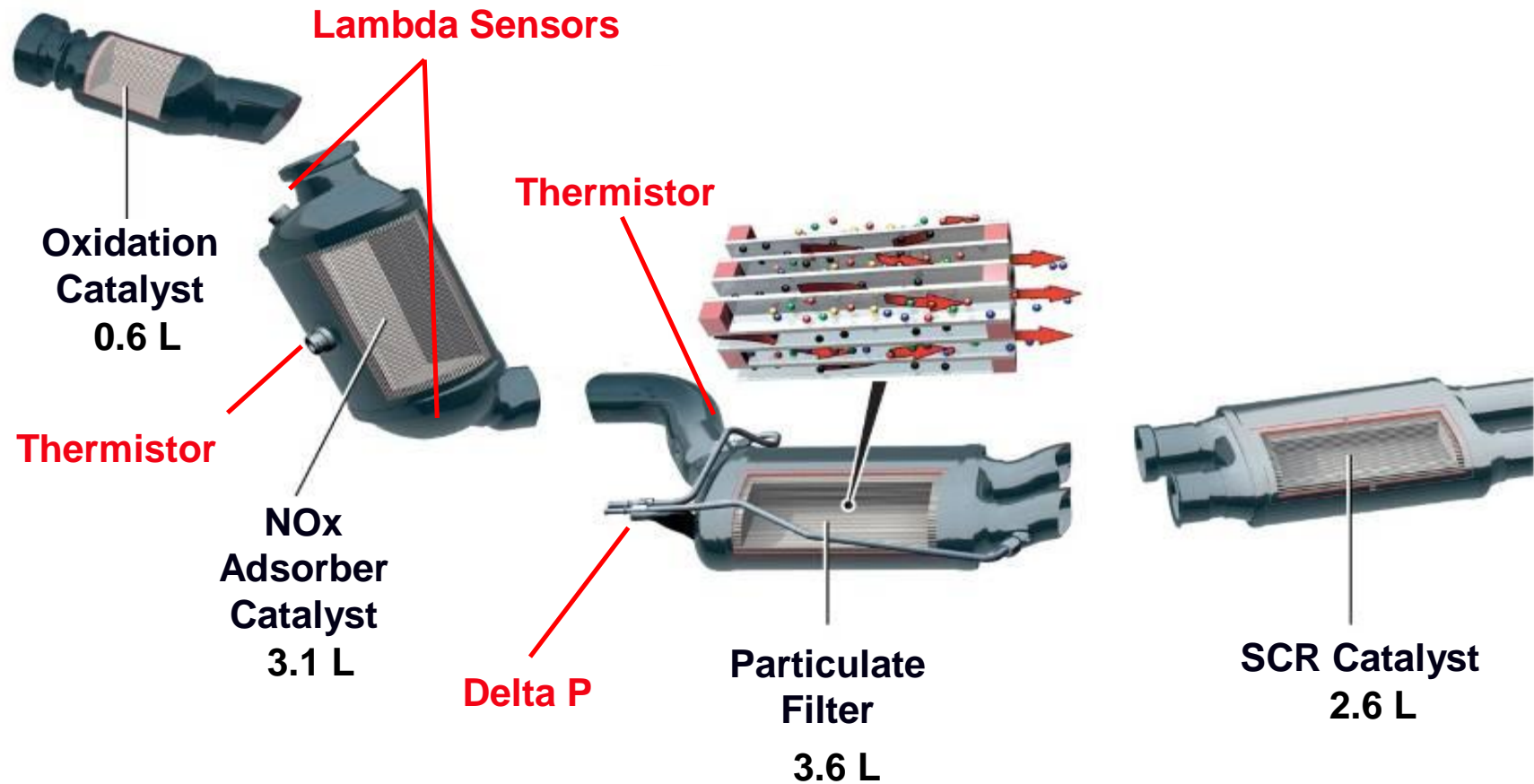


MB E320 Emission Control System: Field Aging and Onboard Monitoring



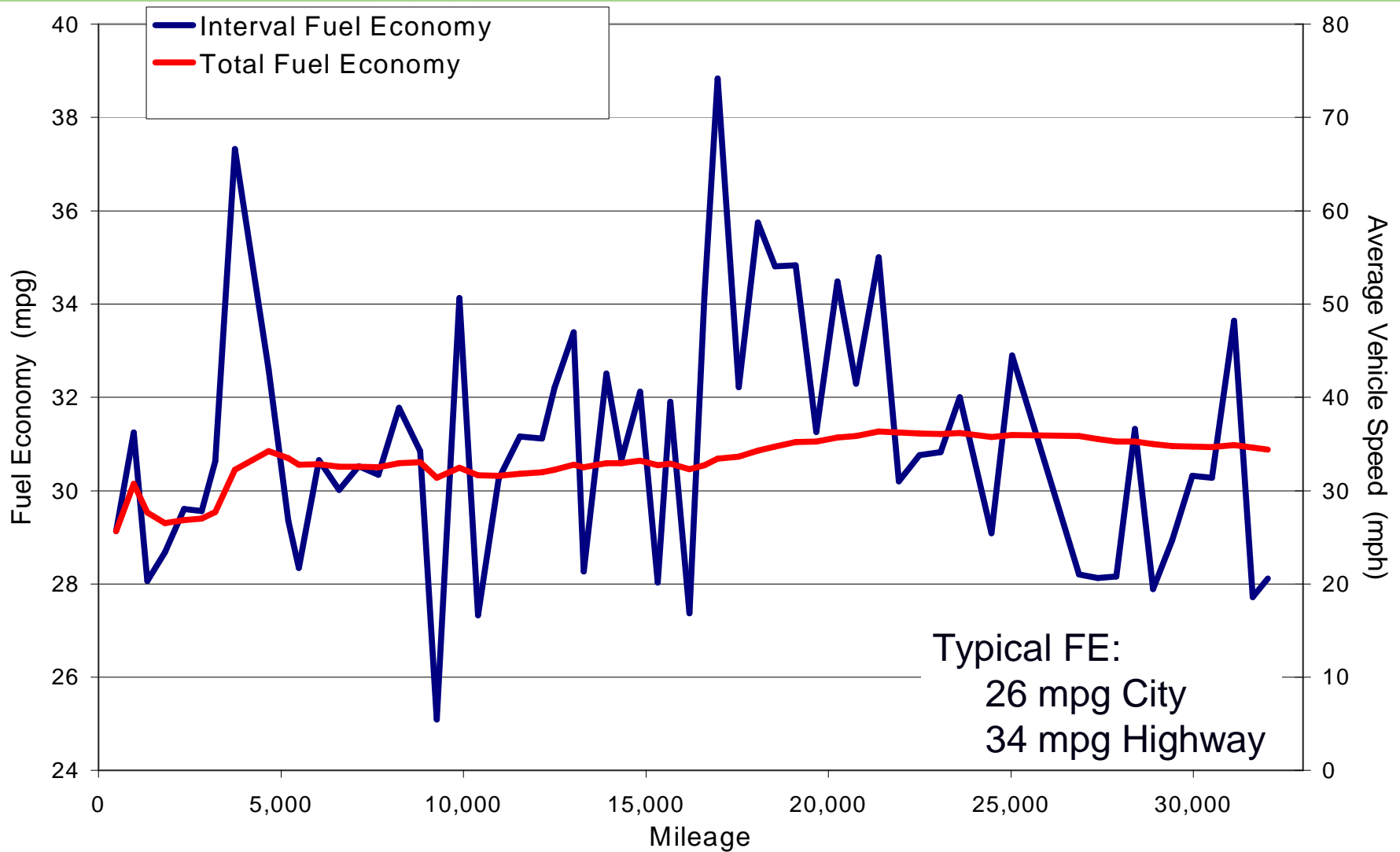
3.0 L V6
Inertial Weight: 4250 lbs
7 Speed Automatic
RWD

Emission Control System Configuration

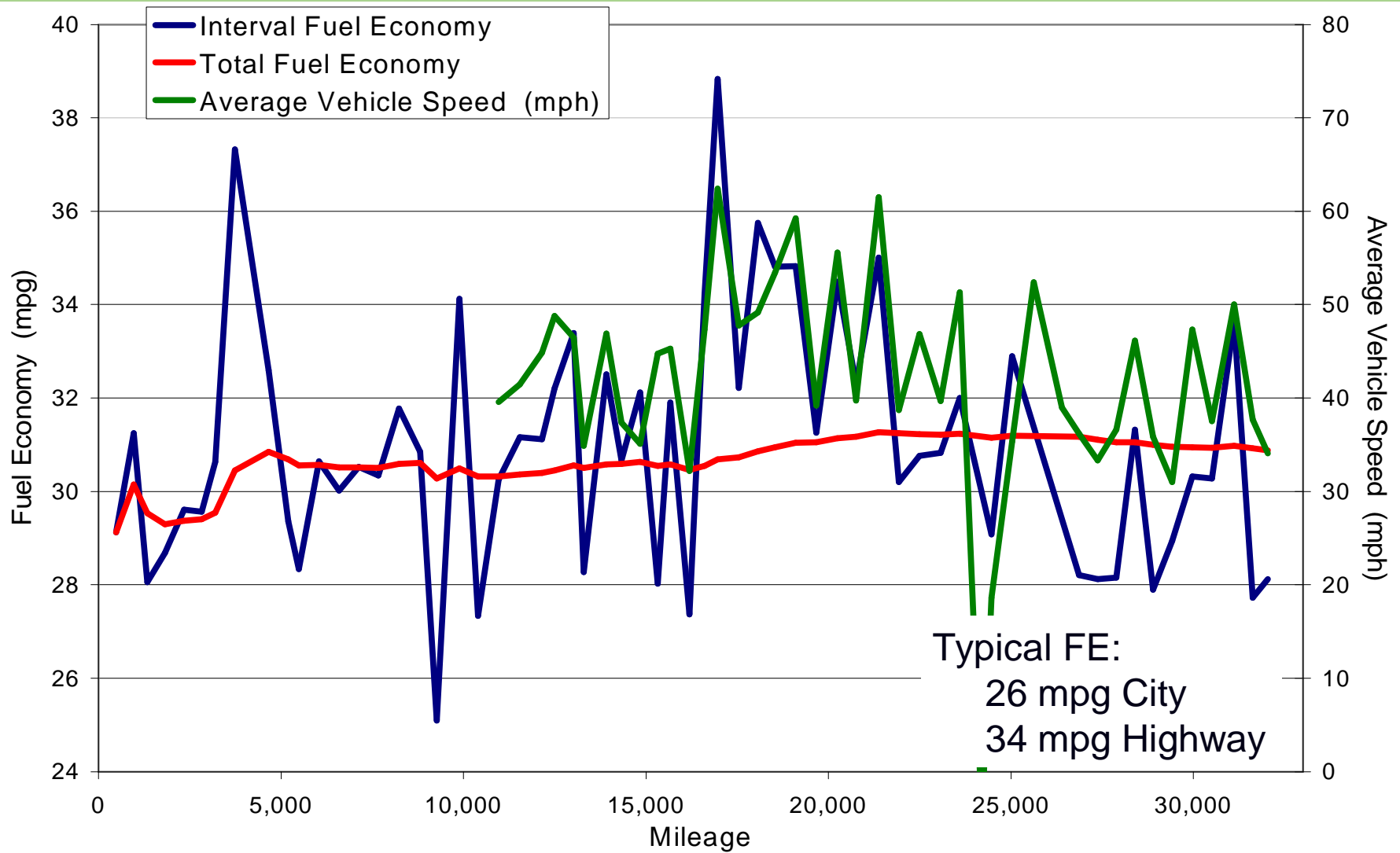


Source: http://www.greencarcongress.com/2006/01/mercedes_to_int.html

Fuel Economy

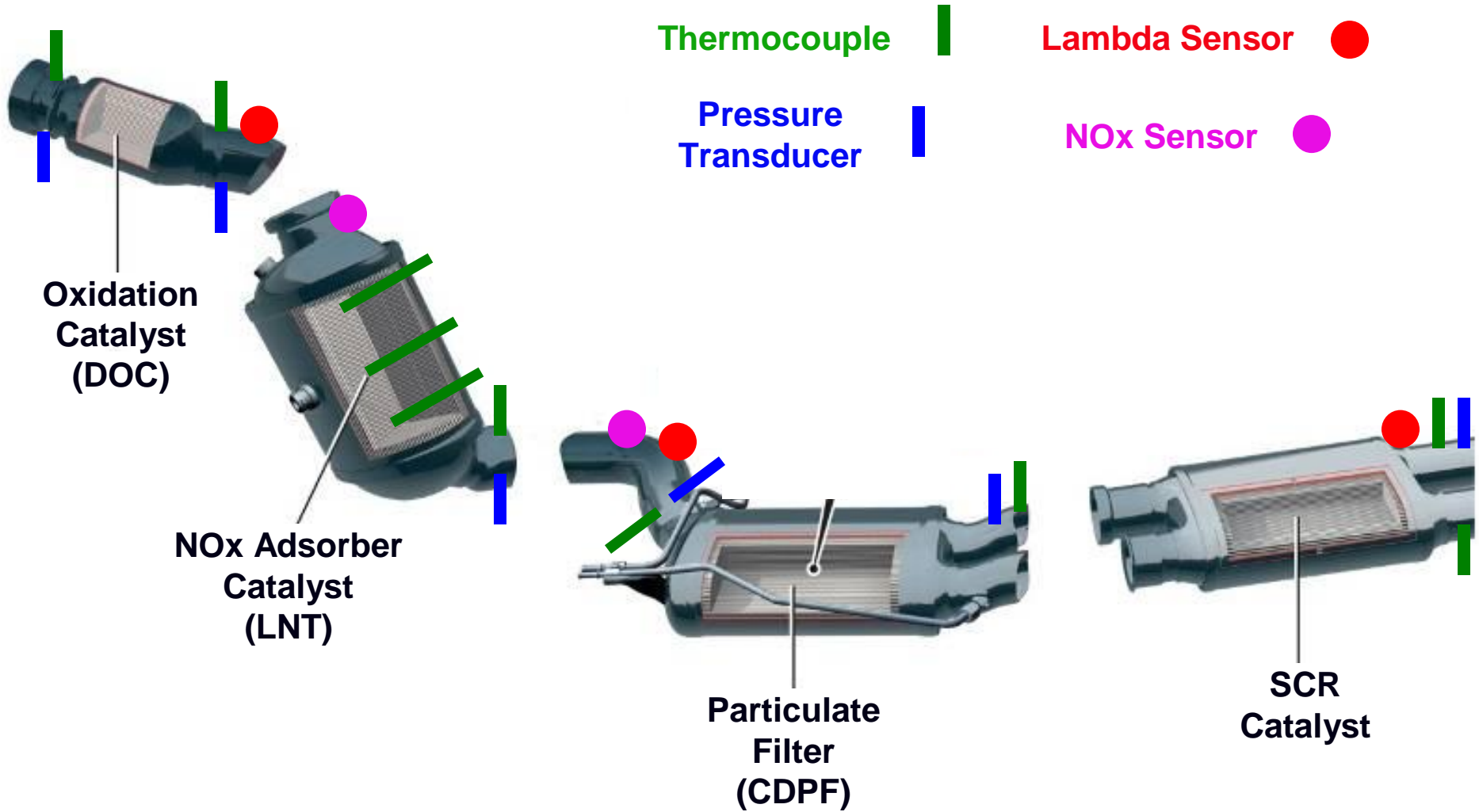


Fuel Economy



On-Board Monitoring Equipment

Sensor and Transducer Inputs to DataLogger

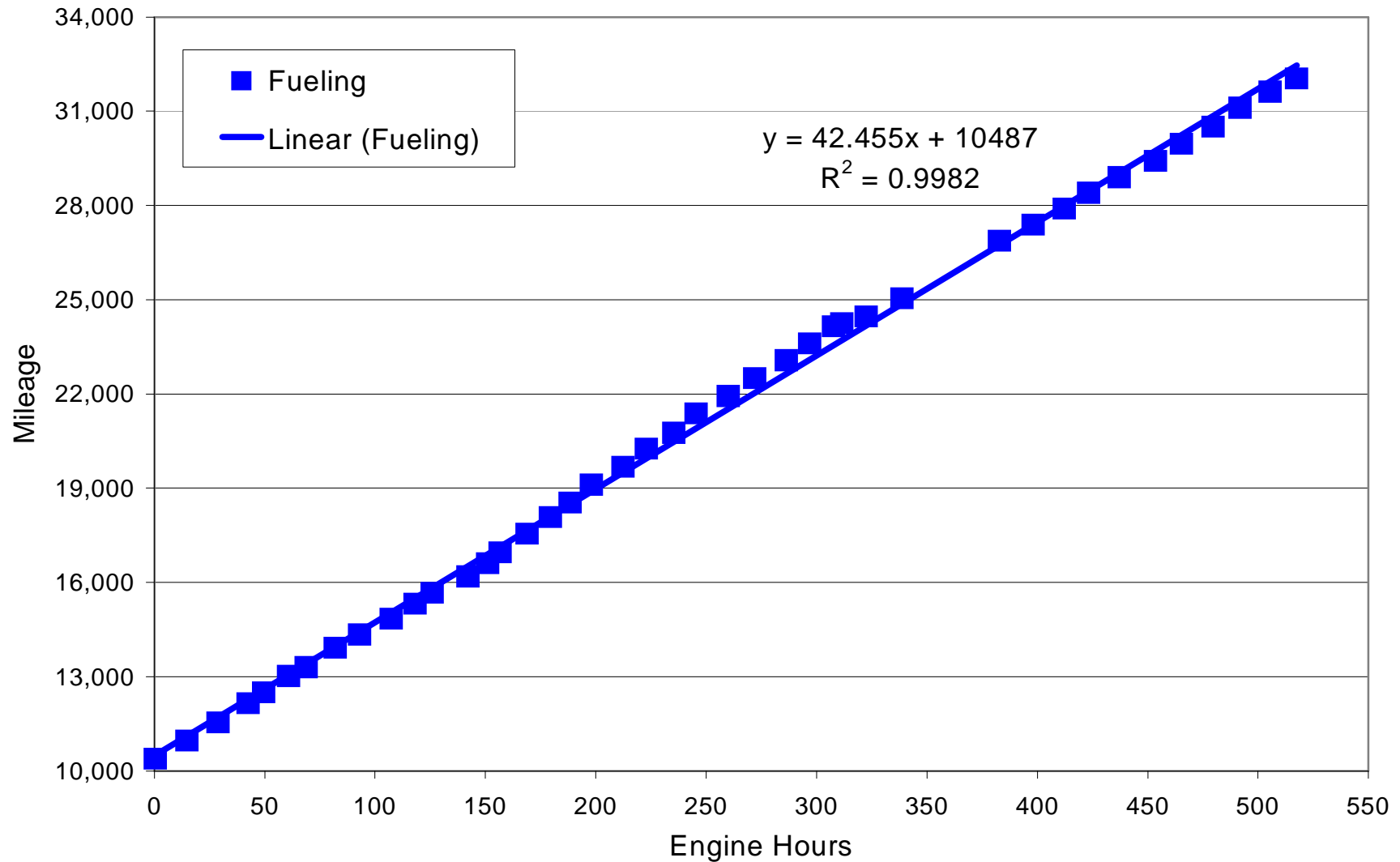


Onboard Data Acquisition System



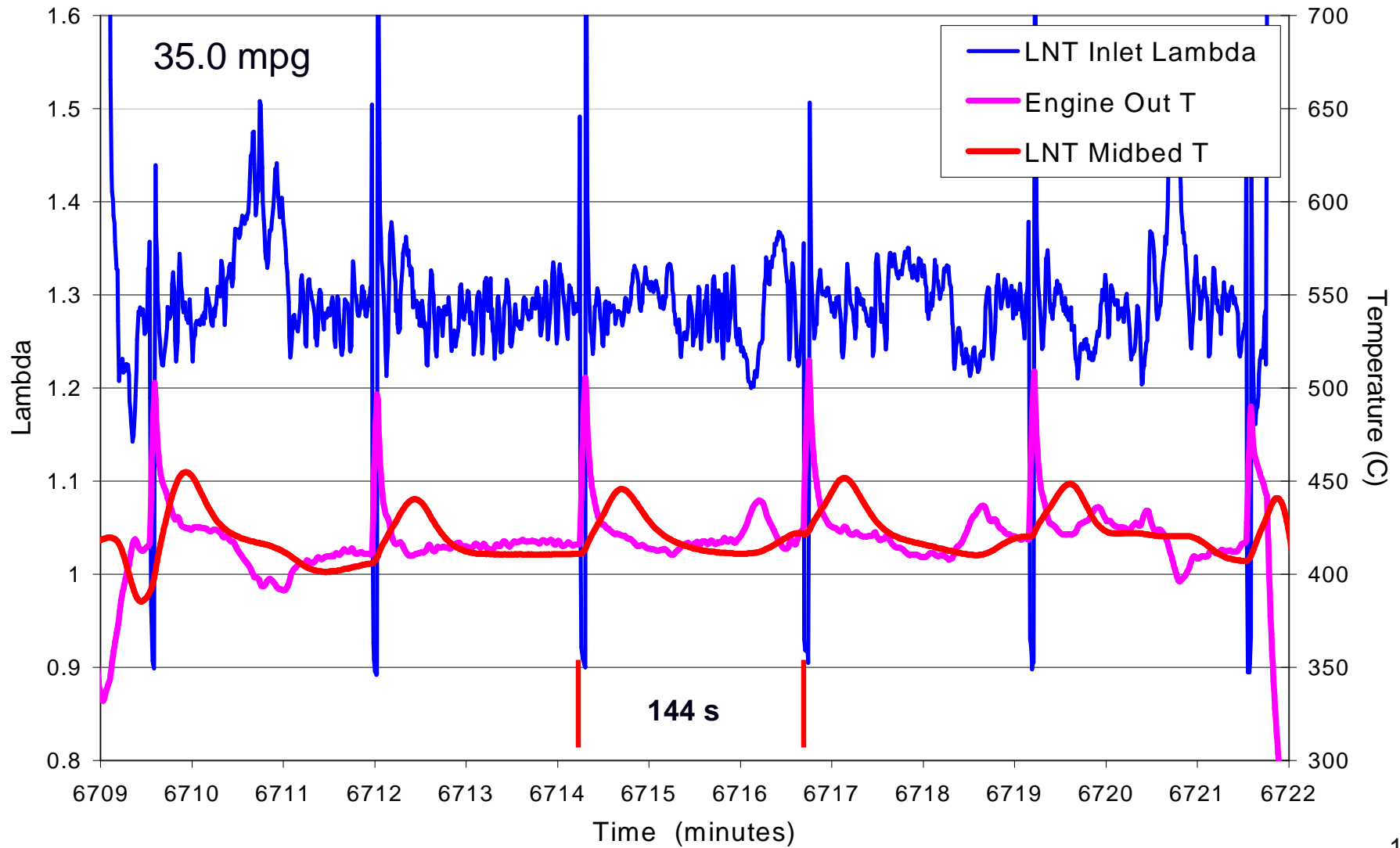
Selectable data acquisition rates:
2 and 10 hz typical

Correlation Between Engine Operation and Mileage Accumulation

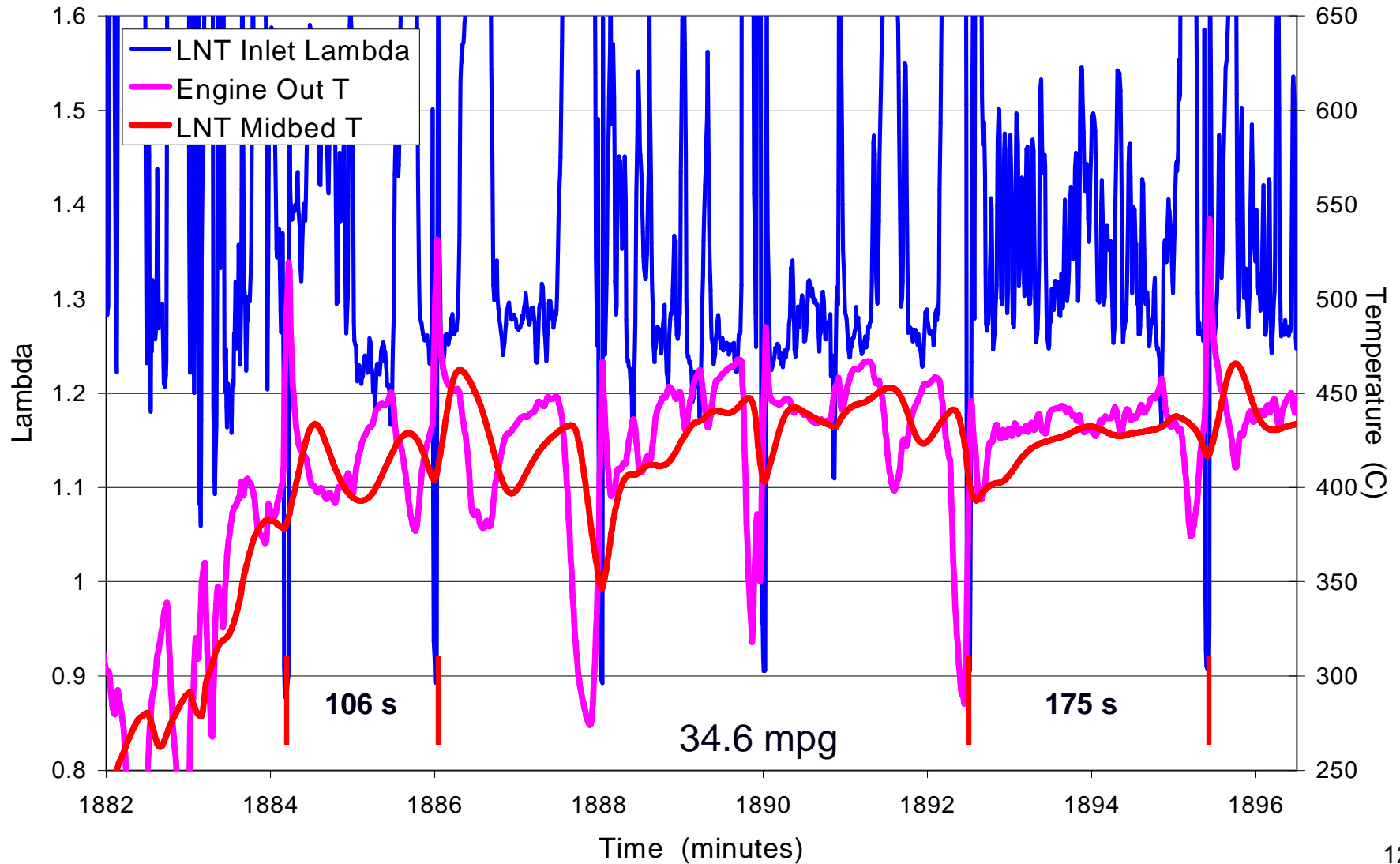


Monitoring of Typical On-Road Events

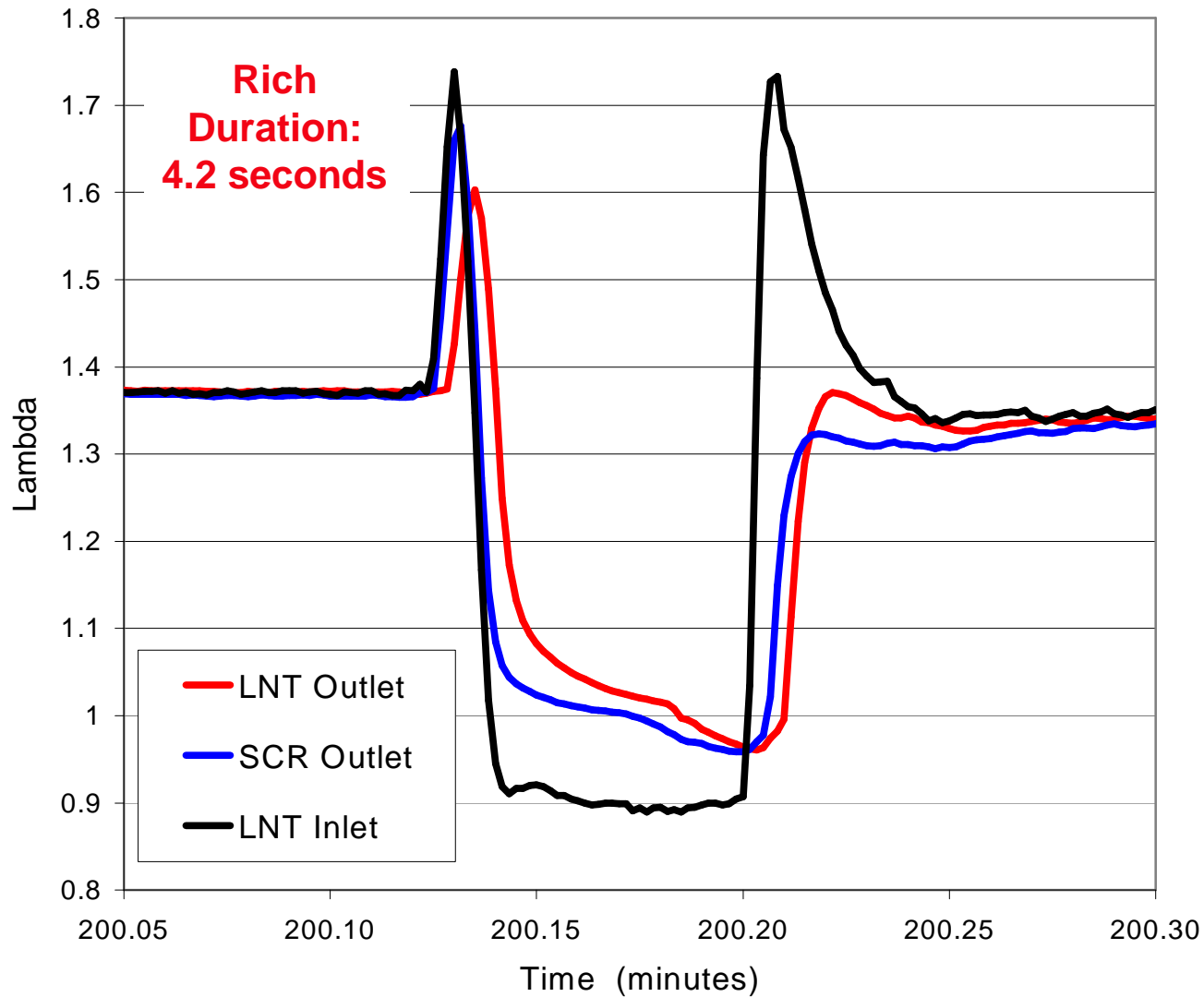
65 mph Cruise



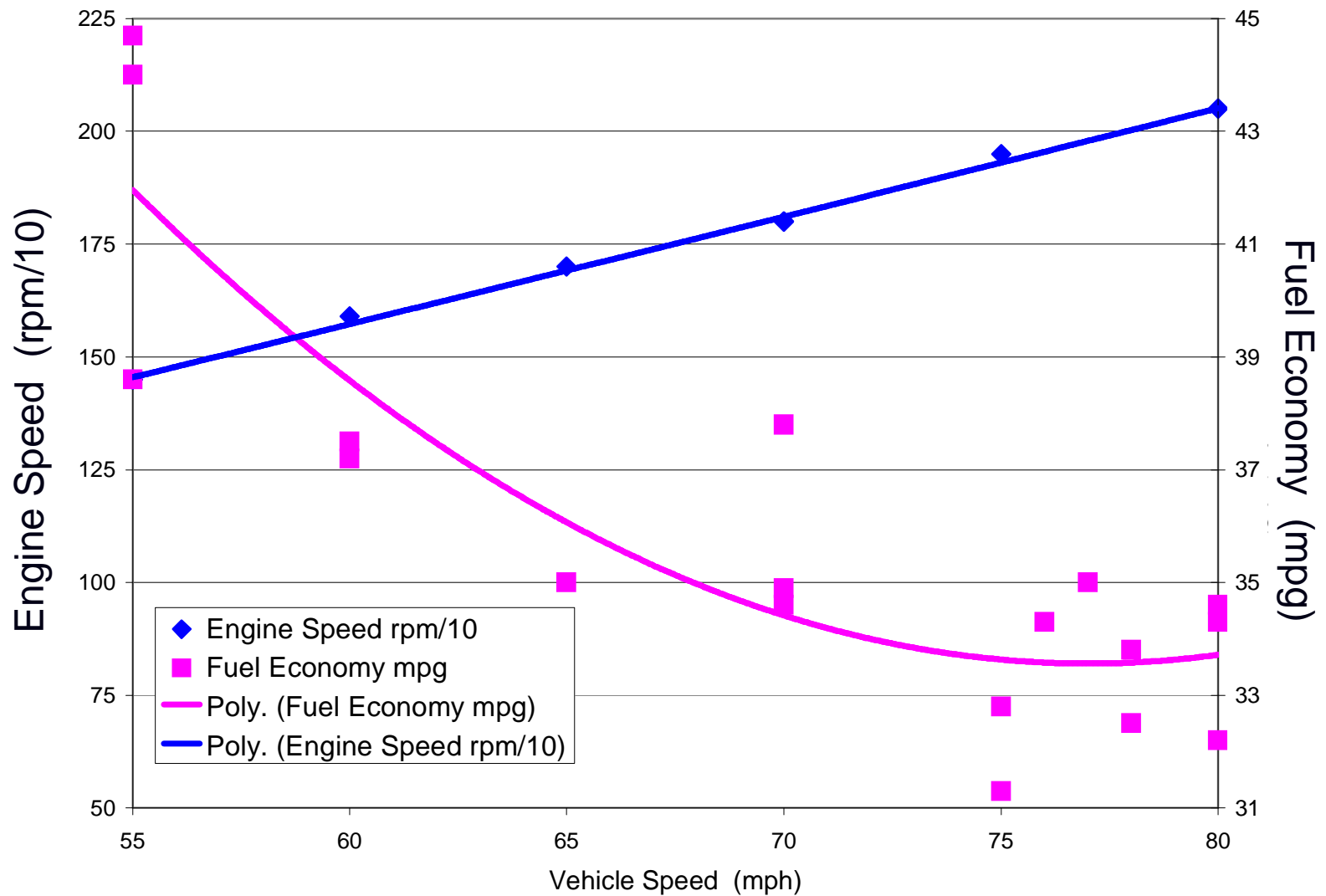
80 mph Cruise



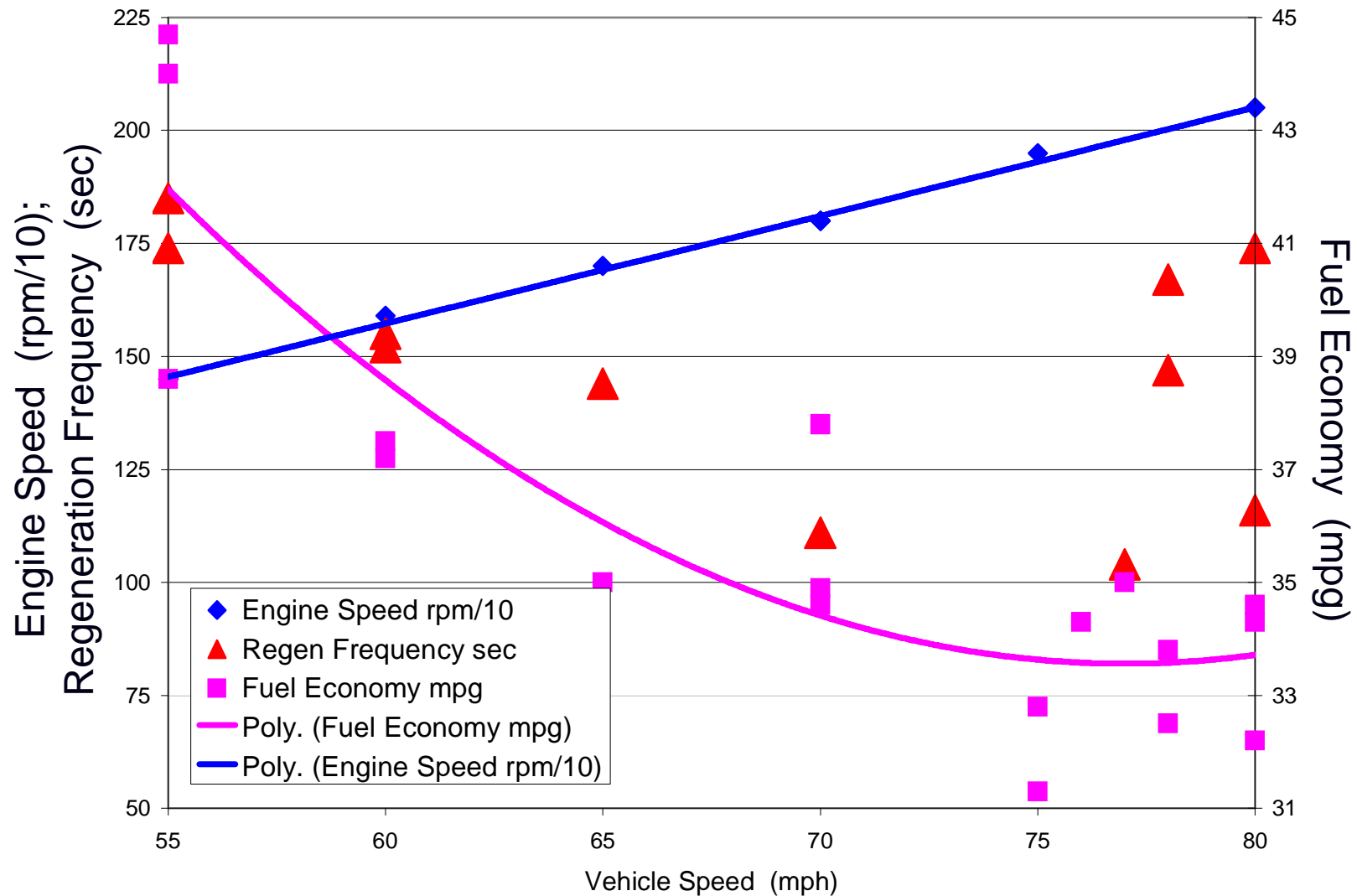
LNT DeNOx During 55 mph Cruise



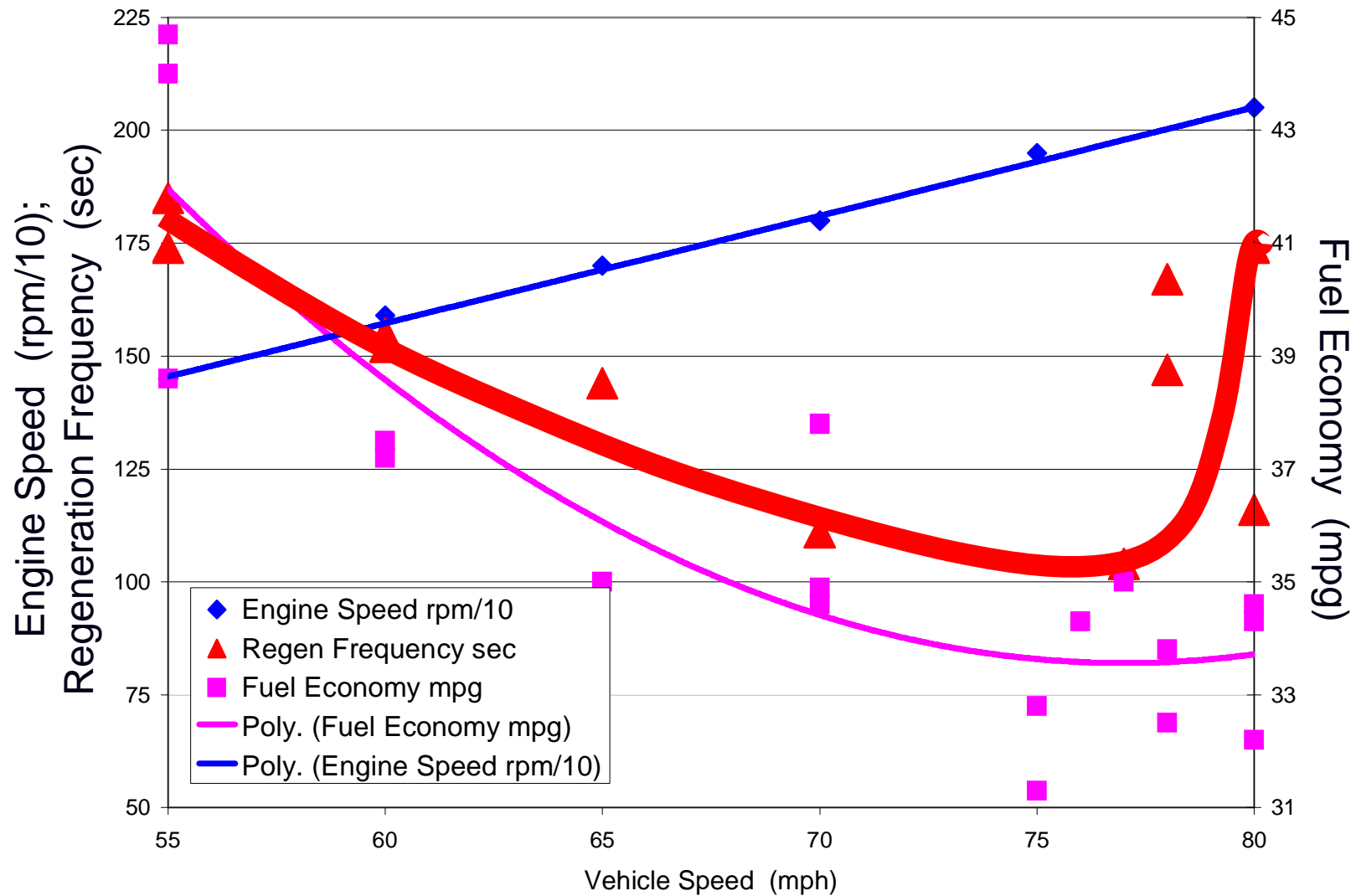
Engine Parameters During Cruises



Engine Parameters During Cruises

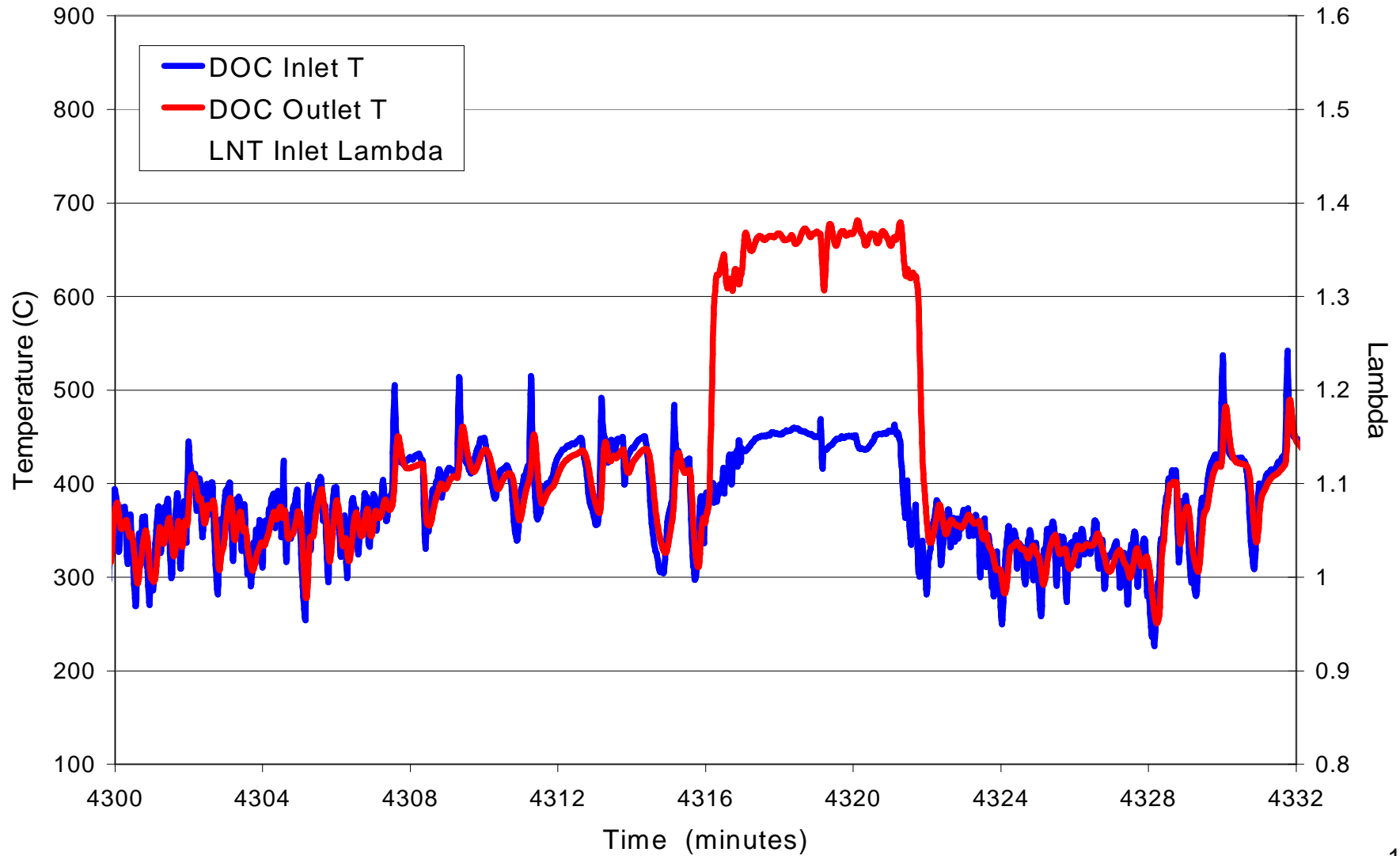


Engine Parameters During Cruises

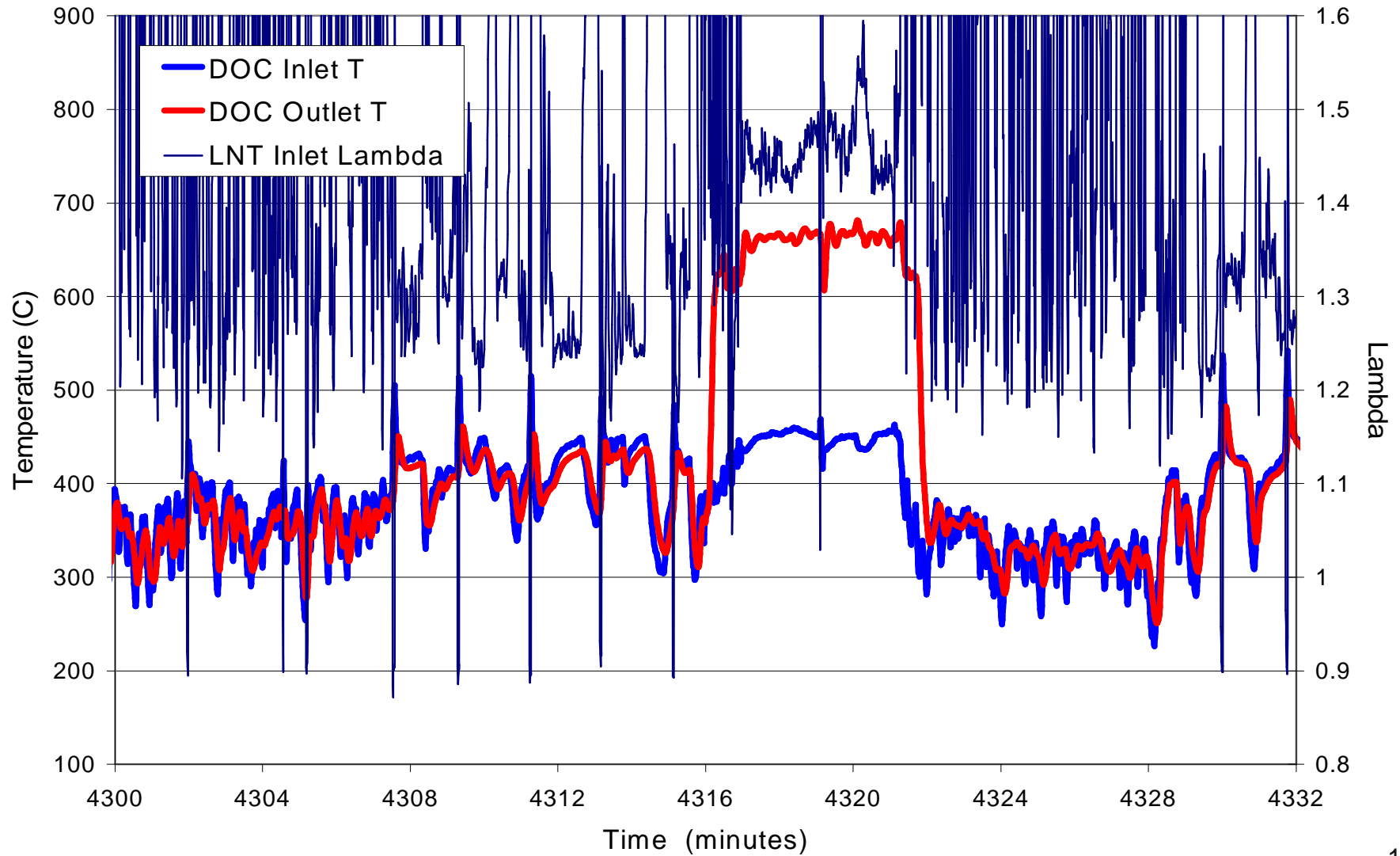


Filter Burnout

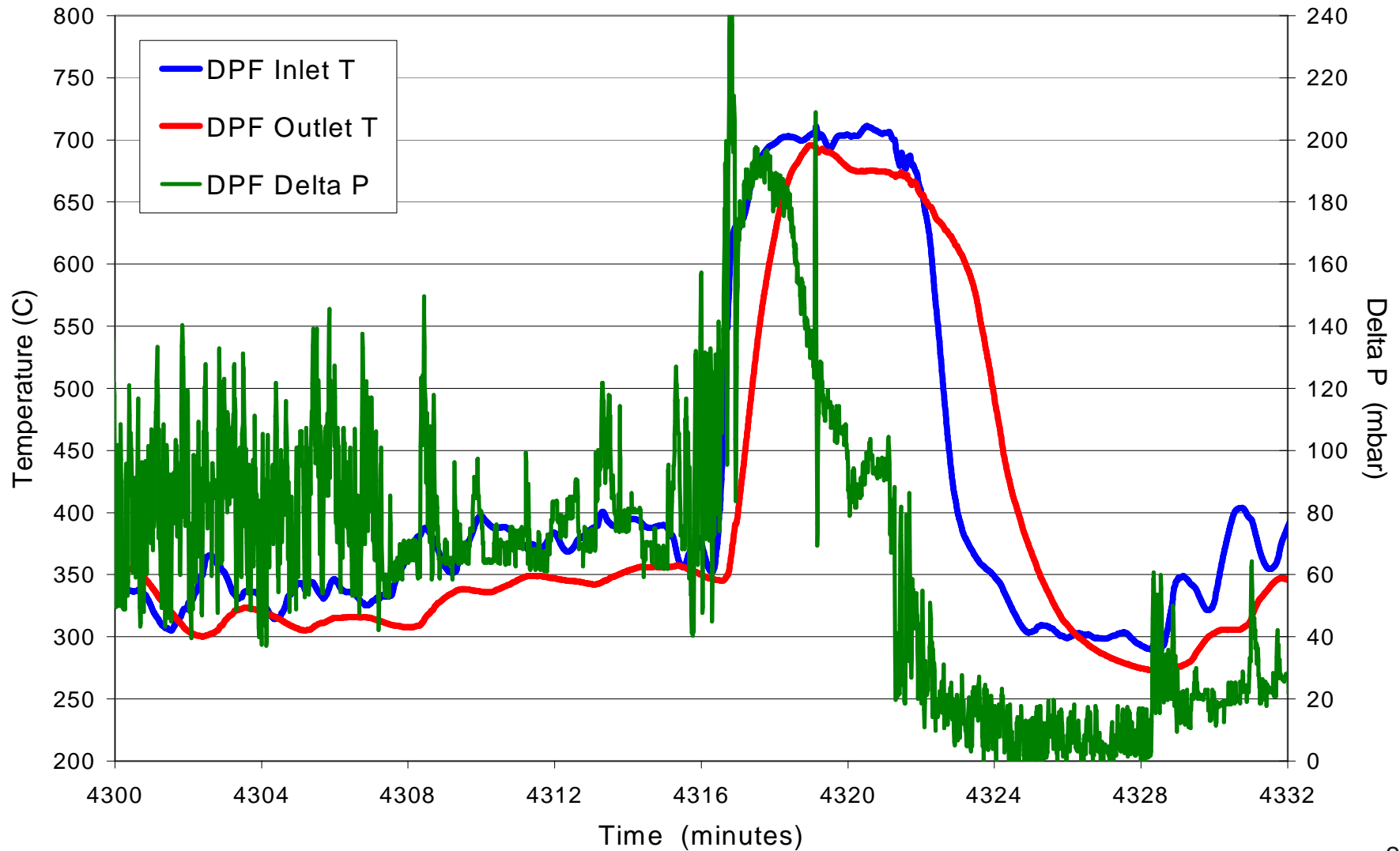
DeSoot During Expressway Cruise



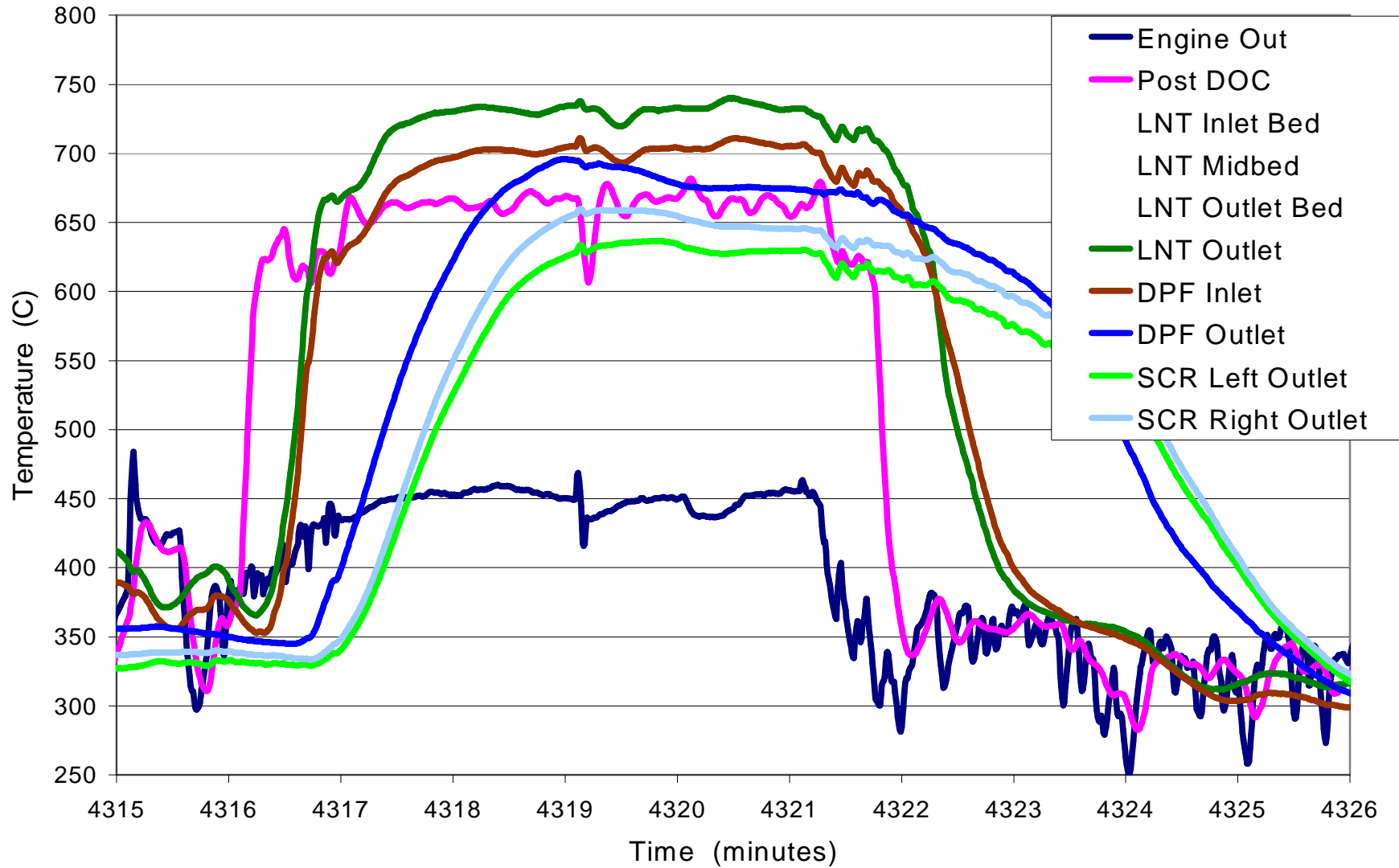
DeSoot During Expressway Cruise



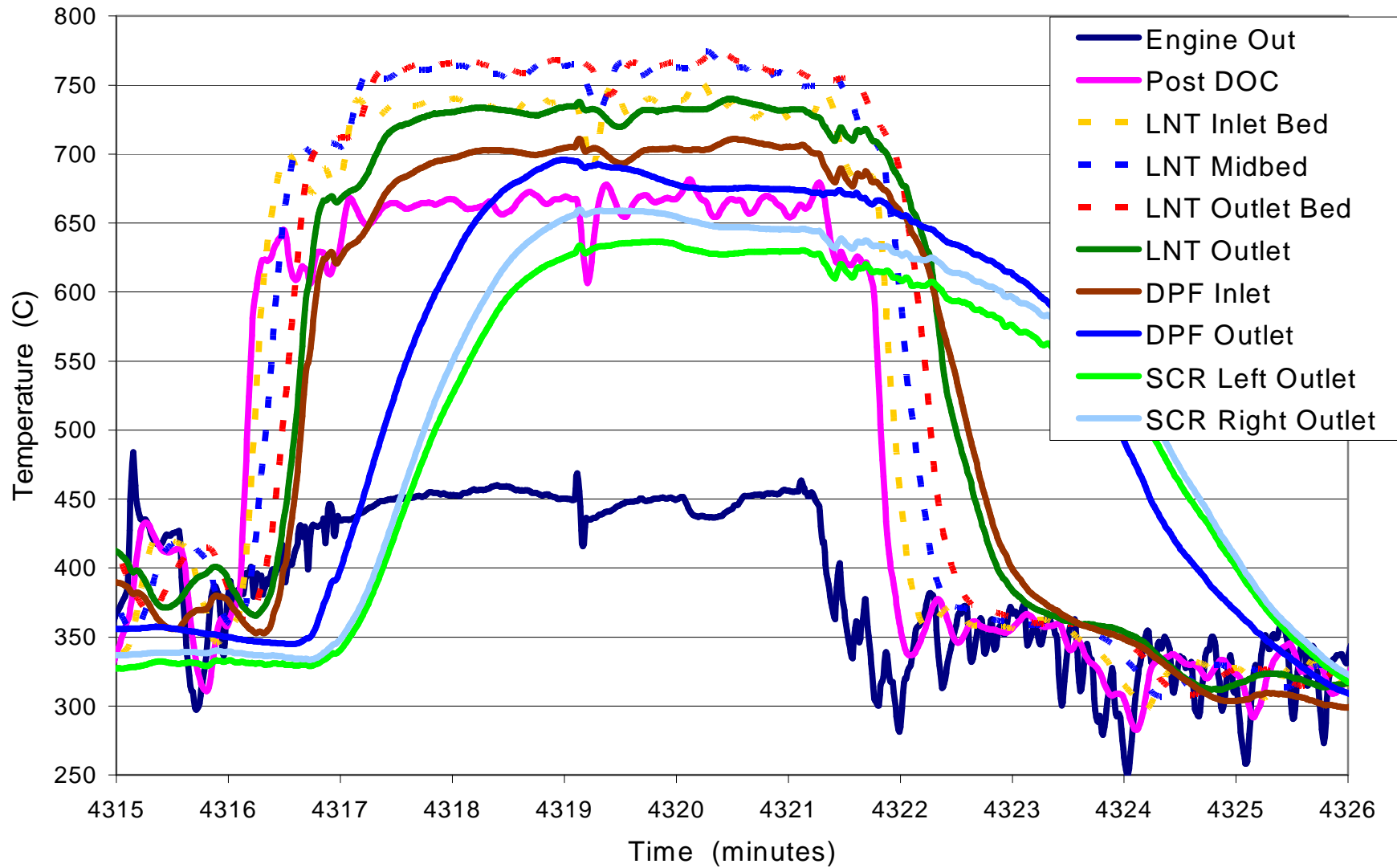
DeSoot During Expressway Cruise



DeSoot During Expressway Cruise

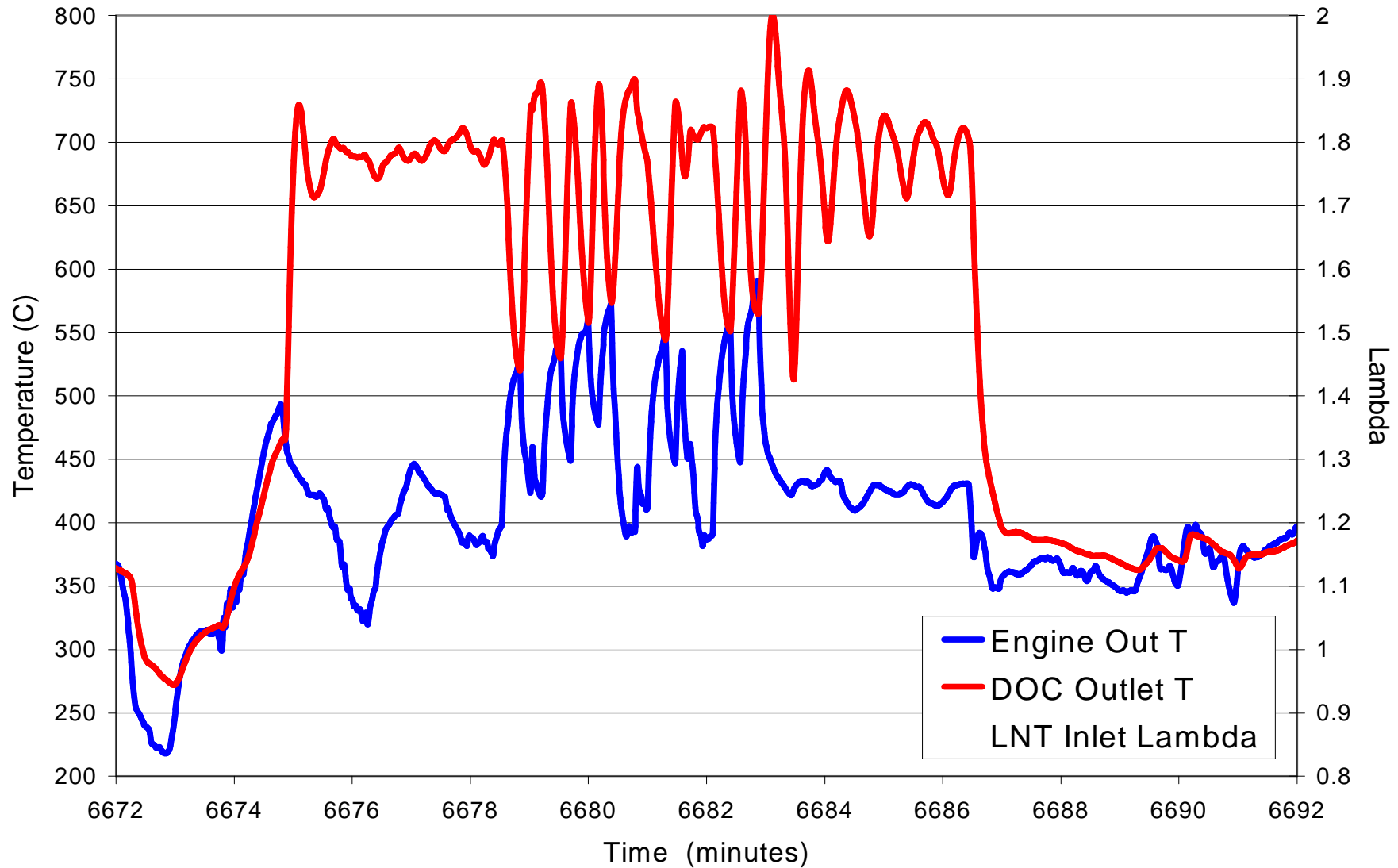


DeSoot During Expressway Cruise

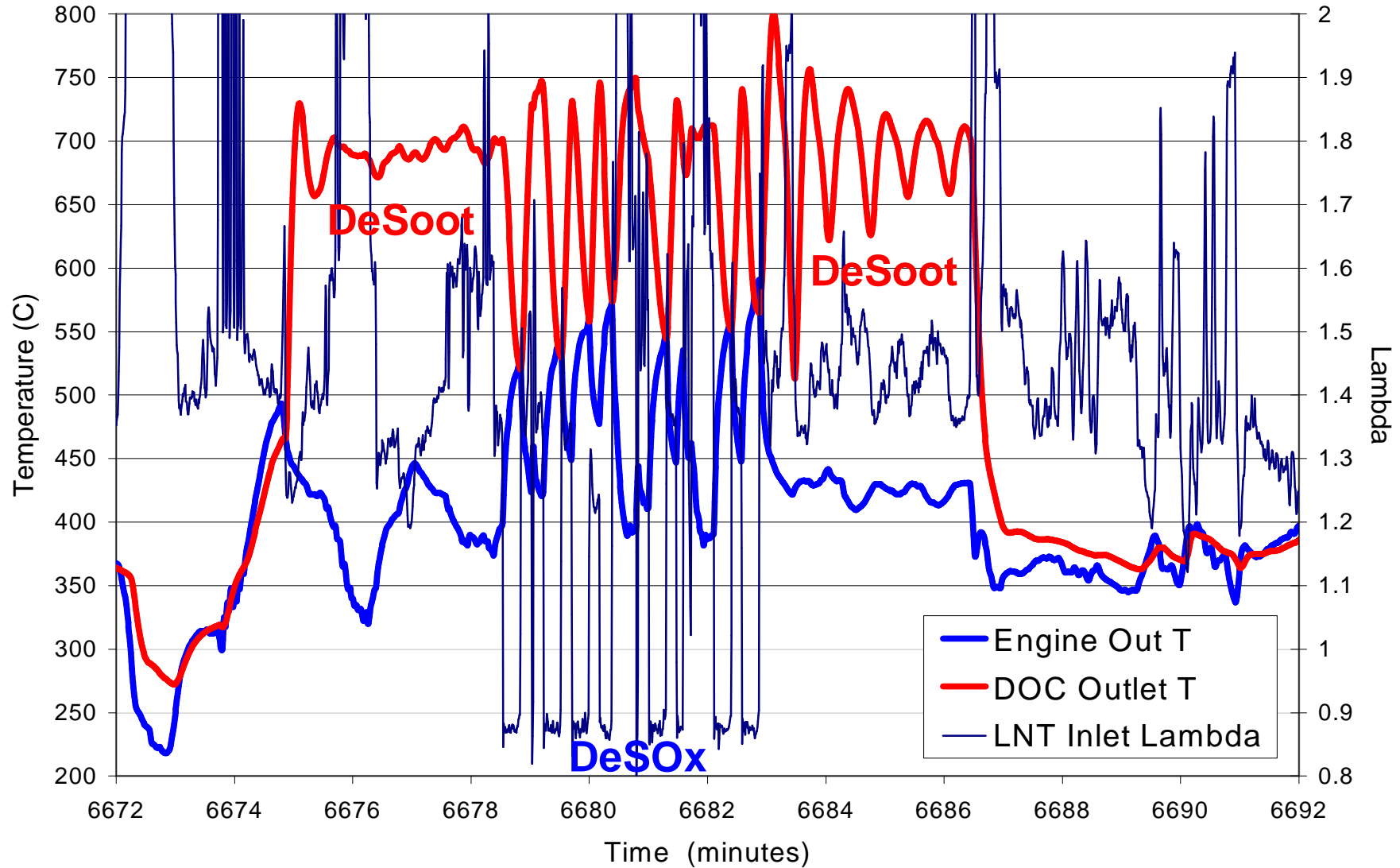


LNT DeSOx

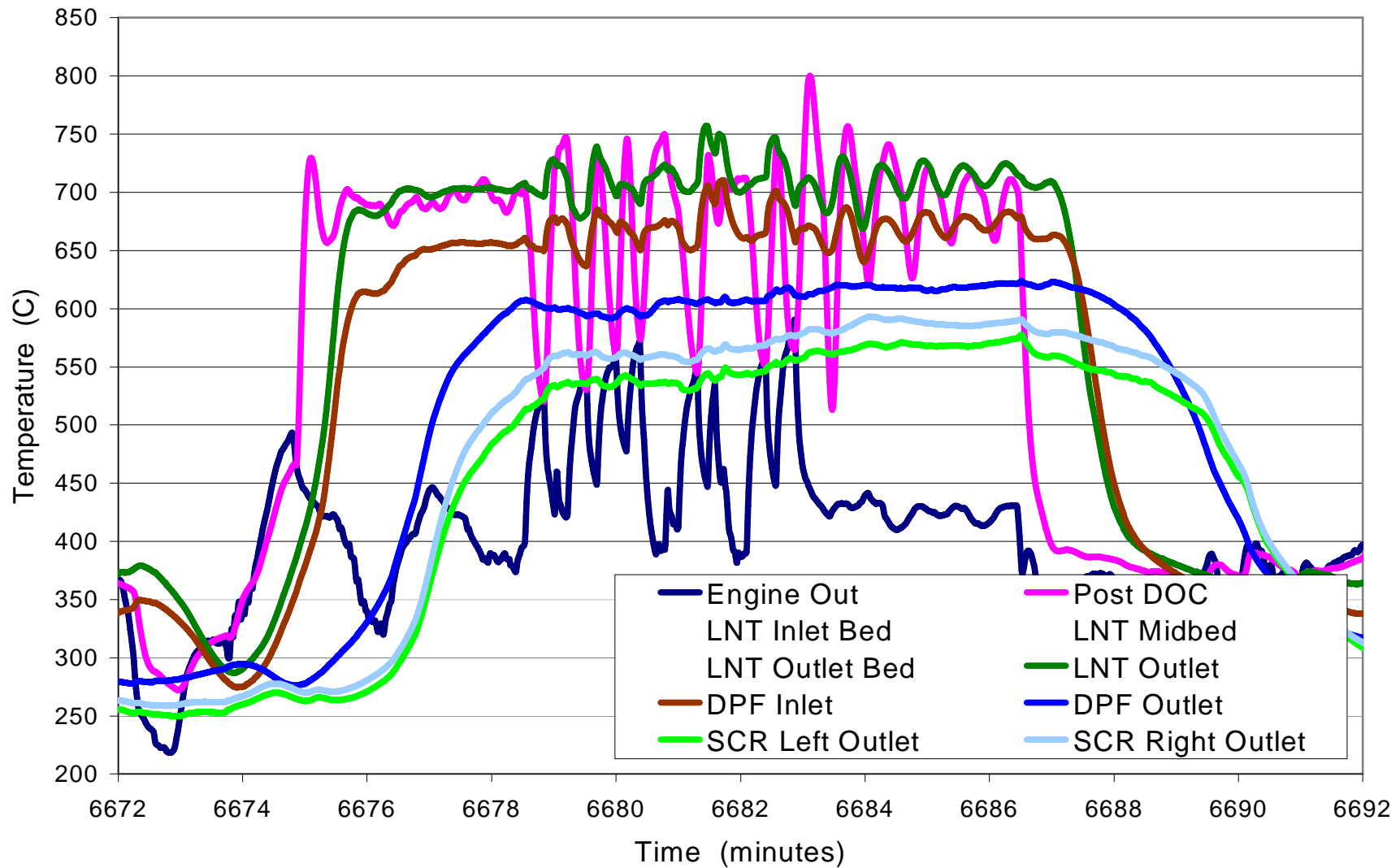
DeSOx During 55-to-60 mph Cruise



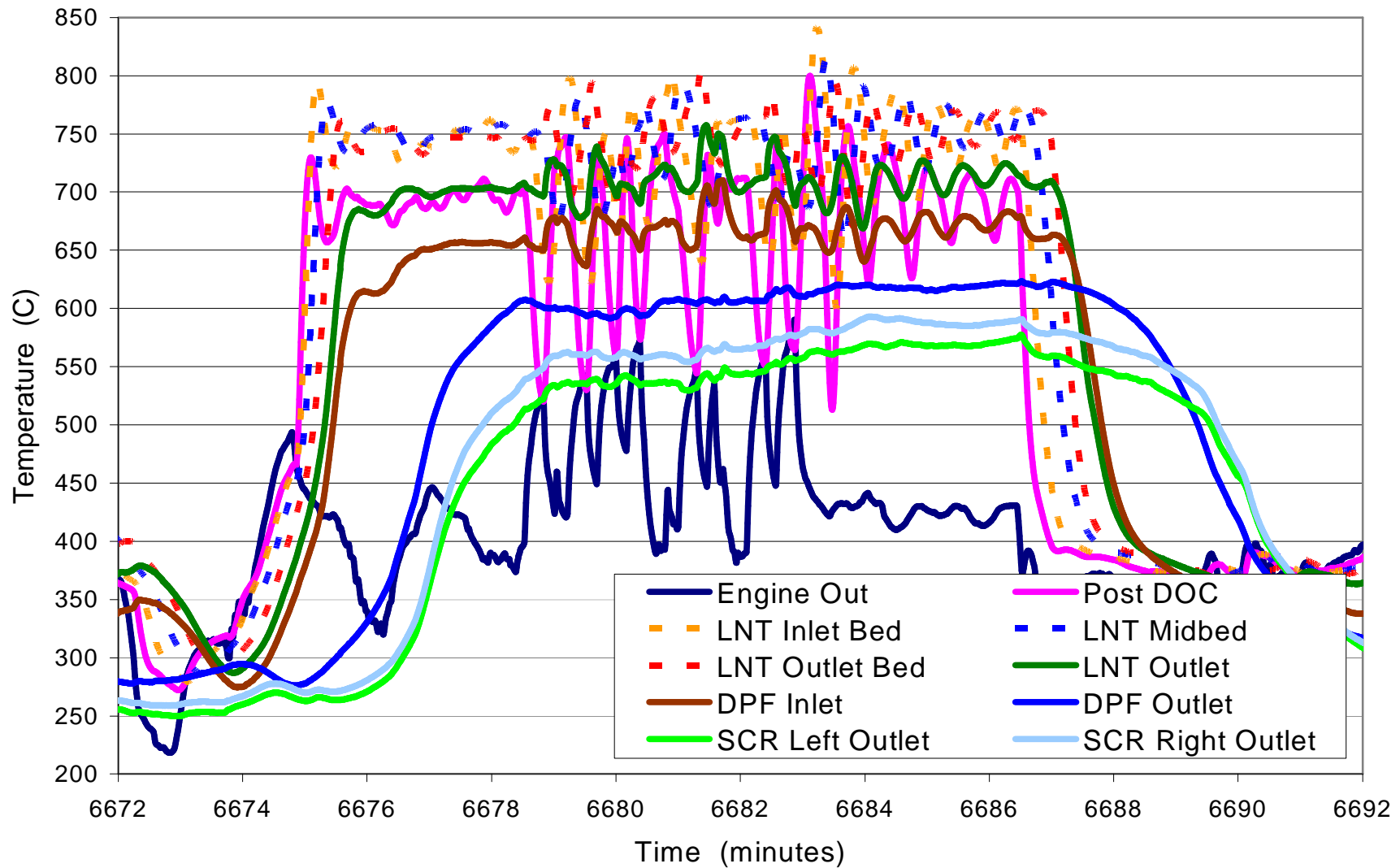
DeSOx During 55-to-60 mph Cruise



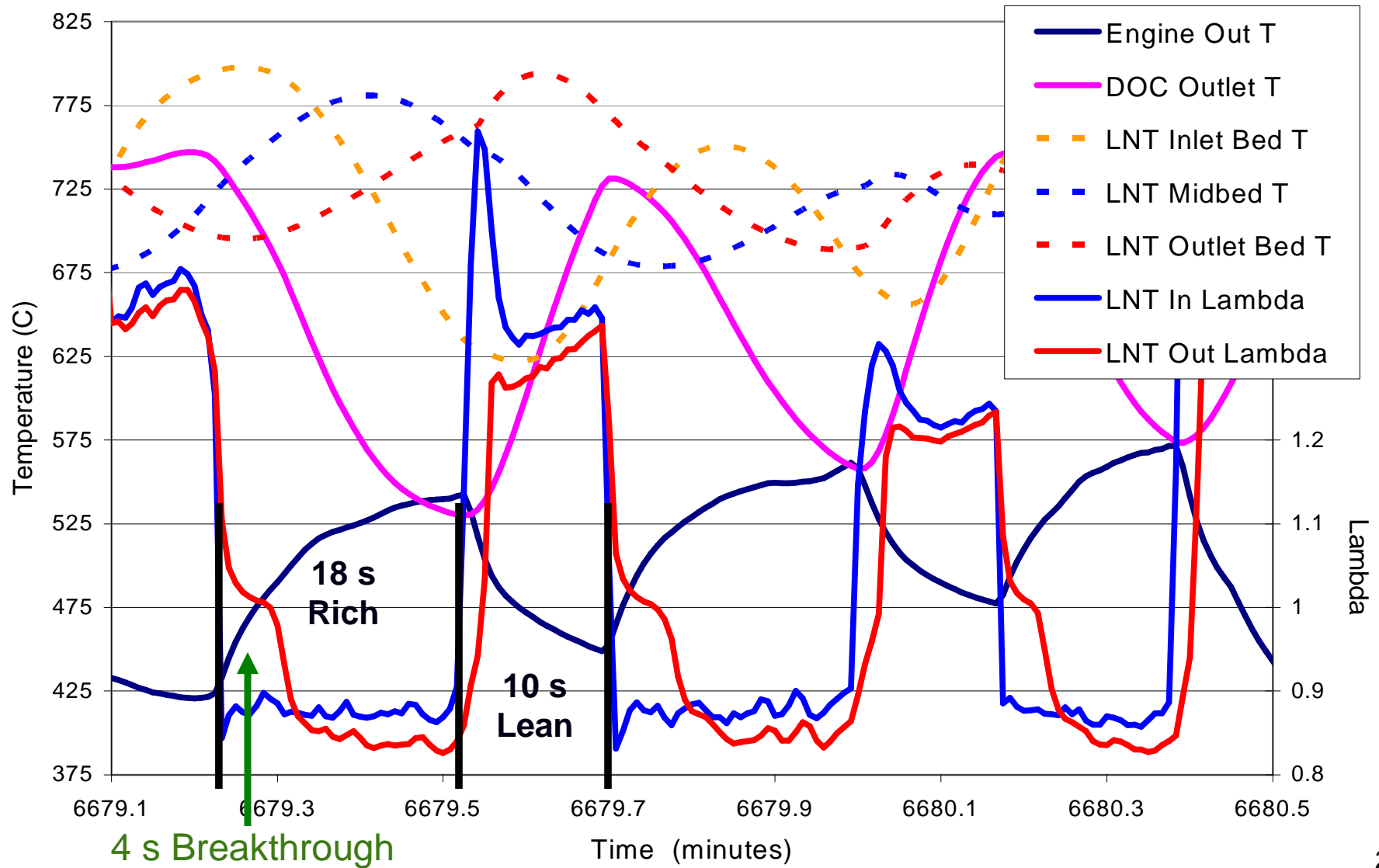
DeSOx During 55-to-60 mph Cruise



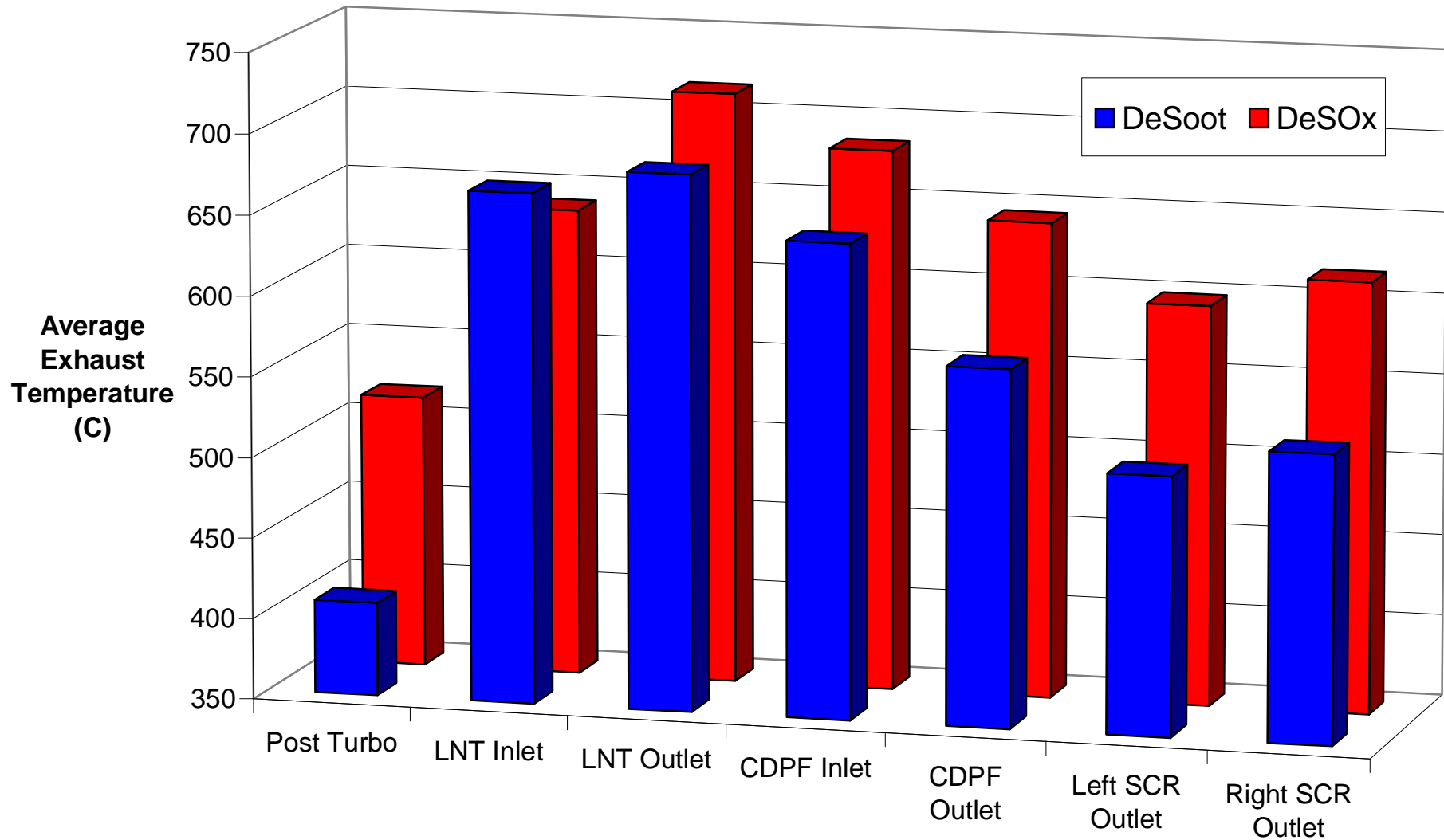
DeSOx During 55-to-60 mph Cruise



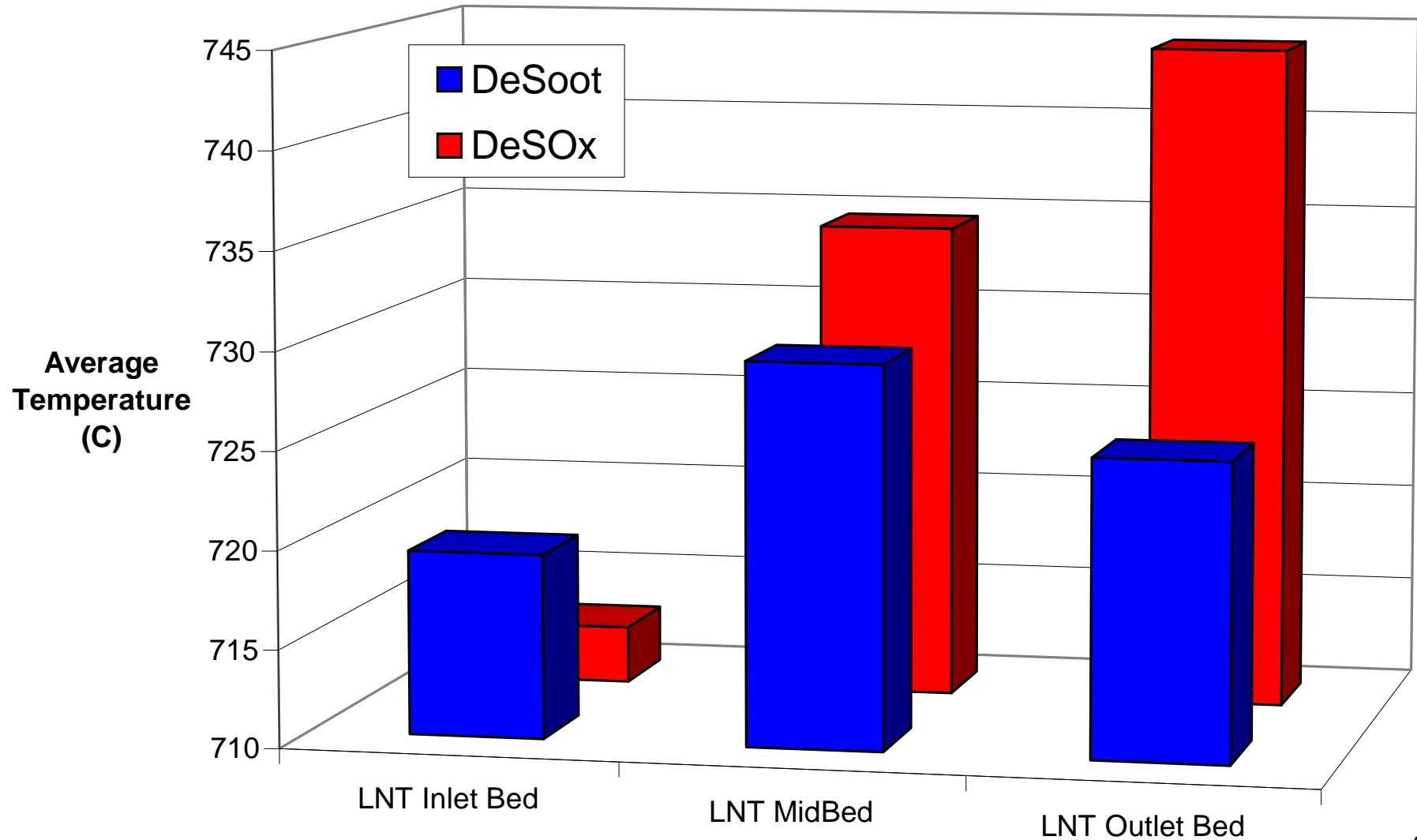
DeSOx During 55-to-60 mph Cruise



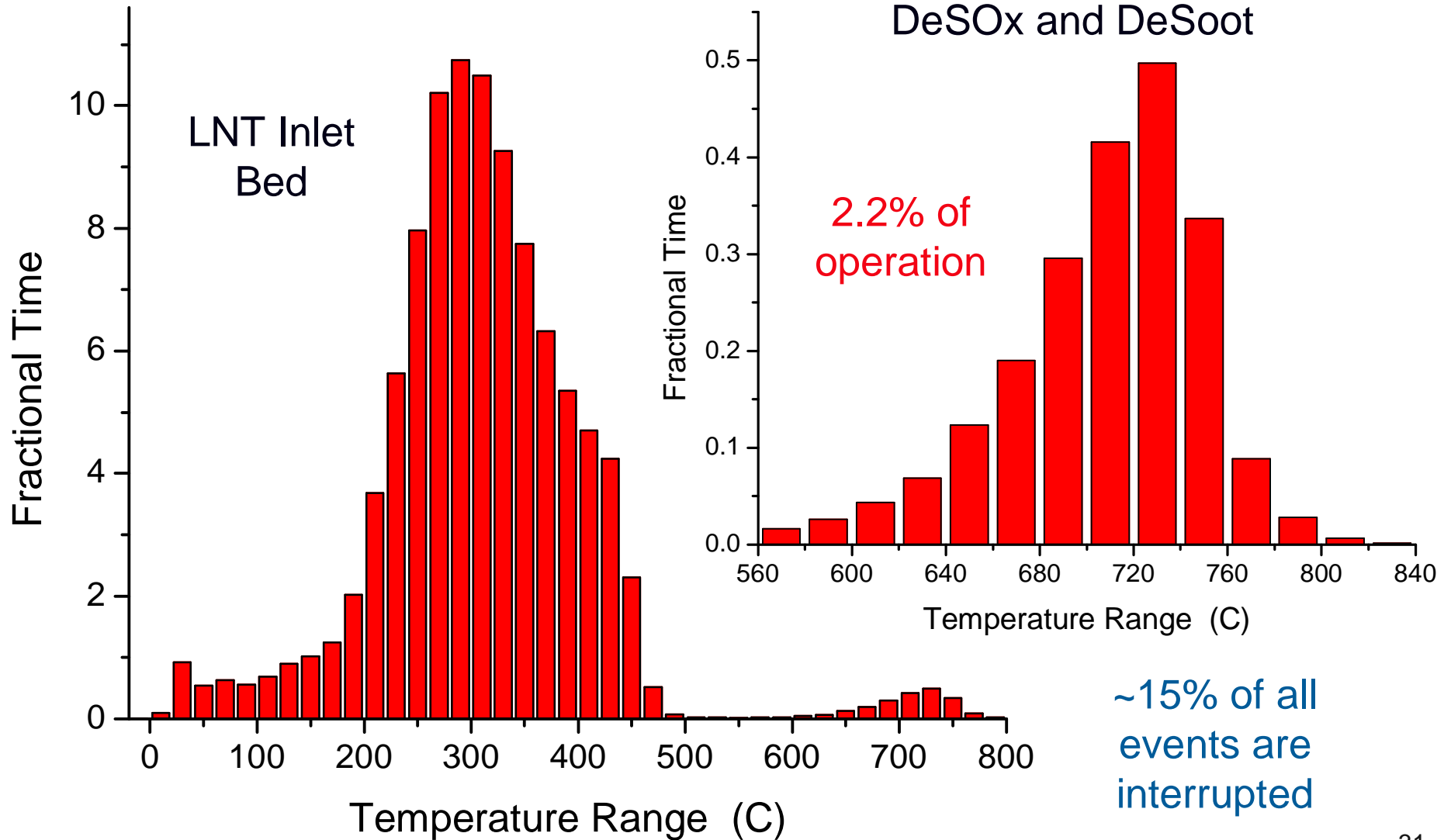
Heat Development Over Exhaust System



Temperature Profile Over LNT



LNT Temperature During Vehicle Operation



Frequency of LNT and CDPF Maintenance

Frequency of LNT DeSOx



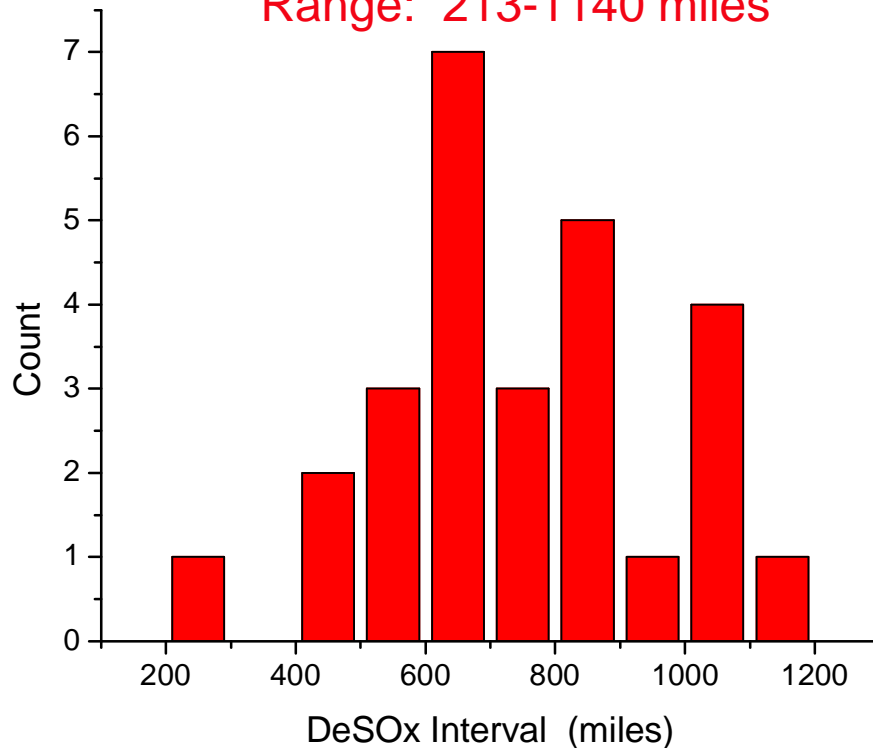
DeSOx + DeSoot

Ave. Total Duration: 12.6 min; Ave. Rich Duration: 5.2 min

Distance between Desulfations

Average: 742 miles

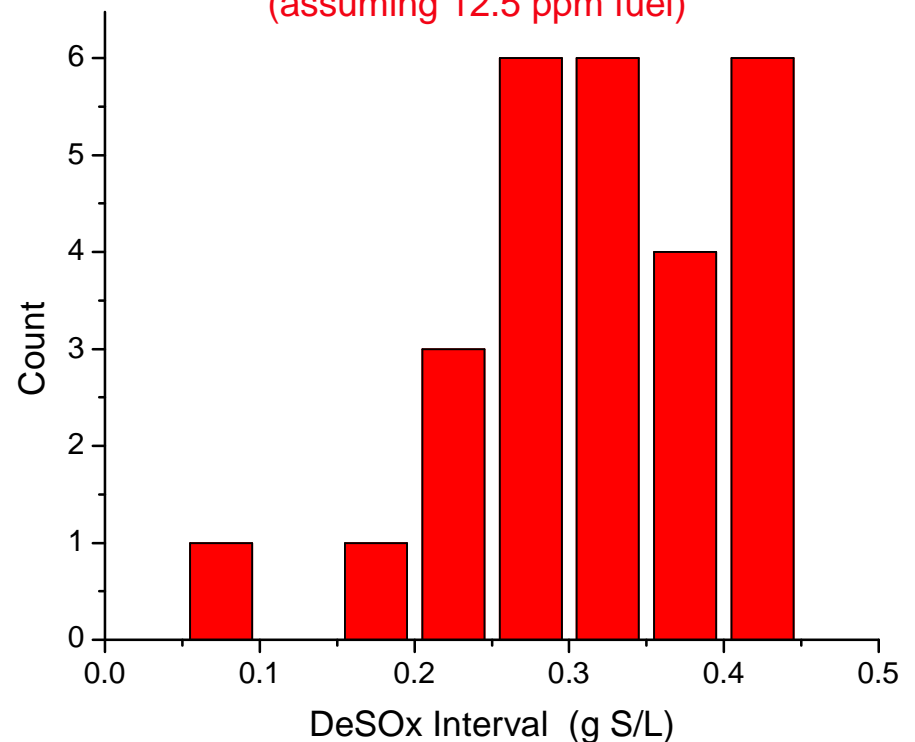
Range: 213-1140 miles



Sulfur Exposure

Average: 0.31 g/L

(assuming 12.5 ppm fuel)



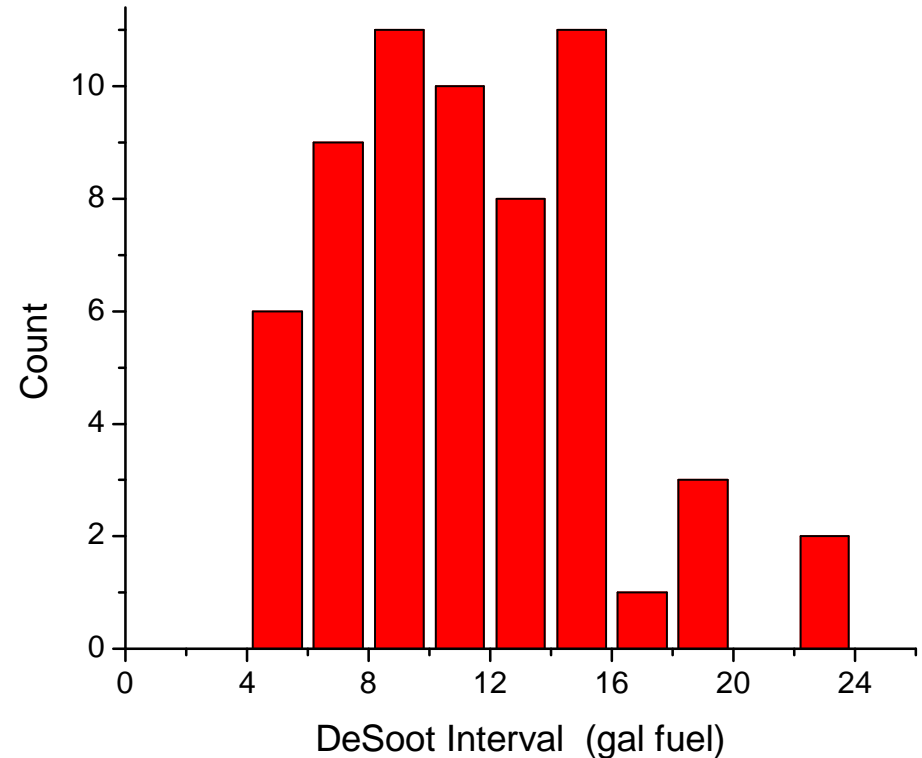
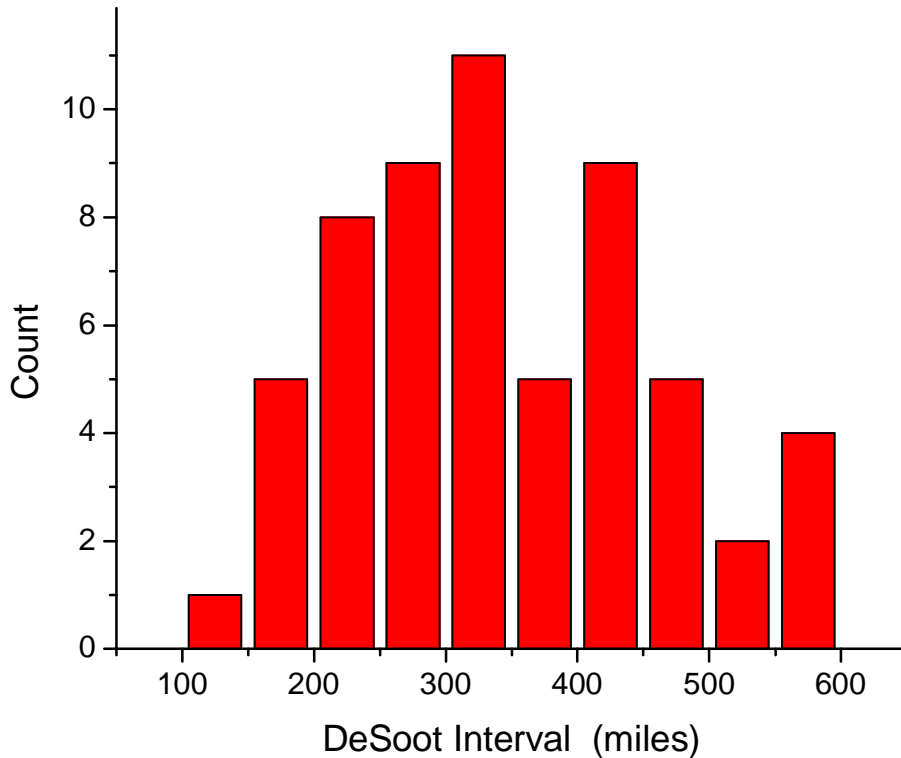
Frequency and Duration of Filter Regenerations



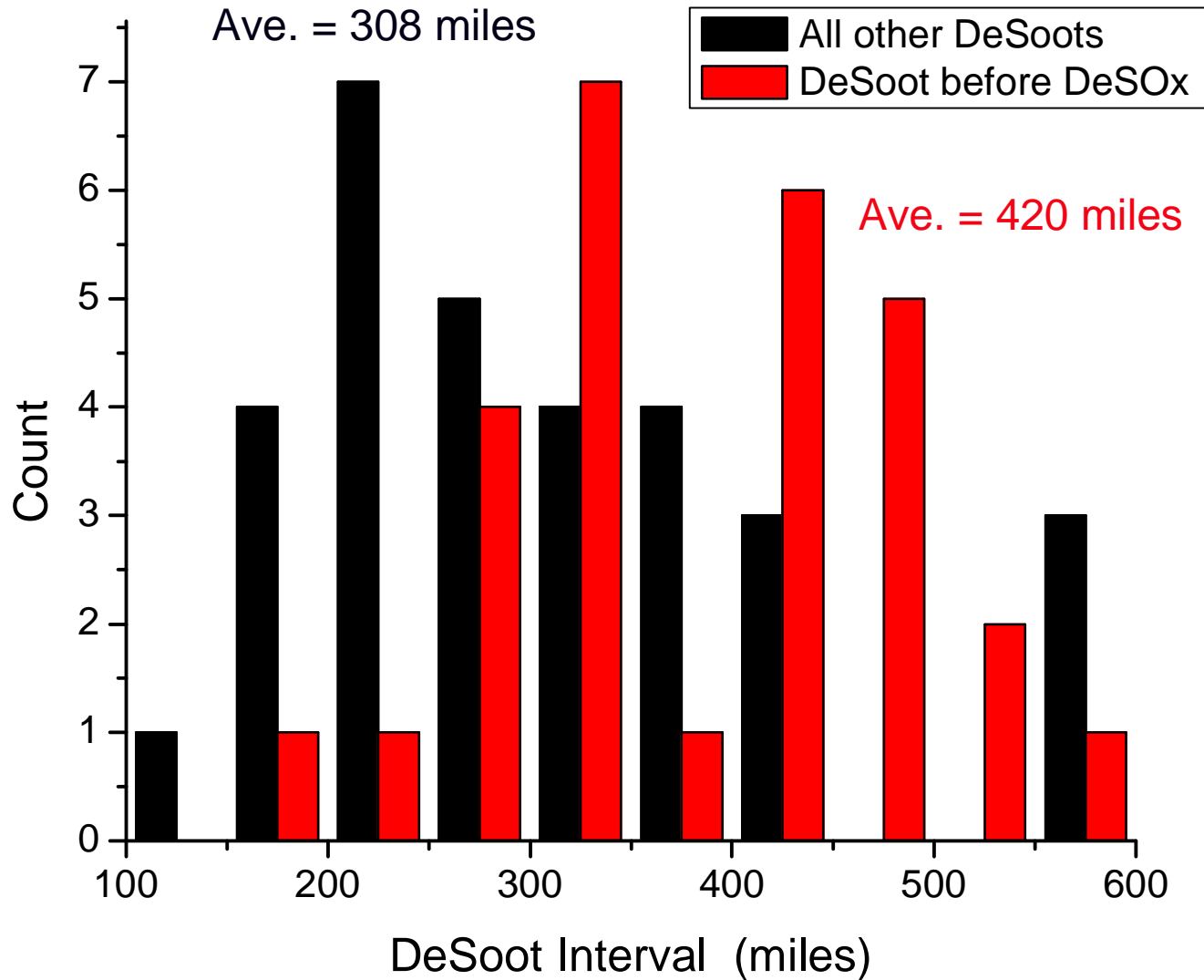
DeSoot: Ave. Duration: 10.9 min

Distance between Regenerations
 Average: 361 miles (~8.5 hr);
 Range: 137-590 miles

Engine-Out PM
 FTP-75 45-50 mg/mile
 HWY 55-60 mg/mile
 US06 45-110 mg/mile
 Assuming 70 mg/mile: 7.0 g PM/L



Influence of DeSOx on DeSoot Frequency



Acknowledgements

Mercedes Benz

“engineered like no other”

Derek Bidleman

“reverse-engineered like no other”