Transitioning I/M Workgroup Final Report

Presented to:
Federal Advisory Committee Act
Clean Air Act Advisory Council
Mobile Source Technical Review Subcommittee

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Special Thanks to USEPA Facilitator Gene Tierney and Co-Chair Allen Lyons for their tireless effort in furthering the mission of this subgroup.

Outline

- Subgroup Background

- Charter of FACA CAAAC MSTRS Remote OBD Technical Subgroup of the Transitioning I/M Workgroup

- Roster of Contributors

- Expected Benefits of Continuous Monitoring

- Emergence of Connected Vehicle Technologies

- Outline of Draft Guidance

- Final Draft Guidance Review

- Summary
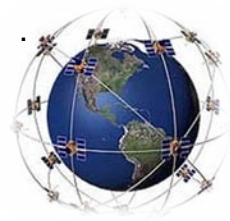
Subgroup Background

- Based upon findings in the Final Report of the Transitioning I/M Workgroup in April of 2008, a Remote OBD Technical Subgroup was formed to recommend a national technical standard for Remote OBD I/M program development.

- The Subgroup convened its first meetings in late 2008, culminating in approval of Draft Guidance at our final meeting during the 26th Clean Air Conference in September of 2010.

- Participation in the Subgroup was voluntary and open to any interested party able to attend meetings and/or contribute subject matter to the draft guidance submitted to MSTRS for review and acceptance.

- Participants represented a broad base of public and private stakeholders with diverse interests and objectives within the larger I/M community of regulators, vendors, program management and technical professionals.

- Extraordinary effort was expended by a host of contributors in order to produce guidance containing substantial technical and policy elements within a collaborative framework of diverse opinions. Most notable in this regard are those included in the roster on the following slide.

Roster of Subgroup Authors

- Allen Lyons – California Air Resources Board

- Michael St. Denis - Revecorp

- Richard Joy – Gordon-Darby

- Gene Tierney – USEPA

- Bill Dell – SysTech, Inc.

- Charlie Gorman, Equipment and Tool Institute

- Dr. Hillok Kargupta - Agnik, Inc.

- Chris Brown – General Motors

- Steve Hirshfeld, State of WI

- Bruce Kohn – SysTech, Inc.

- Vince Mow – MACTEC Engineering and Consulting, Inc.

Potential Benefits of CM

There are certain capabilities of remote OBD monitoring that may offer improvement over common periodic inspection limitations.

1. **Continuous Monitoring (CM)** – the ability to identify OBD faults and their resolution on a frequent basis to reduce the excess vehicle emissions that may otherwise occur between periodic inspections. This may result in a measurable and creditable increase in emission reductions for the I/M fleet.

2. **Failed Test Resolution Verification** – the ability to determine, after a certain interval since a CM Test Failure occurred, that the MIL has been extinguished with at least the ***relevant monitors set***.

3. **Enhanced Auditing & QA Capabilities** – With an initial "fingerprint" for enrolled vehicles, CM affords timely review of a wide range of vehicle performance and extended OBD data that can be used to identify inspection anomalies, defeat devices and other types of fraud.

4. **Enhanced Monitor Readiness Criteria** – CM allows specification of more stringent readiness criteria than periodic programs. In the case of persistent failure to set readiness, it allows for motorist notification and corrective action.

Emergence of Connected Vehicle Technologies

- Remote OBD Pilot Studies

- ITS – IntelliDrive (DOT – FHWA)

- Pay As You Drive (PAYD)

- Pay How You Drive (PHYD)

- Virtual Tollways

- Asset Management

- Heavy-Duty Vehicle Interface (J-BUS)

- Consumer Applications

Outline of Draft Guidance

I.   Introduction

II.   General Design Requirements

III.   Repair / Retest Considerations

IV.   Record Structure and Format

V.   Security and Tamper Protection

VI.   Data Capture

VII.   Compliance Monitoring and Auditing

VIII.   Communication Protocols

IX.   Acceptance Criteria

X.   Administrative Reporting

XI.   Glossary of Terms

Appendices for ATP Scenarios and XML Schema

Final Draft Guidance Review

Standardized reference for OBDIII, Remote, Wireless, Continuous, etc:

Remote OBD I/M - One method for obtaining continuous testing credit.

Description of the basic technical elements:

Remote OBD Link, Data Communications Network, Data Management System

Expected Benefits:

- Continuous nature of testing and repairs
- More stringent and appropriate readiness criteria
- Improved assessment of repair effectiveness
- Additional fraud/anomaly detection methods

Minimum standard for Continuous Monitoring Program qualification:

80% communicate at least once every two weeks on average

20% communicate at least once per month on average

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Enrollment Guidelines:

- Agree not to tamper or destroy remote OBD device
- Commit to timely repairs and response to notices
- Commit to "be seen" by network periodically
- Notify of title transfer or other inability to meet minimum requirements

"Key Events" that must be logged with date and time:

- Change of MIL status
- Change of status of any monitor
- Change of fingerprint data
- Remote OBD link disconnected
- Other anomalous conditions

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The goals associated with the use of compliance monitoring and auditing for a Remote OBD implementation include:

- Ensuring owners take appropriate action when certain events occur
- Preventing fraud
- Verifying adequate network coverage
- Verifying program effectiveness
- Quantifying benefits of the program
- Taking corrective action for shortcomings and inappropriate activities

Conditions Requiring Motorist Notification or Other Jurisdictional Action:

- MIL On
- Lack of Vehicle Reporting
- Failure to Achieve Readiness
- Presence of Anomalous Data

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Communication Protocols:
- Communication between the Remote OBD link and the Transceiver
- Communication between Base Stations and the DMS

Acceptance Criteria:
- Remote OBD link
- Hot spot/receiver
- The Data Management System (DMS) including VID
- End-to-end Testing

Administrative Reporting:
- MIL On
- Lack of Vehicle Reporting
- Failure to Achieve Readiness
- Presence of Anomalous Data

Final Draft Guidance Summary

- Guidance describes the means by which Remote OBD I/M may be an acceptable alternative for periodic inspection.

- Not intended to be technology restrictive but to allow for existing approaches as well as further developments.

- Provides comprehensive treatment of program design and SIP development factors.

- Draft guidance is complete and unanimously accepted by participants

- Pilot and production inspection programs are ongoing and in development even as guidance moves towards adoption.

We would also like to express our appreciation to the OBD Clearinghouse and Weber State University for hosting subgroup documents during development.

http://www.obdclearinghouse.com/index.php?body=wireless

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