Mobile Source Technical Review Subcommittee
February 13, 2002

In-Use HD Diesel Testing Program

Office of Transportation and Air Quality
Certification and Compliance Division
Engine Programs Group

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Overview

- Purpose
- FY01 Program
  - Testing Process
  - Procurement
  - Results
- Initial conclusions
- FY02 Program

Purpose

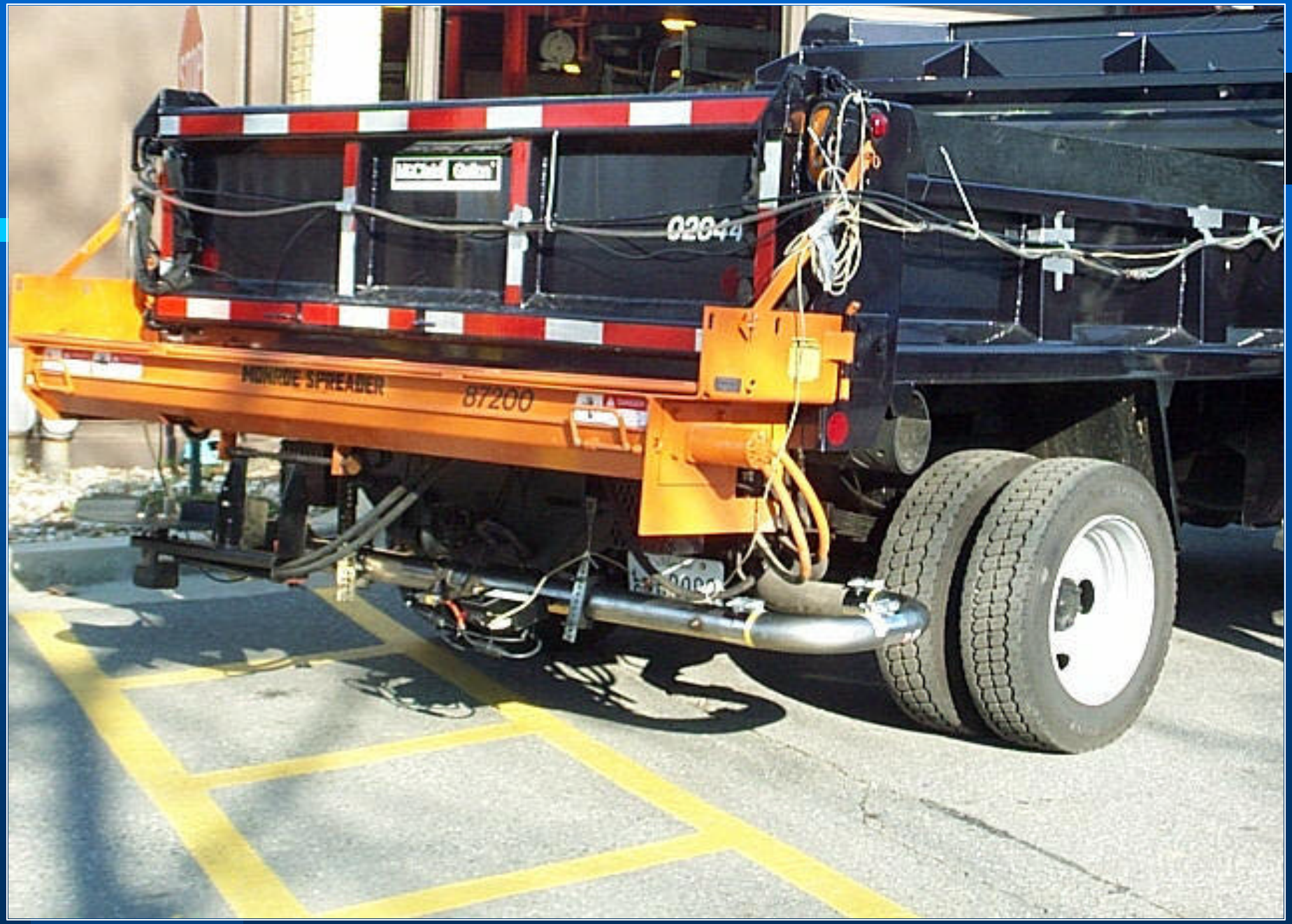
- Establish 1st ever on-highway HD in-use compliance presence
  - Monitor NTE compliance per the Consent Decrees
  - Screen for defeat devices per 1998 manufacturer guidance
- Learn how to implement the NTE as a compliance tool
- Can monitor impact of AECDs

FY01 Program - Testing Process

- 1999 model year and later
  - one truck per family to canvass the fleet
  - limited follow-up of NTE exceedences
- Selections limited to engines with Engine Control Modules that gather speed/load data
- Trucks are outfitted with ROVER, then tested during actual in-use service when possible
- NOx results compared to NTE limits/screening thresholds

FY01 Program - Procurement

- In-Use Team procures trucks from private companies, government agencies, and truck rental facilities
- Examples of ways vehicles are identified:
  - Vehicle registration data provided by VA, MD, DC, PA, and DE, together with National Insurance Crime Bureau VIN decoder information
  - Calls/letters to well-known businesses and trucking fleets
  - GSA data showing government vehicle purchases
  - Web searches
  - Engine manufacturers supplied top sales information
- Army's Aberdeen Test Center (ATC) sets up ROVER and conducts on-road testing through an Interagency Agreement (IAG)


02044
MONROE SPREADER
87200

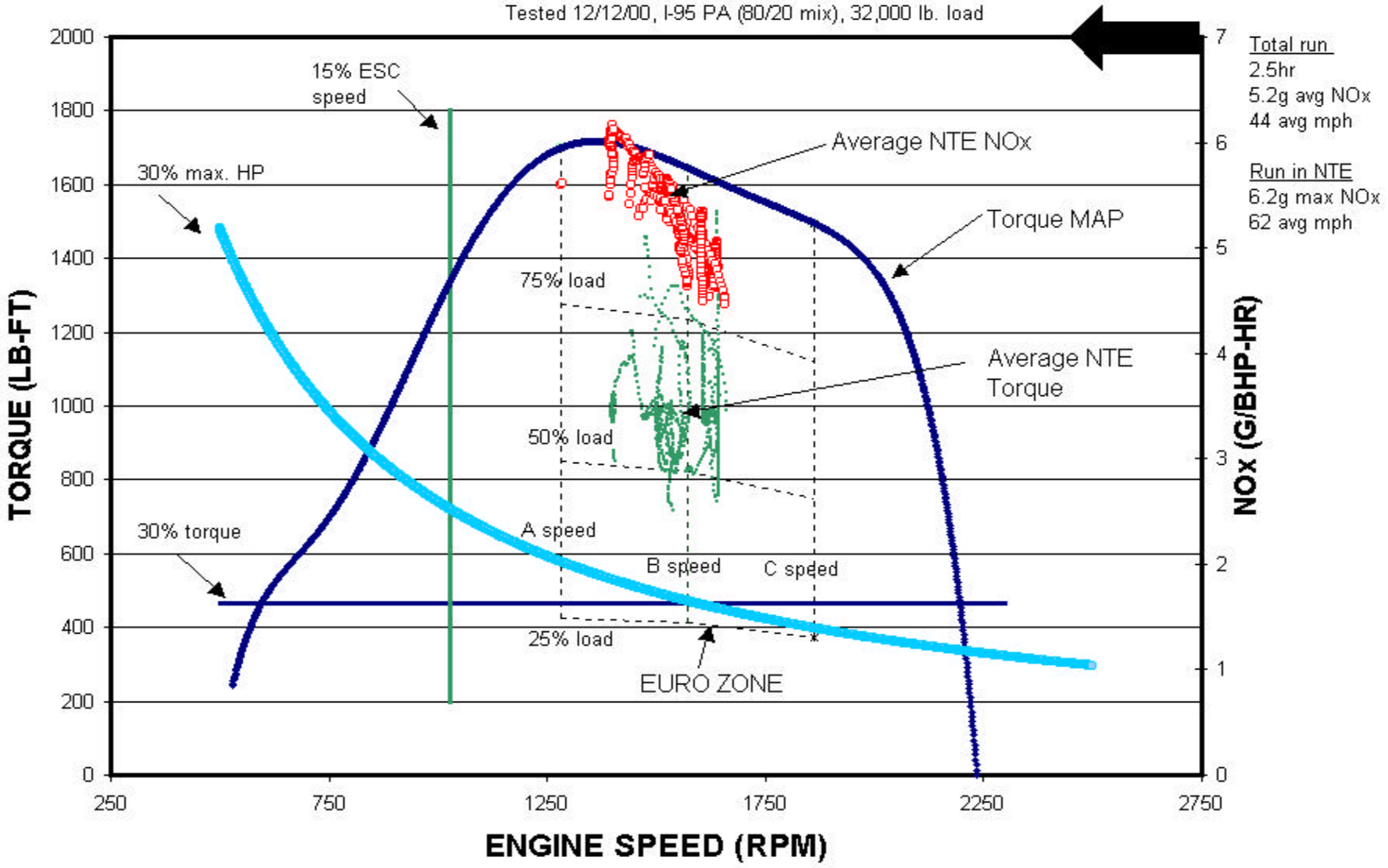
GROVE

5230
CAUTION
Bus Makes Wide Turns
Washington Metropolitan Area Transit Authority
CAUTION
Bus Makes Wide Turns
B-35736
26

FY01 Program - Results

- Tested 57 trucks from 41 engine families
- Procured trucks from private industry and government agencies without incentives
- $3,500 average per test -- about 1/7 the cost of a laboratory dyno test

NTE NOx - ENGINE #4 (HHDD)

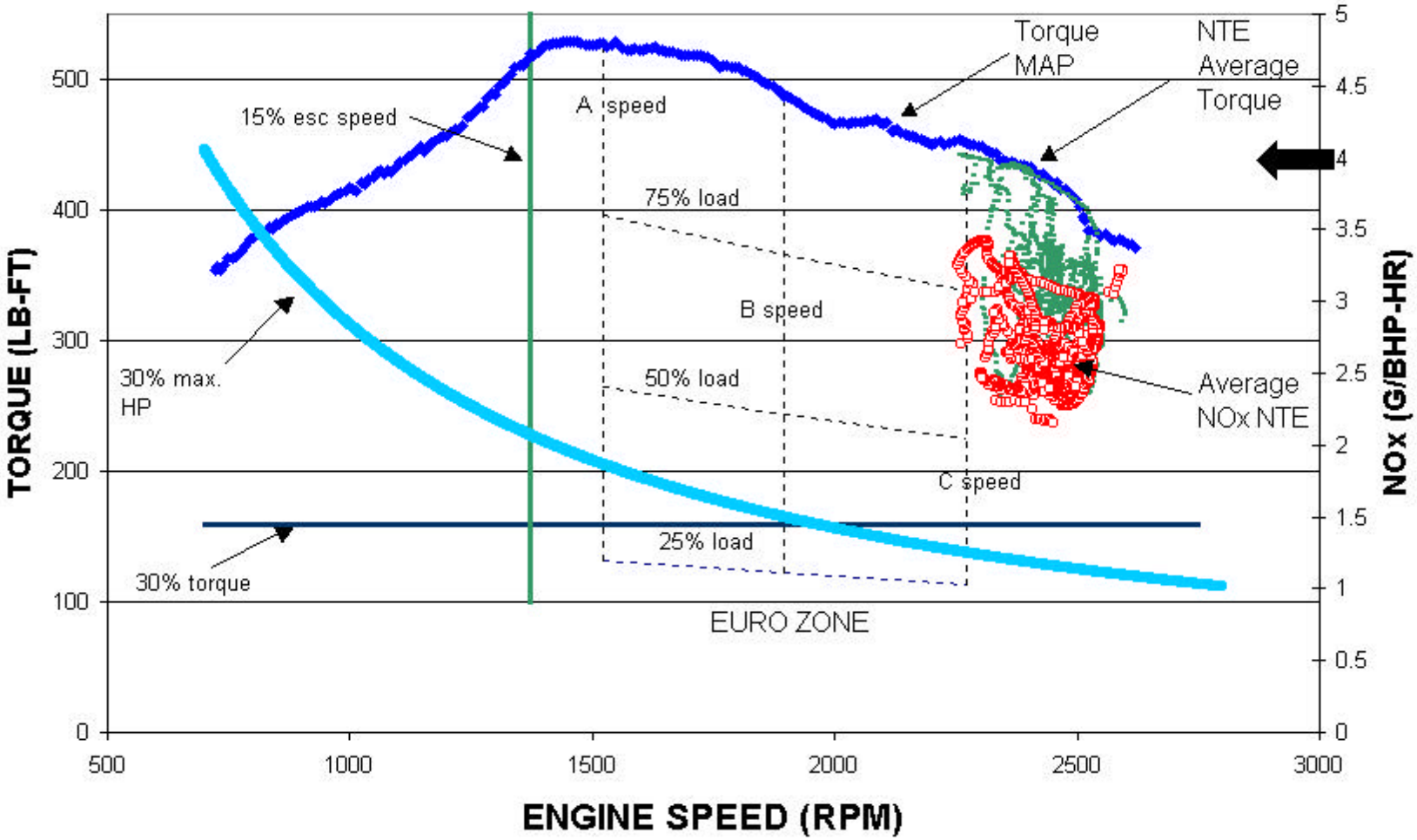


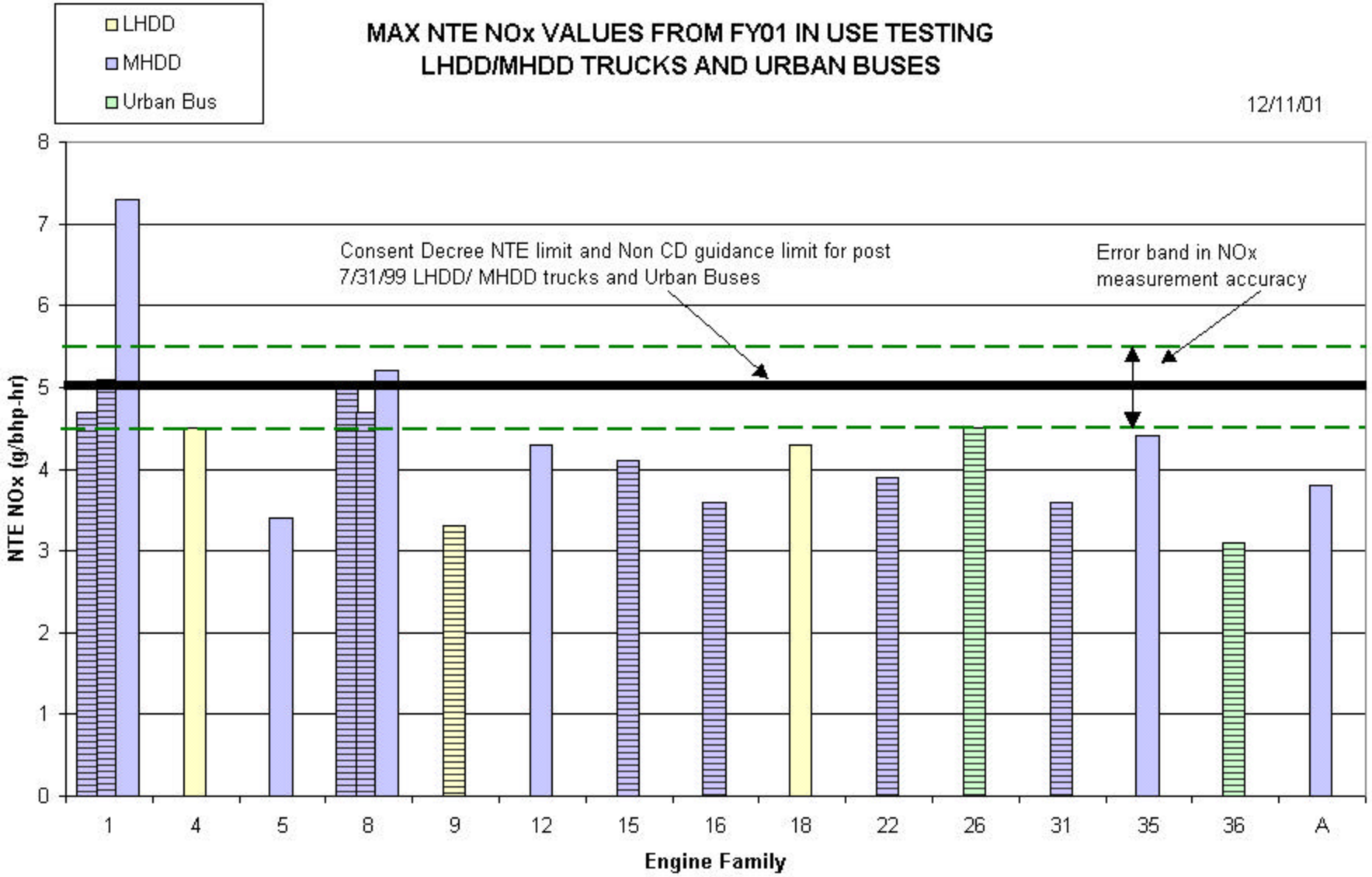
Total run
1.5hr
3.0g avg NOx
33 avg mph

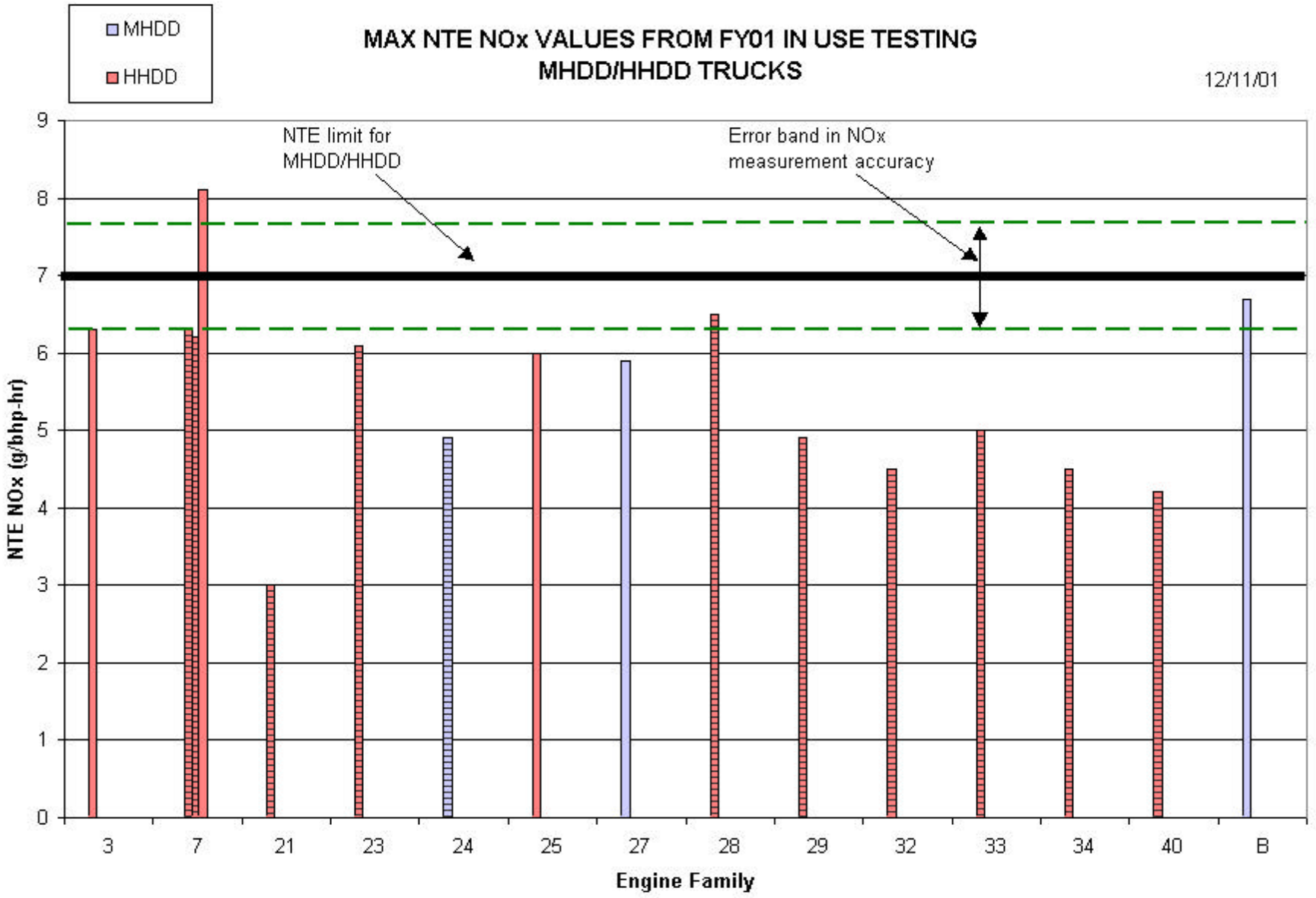
Run in NTE
3.4g max NOx
59 avg mph

NTE NOx - ENGINE #9 (MHDD)

Tested 1/30/01, 75 deg-F, I 95 DE, dump truck w/ sand load




LHDD
MHDD
Urban Bus
MAX NTE NOx VALUES FROM FY01 IN USE TESTING
LHDD/MHDD TRUCKS AND URBAN BUSES
12/11/01
Consent Decree NTE limit and Non CD guidance limit for post 7/31/99 LHDD/ MHDD trucks and Urban Buses
Error band in NOx measurement accuracy
NTE NOx (g/bhp-hr)
0
1
2
3
4
5
6
7
8
1
4
5
8
9
12
15
16
18
22
26
31
35
36
A
Engine Family


MHDD
HHDD
MAX NTE NOx VALUES FROM FY01 IN USE TESTING
MHDD/HHDD TRUCKS
12/11/01
NTE limit for
MHDD/HHDD
Error band in NOx
measurement accuracy
NTE NOx (g/bhp-hr)
0
1
2
3
4
5
6
7
8
9
3
7
21
23
24
25
27
28
29
32
33
34
40
B
Engine Family

Initial Conclusions

- NTE and portable sampling systems makes HD on-road testing feasible
- NTE captures mostly interstate operation
  - Captures worst-case NOx
  - Obscure operation not an issue
  - Complements FTP, EURO
- Program has grabbed industry's attention

2002 Program

- Additional follow-up of FY01 NTE exceedences
- Continue focus on Consent Decree engines
- More in-depth testing focused on fewer families
- Test under varied environmental and operational conditions
  - Varying altitude, temperature, loads, drivers etc
- Pilot program for HD non road engines

2002 Program

- **In Use Data will be used to…**
  - **Ensure manufacturers meet consent decree requirements**
  - **Screen for defeat devices**
  - **Observe the impact of AECDs over various conditions**
  - **Support future rulemaking**

2002 Program

- "Marathon" Test
  - Class 8 truck equipped with ROVER traveling from Maryland to Arizona
  - Approximately 100 hours of data to be collected
  - Will be able to observe the effect of varied environmental and operational conditions over 5,000 mile trip
  - Regional, State, City and County agencies will observe/participate in testing in Tucson and Phoenix