Transitioning I/M Workgroup

Update for the Mobile Source Technical Review Subcommittee

October 8, 2009

Background

- Transitioning I/M Workgroup
  - Completed initial report outlining ways states can take advantage of the new technologies to reduce costs and improve benefits of OBD I/M
  - Decided that a national standard protocol was needed to assist in the implementation of such programs
  - Created the **Remote OBD Technical Sub-group** to facilitate development of such a standard

Sub-group Charter

- Objective: recommend a national technical standard for Remote OBD I/M
- Wireless technology expected to enhance existing OBD inspections
- Continuous monitoring of vehicle emission status leads to more timely fault correction than the periodic (annual or biennial) inspection
- Several states either have or are planning a Remote OBD I/M program and various telematics products are already available for this purpose
- Lack of uniform standards makes implementing a program more complex and costly
- Establishing a national standard will help facilitate greater participation, simplify implementation, inform program design, and reduce the costs of implementing and operating Remote OBD I/M

Remote OBD Monitoring Fundamentals

- Remote OBD gathers same inspection data as conventional inspection, with wireless transmission replacing the cable connection used at a physical inspection facility.
- The wireless transmission of OBD data can be accomplished with original equipment, such as OnStar, or with an add-on device
- The remote OBD link is a small unobtrusive instrument installed once in the vehicle's diagnostic link connector that can communicate at any time with the vehicle's on-board computer.
- Data that reflects the emissions status of the vehicle is temporarily stored in the link for transmission to remote OBD access points which convey real-time inspection records to a central database
- Remote OBD access points consist of 1) a ground-based network of short range radio receivers, 2) a cellular communications network or 3) via satellite communications. The wireless access point then relays the vehicle inspection record to the inspection database (VID).

Remote OBD Monitoring Benefits

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

1. **Continuous Monitoring** – the ability to identify OBD faults on a frequent or real-time basis can drastically reduce the period of excess vehicle emissions that occurs between periodic inspections. This may result in a measurable and creditable increase in emission reductions for the I/M fleet.
2. **Repair Factor Determination** – the ability to determine the exact period after a MIL event has occurred and the MIL is extinguished (presumably by repairs), until a similar fault (DTC) recurs.
3. **Enhanced QA Capabilities** – remote OBD monitoring permits timely review of a wide spectrum of vehicle performance and generic OBD data that can be used to identify inspection anomalies, defeat devices and other types of fraud.
4. **Continuous Repair Improvement** – with immediate electronic notification upon a change of OBD status, motorists, repair professionals and government have the means to evaluate several crucial program performance factors including repair durability, monitor readiness anomalies, deterioration rates, battery disconnects, etc.

Sub-group Progress Report

ISSUE: What is the mission of the sub-group?
RESOLUTION: Collaborative development of the Charter

ISSUE: How is the mission of the sub-group to be carried out?
RESOLUTION: Collaborative development of Draft Scoping Document

ISSUE: Should the level of standardization of a wireless inspection network extend to the Middle Layer Protocol (i.e., the means by which data collected by the wireless vehicle interface (link) is communicated to the external network (server) before transmission to the VID.)
RESOLUTION: Polled participating states who were known to have an interest and after review and further discussion by the group at last Monday's meeting it was resolved to develop standards for this aspect of the wireless network.

PROTOCOL DEVELOPMENT: A protocol development session to complete the first draft of the protocol itself is now in the planning stages

- Authors retreat to hammer out protocol

Outline of Draft Protocol

I. Definitions of terms - Gene Tierney

II. Network design criteria - Hillol Kargupta, Agnik/UMD

III. Repair / Retest considerations - Bill Dell, STI

IV. Communication protocols - Charlie Gorman, ETI

V. Acceptance criteria - Michael St. Denis, Revecorp

VI. Security & tamper detection - Allen Lyons, CARB

VII. Record structure & format - Steve Hirshfeld, State of WI

VIII. Reporting triggers & frequency - Vince Mow, MACTEC

IX. Auditing & compliance monitoring - Allen Lyons, CARB

Outlook for Implementation

- Potential for automakers to make data from factory telematics equipped vehicles available for motorist release to jurisdictions.
- Several jurisdictions expressing interest in program development.
- Pilot and continuous testing projects in at least five I/M jurisdictions.
- Requirements for pilots contained in recent I/M procurements.
- Fleets all over the U.S. are presently equipped with specialized devices capable of transmitting valid OBD inspection records.
- Government and private fleets are most qualified candidates for early implementation as indicated in current practice.
- Continuous monitoring programs with vehicles exempted from periodic inspection in California, Oregon, Davis Co., UT, and imminent in Nevada

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