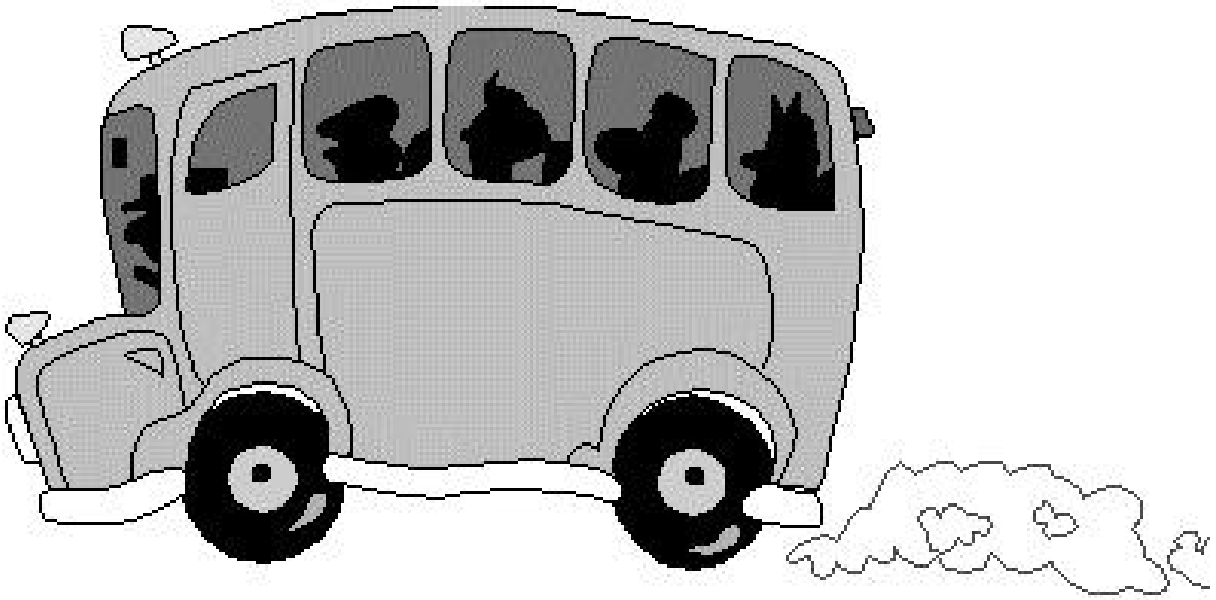
# ROVER
# Been There ...
# Recorded That

A Description of the

# ***R***eal-time ***O***n-road ***V***ehicle ***E***missions ***R***eporter

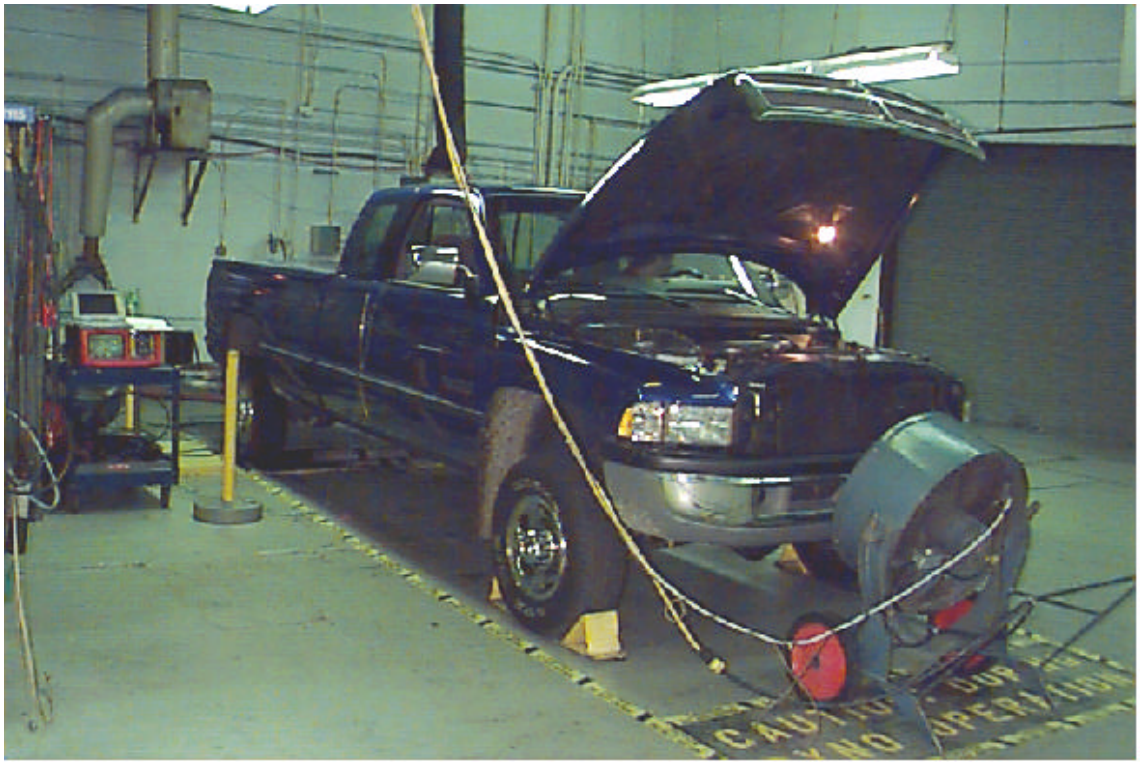
Dennis Johnson, US EPA

# 10 Years Ago



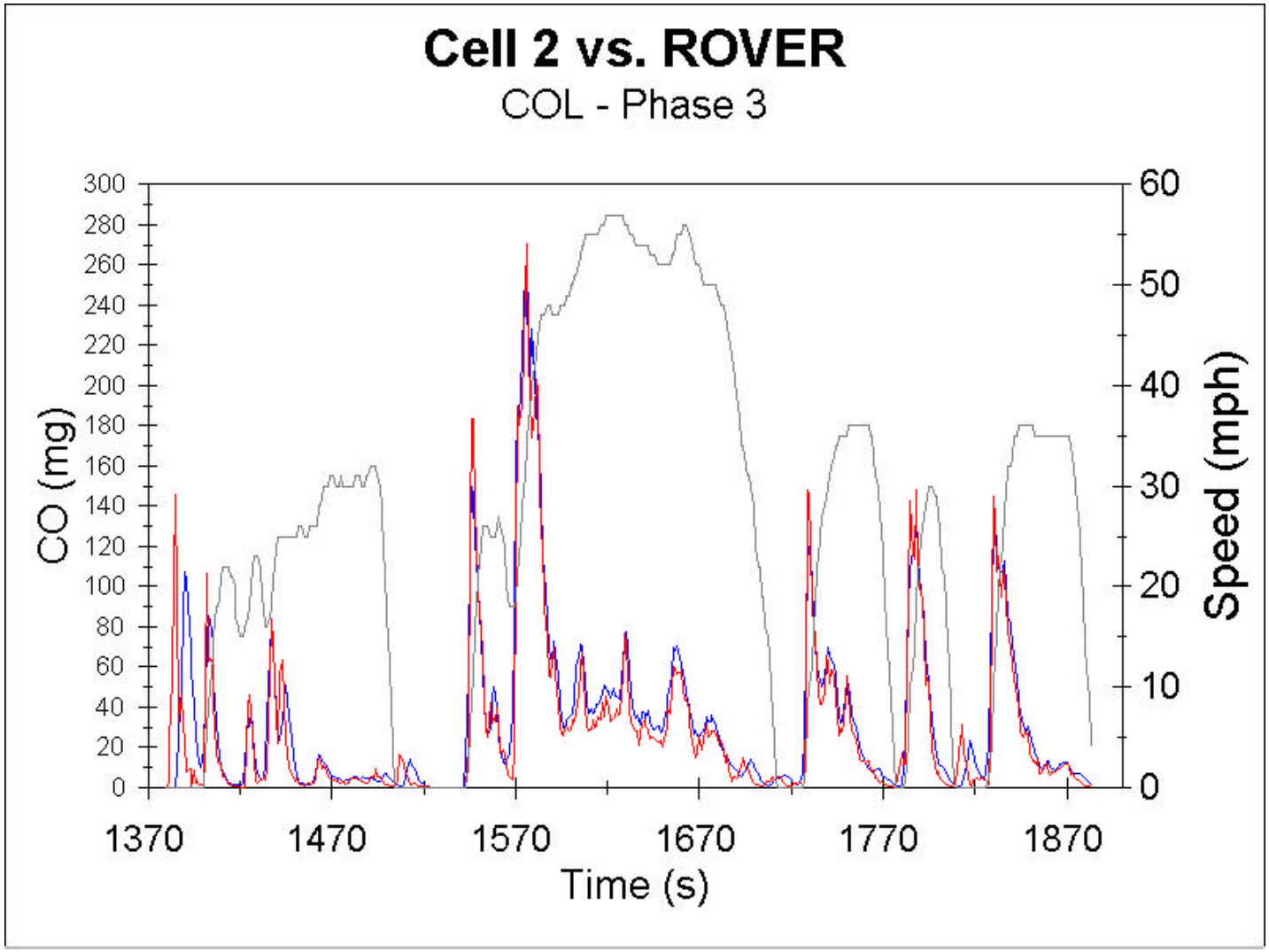
# Invented by Leo Breton in 1995. FTP Correlation Demonstrated.

# Demonstrated on Different Technologies.

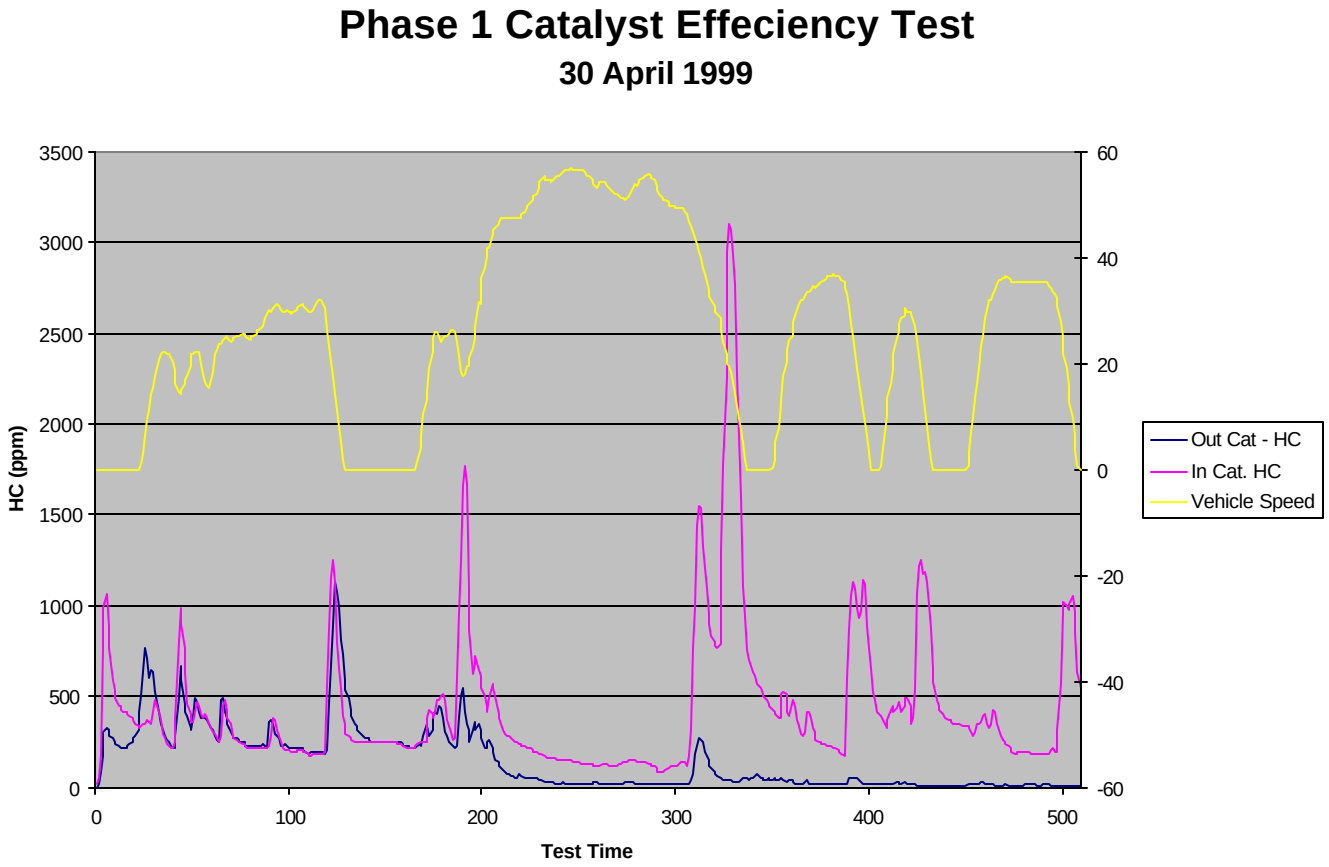


- Accurate
- Mass Emissions Measurement
- Vehicle and Engine Data

# Lab Correlation



# Diagnostics Ready



# On-road Testing

- Real Time Display
- Emissions
- NTE & gm/mi

# Nonroad Testing

# 1998 Off-Road Testing

# Over Six Years

LDV & LDT

HD Gas & Diesel

CNG

Nonroad

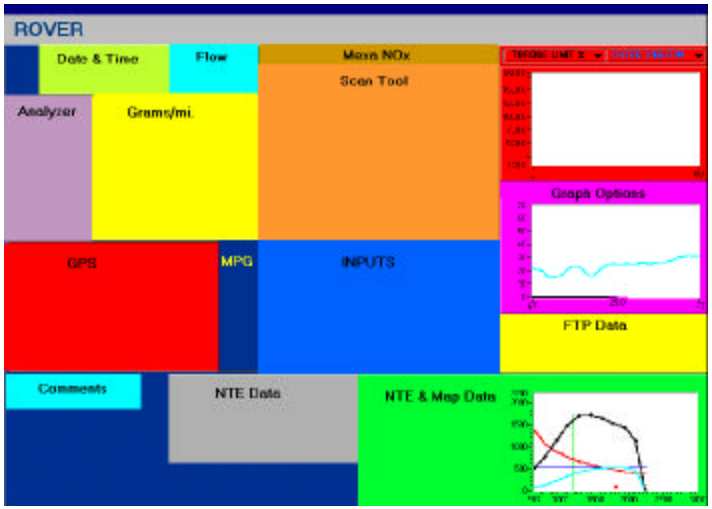
Enforcement

Diagnostics

Recall

Modeling

# Real Time Display




- NTE - gm/bhp-hr
- Mass Emissions
- gm/mi
- gm/bhp-hr
- Exhaust Flow
- Drive Route - FTP
- Vehicle & Engine Data

# Portable, Modular & Versatile

Smoke

&

RPM

Options

# Who Wants In-use Testing?

EPA

NESCAUM

Moscow

States

Retrofitters

Universities

Many More

# So what does Real-time On-road Vehicle Emissions Reporter really mean?

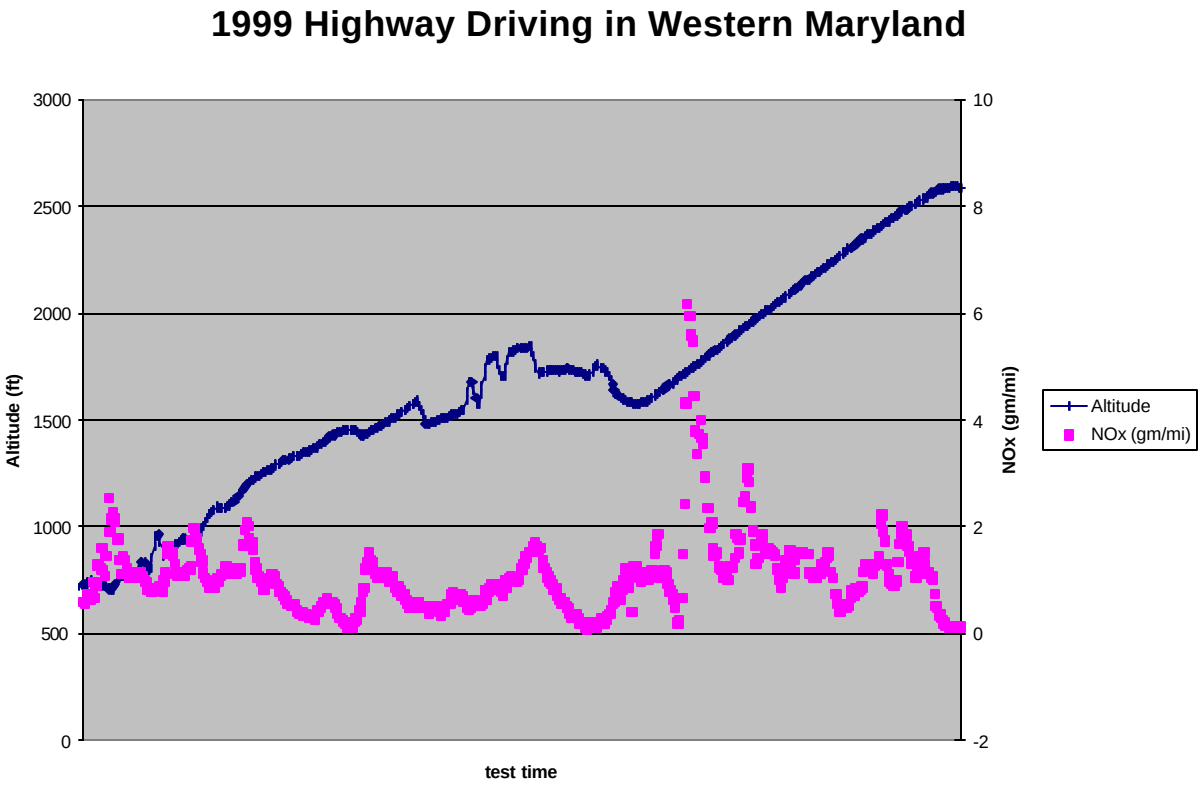
- Flexible
- Many Inputs
- Real Time
- Confidence
- Data

# Where are we now?
# (10 Years Later)

Have Tested…

From Small to Big.

# With ROVER You Can Say…

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