



Katy Amateur Radio Society

Introduction to **Automatic Packet Reporting System** (APRS)

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KG5JBJ-9

◆ History

- In 1982, Bob Bruninga (WB4APR), a senior research engineer at the United States Naval Academy, implemented the earliest ancestor of APRS on an Apple II computer
- Bob Bruninga describes APRS in this way:
"APRS provides situational awareness to all operators of everything that is going on in his or her local area, whether it be weather reporting, traveler info, direction finding, objects pointing to ECHOLink and IRLP, or traffic reporting and emergency response."

- ◆ APRS is
 - a two-way tactical real-time digital communications system
 - digital communications information channel for Ham radio.
 - a single national channel
(United States & Canada: 144.390 MHz)
 - announcements, bulletins, messages, alerts, weather

◆ APRS is

- a frequency to monitor at any time to capture what is happening in ham radio in the local surrounding area
- a map of all this activity including objects, frequencies, satellites, nets, meetings, Hamfests, etc.
- real time positioning can be monitored on the <http://aprs.fi/> website by call sign, location, etc.

◆ APRS Technology

- uses Global Positioning System (GPS)
- operates entirely in an unconnected broadcast fashion, using unnumbered AX.25 protocol at 1200 bit/s
- packet repeaters, called digipeaters, form the backbone of the APRS system
- Internet gateway stations (IGates) connect the on-air APRS network to the **APRS Internet System** (APRS-IS)

◆ Equipment

- Radio (2m)
- Terminal Node Controller (TNC)
- GPS receiver
- Cell phone

◆ APRS Software

- APRSDroid
- APRSPoint
- APRSPro
- APRS-TW (Telemetry Watcher)



Yaesu FT-8800 with Bluetooth TNC-X
GPS from cell phone running APRSDroid

EQUIPMENT

KARS



Yaesu FTM-400XDR
built in GPS & APRS TNC

FTM-400XDR Displays

KARS

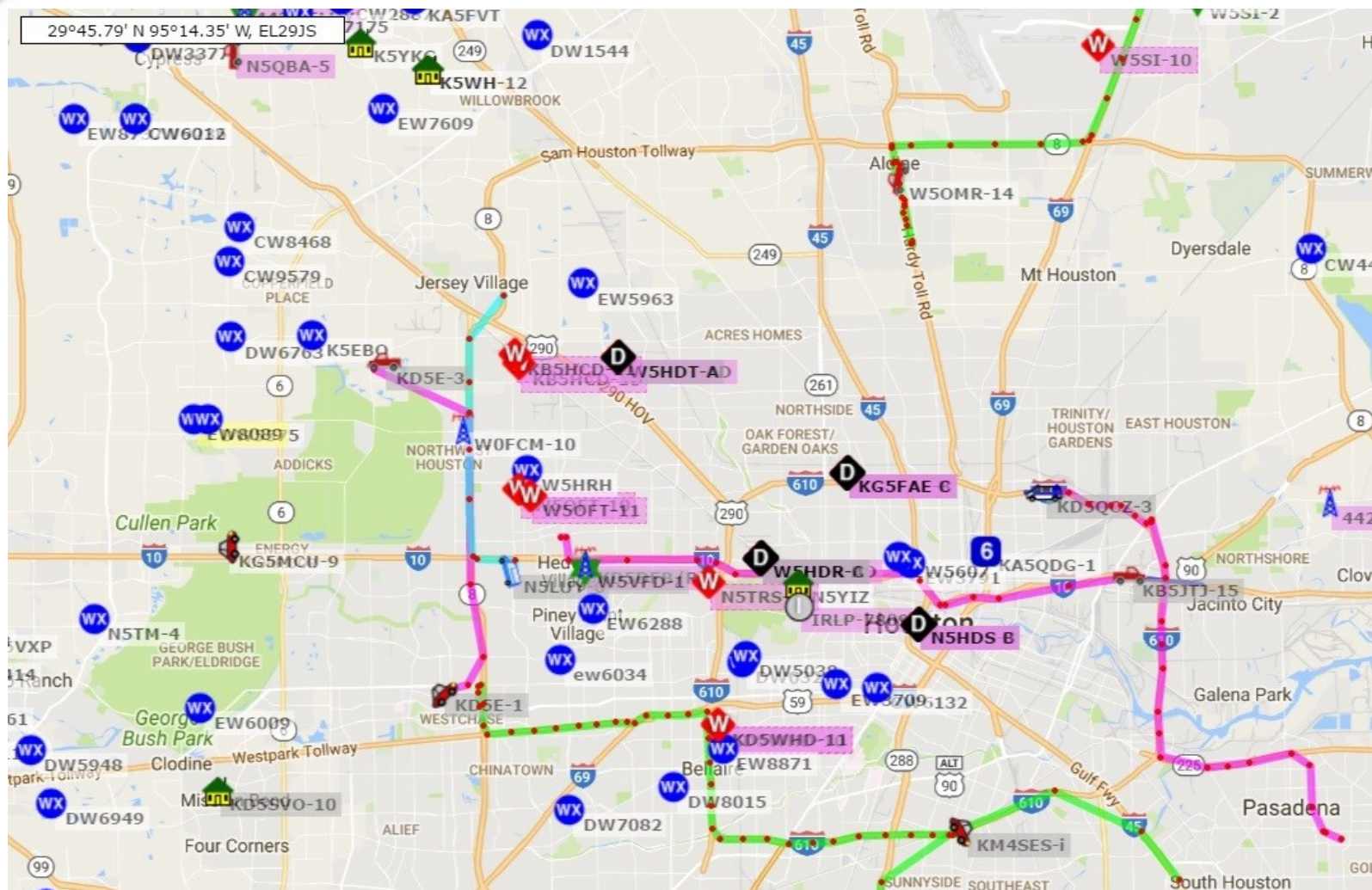
Moving Vehicle



Weather Station

APRS INTERNET SERVICE

KARS



APRS-IS via APRS.fi website

-0	Dot	-1	Ambulance
-2	Bus	-3	Fire Truck
-4	Bike	-5	Yacht (sail)
-6	HELO	-7	Aircraft
-8	Ships (power)	-9	Car
-10	Motorcycle	-11	Balloons
-12	Jeep	-13	Rv
-14	Truck	-15	Van

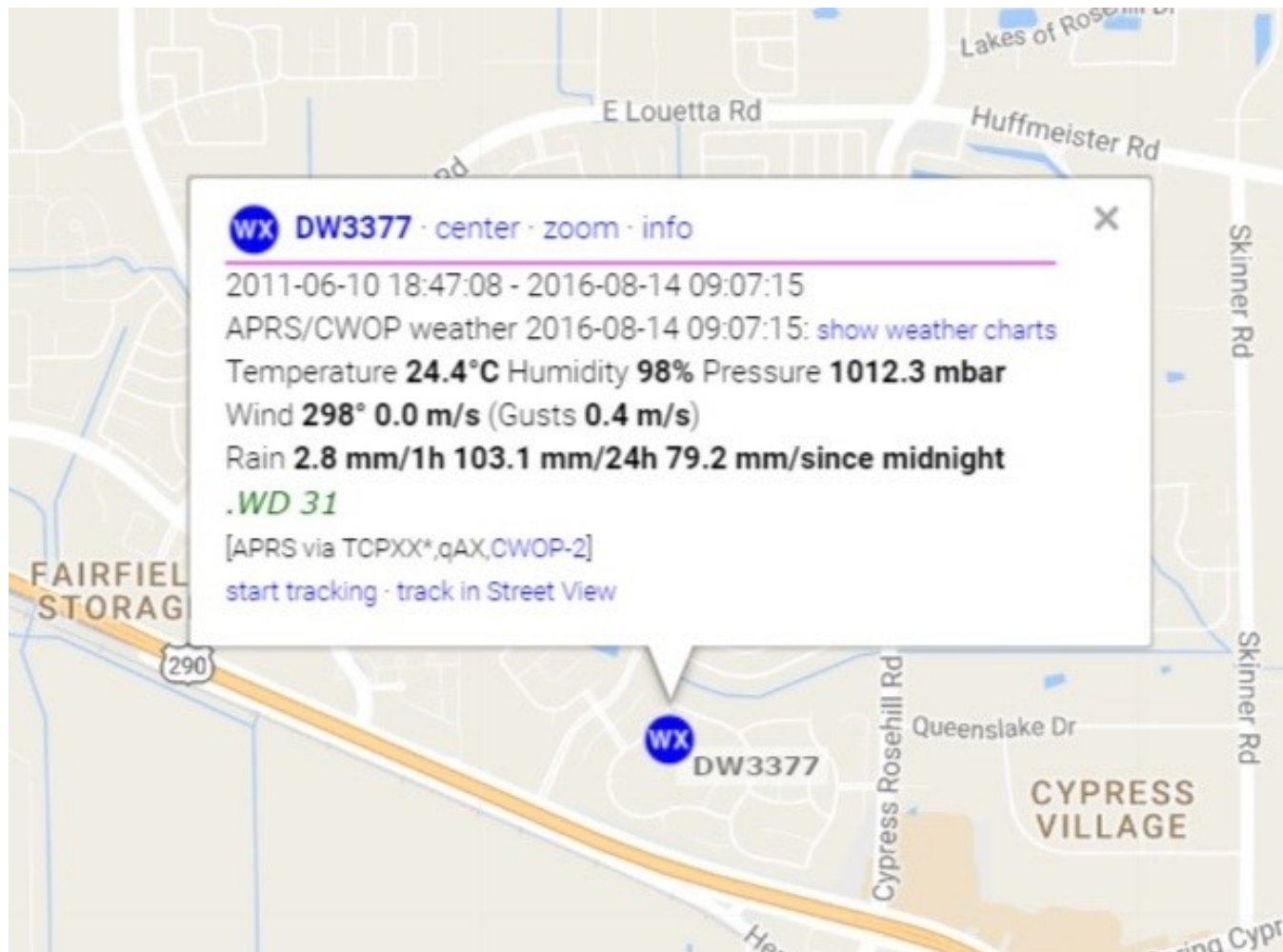
Example – **KG5JBJ-9**

= STAR (digipeaters)

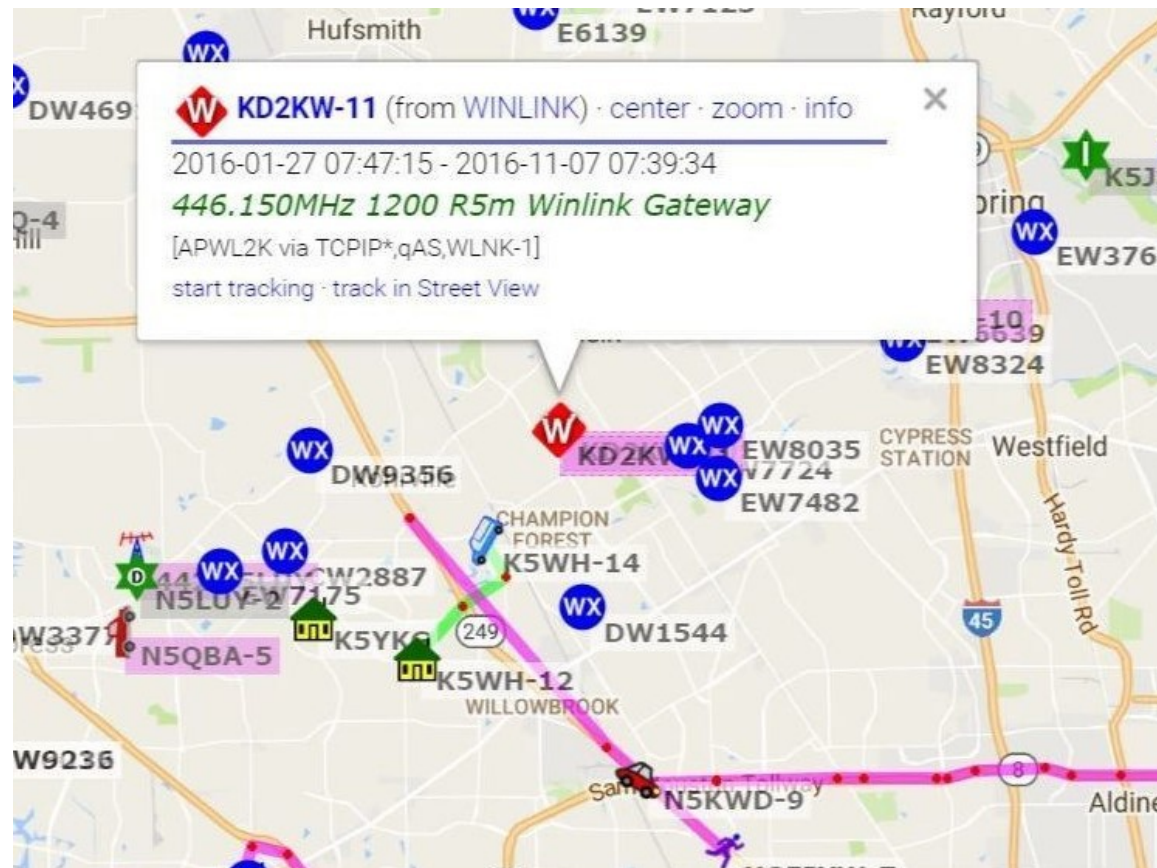
& = DIAMOND (gates)

_ = WEATHER Station (blue), WX and W-R DIGI (green)

Z = W in Red Diamond (APRSlink, part of Winlink)



APRS Weather Station



APRS Winlink Station

APRS-fi Search

Now 

Track callsign: [Clear](#)

?

Address, city or Locator: [Clear](#)

?

Show last:

Track tail length:

KG5JBJ-9   

Updated: 2019-08-11 18:35:41 (20m)
Position: 29°55.25' N 95°41.99' W

2017 **2018** **2019**   

Other SSIDs: **KG5JBJ** 

Wx: 96°F 56% 1012 mbar 2.2 MPH S

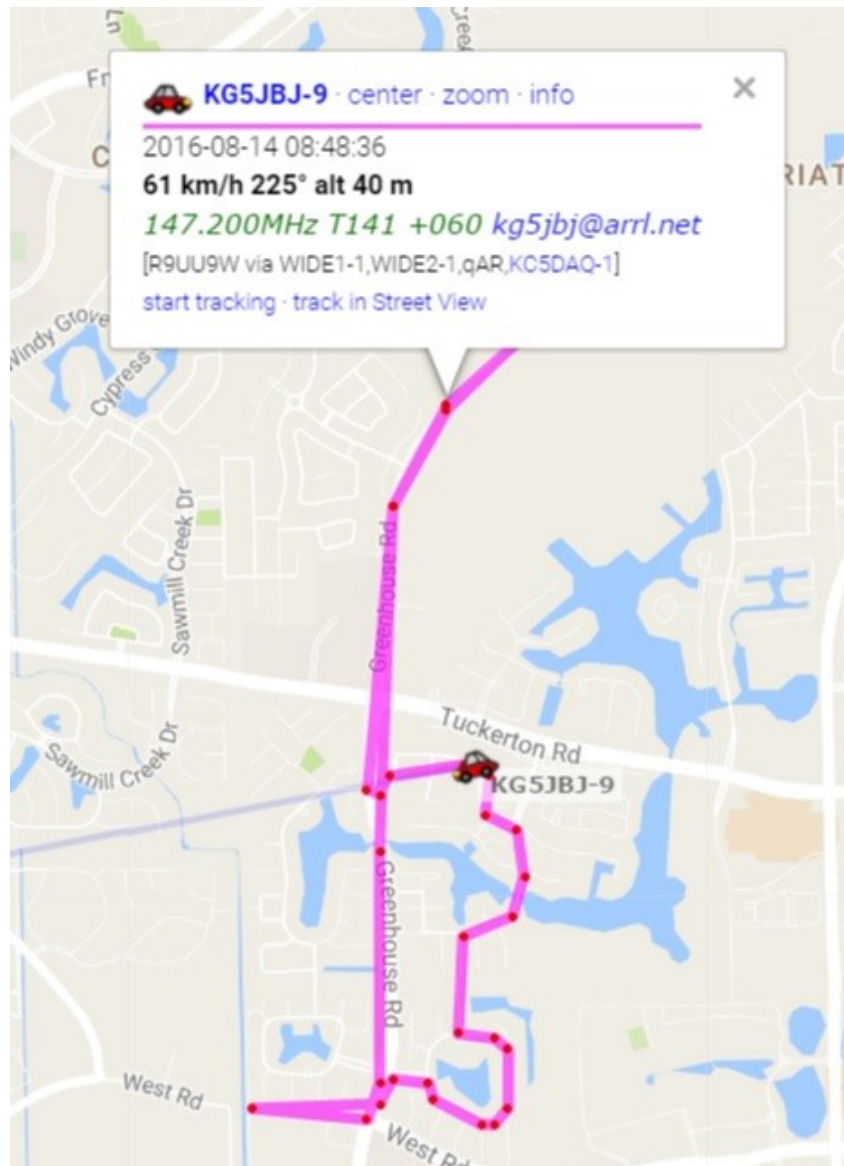
Other views:

- [Station info](#)
- [Raw packets](#)
- [Status packets - Beacon packets](#)
- [APRS/CWOP weather - Telemetry](#)
- [Messages - Bulletin board](#)
- [Prefix browsing](#)
- [Google Earth KML ?](#)
- [Data export tool](#)
- [Preferences - My account](#)

APRS-IS Vehicle Info Map

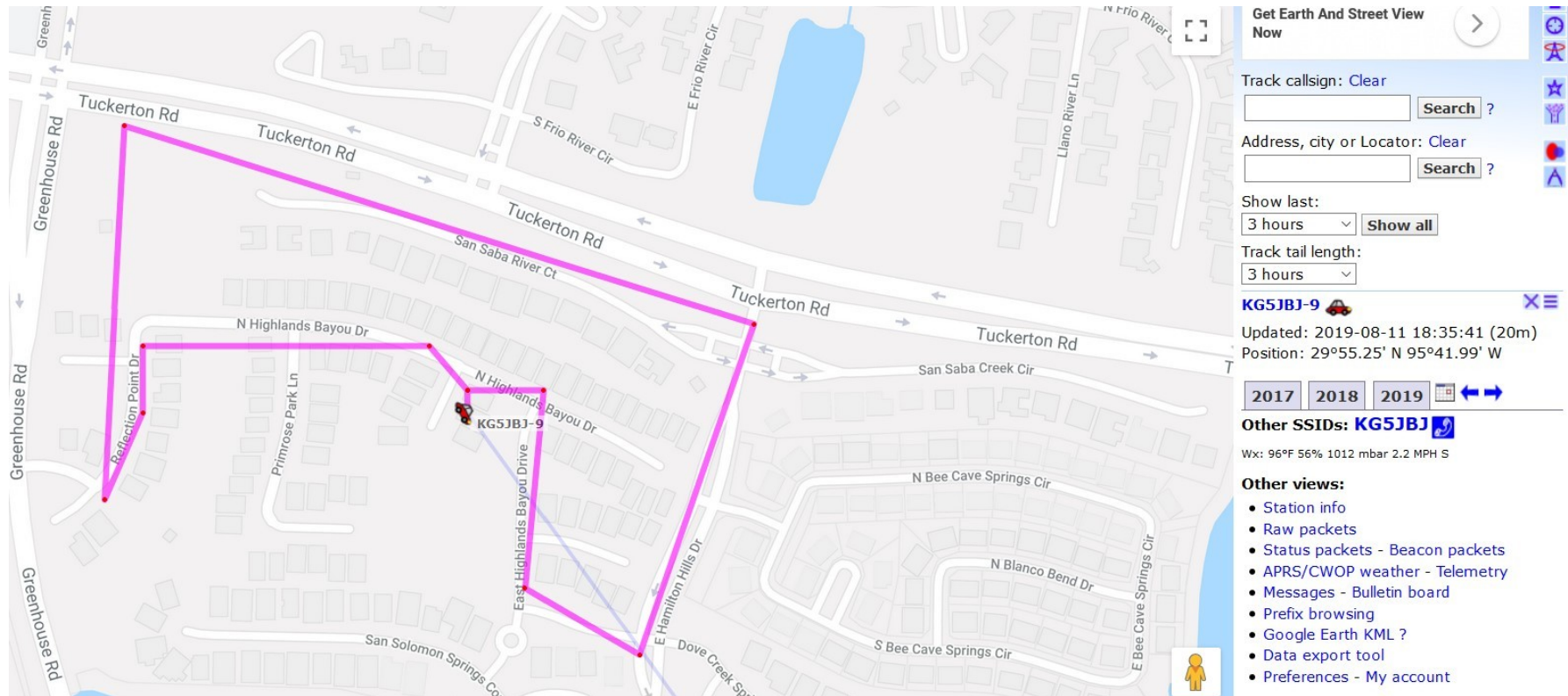
KARS

YAESU
FTM-400XDR
sends main band
freq. information

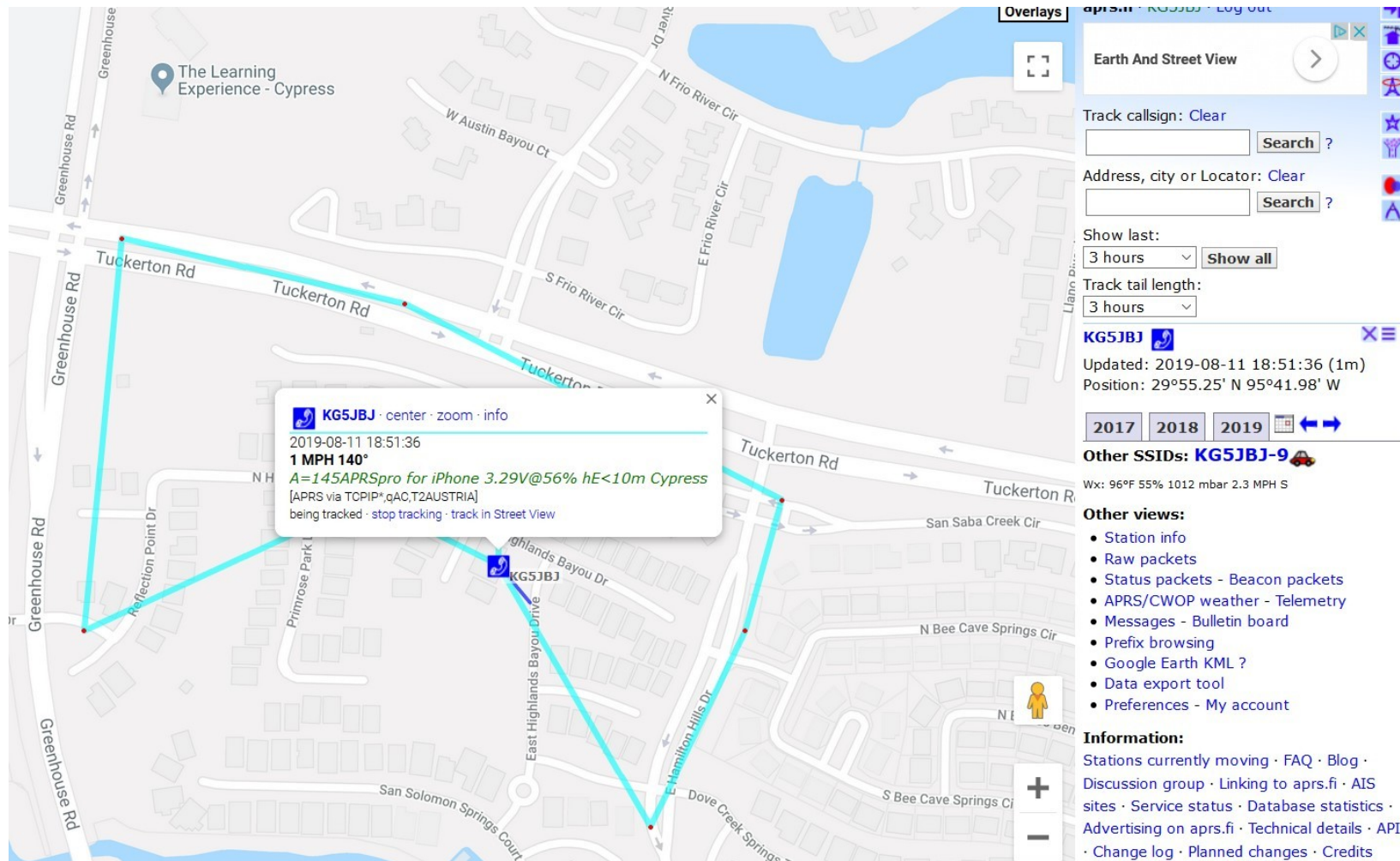


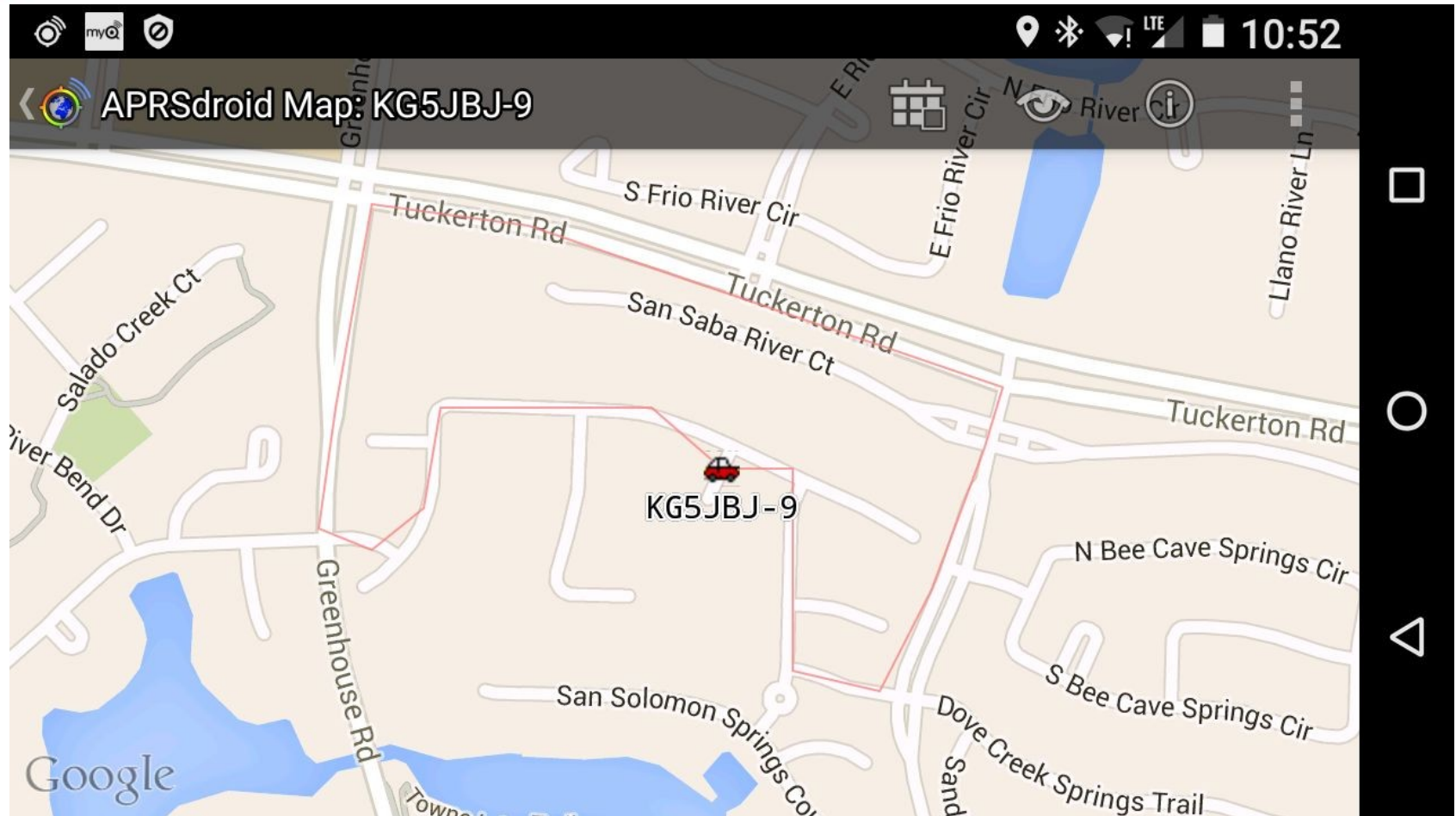
Vehicle Information
at that point

APRS Track from FTM-400XDR



APRS Track from APRSPro for iPhone





Smart Beaconsing
APRSDroid map display

APRSDroid Hub

KG5JBJ 0.0 km N
11:14 AM
/A=000052 kg5jbj@arrl.net

KD5QCZ-3 3.3 km SE
11:16 AM
281/029/A=000183!wI1!

KC5DAQ-8 6.3 km W
11:16 AM
4F}

KF6KYD 6.9 km E
11:15 AM
APRS-IS for Win32

KF6KYD-2 7.0 km E
11:16 AM
000/000g000t078r000p005P001h96b10144

KD5E-3 12.0 km SE
11:05 AM
|P%P'C'r|!w`;!|3

K5WH-12 12.5 km NE
11:16 AM
PHG5170/AllStar 28259/Echolink 4481

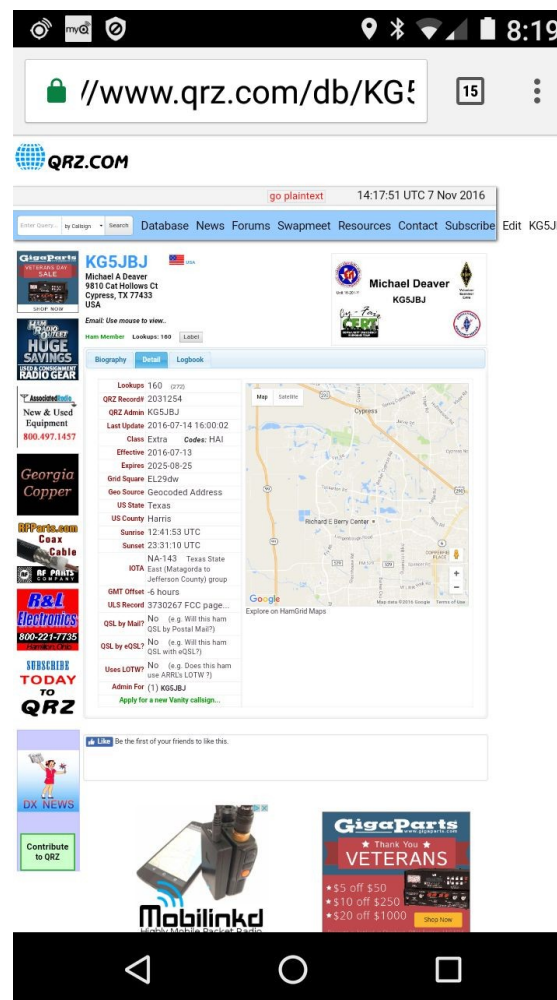
KA5FVT 13.5 km NE
11:14 AM
346/001g004t077r002p237h96b10159.wvi
ow 5 20 2

SINGLE SHOT STOP TRACKING

APRSDroid
Station List



MAP – APRS.FI – QRZ.COM



APRSlink is a part of Winlink System which allows you to send messages, text, and emails

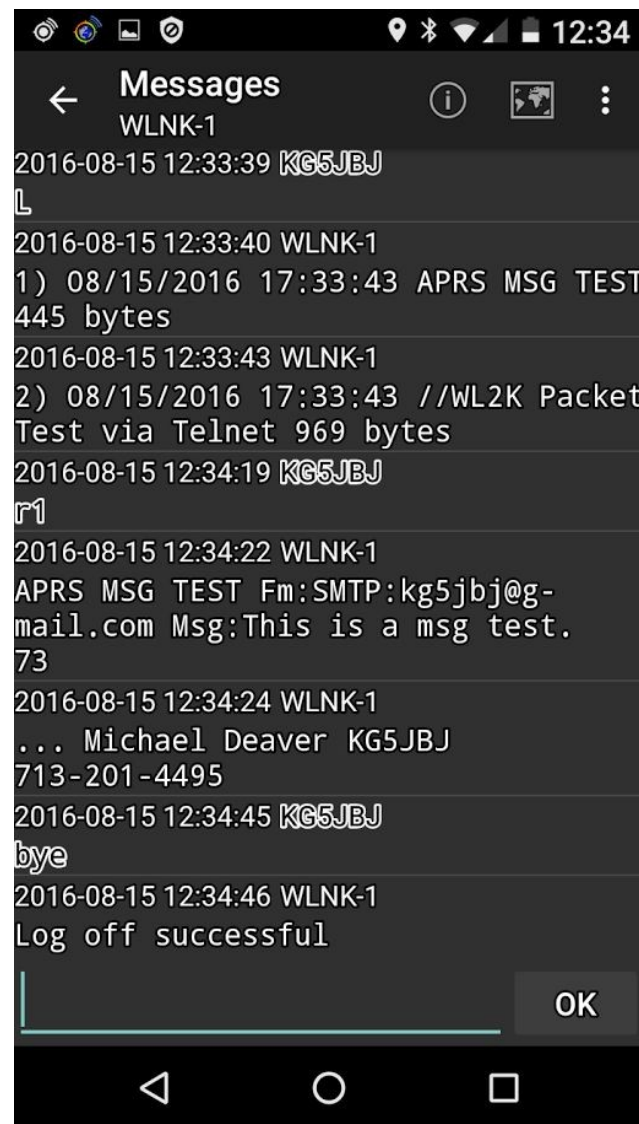
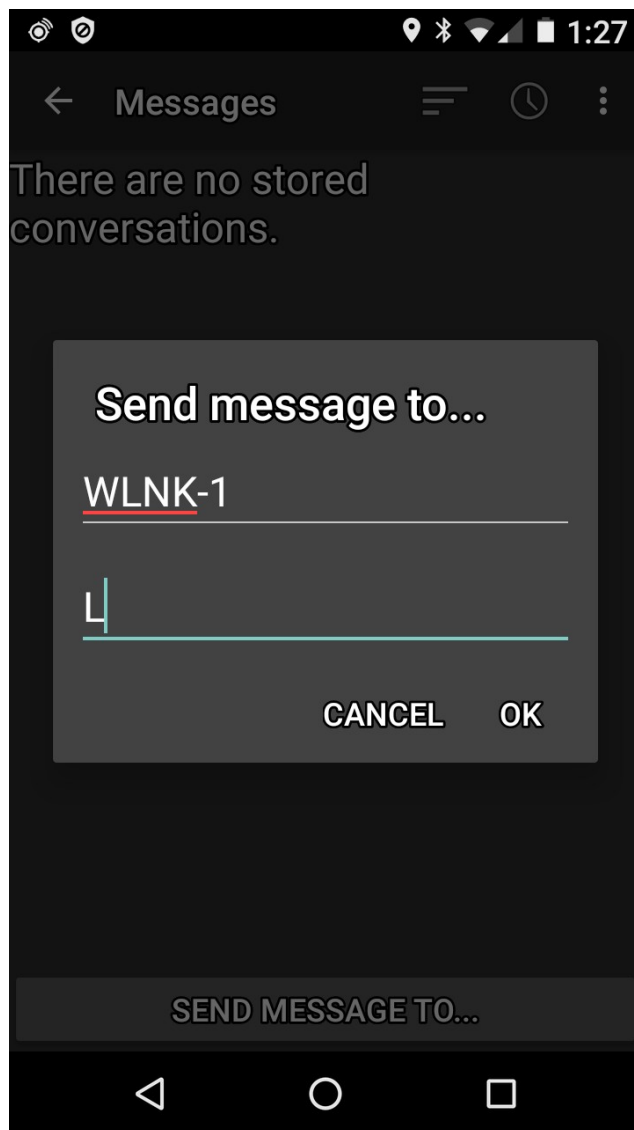
Commands:

- ♦ **WLNK-1** start login process LOGIN [123] – response 123xxx
- ♦ **H** or ? Return brief Help
- ♦ **L** List of messages
- ♦ **R#** Read message number #
- ♦ **Y#** reply to message #
- ♦ **SP** <email address – or- call sign –or- alias> <subject>
SP sam@iam.com Header Test Message
/EX Complete and send the composed

- ♦ P Playback message
- ♦ SMS Send short message
Syntax: SMS <email address, call sign, or alias> <message>
- ♦ A Create an alias for an e-mail address
Example: A sam=sammy.miller@somealongdomainname.net
- ♦ F# Forward message number # to address or call sign following
- ♦ K# Kill (mark as deleted) message number
- ♦ G# Return information about closest active RMS Packet Gateway
- ♦ I Return Information about APRSlink

APRSlink Messages

KARS



List

1

2

R1

log
off

After WNLK-1 login

SP sam@iam.com Test Message (Msg Tx)

Some text for the body of the message (Msg Tx)

Some more text for the message (Msg Tx)

/EX (Msg Tx)

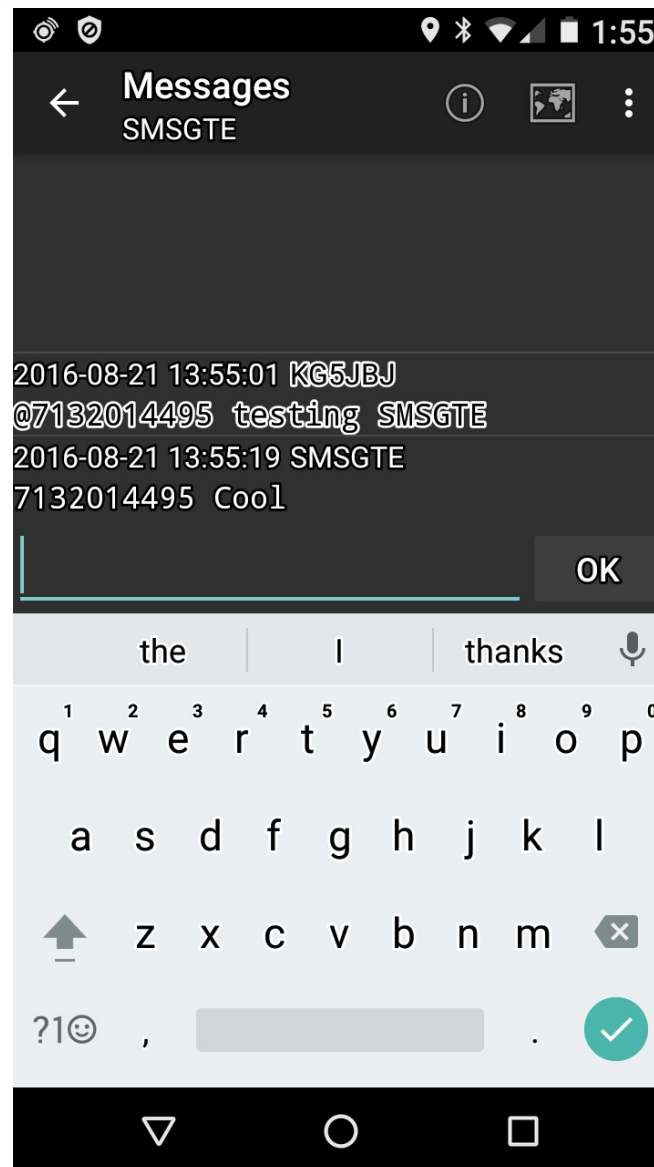
Each line is a separate APRS message, but the need for entering specific commands for each line/message has been removed. You type and send as much text as necessary and then send /EX as a separate APRS message to complete your email and send the composed message. You should receive a confirmation message.

SMS 7135551234 call me asap

SMSGTE SMS texting

KARS

SMSGTE @5551234567
<Your short message here>



◆ Sources and Links

- https://en.wikipedia.org/wiki/Automatic_Packet_Reporting_System
- <http://aprs.fi/>
- <http://www.aprs.org/>
- <http://www.openaprs.net/>
- <https://aprsdroid.org/> - Android app
- <http://aprspro.com/v1/> - iPhone app
- <http://www.aprs-is.net/>
- <http://www.winlink.org/APRSLink>
- Emails and Texts with APRS by K7DCC (PPT)
- <http://smsgte.wixsite.com/smsgte>

◆ Sources and Links

- <http://www.dxzone.com/catalog/Software/APRS/>
- <http://aprsisce.wikidot.com/start>
- <http://www.aprs.net/>
- <https://en.wikipedia.org/wiki/AX.25>
- <http://www.dxzone.com/catalog/Software/APRS/>
- YouTube “APRS tutorial SMS messaging APRSDroid”
- <http://harriscountyares.org/training/DIG/DIG-105.pdf>
- <http://aprstw.blandranch.net/>
- <http://www.aprs.net/vm/DOS/SYMBOLS.HTM>
- <https://groups.yahoo.com/neo/groups/APRS/info>

Thank You!