

Final Report of the OBD Policy Workgroup

Mobile Source Technical Review
Subcommittee

February 12, 2003

Lori Stewart, USEPA

Brock Nicholson, NC DENR

The Workgroup addressed NAS Issues and Other Stakeholder Concerns

- NAS Issues from July 2001 I/M Assessment
 - Future failure rates for aging vehicles
 - Pollution prevention approach of OBD
 - Lack of overlap in tailpipe and OBD failures

- Stakeholder Concerns
 - Potential conflict of interest
 - OBD durability and warranty issues
 - Tampering devices (not in original charter)

Workgroup Report Summarizes Latest Data on OBD Use in I/M Programs

- Average OBD failure rates for OR and WI similar to tailpipe testing.
 - Overall failure rate for the OBD fleet about 2.5%
 - Failure rates 7% and 3.4% for 1996 and 1997, respectively
- Most frequent causes of OBD failures are oxygen sensors, misfires, exhaust gas recirculation, and evap
- OBD I/M scan tool communications rates 99%+ (OR, WI)
- Average emissions reductions statistically the same
 - Doesn't include evaporative and preventative OBD benefits
- OBD minimizes trips back for second and third inspections
- Short inspection times of five to ten minutes
- OBD provides unique evaporative benefits

NAS Issue: OBD Failure Rates for Aging Vehicles

- Failure rates appear consistent with traditional tailpipe testing failure rates, but only six years of data currently available.
- “Preventative” OBD failures down to 30% for more recent EPA high mileage vehicle study, versus 70% reported by the NAS from EPA’s initial “200-car” study.
- Data to date indicates that average tailpipe emissions benefits resulting from OBD failures are consistent with those of traditional tailpipe tests. Also, additional evaporative and preventative benefits.

NAS Issue: OBD Failure Rates for Aging Vehicles (continued)

Workgroup Recommendations

- Although failure rates do not appear to be problematic at this time, more data is needed as OBDII-equipped vehicles continue to age.
- EPA should expand the high-mileage study to about 100 vehicles per year
- EPA and OBD Technical Workgroup should continue to review high-mileage study data and State I/M lane data.
- EPA should share results with States annually.

NAS Issue: OBD Failure Rates for Aging Vehicles (continued)

Workgroup Recommendations

- Also, look at technical questions to assist States:
 - How will the new, low emissions standards (Tier 2, LEV, ULEV, SULEV) impact effectiveness of various I/M testing technologies?
 - Would it be feasible for States to require repair on older OBDII vehicles, only for certain diagnostic trouble codes (DTCs)?

- States should continue to follow high-mileage study results and I/M program lane data and consider these results in any decisions about the future of tailpipe testing.

NAS Issue: OBD Failures for Vehicles in Need of Repair but not yet Exceeding Standards

- NAS concerns partially driven by results of the initial “200-car” study showing 70% of OBD failures were “clean but broken” vehicles
 - More recent EPA high-mileage data shows 30% of failures for “clean but broken” vehicles. Suggests as vehicles age, more failures associated with immediate emissions increases.
- Data to date show average tailpipe emissions reductions for OBD failures not statistically different from tailpipe failures.

NAS Issue: OBD Failures for Vehicles in Need of Repair but not yet Exceeding Standards (cont'd)

Workgroup Recommendations

- Re-emphasis on earlier recommendation to continue and increase EPA high-mileage testing.
- Continue to pursue a full lifecycle analysis of OBD benefits.
- EPA's next update of the emissions modeling tool (the "MOBILE" model) should incorporate the latest available data on full range of benefits of OBD.

NAS I/M Report: Lack of Overlap Issue

- Lack of overlap between tailpipe and OBD failures
 - Several studies have shown little overlap between tailpipe and OBD failures

- Examined the reasons for “lack of overlap”
 - The failures represent only about 3% of the tests. OBD and tailpipe agreed over 97% of the time.
 - OBD represents new paradigm. Not easily compared with tailpipe.
 - Over half of the “lack of overlap” attributable to OBD “preventative” failures, evaporative failures, or below tailpipe cutpoints
 - Some portion due to margin of error in both tailpipe and OBD tests.
 - Tailpipe testing still important for 1995 and older vehicles, and may be needed for OBD vehicles as they age.

NAS I/M Report: Lack of Overlap Issue

- Recommendations to EPA and OBD Technical Workgroup
 - Technical workgroup should try to quantify what portion of the “lack of overlap” presents concern.
 - Review both the EPA data from high mileage study, and the Colorado Department of Public Health and Environment study results.
 - EPA should develop an on-going evaluation program focused on high-emitting vehicles missed by OBD....verified thru FTP testing (not field tailpipe tests).
 - Assess the approx. 2000 FTP data points available in 2004/2005 thru new manufacturer In-Use Verification Program (IUVP).

Stakeholder Issue: Conflict of Interest Concerns

- Some stakeholders concerned about three potential areas where conflict of interest could occur:
 - Dealership inspections may be influenced by manufacturers
 - Potential for insufficient warranty and defect reporting
 - OBD design may not be robust after warranty period
- Mixed perspectives among workgroup members on whether these conflicts are likely to occur, and no evidence presented.
- Final report provides extensive list of EPA, CARB, and State compliance measures that help safeguard against these concerns.

Stakeholder Issue:

Conflict of Interest Concerns (cont'd)

Recommendations: Decentralized Inspection Areas

- States with decentralized programs should consider additional safeguards (if not already in place) to prevent inspection fraud:
 - Video auditing to allow State or contractor to observe and communicate with inspection technicians
 - Bar codes to track inspection stickers
 - Audits of inspection data by the State to detect anomalies
 - “Undercover” failing cars to verify proper inspection
 - Third party testing where repair work is also being performed
- EPA should assist States to ensure adequate safeguards.
- EPA should cross-check data between centralized and decentralized I/M areas to look for anomalies in pass/fail rates.

Stakeholder Issue: Conflict of Interest Concerns (cont'd)

Recommendations: OBD System Design

- EPA should include OBD in its approx. 150 in-use compliance tests/year
- EPA and CARB could increase the number of vehicles examined in in-use compliance programs
- EPA and CARB should set up a data base for all state I/M programs with OBD-related information to support data and trend analysis (e.g. defect reports, in-use testing results, manufacturer in-use testing, etc.)
- EPA and CARB should continue to require improvements to OBD systems as new information becomes available.

Stakeholder Issue: OBD Warranty/Durability

- OBD durability/warranty coverage
 - consumers are liable for repair costs once warranty expires (2 years/24 k miles for smaller components, 8 years/80k miles for catalyst)
- OBD systems and emissions control components subject to “useful life” requirements of 100K miles for light duty vehicles, 120K for light duty trucks.
 - Manufacturers subject to enforcement actions in not met
- Recommendation: Continue EPA’s high mileage study, and evaluate of State I/M lane data to monitor whether warranty periods are appropriate, or should be extended.

Stakeholder Issue: OBD Tampering Devices

- Increasing concerns about availability of tampering devices that can be used to bypass the OBD system
 - Numerous websites offering “O₂ Simulators” that can eliminate diagnostic trouble codes when catalyst missing
 - Offered for “off-road use only”

- Workgroup recommends three pronged approach:
 - EPA and CARB should run strong enforcement programs to deter the use OBD tampering devices.
 - OBD Technical Workgroup should explore technical means for identifying tampering devices.
 - EPA and States should develop I/M program policies that help deter or remove incentive for the use of OBD tampering devices.

Next Steps for Policy Workgroup Report

- Send report forward to the Clean Air Act Advisory Committee
- Post report and “Technical Appendix” on EPA’s website at www.epa.gov/otaq/obd.htm
- EPA and the OBD Technical Workgroup will continue to address recommendations made by the Policy Workgroup.