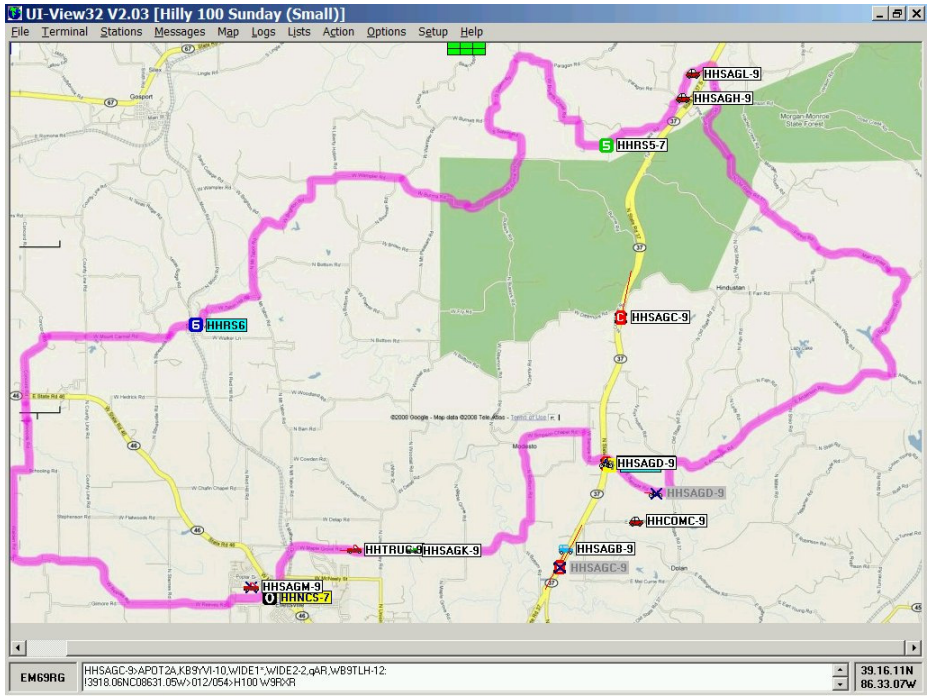


Hilly Hundred Communications Support using APRS

Bob Poortinga K9SQL

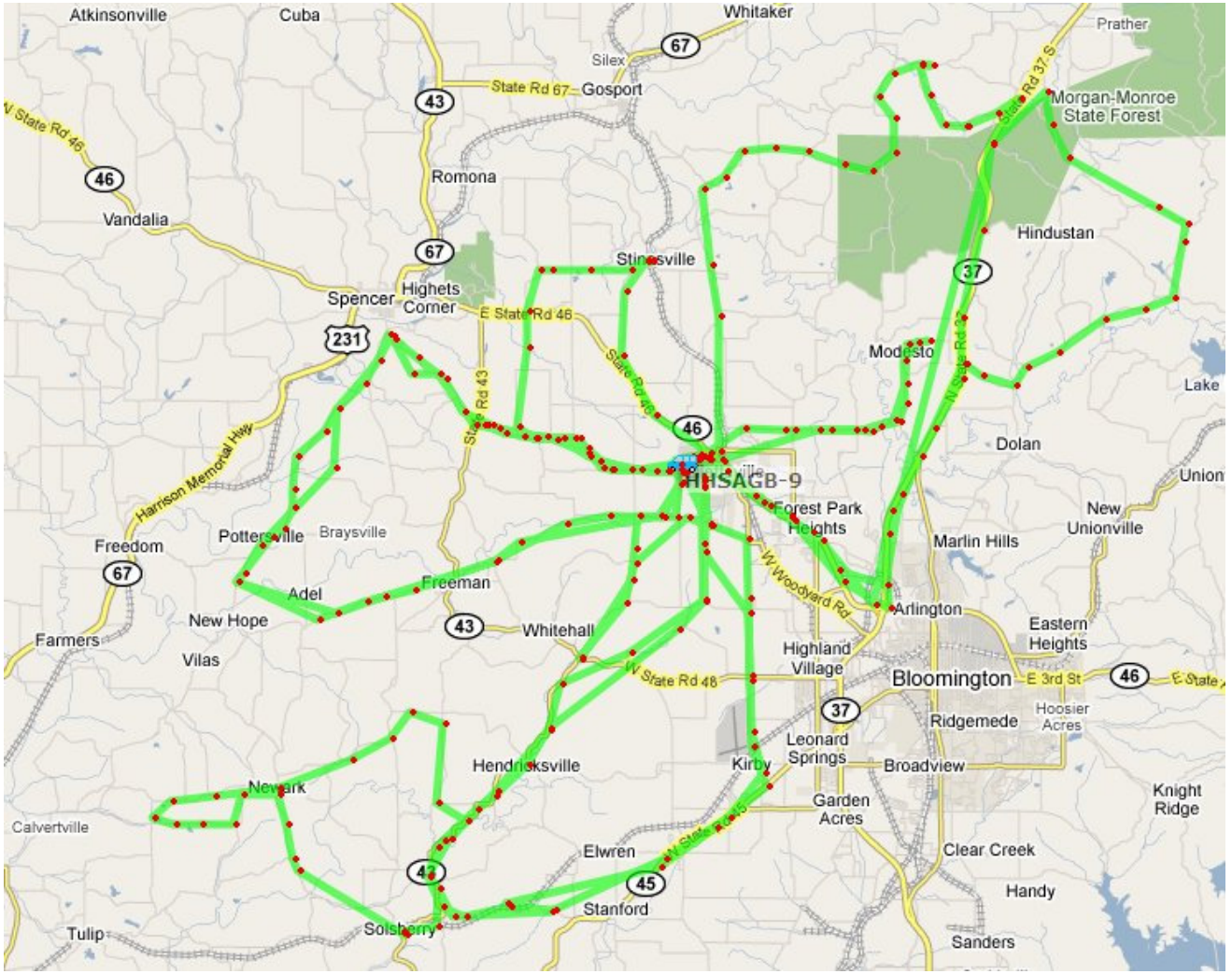
Automatic Packet Reporting System

- Provides situational awareness for Net Control
- Reduces routine voice traffic
- Increases safety for SAGs
- APRS messaging between NCS and stations with messaging capabilities
- Relies on existing digipeater/igate infrastruture
- Portable digipeaters augment route coverage

Tracking SAG vehicles

- Requires GPS, TNC, radio, and antenna
- Some radios have built-in TNCs, e.g. D7/D700/D710
- External TNCs used are Opentracker/TinyTracker
- High power (D700/D710/DR-135) or low power HT
- Use either puck-type (no display) or full-featured GPS

SAGB 2008 track

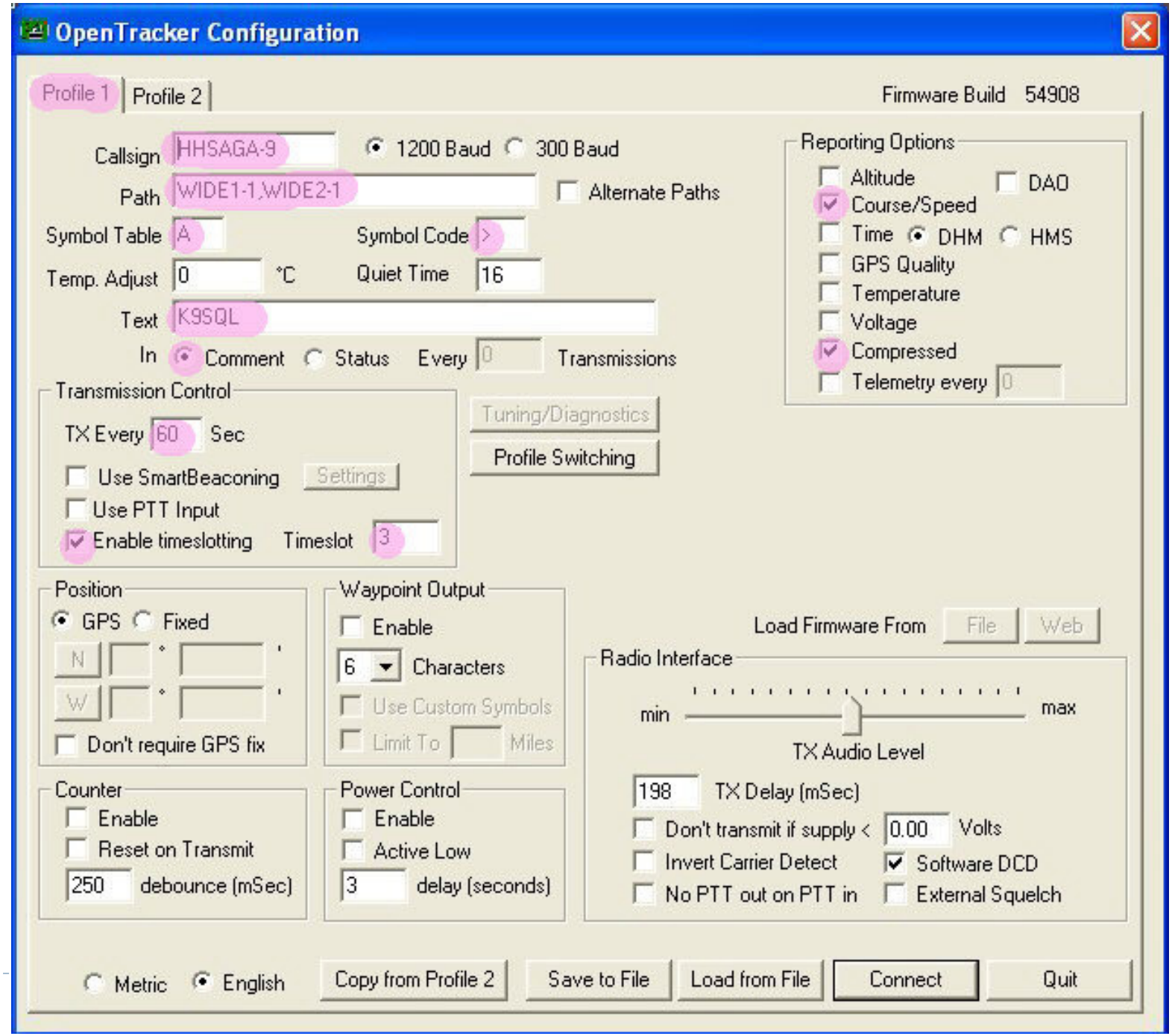


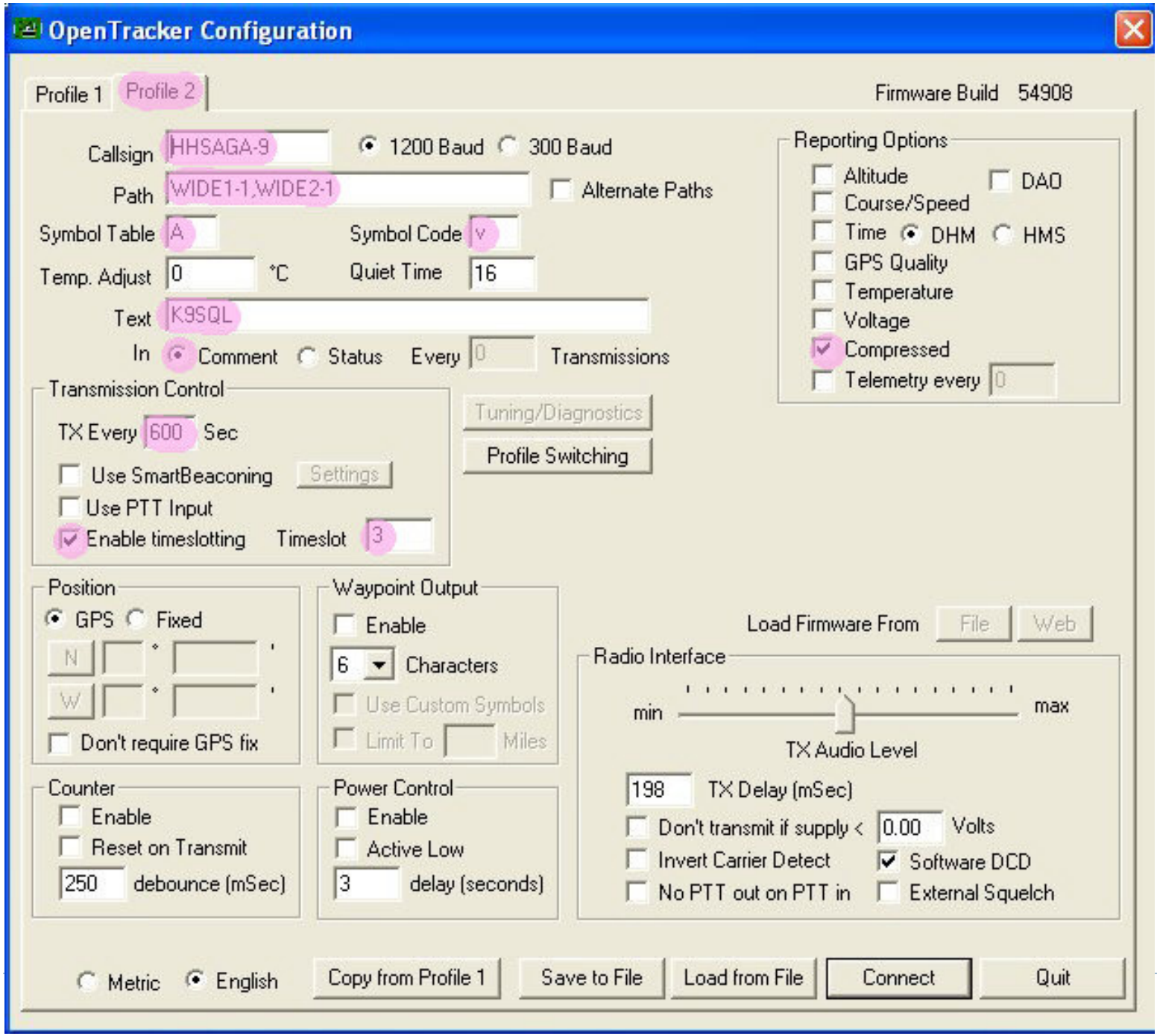
SAG APRS configuration

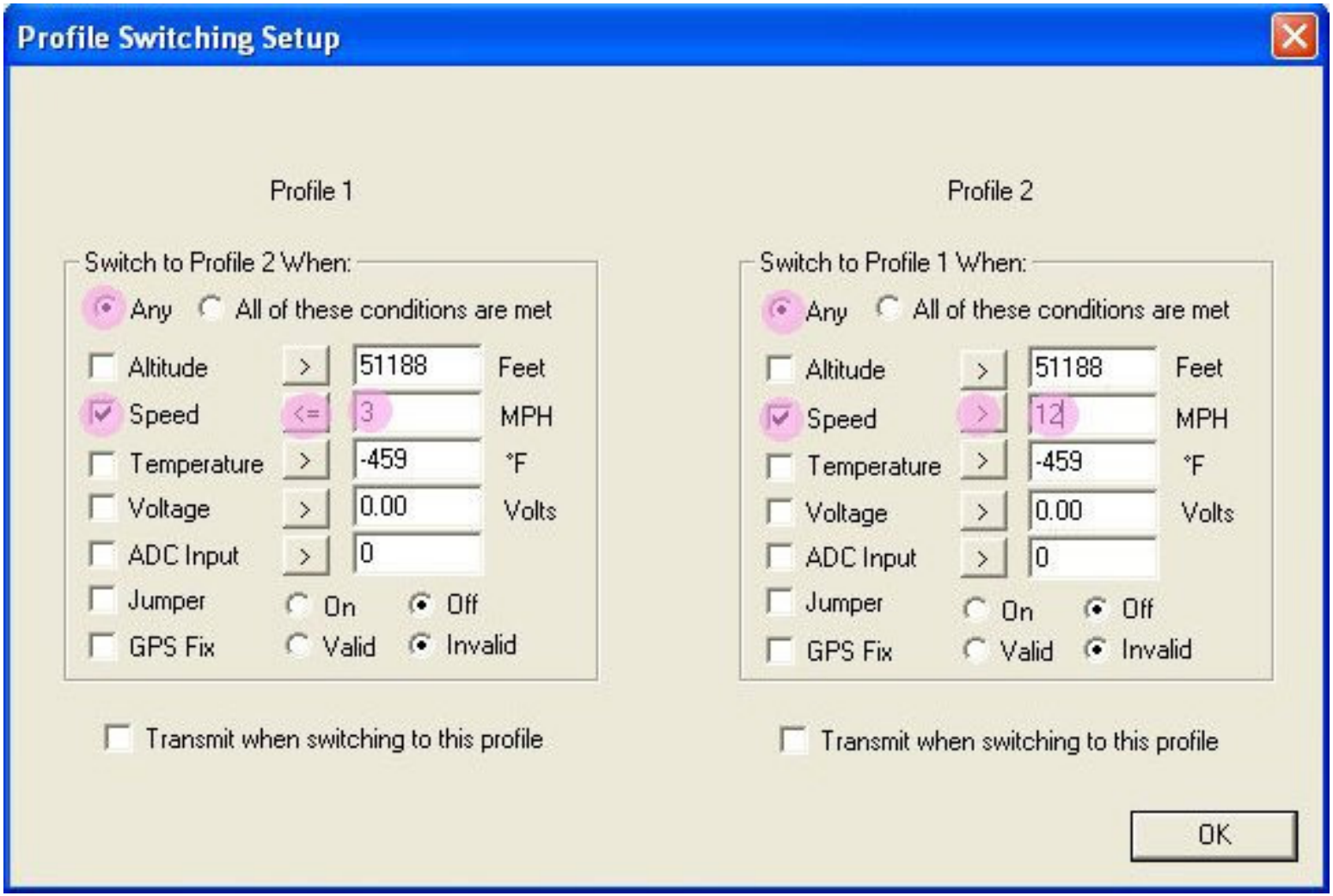
- Use tactical call signs: **HHSAGA-9, HHSAGB-9**, etc.
- FCC call sign in status/comment of packet
- Path of '**WIDE1-1,WIDE2-1**'
- Low power trackers use fixed beacon every 1 minute with time slotting
- High power mobile stations use fixed beacon every 2 minutes
- Keep packets as short as possible! (Compressed, short comment/status and no telemetry)
- No digipeating by mobiles!

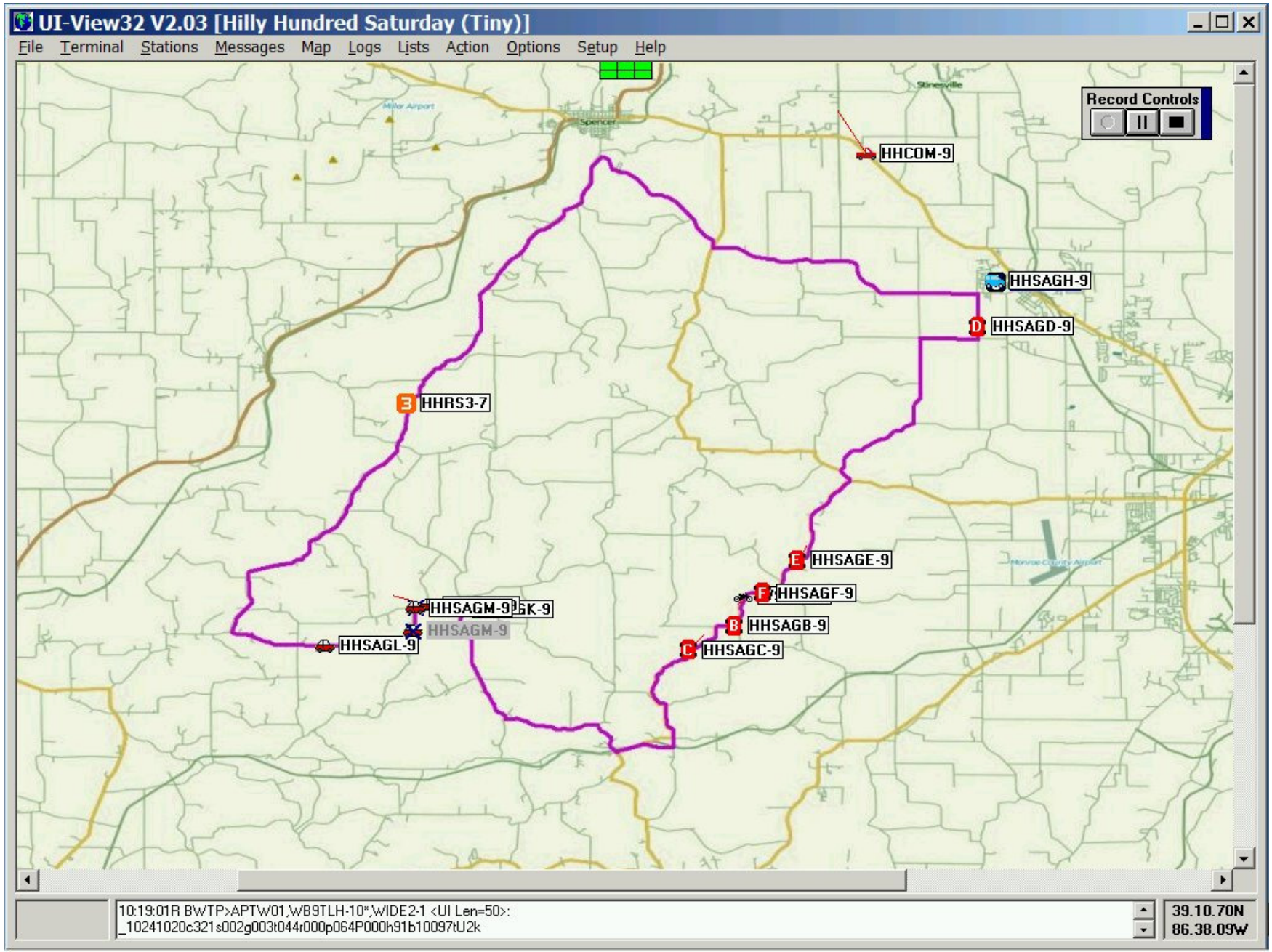
NCS and Rest Stop Fixed Stations

- Use tactical call signs: **HHNCS-7, HHRS1-7**, etc
- FCC call sign in comment/status of packet
- Path of '**WIDE2-1**'
- Beacon every 10 minutes
- Keep packets as short as possible
- NCS will create and transmit objects for rest stops without APRS stations
- No digipeating by Rest Stop stations


OpenTracker Configuration
Profile 1
Profile 2
Firmware Build 54908
Callsign HHSAGA-9
1200 Baud
300 Baud
Path WIDE1-1,WIDE2-1
Alternate Paths
Symbol Table A
Symbol Code >
Temp. Adjust 0 °C
Quiet Time 16
Text K9SQL
In Comment Status Every 0 Transmissions
Reporting Options
Altitude
DAO
Course/Speed
Time DHM HMS
GPS Quality
Temperature
Voltage
Compressed
Telemetry every 0
Transmission Control
TX Every 60 Sec
Use SmartBeaconing
Settings
Use PTT Input
Enable timeslotting
Timeslot 3
Tuning/Diagnostics
Profile Switching
Position
GPS Fixed
N
W
Don't require GPS fix
Waypoint Output
Enable
6 Characters
Use Custom Symbols
Limit To Miles
Load Firmware From
File
Web
Radio Interface
min
max
TX Audio Level
198 TX Delay (mSec)
Don't transmit if supply < 0.00 Volts
Invert Carrier Detect
Software DCD
No PTT out on PTT in
External Squelch
Counter
Enable
Reset on Transmit
250 debounce (mSec)
Power Control
Enable
Active Low
3 delay (seconds)
Metric
English
Copy from Profile 2
Save to File
Load from File
Connect
Quit

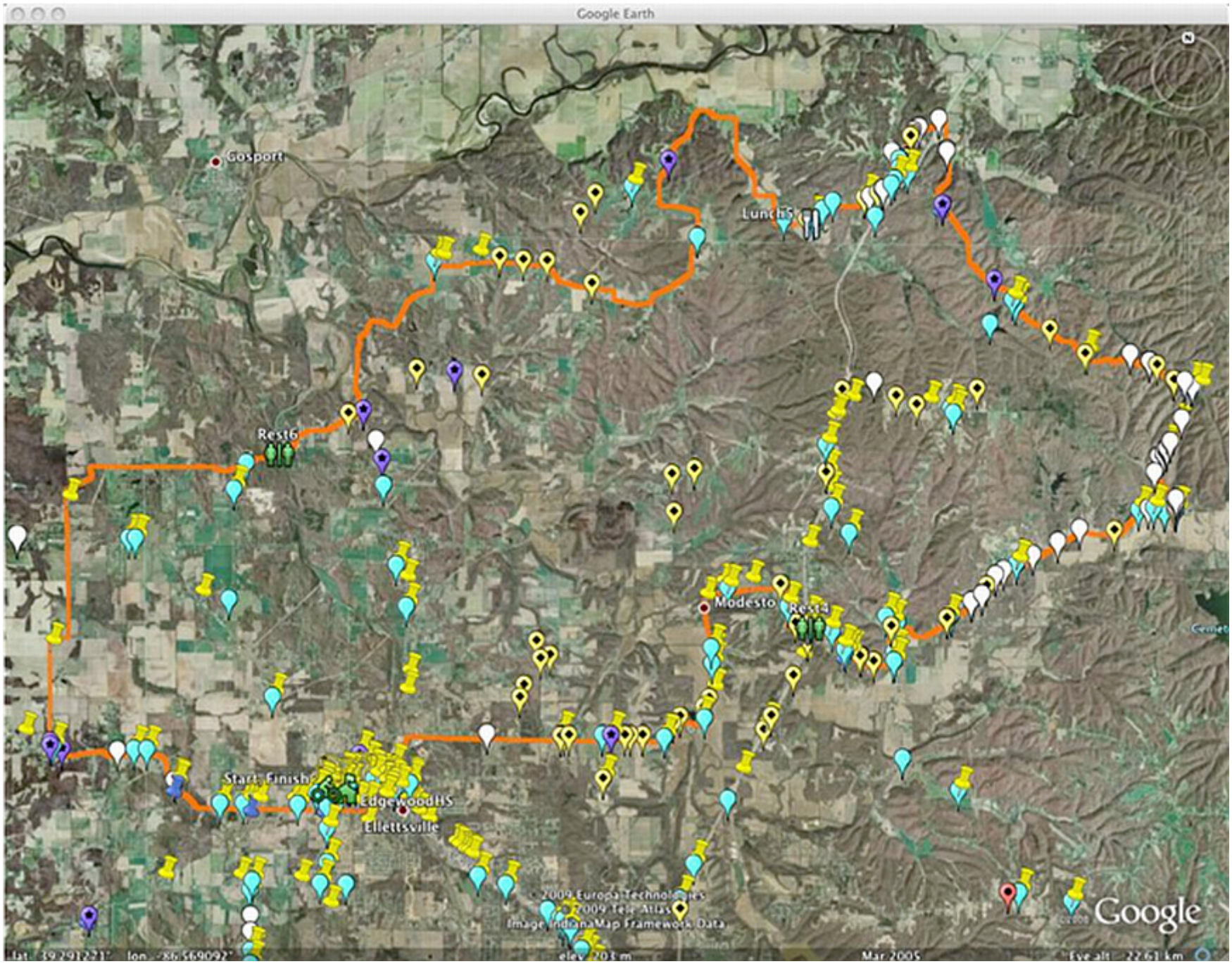

OpenTracker Configuration
Profile 1
Profile 2
Firmware Build 54908
Callsign HHSAGA-9
1200 Baud
300 Baud
Path WIDE1-1,WIDE2-1
Alternate Paths
Symbol Table A
Symbol Code v
Temp. Adjust 0 °C
Quiet Time 16
Text K9SQL
In Comment Status Every 0 Transmissions
Reporting Options
Altitude
DAO
Course/Speed
Time DHM HMS
GPS Quality
Temperature
Voltage
Compressed
Telemetry every 0
Transmission Control
TX Every 600 Sec
Use SmartBeaconing
Settings
Use PTT Input
Enable timeslotting
Timeslot 3
Tuning/Diagnostics
Profile Switching
Position
GPS Fixed
N
W
Don't require GPS fix
Waypoint Output
Enable
6 Characters
Use Custom Symbols
Limit To Miles
Load Firmware From
File
Web
Radio Interface
min
max
TX Audio Level
198 TX Delay (mSec)
Don't transmit if supply < 0.00 Volts
Invert Carrier Detect
Software DCD
No PTT out on PTT in
External Squelch
Counter
Enable
Reset on Transmit
250 debounce (mSec)
Power Control
Enable
Active Low
3 delay (seconds)
Metric
English
Copy from Profile 1
Save to File
Load from File
Connect
Quit


Profile Switching Setup
Profile 1
Switch to Profile 2 When:
Any
All of these conditions are met
Altitude
>
51188
Feet
Speed
<=
3
MPH
Temperature
>
-459
°F
Voltage
>
0.00
Volts
ADC Input
>
0
Jumper
On
Off
GPS Fix
Valid
Invalid
Transmit when switching to this profile
Profile 2
Switch to Profile 1 When:
Any
All of these conditions are met
Altitude
>
51188
Feet
Speed
>
12
MPH
Temperature
>
-459
°F
Voltage
>
0.00
Volts
ADC Input
>
0
Jumper
On
Off
GPS Fix
Valid
Invalid
Transmit when switching to this profile
OK


UI-View32 V2.03 [Hilly Hundred Saturday (Tiny)]
File Terminal Stations Messages Map Logs Lists Action Options Setup Help
Record Controls
HHCOM-9
HHSAGH-9
HHSAGD-9
HHRS3-7
HHSAGE-9
HHSAGF-9
HHSAGM-9
HHSAGB-9
HHSAGL-9
HHSAGC-9
10:19:01R BWTP>APTW01,WB9TLH-10*,WIDE2-1 <UI Len=50>:
_10241020c321s002g003t044r000p064P000h91b10097tU2k
39.10.70N
86.38.09W

Issues

- Poor digipeater coverage of Hilly route, especially for low power trackers
- Use of single APRS frequency by lots of stations in small area
- RF receiver de-sense between APRS 144.390 MHz and voice repeater146.640/146.040 MHz
- Stale positions displayed at Net Control
- Report of transceiver failure due to close proximity of tracker transmitter. Keep antennas apart.


Google Earth
Gosport
Lunch5
Rest6
Modesto
Rest4
Start, Finish
EdgewoodHS
Ellettsville
Google

Saturday L-0-S KB9YVI, KIRK, INDUNV, KB9QJM