

## 1 General Requirements

### 1.1 Introduction

This document addresses the requirements for the Maryland modified emission program. The modified program incorporates the usage of OBDII (On Board Diagnostic) test in lieu of tail pipe emission test for selected vehicles starting on July 1, 2002.

### 1.2 Hardware Requirement

The Vetronix OBDII module, unit part number ESP 10725-1 or equivalent will be used. The OBDII unit will consist of:

- Control module
- Minimum 17' cable with the pin connector defined in SAE J1962 (to be connected to the OBDII control module unit part number ESP 10725-1)

### 1.3 OBDII Test Regime

All 1996 and newer vehicle with a GVW of less than 8,501 lbs. will receive a VEIC inspection consisting of the following subtests:

- OBDII test consisting of:
  - MIL operational visual test under Key On Engine Off (KOEO) condition
  - MIL operational visual test under Key On Engine Running (KOER) condition
  - OBDII connector visual test (Connector accessibility and tampering)
  - Communication with the vehicle ECM (Malfunction Indicator Light (MIL) commanded status and Diagnostic Trouble Codes (DTC) and readiness status)
- Gas cap pressure test (advisory)

Pass/Fail results for each of the individual OBDII subtest will be combined into an overall OBD P/F result as defined later in this document. The overall inspection Pass/Fail decision will be based on the OBDII overall result and the Gas Cap overall result (unless advisory indicated.)

### 1.4 OBDII Retest

Vehicles failing the OBDII test will require a complete OBDII inspection upon retest. As of July 1, 2002, model year vehicles 1996 and newer with a GVW of 8500 and less will receive an OBDII retest if the vehicle failed an IM240 or idle test before July 1, 2002.

## 1.5 OBDII Reject

Vehicles that are OBDII rejected will receive a final result of abort. A vehicle will be OBDII rejected if the vehicle has too many not ready codes set, but would otherwise pass. For model year vehicles 1996 to 2000, 3 or more not ready codes. For model year vehicles 2001 and newer, 2 or more not ready codes. A vehicle OBDII rejected for too many not ready codes will be given documentation by the state representative and instructed to return after one week of driving. Upon return, this vehicle will not be OBDII rejected again.

## 2 OBDII Test Process

### 2.1 Position #1

If test type is OBDII: (see 1.3 OBDII Test Regime)

- Inspector will be asked if this vehicle has been previously OBDII rejected. If yes, then vehicle will not be OBDII rejected a second time and a manager override will be required, the employee number will be saved to VOB.OBD\_NR\_OVER

Vehicle will be cued to proceed to position #2 following the results of the gas cap pressure test.

### 2.2 Position #2

- The system will prompt for the following:
  - Initiate OBDII MIL Bulb Check with Engine Off (KOEO) (ensure engine off for 12 seconds)
    - Instruct inspector Key On Engine Off
      - Is MIL Bulb on? (Yes or No) (Default to yes) (Yes stored as Pass, no stored as a Fail)
        - If yes, proceed to the next screen
        - If no, ask for verification and retry MIL bulb check with Key On Engine Off (Yes or No)
          - A "No" will cause overall result of Fail, test will continue, proceed to next screen
  - Initiate MIL Bulb Check with Engine Running (KOER)
    - Instruct inspector to start engine
      - Is MIL off while engine running? (Yes or No) (Default to yes) (Yes stored as Pass, no stored as Fail)
        - If KOEO equals fail and KOER equals fail, then set KOEO to pass.
        - If KOEO equals fail and KOER equals pass, then ask, "Did the MIL turn ON at any time?" If yes, set KOEO to pass. (See section 3.2.5 for table on calculation of KOEO and KOER results.)
  - Initiate OBDII cable connection
    - Instruct inspector to locate OBDII connector and attach cable

- Inspector to select "Connected" or "Unable to Connect" (description and picture of location of OBDII Connector should be displayed)
  - If unable to connect:
    - Tampered (fail)
      - T- Connector tampered
    - Not Accessible (pass)
      - D - Disabled motorist
      - L - Cannot locate connector
      - O – Connector is inaccessible due to OEM design
      - A – Connector is inaccessible due to Aftermarket equipment

If not accessible is chosen, manager override will be required, the employee number will be saved to VOB.OBD\_ACCESS\_OVER.

The overall OBDII result will be determined by unable to connect reason and the KOEO and KOER results.
  - If able to connect, try to communicate with ECM (Display OBDII Communicating)
    - If communication is successful record the MIL Command Status, any DTCs returned by the vehicle's OBD system, and the state of the readiness monitors.
      - The check for "not ready" status will include the following non-continuous monitors:
        - Catalyst
        - Heated Catalyst
        - Evaporative System
        - Secondary Air System
        - A/C System Refrigerant
        - Oxygen Sensor
        - Oxygen Sensor Heater
        - EGR System
      - The following continuous monitors will be ignored:
        - Misfire
        - Fuel System
        - Comprehensive components
      - For exceptions (from EPA Final OBDII Regulations, June 2001, Appendix D) see section 3.2.6
    - If unable to communicate with the vehicle ECM
      - Display "Unable to Communicate, Retry Required, Check connection." Only option to retry.

- If communication successful continue with ECM interrogation
- If communication unsuccessful on 2<sup>nd</sup> or more attempts, "Unable to Communicate" Select "Continue" or "Retry" (default to "Retry")
- If "Continue" selected, vehicle will fail
- If "Retry" selected, go back to retry communication loop
- After three consecutive vehicles unable to communicate with the vehicle ECM, lane will be locked out from further OBDII testing until OBDII equipment verified to be operating correctly (lane should still be able to perform IM240 and idle tests.) The third test will pass communications and be passed/failed on the MIL check. VOB.OBD\_ACCESS will be set to C.

At test conclusion at position 2, prompt inspector to disconnect OBD cable.

Note: If network is Idle Only Mode (Cancel Dyne Mode) then OBDII tests are still performed.

### 2.3 Position #3

Vehicles undergoing the OBDII test regime will receive the following:

- VEIC printout to include:
  - OBDII overall result (P, F)
    - OBDII result will print in the "OBD Codes" section
      - On a pass, "OBDII Result: PASS" will be printed
      - On a fail, "OBDII Result: FAIL" will be printed
        - On a fail, "Please see Diagnostic Report for details" will be printed directly underneath "OBDII Result: FAIL"
  - All Exhaust Emission Standards, Readings and Results will be N/A
- Diagnostic Report printout to include: (failed OBDII vehicles only)
  - Under "Test Number" print section heading "OBDII TEST RESULTS"
  - Under section heading "OBDII TEST RESULTS"
    - Print "MIL Engine Off: PASS" (or FAIL)
    - Print "MIL Engine On: PASS" (or FAIL)
    - Print "DLC Tampering: PASS" (or FAIL)
    - Print "OBDII Communication: PASS" (or FAIL)
    - Print "MIL Command Status: FAIL" (or PASS)
    - Print "Fault Codes:" (and list the fault codes, number and description)

Note: If "OBDII Communication" is Fail, there will be no MIL Command Status or DTC to print.