

Department of Consumer Affairs  
Bureau of Automotive Repair

# OBD Criteria / Readiness Monitors

*Paul Hedglin, Engineering and Research Branch*

BAR Advisory Group Meeting

*October 20, 2016*

# OBD Test Standard Change

- OBD Inspection System (BAR-OIS) required  
March 9, 2015
- OBD readiness monitor standards changed  
May 4, 2015 on BAR-97 and BAR-OIS
- BAR-OIS OBD data validation implemented  
August 7, 2016

# Gasoline Vehicle Standards

- Number of incomplete monitors allowed to pass on gasoline powered vehicles:
  - Old standard: any two for 1996 to 2000 model years
  - **New standard: any one for 1996 to 1999 (BAR-97 test)**
  - Old standard: any one for 2001 & newer model years
  - **New standard: only evap. for 2000 & newer (BAR-OIS test)**

[Note: use the BAR-97 for gasoline vehicles over 14,000 GVWR]

# Diesel Vehicle Standards

- Number of incomplete monitors allowed to pass on diesel powered vehicles:
  - Old standard: any two for 1998 to 2000 model years
  - **New standard: zero for 1998 to 2006 (BAR-OIS test)**
  - Old standard: any one for 2001 & newer model years
  - **New standard: any two for 2007 and newer (BAR-OIS test)**

[Note: always use the BAR-OIS to inspect diesels.]

# BAR-OIS Data Validation

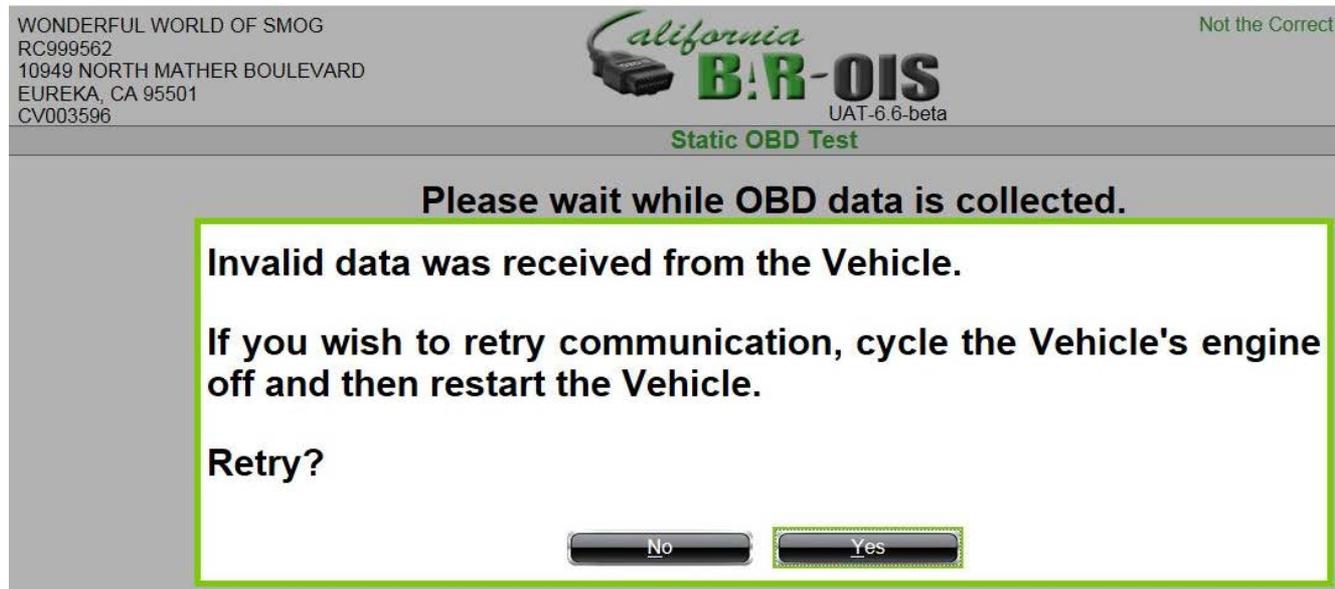
- Starting August 7, 2016, BAR-OIS required vehicles to communicate basic OBD data appropriate to the vehicle
- If a vehicle is OBDII, it must support certain OBD readiness monitors
- When California certification type is *incorrectly* entered for a Federal diesel truck, you may see the message "Invalid data received from the vehicle" causing the inspection to fail for invalid data

# BAR-OIS Data Validation

- Invalid data occurs because the BAR-OIS is expecting a greater number of supported monitors from a California vehicle, but the inspector has told the BAR-OIS that a Federal vehicle is being inspected
- All 1998 and newer California certified diesel trucks subject to Smog Check are OBDII compliant and have greater monitor support (more monitors) than Federal trucks
- Many 1998 through 2006 Federal certified diesel trucks over 8,500 GVWR are not OBDII compliant. Some report little or no monitor support

# BAR-OIS Data Validation

- If certification entered correctly, retry after cycling engine
- If wrong certification type entered, abort and redo
- Invalid data may also occur if only the transmission computer responds; retry after engine restart



# Identifying Certification Type

- Diesel truck emissions certification label typically on engine
- Sample Federal Label: "U.S. EPA"



# Identifying Certification Type

- Sample California Label: "*California*"



# Vehicles of Interest Study

- Before the monitor readiness change on May 4, 2015, BAR identified some vehicle types that would fail for incomplete monitors at much higher than average rate
- A few of these vehicle types failed at a higher than average rate on their first inspection after six model year old exception ends (may indicate OBD issue existed when vehicle new)

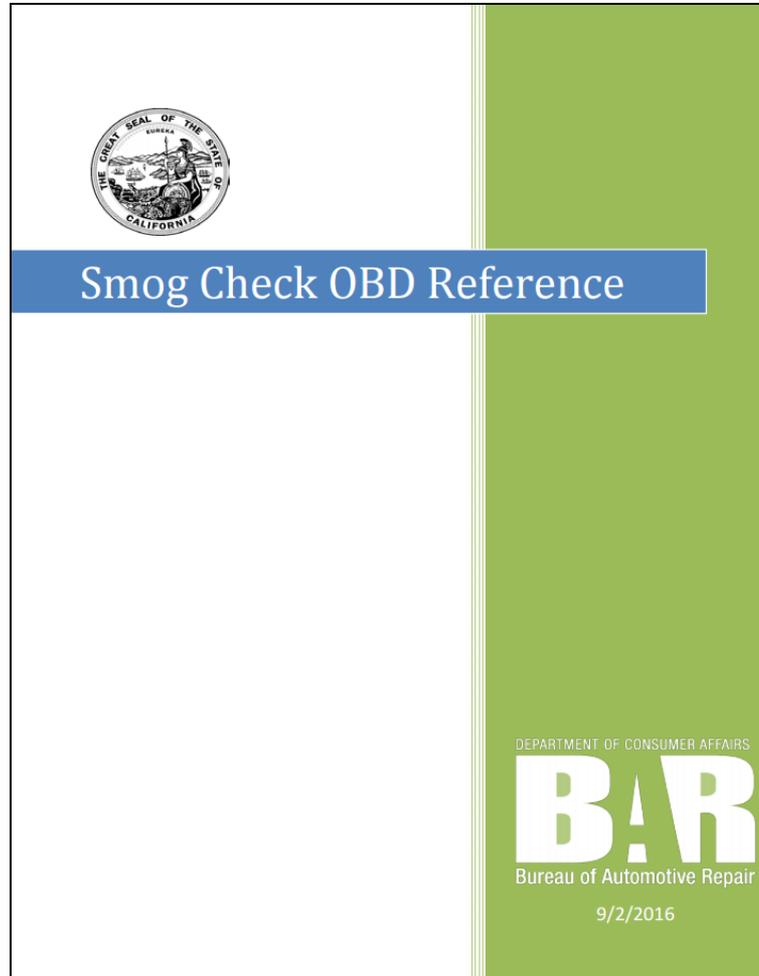
# Vehicles of Interest Study

- A few of the vehicle types that would fail at the highest rate for incomplete readiness monitors were...
  1. Sent to the Referee if only that issue existed (e.g., only EGR readiness monitor not setting)
  2. Recruited to participate with Referee paid diagnosis and limited repair at OEM dealer
  3. Repaired or attempt at dealer, with factory engineering consult
  4. Invoices shared with the ARB
  5. ARB discussed resolution with OEM
  6. Results published in BAR's Smog Check OBD Reference

# Vehicles of Interest Study

- Solution depends on issue and vehicle age
  1. Found 2000 Maxima / Infinity I30 OBD system not completing catalyst monitor because catalyst was defective. BAR advising industry catalyst replacement may be required. Further study needed to pursue correction with Nissan.
  2. Found BMW dealers unable to set oxygen sensor readiness monitor on 2000 BMW 323, dealers unaware of old recall for a reflash, and inappropriately charging motorists for unnecessary repair
  3. Found Ford E350 needing software update so catalyst monitor will run. ARB required Ford issue recall.

# Smog Check OBD Reference



# OBD Reference Contents

- OBD test standards, BAR-OIS and BAR-97 vehicles of interest, repair bulletins, recalls
  - Common issues:
    - Monitor readiness: OIS tuned to ignore monitor(s), or suggestion provided to repair vehicle
    - Federally certified trucks without OBDII: be sure to enter proper emissions certification type (CA or EPA federal); OIS may skip OBD test portion of OIS inspection
    - Vehicle design fault: reflash before inspection

[http://www.bar.ca.gov/pdf/Smog\\_Check\\_OBD\\_Reference\\_Guide.pdf](http://www.bar.ca.gov/pdf/Smog_Check_OBD_Reference_Guide.pdf)

# Latest Version of OBD Reference (v 2.2)

- BAR-OIS will ignore incomplete continuous monitors for the following federal diesels over 8,500 GVWR without OBDII.
- If the BAR-OIS fails to communicate with these vehicles, the inspector must use the result of the bulb check for the overall result of the OBD test if the BAR-OIS offers this option.
  - 1998-2005 Chevrolet: C/K2500, C/K3500, G30, G3500...
  - 2003-2004 DCX Sprinter
  - 1998-2004 Ford: F250, F350, E350, E450...
  - 2002 Freightliner Sprinter
  - 1998-2005 GMC: C/K2500, C/K3500, G3500, Workhorse P30
  - 1998-2006 Dodge: Ram 2500, 3500

[Note: using the BAR-97 on diesels is not permitted]

# Latest Version of OBD Reference (v 2.2)

- Sample BAR-OIS screen showing “use the result of the Bulb Check for the overall result of the OBD Test”

**Communication with the Vehicle has been unsuccessful.**

**Would you like to use the result of the Bulb Check as the overall result for the OBD Test?**

No

Yes

# Tuning BAR-OIS for Vehicles of Interest

- BAR modifies the VID to accommodate vehicle issues
  - By individual vehicle or by groups of vehicles (e.g., model year, fuel type, certification type, VIN)
  - Can switch on/off test modules: OBD, visual, smoke, etc.
  - Can adjust pass/fail standards: monitors, MIL, data validation
  - Can adjust what OBD data is collected: which monitors are required to pass; what OBD data parameters are collected

# Questions and Comments

Submit additional questions and/or comments to:

Paul Hedglin

Bureau of Automotive Repair

10949 N. Mather Boulevard

Rancho Cordova, CA 95670

Phone: 916-403-0223

Email: [Paul.Hedglin@dca.ca.gov](mailto:Paul.Hedglin@dca.ca.gov)