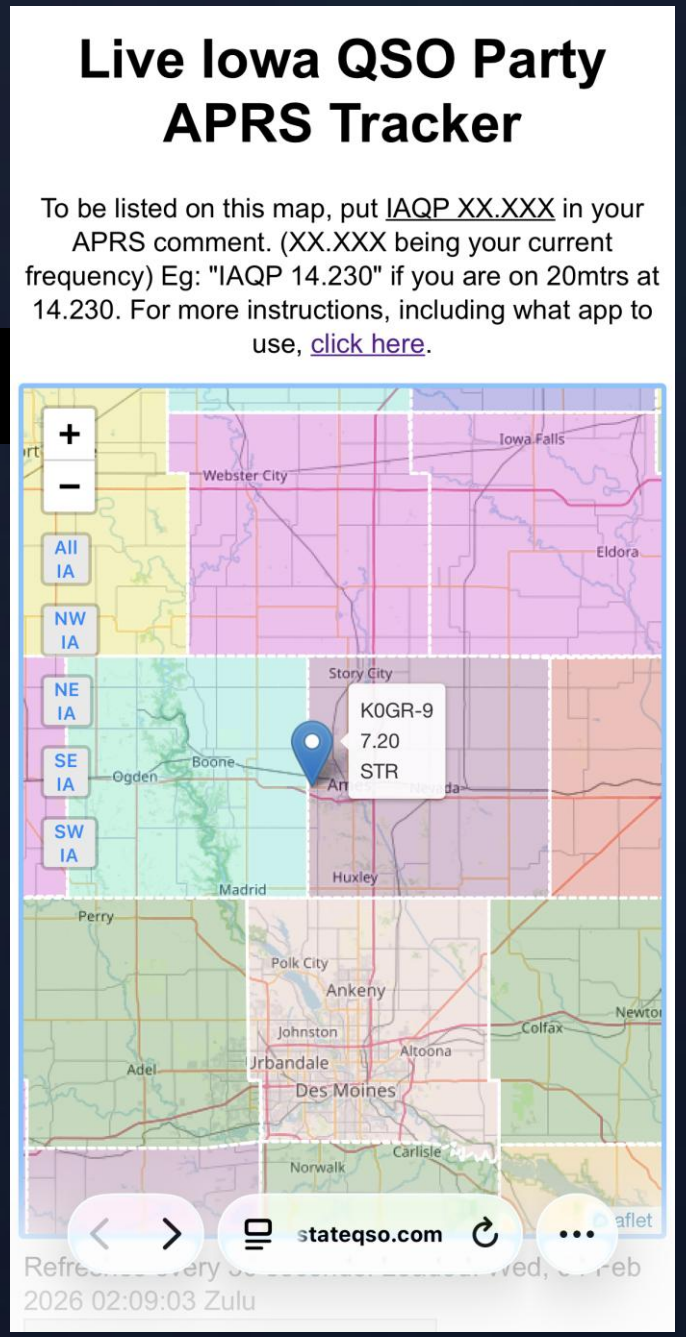

Parks on the Air
SIGN UP
SIGN IN
K0GR @ K-TEST
K-TEST Test Park
None
14000 kHz
K0GR
TESTING APRS [APRS] [APSPOT]
Last heard 28 sec ago at 00:53 UTC
RE-SPOT
1

NYQP: QSP PARTY SPOTTER

SYNTAX

TO: IAQP MSG: IAQP XX.XXXX

- **NYQP:** Developed for the NY QSO Party, All QSO Parties in 2026
- **Two parts:** A zoomable main panel and a table showing active stations.
- Mobiles: Set your APRS comment text to the contest name & frequency.
- **Chasers:** Watch stations on the map to see their real-time locations and work them on the air as they move from county to county.
- **Live Mobile Tracking App:** mobiletracker.stateqso.com
- **Project Website:** https://nyqp.org/wordpress/live-mobile-tracking
- **Iowa QSO Party Tracker:** https://mobiletracker.stateqso.com/IA



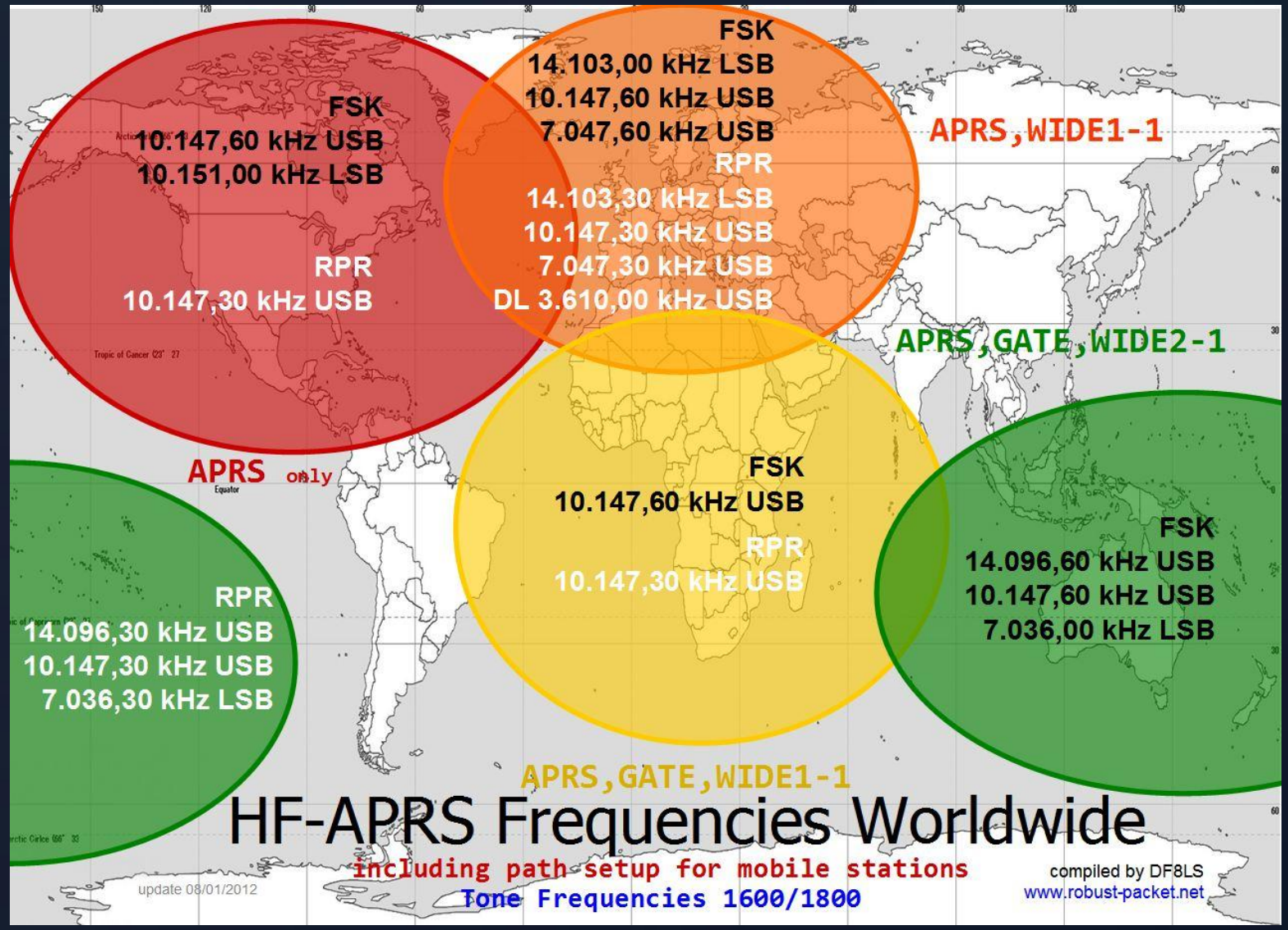

--:--
STATUS TEXT
608
1 TEXT : IAQP 7.20
TX RATE : 1/1
ESC BACK
USE

#APRSTHURSDAY

- **What is it?** A weekly "Net" that takes place all day Thursday.
- **Goal:** Send a packet to check in. Keep the network active.
- **How to participate:** Send an APRS message or beacon with "#APRSThursday" in the comment.
- **Global:** Users from all over the world check in.

HF APRS (LONG HAUL)

- **Frequency:** 30 meters
  10.1476 MHz USB
  7.034 MHz
- **Baud Rate:** 300 baud, 200Hz FSK, 1600Hz/1800Hz - Slower for robustness.
- **Robust Packet:** A newer protocol that is even better at decoding in noise.
- **Range:** Hundreds or thousands of miles without internet.
- No Digipeating, no ACK or FEC



QUESTIONS?

Thank you for attending.

Clint Miller, KØGR

Story County Amateur Radio Club